81-#212-#9069

GEOLOGICAL EVALUATION

AND

EXPLORATION PROGRAM

TROUT LAKE PROJECT

REVELSTOKE MINING DIVISION

SOUTHEASTERN BRITISH COLUMBIA

82 K / 11W

50°34.5 N 117°20 W

for

GOLDEN RULE RESOURCES LTD.

Calgary, Alberta

by

R. K. Netolitzky, P.Geol.

TAIGA CONSULTANTS LTD.

Calgary, Alberta

MARCH 1981

C E R T I F I C A T E

I, the undersigned, of the City of Calgary in the Province of Alberta, do hereby certify that:

1. I am a consulting geologist with the firm of Taiga Consultants Ltd. with office at #100, 1300 - 8th Street S.W., Calgary, Alberta;

2. I am a graduate of the University of Alberta, B.Sc. in Geology (1964), and of the University of Calgary, M.Sc. in Geology (1967);

3. I have practised my profession continuously for fourteen years since 1967;

4. I am a member in good standing of the Association of Professional Engineers, Geologists and Geophysicists of Alberta;

5. I personally visited the claims during October 1980, and supervised the field work thereon conducted; and

6. I have prepared this report at the request of Mr. Glen Harper, whose offices are located at #150, 1300 - 8th Street S.W., Calgary, Alberta.

DATED at Calgary, Alberta, this 23rd day of March, 1981

PROFESSIONAL GEOLOGIST ALBERTA
R. K. NETOLITZKY

Respectfully submitted,

R. K. Netolitzky, M.Sc., P.Geol.

S U M M A R Y

The property consists of five mineral claims (the BUG 2, and BUG 6 to 9 mineral claims) which total 94 units.

The Trout Lake project area is located in the Kootenay Arc near Trout Lake in the Lardeau district of southeastern British Columbia. The Kootenay Arc is a complex geological zone more than 100 km in length that contains several hundred precious metal and base metal occurrences. A number of these occurrences in the Trout Lake area are former precious metals producers. The best-known of these is the old Sunshine-Lardeau mine.

The soil sampling program located one strong anomaly which requires further detailed evaluation, and a number of weaker responses which require further checking.

TABLE OF CONTENTS

INTRODUCTION

Property, Location, and Access

The Trout Lake gold project properties consist of five mineral claims staked under the modified grid system. The claims are located in the Revelstoke and Slocan Mining Divisions in southeastern British Columbia (Figure 1). They are situated along Silver Cup Ridge approximately 6 km northeast of Trout Lake in the Lardeau district. The various claims are described more specifically as follows:

Claim Name	Record Number	Owner	No. of Units	Record Date
Bug 2	883(3)	Golden Rule Resources Ltd.	18	
Bug 6	884(3)		16	
Bug 7	885(3)		20	
Bug 8	886(3)		20	
Bug 9	887(3)		20	

The status of ownership of the above claims has been checked personally by the writer.

The contiguous block of claims is accessable via a maintained gravel road along the northeast side of Trout Lake to a point 29 km south of Beaton. A four-wheel-drive road between Laughton and Rady Creeks gives road access to the centre of the claim group.

Posts and blazed lines relating to the Bug claims were observed during the reconnaissance geochemical program.

Physiography

The claims are located along the crest and southwesterly facing flanks of Silver Cup Ridge in the Columbia Mountains. Elevations on the property range from 1678 m (5800') ASL to 2470 m (8100') ASL. Most of the property is situated over alpine tundra. The slopes facing Trout Lake are very steep and are covered with a thick growth of spruce, fir, balsam, and underbrush. The headwaters of the Burg, Laughton, and Rady Creeks drain the claims.

FIGURE 1

PROPERTY LOCATION MAP

N.T.S. 82 K/11 W

SCALE 1:50,000

The region has been glaciated to an elevation of at least 2500 m (8200') ASL and Triune and Silver Cup peaks form prominent horns above this elevation. Most valleys exhibit evidence of glaciation, and cirques, arêtes, and serrated razorback ridges are common. The lower slopes of mountains are covered with variable thicknesses of glacial deposits, resulting in only fair to poor bedrock exposure.

GEOLOGY

Relevant Published Geological Data

The first geological map of the area was published in 1929 and accompanies GSC Memoir 161. Numerous descriptions of mineral occurrences in the region appear in British Columbia Minister of Mines Annual Reports, chiefly from 1890 to 1914. Other descriptions appear in GSC Summary Reports and Annual Reports and are referenced in more detail elsewhere in this report. Excellent descriptions of the regional geology and mineral deposits are included in British Columbia Department of Mines Bulletin 45. GSC Bulletin 193 includes much relevant geological information. The most useful and up-to-date work is included in GSC Open File 531, published in 1978.

Regional Geology

The Trout Lake gold project area lies within a geologically and structurally complex zone known as the Kootenay Arc, which forms part of the Purcell Anticlinorium in the southern Rocky Mountains. In the Trout Lake area, the Kootenay Arc is comprised of interbedded sedimentary and volcanic rocks of late Proterozoic to Mesozoic age, which have been subjected to multiple phases of deformation, metamorphism, and intrusion. The Trout Lake claims are underlain by mafic volcanics, fine-grained argillaceous and siliceous sediments, grits, and carbonates of the Lardeau Group of lower Cambrian to middle Devonian age. These rocks have been subjected to at least one episode of metamorphism and now consist of greenstone, limey green phyllite, phyllitic grit and phyllite, quartzite and quartz grit, limestone, and phyllitic limestone (Figure 3). Read (1973) has mapped two phases of deformation in the area.

The Broadview, Jowett, Sharon Creek, Ajax, Triune, and Index Formations are of chief importance in the project area. Considerable difficulties attend the separation and correlation of these units owing to their similarities in composition, rapid facies changes laterally and along strike, lack of fossil controls, and repetition of sequences through faulting and folding.

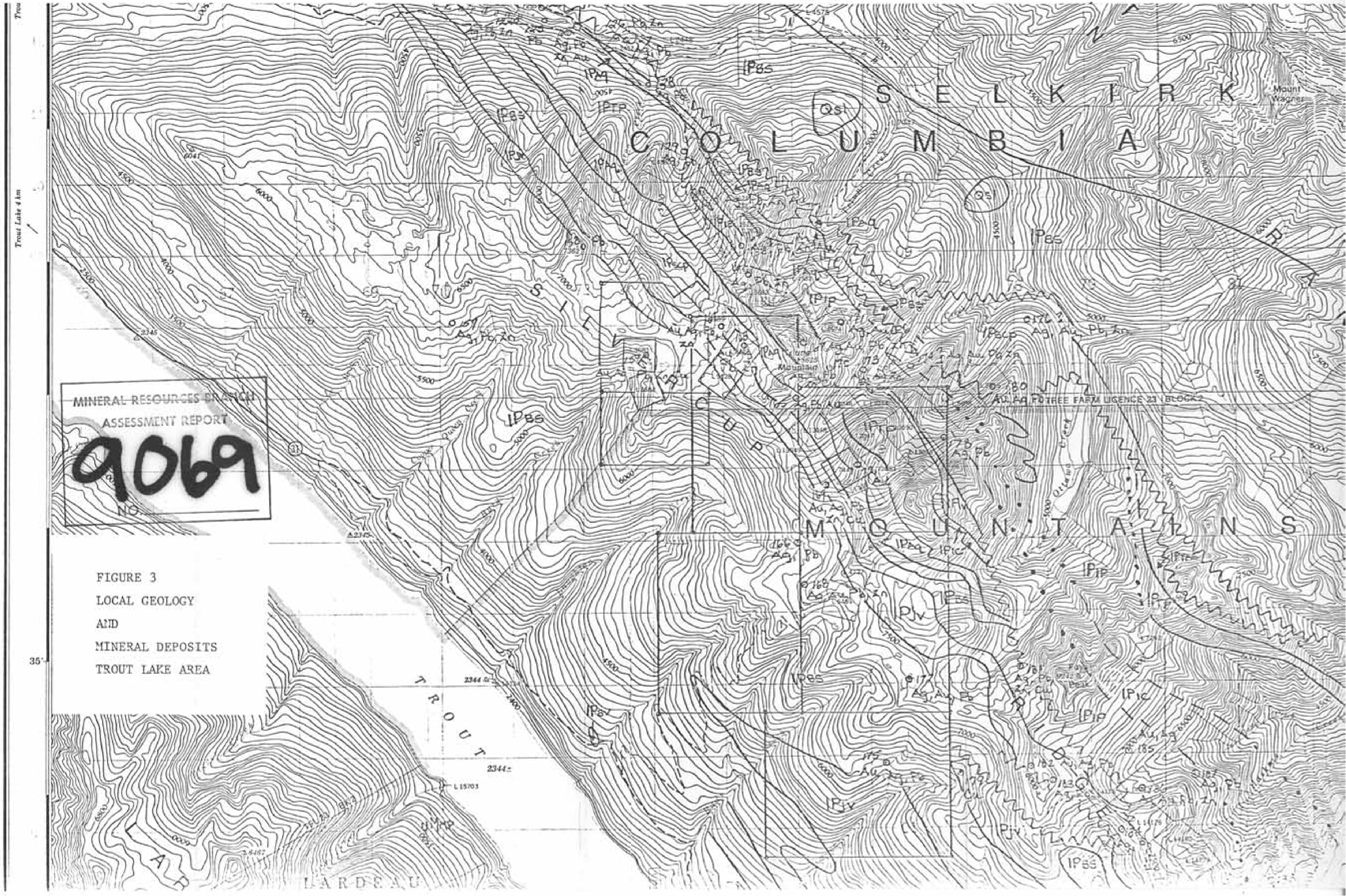


FIGURE 3
LOCAL GEOLOGY
AND
MINERAL DEPOSITS
TROUT LAKE AREA

The following notes, excerpted from GSC Open File 531, illustrate some of the complexities of the area:

> The unfossiliferous Lardeau Group of presumed lower to middle Paleozoic age forms a broad belt northeast of the Kuskanax
> batholith and extends eastward into Lardeau east-half (Reesor, 1973), and northward into Rogers Pass (Wheeler, 1963). The
> detailed stratigraphy of Fyles and Eastwood (1962) is used with some modifications. Sufficient observations of graded bedding
> determinations between Akolkolex and Incomappleux Rivers indicate the stratigraphic order of Fyles and Eastwood is upright.
> Grey and light green phyllite (lPip) and phyllitic limestone (lPic) dominate eastern exposures of the Index Formation, but
> on the southeast side of Akolkolex River, these rocks undergo a lateral facies change and pass southwestward into quartz grit
> and gritty phyllite (lPigr). Layered dark green phyllite, commonly calcareous, and greenstone with rare pillows or volcanic
> breccia, comprise the uppermost member (lPiv) of the Index Formation. Conformably overlying the Index Formation is dark
> grey to black siliceous phyllite divided by the massive, grey Ajax quartzite (lPAq) into the lower Triune Formation (lPtp)
> and the upper Sharon Creek Formation (lPSCp). Because of probable original variations in thickness of the Triune, Ajax
> and Sharon Creek Formations and later intense deformation, each of these formations ranges from a few tens to a few thousands
> of feet in thickness. Along the drainage divide between the Akolkolex and Incomappleux Rivers, detailed mapping shows these
> three formations pass southwestward through a lateral facies change into grit of the Index Formation (Read, 1975). Farther
> southeast, this facies change and faulting restrict Triune, Ajax, and Sharon Creek Formations to the area northeast of Lardeau
> River and Trout Lake. Layered green phyllite, locally limy, and greenstone of the Jowett Formation (lPjv) are litholog-
> ically indistinguishable from the uppermost volcanic member (lPiv) of the Index Formation. These two volcanic units have
> been distinguished because of the intervening, and previously presumed unique sequence of Triune, Ajax, and Sharon Creek
> Formations. Recent detailed mapping shows rocks similar to the Triune-Sharon Creek interval in the overlying Broadview
> Formation on the southwest side of lower Sable Creek and in a belt which extends from the head of Horsefly Creek to the lower
> part of Lake Creek. In the drainage area of Lardeau Creek and Lardeau River and Lake Creek, volcanics of the Index Formation
> (lPiv) are present where Jowett Formation (lPjv) is absent and vice versa. Because of lithologic similarities between the
> two units and antithetic distribution, further work may prove they are the same unit. Grey and light green phyllite, gritty
> phyllite, grit (lPBs), and minor limestone (lPBc) compose the Broadview Formation. Metavolcanic rocks formerly mapped with
> the Broadview Formation (Fyles and Eastwood, 1962; Read, 1973), now are included in the Jowett Formation (lPjv). Because rocks
> of the Broadview Formation are similar to the Horsethief Creek Group and consist of unfossiliferous and dominantly quartzo-
> feldspathic grit composed of materials derived from a plutonic or high grade metamorphic terrain, the Broadview Formation has
> been correlated with the Horsethief Creek Group (Wheeler, 1968; Read, 1973). This correlation necessitates allochthonous
> emplacement of the Broadview Formation above the Hamill, Badshot and other units of the Lardeau Group. Recent mapping (Read,
> 1975) indicates a lateral facies change from phyllite and phyllitic limestone to gritty rocks which makes a tectonic contact
> between grits of the Broadview Formation and other rocks unlikely. In the Lardeau Group, the westward lateral facies change
> from phyllites of the Index, Triune, and Sharon Creek Formations on the northeast to gritty rocks of the Index and Broadview
> Formations on the southwest, implies a westerly source, possibly in the site of the present Shuswap Complex, to contribute
> detritus from plutonic and/or high grade metamorphic rocks.

Perhaps the most important points to note are the suggested equivalence of the Jowett and Index Formations and the implied correlation of the Broadview Formation with the Sharon Creek, Ajax, and Triune Formations.

Detailed descriptions of the major geologic units in the project area have been excerpted from British Columbia Department of Mines Bulletin 45 by J. T. Fyles and are included as an appendix. Since Fyles' division of units was somewhat different from Read's (Open File 531), Fyles' Table of Formations is also appended.

Economic Geology

The Kootenay Arc is a metallogenic province hosting several hundred known precious metal occurrences in the Kaslo, Slocan, Lardeau, and other districts. In the Trout Lake area, mineral occurrences lie along three fairly well-defined belts variously referred to by earlier authors as the Lime Dyke Belt (easternmost belt), the Central Belt (in which the Trout Lake project area is situated), and the Southwestern Belt. Numerous precious metals prospects and more than a dozen former producing mines are situated in the immediate vicinity of the Trout Lake project area (Figure 4).

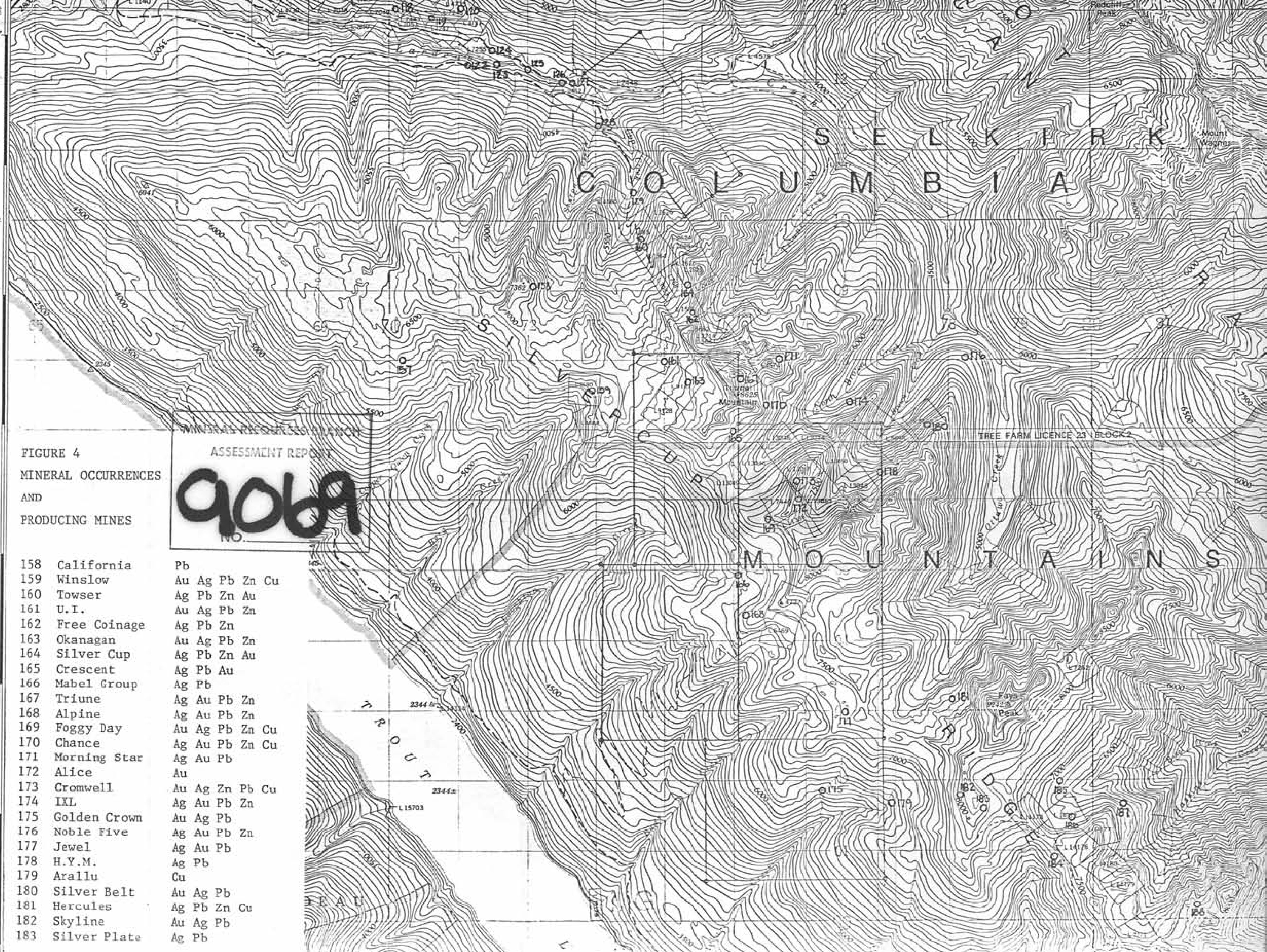


FIGURE 4

MINERAL OCCURRENCES AND PRODUCING MINES

158	California	Pb
159	Winslow	Au Ag Pb Zn Cu
160	Towser	Ag Pb Zn Au
161	U.I.	Au Ag Pb Zn
162	Free Coinage	Ag Pb Zn
163	Okanagan	Au Ag Pb Zn
164	Silver Cup	Ag Pb Zn Au
165	Crescent	Ag Pb Au
166	Mabel Group	Ag Pb
167	Triune	Ag Au Pb Zn
168	Alpine	Ag Au Pb Zn
169	Foggy Day	Au Ag Pb Zn Cu
170	Chance	Ag Au Pb Zn Cu
171	Morning Star	Ag Au Pb
172	Alice	Au
173	Cromwell	Au Ag Zn Pb Cu
174	IXL	Ag Au Pb Zn
175	Golden Crown	Au Ag Pb
176	Noble Five	Ag Au Pb Zn
177	Jewel	Ag Au Pb
178	H.Y.M.	Ag Pb
179	Arallu	Cu
180	Silver Belt	Au Ag Pb
181	Hercules	Ag Pb Zn Cu
182	Skyline	Au Ag Pb
183	Silver Plate	Ag Pb

Of these, the Mabel Group (166), Alpine (168), Alice (172), Jewel (177), and H.Y.M. (178) occurrences are covered (Figure 4) by properties constituting part of the Trout Lake gold project (Numbers in parentheses refer to the number designating the occurrences on Figure 4). Of these occurrences, the H.Y.M. is a former producer. Due to the remoteness and inaccessibility of the deposits in the early days of their development, former production consisted mainly of "high-grading" the ore. The Silver Cup (164), Triune (167), and Winslow (159) were the most important producers in the vicinity of the project area. Less than 100,000 tons of ore were produced from the Silver Cup, and less than 10,000 tons of ore were produced from each of the Triune and Winslow mines.

All of the prospects and former producers are vein-type occurrences exhibiting strikes varying from northwesterly and north-northwesterly to northerly, north-northeasterly, and northeasterly. Dips are 60^{o}-70^{o} on average. Mineralization in most occurrences consists of galena, sphalerite, pyrite, and occasionally chalcopyrite in a quartz and carbonate gangue. High silver values accompany the galena-rich veins whereas high gold values generally run with pyrite in veins containing a relatively lesser abundance of galena. The various deposits in the belt can be crudely categorized as Au-Ag or Ag-Au deposits, depending upon the relative importance of the precious metals in the deposits. Ag, Pb or Ag, Pb, Zn, Cu deposits with neglitible Au values occur more frequently than do Au deposits with negligible Ag values. However, no coherent pattern of zoning is obvious in the distribution of metals in the various deposits.

1980 FIELD PROGRAM

The 1980 field program was conducted between September 27 and October 9, 1980. Personnel involved were:

Ronald K. Netolitzky, M.Sc., P.Geol.
Robert W. Termuende, P.Geol.
Don McMillan, Senior Prospector
Mike Morin, Senior Prospector
J. Kraljic, Sampler
T. Termuende, Sampler
R. Green, Sampler
D. Thompson, Sampler
P. Revie, Sampler

The field program consisted primarily of geochemical sampling and geological observations. Chain- and transit-controlled baselines were completed on the Bug 8 claim for use as control for mapping and geochemical sampling. Soil sampling was conducted on the Bug 2, 8, and 9 claims with a few samples collected from the northeast corner of the Bug 7 claim. Stream silt samples were collected from Laughton Creek and the creek between Laughton and Rady Creeks. Other scattered stream silt samples were also collected. The location of samples and baselines is indicated on Fig.5. On soil samples, wherever soil development allowed, the B_1 horizon was collected. No work was completed on the Bug 6 claim.

