

MINERAL TITLES BRANCH Rec'd.  NOV 03 1998 L.I.# _____ File _____ VANCOUVER, B.C.
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**GEOLOGICAL AND GEOCHEMICAL REPORT**

**ON THE**

**BRECCIA 1 - 4 MINERAL CLAIMS**

**Toodoggone River Area  
Omineca Mining Division  
British Columbia**

**NTS: 94E/11E  
57 31.5' N 127 10' W**

**OWNER: RICHARD T. HEARD**

**AUTHOR: N.C. CARTER, Ph.D. P.Eng.**

**DATE: OCTOBER 11, 1998**

**GEOLOGICAL SURVEY BRANCH  
ASSESSMENT REPORT**

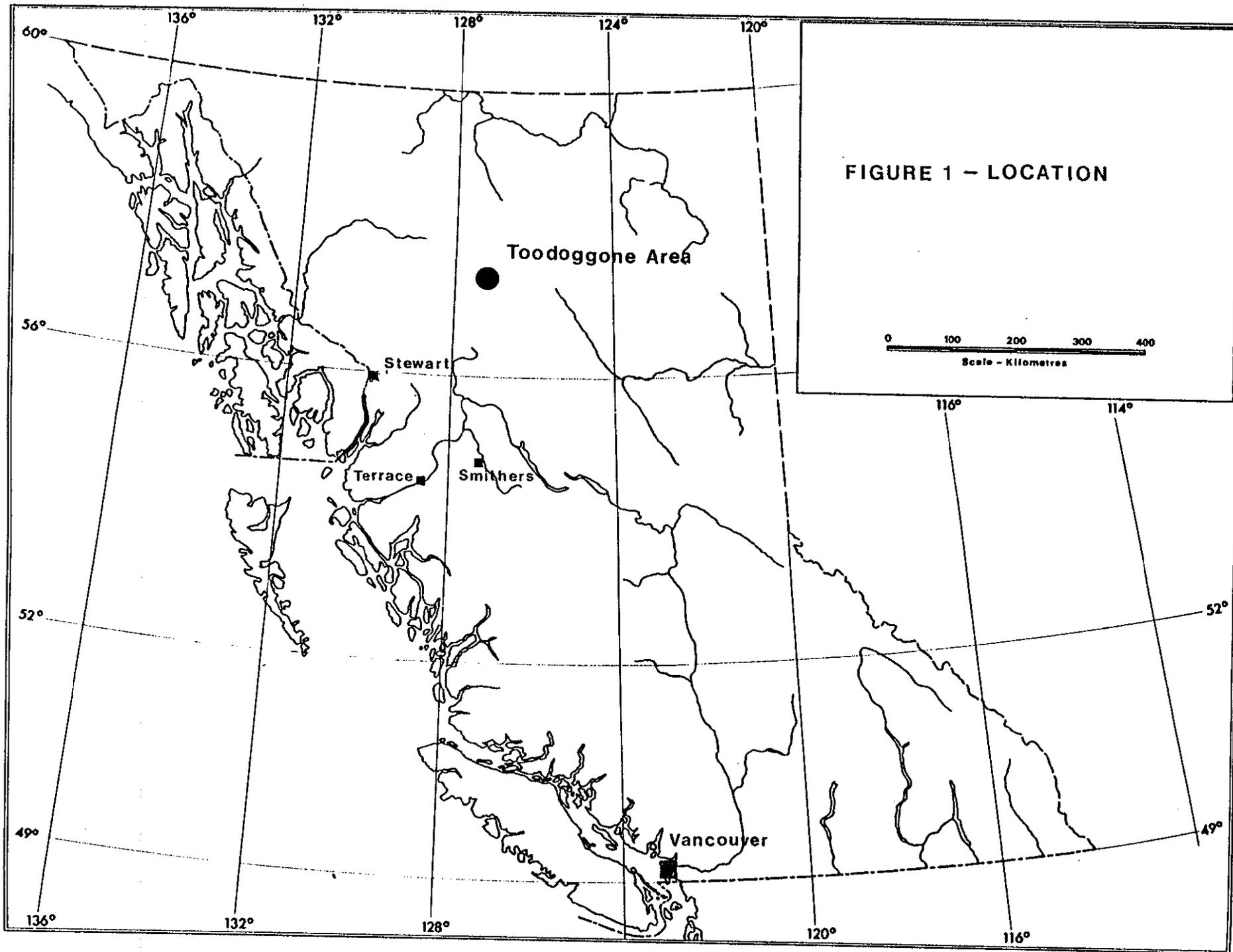
**25,711**

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## INTRODUCTION

### Location and Access

The Breccia 1-4 mineral claims are situated in the Toodoggone River area of north-central British Columbia some 300 kilometres north of Smithers (Figure 1). The claims are 15 km north of Toodoggone River at the headwaters of McClair Creek and 1.5 km southwest of Breccia Peak (Figure 2). The centre of the four claims is near latitude 57 31.5' North and longitude 127 10' West in NTS map-area 94E/11E.

Access into the Toodoggone area is via the Omineca Mining Access Road from Fort St. James or Mackenzie or by fixed wing aircraft to the Sturdee River airstrip 10 km south of Baker Mine (Figure 2). The claims are 35 km north of the airstrip and are most conveniently accessed by helicopter.

### Mineral Property

The Breccia property consists of four 2-post mineral claims registered in the name of Richard T. Heard (Figure 3). Details are as follows:

<u>Claim Name</u>	<u>Units</u>	<u>Record Number</u>	<u>Date of Record</u>
