BRITISH COLUMBIA

PROSPECTORS ASSISTANCE PROGRAM

MINISTRY OF ENERGY AND MINES

GEOLOGICAL SURVEY BRANCH

PROGRAM YEAR:	1996/1997
REPORT #:	PAP 96-15
NAME:	ANDREW MOLNAR

ASSESSMENT REPORT

ON THE

<u>GREENSTONE PROPERTY</u>

STUMP LAKE AREA

NICOLA MINING DIVISION, B.C.

PROPERTY	:	**To the immediate south and east of Stump Lake**
	:	**50° 20' N Latitude**
	:	**120° 22' W Longitude**
	:	**N.T.S. - 92I/8W**
PREPARED BY	:	**Andrew Molnar** **RIO MINERALS LIMITED** **Vancouver, B.C.**
DATED	:	**January, 1997**
WORK PERMIT NO.	:	**Kam 96 1500534-182**

Assessment Report

On the

Greenstone Claims

Nicola Mining Division

Latitude 50 20' North
Longitude 120 22' West

NTS: 92I/8W

Prepared by: Andrew W. Molnar
Rio Minerals Limited

Date of Report: January, 1997
Work Permit No: Kam 96 1500534-182

Table of Contents:

Location and Access	1
Topography and Climate	1
Claim Information	1
History	2,3
Production Records	2
Regional Geology	3,4
Property Geology	4,5
Discussion	5,6
Summary	6
References	7
Statement of Costs	8
Qualifications	9-11
Rock Sample Descriptions	12-17
Assay Reports	18-38

Table of Illustrations

Figure 1	Compilation Map (1:50,000)
Figure 2	Property Location Map (1:50,000)
Figure 3	Claim Map (1:50,000)
Figure 4	Regional Geology (1:200,000)
Figure 5	Geophysical Map (in pocket)
Figure 6	Grid and Sample Location Map (in pocket)

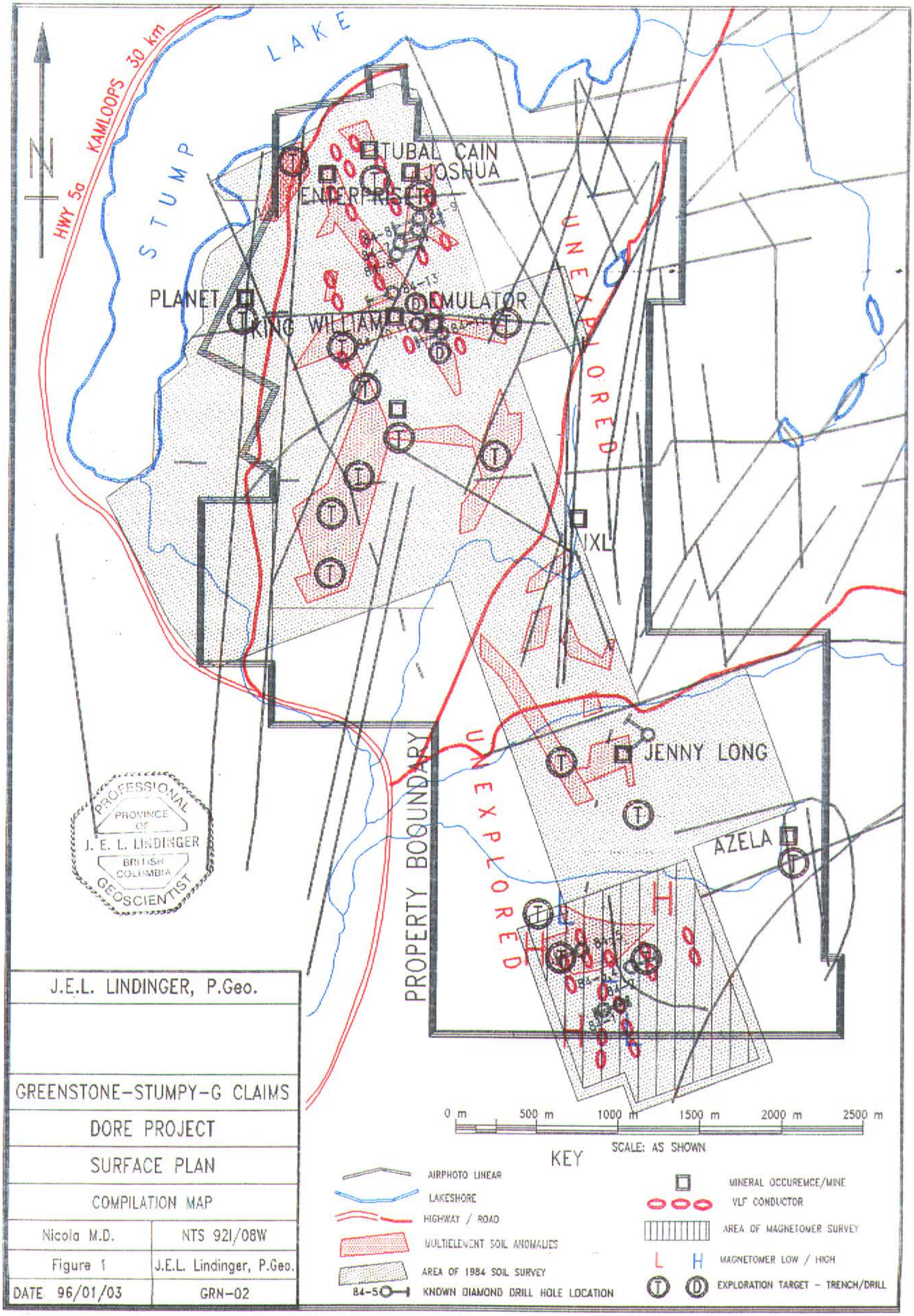
Location, Access, and Topography:

The Greenstone claim group is located equidistant between Kamloops and Merritt on the East side of Highway 5a. Secondary range roads provide access to most of the property with Peter Hope Lake road running through the center. The property occurs on the southern portion of the interior plateau of British Columbia and covers an area extending 5.0 km. south and 3.0km east from the southeast shores of Stump Lake. Elevations vary from 720 to 900 meters. Vegetation is grassland with pine groves and thickets of fir at higher elevations.

The Greenstone Group consists of three modified grid and five two-post claims for a total of 55 contiguous units.

Claim Information:

Claim	Units	Record Date	Expiry Date
Greenstone	20	April 12, 1995	April 12, 1997
Greenstone 2	12	April 14, 1996	April 14, 1997
Greenstone 3	18	April 14, 1996	April 14, 1997
Stumpy 7	01	June 1 2, 1995	June 12, 1997
Stumpy 9	01	June 12, 1995	June 12, 1997
G - 10	01	Sept 30, 1996	Sept 30, 1997
G - 12	01	Sept 30, 1996	Sept 30, 1997
G - 20	01	Oct 02, 1996	Oct 02, 1997



LAKE
STUMP
HWY 5a KAMLOOPS 30 km
N
TUBAL CAIN
JOSHUA
ENTERPRISE
PLANET
KING WILLIAM
EMULATOR
IXL
JENNY LONG
AZELA
UNEXPLORED
PROPERTY BOUNDARY
PROFESSIONAL
PROVINCE OF
J. E. L. LINDINGER
BRITISH COLUMBIA
GEOSCIENTIST
J.E.L. LINDINGER, P.Geo.
GREENSTONE-STUMPY-G CLAIMS
DORE PROJECT
SURFACE PLAN
COMPILATION MAP
Nicola M.D.
NTS 92I/08W
Figure 1
J.E.L. Lindinger, P.Geo.
DATE 96/01/03
GRN-02
0 m
500 m
1000 m
1500 m
2000 m
2500 m
SCALE: AS SHOWN
KEY
AIRPHOTO LINEAR
LAKESHORE
HIGHWAY / ROAD
MULTIELEMENT SOIL ANOMALIES
AREA OF 1984 SOIL SURVEY
84-5
KNOWN DIAMOND DRILL HOLE LOCATION
MINERAL OCCUREMCE/MINE
VLF CONDUCTOR
AREA OF MAGNETOMER SURVEY
L H
MAGNETOMER LOW / HIGH
T D
EXPLORATION TARGET - TRENCH/DRILL