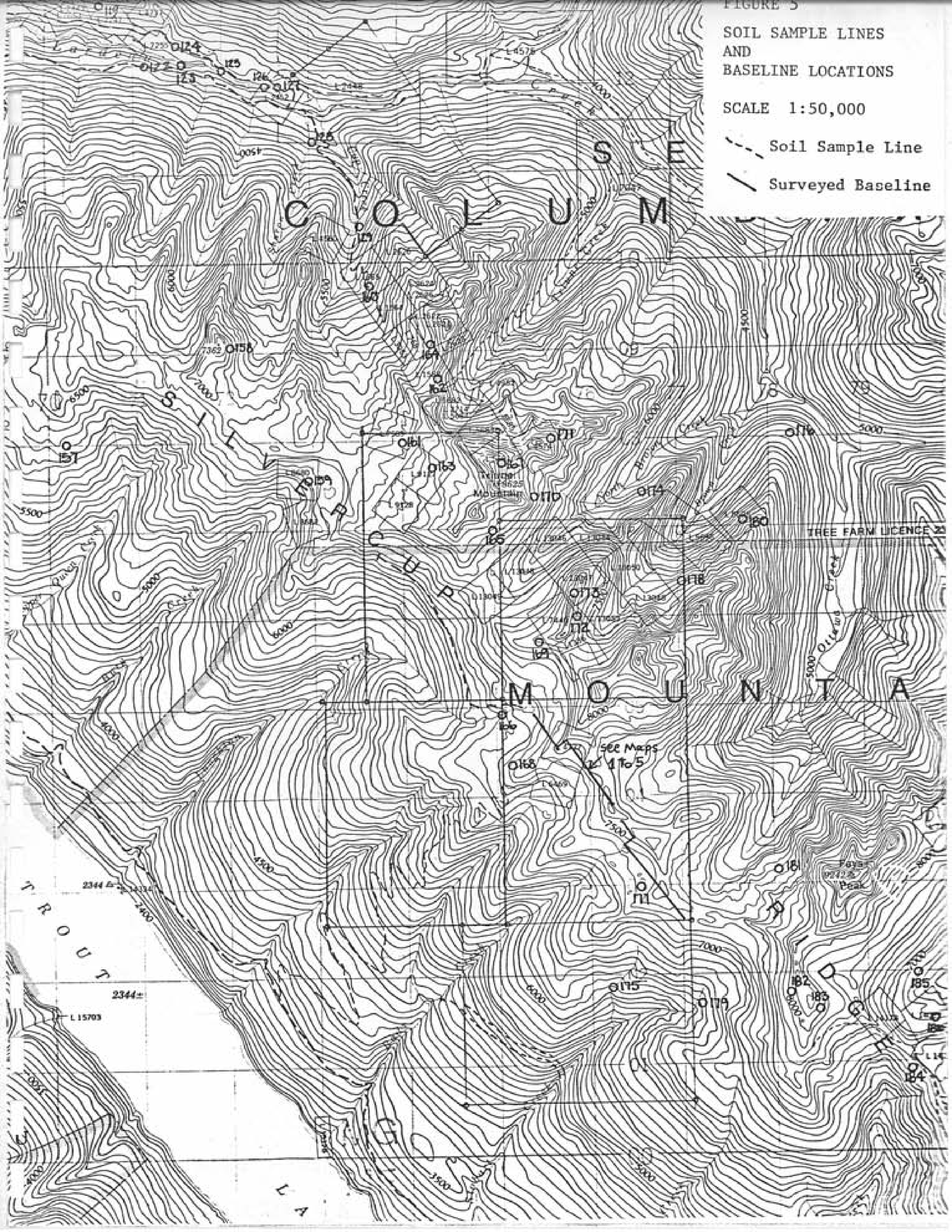


FIGURE 5

SOIL SAMPLE LINES AND BASELINE LOCATIONS

SCALE 1:50,000

Soil Sample Line

Surveyed Baseline

BUG 2 CLAIM

Exploration Completed

A northwest trending line of soil samples was collected through the claim at 50 metre intervals. Streal silt samples were collected along Laughton Creek within the claim. The soil sampling analytical results are presented on Figures 6 to 11. A total of 38 soil samples were collected with a total of 10 stream silt samples along Laughton Creek. The analyses are presented in the appendices. Soil samples were analyzed for Au by standard organic solvent AA techniques with Cu, Pb, Zn, and Ag analyzed by standard AA techniques. Stream silt samples were analyzed for 11 elements. Au was determined by standard organic solvent AA techniques; As was determined by standard colorimetric methods; Cu, Co, Cr, Pb, V, Zn, Mn, Fe, and Ag were determined by ICP methods.

Analytical Results

Soil Sampling. No strongly anomalous metal values are evident. Sample sites TR-14 and TR-15 returned anomalous values in Pb and Zn with site TR-16 being anomalous in Ag. This are may warrant a cursory examination. Sample TR-39 returned the highest Au value of 90 ppb. No other metal association is evident. Sample TR-41 returned the best Ag value of 2.7 ppm . Slightly elevated levels of Zn, Cu, and Pb are present in the same sample.

Stream Silt Sampling. Sample T-11 indicates elevated Zn levels (270 ppm) with possible enrichment in Pb, Cu, and Au. No other anomalous metal conditions are obvious.

Recommendations

Further exploration on the Bug 2 claim should concentrate on detailed geological mapping and prospecting. Further soil sampling should concentrate on selected target areas.

FIGURE 6

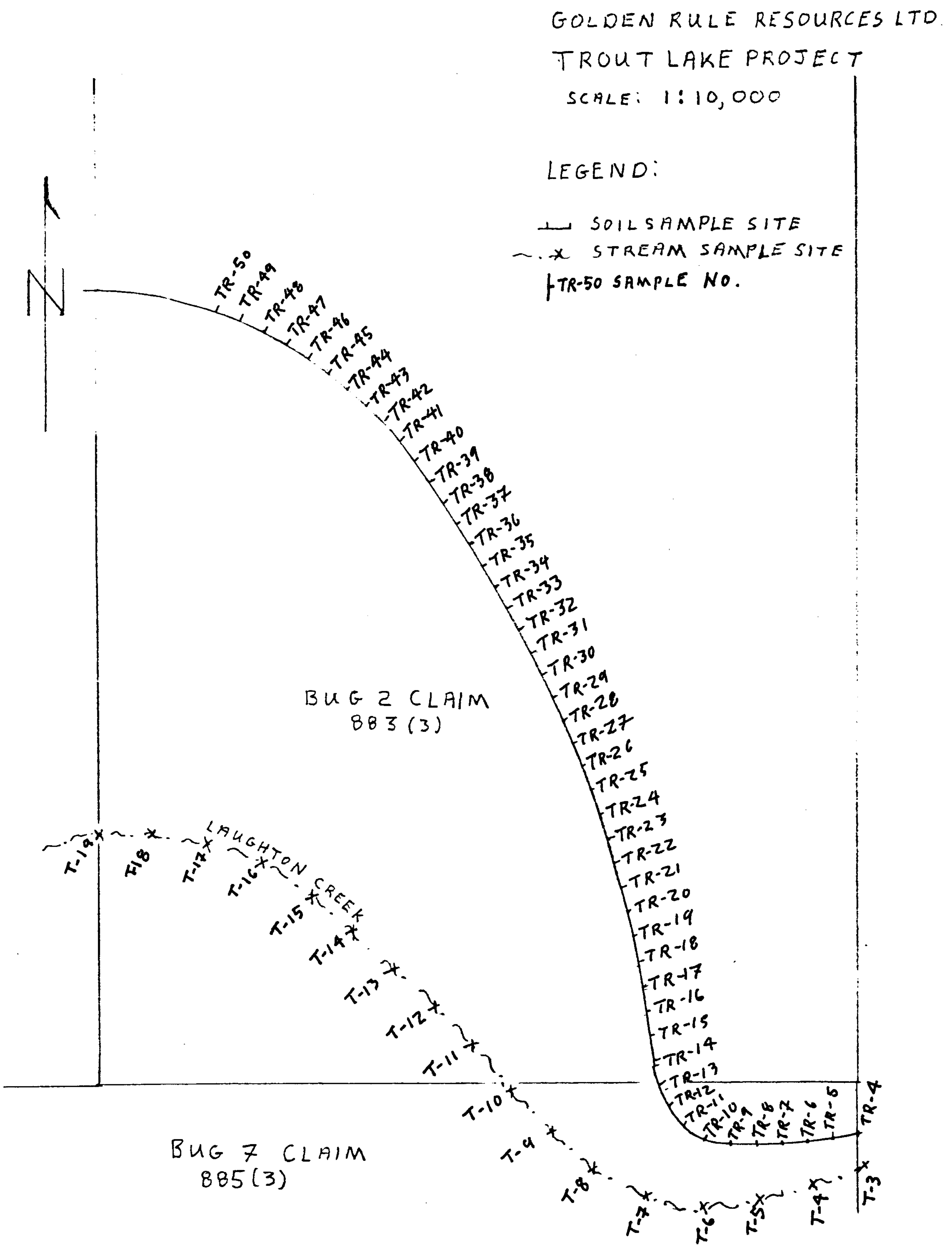

GOLDEN RULE RESOURCES LTD.
TROUT LAKE PROJECT
SCALE: 1:10,000
LEGEND:
SOILSAMPLE SITE
STREAM SAMPLE SITE
TR-50 SAMPLE NO.
N
BUG 2 CLAIM
883 (3)
BUG 7 CLAIM
885 (3)
LAUGHTON CREEK
TR-50
TR-49
TR-48
TR-47
TR-46
TR-45
TR-44
TR-43
TR-42
TR-41
TR-40
TR-39
TR-38
TR-37
TR-36
TR-35
TR-34
TR-33
TR-32
TR-31
TR-30
TR-29
TR-28
TR-27
TR-26
TR-25
TR-24
TR-23
TR-22
TR-21
TR-20
TR-19
TR-18
TR-17
TR-16
TR-15
TR-14
TR-13
TR-12
TR-11
TR-10
TR-9
TR-8
TR-7
TR-6
TR-5
TR-4
T-19
T18
T-17
T-16
T-15
T-14
T-13
T-12
T-11
T-10
T-9
T-8
T-7
T-6
T-5
T-4
T-3

FIGURE 7

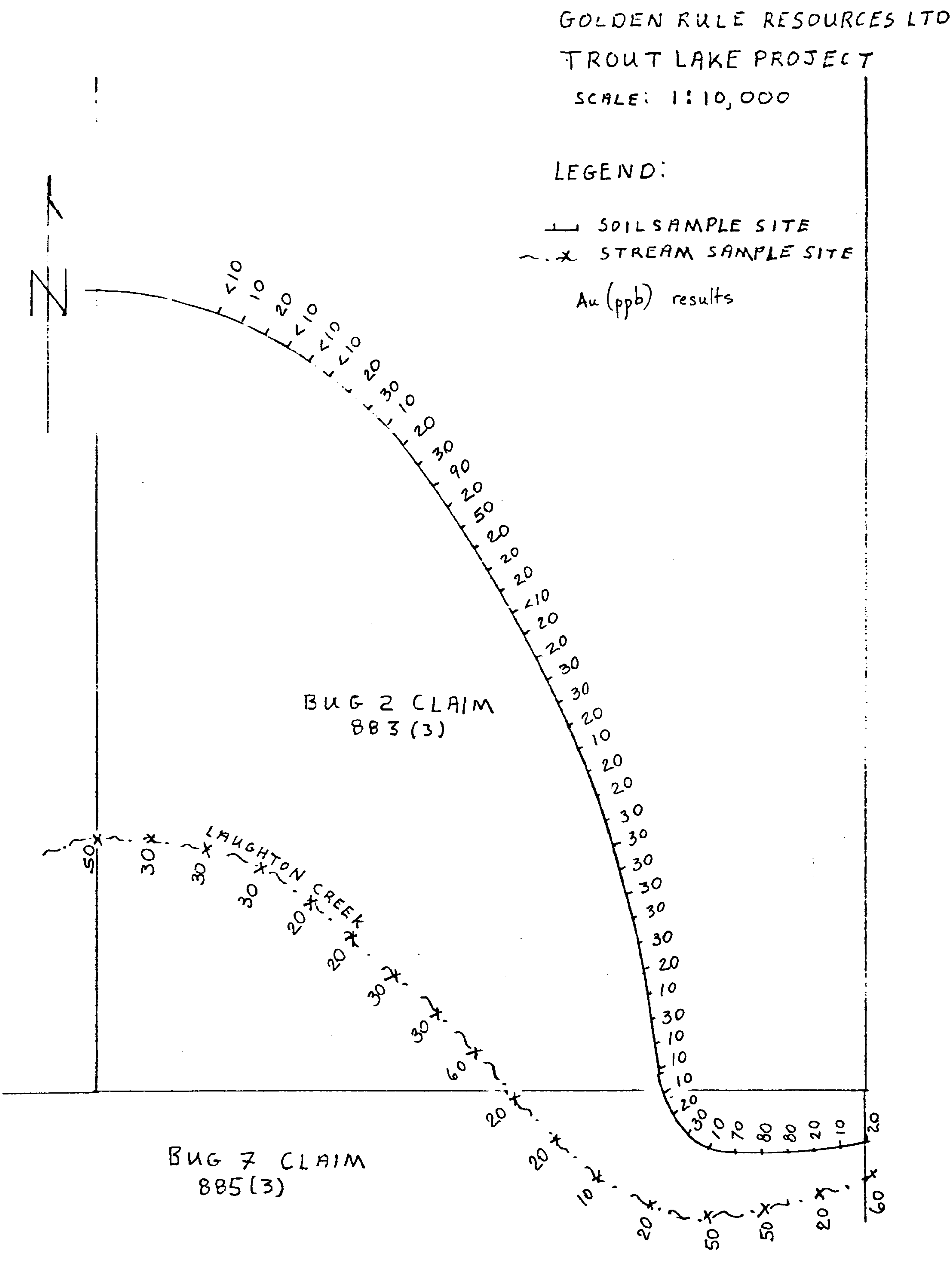

GOLDEN RULE RESOURCES LTD
TROUT LAKE PROJECT
SCALE: 1:10,000
LEGEND:
SOIL SAMPLE SITE
STREAM SAMPLE SITE
Au (ppb) results
BUG 2 CLAIM
883 (3)
BUG 7 CLAIM
885(3)
LAUGHTON CREEK
N

FIGURE 8

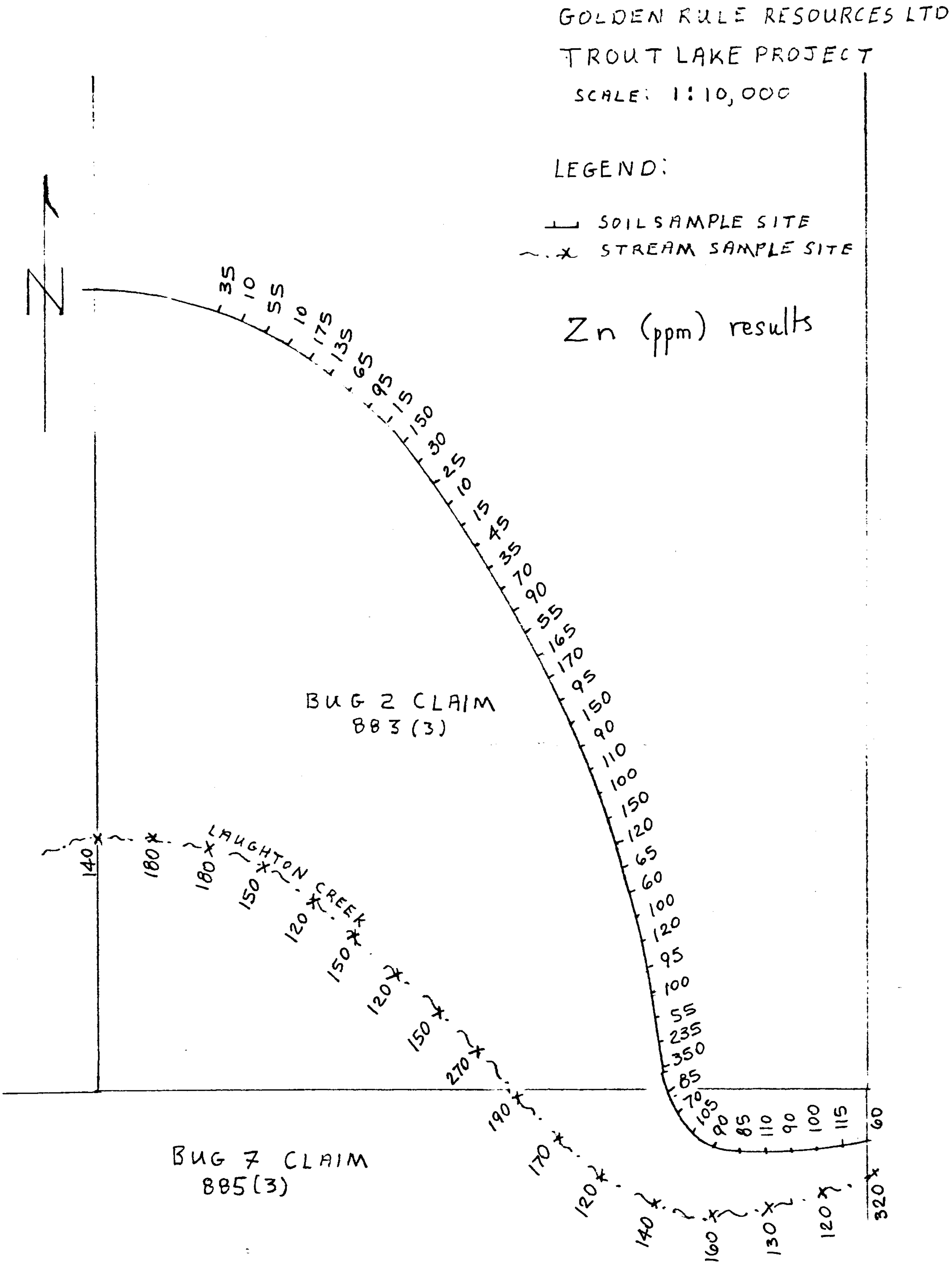

GOLDEN RULE RESOURCES LTD
TROUT LAKE PROJECT
SCALE: 1:10,000
LEGEND:
SOIL SAMPLE SITE
STREAM SAMPLE SITE
Zn (ppm) results
N
BUG 2 CLAIM
883 (3)
LAUGHTON CREEK
BUG 7 CLAIM
885 (3)

FIGURE 9

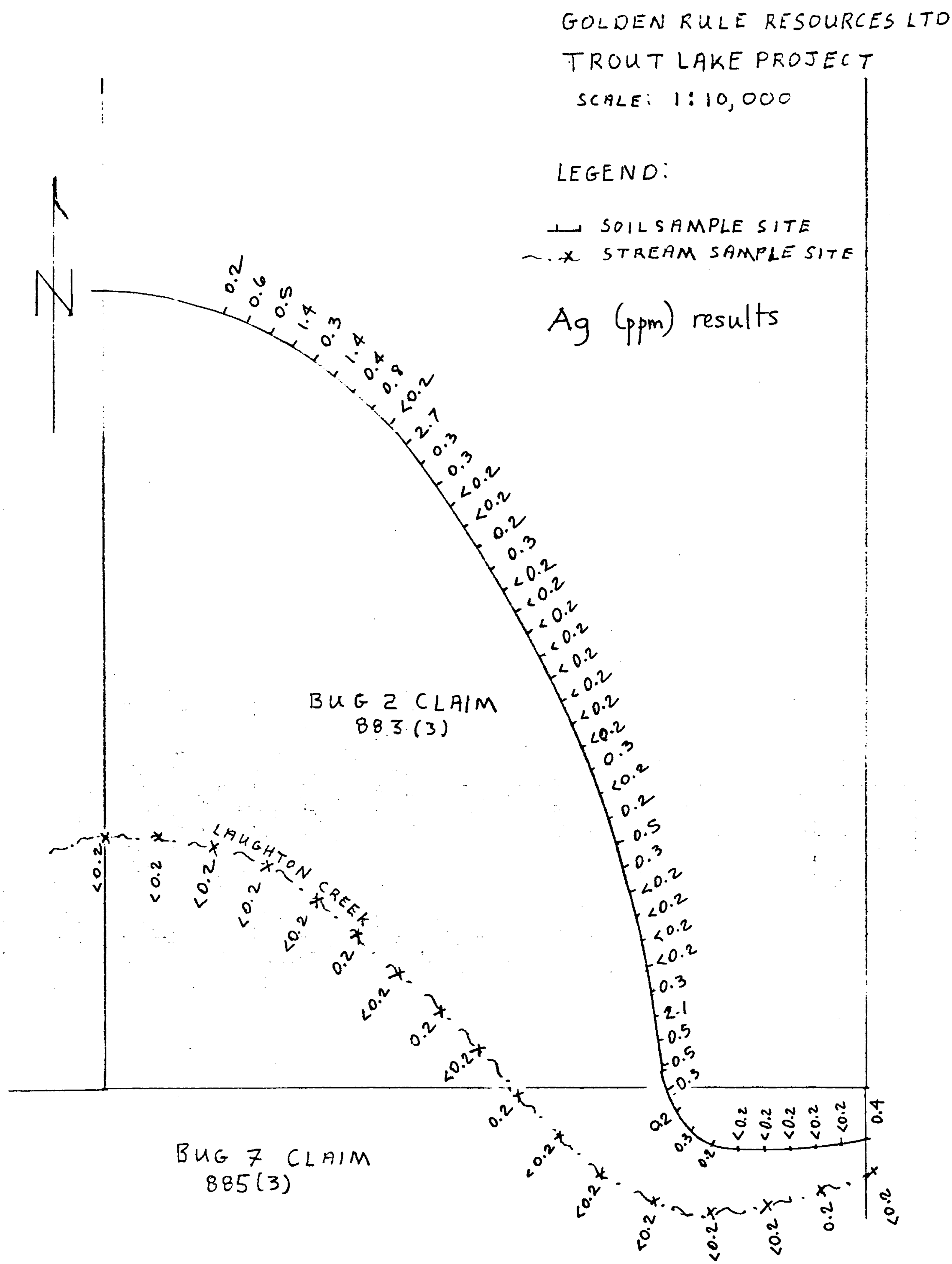

GOLDEN RULE RESOURCES LTD
TROUT LAKE PROJECT
SCALE: 1:10,000
LEGEND:
SOIL SAMPLE SITE
STREAM SAMPLE SITE
Ag (ppm) results
N
BUG 2 CLAIM
883 (3)
BUG 7 CLAIM
885 (3)
LAUGHTON CREEK
0.2
0.6
0.5
1.4
0.3
1.4
0.4
0.9
<0.2
2.7
0.3
0.3
<0.2
<0.2
0.2
0.3
<0.2
<0.2
<0.2
<0.2
<0.2
<0.2
<0.2
<0.2
<0.2
0.3
<0.2
0.2
0.5
0.3
<0.2
<0.2
<0.2
<0.2
0.3
2.1
0.5
0.5
0.3
0.2
0.3
0.2
<0.2
<0.2
<0.2
<0.2
<0.2
0.4
<0.2
<0.2
<0.2
<0.2
<0.2
0.2
<0.2
0.2
<0.2
0.2
<0.2
<0.2
<0.2
<0.2
<0.2
0.2
<0.2

