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**GEOPHYSICAL AND GEOLOGICAL REPORT**

- on the -

**STUMP 1 CLAIM**

**KAMLOOPS MINING DIVISION, BRITISH COLUMBIA**

**COVERING: STUMP 1 CLAIM (12 UNITS)**

**WORK PERFORMED: MAY 13 - SEPTEMBER 27, 1989**

**LOCATION:**

- (1) ALONG EAST SHORE OF NAPIER LAKE**
- (2) N.T.S. MAP NO. 92I/8W**
- (3) LATITUDE: 50°25'20" NORTH**  
**LONGITUDE: 120°17'15" WEST**

**PREPARED BY**

**GEOQUEST CONSULTING LTD.  
RR#3, SITE 11, COMP 180  
VERNON, B.C. V1T 6L6**

**W. GRUENWALD, B. Sc.  
SEPTEMBER 27, 1989**

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**19,145**

**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

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## SUMMARY

The Stump 1 mineral claim, consisting of 12 metric units, is located in easily accessible, rolling terrain approximately 35 kilometers south of Kamloops, B.C.

The property is underlain by Upper Triassic Nicola volcanic rocks that outcrop as a "window" in Kamloops Group volcanic rocks of Tertiary age. Highly altered Nicola rocks, locally appearing as a prominent gossan are closely associated with a strong east-west trending shear zone up to 300 metres wide and at least 1,200 metres long. Granitic intrusions of the Jurassic Wildhorse Batholith are found near the property.

Percussion drilling carried out in the early 1970's tested a large east-west trending siliceous and pyritic zone containing significant amounts of copper, zinc and in some instances gold. One hole, drilled to a depth of 76 metres within this zone, returned a 48.8 metre intersection grading 0.21% copper. Gold values up to 230 ppb were indicated from holes that intersected this zone.

Magnetometer and VLF-EM surveys carried out in 1989 revealed several anomalous areas. Several magnetic anomalies are highly suggestive of lithologic contacts. Coincidence with VLF-EM anomalies is indicated in several cases.

The VLF-EM survey revealed a number of significant conductors. Some of the conductive areas appear closely associated with lithologic contacts as well as the inferred boundaries of the large altered zone. Two small conductors situated within the eastern portion of the altered zone coincide with weak magnetic highs and are proximal to known geochemical (gold/copper) anomalies.

The geologic setting of the Stump 1 claim, combined with the presence of a large altered zone carrying significant amounts of copper, zinc and gold, offers excellent exploration potential. Further examination and exploration of the property is definitely warranted.

## INTRODUCTION

This report describes a geophysical programme recently completed on the Stump 1 mineral claim. The purpose of this programme was to determine whether a large altered and mineralized zone could be better delineated. Indications from past work suggest the potential for a large tonnage, low grade copper/gold deposit.

A series of maps and plans showing the results of the recent programme are included with this report. Recommendations for further exploration of this property are also included.

### LOCATION, PHYSIOGRAPHY AND ACCESS

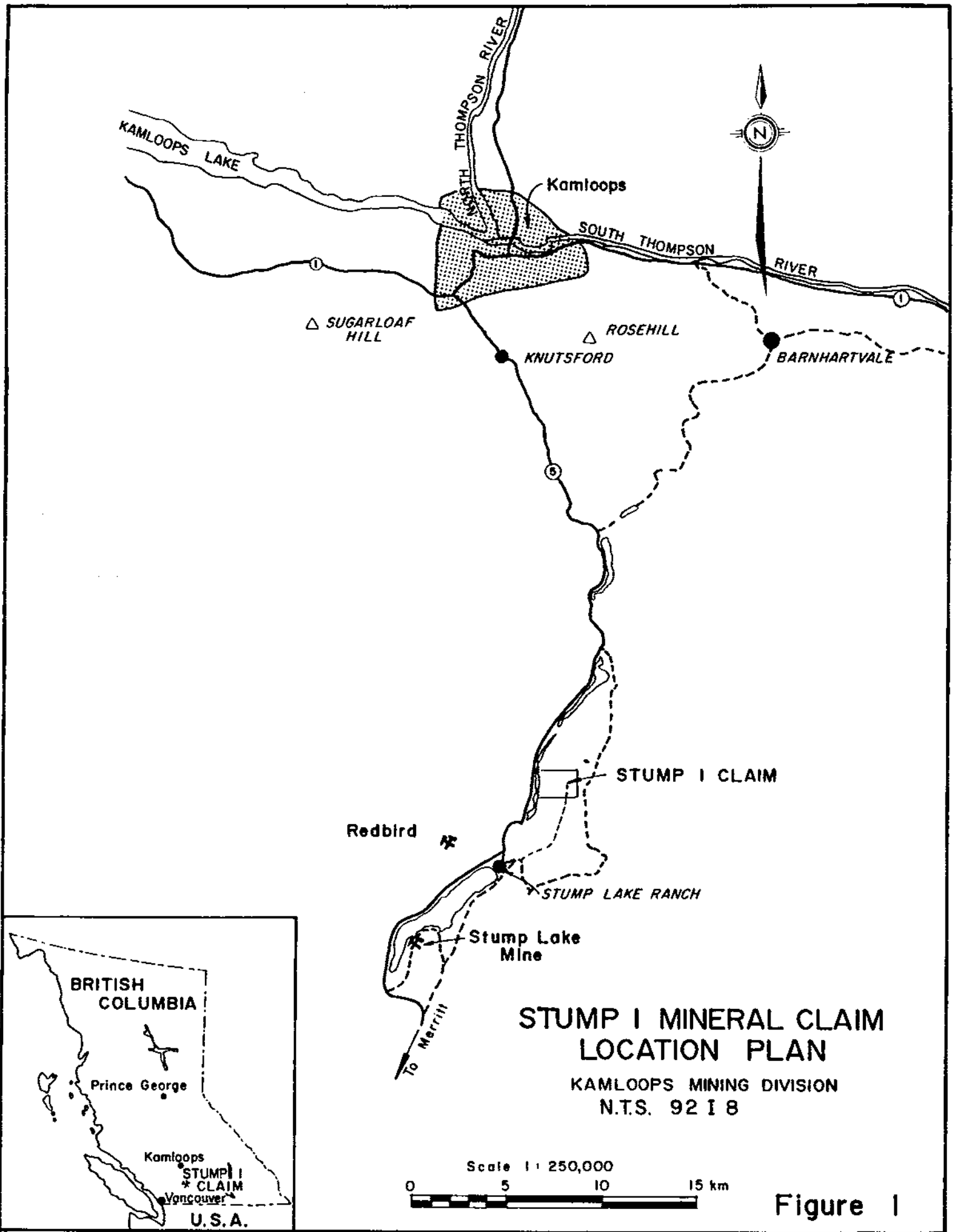
The Stump 1 mineral claim is located in south central British Columbia, approximately 35 kilometers south of Kamloops on Highway #5 (Figure 1). The claims can be reached by two routes.