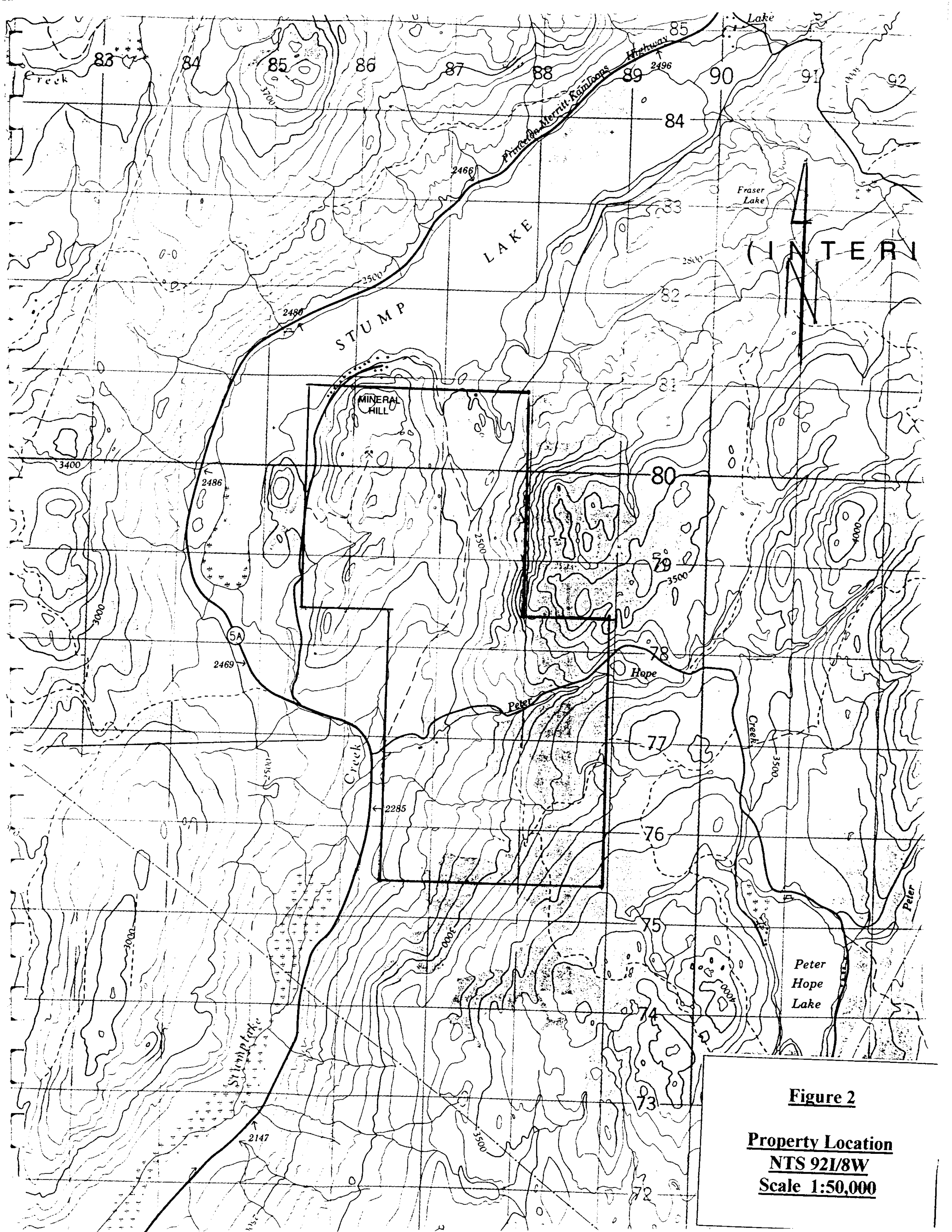


Figure 2

Property Location
NTS 92I/8W
Scale 1:50,000

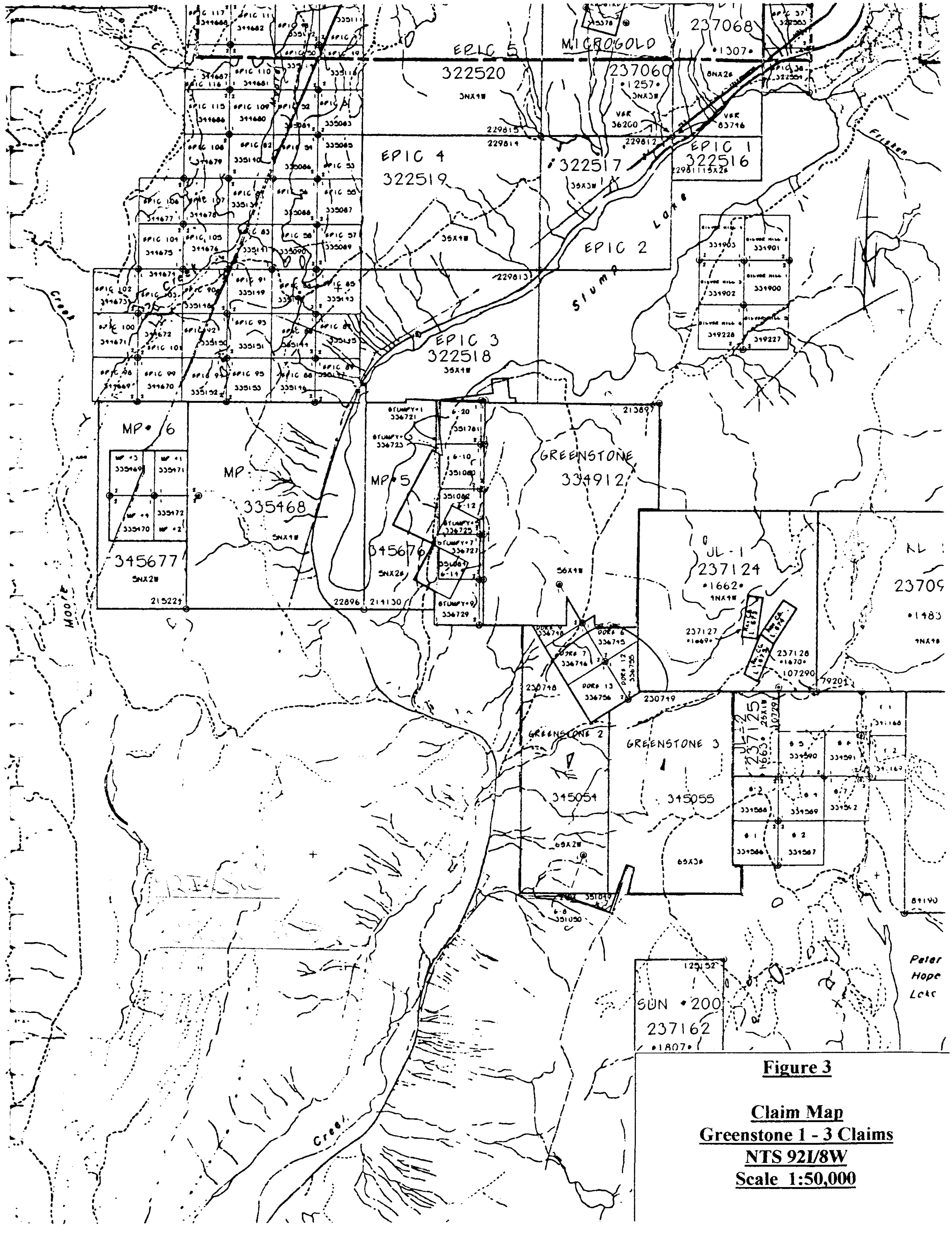


Figure 3

Claim Map
Greenstone 1 - 3 Claims
NTS 92I/8W
Scale 1:50,000

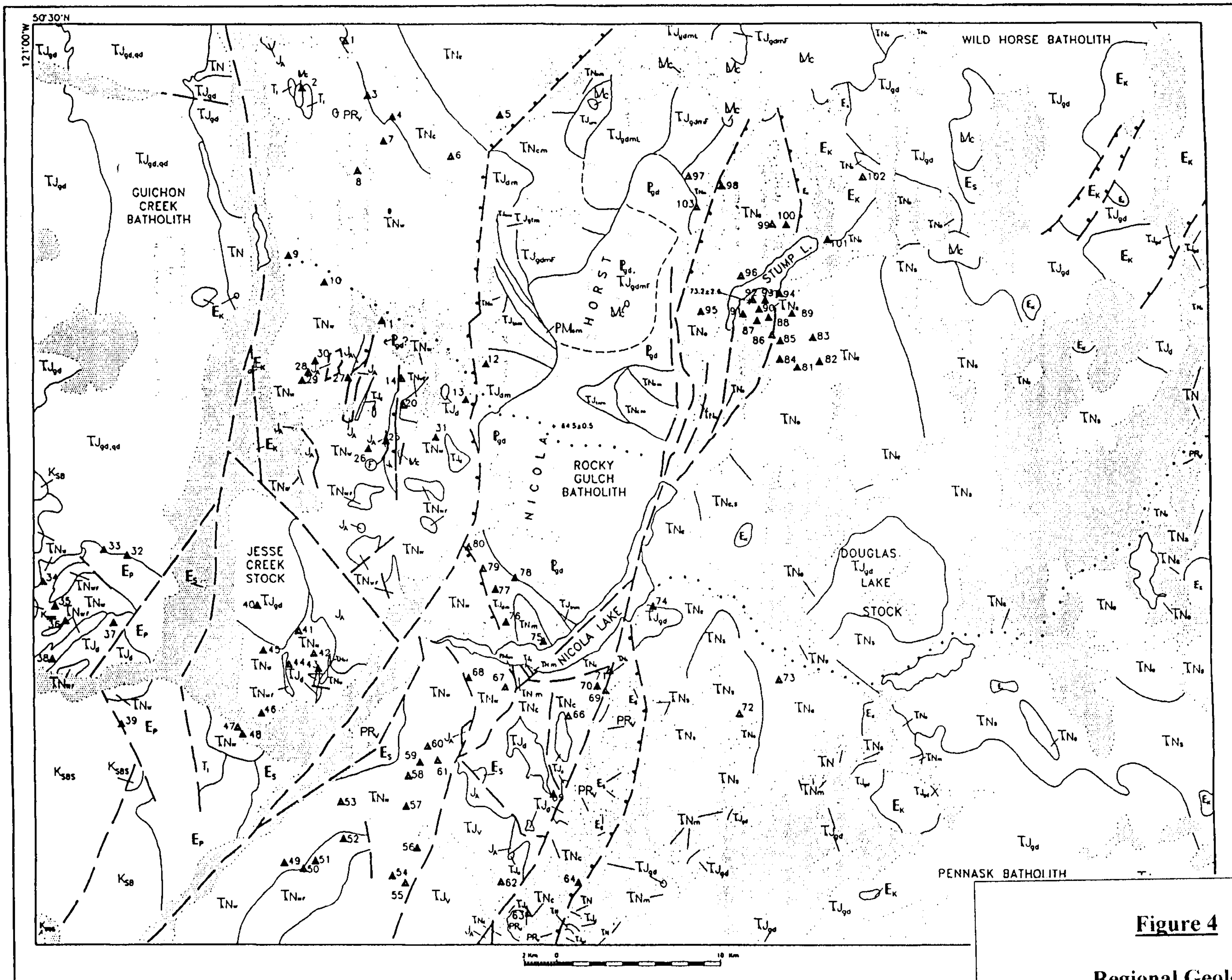


Figure B-6-2. Geology and mineral occurrences of the Nicola Lake region (Moore *et al.*, 1990).

Figure 4

Regional Geology

Scale 1:200,000

LEGEND

LITHOLOGIC UNITS

QUATERNARY

[stippled box] Glacial, fluvioglacial, fluvial and lacustrine deposits; colluvium, landslide deposits

PR_v Olivine basalt, typically vesicular ("Valley basalt")

TERTIARY

T_1 Small intrusions of mainly intermediate composition

MIOCENE

M_c Olivine basalt ("Chilcotin basalts")

EOCENE

KAMLOOPS GROUP

E_K *Mainly basalt and andesite; local rhyolite, breccia, tuff and sandstone*

PRINCETON GROUP

E_P *Intermediate, locally mafic or felsic flows, characterized by acicular hornblende phenocrysts*

E_S Sandstone, conglomerate, argillite, coal ("Coldwater beds")

PALEOCENE

P_{gd} Granodiorite, tonalite and granite with K-feldspar megacrysts, of ROCKY GULCH batholith and possibly REY LAKE pluton

MID AND LATE CRETACEOUS

SPENCES BRIDGE GROUP

K_{SB} Intermediate, locally felsic and mafic flows and pyroclastic rocks; sandstone, shale, conglomerate

SPIUS CREEK FORMATION (SPENCES BRIDGE GROUP)

K_{SBS} Mafic volcanic rocks

EARLY AND MIDDLE JURASSIC

ASHCROFT FORMATION

J_A *Polymictic conglomerate, pyritic sandstone and siltstone,* mudstone, bioclastic calcarenite

LATE TRIASSIC and/or OLDER

TJ_{gd} Hornblende-biotite and biotite granodiorite and quartz diorite (qd) of GUICHON CREEK, WILD HORSE and PENNASK batholiths, JESSE CREEK and DOUGLAS LAKE stocks *and unnamed bodies*

TJ_{gdm} Metamorphosed hornblende-biotite and biotite quartz diorite, granodiorite and granite (gl) of Nicola horst; *F: Frogmoore variety; L: Le Jeune variety*

TJ_{tnm} Metamorphosed, highly strained biotite leucotonalite and tonalite porphyry of Nicola horst

TJ_d Augite, hornblende diorite, quartz diorite; includes subvolcanic intrusions into NICOLA GROUP. m:biotite-hornblende metadiorite of Nicola horst

TJ_{um} Metaperidotite (Nicola horst)

TJ_v **Intermediate and mafic, maroon plagioclase- and augite-plagioclase-phyric sills and/or flows and volcaniclastic** ***rocks; red volcanic conglomerate, sandstone, mudstone***

LATE TRIASSIC

NICOLA GROUP

TN **Mafic and intermediate volcanic and volcaniclastic rocks, undivided; m:upper greenschist-low amphibolite facies metavolcanic rocks, mainly in Nicola horst: hornblende and biotite-** ***hornblende schist, amphibolite***

TN_w **Western volcanic facies: mafic to felsic, plagioclase-phyric flows, pyroclastic and epiclastic breccias, tuff, wacke,** ***minor limestone and limestone conglomerate*** **f: predominantly felsic flows, tuff, welded tuff**

TN_c Central volcanic facies: mafic and intermediate plagioclase-augite-phyric flows, locally pillowed, and breccia; subordinate tuff, limestone, wacke and siltstone

TN_e *Eastern volcanic facies: mafic hornblende- and augite-phyric,* predominantly epiclastic breccia, turbidite wacke, local siltstone

TN_s *Sedimentary facies: volcanic sandstone, siltstone, argillite,* tuff; local polymict conglomerate

PALEOZOIC(?) or MESOZOIC

PM_m Quartzite metaconglomerate, black staurolite-andalusite-mica schist

SYMBOLS

Lithologic contact (broken where speculative)

Boundary of unconsolidated deposits

Fault; solid circles on downthrown side

Base and/or precious metal occurrence (Table 1)

LITHOPROBE transect route

Uranium-lead zircon date locality*

Potassium-argon sericite schist date locality*

Fossil locality*

* Supplementary to Monger and McMillan (1984)

SOURCES OF DATA

Monger, J.W.H. and McMillan, W.J., 1984: *Bedrock geology of Ashcroft map area (92I)*, scale 1:125,000. Geological Survey of Canada, Open File 980.

Monger, J.W.H. and McMillan, W.J., 1989: Geology, Ashcroft, British Columbia. Geological Survey of Canada, Map 42-1989, sheet 1, scale 1:250,000.

Geological mapping by J.M. Moore (1988) and J.M. Moore and A.R. Pettipas (1989)

Base map: Merritt, B.C., Map 92I/SE, scale 1:100,000. Ministry of Environment, British Columbia, 1980

History:

The property has seen intermittent production and exploration from 1882 to the present. The Nicola Mining and Milling Company performed the first major development on the property beggining in 1890 with the sinking of the Joshua, Tubal Cain, and King William Shafts. During the same time period, the Star Company sank the Star (Enterprise) and Planet shafts. Little work was done until Donahue Mines Company Limited began to develop the Joshua and Tubal Cain veins in 1916, at which time a mill was constructed. Work was suspended in 1920.

In 1925, Planet Mines and Reduction Company began work on the Enterprise vein. The shaft was deepened to 320 feet and the crosscut adit was excavated. A mill was constructed and operated from 1929 to 1931. Nicola Mines and Metals Company acquired the property in 1931 and continued development work and began production on the Enterprise, Joshua, and Tubal Cain veins. Nicola Goldfields Limited acquired the property in 1937, rebuilt the mill and continued development. Operations were suspended in 1942. Between 1935 and 1936 the Kootenay Nevada Company acquired and separately developed the Jenny Long vein.

Various companies have performed work on the property since 1942, including surface work by Stump Lake Mines Limited and Copper Hill Mining and Exploration. In 1974, the property was geologically mapped at a scale of 1:400" by Juniper Mines Limited, and a 100 meter diamond drill hole intersected the Jenny Long vein. Work was halted in 1975 and the drill information is not available.

Production figures from 1916 to 1944 as compiled by the British Columbia Department of Mines are as follows:

77,605 tons of ore yielding:

8,494 oz. Au	252,939 oz. Ag	40,822 lbs. Cu
2,205,444 lbs. Pb	367,869 lbs. Zn.	

Recovery grades:

0.109 oz/t. Au	3.26 oz/t. Ag	0.026% Cu
1.42% Pb	0.24% Zn	

Production was exclusively from the Enterprise, King William, Tubal Cain and Joshua Veins. A 35 - ton mill was constructed on the Jenny Long property in the mid - 1930's. No production records are available.

From 1975 to 1983 various companies have controlled the property. In 1984 Celebrity Energy Corp conducted a program of geological mapping, soil sampling, ground electromagnetic, and ground magnetic geophysics. This program covered about 40% of the present property and outlined numerous geophysical and geochemical exploration targets. Many of these targets are open ended and remain untested. (See accompanying compilation map). Follow-up work of the surface program comprised limited bulldozer trenching and diamond drilling. Highlights are: 80cm. of 0.298 oz/t Au in DDH 84-10 near a surface grab sample grading 0.1 oz/t Au, 5.5 oz/t Ag, and 2.3% Pb.; 1m of 0.29oz/t Ag, in DDH 84-05, which underlies a trench reporting up to 2.8 oz/t Ag, 1.02% Cu, and 0.8% Zn.

Regional Geology: modified after Cockfield, 1947:

The regional geology of the district has been mapped by W.E. Cockfield of the Geological Survey of Canada on a scale of 1:250,000 and published as GSC Memoir 249 (1947).

In the Stump Lake area the geological framework is basically composed of an underlay of Nicola Volcanic rocks of Upper Triassic age. The Nicola Group is composed of a succession of volcanic flows and pyroclastics with minor sedimentary sections Nicola Volcanics are dominantly of intermediate composition but variations from basalts to rhyolites do occur.

Regionally, the Nicola Group is underlain by the Cache Creek group of Carboniferous to Permian age. The Cache Creek is a sedimentary Group in which argillite predominates. Minor volcanics are interbedded in certain areas and substantial sections of limestone occur in areas to the north.

In the Stump Lake area, Cache Creek rocks crop out extensively to the east of the claims and as occasional widows to the south. Extensive intrusive bodies cut the older rocks. These bodies are of batholithic size and are assigned to the Coast Intrusives of Jurassic or later age. Granodiorites and related phases predominate. Structurally, the Stump Lake area lies in a synclinal package of Nicola rocks compressed between Cache Creek sediments and the Pennask Batholith on the east and the Nicola Batholith on the west. Miocine flows of the Kamloops Group overlie the older units. Examples of these largely basaltic volcanics are found just to the north of Stump Lake.

Local Geology:

Mapping on scale of 1 inch to 200 feet was carried out over the property except for the northern sections by Agilis Engineering for Juniper Mines in 1974. This work shows the area to be almost exclusively underlain by "greenstone" of the Nicola Group. The work delineated some of the main mineralized structures and projected their traces through covered areas.

Controls for vein quartz and mineralization are not at all clear from the data at hand. It would seem from the distribution of stoped area in the northern workings that the structures tended to make ore on the north-northwesterly rather than northerly trending vein segments. Examples of this include the southern Enterprise-King William section where the north-northwesterly trending King William vein was stoped while the northerly trending Enterprise was not. Similarly on the Tubal Cain system the northerly trending (western) splay is a largely barren shear while the north-northwesterly trending branch to the east makes some ore. This ore distribution suggests that the main regional shear structure may have a northerly trend and a sinistral movement causing areas of low pressure and vein formation on related tensional structures.

The hostrock sequence originally interpreted by Cockfield and others has recently been re-interpreted by Moore (1989). The wallrocks and veins are transected in places by hornblende-porphyritic dikes of intermediate to mafic composition (Hedley, 1936). Brittle faulting has broken the succession into a number of rotated blocks. Movement on the faults is variable; historical descriptions of underground workings indicate that most vein off-sets were rarely more than a few meters.

The large ore zone in the northern part of the Enterprise workings would also fit this structural picture. Here the ore is localized on an arcuate section of vein which would tend to open with north-south strike slip movement to form a wider mineralized section.