FIGURE 10

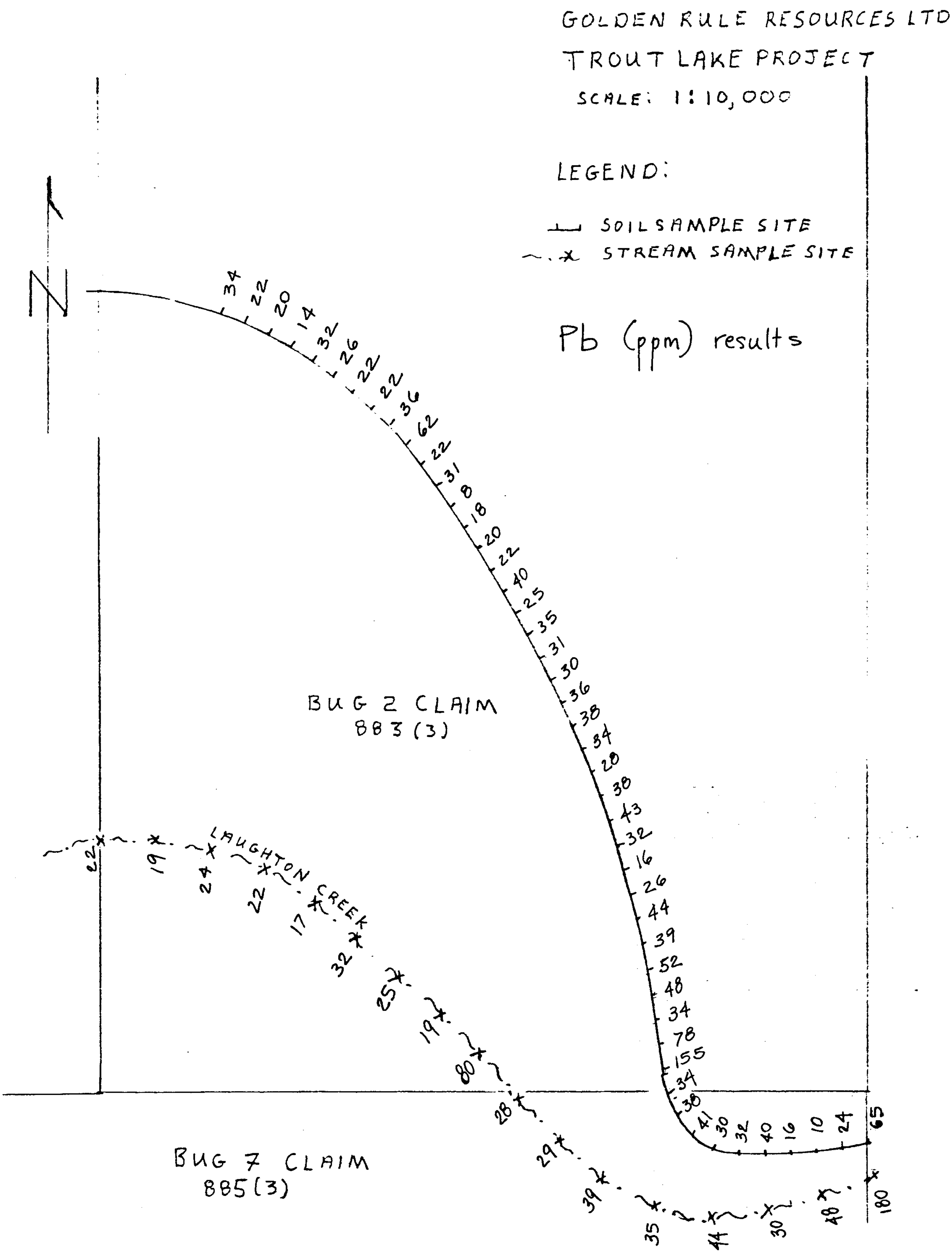
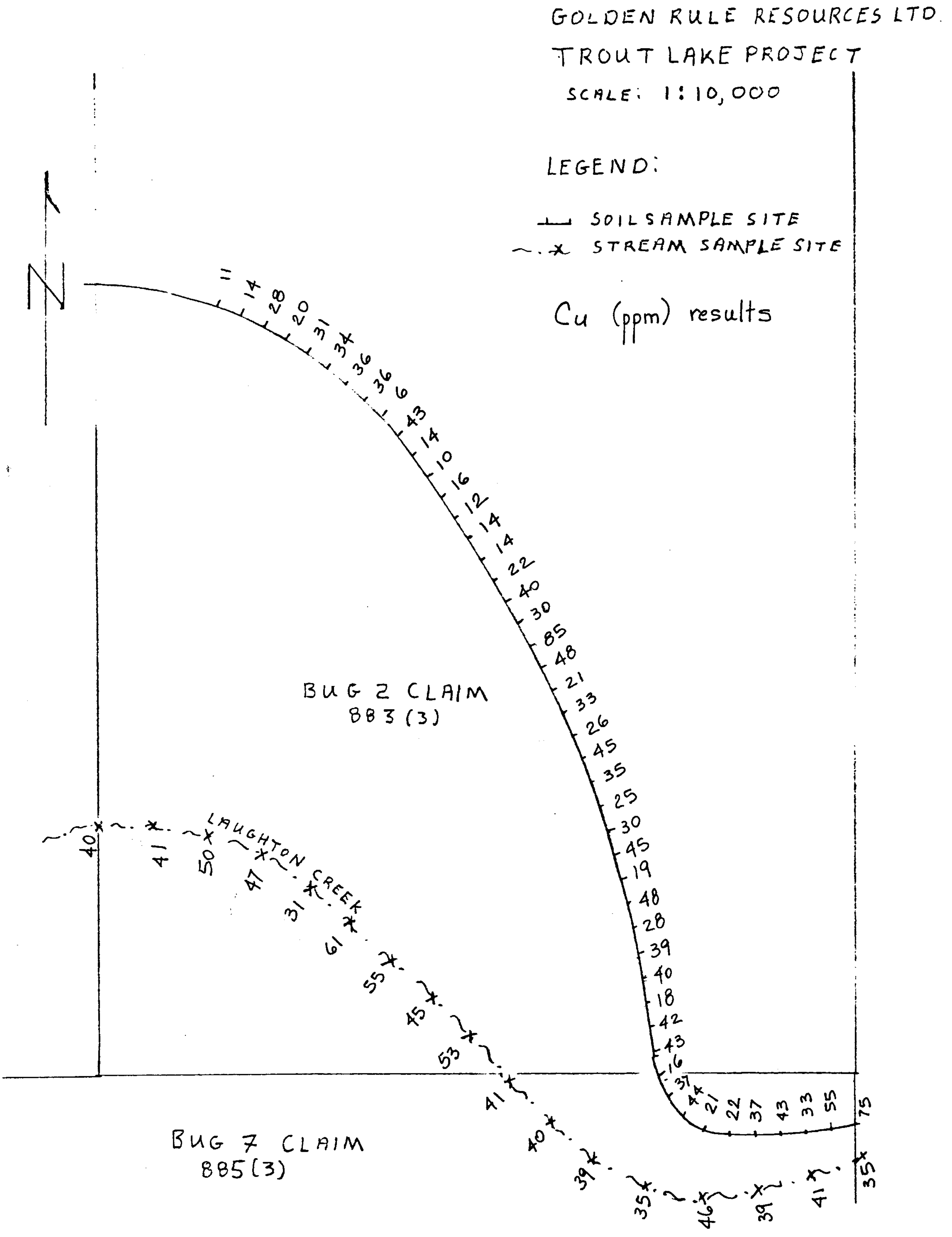

GOLDEN RULE RESOURCES LTD
TROUT LAKE PROJECT
SCALE: 1:10,000
LEGEND:
SOIL SAMPLE SITE
STREAM SAMPLE SITE
Pb (ppm) results
N
BUG 2 CLAIM
883 (3)
BUG 7 CLAIM
885 (3)
LAUGHTON CREEK
34 22 20 14 32 26 22 22 36 62 22 31 8 18 20 22 40 25 35 31 30 36 38 34 28 38 43 32 16 26 44 39 52 48 34 78 155 34 38 41 30 32 40 16 10 24 65
22 19 24 22 17 32 25 19 80 28 29 39 35 44 30 48 180

FIGURE 11


GOLDEN RULE RESOURCES LTD.
TROUT LAKE PROJECT
SCALE: 1:10,000
LEGEND:
SOILSAMPLE SITE
STREAM SAMPLE SITE
Cu (ppm) results
N
BUG 2 CLAIM
883 (3)
BUG 7 CLAIM
885(3)
LAUGHTON CREEK

BUG 7 CLAIM

Exploration Completed

A total of ten soil samples were collected in the northeast corner of the claim (Figures 12 to 17). In addition, eight stream silt samples were collected along Laughton Creek in the northeast corner, with 13 stream silt samples collected along an unnamed creek in the central portion of the claim. The analytical results of these 13 creek samples have not been received; this is still being investigated by the laboratory. Standard AA techniques were used to analyze the soils. Stream silt samples were analyzed by organic solvent AA techniques for the Au, colorimetric methods for As, and ICP procedures for Cu, Co, Cr, Pb, V, Zn, Mn, Fe, and Ag.

Analytical Results

No anomalous metal concentrations were evident in the soil samples.

Silt samples from the boundary between Bug 7 and Bug 8 (T-1 to T-3) display varying enrichment in As, Au, Cu, Pb, and Zn. The mineral occurrence referred to as the Mabel Group is indicated to be in the immediate area. The mineral occurrence is reported to contain Ag and Pb. The lack of a significant Ag response in the silt samples may be indicative of a separate source.

Recommendations

The immediate area warrants a detailed investigation.

FIGURE 12

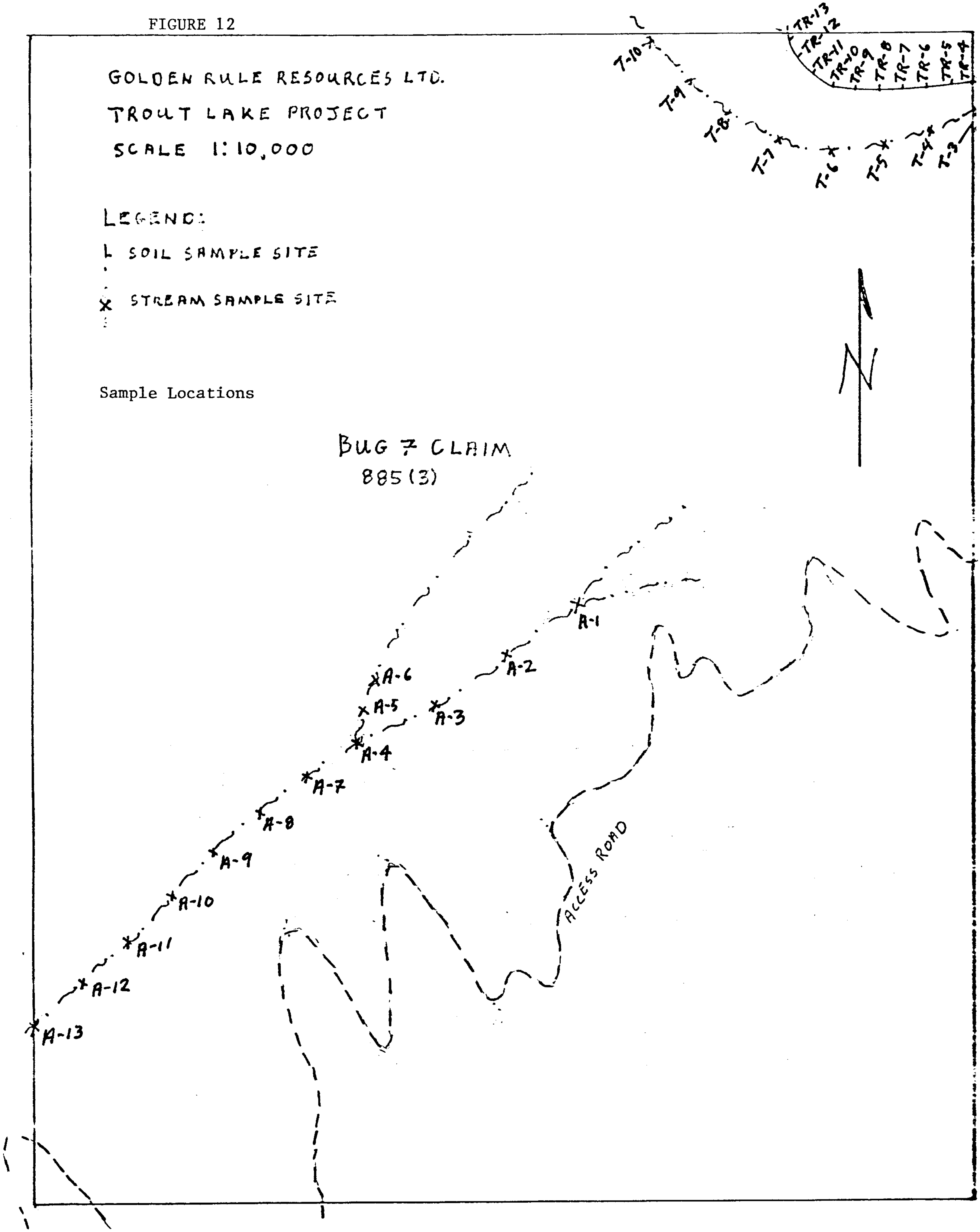

GOLDEN RULE RESOURCES LTD.
TROUT LAKE PROJECT
SCALE 1:10,000
LEGEND:
SOIL SAMPLE SITE
STREAM SAMPLE SITE
Sample Locations
BUG 7 CLAIM
885(3)
N
ACCESS ROAD
A-1
A-2
A-3
A-4
A-5
A-6
A-7
A-8
A-9
A-10
A-11
A-12
A-13
T-3
T-4
T-5
T-6
T-7
T-8
T-9
T-10
TR-4
TR-5
TR-6
TR-7
TR-8
TR-9
TR-10
TR-11
TR-12
TR-13

FIGURE 13

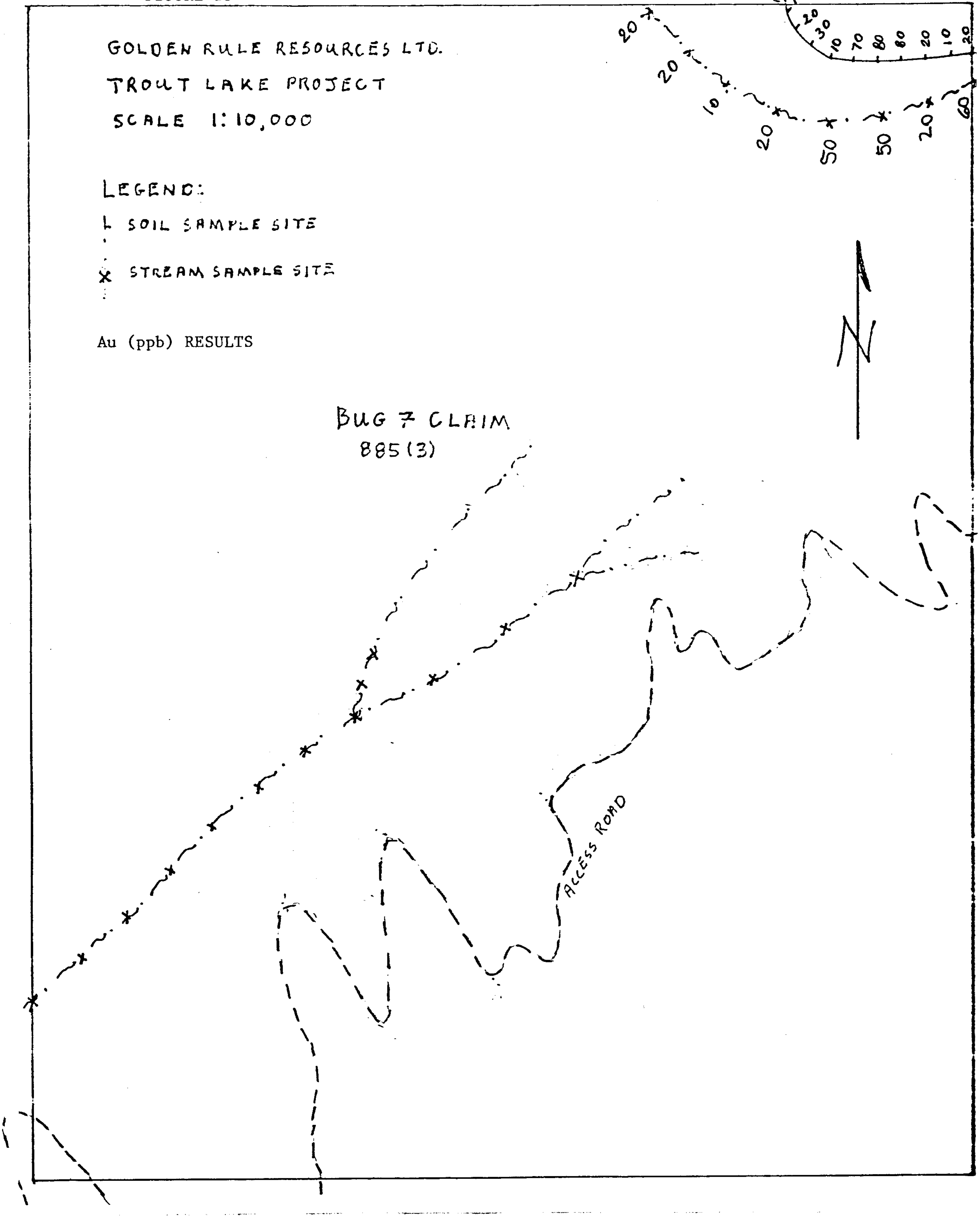

GOLDEN RULE RESOURCES LTD.
TROUT LAKE PROJECT
SCALE 1:10,000
LEGEND:
SOIL SAMPLE SITE
STREAM SAMPLE SITE
Au (ppb) RESULTS
N
BUG 7 CLAIM
885(3)
ACCESS ROAD

FIGURE 14

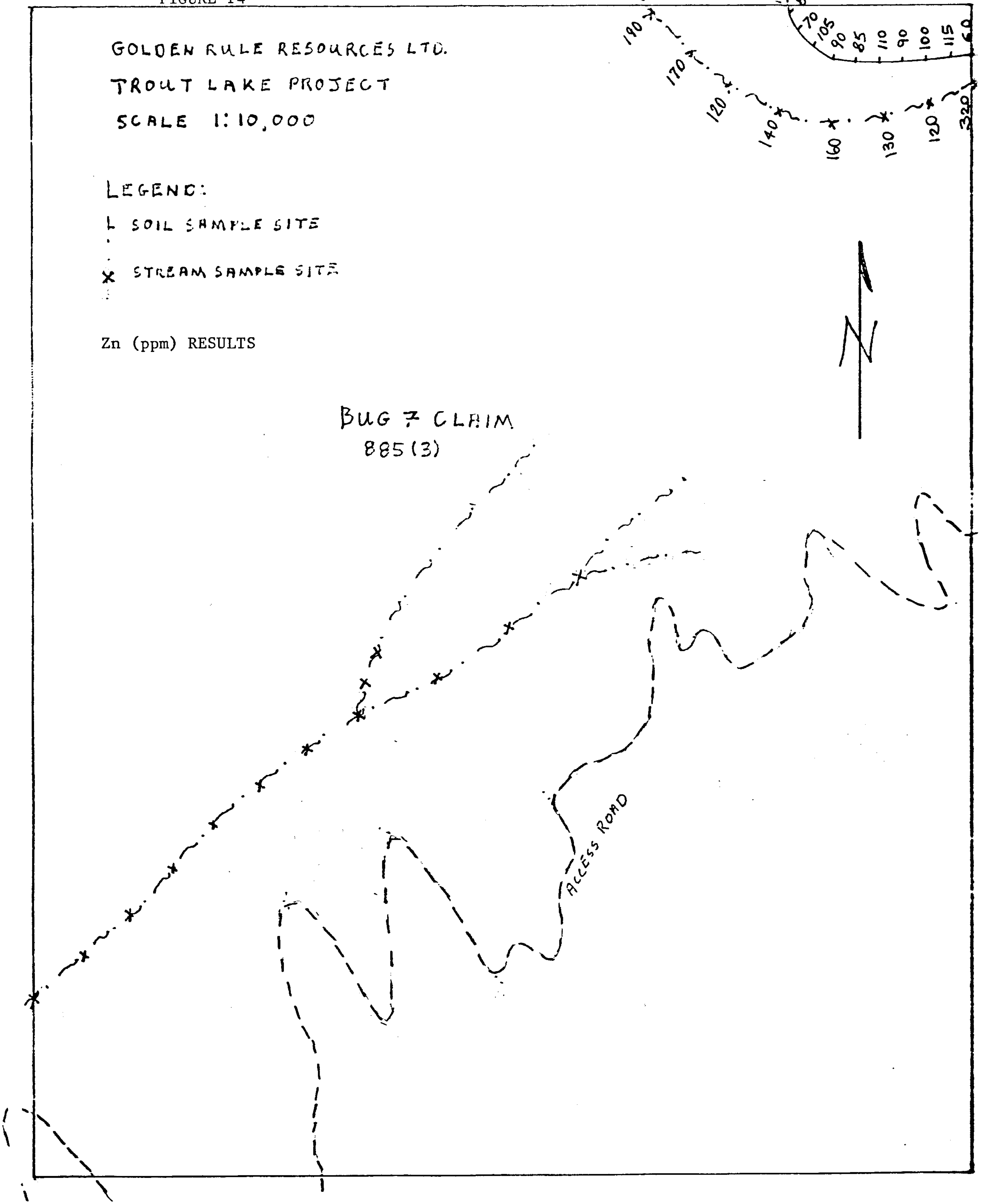

GOLDEN RULE RESOURCES LTD.
TROUT LAKE PROJECT
SCALE 1:10,000
LEGEND:
SOIL SAMPLE SITE
STREAM SAMPLE SITE
Zn (ppm) RESULTS
N
BUG 7 CLAIM
885(3)
ACCESS ROAD
190
170
120
140
160
130
120
320
85
70
105
90
85
110
90
100
115
60