The first and most direct, is by travelling south along Highway #5 to the north end of Napier Lake, where a private road leads to the north end of the lake. From this point, a hike along an old trail for approximately 2 kilometers leads to the north boundary of the claim.

An alternative route, is to continue south along Highway #5 past the south end of Napier Lake to the Stump Lake Ranch. From this point, private roads are followed to the east and then north for approximately 10 kilometres. When the ground is dry and snow free, it is possible to drive to within a half kilometre of the baseline (Figure 1).

The Stump 1 mineral claim covers an area of approximately 300 hectares and is centred on the east side of Napier Lake (N.T.S. Map No. 92I/8W) (Figure 2). The claims are covered primarily by rolling grasslands where the elevation varies from 945 m (3,100') along the south east corner of the claim group to approximately 715 m (2,350') along the western boundary (Napier Lake). Annual precipitation is low and the claims are generally snow free for most of the year.

Outcrops are not common, being confined to the prominent east-west trending gully, steep slopes and small knolls. Overburden depth, with the exception of broad flat areas, ranges from a few centimetres to as much as six metres.



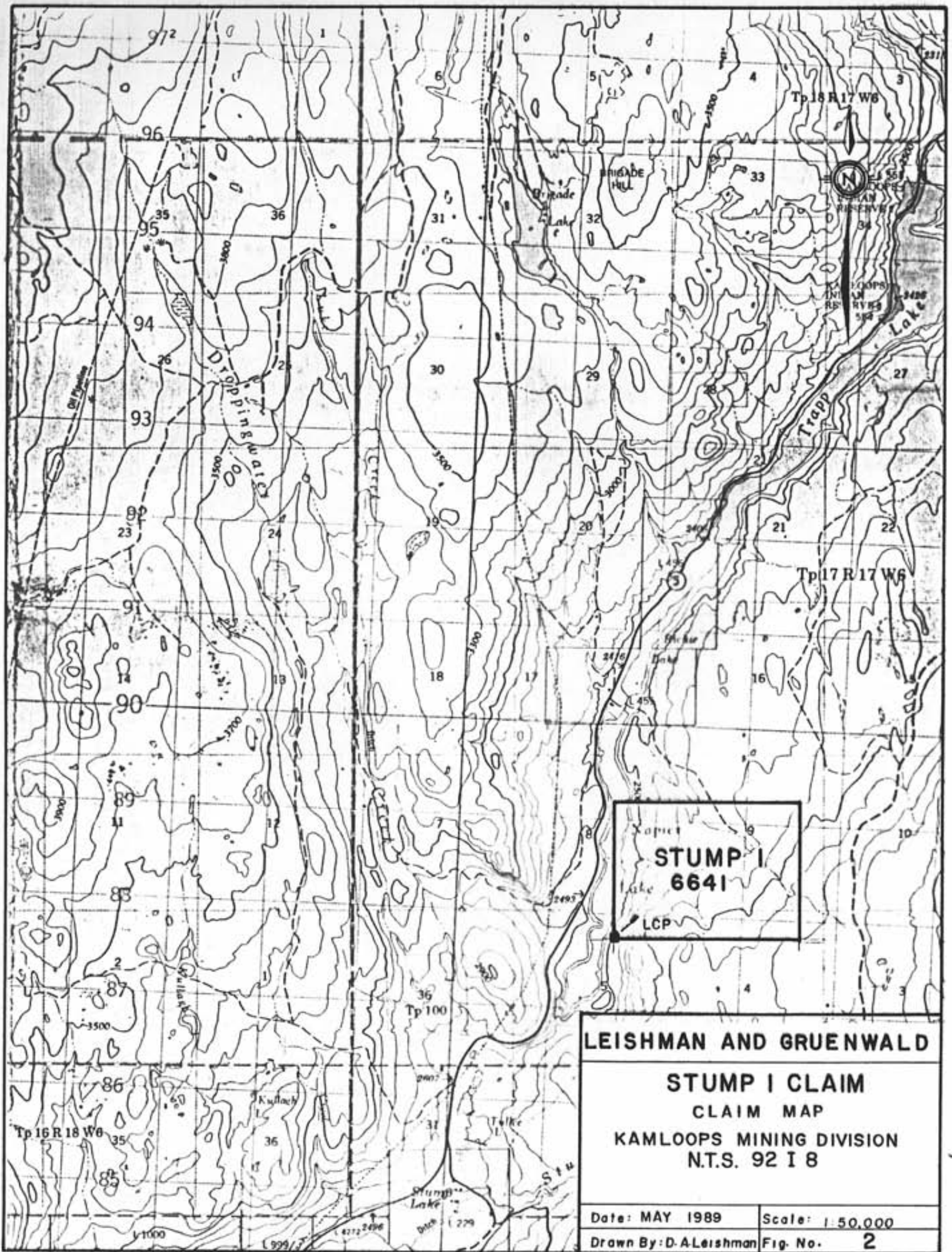
PROPERTY AND OWNERSHIP

The Stump 1 property consists of one contiguous Modified Grid System claim totalling 12 units (Figure 2). Details of the claim are as follows:

<u>Claim Name</u>	<u>Record No.</u>	<u>No. of Units</u>	<u>Expiry Date</u>
Stump 1	6641	12	May 21, 1990

The claims are jointly owned by Werner Gruenwald of Vernon and Doug Leishman of Kamloops, British Columbia.





Xopret  
**STUMP I**  
 lake  
**6641**  
 LCP

**LEISHMAN AND GRUENWALD**

**STUMP I CLAIM**

CLAIM MAP

KAMLOOPS MINING DIVISION  
 N.T.S. 92 I 8

Date: MAY 1989

Scale: 1:50,000

Drawn By: D.A. Leishman

Fig. No. 2

## HISTORY

The history of the Stump Lake area dates back to 1882 when the Mineral Hill deposit was discovered (Stump Lake Mine). From 1882 to 1890 several shafts were sunk on a number of separate veins, but there was never any sustained production. Work resumed at this site in 1916 and continued until 1944. Production records indicate that one vein (the Enterprise Vein) yielded 78,601 tons averaging 0.01 oz/ton gold, 3.17 oz/ton silver, 0.07% copper, 1.46% lead and 0.33% zinc. (B.C. Ministry of Mines, 1965, page 158). Old dumps from this mine may be seen on the east shore of Stump Lake.

In 1973, the area presently covered by the Stump 1 mineral claim was held and worked by Newconex Canadian Exploration Ltd. The initial work by Newconex consisted of soil sampling, magnetometer and geological surveys. The target was a porphyry copper deposit. A strong copper-zinc soil anomaly was found to be associated with an area of silicified and pyritized Nicola volcanics located along an east-west shear zone. The more significant portions of this geochemical anomaly were tested by the drilling of 12 relatively shallow percussion holes (totalling 915 m) in the fall of 1973. This work, however was not reported. Drill sections acquired by D.A. Leishman, revealed that some of the cuttings were analyzed for gold and returned values up to 230 parts per billion (ppb). Significant copper intersections reported included an interval grading 0.17% copper across 24.4 metres (73-P-8). Another hole (73-P-11), located 335 metres to the northwest returned a value of 0.21% copper across 48.8 metres.