Attitudes of tuff horizons and sedimentary bedding suggest that a north plunging axis of a syncline passes through Mineral Hill. Both west and northeast of Stump Lake, the Nicola Group volcanics are intruded by Lower Jurassic granitic batholiths; scattered granodiorite outcrops have been mapped in the vicinity of the camp. Secondary to the north-northeast trending Quilchina and Stunp Lake regional faults are numerous smaller faults which form a complex fracture pattern and appear to control alteration and mineralization. Andesitic rocks are bleached, pervasively silicified, pyritic and brecciated. Mineralization occurs in numerous quartz, and less commonly calcite veins which strike generally to the north and dip steeply eastward.

Discussion:

In October of 1996 a program was conducted by the present owners. This program consisted of 12 sq. km. of prospecting, re-sampling all known cuts and adits, stream sediment samples, aerial photo-reconnaissance, 18.75km. of grid, and 6.1km. of Mag/VLF over the area of the Jenny Long Camp. This area contains numerous workings, shafts, a headframe, and the remains of a 35 ton mill.

Extensive prospecting carried on outside the grid area discovered numerous old workings consisting of trenches, pits, adits, and shafts. On the southeastern portion of the property, float sediment remnants were found in a consistent trail, pieces were angular and quite numerous. The source was prospected for but not found. At the southern end of the Greenstone 2 claim, quartz veins were observed in numerous outcrops as well as in some existing pits. The veins vary from 2 cm. to 30 cm. and contain varying degrees of mineralization. In one such pit samples of an extremely brecciated and silica flooded wallrock was taken. This sample carried epithermal stockwork characteristics; pods of pyrrhotite, pyrite cubes up to 1 cm., and minor chalcopyrite and bornite. Veins in the pit were vuggy with featherlike characteristics. Significant assay results were achieved from these assays. An intrusive body on the southern end of the Greenstone 2 and 3 claims was extensively prospected. This quartz rich porphyry showed some signs of potassic alteration in minor areas and carried considerable sericite. Samples were colleted without significant results.

Some highlights of this program are: 0.828 oz/t Au, >500 ppm Ag, >1% Pb, >0.4% Zn, and 0.15% Cu from a 1 meter chip of the King William vein located in the north of the property, 0.537 oz/t Au, 8.6 oz/t Ag, .3% Cu, >1%pb, >0.2% antimony from a mineralized quartz vein located on the Jenny Long system in the middle of the property, and 0.588 oz/t Au, 4.1 oz/t Ag, with anomalous lead and molybdenum from a mineralized vein at the southern edge of the property. Grades up to 0.838 oz/t Au in the -150 mesh and up to 4.50 oz/t Au were realized from the +150 mesh of samples AR13, and JR31, respectively.

Summary:

Exploration targets are deep epithermal precious metal deposits similar to those already mined in the camp: shear hosted bulk tonnage precious-base metal deposits underlying glacial till similar to the Nap occurance 10km to the north, (the Greenstone property hosts several large shear zones); skarn or limestone hosted metal deposits, and at higher elevations, high grade epithermal gold mineralization similar to the Kullagh lake occurrences 8 km to the North.

References:

Metallogenic Studies in South-Central British Columbia: Mineral Occurances in the Nicola Lake Region. 1989	R.E. Meyers, J.M. Moore T.B. Hubner, A.R. Pettipas
Assessment Report # 13,152	Peter K. Hannigan
Mines and Petrolium Resources Report. 1967	N.D. McKenchie, G.M. Dawson
Report: Stump Lake Property. 1983	G.H. Raynes
G.S.C. Memoir 249. 1947	W.E. Cockfield
Minfile Reports 92ISE 108-115	BCGS

Statement of Qualifications:

Andrew W. Molnar

of

Vancouver, British Columbia

Certify that:

I have completed the Malispina Advanced Prospecting Course (1991)

I have been employed in various capacities in my profession for the past 11 years.

That the information, and conclusions in the report are based on personal work on the property during 1996, and a review of the pertinent literature.

Dated at Vancouver, British Columbia this 21 day of January, 1997.

Andrew W. Molnar.

DON HAIRSINE
Box 1239
Grand Forks, B.C.
VOH 1HO

STATEMENT OF QUALIFICATIONS

1956 - Basic Prospecting Course
B.C. Yukon Chamber of Mines

1984 - Advanced Prospecting Course
B.C. Energy, Mines and Petroleum Resources

1992 - Petrology for Prospectors
B.C. Energy, Mines and Petroleum Resources

1995 - Mineral Deposits Workshop, Creston
B.C. Energy, Mines and Petroleum Resources

I have been involved in the exploration industry since 1984:

- Prospecting for various companies
- mag and soil sampling
- claim staking
- road building and drill assistance

Don Hairsine

JOHN KEMP
Box 866,
Grand Forks, B.C.
V0H 1H0

STATEMENT of QUALIFICATIONS

1989 - Rock and Mineral Course
Chamber of Mines of Eastern B.C.

1991 - Advanced Prospecting Course
B.C. Energy, Mines and Petroleum Resources

1992 - Petrology for Prospectors
B.C. Energy, Mines and Petroleum Resources

1994 - Drift Exploration in Glaciated Terrain
B.C. Geological Survey Branch

1994 - Models and Alteration in Base and Precious Metals
Northwest Mining Association (Spokane, Washington)

1995 - Mineral Deposits Workshop, Creston
B.C. Energy, Mines and Petroleum Resources

I have been employed in the exploration industry for the past 12 years in various capacities;

- responsible for material and fuel transportation into remote areas
- environmental clean-up and reclamation
- placer mining testing, soil sampling, & geophysical surveys
- construction of access roads and drill sites
- placer mining

I have been self-employed as a full time prospector since 1990, as well as offering contract services to the mining industry.

John Kemp

Rock Sample Descriptions

Planet A: Grab of lode vein material: galena, pyrite, minor chalco. no copper.

Planet B: tuff w/pyrite, malachite staining. grab

Planet C: Quartz breccia w/pyrite. grab

AR1: Tubal Cain. silicified wallrock, limonite/hematite alt. no apparent min. 2m.chip.

AR2: Tubal Cain: dump material, qtz vein w/1%py, 2% gal. grab

AR3: 3kg.blaster grab of Raven dump material. Qtz w/ blebs of galena. py., chalco. Bornite in blebs and disseminations in fractures.

AR4: Big Sandy. chlorite alt. greenstones w/minor py. hornfels, small amount of qtz. stringers. 1m. chip.

AR5: east of IXL greenstones, 22/20W, minor py.,qtz. stringers.

AR6: 1m. chip of vein material in IXL shaft. Qtz. w/galena, pyrite blebs.

AR7a: grab from Silver King dump. Qtz breccia w/limonite and py.
AR7b: same dump with tuff in breccia and traces of galena.

AR8: grab of dump material from King William. Qtz. breccia veins, blebs of galena and chalco. some py. and pyrrotite.

AR9: 1m chip from Marion C shaft. steeply dipping qtz veins 1-2" wide. no min.

AR10: grab of dump material from Enterprize.Qtz veins w/ py., galena, malachite, sheelite, chalco.

AR11: 1m. chip across blast pit. volc. w/qtz. breccia in contact w/limestone may be a stockwork.

AR12: 1m. chip in trench south of dry lake. subcrop. Banded qtz. veins w/ chalcedony, slight brecciation.

AR13: 125m south of 12. 1m. chip of vein material. galena, chalco, py. in blebs and stringers.

AR14: 160m from 12 at south end of trench. .7m. chip where vein dips under overburden. Vuggy qtz., w/ galena, chalco, py and malachite staining.

AR15: 1m. chip of brecciated intrusive on east side of southern most trench, Greenstone 2.

OR1: 1m. chip of highly decomposed qtz material at bottom of southern pit.

JR26: breccia w/ clasts of feldspar/k-spar, py, chalco, malachite staining.

Samples

1. JR#1 Chip across vein area in shaft. Area had to be excavated to obtain sample. Sample off foot-wall ; 30cm across, very altered and oxidized material between or within quartz veins, malachite, azurite, chalcopyrite, galena, pyrite and pyrrhotite present. L18+00n, sta01+25e.

   Two production shafts at headframe area; southern shaft is 3m X 3m and depth unknown (caved). Strike @ 345* and dip is 68* east, with continuity between shafts and cat trenches. Wall rock is chloritized, with epidote stringers, limey (mild reaction to acid), and not very magnetic. Parallel quartz veins or silica flooding on both footwall and hanging wall and interbedded with altered greenstone between footwall and hanging wall. Footwall appears to contain more mineralization and more baron silica on hanging wall. Mineralization present: malachite, azurite, chalcopyrite, galena, tungsten, pyrite, hematite, and pyrrhotite. Zone is 2.1 meters wide.

2. JR#2 Very altered material, - fractured, oxidizes and decomposed, possibly Greenstone ?, fault gouge? 1.2 meters wide, some material which was not decomposed appeared to be more siliceous, possible hornfelsed and contained pryite, pyrrhotite and minor chalcopyrite.

3. JR#3 Sample from hanging wall. 50 cm wide. Quarts veins which grade out from the decomposed area (JR#2) to come in contact with altered greenstone. Pyrite, pyrrhotite, malachite, and minor galena.

4. JR#4 2.4 meter chip of greenstone on / above hanging wall, chloritized and with epidote stringer, especially on fractures; pyrite pyrrhotite
   2 specimen samples taken (1 of veining) (1 of mineralization)

5. JR#5 Blaster sample - very altered and oxidized greenstone between hanging wall and foot wall. Same as JR#2.

6. JR#6 50 cm foot wall sample, Grudged up greenstone ?, very siliceous, possibly hornfelsed, with small veinlets running in all directions. One vein width up to 5 cm and containing hematite and minor pyrite & pyrrhotite

7. JR#7 Exposed vein in cat trench at line 18+50n, sta. 01+25e, on strike with vein in shafts. Grab sample of mineralization; malachite, azurite, chalcopyrite, galena, tungsten (ultraviolet light), pyrite and pyrrhotite.

SAMPLES

8. JR#8 L18+50n, sta. 01+25e, Sample of wallrock, carbonized greenstone, beside vein. Very altered and oxidized, Possibly a rhyolite?. Multi-phase veining , (3 phases), with the mineralization coming in on the last phase.

9. JR#9 L18+50n, sta. 01+50e, parallel quartz vein to veins at the headframe area, but on a different strike. Strike 310*, dip @ 50*. Quartz vein contains galena, chalcopyrite, and pyrite. Calcite veining in greenstone (carbonate alteration).

10 JR#10 Grab sample of brecciated silica from vein. Carbonate alteration around silica. Containing clast of pyrite. Looks hydrothermal, possibly chalcedony. L18+55n, sta. 01+55e. Specimen sample taken.

11 JR#11 Grab sample from same area as JR#10 but containing azurite, malachite, pyrite, pyrrhotite and galena.

12 JR#12 L18+00n, sta. 01+50e. Cat trench, with exposed vein, Chip sample (2 meter), east wall of vertical vein. Intensely altered greenstone, with small veinlets containing minor pyrite. Trench #1 .008 Au
Specimen sample taken.

13 JR#13 L18+00n, sta. 01+50e. Continuation of JR#12 sampling vein. Very brecciated quartz vein. Malichite, azurite, pyrite, pyrrhotite. Epithermal characteristics. Millrock. 40 cm chip sample. Trench #1

14 JR#14 L18+00n, sta. 01+50e. Continuation of JR#12 and JR#13 on the west side of the vein. 1.8 meter chip, very altered greenstone beside vein and grading away from the vein to a siliceous limey greenstone. Minor pyrite. Trench #1

15 JR#15 from ore bin beside the head frame, chalcopyrite, pyrite and pyrrhotite.

16 JR#16 L17+80n, sta. 01+65e. Exposed quartz vein in trench #2 and on strike with samples #12, #13, #14, and the decline. Chalcopyrite, galena and pyrite. grab sample.

17 JR#17 Trench #2, from beside vein, sample #16. Siliceous ryolite, calcite on fractured chalcopyrite in veinlet cutting sample. Intermittent veins and alteration. Interbeded greenstone, with carbonate alteration, epidote stringers, garnet, and hydrothermal veining. Grab sample.

SAMPLES

18 JR#18 Trench #2. 2.5 meter chip on the west side of vein; very oxidized and decomposed, hydrothermal veining, consisting of two 8cm quartz veins as well as multiple smaller veins, chalcopyrite, pyrite and pyrrhotite

19 JR#19 Trench #2. 1 meter chip of east side of vein; hanging wall. Strike @330* dip @70* east, very altered and decomposed ryolite?. Pyrite and pyrrhotite, - multi phase veining.

20 JR#20 Grab sample from trench #3, not in place as trench is sloughed in, Galena, chalcopyrite, pyrite and pyrrhotite.

21 JR#21 L16+25n, sta01+50e. Quartz vein, Strike @355*, couldn't measure dip malachite, chalcopyrite, galena and pyrite.

22 JR#22 L16+35n, sta. 01+60e. Two pits on strike with quartz vein at L16+25n, sta. 01+25e and in a east/west shear zone, silica flooding in fractures of block faulting. Galena, pyrite, pyrrhotite and chalcedony.

23 JR#23 B/L07+75n Trench on southern Greenstone #2, Hornfelsed greenstone, very siliceous, quartz veins (barren), galena and pyrite in greenstone.

24 JR#24 L07+75n, sta. 01+25w. Large shaft (3m x 4m x 3m deep), and trench (5m long) Located in E/W shear zone. Greenstone with intruded magnetic basalt, silica flooding with include large clasts; pod of pyrrhotite with minor chalcopyrite, 1 cm pyrite cubes with small quartz vein cutting cube, decomposed sulphur.

From dump, massive pyrrhotite in quartz, very vuggy and feather like appearance.

25 JR#25 L07+75n, sta. 01+25w. Chip sample across north/east wall, (2m) Very oxidized, fractured, and brecciated basalt, (mildly magnetic). Pyrite, pyrrhotite, malachite, mariposite and minor epidote, silica flooded, and veined.

26 JR#26 Brecciated basalt in silica, and carrying pyrite, chalcopyrite, and minor pyrrhotite. Mildly magnetic, garnets and epidote. L07+75n, sta01+25w

27 JR#27 L6+50n, sta02+50w. Quartz porphyry intrusive, k-spar alteration with disseminated pyrite and sericite.

SAMPLES

28 JR#28 L06+50n, sta02+25w. Quartz porphyry intrusive, pyrite and quartz veins.

29 JR#29 L06+75n, sta02+25w. Quartz porphyry intrusive, pyrite, pyrrhotite, and sericite.

30 JR#30 L 07+00n, sta02+00w. Intrusive - similar to other intrusive samples.

31 JR#31 L04+00n, sta.00+50w Trench with quartz vein in greenstone, mineralization in the greenstone as well as the quartz vein. Strike at 330*, Dip @65* east. Many small veins like a dike swarm (barren) chalcopyrite, pyrite, pyrrhotite and galena.