FIGURE 15

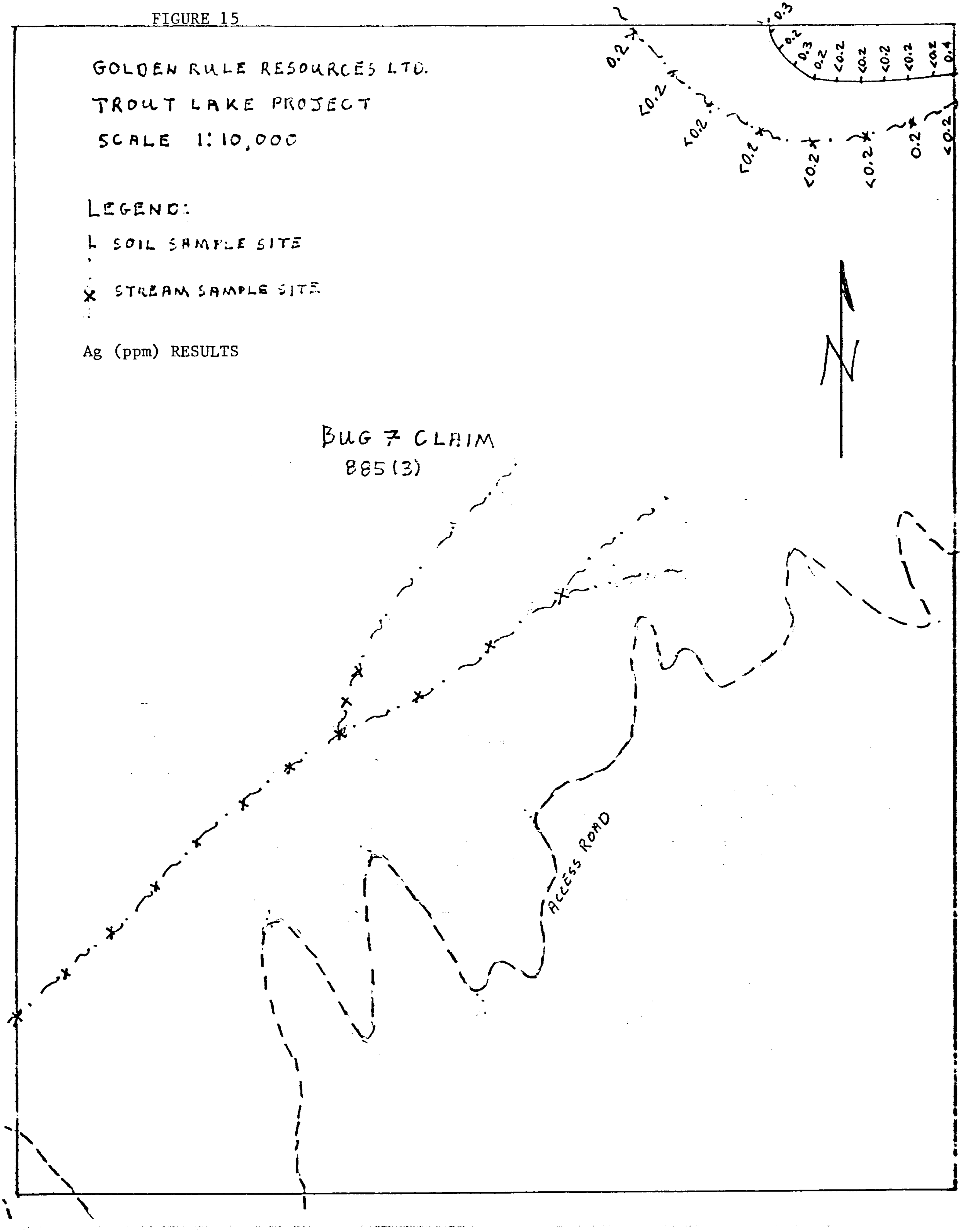

GOLDEN RULE RESOURCES LTD.
TROUT LAKE PROJECT
SCALE 1:10,000
LEGEND:
SOIL SAMPLE SITE
STREAM SAMPLE SITE
Ag (ppm) RESULTS
N
BUG 7 CLAIM
885(3)
ACCESS ROAD
0.2
<0.2
<0.2
<0.2
<0.2
<0.2
0.2
<0.2
0.3
0.2
0.3
0.2
<0.2
<0.2
<0.2
<0.2
<0.2
0.4

FIGURE 16

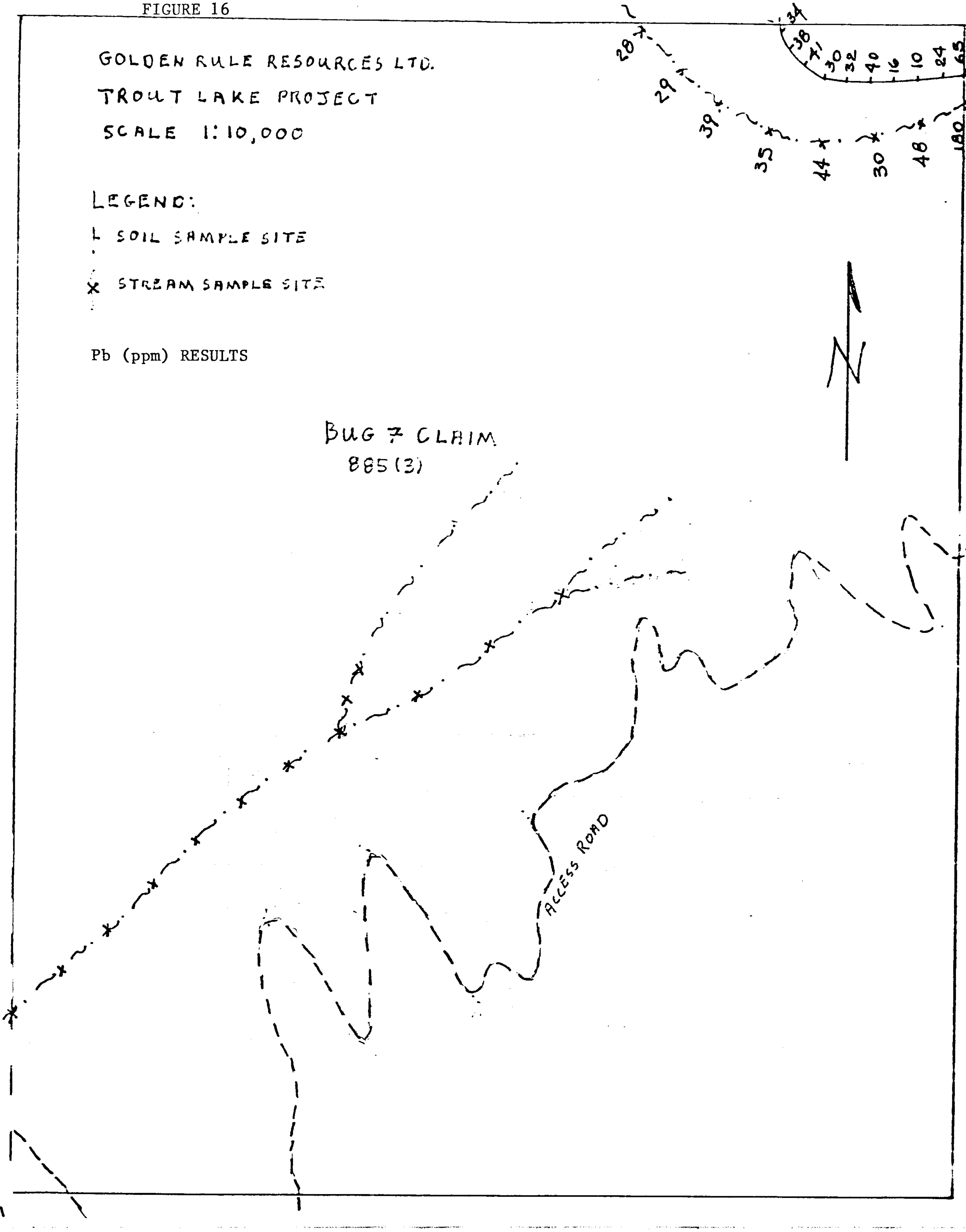
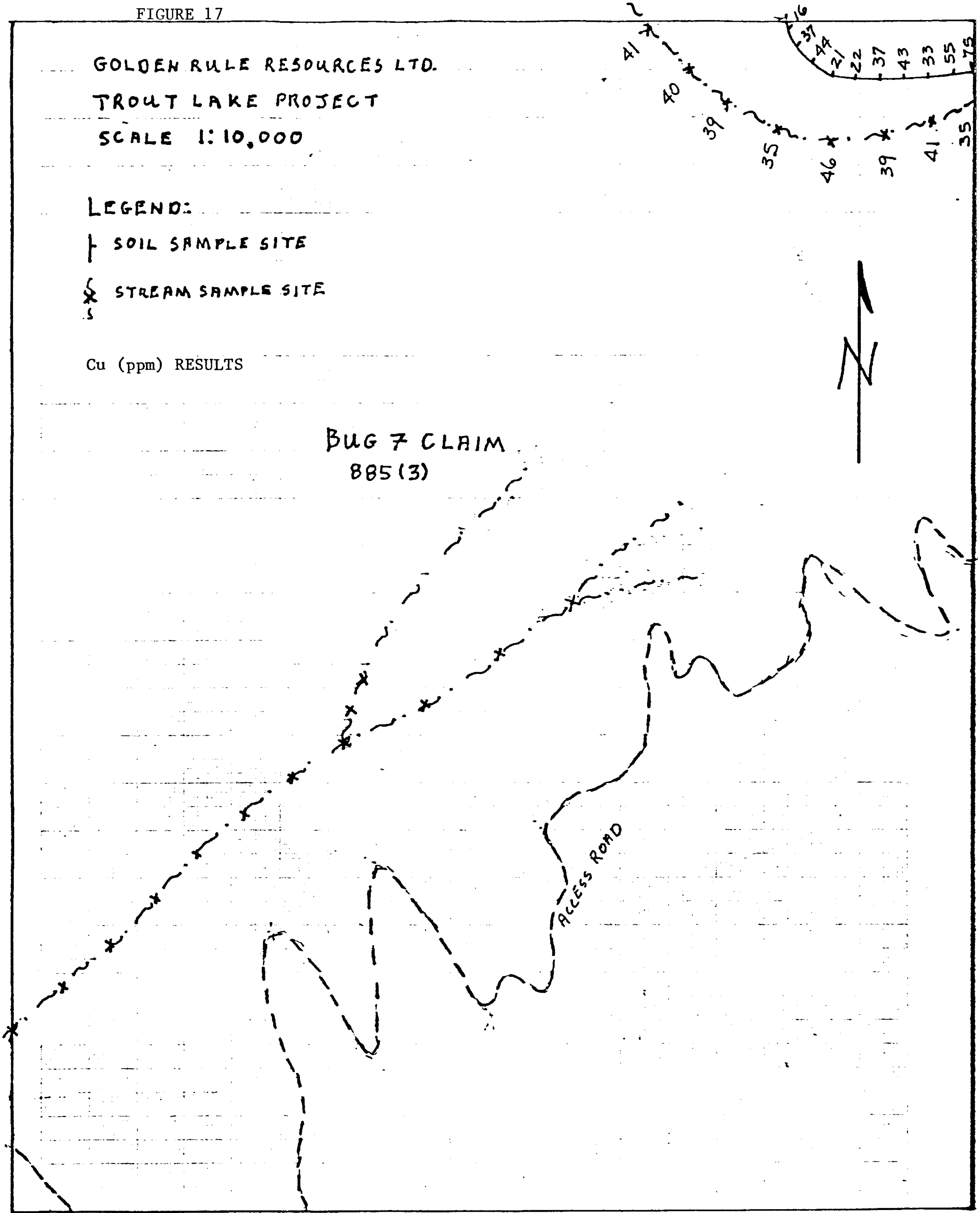

GOLDEN RULE RESOURCES LTD.
TROUT LAKE PROJECT
SCALE 1:10,000
LEGEND:
SOIL SAMPLE SITE
STREAM SAMPLE SITE
Pb (ppm) RESULTS
BUG 7 CLAIM
885(3)
ACCESS ROAD
N
28
29
39
35
44
30
48
180
34
38
41
30
32
40
16
10
24
65

FIGURE 17


GOLDEN RULE RESOURCES LTD.
TROUT LAKE PROJECT
SCALE 1:10,000
LEGEND:
SOIL SAMPLE SITE
STREAM SAMPLE SITE
Cu (ppm) RESULTS
N
BUG 7 CLAIM
885(3)
ACCESS ROAD
41
40
39
35
46
39
41
35
16
37
44
21
22
37
43
33
55
75

BUG 8 CLAIM

Exploration Completed

Two transit-controlled baselines were completed to be used for control for geological mapping and soil sampling programs. The northern baseline was used to collected soil samples on a small grid. A total of 131 soil samples consisting of the B_1 horizon, wherever possible, were collected on the grid. The soil samples were analyzed for Au, Ag, Cu, Pb, and Zn by standard AA methods. The results are presented on Maps 1 to 5 (in back pocket).

Analytical Results

One strongly anomalous area has been outlined by the soil sampling. Samples returned up to 1210 ppb Au, 9.9 ppm Ag, 2250 ppm Pb, and 355 ppm Cu. This anomaly occurs within or near the boundary of the IXL Crown grant. Other scattered areas of metal enrichment and isolated anomalous values are evident. Au values were particularly higher than present in other sampling completed in this region.

Recommendations

Detailed geological mapping of the grid area should be completed, with mapping and geochemical coverage extended. An attempt should be made to option or purchase the relevant Crown grants internal to the Bug 8 claim. Check-analyses should be considered for selected soil samples to confirm reliability of results.

BUG 9 CLAIM

Exploration Completed

A total of 57 soil samples and 3 silt samples (LB9-1, LB9-36, and UB9-1) were collected in the claim area. The analytical results are presented on Figures 18 to 23. The soil samples were analyzed for Au, Ag, Pb, Zn, and Cu by standard AA methods. The silt samples were analyzed for Au by standard organic AA techniques, with Ag analyzed by colorimetric methods, and Cu, Co, Cr, Pb, V, Zn, Mn, Fe, and Ag by ICP methods.

Analytical Results

No strongly anomalous metal values were obtained from the survey.

Recommendations

An effort should be made to trace the known Au occurrence on the Golden Crown on to the Bug 9 claim. If this does not succeed, further work is not recommended for the property.

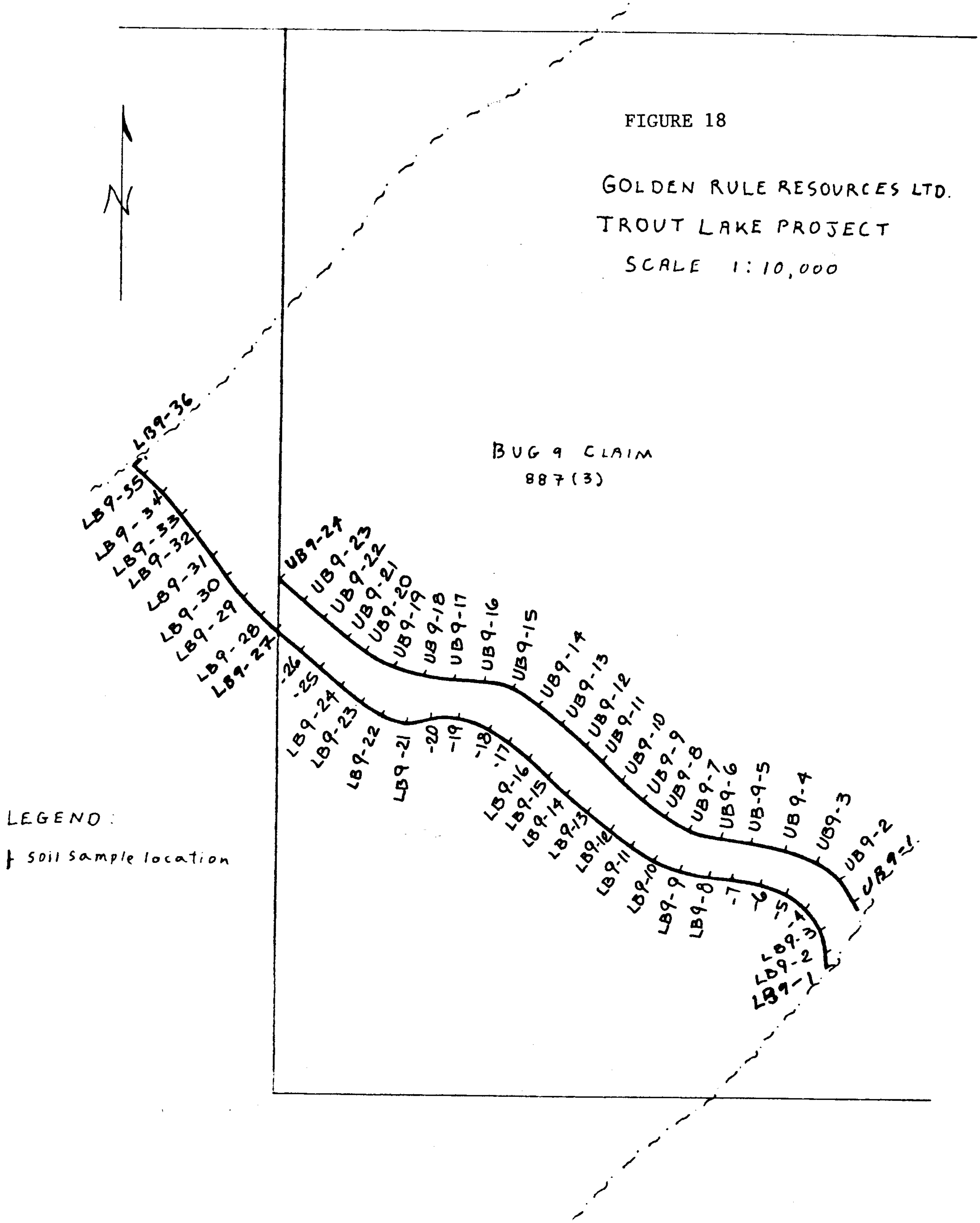


FIGURE 18
GOLDEN RULE RESOURCES LTD.
TROUT LAKE PROJECT
SCALE 1:10,000
N
BUG 9 CLAIM
887(3)
LB9-1 … LB9-36
UB9-1 … UB9-24
LEGEND:
soil sample location