In 1977 Newconex conducted an E.M. survey over part of the property. No anomalies of any significance were reported. The property was subsequently allowed to lapse.

There are indications (old claim posts) on the property that Noranda Exploration Ltd. staked part of the ground covered by the Stump 1 claim in the early 1980's. It appears the claims were never recorded and there is no information of Noranda completing work on the property.

More recently, work on the Redbird claim, located 5 kilometres southwest of the Stump 1 claim revealed an east-west trending fracture system containing epithermal style quartz-fluorite mineralization. Significant, but subeconomic gold values were indicated from surface trenching and several diamond drill holes.

Major structures in the Stump Lake area trend northerly whereas the Redbird and Stump 1 properties are associated with definite east-west structures. It was this latter feature, combined with the anomalous copper/gold values in the Newconex drilling, that led to the acquisition of the Stump 1 claim.

During 1986, the writer and D.A. Leishman carried out a grid geochemical sampling programme over the central portion of the claim area to cover the east-west trending altered zone. Results revealed anomalous gold values (up to 310 ppb) extending south of the baseline from Lines 1+00W to 1+50E. This area correlated well with the strongly altered, copper mineralized zone partially tested by Newconex.

## GEOLOGY

### REGIONAL:

The regional geology of the Stump Lake area is described in Memoir 249 (Map No. 886A) by W.E. Cockfield (1961). More recently, J.W.H. Monger completed Open File Report 980 for the Geological Survey of Canada. The geology of the claim area, taken from Open File 980, is illustrated in Figure 3.

The oldest rock units in the area of the claim are of the upper Triassic Nicola Group and consist of amphibolites, foliated diorites, fine grained sediments, volcanoclastics and augite porphyry flows. Intruding these rocks is the Early Jurassic Wildhorse Batholith. These rocks are in turn overlain by the younger Kamloops Group volcanic flows, olivine basalts and minor intrusions of intermediate composition. These flows and basalts form prominent ridges and cliffs which can be seen along Highway #5 near the Stump 1 mineral claim.

The mineralization at the old Stump Lake mine is associated with north-south striking vein structures. A major north-south trending fault has been postulated by Monger through the north end of Stump Lake. The structures on the Redbird and Stump 1 claims however trend east-west. This may suggest that they post date the main north-south structure in the area.

# Geological Legend

## Quarternary

**Qd** GLACIAL DRIFT, ALLUVIUM

## Tertiary

**Tv** OLIVINE BASALTS

**Ti** INTRUSIONS INTERMEDIATE COMPOSITION

## Kamloops Group

**Ek** VOLCANIC FLOWS

## Early Jurassic

**eJgd** WILDHORSE BATHOLITH

## Triassic & Jurassic

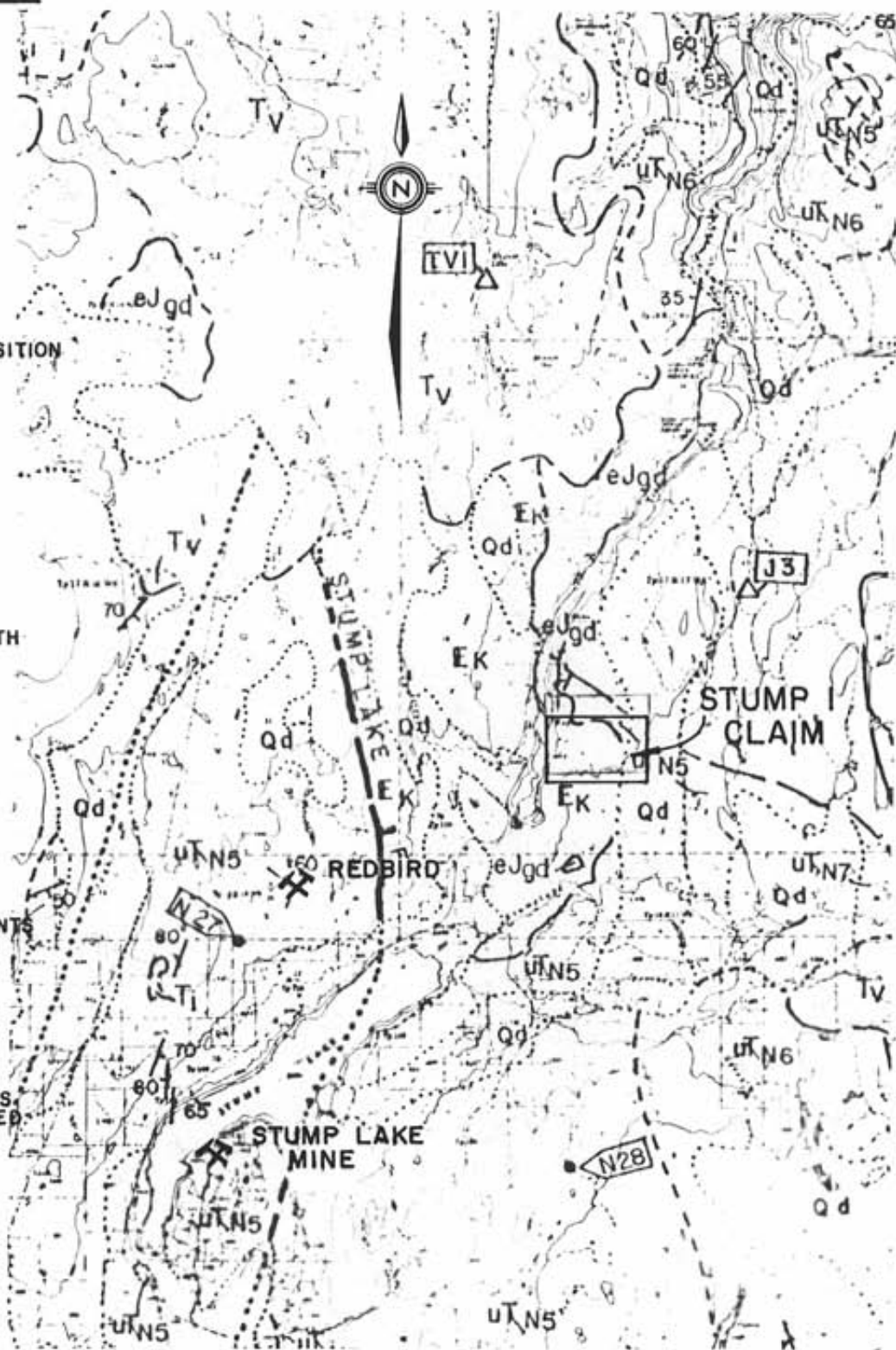
### Nicola Group

**UTN5** AUGITE PORPHYRY

**UTN6** FINE GRAINED SEDIMENTS & VOLCANICLASTICS

**UTN7** FOLIATED DIORITES, AMPHIBOLITES

----- FAULTS, DEFINED, APPROXIMATE, ASSUMED



Geology after Monger, 1982

## STUMP I CLAIM REGIONAL GEOLOGY

KAMLOOPS MINING DIVISION

N.T.S. 92 I 8

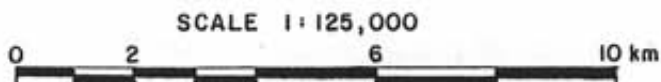


Figure 3

## PROPERTY GEOLOGY:

The geological work carried out to date by the owners of the Stump 1 mineral claim has been limited to examination and random chip sampling of outcrops primarily in the grid area. For the purposes of this report, individual outcroppings are not indicated, however the inferred outline of the prominent east-west trending altered zone has been plotted on Figures 4 and 5 for interpretive purposes.