BRECCIA 1	1	357494	July 11, 1997
BRECCIA 2	1	357495	July 11, 1997
BRECCIA 3	1	357496	July 11, 1997
BRECCIA 4	1	357497	July 11, 1997

### Previous Work

Initial work in the area of the current claims included investigation of the prominent gossan on Oxide Peak, 5 km south of the Breccia property (Figure 2) by Consolidated Mining and Smelting Company in the early 1930's. Considerable work was being undertaken by Two Brothers Valley Gold Mines on placer gold deposits at the confluence of McClair Creek and Toodoggone River during the same period.

The area between Toodoggone and Chukachida Rivers was investigated for porphyry copper potential by Canadian Superior Exploration Ltd. in the early 1960's. This work involved field analyses of stream sediment samples, one of which from the area of the present claims in the upper McClair Creek drainage, returned an anomalous, 10 ppm cold extractable copper value (Booth, 1964).

More recent work within and adjacent to the present claims includes that carried out by SEREM Ltd. near Breccia Peak in the early 1980's and airborne geophysical surveys and rock and soil geochemistry completed by Cove Energy Corp. in the mid- to late 1980's (Adamec, 1988).

### Present Status

The Breccia 1-4 mineral claims were located July 11, 1997 on behalf of Richard T. Heard following a release of Regional Geochemical Survey data for the Toodoggone River (94E) map-area. A reconnaissance of the claims area and a limited sampling program was undertaken September 19 and 20, 1997.