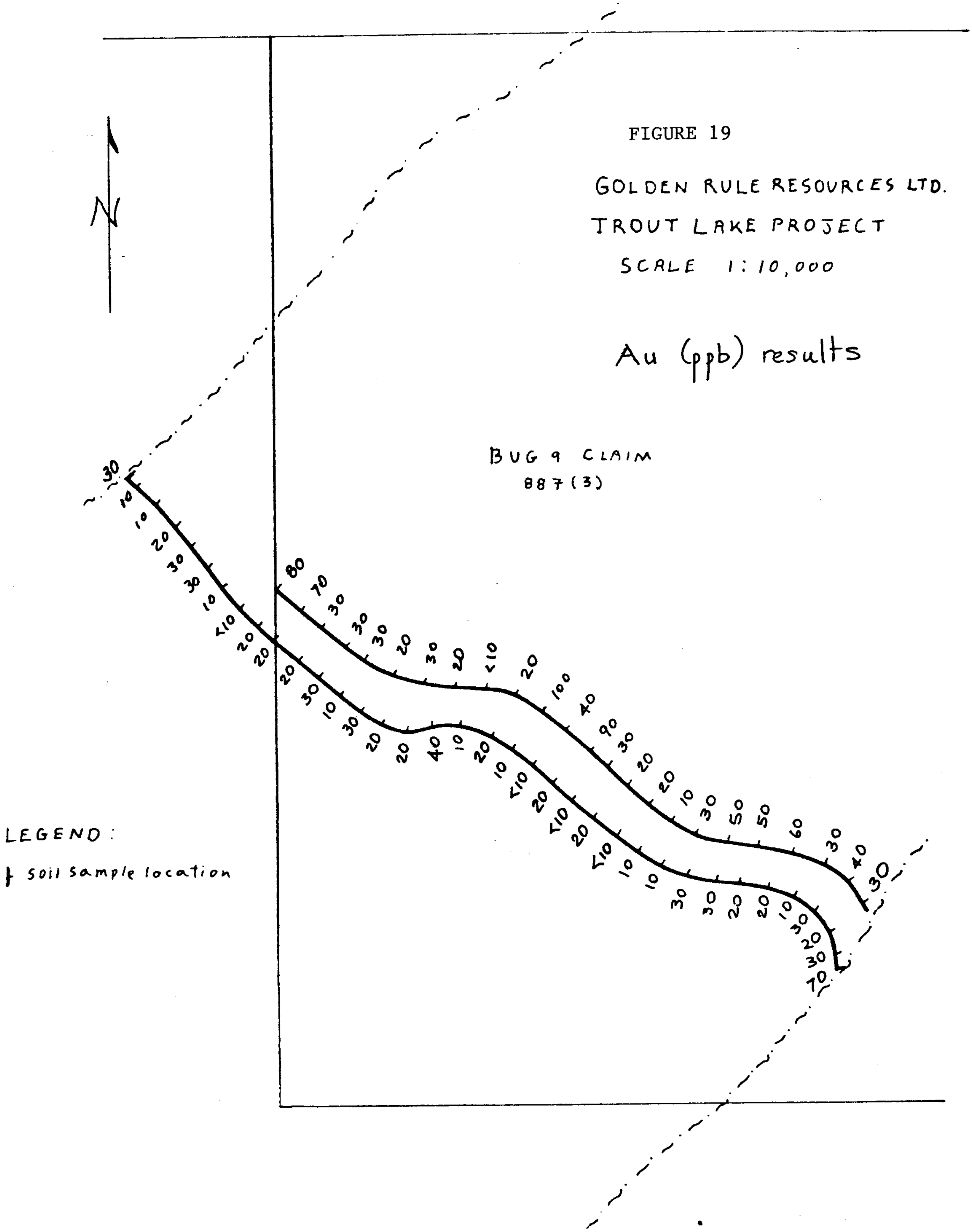


FIGURE 19

GOLDEN RULE RESOURCES LTD.
TROUT LAKE PROJECT
SCALE 1:10,000

Au (ppb) results

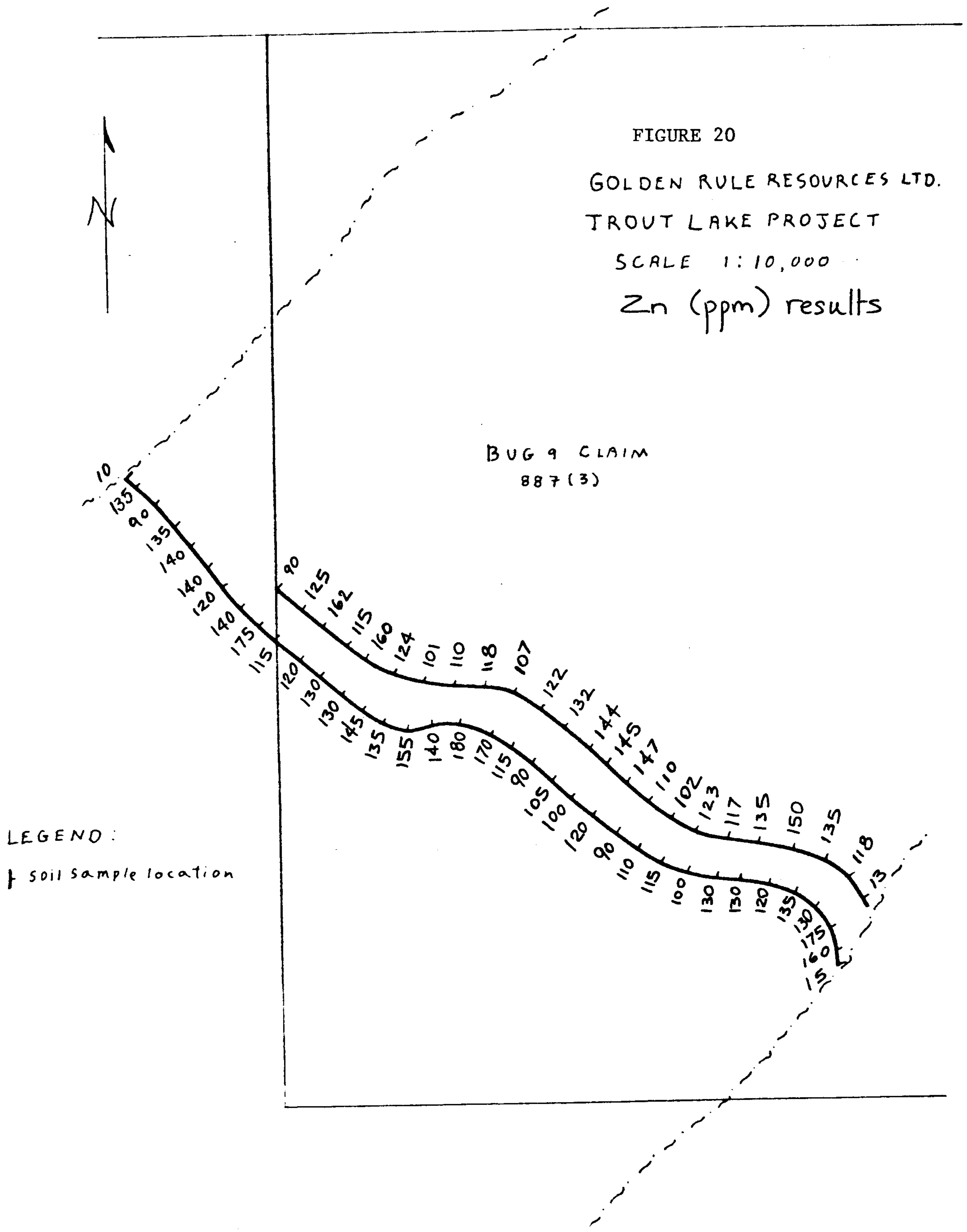


FIGURE 20
GOLDEN RULE RESOURCES LTD.
TROUT LAKE PROJECT
SCALE 1:10,000
Zn (ppm) results
N
BUG 9 CLAIM
887 (3)
LEGEND:
soil sample location
10
135
90
135
140
140
120
140
175
115
120
130
130
145
135
155
140
180
170
115
90
105
100
120
90
110
115
100
130
130
120
135
130
175
160
15
90
125
162
115
160
124
101
110
118
107
122
132
144
145
147
110
102
123
117
135
150
135
118
13

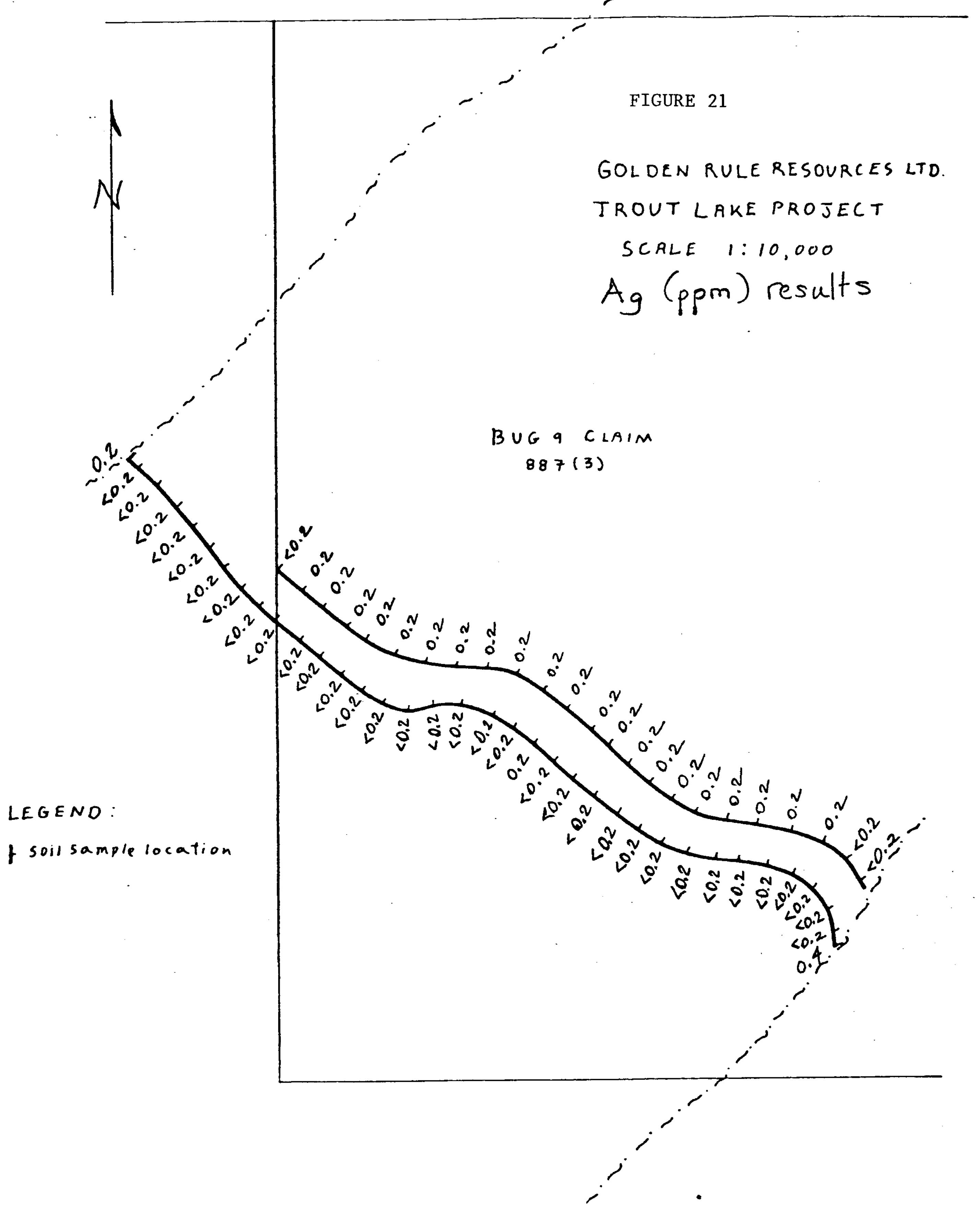


FIGURE 21
GOLDEN RULE RESOURCES LTD.
TROUT LAKE PROJECT
SCALE 1:10,000
Ag (ppm) results
N
BUG 9 CLAIM
887(3)
LEGEND:
soil sample location

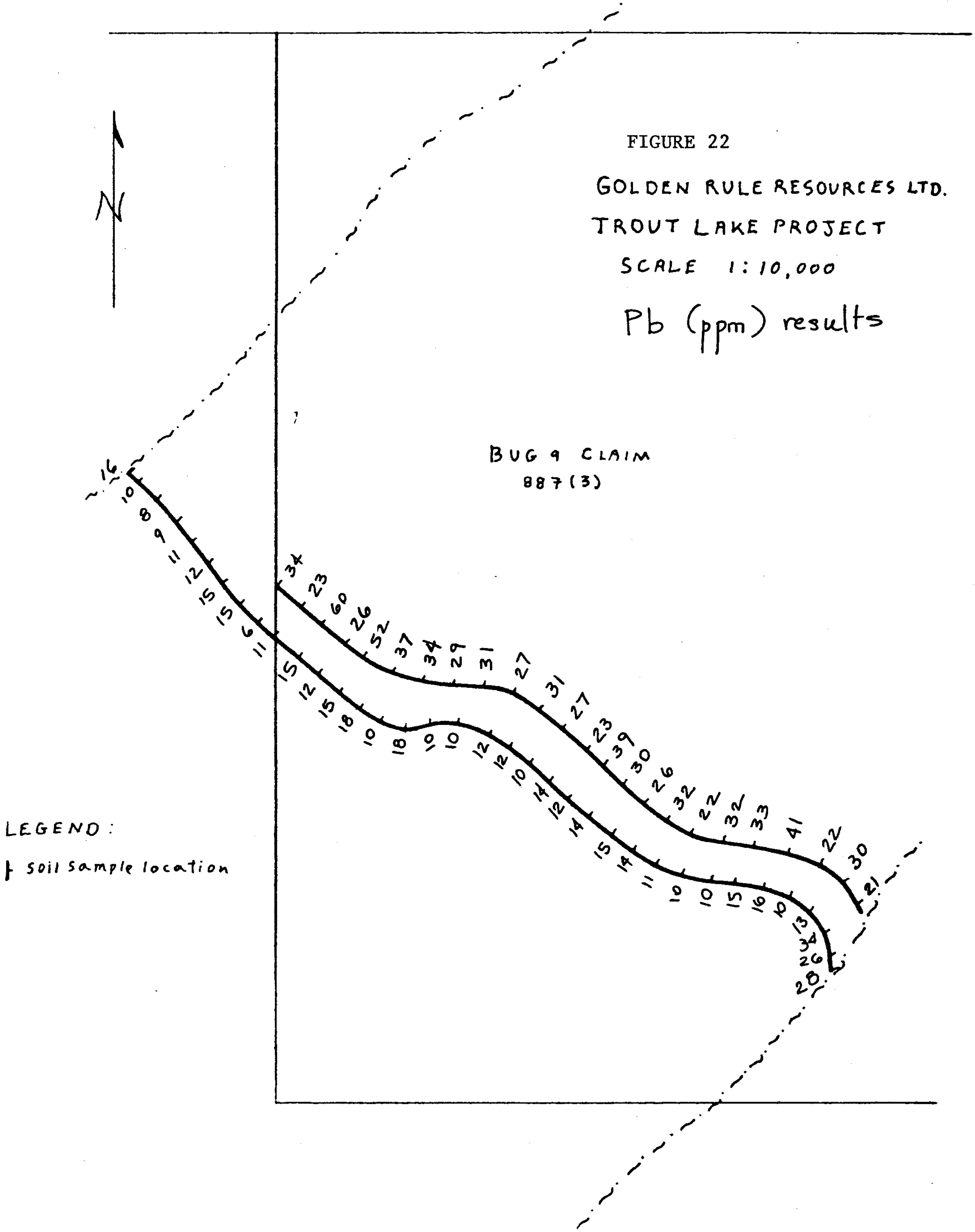


FIGURE 22
GOLDEN RULE RESOURCES LTD.
TROUT LAKE PROJECT
SCALE 1:10,000
Pb (ppm) results
N
BUG 9 CLAIM
887(3)
LEGEND:
soil sample location

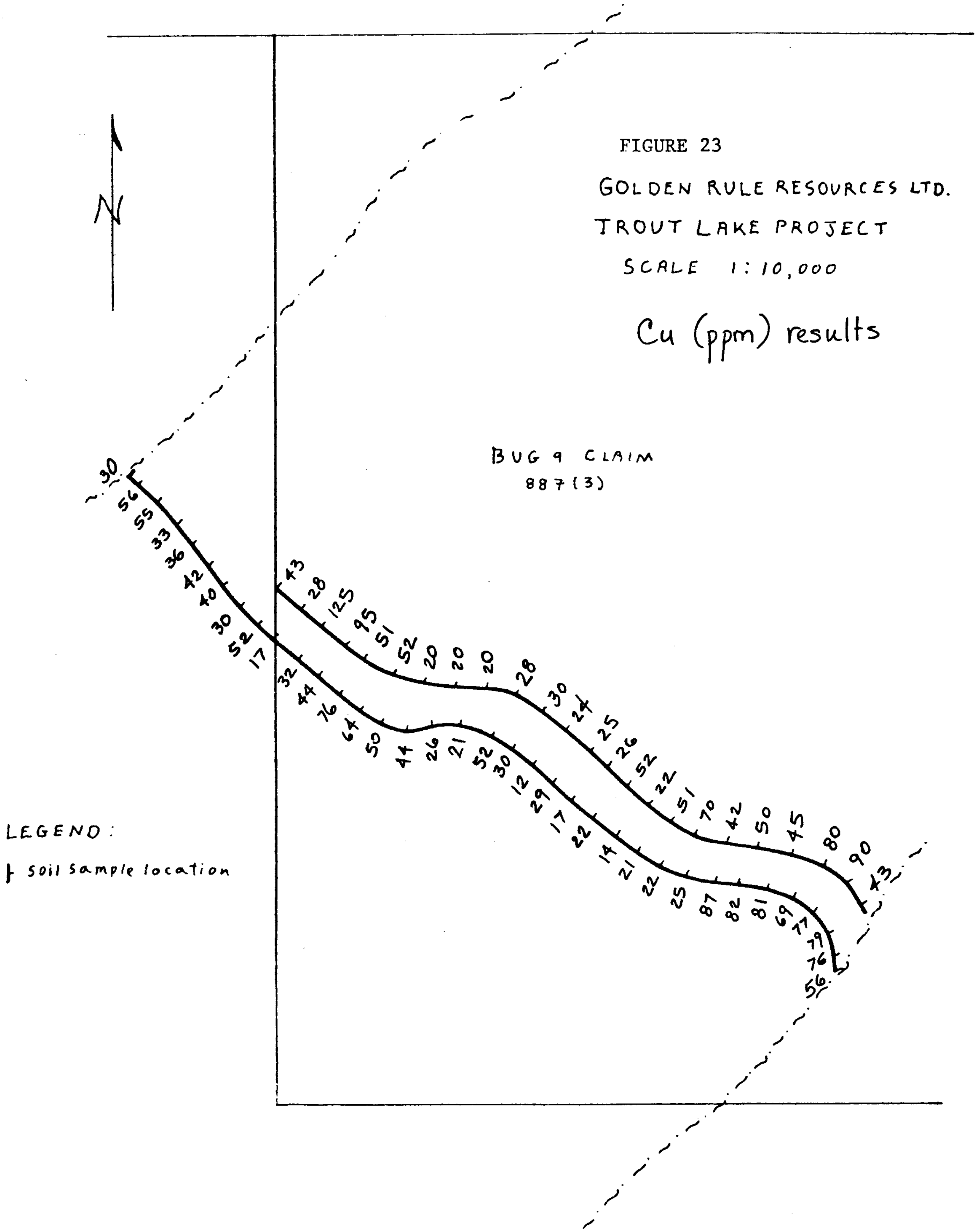


FIGURE 23

GOLDEN RULE RESOURCES LTD.

TROUT LAKE PROJECT

SCALE 1:10,000

Cu (ppm) results

EXPLORATION CONDUCTED OUTSIDE OF THE PROPERTY

A series of eight stream silts (CR-1 to CR-8) were collected above the Trout Lake Road from creeks draining Silver Cup Ridge and the Bug claims. The objective of this sampling was to ascertain background levels and to check for any anomalous metal elvels which may be atributable to the Bug claims. The sample locations are indicated on Figure 24. The analytical results are presented in the appendices.

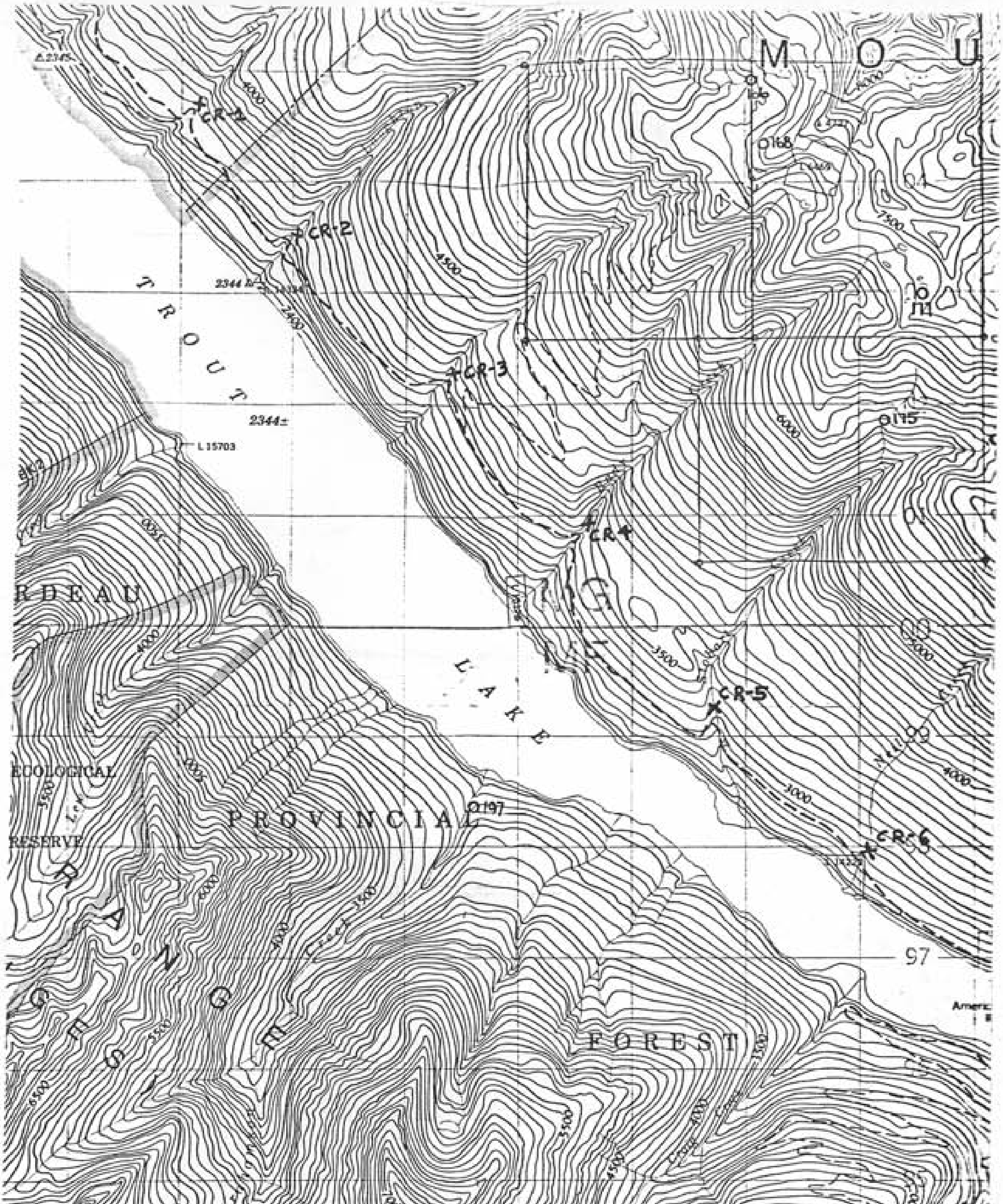


FIGURE 24

RECONNAISSANCE STREAM SILT SAMPLE LOCATIONS +

SCALE 1:50,000

SUMMARY OF EXPENDITURES

TROUT LAKE, BRITISH COLUMBIA
REVELSTOKE MINING DIVISION

Bug 2 Claim
Record Number 883(3) Time Period: Sept.27 to Oct.9, 1980

PRE-FIELD PREPARATION			$ 200.00
PERSONNEL			
Project Supervisor	1 man days @ $350	350.00	
Senior Prospector	½ man day @ $140	70.00	
Junior Prospectors	5 man days @ $100	500.00	920.00
TRANSPORTATION AND TRAVEL			
Travel expenses		200.00	
4x4 truck	2½ days @ $35	87.50	287.50
CAMP & ACCOMMODATION			
Lodging	6½ man days @ $10	65.00	
Food	6½ man days @ $17	110.50	
Fuel		50.00	
Field equipment rentals and misc. supplies	6½ man days @ $15	97.50	323.00
GEOCHEMICAL ANALYSES			
38 soil samples analyzed for Au, Pb, Ag, Zn, Cu	@ $8.80/sample	334.40	
10 stream silt samples analyzed for Au, Cr, Co, Cu, Fe, Pb, Mn, Ag, V, Zn, As	@ $14.55/sample	145.50	479.90
MISCELLANEOUS			
Maps, publications; reproductions		20.00	
Telephone and Freight		20.00	40.00
POST-FIELD COMPILATION			
Report writing		300.00	
Drafting and secretarial		100.00	400.00
		SUB-TOTAL	$ 2,650.40
ADMINISTRATION @ 10%			265.04
		TOTAL	$ 2,915.44