32 JR#32 Sample of quartz vein from L04+00n, sta02+00w. Galena present, finely disseminated.

Bondar Clegg
Inchcape Testing Services

Certificate of Analysis

REPORT: V96-01715.4 (COMPLETE)

REFERENCE:

CLIENT: RIO MINERALS LTD.

PROJECT: NONE GIVEN

SUBMITTED BY: A. MOLNAR

DATE PRINTED: 3-NOV-96

ORDER	ELEMENT		NUMBER OF ANALYSES	LOWER DETECTION LIMIT	EXTRACTION	METHOD
1	Fine	Pulp Weight -- Fine	7	0.1 g		FIRE ASSAY
2	Heavy	Pulp Weight - Heavy	7	0.01 g		FIRE ASSAY
3	AuFine	Gold in Fines	7	0.03 PPM		FIRE ASSAY
4	Au Hvy	Gold in Heavies	7	0.03 PPM		FIRE ASSAY
5	AVG_AU	Avg Au in Sample	7	0.03 PPM		FIRE ASSAY

SAMPLE TYPES	NUMBER	SIZE FRACTIONS	NUMBER	SAMPLE PREPARATIONS	NUMBER
R ROCK	7	: HEAVY/-200	7	TSP - BLASTER PREP	7
				PULVERIZING/KG	34

REPORT COPIES TO: MR. ANDREW MOLNAR

INVOICE TO: MR. ANDREW MOLNAR

Bondar-Clegg & Company Ltd.
130 Pemberton Avenue, North Vancouver, B.C., V7P 2R5, Canada
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Certificate of Analysis

CLIENT: RIO MINERALS LTD.
REPORT: V96-01715.4 (COMPLETE)

PROJECT: NONE GIVEN
DATE PRINTED: 3-NOV-96 PAGE 1

SAMPLE NUMBER	ELEMENT UNITS	Fine g	Heavy g	AuFine PPM	Au Hvy PPM	AVG_AU PPM
R: A		7160.0	51.16	0.20	0.72	0.21
R: B		2130.0	100.33	31.26	38.67	31.59
R: AR3		7160.0	68.79	2.44	4.46	2.46
R: JR22		2730.0	14.11	0.12	2.83	0.13
R: JR25		4540.0	25.22	0.13	0.99	0.13
R: OR1		4510.0	18.98	0.20	2.53	0.21
R: PLANET C		4350.0	17.39	3.91	23.98	3.99

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PROJECT: NONE GIVEN
DATE PRINTED: 3-NOV-96

STANDARD NAME	ELEMENT UNITS	Fine g	Heavy g	AuFine PPM	Au Hvy PPM	AVG_AU PPM
ANALYTICAL BLANK		-	-	<0.03	-	-
Number of Analyses		-	-	1	-	-
Mean Value		-	-	0.015	-	-
Standard Deviation		-	-	-	-	-
Accepted Value		<0.1	<0.01	<0.01	<0.01	<0.01
Gannet Standard		-	-	0.21	-	-
Number of Analyses		-	-	1	-	-
Mean Value		-	-	0.206	-	-
Standard Deviation		-	-	-	-	-
Accepted Value		-	-	0.21	-	-
AU 0.05		-	-	-	1.80	-
Number of Analyses		-	-	-	1	-
Mean Value		-	-	-	1.800	-
Standard Deviation		-	-	-	-	-
Accepted Value		-	-	1.71	1.70	-

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CLIENT: RIO MINERALS LTD. PROJECT: NONE GIVEN
REPORT: V96-01715.4 (COMPLETE) DATE PRINTED: 3-NOV-96 PAGE 3

SAMPLE NUMBER	ELEMENT UNITS	Fine g	Heavy g	AuFine PPM	Au Hvy PPM	AVG_AU PPM
OR1		4510.0	18.98	0.20	2.53	0.21
Duplicate				0.18		

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Certificate of Analysis

REPORT: V96-01714.4 (COMPLETE)

REFERENCE:

CLIENT: RIO MINERALS LTD.

PROJECT: NONE GIVEN

SUBMITTED BY: UNKNOWN

DATE PRINTED: 24-OCT-96

ORDER	ELEMENT	NUMBER OF ANALYSES	LOWER DETECTION LIMIT	EXTRACTION	METHOD
1	Wt-150 Pulp Weight -150	44	0.1 GM		FIRE ASSAY
2	WT+150 +150 Pulp Weight	44	0.01 g		FIRE ASSAY
3	Au-150 Gold -150 mesh	44	0.001 OPT		FIRE ASSAY
4	Au+150 Gold +150 mesh	44	0.01 OPT		FIRE ASSAY
5	Au Tot Gold in total sample	44	0.001 OPT		FIRE ASSAY

SAMPLE TYPES	NUMBER
R ROCK	44

SIZE FRACTIONS	NUMBER
W +150/-150	44

SAMPLE PREPARATIONS	NUMBER
DRY, SIEVE -80	5
CRUSH/SPLIT & PULV.	44
OVERWEIGHT/KG	39
METALLICS SCREENING	44

REPORT COPIES TO: MR. ANDREW MOLNAR

INVOICE TO: MR. ANDREW MOLNAR

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Certificate of Analysis

CLIENT: RIO MINERALS LTD.
REPORT: V96-01714.4 (COMPLETE)

PROJECT: NONE GIVEN
DATE PRINTED: 24-OCT-96 PAGE 1

SAMPLE NUMBER	ELEMENT UNITS	Wt-150 GM	WT+150 g	Au-150 OPT	Au+150 OPT	Au Tot OPT
RW AR1		252.6	20.58	0.002	0.13	0.012
RW AR2		253.1	7.55	0.009	<0.01	0.009
RW AR4		254.0	50.33	0.002	<0.01	0.002
RW AR5		300.2	49.38	0.002	<0.01	0.002
RW AR6		232.9	25.21	0.024	<0.01	0.022
RW AR7A		251.1	24.44	0.031	0.03	0.031
RW AR7B		251.4	7.16	0.003	<0.01	0.003
RW AR8		275.2	13.85	0.132	0.68	0.158
RW AR9		239.2	21.50	0.001	<0.01	0.001
RW AR10		297.9	6.75	0.189	0.46	0.195
RW AR11		251.4	8.28	<0.001	<0.01	<0.001
RW AR12		243.4	30.58	<0.001	<0.01	<0.001
RW AR13		288.9	5.39	0.838	0.82	0.838
RW AR14		272.9	1.72	0.136	3.53	0.157
RW AR15		223.7	0.68	0.002	<0.01	0.002
RW JR1		258.7	1.12	0.073	<0.01	0.073
RW JR2		273.0	26.96	0.012	0.01	0.012
RW JR3		280.0	2.06	0.119	2.73	0.138
RW JR4		303.5	9.18	<0.001	<0.01	<0.001
RW JR6		257.3	32.35	0.008	0.04	0.012
RW JR8		289.2	25.46	0.003	<0.01	0.003
RW JR9		293.5	6.20	0.540	0.40	0.537
RW JR10		290.0	6.74	0.047	<0.01	0.046
RW JR11		234.4	1.17	0.392	0.82	0.394
RW JR12		201.6	3.40	0.008	<0.01	0.008
RW JR13		290.2	1.09	0.064	<0.01	0.064
RW JR14		251.6	37.95	0.001	<0.01	0.001
RW JR15		338.2	0.81	0.074	<0.01	0.073
RW JR16		239.6	7.22	0.074	0.08	0.074
RW JR17		232.9	0.43	0.001	<0.01	0.001
RW JR18		237.5	3.14	0.005	<0.01	0.005
RW JR19		253.9	1.72	<0.001	<0.01	<0.001
RW JR20		309.5	13.06	0.059	0.02	0.057
RW JR21		246.3	6.32	0.061	0.12	0.062
RW JR23		271.2	5.75	<0.001	<0.01	<0.001
RW JR24		281.5	7.09	0.598	0.21	0.588
RW JR26		210.3	8.90	0.002	<0.01	0.002
RW JR27		207.4	2.00	0.005	<0.01	0.005
RW JR29		276.1	10.47	<0.001	<0.01	<0.001
RW JR30		263.2	4.14	0.001	<0.01	<0.001

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Certificate of Analysis

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REPORT: V96-01714.4 (COMPLETE)

PROJECT: NONE GIVEN
DATE PRINTED: 24-OCT-96

SAMPLE NUMBER	ELEMENT UNITS	Wt-150 GM	WT+150 g	Au-150 OPT	Au+150 OPT	Au Tot OPT
RW JR31		256.5	0.90	0.238	4.50	0.253
RW JR32		238.1	4.75	0.002	<0.01	0.002
RW PLANET A		234.7	1.62	0.005	<0.01	0.005
RW PLANET B		221.3	4.59	0.006	<0.01	0.006

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DATE PRINTED: 24-OCT-96

STANDARD NAME	ELEMENT UNITS	Wt-150 GM	WT+150 g	Au-150 OPT	Au+150 OPT	Au Tot OPT
ANALYTICAL BLANK		-	-	<0.001	-	-
ANALYTICAL BLANK		-	-	<0.001	-	-
Number of Analyses		-	-	2	-	-
Mean Value		-	-	0.0004	-	-
Standard Deviation		-	-	0.00000	-	-
Accepted Value		<0.1	<0.01	<0.001	<0.01	<0.001
AU 0.1		-	-	-	0.10	-
Number of Analyses		-	-	-	1	-
Mean Value		-	-	-	0.098	-
Standard Deviation		-	-	-	-	-
Accepted Value		-	-	0.100	0.10	-
Gannet Standard		-	-	0.031	-	-
Number of Analyses		-	-	1	-	-
Mean Value		-	-	0.0313	-	-
Standard Deviation		-	-	-	-	-
Accepted Value		-	-	0.031	-	-
AU 0.05		-	-	-	0.05	-
Number of Analyses		-	-	-	1	-
Mean Value		-	-	-	0.047	-
Standard Deviation		-	-	-	-	-
Accepted Value		-	-	0.050	0.05	-
Gannet Standard		-	-	0.006	-	-
Number of Analyses		-	-	1	-	-
Mean Value		-	-	0.0059	-	-
Standard Deviation		-	-	-	-	-
Accepted Value		-	-	0.006	-	-

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Certificate of Analysis

CLIENT: RIO MINERALS LTD. PROJECT: NONE GIVEN
REPORT: V96-01714.4 (COMPLETE) DATE PRINTED: 24-OCT-96 PAGE 4

SAMPLE NUMBER	ELEMENT UNITS	Wt-150 GM	WT+150 g	Au-150 OPT	Au+150 OPT	Au Tot OPT
AR7A		251.1	24.44	0.031	0.03	0.031
Duplicate				0.027		
JR3		280.0	2.06	0.119	2.73	0.138
Duplicate				0.109		
JR15		338.2	0.81	0.074	<0.01	0.073
Duplicate				0.078		
JR30		263.2	4.14	0.001	<0.01	<0.001
Duplicate				0.002		

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Registered Assayer, Province of British Columbia

Bondar Clegg
Inchcape Testing Services

Vancouver, B.C. Canada

"URGENT & CONFIDENTIAL"

To: RIO MINERALS LTD.
Attention :
Reference :
Submitter : A. MOLNAR

Our Fax No: (604) 985-1071
Your Fax No: 871-0231
Number of Pages : 2 including this page.

Report : V96-01715.4 Status : COMPLETE Total number of samples: 7

Element	Method	Totl	Element	Method	Totl	Element	Method	Totl
Fine	FIRE ASSAY	7	Heavy	FIRE ASSAY	7	AuFine	FIRE ASSAY	7
Au Hvy	FIRE ASSAY	7	AVG_AU	FIRE ASSAY	7			

Sample Preparations	Totl	Sample Type	Totl	Size Fraction	Totl	Remarks
TSP - BLASTER PREP	7	ROCK	7	HEAVY/-200	7	
PULVERIZING/KG	34					

Notes:

If you do not receive the entire transmission in legible form, please call us at (604) 985-0681.

Bondar Clegg
Inchcape Testing Services

CLIENT: RIO MINERALS LTD.
REPORT: V96-01715.4 (COMPLETE)

PROJECT: NONE GIVEN
DATE PRINTED: 5-NOV-96 PAGE 1

SAMPLE NUMBER	ELEMENT UNITS	Fine g	Heavy g	AuFine OPT	Au Hvy OPT	AVG_AU OPT
R: A		7160.0	51.16	0.006	0.02	0.006
R: B		2130.0	100.33	0.912	1.13	0.921
R: AR3		7160.0	68.79	0.071	0.13	0.072
R: JR22		2730.0	14.11	0.003	0.08	0.004
R: JR25		4540.0	25.22	0.004	0.03	0.004
R: OR1		4510.0	18.98	0.006	0.07	0.006
R: PLANET C		4350.0	17.39	0.114	0.70	0.116

Bondar Clegg
Inchcape Testing Services

Geochemical Lab Report

REPORT: V96-01714.0 (COMPLETE)

REFERENCE:

CLIENT: RIO MINERALS LTD.