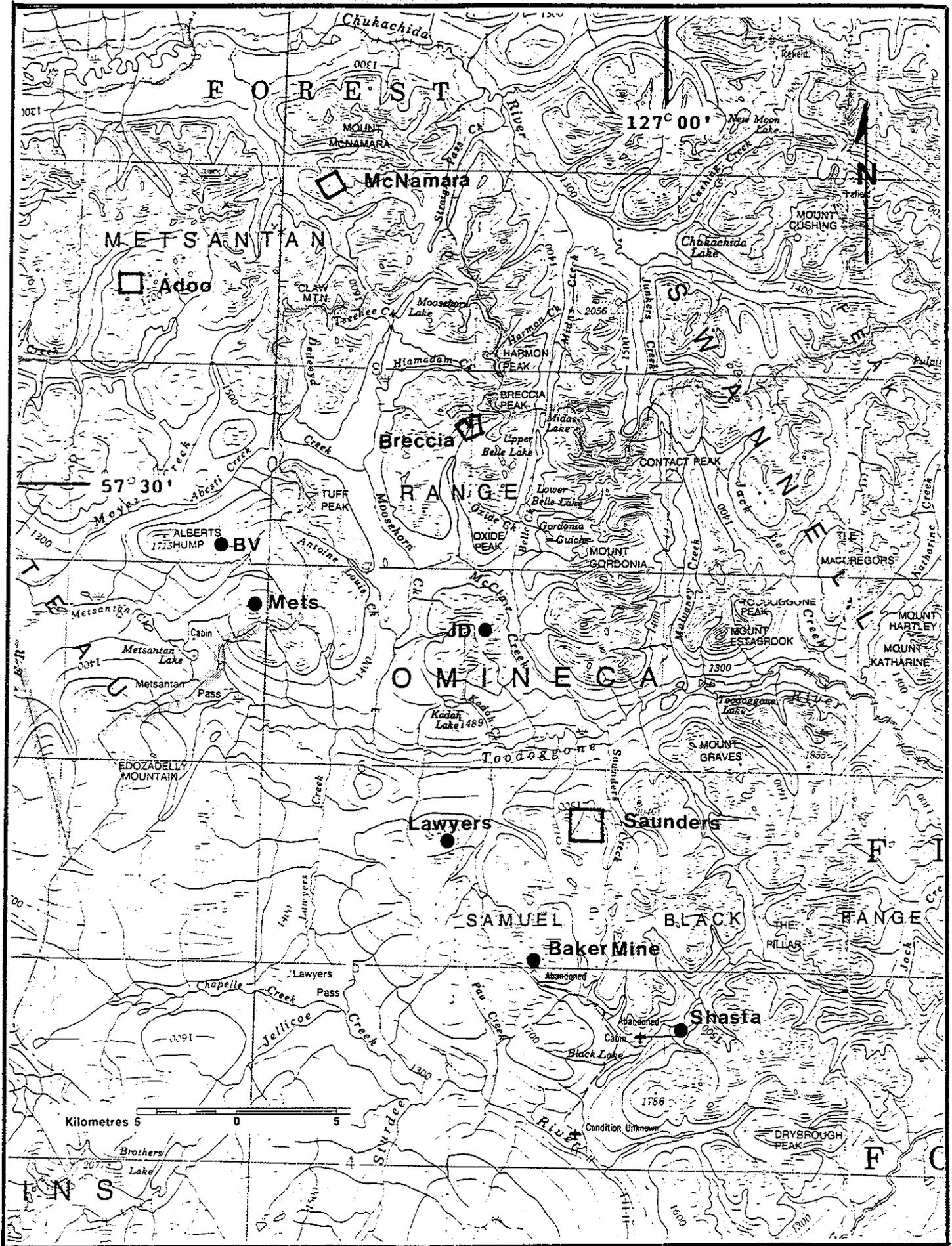


FIGURE 2 - PROPERTY LOCATION

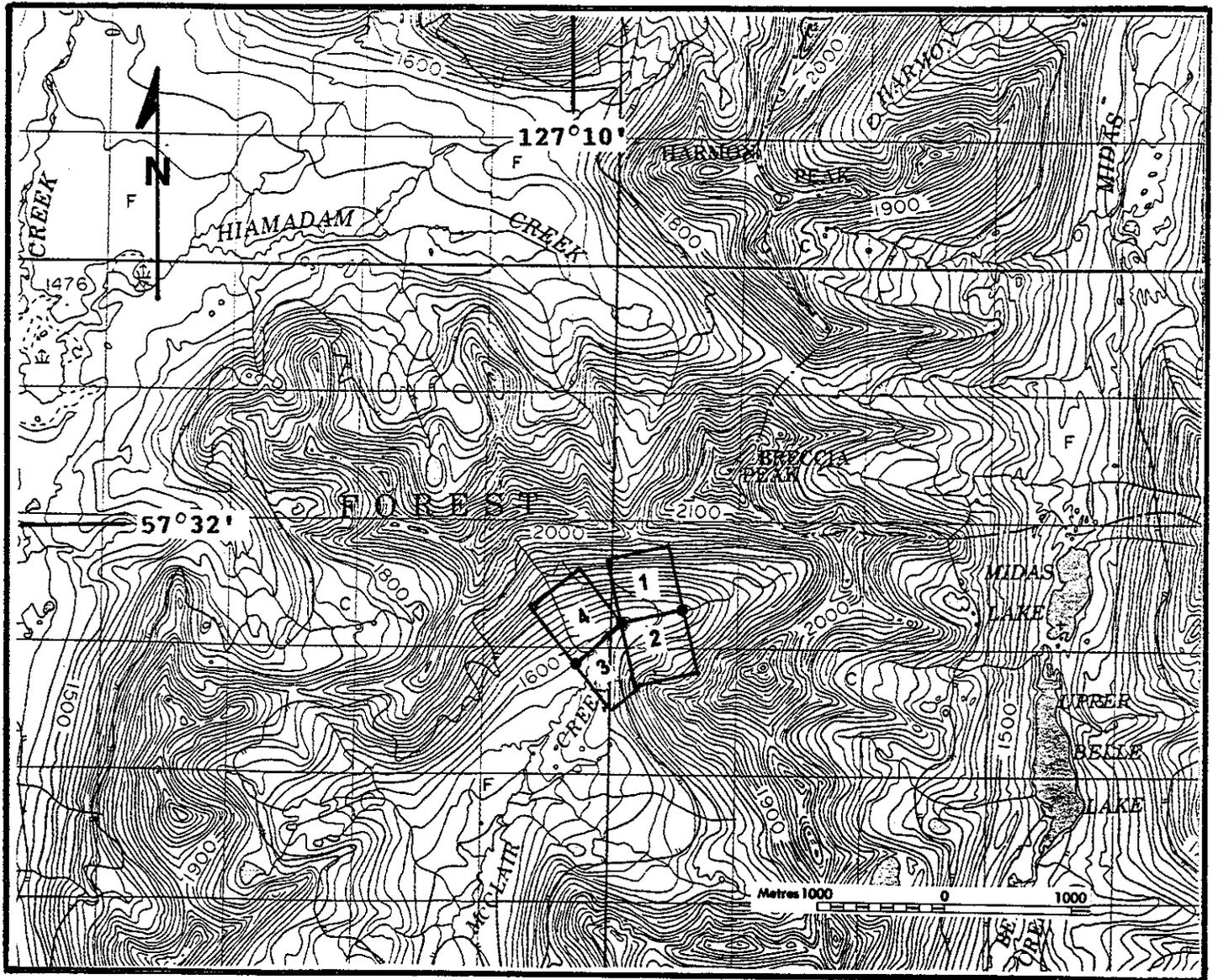


FIGURE 3 - BRECCIA 1 - 4 MINERAL CLAIMS

## GEOLOGY AND MINERALIZATION

### Physical Setting

The northern Toodoggone River area is on the eastern margin of the Spatsizi Plateau, an open, gently rolling upland surface dissected by broad, alluvium-filled valleys. Products of alpine glaciation include steep-walled cirques on north-facing slopes; southern slopes are relatively gentle and rounded.

The Breccia claims are situated in moderately rugged topography at the Headwaters of McClair Creek (Figure 3). Breccia Peak, 1.5 km northeast of the claims, is 2320 metres above sea level; elevations within the claims area range from 1560 metres along McClair Creek at the western claims boundary to about 1920 metres at the northeast corner of the Breccia 1 claim (Figure 3).

Much of the property area features typical open alpine country with abundant felsenmeer and bedrock exposures.

### Regional Geological Setting

The Toodoggone River area, situated near the eastern margin of the Intermontane tectonic belt, is within Stikine terrane which consists of allochthonous Paleozoic and Mesozoic magmatic arc assemblages and overlying sedimentary sequences (Diakow et al, 1991).

Oldest rocks in the area are late Paleozoic limestones in the vicinity of Baker Mine which are in fault contact with late Triassic Stuhini Group volcanic and lesser sedimentary rocks. Overlying these is an early Jurassic volcanic assemblage of distinctive lithology and informally called the "Toodoggone Volcanics" (Carter, 1972). More detailed work in the 1980's (Diakow et al, 1991) defined the Toodoggone formation as being a subaerial, predominantly andesitic to dacitic pyroclastic assemblage with a thickness of at least 2200 metres contained in a northwest-trending belt some 90 km long and 2 - 20 km wide extending from Thutade Lake on the south to Stikine River on the north.