SUMMARY OF EXPENDITURES

TROUT LAKE, BRITISH COLUMBIA
REVELSTOKE MINING DIVISION

Bug 7 Claim
Record Number 885(3) Time Period: Sept.27 to Oct.9, 1980

PRE-FIELD PREPARATION			$ 200.00
PERSONNEL			
Project Supervisor	1 man day @ $350	350.00	
Senior Prospector	½ man day @ $140	70.00	
Junior Prospector	3 man days @ $100	300.00	720.00
TRANSPORTATION & TRAVEL			
Travel expenses		200.00	
4x4 truck	1½ man days @ $35	52.50	252.50
CAMP & ACCOMMODATION			
Lodging	4½ man days @ $10	45.00	
Food	4½ man days @ $17	76.50	
Fuel		20.00	
Field equipment rentals and misc. supplies	4½ man days @ $15	67.50	209.00
GEOCHEMICAL ANALYSES			
10 soil samples analyzed for Au, Pb, Ag, Zn, Cu	@ $8.80/sample	88.00	
21 stream silt samples analyzed for Au, Cr, Co, Cu, Fe, Pb, Mn, Ag, V, Zn, As	@ $14.55/sample	305.55	393.55
MISCELLANEOUS			
Maps, publications; reproductions		20.00	
Telephone and freight		20.00	40.00
POST-FIELD COMPILATION			
Report writing		100.00	
Drafting and secretarial		50.00	150.00
		SUB-TOTAL	$ 1,965.05
ADMINISTRATION @ 10%			196.51
		TOTAL	$ 2,161.56

SUMMARY OF EXPENDITURES

TROUT LAKE, BRITISH COLUMBIA
REVELSTOKE MINING DIVISION

Bug 8 Claim
Record Number 886(3) Time Period: Sept.27 to Oct.9, 1980

PRE-FIELD PREPARATION			$ 200.00
PERSONNEL			
Project Supervisor	1 man day @ $350	350.00	
Senior Prospectors	8 man days @ $140	1,120.00	
Junior Prospector	4 man days @ $100	400.00	1,870.00
TRANSPORTATION & TRAVEL			
Travel expenses		250.00	
4x4 truck	6 days @ $35	210.00	460.00
CAMP & ACCOMMODATION			
Lodging	13 man days @ $10	130.00	
Food	13 man days @ $17	221.00	
Fuel		100.00	
Field equipment rentals and misc. supplies	13 man days @ $15	195.00	646.00
GEOCHEMICAL ANALYSES			
131 soil samples analyzed for Au, Pb, Ag, Zn, Cu	@ $8.80/sample		1,152.80
MISCELLANEOUS			
Maps, publications; reproductions		20.00	
Telephone and freight		20.00	40.00
POST-FIELD COMPILATION			
Report writing		300.00	
Drafting and secretarial		150.00	450.00
		SUB-TOTAL	$ 4,818.80
ADMINISTRATION @ 10%			481.88
		TOTAL	$ 5,300.68

SUMMARY OF EXPENDITURES

TROUT LAKE, BRITISH COLUMBIA
REVELSTOKE MINING DIVISION

Bug 9 Claim
Record Number 887(3) Time Period: Sept.27 to Oct.9, 1980

PRE-FIELD PREPARATION			$ 200.00
PERSONNEL			
Project Supervisor	½ man day @ $350	175.00	
Senior Prospector	2½ man days @ $140	350.00	525.00
TRANSPORTATION & TRAVEL			
Travel expenses		200.00	
4x4 truck	2 days @ $35	70.00	270.00
CAMP & ACCOMMODATION			
Lodging	3 man days @ $10	30.00	
Food	3 man days @ $17	51.00	
Fuel		50.00	
Field equipment rentals and misc. supplies	3 man days @ $15	45.00	176.00
GEOCHEMICAL ANALYSES			
57 soil samples analyzed for Au, Pb, Ag, Zn, Cu	@ $8.80/sample	501.60	
3 stream silt samples analyzed for Au, Cr, Co, Cu, Fe, Pb, Mn, Ag, V, Zn, As	@ $14.55/sample	43.65	545.25
MISCELLANEOUS			
Maps, publications; reproductions		20.00	
Telephone and freight		20.00	40.00
POST-FIELD COMPILATION			
Report writing		200.00	
Drafting and secretarial		75.00	275.00
		SUB-TOTAL	$ 2,031.25
ADMINISTRATION @ 10%			203.13
		TOTAL	$ 2,234.38

APPENDIX I

ANALYTICAL RESULTS

GEO ANALYTICAL SERVICES (WESTERN) LTD.

JOB #: 80 - 79

SAMPLE TYPE: TAIGA CONSULTANTS

LAB No.	CLIENT No.	Au ppb	Cu ppm	Pb ppm	Zn ppm	Ag ppm
1	LB 9 2	30	76	26	160	< 0.2
2	3	20	79	34	175	< 0.2
3	4	30	77	13	130	< 0.2
4	5	10	69	10	135	< 0.2
5	6	20	81	16	120	< 0.2
6	7	20	82	15	130	< 0.2
7	8	30	87	10	130	< 0.2
8	9	30	25	10	100	< 0.2
9	10	10	22	11	115	< 0.2
0	11	10	21	14	110	< 0.2
1	12	<10	14	15	90	< 0.2
2	13	20	22	14	120	< 0.2
3	14	<10	17	12	100	< 0.2
4	15	20	29	14	105	< 0.2
5	16	<10	12	10	90	0.2
6	17	10	30	12	115	< 0.2
7	18	20	52	12	170	< 0.2
8	19	10	21	10	180	< 0.2
9						
0						

FORM NO. 001

GEO ANALYTICAL SERVICES (WESTERN) LTD.

JOB #: 80 - 79

PAGE 2

SAMPLE TYPE:

LAB No.	CLIENT No.	Au ppb		Cu ppm		Pb ppm		Zn ppm		Ag ppm					
1	LB 9 20	40		26		10		140		< 0.2					
2	21	20		44		18		155		< 0.2					
3	22	20		50		10		135		< 0.2					
4	23	30		64		18		145		< 0.2					
5	24	10		76		15		130		< 0.2					
6	25	30		44		12		130		< 0.2					
7	26	20		32		15		120		< 0.2					
8	27	20		17		11		115		< 0.2					
9	28	20		52		6		175		< 0.2					
0	29	<10		30		15		140		< 0.2					
1	30	10		40		15		120		< 0.2					
2	31	30		42		12		140		< 0.2					
3	32	30		36		11		140		< 0.2					
4	33	20		33		9		135		< 0.2					
5	34	10		55		8		90		< 0.2					
6	35	10		56		10		135		< 0.2					
7	RIT 2	10		38		39		95		3.7					
8	4	10		28		34		80		0.3					
9															
0															

FORM NO. 001

GEO-ANALYTICAL SERVICES (WESTERN) LTD.

JOB 80 - 79

PAGE 8

SAMPLE TYPE:

LAB No.	CLIENT No.	Au ppb	Cu ppm	Pb ppm	Zn ppm	Ag ppm
1	EL2 L4+00E 0+25N	20	180	10	80	< 0.2
2	0+50	30	18	12	25	0.2
3	0+75	30	42	10	60	< 0.2
4	1+00	40	55	5	90	< 0.2
5	1+25	10	75	12	140	< 0.2
6	1+50	20	16	14	30	0.5
7	L6+00W 0+25N	10	20	6	75	< 0.2
8	0+50	30	75	4	90	< 0.2
9	0+75	20	25	8	85	< 0.2
0	1+00	30	36	4	85	< 0.2
1	1+25	10	36	10	70	< 0.2
2	1+50	20	188	5	75	< 0.2
3	TR 01	20	46	28	68	< 0.2
4	02	10	80	6	90	< 0.2
5	03	20	85	16	140	< 0.2
6	04	20	75	65	60	0.4
7	05	10	55	24	115	< 0.2
8	06	20	33	10	100	< 0.2
9						
0						

FORM NO 003

GEO ANALYTICAL SERVICES (WESTERN) LTD.

JOB #: 80 - 79

SAMPLE TYPE:

PAGE 9

LAB No.	CLIENT No.	Au ppb	Cu ppm	Pb ppm	Zn ppm	Ag ppm
1	TR 07	80	43	16	90	<0.2
2	08	80	37	40	110	<0.2
3	09	70	22	32	85	<0.2
4	10	10	21	30	90	0.2
5	11	30	44	41	105	0.3
6	12	20	37	38	70	0.2
7	13	10	16	34	85	0.3
8	14	10	43	155	350	0.5
9	15	10	42	78	235	0.5
0	16	30	18	34	55	2.1
1	17	10	40	48	100	0.3
2	18	20	39	52	95	<0.2
3	19	30	28	39	120	<0.2
4	20	30	48	44	100	<0.2
5	21	30	19	26	60	<0.2
6	22	30	45	16	65	0.3
7	23	30	30	32	120	0.5
8	24	30	25	43	150	0.2
9						
0						

FORM NO 003

GEO ANALYTICAL SERVICES (WESTERN) LTD.

JOB #: 80 - 79

SAMPLE TYPE:

PAGE 10

LAB No.	CLIENT No.	Au ppb		Cu ppm		Pb ppm		Zn ppm		Ag ppm					
1	TR 25	20		35		38		100		< 0.2					
2	26	20		45		28		110		0.3					
3	27	10		26		34		90		< 0.2					
4	28	20		33		38		150		< 0.2					
5	29	30		21		36		95		< 0.2					
6	30	30		48		30		170		< 0.2					
7	31	20		85		31		165		< 0.2					
8	32	20		30		35		55		< 0.2					
9	33	< 10		40		25		90		< 0.2					
0	34	20		22		40		70		< 0.2					
1	35	20		14		22		35		0.3					
2	36	20		14		20		45		0.2					
3	37	50		12		18		15		< 0.2					
4	38	20		16		8		10		< 0.2					
5	39	90		10		31		25		0.3					
6	40	30		14		22		30		0.3					
7	41	20		43		62		150		2.7					
8	42	10		6		36		15		< 0.2					
9															
0															

FORM NO. 003

GEO ANALYTICAL SERVICES (WESTERN) LTD.

JOB #: 80 - 79

PAGE 11

SAMPLE TYPE:

LAB No.	CLIENT No.	Au ppb	Cu ppm	Pb ppm	Zn ppm	Ag ppm
1	TR 43	30	36	22	95	0.8
2	44	20	36	22	65	0.4
3	45	< 10	34	26	135	1.4
4	46	< 10	31	32	175	0.3
5	47	< 10	20	14	10	1.4
6	48	20	28	20	55	0.5
7	49	10	14	22	10	0.6
8	50	< 10	11	34	35	0.2
9	BL1-BL0 1+85E 5+00S	30	18	8	22	0.2
0	5+75S	20	85	8	75	< 0.2
1	7+00	< 10	14	5	5	< 0.2
2	7+25	50	16	8	22	< 0.2
3	7+75	30	26	17	55	0.6
4	8+00	20	15	11	22	0.7
5	8+75	< 10	30	10	125	0.2
6	9+25	20	30	8	82	< 0.2
7	9+75	10	27	3	70	< 0.2
8	11+00	30	23	5	50	< 0.2
9						
0						

GEO ANALYTICAL SERVICES (WESTERN) LTD.

JOB #: 80-79

SAMPLE TYPE:

PAGE 12

LAB No.	CLIENT No.		Au ppb		Cu ppm		Pb ppm		Zn ppm		Ag ppm				
1	BLO 1+85 E 11+75 S		20		46		3		95		< 0.2				
2	BLO 1+85 E L6 6+00 S 0+25 E		30		100		26		200		0.3				
3	0+25 W		60		68		8		98		< 0.2				
4	0+75		50		17		10		45		0.6				
5	1+00		90		21		10		17		< 0.2				
6	1+25		130		24		16		74		< 0.2				
7	1+50		120		21		21		95		< 0.2				
8	8+00 S L8 0+25 W		90		15		22		57		1.0				
9	0.50		120		30		23		61		0.4				
0	0+75		120		14		7		20		< 0.2				
1	1+25		120		20		12		68		< 0.2				
2	1+50		190		33		10		118		< 0.2				
3	BLO L4 0+25 W		1040		180		800		1575		4.6				
4	1+25		90		41		55		77		0.3				
5	BLO 1+85 E L10 10+00S 1+00 E		120		90		16		117		< 0.2				
6	0+25 W		120		14		8		11		< 0.2				
7	0+50		130		33		4		54		< 0.2				
8	1+00		140		25		9		38		< 0.2				
9															
0															

FORM NO 003

GEO ANALYTICAL SERVICES (WESTERN) LTD

JOB # 8

PAGE 13

SAMPLE TYPE:

LAB No.	CLIENT No.		Au ppb		Cu ppm		Pb ppm		Zn ppm		Ag ppm				
1	BLO 0+25S		40		2		30		25		< 0.2				
2	0+50		80		35		23		165		0.3				
3	0+75		80		43		24		139		0.2				
4	1+00		190		36		26		118		0.8				
5	2+25		150		65		15		118		0.2				
6	5+00		130		68		28		165		0.2				
7	1+00 W		60		19		23		52		0.7				
8	1+25 E		180		80		57		196		< 0.2				
9	BLO L2 0+50E		60		30		16		134		0.3				
0	0+75		70		90		43		163		0.3				
1	0+75W 2+00S		60		5		25		13		< 0.2				
2	1+25W		100		17		20		40		0.2				
3	1+50		70		7		12		20		< 0.2				
4	BL 0+50E 5+00S		130		44		17		120		< 0.2				
5	BL 0+75E 5+00S		90		48		5		87		< 0.2				
6	BL2 L2+00W 1+50N		90		35		17		91		0.2				
7	TRS 01		110		25		14		335		< 0.2				
8	BS 01		N.S.		N.S.		N.S.		N.S.		N.S.				
9															
0															

FORM NO 003

GEO ANALYTICAL SERVICES (WESTERN) LTD

JOB 80-79

PAGE 15

SAMPLE TYPE:

LAB No.	CLIENT No.		Au ppb		Cu ppm		Pb ppm		Zn ppm		Ag ppm				
1	BL2 BLO 5+75W		50		29		8		73		0.2				
2	6+00		100		53		2		85		0.2				
3	6+25		40		35		21		65		0.2				
4	6+50		50		24		16		74		0.2				
5	6+75		70		67		10		84		0.2				
6	7+00		90		75		96		99		0.2				
7	RIT 1		70		56		82		79		0.2				
8	3		90		18		51		76		0.2				
9	5		60		120		107		104		2.3				
0	7		80		500		69		70		0.5				
1	11		40		100		57		74		1.1				
2	12		40		63		91		83		0.3				
3	14		40		25		63		51		0.7				
4	16		30		63		121		55		0.5				
5	9		40		10		50		24		0.3				
6	UB9 2		40		90		30		118		< 0.2				
7	3		30		80		22		135		0.2				
8	4		60		45		41		150		0.2				
9															
0															

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SAMPLE TYPE:

LAB No.	CLIENT No.	Au ppb	Cu ppm	Pb ppm	Zn ppm	Ag ppm
1	UB9 5	50	50	33	135	0.2
2	6	50	42	32	117	0.2
3	7	30	70	22	123	0.2
4	8	10	51	32	102	0.2
5	9	20	22	26	110	0.2
6	10	20	52	30	147	0.2
7	11	30	26	39	145	0.2
8	12	90	25	23	144	0.2
9	13	40	24	27	132	0.2
0	14	100	30	31	122	0.2
1	15	20	28	27	107	0.2
2	16	< 10	20	31	118	0.2
3	17	20	20	29	110	0.2
4	18	30	20	34	101	0.2
5	19	20	52	37	124	0.2
6	20	30	51	52	160	0.2
7	21	30	95	26	115	0.2
8	22	30	125	60	162	0.2
9						
0						

SAMPLE TYPE:

LAB No.	CLIENT No.	Au ppb	Cu ppm	Pb ppm	Zn ppm	Ag ppm
1	UB9 23	70	28	23	125	0.2
2	BL1 BL0 00	80	41	41	87	1.0
3	0+25E	150	31	49	87	2.1
4	0+75	70	175	24	118	0.4
5	1+00	90	37	90	110	0.2
6	0+25W	200	23	37	42	1.2
7	0+50	200	13	14	18	1.1
8	0+75	60	16	34	35	1.7
9	1+00	90	72	159	420	0.6
0	1+25	80	22	25	17	4.5
1	1+50	210	22	29	54	0.7
2	BLO L2 0+25E	20	23	59	118	0.3
3	BLO 1+25S	90	45	42	95	0.2
4	1+50	110	40	84	150	0.2
5	1+75	90	52	21	189	0.2
6	2+00	220	66	27	220	0.2
7	2+50	70	75	25	132	0.2
8	2+75	50	85	35	105	< 0.2
9	UB9 24	80	43	34	90	< 0.2
0						

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SAMPLE TYPE:

LAB No.	CLIENT No.	Au ppb	Cu ppm	Pb ppm	Zn ppm	Ag ppm
1	BL0 3+00S	70	43	50	135	< 0.2
2	3+25	N.S.	N.S.	N.S.	N.S.	N.S.
3	3+50	100	81	101	310	0.5
4	3+75	100	61	175	555	0.7
5	4+00	610	140	325	600	3.1
6	4+25	1210	355	2550	3550	9.9
7	4+50	110	90	26	160	0.5
8	4+75	70	118	21	250	0.3
9	BL0 L2 0+50W	110	30	32	95	0.2
0	1+00	70	9	27	5	0.2
1	2+25	50	29	25	90	0.2
2	1+00	110	47	28	100	< 0.2
3	L4 0+50W	110	107	30	160	0.3
4	0+74	N.S.	N.S.	N.S.	N.S.	N.S.
5	1+50	100	45	93	115	0.6
6	0+25E	910	127	126	1150	6.3
7	BL0 1+85 L6 6+00S 1+50E	120	77	55	170	0.4
8	1+25	100	46	53	140	0.3
9						
0						

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SAMPLE TYPE:

LAB No.	CLIENT No.		Au ppb		Cu ppm		Pb ppm		Zn ppm		Ag ppm				
1	L6 1+00E		110		19		22		30		0.5				
2	0+75		30		15		17		15		0.6				
3	0+50		130		47		40		110		0.3				
4	0+50W		110		24		20		55		0.2				
5	L8 8+00S 1+50E		120		98		27		205		< 0.2				
6	1+00E		130		21		15		105		0.3				
7	0+75E		90		9		18		30		0.3				
8	0+50E		30		40		13		120		0.2				
9	0+25E		40		57		20		100		0.3				
0	1+00W		100		24		21		50		< 0.2				
1	1+25W		N.S.		N.S.		N.S.		N.S.		N.S.				
2	BL1 BL0+25E 5+00S		70		49		20		115		0.2				
3	0+50E		70		15		27		60		0.5				
4	1+00E 5+00S		110		77		6		105		0.2				
5	1+50E 5+00S		60		58		25		120		0.2				
6	1+75E 5+00S		40		16		15		10		0.2				
7	1+25E 5+00S		70		63		8		85		< 0.2				
8	1+85E 5+25S		30		40		23		140		0.2				
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SAMPLE TYPE:

LAB No.	CLIENT No.	Au ppb	Cu ppm	Pb ppm	Zn ppm	Ag ppm
1	BL0 1+85E 5+50S	30	51	102	160	0.6
2	6+00	60	33	53	75	0.5
3	6+50	90	59	130	200	0.5
4	6+75	10	13	15	< 1	0.3
5	7+50	20	36	15	60	0.3
6	8+25	140	61	9	60	0.3
7	BL0 1+85 L12 12+00S 1+50W	10	12	20	40	0.2
8	1+25	40	19	15	35	0.2
9	1+00	70	20	15	60	0.2
0	0+75	160	35	9	70	0.4
1	0+50	10	21	10	50	0.2
2	0+25	70	49	10	65	0.2
3	10+00S L10 1+50E	20	28	10	40	0.4
4	1+25	20	24	14	40	0.3
5	0+75	80	38	12	65	0.3
6	0+50	< 10	10	15	15	0.2
7	0+25	60	40	7	100	0.3
8	1+50W	80	40	10	75	0.2
9						
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SAMPLE TYPE:

LAB No.	CLIENT No.		Au ppb		Cu ppm		Pb ppm		Zn ppm		Ag ppm				
1	L10 10+00S 1+25W		30		25		11		55		0.2				
2	0+75		20		23		15		95		0.2				
3	BL0 1+85E 12+00S 0+25E		20		27		10		45		0.2				
4	0+50		10		15		10		5		0.2				
5	0+75		20		232		8		140		0.2				
6	1+00		10		136		6		125		< 0.2				
7	1+25		20		105		6		115		< 0.2				
8	1+50		20		54		8		90		< 0.2				
9	BL0 1+85E 8+50S		20		109		13		130		< 0.2				
0	9+00		10		31		10		40		< 0.2				
1	9+50		< 10		38		6		75		< 0.2				
2	10+00		10		30		8		70		< 0.2				
3	10+25		< 10		53		9		35		< 0.2				
4	10+50		30		78		69		230		< 0.2				
5	10+75		20		40		12		55		< 0.2				
6	11+25		20		38		10		55		< 0.2				
7	11+75		10		32		10		50		< 0.2				
8	12+00		< 10		33		8		55		< 0.2				
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SAMPLE TYPE:

LAB No.	CLIENT No.		Au ppb		Cu ppm		Pb ppm		Zn ppm		Ag ppm				
1	BL0 1+85E 12+25S		< 10		35		6		55		0.2				
2	12+50		30		143		6		105		0.2				
3	12+75		30		70		10		90		< 0.2				
4	13+00		50		67		10		80		< 0.2				
5															
6															
7															
8															
9															
0															
1															
2															
3															
4															
5															
6															
7															
8															
9															
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SAMPLE TYPE:

LAB No.	CLIENT No.		As ppm	Au ppb	Cu ppm	Co ppm	Cr ppm	Pb ppm	V ppm	Zn ppm	Mn %	Fe %	Ag ppm		
1	T 1		90	20	65	32	11	240	51	380	1.24	25.2	< 0.2		
2	2		117	100	82	23	17	250	48	330	1.36	26.4	< 0.2		
3	3		145	60	35	38	21	180	61	320	1.36	32.4	< 0.2		
4	4		38	20	41	10	21	48	94	120	1.02	18.8	0.2		
5	5		48	50	39	23	14	30	92	130	0.97	19.2	< 0.2		
6	6		67	50	46	20	26	44	82	160	1.36	19.2	< 0.2		
7	7		93	20	35	12	23	35	103	140	0.76	17.2	< 0.2		
8	8		17	10	39	13	23	39	100	120	0.29	12.8	< 0.2		
9	9		49	20	40	16	17	29	89	170	1.36	18.0	< 0.2		
0	10		37	20	41	18	17	28	101	190	1.36	22.4	0.2		
1	11		60	60	53	30	27	80	69	270	1.31	18.8	< 0.2		
2	12		35	30	45	20	17	19	114	150	0.95	23.2	0.2		
3	13		35	30	55	18	19	25	85	120	1.31	23.6	< 0.2		
4	14		72	20	61	19	16	32	74	150	1.31	23.6	0.2		
5	15		15	20	31	25	12	17	68	120	1.31	17.6	< 0.2		
6	16		60	30	47	17	19	22	79	150	1.24	18.4	< 0.2		
7	17		43	30	50	20	23	24	93	180	1.31	24.0	< 0.2		
8	18		34	30	41	23	17	19	108	180	1.31	22.8	< 0.2		
9															
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SAMPLE TYPE:

LAB No.	CLIENT No.		As ppm	Au ppb	Cu ppm	Co ppm	Cr ppm	Pb ppm	V ppm	Zn ppm	Mn %	Fe %	Ag ppm		
1	T 19		25	50	40	33	12	22	67	140	1.32	16.8	< 0.2		
2	TRS 02		< 5	50	45	10	75	47	143	150	0.37	8.8	0.6		
3	CR 1		82	70	70	30	12	49	57	300	1.32	14.4	0.4		
4	2		72	50	62	20	17	33	74	110	0.96	17.2	0.4		
5	3		42	50	109	21	15	38	49	80	1.32	18.0	< 0.2		
6	4		35	50	54	21	24	29	92	110	1.31	16.8	< 0.2		
7	5		49	50	45	16	55	20	143	80	0.60	14.0	< 0.2		
8	6		90	70	62	21	70	29	169	100	0.65	16.0	< 0.2		
9	7		55	50	36	18	37	20	131	22	1.28	16.4	< 0.2		
0	8		68	90	70	33	44	45	143	21	1.32	20.8	0.5		
1	LB9 1		74	70	56	24	32	28	108	15	1.26	17.6	0.4		
2	36		15	30	30	34	16	16	90	10	0.78	13.0	0.2		
3	UB9 1		50	30	43	39	35	21	132	13	1.00	15.6	< 0.2		
4															
5															
6															
7															
8															
9															
0															

FORM NO. 003

A P P E N D I X I I

PROPERTY DESCRIPTIONS
AND
GENERAL GEOLOGY

MINERAL PROPERTIES

1. Winslow

The Winslow (159) occurrence is located at the head of Burg Creek on the southwesterly facing slopes of Silver Cup Ridge (Figure 5). The Winslow vein was staked prior to 1904, and most of the exploration and development work done on the vein was conducted prior to 1915. Some ore shipments were reported for 1918, but from then until 1933, the property was dormant. Attempts to rehabilitate the old workings began in 1933 and by the end of 1939 a new mill had been constructed and several tons of concentrates shipped. Milling operations continued through 1940 and 1941, when, in the latter year, a small tonnage of ore was treated, mainly from the Okanagan claim. The property again lay dormant from 1941 to 1971, when rising precious metals prices encouraged new work on the ground. During 1971 and 1972, minor surface work and road building was conducted on the claims. Subsequent to 1941, the property changed ownership several times and a limited amount of information is available from examinations carried out by professional engineers during this interval.

The Winslow vein has been traced from near the southern boundary of the Winslow claim (L 8680) to the crest of the hill between Sixmile Creek and Burg Creek. To date, approximately 1,000 feet of underground workings, driven from at least seven separate locations, have explored the vein over a vertical distance of 300 feet and a horizontal distance of 400 feet. Mineralization consists mainly of pyrite with lesser amounts of galena, sphalerite, and rare free gold. The vein system consists of two veins, aggregating 12' in width, with a 1.5 to 4 foot panel of schistose material separating the two veins. The vein strikes about N 20° E and dips 55°-60° E. The best gold values occur in a pipe-like ore shoot with grades tapering off horizontally along the vein structure. The vein is typical of other precious metals occurrences in the "Central Belt", which also exhibit limited potential along strike, but good continuity of grades with depth. The oxidized portions of the Winslow vein system are considerably enriched in gold, and have assayed as high as 5.4 oz/ton Au and 4.6 oz/ton Ag (MMAR, 1914). More representative grades of unoxidized vein material are reported by several authors to be:

Au (oz/ton)	Ag (oz/ton)
0.4	0.6

Although it is impossible to arrive at any meaningful estimate of possible tonnages at this point in time, it should be borne in mind that today's high precious metals prices and efficient milling and extraction techniques might significantly extend the mineable horizontal dimensions of the vein.

2. Okanagan-Enderby

The Okanagan-Enderby veins (163) are located on the Okanagan (L 9127) and Enderby (L 9128) adjoining Crown grants which are situated at the headwaters of Burg Creek about one kilometer east of the Winslow and Gladhand Crown grants and one kilometer west of the peak of Triune Mountain. The Okanagan vein has been exposed over a length of 200' in a shallow basin near the summit of the ridge at an elevation of 7700'. Workings consist of two 14' shafts and several open cuts. Approximately 200' south of the southerly shaft and 60-70' lower in elevation, a crosscut was driven towards the vein but was stopped 10-20' before intersecting it.

The vein is one of a large number of barren and mineralized (various amounts of pyrite and lesser galena, sphalerite, and chalcopyrite) quartz veins that are exposed along the gently sloping part of the ridge crest between Cup Creek and the steep slopes facing Trout Lake. The vein, where exposed, is 1.5' to 4.5' in width, strikes N 10^{o} W to N 33^{o} W, and dips 57^{o}-65^{o} E.

The following assays have been reported:

Location	Width	Au (oz/ton)	Ag (oz/ton)
N. shaft	1.2'	1.68	-
grab at shaft	-	1.03	-
"	-	2.71	-
"	-	2.22	-
--	3.0'	5.4	5
Specimen (no gangue)	-	13.7	67.9
--	3.0'	1.9	2.9

The vein pinches out about 200' north of the above-described workings, but has been traced southerly from the workings for a "considerable" distance.

The Enderby vein is exposed several hundred feet northwest of the southeast corner of the Enderby claim. The vein is reported to be 1.5' to 3' in width, strikes N 55° E, and dips fairly flatly to the east. The following assays have been reported:

Width	Au (oz/ton)	Ag (oz/ton)	Pb (%)
grab from dump	0.064	35.2	33.5
2'	0.04	46.83	43.43
2.5'	0.07	7.3	
14' trench	0.012	2.68	

The vein exhibits more similarities to the Silver Cup vein structures than to the Winslow, Okanagan, and Alice veins.

3. Alice

The Alice vein (172) is located in the precipitous cirque at the headwaters of a tributary of Laughton Creek. The claim is underlain by highly deformed phyllites of the Sharon Creek Formation. The vein is one of the most consistently developed of a number of quartz veins which are known on the property, and may be an extension of the Foggy Day vein (169), also known as the Sunshine vein. The vein has been explored by four adits and a number of open pits. It varies in width from 2' to 5', strikes N 7° E, and dips from 43° to horizontal, averaging 15°E and increasing down dip.

The No.1 (lowermost) adit was driven 60' as a crosscut, and 15' along the vein. The No.2 adit is located 50' northwesterly from the portal of the No.1 adit, and 15' higher in elevation. It was driven as a crosscut for 23' and drifted along the vein for 25'. The No.3 adit was driven from a point 25' northwest from the portal of No.2 adit and 5' higher in elevation. The drift follows the vein for 35'. The No.4 adit is only 12' in length and is located 35' northwest of the Alice working and 5' higher. All of these workings are driven into a steep scarp at the head of the talus covered slope. The cliff provides a good cross-section of the flat lying vein. The following assays have been reported:

Location	Width	Au (oz/ton)	Ag (oz/ton)
No.1 Adit	1.4'	0.01	Tr
	1.5'	0.05	1.4
No.2 Adit	2.0'	0.50	1.15
	2.5'	1.14	3.40
	2.1'	1.04	2.40
	1.9'	0.19	0.20
No.3 Adit	1.2'	0.30	0.95
	1.9'	1.54	2.6
grab of sorted rejects		3.50	9.80
No.4 Adit	8"	0.40	0.40

At least one author reports that the Foggy Day vein (169), also known as the Sunshine vein, can be traced from south of the Alice claim into the same structure as the Alice vein. The vein varies in width from 2' to 5' and has a relatively flat dip similar to that of the Alice vein. One adit, 77' long, has been driven on the vein, from which the following assays are reported:

Width	Au (oz/ton)	Ag (oz/ton)
3.1	1.22	3.40
4.0	0.06	Tr
2.0	0.04	Tr
2.4	0.15	Tr

4. Mabel Group

The Mabel prospect (166) is located at the headwaters of Laughton Creek, about one kilometer west of the summit of Silver Cup Ridge, on the Bug 7 claim. The property was staked prior to 1898. Early development included a 50' deep shaft on the Virginia claim (now abandoned) and drifting along the vein. The vein was reported to be 4' in width, although heavily mineralized sections were narrower. The showing on the Mabel claim was reported to have been exposed over a distance of 300' at surface.

Drifting was also carried out on the Mabel claim. No other information about the occurrences is known to the writer. The prospect was probably of little interest at the turn of the century since it was known to be "concentrating" ore rather than "direct-shipping" (high-grade) ore and the economics of the day would not support it as a producer.

5. Alpine

The Alpine prospect (168) is located approximately 1.5 km southeast of the head of the north fork of Brown Creek on the Bug 8 claim. The quartz vein is about 3' wide, strikes north-south, dips 84^{o}E, and has been exposed over a strike length of 200' by several open cuts. A 40' deep shaft is collared at an elevation of 7,075' ASL. Mineralization consists of pyrite, galena, sphalerite, and chalcopyrite, in a quartz gangue. The following assays have been reported:

Au (oz/ton)	Ag (oz/ton)	Pb (%)
0.1	3.3	4.6

6. Jewell

The Jewell prospect (177) is located approximately 3 km southeast of the Alpine prospect at an elevation of 7,300' on the Bug 8 claim. A well-defined quartz vein, 2.5' to 4' wide, striking N45^{o}W and dipping north-easterly, cuts the enclosing phyllites almost at right angles. Mineralization consists of galena, pyrite, and sphalerite. The following assays have been reported:

Location	Width	Au (oz/ton)	Ag (oz/ton)	Pb (%)
bottom of shaft	2.5'	0.12	1.9	----
solid galena from open cut	---	0.06	54.0	78.3

Later development on the property included the sinking of a small winze by Ainsworth Mines Ltd., who shipped 26.5 tons of ore; and some trenching carried out by Leadridge Mining Co. Ltd. in 1949 in conjunction with their exploration program of the adjacent Wagner group.

7. H.Y.M.

The H.Y.M. occurrence (178) is located near the head of Brown Creek on the Bug 6 claim. The Minister of Mines Annual Report for 1911 reports that two adits had been driven on the vein, the upper adit being 30' and the lower adit 50' long. The lower adit was intended to cut the vein 150' in and 125' vertically below the upper level. The mineralized zone in the upper level was reported to be 10" to 14" in width and averaged 90 oz/ton Ag. Three other veins were also known on other parts of the H.Y.M. Fourteen tons of ore were shipped from the workings.

CHAPTER II.—GENERAL GEOLOGY

The Ferguson area contains a thick sequence of highly deformed sedimentary and volcanic rocks intruded locally by small masses of diorite. The sedimentary and volcanic rocks were divided by Walker and Bancroft (1929) into the Hamill series, Badshot formation, Lardeau series, and Milford group. The Hamill series, the oldest, is dominantly quartzitic, the Badshot is limestone, and the Lardeau series includes phyllite, quartzite, grit, pyroclastic and flow rocks, and minor limestone. These three units were regarded as part of a thick conformable succession unconformably overlain by limestone, chert, and argillite of the Milford group.

The Hamill and Lardeau series, which are primarily lithological units, are called the Hamill and Lardeau groups in the present report. The groups have been subdivided into formations. Several formations are well-defined units with distinctive lithologies; others are poorly defined and contain thick and varied sequences not readily subdivided. Some formations, particularly those containing volcanic rocks, change facies rapidly. The formations have been named because they are useful map-units within the area, and several have been recognized well beyond the map-area. It is hoped they will be of value in geological studies of other sections of the Kootenay arc. The formations are given in the following table.

Table of Formations

Group	Formation	Lithology
Mafic intrusives.		Mainly diorite.
Milford.		Slate, argillite, chert, limestone, and pebble conglomerate.
Stratigraphic relationship not established within the map-area.		
Lardeau.	Broadview.	Grey and green grit and phyllite; minor pebble conglomerate and pyroclastic rocks.
	Jowett.	Mafic lavas, pyroclastic rocks, argillite, minor limestone.
	Sharon Creek.	Dark-grey to black siliceous argillite; slate, phyllite, and minor grit.
	Ajax.	Massive grey quartzite.
	Triune.	Grey to black siliceous argillite.
	Index.	Dark-grey and green phyllite; dark-grey argillite; minor limestone and volcanic rocks.
Probable conformity—relationship uncertain in map-area.		
	Badshot.	Grey limestone.
	(Lade Peak.)	(Grey limestone and argillaceous limestone.)
Apparent conformity—relationship uncertain in map-area.		
Hamill.	Mohican.	Dark-grey and green phyllite; minor limestone.
	Marsh-Adams.	Grey, brown, and white quartzite; micaceous quartzite; minor phyllite.
	Mount Gainer.	White to pinkish quartzite.
Base not exposed.		

The present study has been principally of the Lardeau group. Although the Lardeau group has been known for many years and is widely distributed in the Kootenay arc and to the north (*see* Reesor, 1957b; Rice, 1941; Okulitch, 1949), little is known of the internal stratigraphy of the group. Areas containing the Lardeau group are structurally complex, and the structural complexities have confused stratigraphic studies which heretofore have been mainly of a reconnaissance nature.

than, the Badshot limestone. The Lade Peak and the Badshot limestones occur northeast of the Lade Peak anticline on the limbs of a complex syncline containing dark-grey and black phyllites without distinctive markers or structural features by which the form of the syncline can be readily determined. On the southwest limb of the syncline the Lade Peak limestone is overlain by a few hundred feet of green phyllite with a thin bed of limestone and another of quartzite near the top (*see* p. 20). These distinctive rocks are not found on the northeast limb of the syncline adjacent to the Badshot limestone. The contact of the Badshot limestone with the dark-grey phyllites to the southwest is strongly sheared and may represent a fault with considerable displacement. Despite these uncertainties the Lade Peak limestone is tentatively considered to be the equivalent of the Badshot. Alternatively, the Lade Peak limestone may be a relatively great distance stratigraphically above the Badshot and not repeated northeast of Lade Peak.

LARDEAU GROUP

The Lardeau group was defined by Walker and Bancroft (1929, p. 11) from the Lardeau district in which it is widely exposed. It includes a great thickness of sedimentary and volcanic rocks between the Badshot formation and the Milford group. The Lardeau group continues beyond the Lardeau area and has been mapped along Kootenay Lake (*see* Rice, 1943; Reesor, 1957a). Everywhere it is highly deformed and locally it is intensely metamorphosed. Details of the structure and stratigraphy of the Lardeau group as a whole had not been studied before the present work in the Ferguson area. In this work the Lardeau group has been subdivided into formations (*see* Table of Formations) which have been traced for several miles along strike within the map-area and are found in both the northeastern part of the area and on the Silvercup anticline. Parts of some formations change facies within the map-area, both parallel to and across the formational strike. Although it is uncertain how far details of the stratigraphy extend, the Lardeau group as a whole and a few distinctive formations within it are recognized in other places in the Kootenay arc.

Index Formation

The oldest rocks in the Lardeau group are members of the Index formation, named from exposures in the basin of Index Creek, a northwesterly flowing tributary of Gainer Creek. The Index formation consists of a thick sequence of grey and green phyllite and dark-grey argillite together with thin bands of limestone, argillaceous limestone, and volcanic rocks. The formation outcrops in a folded belt more than 2 miles wide southwest of Badshot and Mohican Mountains, and the upper part is exposed in the basin of Triune Creek in the core of the Silvercup anticline.

The formation is best known from exposures in the folded belt southwest of Badshot and Mohican Mountains. It consists of green phyllite, overlain by grey phyllite and dark-grey argillite. Thin lenses of limestone are found near the base and at the top of the grey phyllite. The uppermost limestone is overlain by phyllitic green volcanic rocks, the highest member in the Index formation. The volcanic rocks are overlain conformably by the Triune formation.

The Index formation is isoclinally folded about northwesterly trending axes with low plunge. Individual members are repeated several times across the belt between Badshot and Mohican Mountains and the valleys of Bunker Hill and Index Creeks. The Lade Peak limestone occupies the cores of five isoclinal anticlines (*see* Fig. 3), and the Index formation, which overlies the limestone, is contained in the intervening synclines and forms a more or less homoclinal succession only southwest of the Silver Chief anticlines.

Green phyllite, the basal member of the Index formation, overlies the Lade Peak limestone. The contact is well defined and commonly sheared or tightly folded. The green phyllite occurs on both limbs of the Lade Peak anticline, where it is a few hundred feet thick, and outcrops widely to the southwest as far as Index and Bunker Hill Creeks. It appears to thicken toward the southwest and has not been found adjacent to the Badshot limestone on Badshot and Mohican Mountains. The green phyllite has a strong but somewhat irregular cleavage. Beds are not commonly visible, but where seen they are a fraction of an inch thick and tightly crenulated. Study of thin-sections shows the principal minerals to be quartz, muscovite, and chlorite. Narrow lenticular bands of grey and greenish-grey phyllite, which lack chlorite, are fairly abundant.

The green phyllite is overlain by grey and dark-grey phyllite and argillite. The grey phyllite and argillite occupies most of a synclinal trough between the Lade Peak anticline and Badshot and Mohican Mountains. Northwest of Gainer Creek it is repeated in another synclinal trough southwest of the Lade Peak anticline, but it does not continue on strike southeast of the creek. The grey phyllite is repeated again in the upper part of Bunker Hill Creek and on the ridge between Bunker Hill and Gainer Creeks (*see* Fig. 2). The rocks immediately southwest of Badshot and Mohican Mountains are dark-grey to black phyllites and argillites with lenses and beds of limy argillite and platy limestone a few tens of feet thick. The argillite is commonly silty, and characteristically contains clear quartz grains which are visible with the aid of a hand-lens. Southwest of the Lade Peak anticline the grey phyllites are similar to those just described, but in general they are lighter grey, fined grained and contain essentially no limy beds. In the upper part of Bunker Hill Creek, grey to black phyllite is several hundred feet thick and on the southwest is interbedded and infolded with green phyllite. To the southeast along Index Creek it grades into green phyllite. Thin-sections reveal that the grey phyllite differs from the green only in the content of carbonaceous material.

The contact of the grey phyllite with the underlying green phyllite is not well defined, but locally a bed of grey limestone and another of brownish quartzite occur near the contact. The limestone and quartzite are well exposed on the northeast limb of the Lade Peak anticline. The limestone averages a few tens of feet thick, but north of Lade Peak it is more than 100 feet thick, near Gainer Creek it pinches out and to the southeast of Gainer Creek it occurs only as lenses. The limestone is grey and dark grey and contains narrow interbeds of grey and locally green phyllite. It is overlain by about 100 feet of grey and green phyllite which in places contains lenses of brownish quartzite and grades up into a few tens of feet of this quartzite. The quartzite is mainly composed of rounded grains of quartz that are commonly 1 to 2 millimetres in diameter and, in the coarser varieties, as much as 4 millimetres in diameter. Visible grains of feldspar give the rock a porphyritic appearance. Minor amounts of muscovite, iron oxides, and carbonates are present. The quartzite occurs in lenticular beds a few feet thick that change rapidly in thickness and grain size along strike.