The oldest rocks exposed on the Stump 1 claim belong to the Nicola Group of Triassic age. These rocks are represented by both unaltered and altered variations. The unaltered variety consists primarily of a finely crystalline, massive, grey to black volcanic of intermediate to mafic composition. A weakly schistose texture is occasionally evident.

The altered variety consists of a fine grained, pale grey to yellowish rock displaying varying degrees of alteration including silicification, pyritization and sericitization. Finely disseminated pyrite locally occurs within the sericitized units in concentrations of up to 10%, however 2-3% is more common. Surface oxidation often results in a friable and bleached looking rock in the typical gossanous shades of yellow, orange and red. The soils derived from these rocks are also often distinctly coloured and may prove useful in delineating such altered rocks.

Silicification is often pervasive. Locally, quartz-carbonate ± gypsum veinlets (fracture fillings) up to several centimeters have been observed. Some of these veinlets contain traces of chalcopyrite and malachite.

Where schistosity or fracture cleavage are evident, the strike ranges from 090° to 110°, with the dip generally steep to the south.

Although not directly observed, granitic rocks of the Wildhorse Batholith occur very near if not on the property. Drilling by Newconex approximately 150 metres east of the present claim boundary encountered a narrow sequence of hornfels underlain by massive granitic rock. This appears consistent with mapping by

the G.S.C. (Monger, 1982) that shows rocks of the Wildhorse Batholith immediately northeast of the Stump 1 claim.

Cutting the altered zone in the area of the prominent gully is an easterly striking mafic (lamprophyre?) dyke. This rock is thought to represent the final magmatic phase of the Wildhorse Batholith.

Unconformably overlying the Nicola Group rocks, as well as Wildhorse Batholith, are rhyolitic to basaltic flows and pyroclastics of the Tertiary Kamloops Group. Large outcrops of these rocks are found in the northern and southern portions of the claim. A distinct white to pale grey rhyolitic unit is present near the northern ends of Lines 2+00E, 0+00E, 7+00W, 8+00W, and along Highway #5 near the northwest corner of the Stump 1 claim.

The eastern regions of the claim contain few outcroppings. A northwesterly trending drainage in the eastern portion of the Stump 1 claim cuts through a relatively thick sequence of well cemented, alluvial gravels. Intersected in some of the Newconex drill holes, these gravels may represent pre-glacial stream channels.

## GEOPHYSICAL SURVEYS

During May 1989 magnetometer and VLF-EM surveys were conducted over two portions of the Stump 1 claim. The purpose of this programme was to determine whether the strongly altered zone and its contacts could be delineated and correlated with known geochemical and drill hole data. A total of 8 kilometers of grid was surveyed.

### MAGNETOMETER SURVEY:

The magnetometer survey was carried out using a Unimag II Proton Magnetometer (Model 9-846). This instrument measures the total magnetic field (gammas) and digitally displays the data. Readings were taken at 25 meter intervals except in areas of high magnetic gradients where 12.5 metre spacings were utilized. The average of several readings were reported for each station. A base station was established and used throughout the survey to determine diurnal fluctuations. The lack of significant daily variations negated the need for "drift" corrections. The contoured magnetic data is presented on Figure 4.

### DISCUSSIONS OF RESULTS:

The total magnetic relief of the survey area is quite low (700 gammas) ranging from 56,600 to 57,300 gammas. The data, contoured at 200 gamma intervals, reveals a few anomalous areas. One of the more pronounced magnetic features is found near the north end of Lines 8+00W and 9+00W. This area corresponds reasonably well with the rhyolitic rocks found in this area and may reflect a lithologic contact.

The east-west trending altered zone revealed weak magnetic responses in the eastern portion of the grid. Several weak magnetic "highs" coincide with the altered zone as well as the northern and southern contacts. The western portion of the large altered zone is "magnetically flat".



### VLF-EM SURVEY:

Electromagnetic readings were obtained with a Sabre Electronics VLF-EM unit (Model 27) utilizing the Cutler, Maine transmitting station as the primary field source. Readings were taken at 25 metre intervals. At each station the orientation of the transmitter is determined by rotating the instrument in the horizontal plane until a "null" in the field strength is indicated. While facing the transmitter, the unit is held in the vertical plane, so that the instrument coil is perpendicular to the primary electromagnetic field. The dip angle, measured in degrees, is then determined by rotating the instrument clockwise or counterclockwise until the lowest reading or "null" is observed. This value is recorded as a positive or negative number. Returning the instrument to the horizontal plane and rotating 90° to the transmitter allows the measurement of the relative field strength. An optimum field strength level of  $50 \pm 10$  is generally used. Excessive or deficient field strength levels are adjusted by a gain control, the level of which is recorded.

Data was recorded as if all lines were surveyed from west to east to facilitate the filtering of the data. The Fraser filter method was utilized and represented by the algebraic expression:

$$F = (a + b) - (c + d)$$

where a, b, c, and d represent the dip angles measured at four consecutive grid stations. Each filtered value is then plotted between stations "b" and "c". This method is often employed to diminish the effects of topography and to enhance electromagnetic anomalies. Raw and filtered data is plotted on Figure 5.

Filtered values were contoured at +5° intervals.

## DISCUSSION OF RESULTS:

Several VLF-EM anomalies or conductors were delineated from the survey. Fraser filtered values ranged up to +22° with six anomalies of +15° and higher being indicated and described as follows:

- (A) The largest anomaly of the survey is situated near the northern ends of L-7+00W to L-9+00W. This east-west trending conductor occurs in Nicola volcanics near their contact with Kamloops Group volcanics (rhyolite) etc. With the exception of several very small anomalies, this area displays no significant magnetic gradient. Geochemically, this area is an unknown, not having been tested for gold in the 1986 survey. Future detailed sampling is definitely warranted.
- (B) Situated south of the baseline on L-8+00W and L-9+00W is another relatively strong conductor (+18°). This east-northeast trending anomaly has little significant magnetic expression and also has not been geochemically tested. No outcroppings are indicated for this area.
- (C) Situated on L-1+00W;2+50N is a small but relatively strong conductor (+19°). No coincident magnetic anomaly is indicated, and as with the above conductors geochemical sampling (gold) has not been carried out. Geologically, this anomaly is situated just north of the large altered zone and westerly of rhyolitic outcroppings. This may suggest proximity to the Nicola-Kamloops Group contact.
- (D) Situated on L-0+00 just south of the baseline is a small conductor that has the highest Fraser filtered value of the survey (+22°). This anomaly is found within the east-west altered zone and coincides with a weak magnetic high. Several anomalous values for gold in soil and rock are found immediately south (uphill) of this conductor.
- (E) This conductor (+17°) is situated on L-1+00E approximately 175 metres southeast of anomaly "D". As with the previous anomaly, this conductor coincides with a weak magnetic high. In addition, this anomaly is situated well within the

strongly altered zone near outcroppings of highly oxidized and pyritic rock. Several moderately anomalous gold values are found just east of this anomaly.