Six lithostratigraphic members of the Toodoggone formation are recognized. Two distinct volcanic cycles are evident, of which the oldest, comprised of four members, was erupted between 207 and 197 Ma. The younger cycle occurred between 193 and 183 Ma (Diakow et al, 1991).

Toodoggone formation volcanics and older layered rocks are cut by comagmatic Omineca granitic rocks and by subvolcanic intrusions related to Toodoggone volcanism.

Clastic sedimentary rocks of the Cretaceous - Tertiary Sustut Group overlie older rocks near the Stikine River and mark the southwestern exposed margin of the Toodoggone volcanic belt.

Several styles of mineralization have been identified in the Toodoggone River area of which the most important are epithermal precious and base metal deposits related to volcanic processes associated with the eruption of Toodoggone formation volcanics. Known deposits occur as fissure veins, quartz stockworks, breccia zones and zones of silicification in which the principal ore minerals include argentite, electrum, native gold and silver and lesser

chalcopyrite, galena and sphalerite. Alteration mineral suites are typical of epithermal environments with an inner zone of intense silicification, clay minerals and locally alunite, grading outward to sericite and clay minerals, chlorite, epidote and pyrite.

Diakow et al (1991) classify the epithermal deposits on the basis of ore and alteration mineralogy into two types. Most of the known Toodoggone deposits are of the adularia-sericite type. Baker Mine (Chappelle property) includes at least six fissure vein systems developed in Late Triassic Stuhini Group volcanic rocks although the known veins are spatially related to dykes believed to be feeders for nearby Toodoggone formation volcanic rocks. Production from Baker mine A Vein between 1981 and 1983 amounted to 1170 kg gold (37,606 oz.) and 23076 kg silver (742,117 oz.) from 70000 tonnes milled. More recent production, from the nearby B Zone, totaled some 18000 tonnes of similar grade material.

Virtually all of the other known adularia-sericite epithermal deposits (Lawyers, Shasta, Mets - Figure 2) are hosted by various volcanic members of the Toodoggone formation. The Lawyers (Cheni mine) deposits consist of gold-silver mineralization in banded quartz-chalcedony stockworks and breccia zones. Production from Cheni mine over a four year period between 1989 and 1993 consisted of 620000 tonnes with average recovered grades of 8.62 g/t gold and 18.2 g/t silver. Recoveries for both gold and silver were about 90%.

Other deposit types recognized in the Toodoggone area include porphyry copper-gold mineralization associated with Early Jurassic granitic plutons, polymetallic skarns hosted by Permian limestones and copper-silver occurrences in Stuhini mafic volcanic rocks.

Several mineral occurrences immediately north and west of the current claims include polymetallic, gold-silver bearing veins and stockworks in Stuhini volcanic rocks, silicified zones with gold-silver values in Toodoggone volcanic rocks and 10-15 cm wide massive galena-sphalerite seams in Toodoggone volcanics. Stuhini and Toodoggone volcanics are intruded by granodiorite near the summit of Breccia Peak; all units contain disseminated pyrite and chalcopyrite.

#### **Property Geology and Mineralization**

The Breccia 1-4 mineral claims cover a fault contact between Stuhini volcanics on the west and Toodoggone volcanic rocks to the east (Figure 4). A 500 x 100 metres wedge of limestone, marginal to the north-trending fault, is thought to be part of the Stuhini Group although it may be of older, Permian age.

Stuhini volcanics consist of variably iron-stained and epidotized equigranular andesites. Some silicified areas with pyrite were noted south of McClair Creek, particularly where the volcanics were intruded by a northerly-trending feldspar porphyry dyke. The apparently interbedded white, crystalline limestone weathers to a medium grey colour.

Previous bedrock sampling in the area of the current claims (Figure 4) included samples of rusty andesite containing pyrite and some chalcopyrite. Gold and silver values ranged from 86 to 162 ppb and 1.5 to 2.9 ppm respectively (Adamec, 1988). A stream sediment sample from McClair Creek just west of the present property returned 102 ppb gold.