SUBMITTED BY: UNKNOWN

PROJECT: NONE GIVEN

DATE PRINTED: 24-OCT-96

	ELEMENT		NUMBER OF ANALYSES	LOWER DETECTION	EXTRACTION	METHOD
1	Au30	Gold	5	5 PPB	Fire Assay of 30g	30g Fire Assay - AA
2	Ag	Silver	49	0.2 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
3	AgOL	Silver,semiquant.	6	1 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
4	Cu	Copper	49	1 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
5	Pb	Lead	49	2 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
6	Zn	Zinc	49	1 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
7	ZnOL	Zinc, semiquant	1	0.1 PCT	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
8	Mo	Molybdenum	49	1 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
9	Ni	Nickel	49	1 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
10	Co	Cobalt	49	1 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
11	Cd	Cadmium	49	0.2 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
12	Bi	Bismuth	49	5 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
13	As	Arsenic	49	5 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
14	Sb	Antimony	49	5 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
15	Fe	Iron	49	0.01 PCT	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
16	Mn	Manganese	49	1 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
17	Te	Tellurium	49	10 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
18	Ba	Barium	49	1 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
19	Cr	Chromium	49	1 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
20	V	Vanadium	49	1 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
21	Sn	Tin	49	20 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
22	W	Tungsten	49	20 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
23	La	Lanthanum	49	1 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
24	Al	Aluminum	49	0.01 PCT	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
25	Mg	Magnesium	49	0.01 PCT	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
26	Ca	Calcium	49	0.01 PCT	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
27	Na	Sodium	49	0.01 PCT	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
28	K	Potassium	49	0.01 PCT	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
29	Sr	Strontium	49	1 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
30	Y	Yttrium	49	1 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
31	Ga	Gallium	49	2 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
32	Li	Lithium	49	1 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
33	Nb	Niobium	49	1 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
34	Sc	Scandium	49	5 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
35	Ta	Tantalum	49	10 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
36	Ti	Titanium	49	0.01 PCT	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA
37	Zr	Zirconium	49	1 PPM	HCL:HNO3 (3:1)	INDUC. COUP. PLASMA

SAMPLE TYPES	NUMBER	SIZE FRACTIONS	NUMBER	SAMPLE PREPARATIONS	NUMBER
S SOIL	5	1 -80	5	DRY, SIEVE -80	5
R ROCK	44	2 -150	44	CRUSH/SPLIT & PULV.	44
				OVERWEIGHT/KG	39
				METALLICS SCREENING	39

REMARKS: ZINC CONCENTRATION >1% WILL ENHANCE TUNGSTEN RESULTS. THEREFORE, TUNGSTEN CONCENTRATION WOULD BE GREATER THAN TRUE VALUE. THANK YOU, RRD

REPORT COPIES TO: MR. ANDREW MOLNAR

INVOICE TO: MR. ANDREW MOLNAR

Bondar Clegg
Inchcape Testing Services

Geochemical Lab Report

CLIENT: RIO MINERALS LTD.
REPORT: V96-01714.0 (COMPLETE)

PROJECT: NONE GIVEN
DATE PRINTED: 24-OCT-96

SAMPLE NUMBER	ELEMENT UNITS	Au30 PPB	Ag PPM	AgOL PPM	Cu PPM	Pb PPM	Zn PPM	ZnOL PCT	Mo PPM	Ni PPM	Co PPM	Cd PPM	Bi PPM	As PPM	Sb PPM
S1 8+50N 1+00W		7	<0.2		79	6	78		2	21	12	0.3	<5	<5	<5
S1 11+00N 1+00W		<5	<0.2		73	5	61		2	26	11	<0.2	<5	<5	<5
S1 15+90N 0+40W		9	<0.2		53	2	52		2	22	12	<0.2	<5	<5	<5
S1 BLO 17+60N		<5	<0.2		68	8	98		3	19	12	0.4	<5	<5	<5
S1 BL21+60W		<5	<0.2		36	<2	52		1	17	8	<0.2	<5	<5	<5
AR1			<0.2		1771	7	1415		3	10	19	0.5	10	40	<5
AR2			7.9		1387	369	1379		5	8	6	24.5	<5	127	<5
AR4			<0.2		561	<2	458		2	24	21	<0.2	<5	39	<5
AR5			<0.2		538	<2	462		2	22	18	<0.2	5	<5	<5
AR6			126.4		896	5819	3818		4	6	2	90.7	66	106	<5
AR7A			59.8		302	538	521		4	8	16	12.4	<5	78	<5
AR7B			1.3		69	45	196		2	8	9	2.6	<5	26	<5
AR8			93.5		952	>10000	8043		9	14	4	212.9	<5	134	35
AR9			0.5		91	205	320		<1	280	24	8.5	<5	<5	<5
AR10			>200.0	>500	8190	>10000	6624		<1	63	6	224.4	<5	502	>2000
AR11			1.5		56	36	86		2	10	11	0.7	<5	<5	7
AR12			<0.2		49	70	220		<1	32	12	4.5	<5	<5	<5
AR13			>200.0	>500	1499	>10000	4260		2	16	2	138.1	<5	94	58
AR14			>200.0	386	1174	>10000	1202		4	17	2	36.6	6	92	33
AR15			3.7		1498	46	114		62	19	13	0.6	<5	<5	<5
JR1			177.1		3775	>10000	2719		67	8	4	91.7	12	584	1558
JR2			10.8		2406	730	3496		75	15	17	69.4	9	54	191
JR3			109.6		2613	>10000	4712		116	7	6	167.5	32	227	1344
JR4			1.0		305	129	167		5	12	15	2.9	<5	<5	5
JR6			4.0		340	96	2190		12	13	15	24.0	<5	40	57
JR8			1.4		236	27	179		5	20	23	1.0	8	<5	70
JR9			>200.0	246	3290	>10000	932		107	5	2	56.5	27	333	>2000
JR10			89.0		2800	2057	2894		126	11	8	78.1	5	240	1590
JR11			>200.0	263	8529	>10000	4476		917	8	5	216.7	18	774	>2000
JR12			6.4		344	151	380		70	15	21	5.1	<5	40	152

SAMPLE NUMBER	Fe PCT	Mn PPM	Te PPM	Ba PPM	Cr PPM	V PPM	Sn PPM	W PPM	La PPM	Al PCT	Mg PCT	Ca PCT	Na PCT	K PCT	Sr PPM	Y PPM	Ga PPM	Li PPM	Nb PPM	Sc PPM	Ta PPM
S1 8+50N 1+00W	2.33	845	<10	116	31	48	<20	<20	5	1.72	1.02	0.93	0.04	0.43	132	6	2	9	2	<5	<10
S1 11+00N 1+00W	2.79	619	<10	82	48	68	<20	<20	5	1.39	1.43	1.38	0.05	0.34	100	5	2	7	2	<5	<10
S1 15+90N 0+40W	3.60	702	<10	107	43	86	<20	<20	4	1.32	0.86	0.55	0.03	0.33	47	5	<2	6	1	<5	<10
S1 BLO 17+60N	2.53	872	<10	121	31	47	<20	<20	6	2.08	0.91	0.59	0.03	0.43	61	6	4	10	1	<5	<10
S1 BL21+60W	2.35	409	<10	80	40	62	<20	<20	4	0.89	0.95	2.32	0.04	0.16	78	4	<2	5	<1	<5	<10
AR1	4.62	1379	<10	126	27	75	<20	<20	5	1.80	1.22	8.41	0.01	0.69	75	8	4	6	<1	9	<10
AR2	1.64	1202	<10	33	115	11	<20	<20	<1	0.18	1.54	3.68	<.01	0.10	50	2	2	<1	<1	<5	<10
AR4	3.46	764	<10	232	66	101	<20	<20	2	2.19	2.02	2.64	0.05	0.09	149	5	5	12	<1	7	<10
AR5	3.97	953	<10	143	63	121	<20	<20	3	2.43	2.16	3.25	0.04	0.61	167	6	5	10	<1	10	<10
AR6	3.49	392	32	15	126	5	<20	<20	<1	0.14	0.20	0.57	<.01	0.09	26	<1	<2	<1	<1	<5	<10
AR7A	4.22	1903	31	47	31	27	<20	<20	2	0.55	1.90	5.73	<.01	0.39	262	4	4	<1	<1	<5	<10
AR7B	2.79	1873	<10	24	90	17	<20	<20	<1	0.24	2.02	5.55	<.01	0.17	279	3	6	<1	<1	<5	<10
AR8	4.08	515	37	15	180	5	<20	51	<1	0.12	0.40	0.76	<.01	0.09	36	<1	<2	<1	<1	<5	<10
AR9	2.68	1947	<10	12	422	45	<20	<20	3	1.42	3.87	>10.00	<.01	0.03	346	2	7	8	<1	7	<10
AR10	0.91	442	149	19	192	5	<20	<20	<1	0.13	0.92	1.06	<.01	0.04	50	<1	<2	<1	<1	<5	<10
AR11	2.81	859	<10	89	76	30	<20	<20	2	0.39	1.59	5.63	0.01	0.28	161	2	<2	<1	<1	<5	<10
AR12	3.61	1565	<10	67	12	88	<20	<20	5	0.72	3.27	>10.00	<.01	0.30	323	5	2	5	<1	9	<10
AR13	1.56	70	199	10	238	2	<20	<20	<1	0.03	0.01	0.11	<.01	0.04	33	<1	<2	<1	<1	<5	<10
AR14	1.35	155	113	9	218	4	<20	<20	<1	0.02	0.46	0.68	<.01	0.03	30	<1	<2	<1	<1	<5	<10
AR15	2.85	835	<10	120	119	65	<20	<20	2	1.18	1.42	2.16	0.06	0.72	49	5	<2	11	<1	7	<10
JR1	1.63	457	29	9	266	7	<20	251	<1	0.14	0.12	0.40	<.01	0.09	23	1	<2	<1	<1	<5	<10
JR2	4.28	1629	<10	31	57	91	<20	117	1	1.78	1.79	5.85	0.01	0.24	108	6	5	14	<1	11	<10
JR3	4.34	1988	19	125	115	22	<20	380	<1	0.41	1.23	2.87	0.02	0.28	69	3	4	1	<1	<5	<10
JR4	2.63	744	<10	21	53	81	<20	28	<1	1.96	1.56	6.64	0.08	0.06	138	3	<2	9	<1	<5	<10
JR6	4.35	1841	<10	59	35	75	<20	<20	2	1.66	1.85	9.45	0.02	0.45	131	9	3	12	<1	13	<10
JR8	5.47	1253	<10	68	23	47	<20	<20	<1	0.72	2.54	7.80	<.01	0.54	225	6	<2	<1	<1	15	<10
JR9	1.71	86	56	11	227	3	<20	249	<1	0.05	0.02	0.18	<.01	0.03	21	<1	<2	<1	<1	<5	<10
JR10	3.22	1394	<10	35	140	16	<20	33	<1	0.17	2.40	5.89	<.01	0.11	72	3	<2	<1	<1	<5	<10
JR11	1.86	741	45	124	204	6	<20	<20	<1	0.19	1.35	2.60	<.01	0.12	50	3	<2	<1	<1	<5	<10
JR12	4.60	1227	<10	61	36	85	<20	<20	<1	1.47	2.52	6.70	0.01	0.73	116	7	<2	6	<1	13	<10

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Inchcape Testing Services

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SAMPLE NUMBER	ELEMENT UNITS	Ti PCT	Zr PPM
S1 8+50N 1+00W		0.08	5
S1 11+00N 1+00W		0.09	2
S1 15+90N 0+40W		0.11	5
S1 BLO 17+60N		0.09	7
S1 BL21+60W		0.10	2
AR1		0.04	<1
AR2		<.01	<1
AR4		0.18	2
AR5		0.20	2
AR6		<.01	<1
AR7A		<.01	<1
AR7B		<.01	<1
AR8		<.01	<1
AR9		<.01	<1
AR10		<.01	<1
AR11		<.01	<1
AR12		<.01	<1
AR13		<.01	<1
AR14		<.01	<1
AR15		0.09	4
JR1		<.01	1
JR2		0.07	3
JR3		<.01	1
JR4		0.20	3
JR6		0.03	2
JR8		<.01	<1
JR9		<.01	<1
JR10		<.01	<1
JR11		<.01	<1
JR12		0.02	<1

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Inchcape Testing Services

Geochemical Lab Report

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SAMPLE / ELEMENT	Au30	Ag	AgOL	Cu	Pb	Zn	ZnOL	Mo	Ni	Co	Cd	Bi	As	Sb
NUMBER / UNITS	PPB	PPM	PPM	PPM	PPM	PPM	PCT	PPM	PPM	PPM	PPM	PPM	PPM	PPM
JR13		63.7		1530	837	1018		116	10	6	37.6	<5	132	932
JR14		1.5		317	80	307		26	9	14	3.6	37	<5	29
JR15		55.3		1478	4139	>10000	1.5	27	16	12	276.8	37	112	961
JR16		79.2		4737	>10000	1591		35	13	35	45.9	31	301	508
JR17		4.3		1531	204	731		20	22	137	7.1	14	44	63
JR18		14.7		770	289	442		27	13	13	8.0	24	<5	108
JR19		0.3		816	5	99		15	10	41	<0.2	<5	<5	33
JR20		90.9		4000	1313	992		15	6	4	25.9	54	401	>2000
JR21		38.4		1388	1278	575		90	10	2	14.8	<5	143	746
JR23		0.3		197	10	104		124	18	7	<0.2	24	<5	<5
JR24		141.9		64	1084	75		19	5	<1	1.2	121	<5	36
JR26		6.2		688	30	88		30	14	11	0.8	43	<5	<5
JR27		2.1		187	21	46		45	10	4	0.4	<5	<5	<5
JR29		1.0		142	15	82		4	5	3	1.2	<5	<5	<5
JR30		2.0		526	21	31		299	14	6	<0.2	13	<5	<5
JR31		>200.0	247	1067	5441	322		56	11	<1	11.6	115	524	>2000
JR32		4.0		1276	70	171		190	60	16	0.9	213	<5	43
PLANET A		2.4		58	79	58		9	12	8	0.8	<5	54	28
PLANET B		3.6		123	129	158		3	11	13	2.9	<5	85	<5

SAMPLE / ELEMENT	Fe	Mn	Te	Ba	Cr	V	Sn	W	La	Al	Mg	Ca	Na	K	Sr	Y	Ga	Li	Nb	Sc	Ta
NUMBER / UNITS	PCT	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PCT	PCT	PCT	PCT	PCT	PPM	PPM	PPM	PPM	PPM	PPM	PPM
JR13	2.20	1775	<10	59	124	21	<20	33	<1	0.25	2.28	>10.00	<.01	0.13	118	4	2	<1	<1	<5	<10
JR14	3.32	2318	<10	71	41	116	<20	125	4	2.70	2.05	>10.00	0.13	0.26	168	9	10	22	<1	12	<10
JR15	4.20	1986	<10	15	240	12	<20	<58	<1	0.30	0.94	1.94	<.01	0.18	35	1	3	<1	<1	<5	<10
JR16	4.72	1997	28	18	111	16	<20	239	<1	0.22	2.39	6.82	<.01	0.12	74	4	4	<1	<1	<5	<10
JR17	>10.00	3359	<10	35	62	52	23	160	<1	0.68	3.06	>10.00	<.01	0.36	106	5	5	4	3	11	<10
JR18	4.34	2030	<10	35	69	112	<20	91	<1	1.40	1.80	9.42	0.01	0.30	149	6	4	10	<1	11	<10
JR19	5.57	1687	<10	45	33	93	<20	<20	1	1.07	1.60	5.86	0.01	0.38	124	8	7	20	1	14	<10
JR20	3.28	643	22	8	164	9	<20	238	<1	0.06	0.22	0.62	<.01	0.03	16	1	<2	<1	1	<5	<10
JR21	0.89	1366	<10	75	205	10	<20	38	<1	0.15	1.28	2.74	<.01	0.10	53	2	3	<1	<1	<5	<10
JR23	3.15	882	<10	123	151	117	<20	502	<1	1.57	1.87	2.77	0.10	0.98	105	5	4	31	1	13	<10
JR24	>10.00	34	44	3	106	6	<20	21	16	<.01	<.01	0.02	<.01	0.03	4	<1	<2	<1	3	<5	<10
JR26	2.60	1601	<10	66	64	40	<20	<20	<1	0.94	1.22	2.99	0.04	0.39	88	4	6	8	1	<5	<10
JR27	1.69	1235	<10	69	172	19	<20	<20	14	0.49	0.33	1.27	0.05	0.31	54	4	5	3	<1	<5	<10
JR29	0.97	524	<10	216	113	6	<20	<20	12	0.38	0.02	0.22	0.05	0.26	19	2	<2	2	<1	<5	<10
JR30	1.75	802	<10	146	99	7	<20	<20	6	0.39	0.11	0.67	0.04	0.28	33	3	<2	2	<1	<5	<10
JR31	0.79	57	51	7	334	2	<20	<20	<1	0.01	<.01	0.01	<.01	0.05	10	<1	<2	<1	<1	<5	<10
JR32	4.66	1076	<10	39	230	159	<20	54	<1	2.22	2.64	3.06	0.07	1.60	59	6	4	31	1	19	<10
PLANET A	2.32	1110	<10	27	122	18	<20	<20	<1	0.31	1.79	4.68	<.01	0.22	247	2	<2	<1	<1	<5	<10
PLANET B	3.22	1495	<10	36	30	21	<20	<20	<1	0.52	1.95	5.79	<.01	0.39	243	4	6	<1	<1	<5	<10