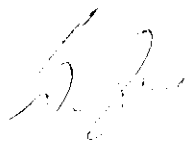
- (F) This large east-west trending conductor (+15°) is situated near the south end of L-2+00W to L-1+00E along the approximate southern contact of the altered zone. This anomaly also displays good coincidence with a weak magnetic high and therefore may represent a contact feature. Geochemically, this anomaly has not been tested for gold.

## CONCLUSIONS AND RECOMMENDATIONS

The most recent work carried out on the Stump 1 claim has been quite definitive. The geophysical anomalies have targeted areas of exploration potential, as well as delineated possible lithologic boundaries. The large, altered and mineralized zone is related to a strong east-west trending structure (i.e. shear). Hydrothermal activity and subsequent mineralization along this structure may have been related to the emplacement of the nearby Wildhorse Batholith and/or more recent volcanic activity.

Further exploration of the Stump 1 claim is definitely recommended. Work should initially consist of expanding the grid area and conducting fill-in geochemical, geological and geophysical surveys where appropriate. A programme of trenching and sampling is recommended to follow-up on targets from the initial work. Contingent on favourable results, a programme of drilling may be warranted.

Respectfully submitted by  
GEOQUEST CONSULTING LTD.



W. Gruenwald, B. Sc.  
CONSULTING GEOLOGIST

Vernon, B.C.

September 27, 1989

APPENDIX A

GEOPHYSICAL DATA

May 13/89.

Stump Claim

LINE	STATION	DIP $^{\circ}$	FILTER	F.S.
Record	E.M. data south to north.			
*	(USING CUTLER STATION)			Gain = 616
L-9+00W	B/L	-2° (a)		43
"	0+25N	-3° (b)	-2	44
"	0+50N	-2° (c)	-6	43
"	0+75N	-1° (d)	-7	40
"	1+00N	+2°	+1	43
"	1+25N	+2°	+7	46
"	1+50N	-2°	+3	46
"	1+75N	-3°	-3	48
"	2+00N	0°	-5	49
"	2+25N	-2°	-7	47
"	2+50N	+4°	+7 <sup>v</sup>	47
"	2+75N	+1	+20 <sup>v</sup> *	63 *
"	3+00N	-10°	0	48
"	3+25N	-5°	-5	51
"	3+50N	-4°	+2	52
"	3+75N	-6°	-4	50
"	4+00N	-5°		46
"	4+25N	-1°		42

11 May 13/19

<u>LINE</u>	<u>STAT</u>	<u>DIPL°</u>	<u>FILTER</u>	<u>F.S.</u>
L-9+00 <sup>W</sup>	5+00 <sup>S</sup>	-17		50
	4+75	-13	-1	53
	4+50	-19	-8	45
	4+25	-10	+5 ✓	52
	4+00	-14	+12 ✓	57
	3+75	-20	-11	44
	3+50	-16	-25	36
	3+25	-7	-11	52
	3+00	-4	+5 ✓	43
	2+75	-9	+8 ✓	43
	2+50	-8	+18 ✓	56
	2+25	-12	+17 ✓	62
	2+00	-22	-7	48
	1+75	-15	-14	40
	1+50	-12	10	45
	1+25	-11	-18	45
	1+00	-6	16	43
	0+75	+1	-3	44
	0+50	-2	0	47
	0+25	0°		45
B/L	0+00	-1		47

<u>LINE</u>	<u>STAT</u>	<u>DIPL°</u>	<u>FILTER</u>	<u>F.S.</u>
B/L 8 <sup>W</sup>	B/L	-12		46
	0+25 <sup>N</sup>	-4	0	49
	0+50 <sup>N</sup>	-8	0	51
	0+75	-8	-15	50
	1+00	-4	-5	47
	1+25	+3	+5	57
	1+50	-10	-13	43
	1+75	+4	3	48
	2+00	+2	+16 ✓	68
	2+25	-5	+9 ✓	63
	2+50	-5	7	44
	2+75	-7	-11	40
	3+00	-2	13	40
	3+25	+3	+6 ✓	43
	3+50	0	+19 ✓	48
	3+75	-5	+20 ✓	49
	4+00	-11	+5 ✓	49
	4+25	-14	-13	38
	4+50	-7	12	43
	4+75	-5	4	44
	5+00	-4	3	50
	5+25	-4	8	49
	5+50	-2		50
	5+75 <sup>N</sup>	+2		53

LINE	STAT	DIP L°	FILTER	r.s.
L-8 <sup>N</sup>	5100 <sup>S</sup>	-10		53
	4175	-13	0	50
	4150	-12	0	50
	4125	-11	+5	50
	4100	-14	+1	49
	3175	-14	6	45
	3150	-12	7	45
	3125	-10	3	48
	3100	-9	+1	48
	2175	-10	+4 ✓	58
	2150	-10	+11 ✓	53
	2125	-13	+17 ✓	55
L	2100	-18	+6 ✓	53
	1175	-22	2	43
	1150	-15	21	40
	1125	-13	17	41
1	1100	-3	12	40
	0175	-8	14	48
	0150	-10	-1	43
	0125 <sup>S</sup>	-5		48
hil	B/L	-12		40

LINE	STAT	DIP L°	FILTER	r.s.
L-7 <sup>W</sup>	B/L	-9		57
	0125 <sup>N</sup>	-7	-5	52
	0150 <sup>N</sup>	-7	+3	54
	0175 <sup>N</sup>	-7	-1	48
	1100 <sup>N</sup>	-12	-14	41
	1125	-1	-6	40
	1150	-4	6	48
	1175	+3	-19	45
	2100	+4	-7	47
	2125	+8	+12	55
	2150	0	+10	57
	2175	0	+6	52
	3100 <sup>N</sup>	-2	+7	62
	3125	-4	+3	58
	3150	-5	-2	53
	3175	-4		55
	4100 <sup>N</sup>	-3		50



LINE	STAT	DIPLO	FILTER	F.S.
L-7 <sup>w</sup>	3100 <sup>s</sup>	-7		50
	2175	-10	-1	58
	2150	-8	-2	45
	2125	-8	+3	44
	2100	-8	+5	53
	1175	-11	+2	55
	1150	-10	-2	50
	1125	-11	-9	47
	1100	-8	-13	43
	0175	-4	-7	48
	0150	-2	+6	48
	0125	-3		55
	0100	-9		57