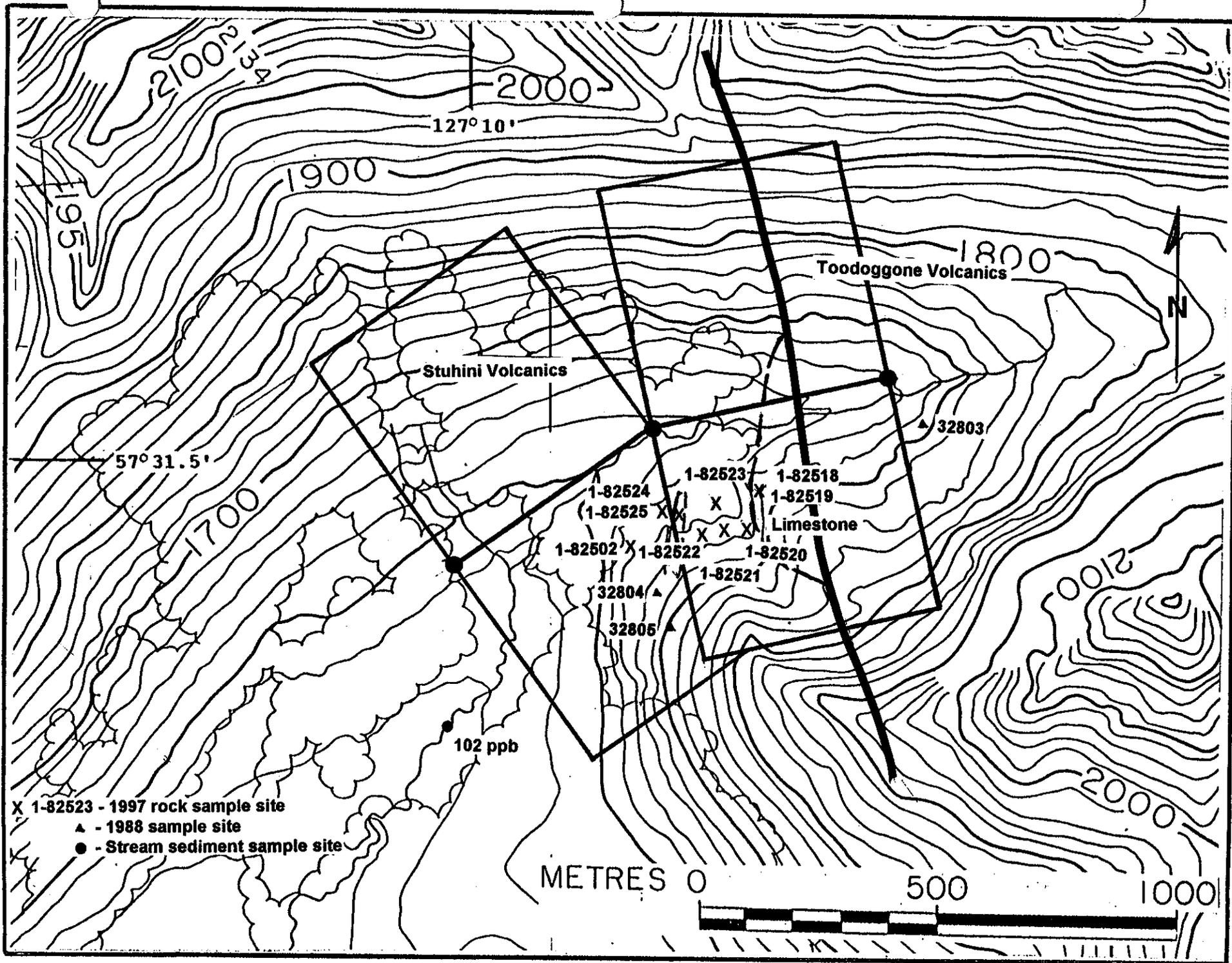


FIGURE 4 BRECCIA MINERAL CLAIMS - Geology and Sample Locations

## 1997 PROGRAM

A reconnaissance of the Breccia 1-4 claims on September 20, 1997, included the collection of nine rock samples from both the limestone area and the gossanous Stuhini volcanics to the west. Sample locations are shown on Figure 4. and sample descriptions are as follows:

Samples 1-82518 and 1-82519 were from the limestone unit; the first sample was collected from salts emanating from an iron seep within the unit and the second sample included iron-stained limestone. Samples 1-82504 and 1-82520 through 1-82522 were collected from iron-stained Stuhini volcanic rocks; sample 1-82523 was from jasperoid alteration in volcanics. Sample 1-82524 was collected from a feldspar porphyry dyke containing disseminated pyrite and 1-82525 was from iron-stained volcanics marginal to the dyke.

The rock samples were submitted to Mineral Environment Laboratories in Smithers for sample preparation and subsequent analyses for 31 major and trace elements by ICP methods at the company's Vancouver laboratory. Gold was determined on a 15 gram split by atomic absorption. Complete results are contained in Appendix I; partial results are as follows:

<u>Sample Number</u>	<u>Au (ppb)</u>	<u>Ag (ppm)</u>	<u>Cu (ppm)</u>	<u>Pb (ppm)</u>	<u>Zn (ppm)</u>
1-82504	21	0.1	88	17	66
1-82518	17	0.1	26	41	79
1-82519	18	0.1	8	32	114
1-82520	35	0.1	231	26	63
1-82521	24	0.8	137	41	206
1-82522	14	0.4	725	35	69
1-82523	11	0.1	1	21	215
1-82524	11	0.1	97	18	368
1-82525	49	1.8	22	74	75

## CONCLUSIONS AND RECOMMENDATIONS

The Breccia 1-4 claims were staked on the basis of the release of results of a 1996 Regional Geochemical Survey, namely an anomalous gold value (54 ppb) in stream sediment sample number 94E1388 collected from the headwaters area of McClair Creek.

The nine rock samples collected from the gossan area central to the drainage contain some weakly anomalous copper and zinc values. The cause of the anomalous gold in stream sediments remains unexplained and further sampling of the claims area is recommended.

**COST STATEMENT**Wages

- September 19,20,1997 -

N.C. Carter - 0.5 day @ \$500 \$250.00

Transportation

Helicopter - (Bell Long Ranger) -  
0.35 hour @ \$1100/hour \$400.00

Analytical Costs

9 rock samples @ \$21.20 \$190.80

Report Preparation

N.C. Carter - 0.75 day @ \$500 \$380.00

**TOTAL EXPENDITURES \$1,220.80**

**REFERENCES**

Adamec, J.Duro (1988): Assessment Report on the Toodoggone Property, Omineca Mining Division, British Columbia, BC Ministry of Energy and Mines Assessment Report 18338

Booth, J.M. (1964): North Omineca Project, Canadian Superior Exploration Ltd., notes in BC Ministry of Energy and Mines Property File

Diakow, L.J., Panteleyev, A. and Schroeter, T.G. (1985): Geology of the Toodoggone River Area, NTS 94E, BCMEMPR Preliminary Map 61

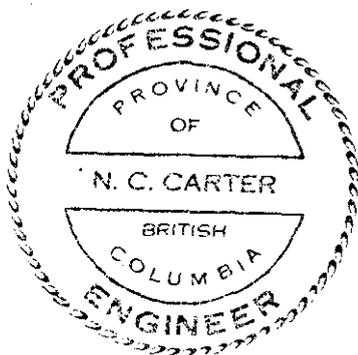
----- (1991): Jurassic Epithermal Deposits in the Toodoggone River Area, Northern British Columbia: Examples of Well-preserved, Volcanic-hosted, Precious Metals Mineralization; Economic Geology Volume 86, pp.529-554

----- (1993): Geology of the Early Jurassic Toodoggone Formation and Gold-Silver Deposits in the Toodoggone River Map-Area, Northern British Columbia, BCMEMPR Bulletin 86

### AUTHOR'S QUALIFICATIONS

I, NICHOLAS C. CARTER, of 1410 Wende Road, Victoria, British Columbia, do hereby certify that:

1. I am a Consulting Geologist, registered with the Association of Professional Engineers and Geoscientists of British Columbia since 1966.
2. I am a graduate of the University of New Brunswick with B.Sc. (1960), Michigan Technological University with M.S. (1962) and the University of British Columbia with Ph.D. (1974).
3. I have practised my profession in eastern and western Canada and in parts of the United States and abroad for more than 30 years.
4. Field work on the Breccia 1-4 mineral claims, as described herein, was planned and carried out by the writer. I am personally familiar with the property and its geological setting.