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Inchcape Testing Services

Geochemical Lab Report

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REPORT: V96-01714.0 (COMPLETE)

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DATE PRINTED: 24-OCT-96

SAMPLE NUMBER	ELEMENT UNITS	Ti PCT	Zr PPM
JR13		<.01	<1
JR14		0.10	2
JR15		<.01	<1
JR16		<.01	<1
JR17		<.01	<1
JR18		0.04	3
JR19		<.01	1
JR20		<.01	<1
JR21		<.01	<1
JR23		0.13	3
JR24		<.01	<1
JR26		0.05	1
JR27		<.01	2
JR29		<.01	2
JR30		<.01	3
JR31		<.01	<1
JR32		0.16	3
PLANET A		<.01	<1
PLANET B		<.01	<1

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STANDARD NAME	ELEMENT UNITS	Au30 PPB	Ag PPM	AgOL PPM	Cu PPM	Pb PPM	Zn PPM	ZnOL PCT	Mo PPM	Ni PPM	Co PPM	Cd PPM	Bi PPM	As PPM	Sb PPM	Fe PCT	Mn PPM	Te PPM	Ba PPM	Cr PPM	V PPM	Sn PPM	W PPM	La PPM	Al PCT	Mg PCT	Ca PCT	Na PCT	K PCT	Sr PPM	Y PPM	Ga PPM	Li PPM	Nb PPM	Sc PPM	Ta PPM
BCC GEOCHEM STD 6		-	0.4	-	145	18	127	-	3	122	30	<0.2	<5	116	<5	6.48	1509	<10	6	167	42	<20	<20	<1	1.81	2.41	3.79	0.01	0.04	79	3	6	20	1	8	<10
Number of Analyses		-	1	-	1	1	1	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Mean Value		-	0.4	-	145	18	127	-	3	122	30	0.1	3	116	3	6.48	1509	5	6	167	42	10	10	0.5	1.81	2.41	3.79	0.01	0.04	79	3	6	20	1	8	5
Standard Deviation		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Accepted Value		-	0.2	0.2	140	13	140	0.01	4	135	35	0.1	1	145	1	6.50	1450	-	6	170	50	5	12	-	1.80	2.70	4.00	0.01	0.04	70	3	-	24	2	6	1
ANALYTICAL BLANK		<5	<0.2	-	<1	<2	<1	-	<1	<1	<1	<0.2	<5	<5	<5	<0.01	<1	<10	<1	<1	<1	<20	<20	<1	<.01	<.01	<0.01	<.01	<.01	<1	<1	<2	<1	<1	<5	<10
ANALYTICAL BLANK		-	<0.2	-	<1	<2	<1	-	<1	<1	<1	<0.2	<5	<5	<5	<0.01	7	<10	<1	<1	<1	<20	<20	<1	<.01	<.01	<0.01	<.01	<.01	<1	<1	<2	<1	<1	<5	<10
Number of Analyses		1	2	-	2	2	2	-	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mean Value		3	0.1	-	0.5	1	0.5	-	0.5	0.5	0.5	0.1	3	3	3	0.005	4	5	0.5	0.5	0.5	10	10	0.5	.005	.005	0.005	.005	.005	0.5	0.5	1	0.5	0.5	3	5
Standard Deviation		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Accepted Value		5	0.2	.005	1	2	1	<.01	1	1	1	0.1	2	5	5	0.05	1	.01	.01	1	1	.01	.01	.01	<.01	<.01	<.0001	<.01	<.01	.01	.01	.01	.01	.01	.01	.01
Garnet Standard		424	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Number of Analyses		1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mean Value		424	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Standard Deviation		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Accepted Value		410	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BCC GEOCHEM STD 5		-	0.5	-	83	9	70	-	3	32	15	<0.2	<5	<5	<5	4.19	730	<10	164	45	111	<20	<20	3	2.99	1.92	0.94	0.06	0.30	38	6	6	25	<1	10	<10
Number of Analyses		-	1	-	1	1	1	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Mean Value		-	0.5	-	83	9	70	-	3	32	15	0.1	3	3	3	4.19	730	5	164	45	111	10	10	3	2.99	1.92	0.94	0.06	0.30	38	6	6	25	0.5	10	5
Standard Deviation		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Accepted Value		-	0.7	0.7	90	11	80	.008	2	40	18	0.1	1	8	1	4.74	720	0.2	200	54	133	4	2	5	3.09	1.83	1.08	0.06	0.32	39	9	4	-	1	18	1

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Geochemical Lab Report

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STANDARD NAME	ELEMENT UNITS	Ti PCT	Zr PPM
BCC GEOCHEM STD 6		<.01	4
Number of Analyses		1	1
Mean Value		.005	4
Standard Deviation		-	-
Accepted Value		.003	5
ANALYTICAL BLANK		<.01	<1
ANALYTICAL BLANK		<.01	<1
Number of Analyses		2	2
Mean Value		.005	0.5
Standard Deviation		-	-
Accepted Value		<.01	.01
Garnet Standard		-	-
Number of Analyses		-	-
Mean Value		-	-
Standard Deviation		-	-
Accepted Value		-	-
BCC GEOCHEM STD 5		0.19	9
Number of Analyses		1	1
Mean Value		0.19	9
Standard Deviation		-	-
Accepted Value		-	9

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DATE PRINTED: 24-OCT-96

SAMPLE ELEMENT	Au30	Ag	AgOL	Cu	Pb	Zn	ZnOL	Mo	Ni	Co	Cd	Bi	As	Sb	Fe	Mn	Te	Ba	Cr	V	Sn	W	La	Al	Mg	Ca	Na	K	Sr	Y	Ga	Li	Nb	Sc	Ta
NUMBER UNITS	PPB	PPM	PPM	PPM	PPM	PPM	PCT	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PCT	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PCT	PCT	PCT	PCT	PCT	PPM	PPM	PPM	PPM	PPM	PPM	PPM
S1 BL21+60W	<5	<0.2		36	<2	52		1	17	8	<0.2	<5	<5	<5	2.35	409	<10	80	40	62	<20	<20	4	0.89	0.95	2.32	0.04	0.16	78	4	<2	5	<1	<5	<10
Duplicate	<5	<0.2		33	<2	50		1	14	7	0.2	<5	<5	<5	2.16	373	<10	67	36	59	<20	<20	3	0.83	0.84	2.09	0.04	0.15	72	4	<2	5	1	<5	<10
JR2		10.8		2406	730	3496		75	15	17	69.4	9	54	191	4.28	1629	<10	31	57	91	<20	117	1	1.78	1.79	5.85	0.01	0.24	108	6	5	14	<1	11	<10
Duplicate		9.3		2225	592	3257		69	14	15	62.0	12	56	177	3.74	1426	<10	28	49	83	<20	92	<1	1.60	1.55	5.13	0.01	0.22	97	6	5	15	<1	10	<10
JR24		141.9		64	1084	75		19	5	<1	1.2	121	<5	36	>10.00	34	44	3	106	6	<20	21	16	<.01	<.01	0.02	<.01	0.03	4	<1	<2	<1	3	<5	<10
Duplicate		134.9		54	1082	68		18	5	<1	0.8	119	<5	32	>10.00	35	40	3	102	4	23	<20	13	<.01	<.01	0.01	<.01	0.03	4	<1	<2	<1	3	<5	<10

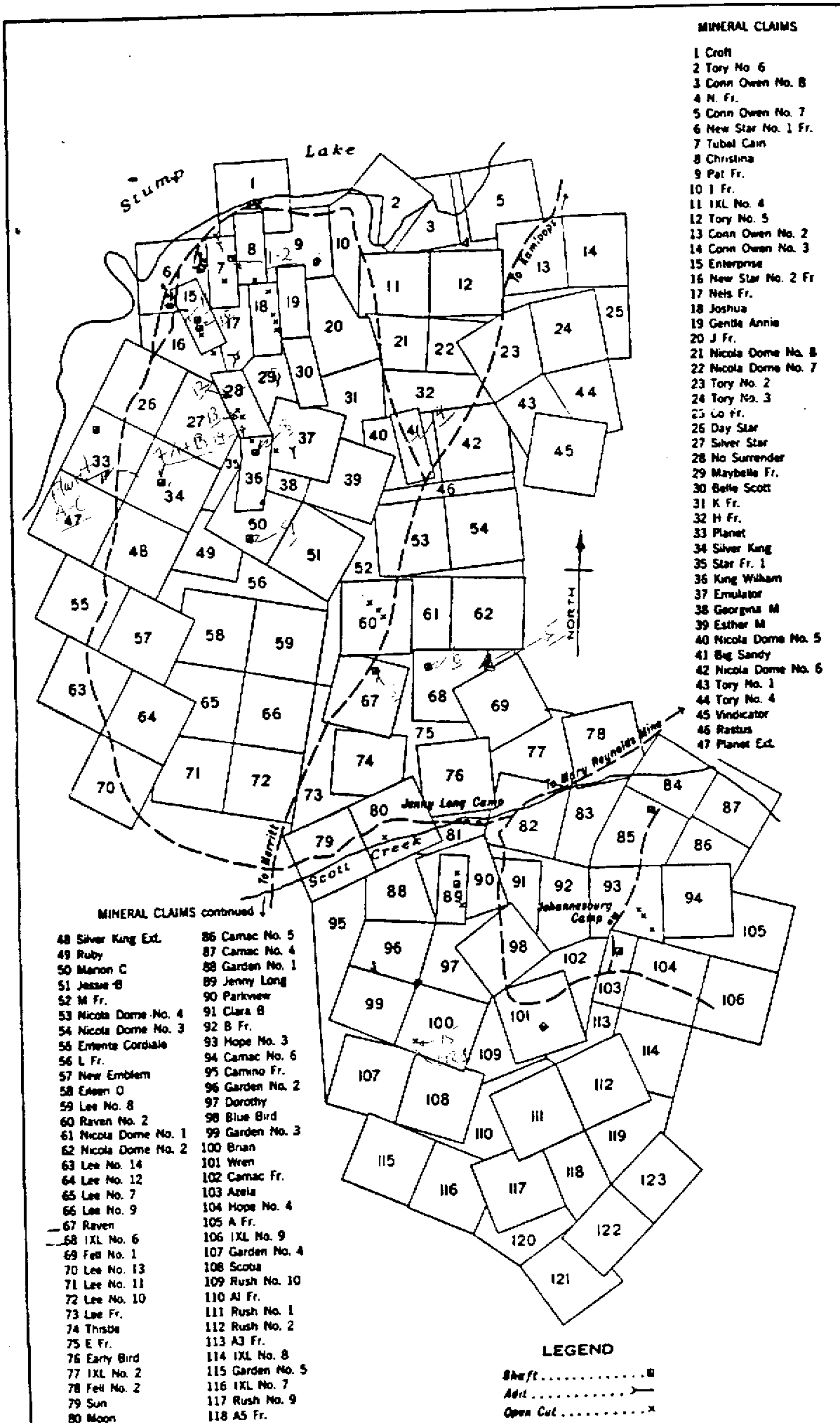
Bondar Clegg
Inchcape Testing Services

Geochemical Lab Report

CLIENT: RIO MINERALS LTD.
REPORT: V96-01714.0 (COMPLETE)

PROJECT: NONE GIVEN
DATE PRINTED: 24-OCT-96

SAMPLE NUMBER	ELEMENT UNITS	Ti PCT	Zr PPM
S1 BL21+60W		0.10	2
Duplicate		0.10	2
JR2		0.07	3
Duplicate		0.06	2
JR24		<.01	<1
Duplicate		<.01	<1


Stump Lake
To Kamloops
To Merritt
Scott Creek
Jenny Long Camp
To Mary Reynolds Mine
Johannesburg Camp
NORTH
MINERAL CLAIMS
1 Croft
2 Tory No 6
3 Conn Owen No. 8
4 N. Fr.
5 Conn Owen No. 7
6 New Star No. 1 Fr.
7 Tubal Cain
8 Christina
9 Pat Fr.
10 I Fr.
11 IXL No. 4
12 Tory No. 5
13 Conn Owen No. 2
14 Conn Owen No. 3
15 Enterprise
16 New Star No. 2 Fr
17 Nels Fr.
18 Joshua
19 Gentle Annie
20 J Fr.
21 Nicola Dome No. 8
22 Nicola Dome No. 7
23 Tory No. 2
24 Tory No. 3
25 Co Fr.
26 Day Star
27 Silver Star
28 No Surrender
29 Maybelle Fr.
30 Belle Scott
31 K Fr.
32 H Fr.
33 Planet
34 Silver King
35 Star Fr. 1
36 King William
37 Emulator
38 Georgina M
39 Esther M
40 Nicola Dome No. 5
41 Big Sandy
42 Nicola Dome No. 6
43 Tory No. 1
44 Tory No. 4
45 Vindicator
46 Rastus
47 Planet Ext.
MINERAL CLAIMS continued
48 Silver King Ext.
49 Ruby
50 Marion C
51 Jessie B
52 M Fr.
53 Nicola Dome No. 4
54 Nicola Dome No. 3
55 Entente Cordiale
56 L Fr.
57 New Emblem
58 Eileen O
59 Lee No. 8
60 Raven No. 2
61 Nicola Dome No. 1
62 Nicola Dome No. 2
63 Lee No. 14
64 Lee No. 12
65 Lee No. 7
66 Lee No. 9
67 Raven
68 IXL No. 6
69 Fell No. 1
70 Lee No. 13
71 Lee No. 11
72 Lee No. 10
73 Lee Fr.
74 Thistle
75 E Fr.
76 Early Bird
77 IXL No. 2
78 Fell No. 2
79 Sun
80 Moon
86 Camac No. 5
87 Camac No. 4
88 Garden No. 1
89 Jenny Long
90 Parkview
91 Clara B
92 B Fr.
93 Hope No. 3
94 Camac No. 6
95 Camino Fr.
96 Garden No. 2
97 Dorothy
98 Blue Bird
99 Garden No. 3
100 Brian
101 Wren
102 Camac Fr.
103 Azela
104 Hope No. 4
105 A Fr.
106 IXL No. 9
107 Garden No. 4
108 Scoba
109 Rush No. 10
110 A1 Fr.
111 Rush No. 1
112 Rush No. 2
113 A3 Fr.
114 IXL No. 8
115 Garden No. 5
116 IXL No. 7
117 Rush No. 9
118 A5 Fr.
LEGEND
Shaft
Adit
Open Cut