May 14/61

LINE	STATION	DIPLO	FILTER	F.S.	GAIN
L-2100 <sup>E</sup>	5100 <sup>s</sup>	-2		59	
	4175 <sup>s</sup>	-1	+2	61	
	4150	-3	-1	62	
	4125	-2	-1	60	
	4100	-1	+4	60	
	3175	-3	+2	60	
	3150	-4	-2	57	
	3125	-2	+2	59	
	3100	-3	+5	62	
	2175	-5	+1	60	
	2150	-5	-5	57	
	2125	-4	-5	53	
	2100	-1	-4	49	
	1175	-3	-8	48	
	1150	+2	-2	48	
	1125	+2	-7 v	53	*
	1100	-1	+8 v	57	
	0175	-2	+3 v	54	
	0150	-5	-4	50	
	0125 <sup>s</sup>	-1		49	
L-2100 <sup>E</sup>	0100(61)	-2		50	570

LINE	STATION	DIF. L°	FILTER	I.S.	GAIN
L-1100 <sup>E</sup>	5100 <sup>1</sup>	-3		58	
	4175	-6	0	57	
	4150	-6	-7	54	
	4125	-3	-7	57	
	4100	-2	-4	54	
	3175	0	+7 ✓	63	
	3150	-1	+15 ✓	60	
	3125	-8	+7 ✓	60	
	3100	-8	-7	59	
	2175	-8	-16	46	
	2150	-1	-12	51	
	2125	+1	+2	56	
	2100	+2	+17 ✓	60	
	1175	-4	+16 ✓	66	
	1150	-10	+1	58	
	1125	-8	-3	59	
	1100	-7	+1	58	
	0175	-8	-3	52	
	0150	-8	-6	50	
	0125 <sup>E</sup>	-4	-3	51	
	0100	-6	-7	53	
	0175 <sup>N</sup>	-3	-7	48	
	0150	0	+1	50	
	0175	-2	+7	54	
	1100 <sup>N</sup>	-2		52	

LINE	STATION	DIF. L°	FILTER	F.S.	GAIN
L-1100 <sup>E</sup>	1125 <sup>N</sup>	-1	-2	51	
	1150	-1	-2	50	
	1175	0	+2	52	
	2100	0	+5	53	
	2125	-3	+2	50	
	2150	-2	-2	46	
	2175	-3	-5	48	
	3100	0	-2	48	
	3125	0	+1	51	
	3150	-1	+2	50	
	3175	0	+2	53	
	4100	-3	-8	50	
	4125	0	-11	46	
	4150	+5	+2	51	
	4175	+3	+9 ✓	55	
	5100 <sup>N</sup>	0	+2	55	
	5125	-1		54	
	5150	0		53	
L-0100	5100 <sup>S</sup>	-1		43	
1.5-1.14	4175	0	-2	43	
	4150	0	-3	44	
	4125	+1	-2	43	
	4100	+2	+5 ✓	45	
	3175	+1	+11	46	
	3150 <sup>S</sup>	-3	+9	46	

LINE	STATION	DIPL°	FILTER	F.S.	GAIN
L-0100	3+25	-5	+6	47	
	3+00	-6	+8	49	450
	2+75	-8	+8	46	402
	2+50	-11	0	58	570
	2+25	-11	-9	53	
	2+00	-8	-9	50	
	1+75	-5	-5	47	
	1+50	-5	-8	50	
	1+25	-3	-13	47	
	1+00	+1	-10	48	
	0+75	+4	+8 ✓	50	
	0+50	+4	+22 ✓	60	
	0+25	-7	+7 ?	63	
	0+00	-7	-8	52	

L-0100W	0+25 <sup>N</sup>	-3	-5	52	
	0+50	-3	-1	51	
	0+75	-2	+6 ✓	52	
	1+00	-3	+11 ✓	48	
	1+25	-8	+1 ✓	52	
	1+50	-8	-9	47	
	1+75	-4	-8	47	
	2+00	-3	3	38	
	2+25 <sup>N</sup>	-1		52	
			+3		

LINE	STAT	DIPL°	FILTER	F.S.	GAIN
L-0100	2+50 <sup>N</sup>	-3	+2	56	
	2+75	-4	-2	48	
	3+00	-2	-2	50	
	3+25	-3	-3	49	
	3+50	-1	-4	48	
	3+75	-1	-6	49	
	4+00	+1	-2	48	
	4+25	+3	+7	53	
	4+50	0	+4	55	
	4+75	-3		52	
	5+00 <sup>N</sup>	+2		52	

L-1100W	5+00 <sup>S</sup>	-5	1	43	460
	4+75	-5	+1	44	
	4+50	-7	-7	42	
	4+25	-4	-7	44	
	4+00 <sup>S</sup>	-4	0	46	
	3+75	0	+12 ✓	47	
	3+50	-8	+13 ✓	47	
	3+25	-8	+7 ✓	44	
	3+00	-13	-6	38	
	2+75	-10	-14	43	516
	2+50	-5	-16	47	590
	2+25	0	-8	48	
	2+00 <sup>S</sup>	+1	-1	52	

**APPENDIX B**

**PERSONNEL**

PERSONNEL

W. Gruenwald, B. Sc.  
May 13, 14, 1989  
Sept 25, 26, 27, 1989

3 3/4 days

D.A. Leishman, B. Sc.  
May 13, 15, 1989

1 1/2 days

J. Belik, Assistant  
May 13, 14, 1989

2 days

**APPENDIX C**

**STATEMENT OF EXPENDITURES**

STATEMENT OF EXPENDITURES

LABOUR:

W. Gruenwald, B. Sc. 3 3/4 days @ \$300/day	\$1,125.00	
D.A. Leishman, B. Sc. 1 1/2 days @ \$300/day	450.00	
J. Belik, Assistant 2 days @ \$150/day	<u>300.00</u>	\$1,875.00

EXPENSES AND DISBURSEMENTS:

(a) Truck charges:	120.00	
(b) Equipment Rental: Magnetometer, EM units 2 days @ \$50/day	100.00	
(c) Drafting charges: DBM Technical	162.50	
(g) Miscellaneous: Printing, xeroxing, secretarial, telephone, freight, etc.	<u>188.54</u>	<u>571.04</u>

TOTAL COST:

\$2,446.04

LINE	STAT	DIPLO	FILTER	FJ	GAIN
L-1100W	1175	+2	+3	59	
	1150	0	+5	61	
	1125	0	+6	59	?
	1100	-3	0	61	
	0175	-3	-7	50	
	0150	0	-7	55	
	0125 <sup>S</sup>	+1	-4	53	
	0100	+3	-2	58	
	0125 <sup>N</sup>	+2	-4	56	
	0150	+4	3	57	
	0175	+5	+8	60	
	1100	+4	+11	59	
	1125	-3	-5	57	
	1150	+1	-14	48	
	1175	+5	-14	50	
	2100	+7	-8	50	
	2125	+13	+12	59	
	2150	+7	+19	65	
	2175	+1	+11	62	
	3100 <sup>N</sup>	0	+8	60	
	3125	+3	+0	59	
	3150	-4	-11	52	
	3175	+1	9	52	
	4100 <sup>N</sup>	+4	+3	56	
L-1100W	4125	+2	+6	57	