A handwritten signature in cursive script, appearing to read "N.C. Carter".

N.C. Carter, Ph.D. P.Eng.

Victoria, BC  
October 11, 1998

**APPENDIX I**  
**Analytical Results**

COMP: R T HEARD & ASSOC.

PROJ:

ATTN: Terry Heard / Nick Carter

MIN-EN LABS — ICP REPORT

8282 SHERBROOKE ST., VANCOUVER, B.C. V5X 4E8

TEL:(604)327-3436 FAX:(604)327-3423

FILE NO: 7S-0294-RJ1+2

DATE: 97/10/01

\* \* (ACT:ICP 31)

SAMPLE NUMBER	AG PPH	AL %	AS PPH	BA PPH	BE PPH	BI PPH	CA %	CD PPH	CO PPH	CR PPH	CU PPH	FE %	GA PPH	K %	LI PPH	HG %	MW PPH	MO PPH	NA %	NI PPH	P PPH	PB PPH	SB PPH	SN PPH	SR PPH	TH PPH	Tl %	U PPH	V PPH	W PPH	ZN PPH
1-82504	.1	1.26	6	32	.1	1	.76	.1	26	85	88	6.90	4	.04	6	.85	374	1	.14	24	910	17	2	1	40	34	.13	9	75.6	1	66
1-82518	.1	.05	1	7	.1	4	12.78	.9	1	6	26	6.59	4	.01	1	.04	89	1	.01	1	130	41	1	1	63	28	.01	9	9.2	1	79
1-82519	.1	.41	1	9	.1	1	15.00	1.2	3	20	8	1.27	1	.03	6	.52	1006	1	.01	3	290	32	1	1	106	7	.02	2	27.8	1	114
1-82520	.1	1.40	7	31	.1	1	.77	.2	7	41	231	3.09	3	.06	8	1.00	362	1	.09	6	1610	26	1	1	25	17	.07	4	38.9	1	63
1-82521	.8	2.68	18	6	.1	1	3.65	.7	21	77	137	5.42	1	.03	30	2.37	2214	100	.01	24	710	41	2	1	98	30	.13	7	108.8	2	206
1-82522	.4	.97	9	9	.1	1	.58	.2	25	80	725	4.40	2	.02	5	.82	337	1	.04	32	750	35	2	1	41	22	.11	6	48.3	1	69
1-82523	.1	1.20	22	29	.1	16	6.45	.9	21	59	1	6.03	1	.07	7	1.09	1969	1	.02	21	890	21	2	1	39	30	.03	8	52.4	5	215
1-82524	.1	1.92	5	14	.1	1	.69	3.6	22	142	97	6.40	4	.03	15	2.03	789	1	.08	51	1040	18	2	1	39	34	.14	8	96.3	3	368
1-82525	1.8	1.21	6	86	.1	1	.20	.1	12	70	22	4.44	2	.19	8	.87	720	3	.02	12	730	74	2	1	10	23	.10	5	27.1	1	75

*Quality Assaying for over 25 Years*

Geochemical Analysis Certificate

7S-0294-RG1

Company: R T HEARD & ASSOC.

Date: OCT-01-97

Project:

Attn: Terry Heard / Nick Carter

We hereby certify the following Geochemical Analysis of 24 ROCK samples submitted SEP-23-97 by NICK CARTER.

Sample Number	Au-fire PPB	Au-fire g/tonne
1-82504	21	
1-82514	127	
1-82515	16	
1-82516	29	
1-82517	17	
1-82518	17	
1-82519	18	
1-82520	35	
1-82521	24	
1-82522	14	
1-82523	11	
1-82524	11	
82525	49	