GEOPHYSICAL REPORT

ON

<u>VLF-EM AND MAGNETIC SURVEYS</u>

OVER THE

GREENSTONE CLAIMS

STUMP LAKE AREA

NICOLA MINING DISTRICT, BRITISH COLUMBIA

SURVEY PERIOD	:	October, 1996
WRITTEN FOR	:	RIO MINERALS LIMITED Vancouver, British Columbia V6C 2T6
WRITTEN BY	:	David G. Mark, P.Geo., Geophysicist GEOTRONICS SURVEYS LTD. 405 - 535 Howe Street Vancouver, British Columbia V6C 2Z6
DATED	:	January 27, 1997

GEOTRONICS

TABLE OF CONTENTS

SUMMARY 1

INTRODUCTION AND GENERAL REMARKS 2

INSTRUMENTATION 2

(1) VLF-EM Receiver 2

(2) Magnetometer 3

THEORY 3

(1) Magnetics 3

(2) Electromagnetics 3

SURVEY PROCEDURE 4

COMPILATION OF DATA 4

DISCUSSION OF RESULTS 4

GEOPHYSICIST'S CERTIFICATE 6

MAPS IN POCKET

	Scale	Map #
Magnetic Survey		
Contour Plan	2000	GP-1
Profile Plan	2000	GP-2
VLF-EM Survey		
Profile Plan (Tilt Angle and Quadrature)	2000	GP-3
Contour Plan (Fraser-filter)	2000	GP-4

SUMMARY

VLF-EM and magnetic surveys were carried out on 3 different grids over a portion of the Greenstone Claims belonging to Rio Minerals Limited.

The magnetic survey was carried out with a proton precession magnetometer by taking readings every 12.5 m on 50-m separated lines. The readings were in put into a computer, plotted and contoured at a 50-gamma interval on a 1:2,000 base map as well as profiled on a second base map.

The VLF-EM survey was carried out with a VLF-EM receiver also, by taking tilt angle and quadrature readings every 12.5 m on the same 50-m separated lines. The raw data was profiled on one 1:2,000 base map, and also Fraser-filtered and profiled on a second 1:2,000 base map.

The purpose of the work was to determine the extent of the known geophysical mineralized zones as well as to locate other possible mineralized zones. An additional purpose was to map geology especially in how it related to the known mineralization.

GEOPHYSICAL REPORT

ON

VLF-EM AND MAGNETIC SURVEYS

OVER THE

GREENSTONE CLAIMS

STUMP LAKE AREA

NICOLA MINING DISTRICT, BRITISH COLUMBIA

INTRODUCTION AND GENERAL REMARKS

This report discusses the instrumentation, theory, field procedure and results of VLF-EM, and magnetic surveys carried out over the Greenstone Claims belonging to Rio Minerals Limited.

The magnetic survey was carried out by Andrew Molnar, and the VLF-EM survey was carried out by Otto Paesler, both experienced field technicians.

The main purpose of the geophysics was: (1) to determine the response of the magnetic and VLF-EM surveys over the known mineralized zones.. (2) to determine whether the known mineralization has any strike extension, and (3) to locate other mineralized zones.

An additional purpose of the magnetic and VLF-EM surveys was to assist in the mapping of the bedrock geology especially as to how it related to the known mineralization. The magnetic survey was expected to map lithology as well as possibly structure. The VLF-EM survey was expected to map geological structure as conductors.

INSTRUMENTATION

(1) VLF-EM Receiver

The VLF-EM survey was carried out with a VLF-EM receiver, Model EM-16, manufactured by Geonics Ltd. of Toronto, Ontario. This instrument is designed to measure the electromagnetic component of the very low frequency field (VLF-EM), which for this survey is transmitted at 24.8 kHz from Jim Creek, Washington, which is east of Arlington.

(2) Magnetometer

The magnetic survey was carried out with a model G-816 proton precession magnetometer, manufactured by Geometrics Inc. of Sunnyvale, California. This instrument reads out directly in gammas to an accuracy of ±1 gammas, over a range of 20,000 - 100,000 gammas. The operating temperature range is -40° to +50° C, and its gradient tolerance is up to 3,000 gammas per meter.

THEORY

(1) Magnetics

Only two commonly occurring minerals are strongly magnetic -- magnetite and pyrrhotite. Magnetic surveys are therefore used to detect the presence of these minerals in varying concentrations. Therefore, if magnetite or pyrrhotite occurs with economic mineralization, magnetic surveys are used to locate this type of mineralization. Magnetic surveys are also useful as a reconnaissance tool for mapping geologic lithology and structure since different rock types have different background amounts of magnetite and/or pyrrhotite.

(2) Electromagnetics

In all electromagnetic prospecting, a transmitter produces an alternating magnetic field (primary) by a strong alternating current usually through a coil of wire. If a conductive mass such as a sulphide body is within this magnetic field, a secondary alternating current is induced within it which in turn induces a secondary magnetic field that distorts the primary magnetic field. It is this distortion that the EM receiver measures. The VLF-EM uses a frequency range from 15 to 30 kHz, whereas most EM instruments use frequencies ranging from a few hundred to a few thousand Hz. Because of its relatively high frequency, the VLF-EM can pick up bodies of a much lower conductivity and therefore is more susceptible to clay beds, electrolyte-filled fault or shear zones and porous horizons, graphite, carbonaceous sediments, lithological contacts as well as sulphide bodies of too low a conductivity for other EM methods to pick up. Consequently, the VLF-EM has additional uses in mapping structure and in picking up sulphide bodies of too low a conductivity for conventional EM methods and too small for induced polarization. (In places it can be used instead of IP). However, its susceptibility to lower conductive bodies results in a number of anomalies, many of them difficult to explain and, thus, VLF-EM preferably should not be interpreted without a good geological knowledge of the property and/or other geophysical and geochemical surveys.

SURVEY PROCEDURE

The survey lines were placed in an east-west direction 50 m apart with stations marked every 25 m.

For the ***magnetic survey***, readings of the earth's total magnetic field were taken every 12.5 m along the survey lines for a total survey length of 6,050 meters.

The diurnal variation was monitored in the field by the closed loop method to enable the variation to be removed from the raw data prior to plotting.

For the ***VLF-EM survey***, the tilt angle and quadrature readings of the electromagnetic field from the transmitter station, Seattle (Jim Creek) at 24.8 kHz, were also taken at the 12.5 m stations. The survey length was also 6,050 meters.

COMPILATION OF DATA

The magnetic data were input into a computer, and then plotted, with 56,000 nT (gammas) subtracted, and contoured onto a plan map, GP-1. The contour interval chosen was 50 nT. The data were also profiled onto a plan map of the same scale, numbered GP-2, but with a vertical scale of 1 cm = 100 nT using a base of 56,850 nT.

The Seattle VLF-EM data were also input into a computer, 4-point Fraser-filtered, and then plotted and contoured at an interval of 5 degrees onto a plan map and numbered GP-3. In addition, the tilt angle and the quadrature were each profiled at a vertical scale of 1 cm = 20° onto a plan map numbered GP-4.

All of the above data reduction was carried out using software produced by Geosoft of Toronto, Ontario.

DISCUSSION OF RESULTS

The **VLF-EM survey** has revealed four main conductors each trending in a northerly direction across the survey area. For ease of discussion purposes, they have been labeled by the lower case letters, 'a' to 'd', respectively. As mentioned above, the probable causative source of each of them is geological structure such as faults, shear zones and/or contact zones.

The northern part of ***conductor 'a'*** correlates directly with the Jenny Long workings. Therefore, the two main possible causes of 'a' is either the mineralization itself or geological structure associated with the mineralization with the greater likelihood being the latter.

Either way, the suggestion is that the mineralization extends to the north and to the south along conductor 'a'. Its strike length is at least 400 m long and thus there is potential for mineralization along the 400-m length.

Conductor 'b' occurs to the immediate west of conductor 'a' and has a minimum strike length of 500 meters with it being open to both the north and to the south. It is possible that 'b' is also associated with mineralization.

Conductor 'c,' which occurs to the west of 'b' also has a minimum strike length of 500 meters being open to both the north and to the south. It could also be reflecting mineralization. However, this conductor is more complex in that it appears to be reflecting structure that crosses each other. Where structure crosses is always of exploration interest since these areas are more likely places of mineral deposition.

Conductor 'd' has similar characteristics as conductor 'c' except it occurs on the eastern edge of the survey area. Thus it also is of exploration interest.

The **magnetic survey** indicates a magnetic field that is relatively flat ranging in values from 56,672 nT to 57,016 nT which is a range of only 344 nT. This shows the underlying greenstones are magnetically quiet.

The center of the survey area has a magnetic field that is relatively low with it being higher on both east and west edges. This is probably just a reflection of magnetic variation within the greenstones. However, there is a small high that correlates with the Jenny Long workings that indicates that magnetite or pyrrhotite may be associated with the mineralization.

Two lineal-shaped magnetic lows occur within the survey area that may reflect faulting or shearing. One trends northerly and occurs at about 90W. The other trends northeasterly and occurs at about 1550N, 150E to 1750N, 225E and thence to 2000N, 225E.

Respectfully submitted,
GEOTRONICS SURVEYS LTD.

PROFESSIONAL
PROVINCE OF
D.G. MARK
BRITISH COLUMBIA
GEOSCIENTIST

David G. Mark, P.Geo.,
Geophysicist

GEOPHYSICIST'S CERTIFICATE

I, DAVID G. MARK, of the City of Vancouver, in the Province of British Columbia, do hereby certify that:

I am a Consulting Geophysicist of Geotronics Surveys Ltd., with offices at #405 - 535 Howe Street, Vancouver, British Columbia.

I further certify that:

1. I am registered as a Professional Geoscientist with the Association of Professional Engineers and Geoscientists of the Province of British Columbia.

2. I am a graduate of the University of British Columbia (1968) and hold a B.Sc. degree in Geophysics.

3. I have been practicing my profession for the past 29 years, and have been active in the mining industry for the past 32 years.

4. This report is compiled from data obtained from magnetic and VLF-EM surveys carried out over the Greenstone Claims during October, 1996. The two surveys were done by Andrew Molnar and Otto Paesler, respectively, and the data brought to me to reduce, to interpret, and to write a report on.

5. I do not hold any interest in Rio Minerals Limited, nor in the property discussed in this report, nor do I expect to receive any interest as a result of writing this report.

PROFESSIONAL GEOSCIENTIST
PROVINCE OF
D.G. MARK
BRITISH COLUMBIA

DAVID G. MARK, P.Geo.,
Geophysicist

January 27, 1997

BRITISH COLUMBIA
PROSPECTORS ASSISTANCE PROGRAM
PROSPECTING REPORT FORM (continued)

B. TECHNICAL REPORT

- One technical report to be completed for each project area.
- **Refer to Program Requirements/Regulations, section 15, 16 and 17.**
- If work was performed on claims a copy of the applicable assessment report may be submitted in lieu of the supporting data (*see* section 16) required with this TECHNICAL REPORT.

Name Andrew Molnar Reference Number 96/97 P31

LOCATION/COMMODITIES

Project Area (as listed in Part A) Stump Lake MINFILE No. if applicable 92ISE108-115

Location of Project Area NTS 92I/8W Lat 50°20' N Long 120°22' W

Description of Location and Access On the South and East side of Stump Lake, East side of Hwy 5A, equidistant between Kamloops and Merritt.

Main Commodities Searched For Au, Ag, Pb, Zn, Cu.

Known Mineral Occurrences in Project Area Several past producers: King William, Tubal Cain, Planet Mine, Jenny Long, Joshua

WORK PERFORMED

1. Conventional Prospecting (area) 12.0 square Km.
2. Geological Mapping (hectares/scale) 102 Ha 1:2,000
3. Geochemical (type and no. of samples) 51 rock samps. 7 stream seds
4. Geophysical (type and line km) Mag/VLF 6.1 Km @ 12.5 m spacing
5. Physical Work (type and amount) Claim staking, Trench rehab, prosp. mapping grid 18.75 Km
6,. Drilling (no,. holes, size, depth in m, total m) —
7. Other (specify) Mag/VLF, Geochem, assay. rock samps.