LINE	STAT	DIPLO	FILTER	FJ	GAIN
L-1100W	4150 <sup>N</sup>	0		58	
	4175	0		55	
	5100	+1		55	
L-2100W	5100 <sup>S</sup>	-4		66	
	4175	-3	-2	63	
	4150	-4	-4	61	
	4125	-1	+2	60	
	4100	-2	+2	63	
	3175	-5	+6	60	
	3150	-4	-11	59	
	3125	+2	0	59	
	3100	0	+4	61	
	2175	-2	-1	60	
	2150	0	+3	60	
	2125	-1	+8	63	
	2100	-4	+4	62	
	1175	-5	+2	60	
	1150	-4	+4	60	
	1125	-7	-1	60	
	1100	-6	-3	56	
	0175	-4	+1	53	
	0150	-6	+2	56	
	0125	-5	+3	55	
L-2100W	0100	-7	-2	57	



LINE	STAT	DIPL°	FILTER	PS.	GAIN
	0+25 <sup>N</sup>	-1	-7	57	
	0+50	-4	-8	57	
	0+75	-3	+1	55	
	1+00	-3	+4	57	
	1+25	-5	-1	57	
	1+50	+5	-7	55	
	1+75	-2	-6	55	
	2+00	-1	-7	55	
	2+25	0	-9	53	
	2+50	+4	-4	55	
	2+75	+4	-1	57	
	3+00	+4	-1	56	
	3+25	+5	-1	51	
	3+50	+4	-1	56	
	3+75	+4	0	55	
	4+00	+4	0	55	
	4+25	+4	+3	55	
	4+50	+4	16	58	
	4+75	+1		54	
	5+00 <sup>N</sup>	+1		60	

\*  
(From L-14 5+00<sup>N</sup>)

LINE	STAT	DIPL°	FILTER	FS	GAIN
L-2+00 <sup>E</sup>	0+25 <sup>N</sup>	-2		58	590
	0+50	-1	-3	58	
	0+75	-1	-5	60	
	1+00	+1	-3	59	
	1+25	+2	+7	63	
	1+50	0	+11	64	
	1+75	-4	+4	48	(460)
	2+00	-5	-1	43	
	2+25	-3	+5	45	
	2+50	-5		43	
End line	2+75	-9		40	
	3+00				
	3+25				
	3+50	No line			
	3+75				
	4+00				
	4+25				
	4+50				
	4+75				
L-2+00 <sup>E</sup>	5+00 <sup>N</sup>				

Noted presence of small (3x3) gas...  
- indicates alt'd oxidized zone ext. to here

**APPENDIX D**

**REFERENCES**

## REFERENCES

- Cockfield, W.E. (1961) Geology and Mineral Deposits of Nicola Map Area, B.C., GSC Memoir 249.
- Monger, J.W.H. (1984) Bedrock Geology of Ashcroft (921) Map Area, GSC Open File Report 980.
- Rebagliati, C.M., P. Eng. Geology, Geochemistry and Geophysics of the Napier Lake Property, Nap Claims, Kamloops Mining Division, Newconex Canadian Exploration Limited, July 1973.
- Rebagliati, C.M., P. Eng. Percussion Drilling of the Napier Lake Property, Nap Claims, Kamloops Mining Division, Newconex Canadian Exploration Limited, unpublished report, Fall 1973 and personal comm.
- Richardson, Paul, P. Eng. Electromagnetic Survey, Napier Lake Property, Kamloops Mining Division, Newconex Canadian Exploration Limited, June 1977.
- Leishman, D.A. (1987) Geological and Geochemical Report on the Stump 1 Mineral Claim, Kamloops Mining Division, B.C.

APPENDIX E

WRITER'S CERTIFICATE

CERTIFICATE

I, WERNER GRUENWALD OF THE CITY OF VERNON, BRITISH COLUMBIA, DO  
HEREBY CERTIFY THAT:

- (1) I am a geologist employed by Geoquest Consulting Ltd. with my office at RR#3, Site 11, Comp 180, Vernon, B.C.
- (2) I am a graduate of the University of British Columbia with a B. Sc. in Geology, 1972.
- (3) I am a fellow of the Geological Association of Canada.
- (4) I have practiced my profession as a geologist since May 1972.
- (5) This report is based on a study of available data, published and unpublished reports and my knowledge of the Stump 1 claim.



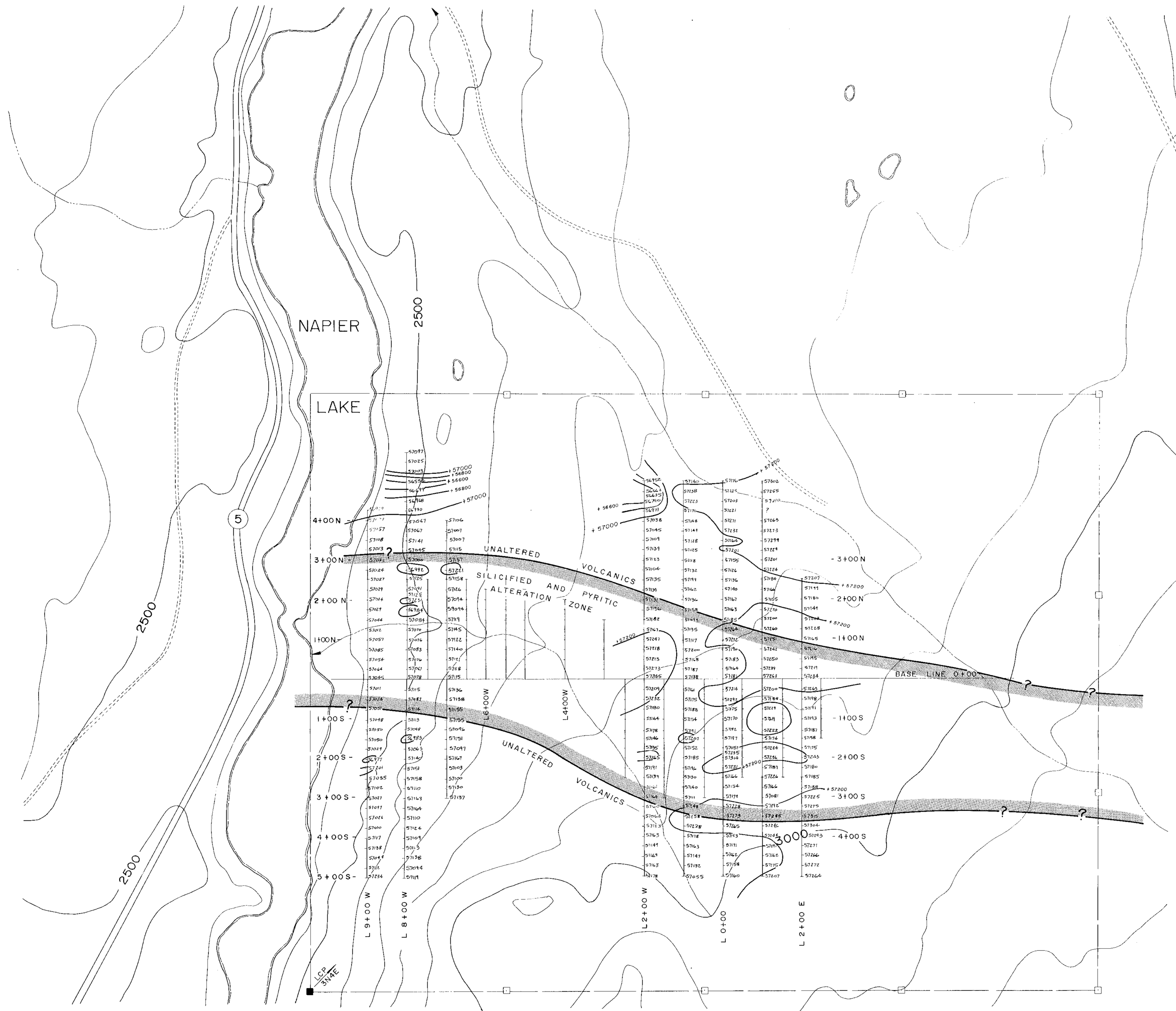
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Werner Gruenwald, B.Sc.  
CONSULTING GEOLOGIST

Vernon, B.C.  
September 27, 1989

**APPENDIX F**

**MAPS**



**LEGEND**

- CREEKS
- LAKE or POND
- GRAVEL ROAD
- MAJOR ROAD
- LCP
- CLAIM POST
- BOUNDARY OUTLINE
- CONTOUR INTERVAL 200 gammas.

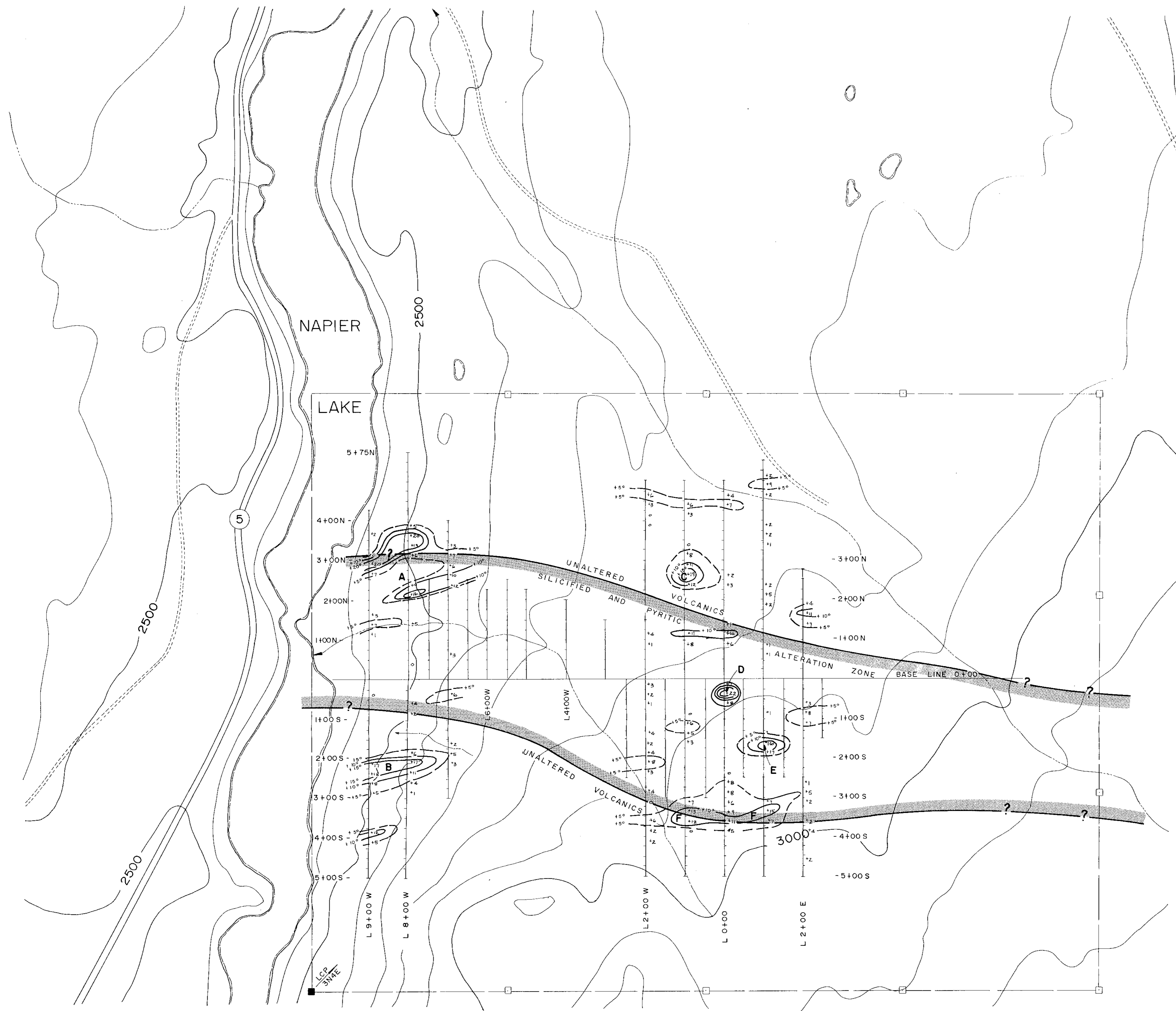
**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

**19,145**



INSTRUMENT - UNIMAG II PROTON MAGNETOMETER

LEISHMAN AND GRUENWALD <b>MAGNETOMETER SURVEY TOTAL FIELD MAGNETICS 1989</b> <b>STUMP 1 MINERAL CLAIM</b> N.T.S. 9216 KAMLOOPS MINING DIVISION	
TECHNICAL WORK BY: D. Leishman/Geoquest Consulting Ltd.	SCALE 1:5,000
DRAWN BY: D. B. Mirtle	DATE: July, 1989
REVISIONS:	FIG. NO. 4



**LEGEND**

- CREEKS
- LAKE or POND
- GRAVEL ROAD
- MAJOR ROAD
- LCP
- CLAIM POST
- BOUNDARY OUTLINE
- FRASER FILTERED VALUES
- CONTOUR INTERVAL 5'

TRANSMITTER STATION - CUTLER, MAINE.

**A** VLF - EM ANOMALIES  
**GEOLOGICAL BRANCH**  
**ASSESSMENT REPORT**

**19,145**



INSTRUMENT - SABRE ELECTRONICS VLF - EM

LEISHMAN AND GRUENWALD	
VLF - EM SURVEY	
FRASER FILTERED	
1989	
STUMP 1 MINERAL CLAIM	
N.T.S. 9216	
KAMLOOPS MINING DIVISION	
TECHNICAL WORK BY: D. Leishman/Geoquest Consulting Ltd.	SCALE 1:5,000
DRAWN BY: D. B. Mirtle	DATE: July, 1989
REVISIONS:	FIG. NO. 5