SIGNIFICANT RESULTS

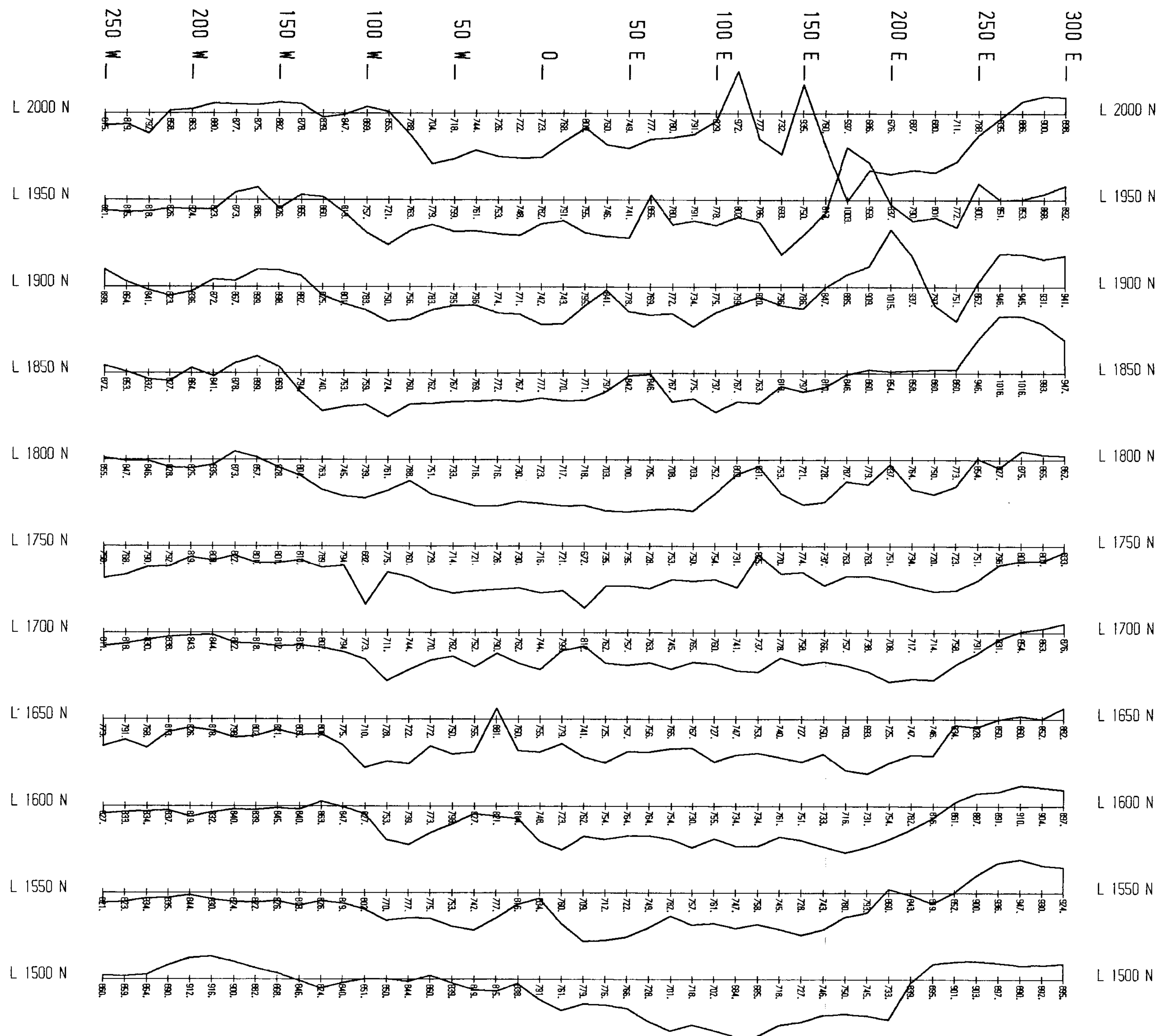
Commodities Au, Ag, Pb, Zn, Cu Claim Name Greenstone 1-3

Location (show on map) Lat 50° 19' N Long 120° 22' W Elevation 800 m

Best assay/sample type 4.50 oz/t Au. 2m chip across trench.

Description of mineralization, host rocks, anomalies Polymetallic quartz-sulphide assemblages, mesothermal to epithermal in character. Pyrite, chalco, sphalerite, tetrahedrite, lesser amounts of bornite, scheelite, arsenopyrite, pyrrhotite, and native gold. Shear hosted bulk tonnage precious metal deposits underlying glacial till and skarn or limestone hosted metal deposits may also be present.

Supporting data must be submitted with this TECHNICAL REPORT
Information on this form is confidential for one year from the date of receipt subject to the provisions of the *Freedom of Information Act.*



Data Reduction by:
GEOTRONICS SURVEYS LTD.
VANCOUVER B.C.

Scale 1:2000
25 0 25 50 75 100
(metres)

Scale 1:2000
100 0 100 200 300 400
(feet)

SURVEY LEGEND

Instrumentation:
Geometrics Magnetometer
Model G-816

Survey Date: October 1996

Surveyed by: Andrew Molnar

Data Reduction:
Geotronics Surveys Ltd.

Note:
56,000 nT (gammas) has been deducted from each posted value.

Profile Scale: 1 cm = 100 nT (base = 56,850nT

PROFESSIONAL GEOSCIENTIST — PROVINCE OF BRITISH COLUMBIA — D.G. MARK

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RIO MINERALS LTD.

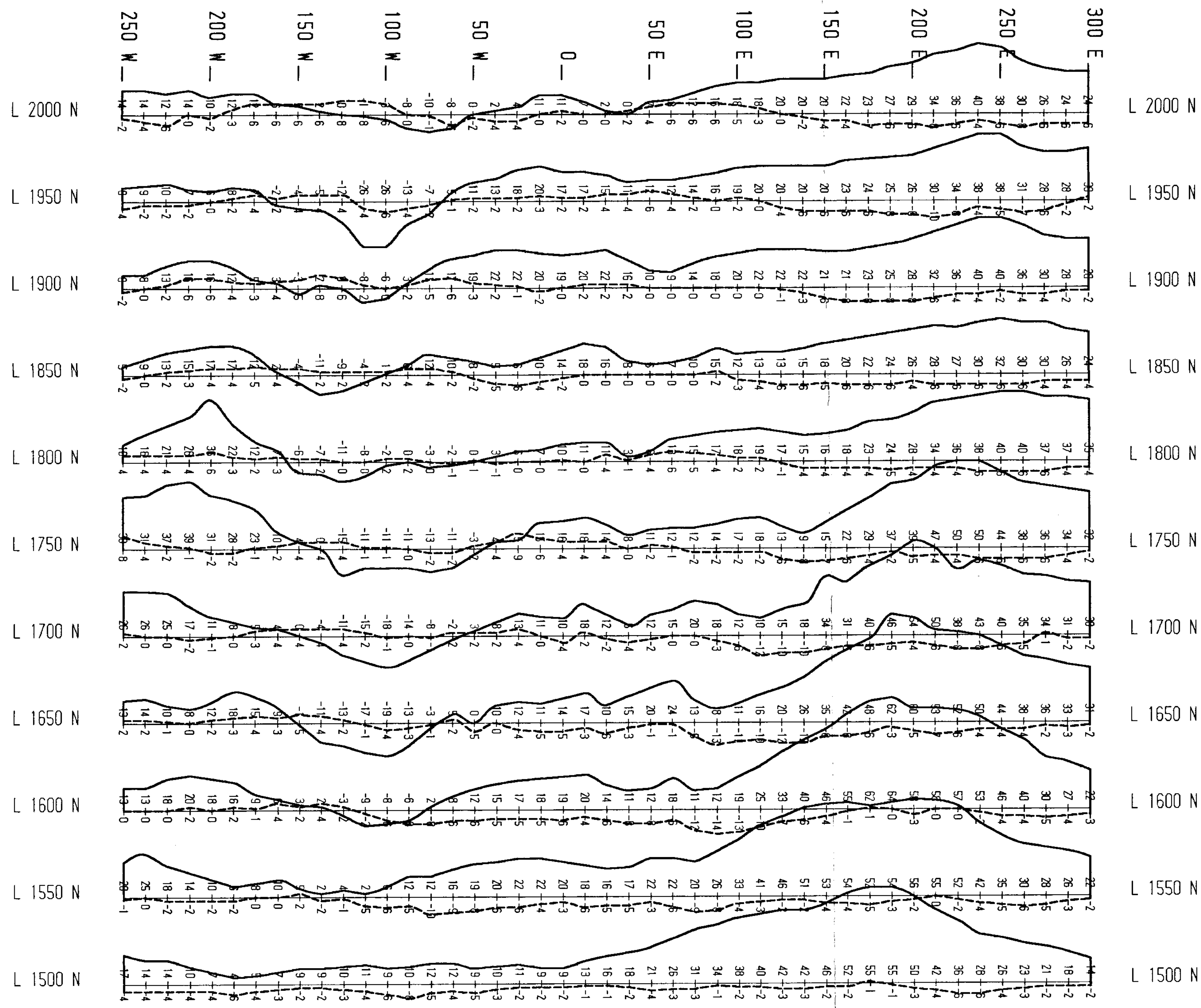
GREENSTONE CLAIMS

Stump Lake Area
Nicola Mining Division, B.C. 96-15

MAGNETIC SURVEY PROFILE PLAN

②

Drawn by:	Job No.	NTS	Date	Map No.
RTM	97/03	92I/8W	JAN. 97	GP-2



Instrumentation:
Geonics VLF-EM Receiver
Model EM-16

Survey Date: October 1996

Transmitter:
Jim Creek, Washington (24.8 kHz)
Bearing: S.W.

Data reduction:
Geotronics Surveys Ltd.

Surveyed By: Otto Paesler

VLF Profiles & Vertical Scale:
——— Tilt angle (1 cm = 20 deg)
– – – Quadrature (1 cm = 20 deg)

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Geotronics Surveys Ltd.

RIO MINERALS LTD.

GREENSTONE CLAIMS
Stump Lake Area
Nicola Mining Division, B.C. 96-15

VLF-EM SURVEY
PROFILE PLAN (3)

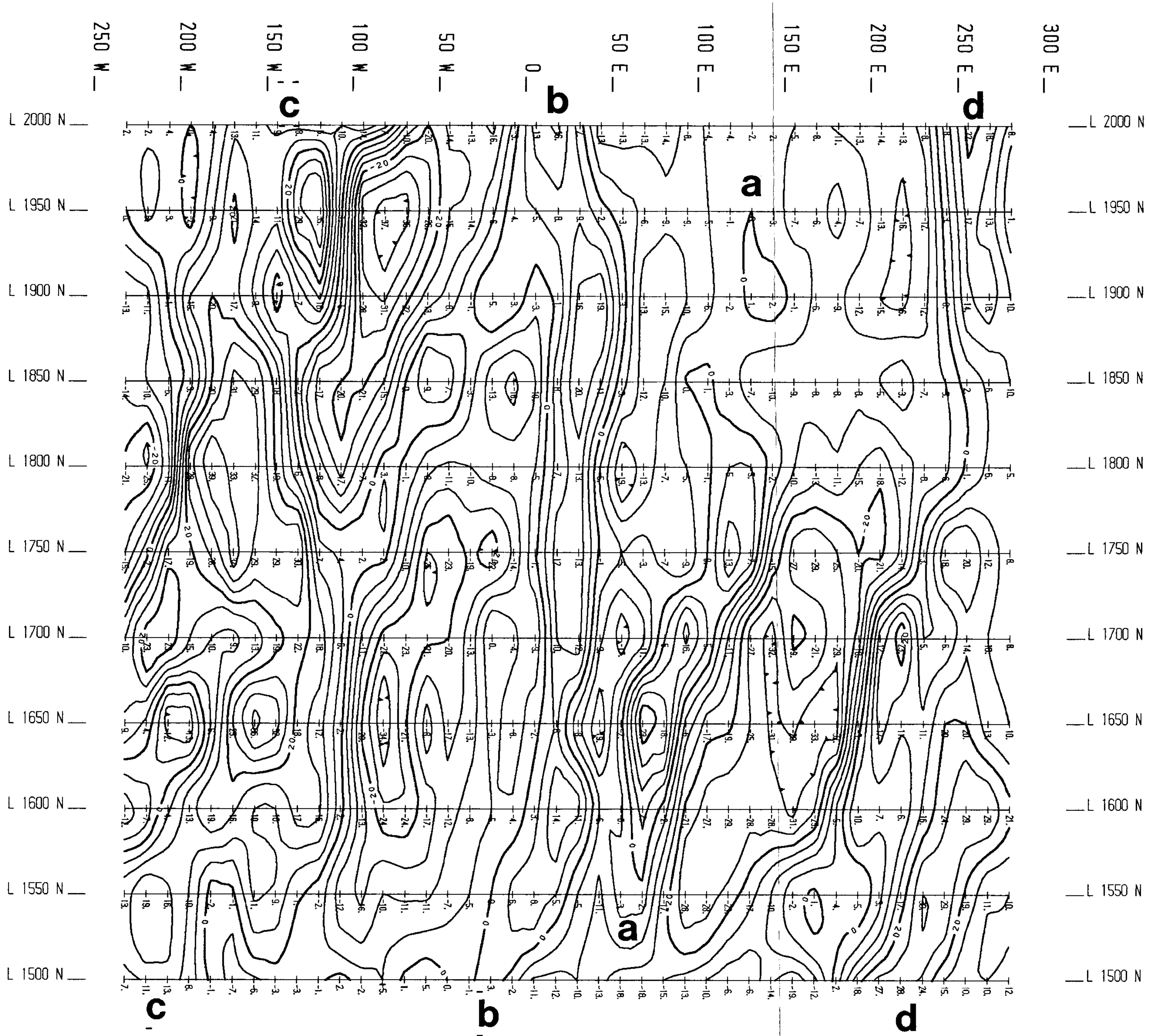
Drawn by:	Job No.	NTS	Date	Map No.
RTM	97/03	92I/8W	JAN. 97	GP-3

Data Reduction by:
GEOTRONICS SURVEYS LTD.
VANCOUVER B.C.

Geotronics

Scale 1:2000
25 0 25 50 75 100
(metres)

Scale 1:2000
100 0 100 200 300 400
(feet)



Instrumentation:
Geonics VLF-EM Receiver
Model EM-16

Survey Date: October, 1996

Transmitter:
Jim Creek, Washington (24.8 kHz)
Bearing: S.W.

Data reduction:
Geotronics Surveys Ltd.

Surveyed By: Otto Paesler

Contour Interval: 5 deg.

PROFESSIONAL GEOSCIENTIST
PROVINCE OF BRITISH COLUMBIA
D.G. MARK

Data Reduction by:
GEOTRONICS SURVEYS LTD.
VANCOUVER B.C.

Scale 1:2000
25 0 25 50 75 100
(metres)

Scale 1:2000
100 0 100 200 300 400
(feet)

Geotronics Surveys Ltd.

RIO MINERALS LTD.

GREENSTONE CLAIMS

Stump Lake Area
Nicola Mining Division, B.C. 96-15

VLF-EM SURVEY
FRASER FILTERED PLAN

(4)

Drawn by:	Job No.	NTS	Date	Map No.
RTM	97/03	92I/8W	JAN. 97	GP-4


D.D HOLES ?
HEADFRAME
CAT TRENCHES
600 m FROM B/L - OFF GRID
CAT TRENCHES
QUARTZ VEINS.
OFF GRID
550 m FROM B/LINE
SEDIMENTS
FLOAT
BASE/LINE
CORNER
POST
GREENSTONE
#2 + #3
B/LINE
L20+00N
L19+50N
L19+00N
L18+50N
L18+00N
L17+50N
L17+00N
L16+50N
L16+00N
L15+50N
L15+00N
L14+00N
L13+00N
L12+00N
L11+00N
L10+00N
L09+00N
L08+00N
L07+00N
L06+00N
L05+00N
L04+00N
L03+00N
L02+00N
L01+00N
L00+00N
GREENSTONE GROUP
STUMP LAKE
NICOLA MINING DIVISION
LAT. 50° 20' N LONG 120° 22' W
N.T.S 92I/8W
SAMPLE LOCATION
50
0
100
200
300
METERS
N
FAULT
QUARTZ VEIN
SHAFT
HEADFRAME
MILLSITE
ROAD / TRAIL
TRENCH
DIAMOND DRILL SITE
TAILINGS
SAMPLE LOCATION
FLOAT SEDIMENTS
INTRUSIVE
WASTE ROCK
DECLINE
22
96-15
5