Neither the quartzite nor the underlying limestone is found on the southwest limb of the Lade Peak anticline, but the limestone and thin lenses of fine-grained brownish quartzites are repeated about 3,000 feet southwest of Lade Peak. The limestone pinches out near Gainer Creek and has not been found to the southeast. Farther to the southwest a lens of quartzite near the contact of the green and the grey phyllite is exposed on the ridge between Bunker Hill and Marsh-Adams Creeks. It weathers white, is brownish on fresh surfaces, and contains many quartz veinlets. The lens is 15 to 20 feet thick and extends for about 1,000 feet along strike on the top and down both sides of the ridge.

Another thin bed of limestone in the Index formation crosses the Molly Mac property on the ridge between Bunker Hill and Gainer Creeks and is referred to as the Molly Mac limestone. It overlies the grey phyllite just described and is several hundred feet stratigraphically above the limestone and quartzite near the base of the grey phyllite. Southeast of the Molly Mac property the limestone outcrops intermittently as far as the Index basin; at the head of the basin and to the southeast it forms discontinuous lenses in complexly folded phyllite. Northwest of the Molly Mac property the limestone continues to an area of little or no outcrop southwest of the lower part of Bunker Hill Creek and does not occur to the northwest near the head of the creek.

The Molly Mac limestone on the Molly Mac property ranges from about 40 to more than 100 feet thick. It is thinly banded grey and dark-grey limestone with dark-grey argillaceous partings in the lower part. The contacts are well defined; it is underlain by several feet of green phyllite followed downward by a thick section of grey phyllite, and is overlain by olive-green phyllitic volcanic rocks containing lenses of grey phyllite near the limestone. In the Index basin near the Index workings the limestone is 50 to 60 feet thick, weathers cream coloured, and is more coarsely crystalline than at the Molly Mac. Lenses of siderite containing disseminated pyrite and locally galena and sphalerite are found at many places in the limestone.

Olive-green phyllitic volcanic rocks which overlie the Molly Mac limestone constitute the uppermost member of the Index formation. Near the limestone the volcanic rocks contain lenses of green or dark-grey phyllite a few feet thick and up to a few hundred feet long. Most of the volcanic rocks are sheared, and many are more or less replaced by rusty-weathering carbonates. Locally, in particular in the basin of Bunker Hill Creek and southeast of the Index basin just beyond the map-area, the volcanic rocks are fairly blocky and contain pillow structures. The pillows have narrow dark-green rims, and spaces between them are filled with buff to white crystalline limestone. In cross-section the pillows are oval, as much as 18 inches long and about 6 inches thick. The longest dimension is parellel to the plunge of fold axes. Pillows are not seen in the sheared and altered volcanic rocks, but small irregular lenses of whitish limestone like those between pillows in the more blocky rocks are common. It is suggested that much of the volcanic sequence above the Molly Mac limestone originally had a pillow structure. Microscopic study of the more blocky volcanic rocks shows that they are composed of very fine-grained amphibole, albite, chlorite, quartz, and somewhat coarser-grained carbonate. The original texture and composition are completely changed. Near the Molly Mac property the volcanic rocks are 500 to 800 feet thick. On the southwest side of the Bunker Hill basin they are about 400 feet thick, and in the Index basin they are very much thinner.

The total apparent thickness of the Index formation ranges from about 1,500 feet in the Index basin to about 2,500 feet in the upper part of Bunker Hill Creek.

The uppermost part of the Index formation is exposed in the core of the Silvercup anticline in the basin at the head of Triune Creek and at the Silver Cup mine. The rocks are well exposed in the Triune basin, but they are altered to carbonates, intruded by diorite, and complexly folded, and the stratigraphic relationships are uncertain. Probably the oldest rocks of the Index formation in the Triune basin are green and grey phyllites occurring immediately southwest of a strike fault on the northeast limb of the Silvercup anticline. They occur on both sides of the basin and contain a bed of buff-weathering fine-grained grey massive dolomite 50 to 100 feet thick. The dolomite lenses out on the northwest side of the basin and continues southeast beyond the map-area. Altered rocks lying southwest of the green and grey phyllites comprise the youngest member of the Index formation this part of the area. They are dominantly green phyllites containing sheared a angular fragments commonly up to half an inch across. Thin-sections show that fragments are mainly of volcanic rock including mafic amygdaloids and porphyr The main constituents are chlorite, actinolite, epidote, and albite. These rocks overlain by the Triune formation.

TRIUNE FORMATION

The Triune formation, overlying the Index formation, occurs in the nor eastern part of the map-area and on the Silvercup anticline. The formation, nan from Triune Peak, is the principal rock in the core of the Silvercup anticline anc extensively exposed between Triune Peak and Five Mile Creek. . In the northeast part of the map-area it forms a more or less continuous band along the southw side of the valleys of Bunker Hill and Index Creeks.

The formation is characteristically blocky grey to black siliceous argill Where sheared it is siliceous slate or phyllite. Very siliceous rocks resembling g cherts are found in the formation at a number of places on the Silvercup anticli

In the northeastern part of of the area the Triune formation is composed mai of dark-grey to black siliceous argillite. Fresh surfaces are commonly coated w rust from the weathering of disseminated pyrite, and below the glacier on the sou west side of Bunker Hill Creek the Triune formation forms impressive rusty cli Locally, areas a few inches across are coated with a blue copper stain. Vague be parallel to joints, range from about one-half to 2 inches thick and are commo obscured by cleavage. Near the top of the formation in the northeastern part of area is a soft, grey to purplish-brown silty argillite with well-marked beds a fract of an inch to as much as a foot thick. Southwest of Bunker Hill Creek a 10-f bed of conglomerate containing angular fragments of argillite in a sandy and s matrix is interbedded with the soft argillite. Soft argillite is found also in the A mine near the crest of the Silvercup anticline, but it has not been recognized e where in the area.

The Triune formation varies greatly in thickness in the northeastern part the area. On the northwest side of Gainer Creek it is more than 1,000 feet th but thins rapidly to the southeast, pinching out entirely in the cliffs north of Red Peak and thickening again to a few tens of feet at the southeast edge of the m area. Northwest of Gainer Creek it is a few hundred feet thick. The upper s argillite is as much as 75 feet thick below the glacier southwest of Bunker Hill Cr and thins markedly to the northwest and southeast. Southeast of Gainer Cr it is found only locally.

On the Silvercup anticline the Triune formation consists of grey and dark-g siliceous rocks ranging from argillite to slate and phyllite; in places it includes v siliceous grey cherty rocks. Most of the formation on the anticline has a m or less well-defined cleavage. Slate and phyllite are common near the Silver C mine and in the Triune basin. Thin-sections of phyllite from near the Silver C mine reveal extremely fine-grained quartz and small amounts of sericite and carbo ceous matter. Rusty siderite metacrysts are common near the mine, and to southeast the phyllite is almost entirely altered to a rusty mass of siderite, muscov and chromian mica. Very siliceous grey cherty rocks occur in the Triune format on the northeast limb of the Silvercup anticline on both sides of the Triune ba and near the crest of the anticline near Five Mile Creek. The cherty rocks h irregular beds marked by poorly defined joints 1 to 2 inches apart.

Apparently complete sections of the Triune formation on the Silvercup anticline are found only on the southwest limb between the Silver Cup mine and Triune Peak. In this locality the formation is somewhat more than 1,000 feet thick.

Ajax Formation

The Ajax formation is a distinctive grey quartzite named from exposures near the Ajax mine northeast of Ferguson. Although it has been named only during the present work, the quartzite was recognized as a distinctive rock type by Walker and Bancroft (1929, p. 12) and was known as the Cromwell dyke in the early days of prospecting. At the Ajax mine the quartzite is near the crest of the Silvercup anticline, and to the southeast it outcrops as two divergent bands on the limbs of the anticline. In the northeastern part of the area the quartzite forms a band of variable width southwest of the Triune formation and has been traced from the head of Marsh-Adams Creek to the head of Stevens Creek southeast of the map-area.

Typically, the Ajax formation is massive grey quartzite with beds ranging from a few inches to several tens of feet thick. Locally the quartzite has interbeds of dark-grey to black argillite a few inches to several feet thick. The quartzite is commonly cut by irregular branching white quartz veins. In general the base of the Ajax quartzite is well defined, but in the northeastern part of the area a few beds of quartzite are found in the uppermost part of the Triune formation.

In the northeastern part of the area the quartzite is mainly massive and blocky, but in some sections several feet of thin-bedded quartzite with dark-grey argillaceous partings are present. Thin-bedded rocks have a poorly developed cleavage, dipping steeply to the southwest, and most of the quartzite has joints parallel to bedding planes. Blocky quartzites in places contain rounded limy concretionary masses composed of grey to brownish quartzite with a limy cement. In some localities these are 1 to 3 inches in diameter; in others, 8 to 10 inches in diameter. On the northwest side of Marsh-Adams Creek conglomerate a few feet thick containing rounded cobbles a few inches across occurs in the Ajax quartzite. The quartzite is more than 2,000 feet thick along Gainer Creek, but has been thickened by folds and obscure strike faults. It thins rapidly upward to a few feet in exposures in upper Bunker Hill Creek, and pinches out entirely to the southeast in cliffs north of Redcliff Peak.

On the southwest limb of the Silvercup anticline the Ajax quartzite has a lower part as much as 200 feet thick in which beds are a few feet thick and argillaceous interbeds are common. It is overlain by massive quartzite, becoming flaggy toward the top. Very few argillaceous beds occur in the quartzite on the northeast limb. The Ajax quartzite is commonly about 600 feet thick on the southwest limb of the Silvercup anticline and less than 200 feet thick on the northeast limb. Near Five Mile Creek and southeast of Triune Creek it pinches out entirely.

Sharon Creek Formation

The Sharon Creek formation, named from exposures near the head of Sharon Creek, conformably overlies the Ajax quartzite. It occurs on the Silvercup anticline and is well exposed on the southwest limb along the Tenmile road near Six Mile Creek. In the northeastern part of the area it has been traced from the northeast slopes of Mount Jowett southeastward around the northeast slopes of Spine Mountain and Redcliff Peak to the head of Stevens Creek beyond the map-area. On the Silvercup anticline the Sharon Creek formation is overlain by the Broadview formation and in the northeastern part of the area by the Jowett formation.

The Sharon Creek formation is dominantly dark-grey to black siliceous argillite, argillite, slate, and phyllite. Locally it contains lenses of argillaceous limestone and beds of grey quartzite and pebble conglomerate. In general the Sharon Creek closely resembles the Triune formation, and beds of grey quartzite are very similar to parts of the Broadview group.

In the northeastern part of the area the Sharon Creek formation is mainly dark-grey to black siliceous argillite. It commonly resembles bedded chert and has more or less well-defined bedding planes one-half to 2 inches apart, in places marked by thin phyllitic partings. The uppermost part of the formation consists of black argillite, which is less siliceous, poorly bedded, and commonly is strongly cleaved. Where bedding and cleavage are both present, the argillite has a pronounced lineation and breaks into rod-like fragments. On the northern slopes of Redcliff Peak, lenses of grey limestone a few inches thick and about a foot long, and less commonly beds of limestone 2 to 3 feet thick, occur in siliceous argillite of the Sharon Creek formation. On the northwest side of the upper part of Marsh-Adams Creek a 6-foot bed of conglomerate is interbedded with argillite in the upper part of the formation. The formation ranges from about 200 feet to a little more than 1,000 feet thick in the northeastern part of the area.

The Sharon Creek formation is well displayed on the southwest limb of the Silvercup anticline. As in the northeastern part of the area, the lower part, somewhat more than half the total thickness, is dominantly siliceous dark-grey to black argillite, and the upper part is less siliceous. The siliceous argillite is commonly phyllitic and grades up into slaty argillite with interbeds of grey grit up to several feet thick. The grit contains rounded black quartz grains about 1 millimetre in diameter. Between Five Mile and Six Mile Creeks a few beds of conglomerate are found. They contain rounded and angular tabular fragments up to one-half inch thick and 2 inches long, mainly of grey siliceous argillite and less commonly of green phyllite.

On the northeast limb of the Silvercup anticline, the Sharon Creek formation is discontinuous and sliced by strike faults. It is mainly black siliceous argillite and commonly is strongly sheared and crushed.

On the southwest limb of the Silvercup anticline through most of the map-area the Sharon Creek formation is about 800 feet thick. Northwest of Five Mile Creek it appears to thin rapidly and to pinch out entirely on the slopes of Ferguson Creek northwest of the Nettie L mine.

Jowett Formation

The Jowett formation occurs only in the northeastern part of the map-area. The formation is composed mainly of volcanic rocks, which form many of the highest peaks in the district. Within the map-area the Jowett formation occurs on the summits and upper southwest slopes of Mount Jowett, Spine Mountain, and Redcliff Peak; beyond the map-area it forms the upper parts of Mount Pool to the northwest and Mount Wagner to the southeast. Between Ferguson Creek and Gainer Creek the formation has three distinct members—a lower member composed of flow rocks, a middle member of mixed sedimentary rocks, and an upper member of volcanic breccia. Southeast of Gainer Creek the three members are not readily distinguished.

On Mount Jowett the lower member is composed of green commonly amygdaloidal volcanic rock overlain by and grading upward into volcanic breccia. The rocks are blocky and form spectacular cliffs on the northwest, northeast, and southeast sides of Mount Jowett. A poor stratification seen in the cliffs from a distance, although difficult to see at close range, apparently represents individual flows 10 to 20 feet thick, with vague flow banding and scoriaceous margins. In outcrops, vague wavy epidote-rich layers are seen to be somewhat parallel to purplish, discontinuous, highly amygdaloidal layers. The blocky flow rocks are at least 1,000 feet thick and grade upward into somewhat sheared pillow lavas and fragmental volcanic rocks. On Mount Jowett, rocks of the lower member lie conformably on black argillite of the Sharon Creek formation and are in fault contact with the middle member.

Southeast of Mount Jowett, on Spine Mountain and the northwest slope of Gainer Creek, the lower member of the Jowett formation is composed mainly of pillow lavas and fragmental volcanic rocks. The pillow lavas are well displayed near the head of Glacier Creek, a creek flowing southeast into Gainer Creek about 1¾ miles northeast of Tenmile. The pillows are ellipsoidal and commonly are 6 inches to 1 foot thick and 1 to 2 feet long, but some are as much as 2 feet thick and 4 feet long (*see* Plate XIII). They are marked by a fine-grained dark-green margin and concentric bands of amygdules extending into the centre of the pillows. Interpillow spaces are filled with white to buff crystalline limestone. Pillows are displayed best where the rocks are not strongly sheared. On Spine Mountain most of the lower member of the Jowett formation is green phyllite that contains small irregular lenses of whitish to buff limestone. The phyllite is regarded as sheared pillow lava and locally contains recognizable pillow structures. Fragmental volcanic rocks are interlayered with the pillow lavas. Most commonly they are phyllitic, with vague angular light-green fragments up to 2 inches across in a somewhat darker-green matrix. Rocks containing well-defined, rounded, commonly amygdaloidal fragments a few inches across are found locally and are usually less sheared (Plate VIII). Such rocks are well displayed in outcrops in the glacier on the northeast slope of Spine Mountain.

Southeast of Gainer Creek the lower member of the Jowett formation contains phyllitic fragmental volcanic rocks and green phyllites with limy lenses, and in general is similar to the lower Jowett northwest of the creek. It is in sharp and apparently conformable contact with the underlying Sharon Creek formation and grades upward into the middle member of the Jowett formation. On Redcliff Peak the lower Jowett is relatively blocky green fragmental volcanic rock; no pillow lavas were found in the part of the formation mapped.

Thin-sections of the lower member of the Jowett formation show that the rocks are completely recrystallized. Epidote, chlorite, actinolite, and plagioclase are the principal constituents; carbonates and quartz are present locally. Very fine-grained epidote predominates in the more blocky rocks; actinolite and chlorite are abundant in the phyllitic rocks. Plagioclase identified as oligoclase is mostly very fine-grained and rarely occurs as poorly formed porphyroblasts. Actinolite is in fine needles and locally forms pseudomorphs after pyroxene and is itself altered to chlorite. Amygdules are mainly epidote and chlorite and less commonly quartz and calcite.

The middle member of the Jowett formation is a mixed assemblage of sedimentary rocks of both volcanic and non-volcanic derivation. The member contains occasional thin lenses of limestone and comprises mainly brownish, greyish, and locally greenish tuff, lapilli-tuff, argillite, and volcanic breccia with some fragments of limestone and some limy cementing material. The thickness and lithology vary considerably along strike.

On the southeast side of Ferguson Creek and the southwest slopes of Mount Jowett the middle member of the Jowett formation is composed of lenses of buff-weathering grey limestone and green, somewhat limy phyllite. It is strongly sheared and tightly folded and has a wide rusty fault zone on the northeast side. At the head of Finkle Creek the middle member appears to be more than 1,000 feet thick and contains a variety of rock types. Discontinuous lenses of buff-weathering limestone a few tens of feet thick at the top of the member are underlain by grey to brown argillite, tuffaceous argillite, and breccia. Lower in the section a striking bed of conglomerate and breccia a few hundred feet thick contains rounded and angular fragments, some of which are very large, scattered in a grey argillaceous matrix. Rounded fragments a few inches to a foot across are of dark-grey argillite, limy argillite, and buff-weathering siliceous limestone. Fragments of banded light-grey limestone occur as angular blocks several feet across, and one such block, well exposed in the basin southwest of the summit of Spine Mountain, is about 8 feet thick and 75 feet long. The conglomerate and breccia are underlain by grey argillite containing thin beds of dark-grey limestone. Rocks of the type exposed in the Finkle Creek basin continue to the southeast as far as the head of Glacier Creek where they grade into dominantly green and grey phyllites which cross the valley of Gainer Creek. The green phyllites commonly are fragmental, and lenses of buff limestone and amygdaloidal fragmental rocks are interbedded with them on the southeast side of Gainer Creek and extend southeast to the limit of mapping.

The upper member of the Jowett formation is a distinctive green agglomerate or volcanic breccia. Typically the breccia is green to dark green, locally purplish, and is made up of vague rounded fragments an inch to a few inches across. Thin-sections reveal that the matrix is also fragmental and composed of rounded and angular fragments of volcanic rock, commonly with interstitial carbonate. The principal minerals are very fine-grained epidote, actinolite, and chlorite and minor plagioclase. Fragments and matrix are of about the same colour, but fragments usually stand out in relief on weathered surfaces. Although it is somewhat phyllitic, the upper member is resistant to erosion and tends to make continuous ridges and prominent bluffs. The rocks show no bedding or banding but commonly have a poor cleavage. The base of the upper member is sharply defined, except in the valley of Gainer Creek, where it is gradational with green fragmental rocks of the middle member. The top of the upper member is a conformable contact with basal argillite of the Broadview formation. The upper member ranges from about 200 to about 800 feet thick.

The total thickness of the Jowett formation is difficult to estimate accurately. On Gainer Creek, the thinnest section in the map-area, it is 1,500 to 2,000 feet; on Mount Jowett it appears to be double that thickness.

The Jowett formation is not found on the Silvercup anticline, where the Sharon Creek formation is overlain by the Broadview formation (*see* p. 29). The lower division of the Broadview formation on the Silvercup anticline contains two pyroclastic members; one at the base is 50 to 100 feet thick, and one 1,000 to 1,500 feet above the base is about 400 feet thick. In the northeastern part of the area a thick sequence of grits without significant volcanic material overlies the Jowett formation and is regarded as part of the Broadview formation. Close studies along formational contacts suggest that the sequence in both the northeastern part of the area and on the Silvercup anticline is a conformable one. It is concluded that only part, if any, of the Jowett formation was deposited in the vicinity of the anticline. Whether or not the lower division of the Broadview formation on the anticline is equivalent to part of the Jowett formation is a matter for speculation. Similarities between the pyroclastic member of the lower Broadview and the upper member of the Jowett formation suggest a possible correlation of these two members. Lithologic changes within the Jowett formation along strike have been described in the foregoing paragraphs. In general the formation appears to thin toward the southeast.

BROADVIEW FORMATION

The uppermost part of the Lardeau group in the Ferguson area is the Broadview formation, named for exposures along Broadview Creek and near the Broadview mine. It is exposed in two broad belts—one in the northeast part of the map-area and the other on the southwest flank of the Silvercup anticline. The formation comprises a very thick sequence of grey and green unsorted quartzites or grits* and phyllites, with very minor interbedded pyroclastics. The rocks show all gradations from grit to phyllite and from green to grey or black, and the various types are closely interbedded and change in relatively short distances both across and along the strike. Stratigraphic subdivisions can be discerned, but in general they can be traced only relatively short distances. In particular, a succession determined on Mount Homer and Nettie L Mountain in the northeast belt cannot be matched with a succession determined on Silvercup ridge (*see* table, p. 28). On Silvercup ridge and for a short distance up the south and east slopes of Great Northern Mountain three divisions of the formation are recognizable, but on the summit of Great Northern Mountain facies changes make it impossible to distinguish between the middle and upper divisions. Rocks of the Broadview formation probably are exposed widely beyond the limits of the map-area.

Much of the Broadview formation is composed of blocky grey grit, dark-grey and green micaceous grit, and phyllite. Thick sequences of interbedded blocky and micaceous grits with more or less well-defined bedding planes are common. Blocky beds generally weather light grey and contain readily visible dark-grey to black rounded quartz grains. The quartz grains are not sorted; coarse grains locally as much as 1 centimetre across are scattered through a matrix of much smaller grains with a wide range of sizes. Quartz, muscovite, and chlorite are the main constituents seen in thin-section, and minor plagioclase, biotite, epidote, hornblende, and varying amounts of carbonaceous matter are also present. Grits composed mainly of quartz are blocky; micaceous and carbonaceous varieties are phyllitic. In green grits visible quartz grains are whitish. Thin-sections show that the green rocks contain the same minerals as the grey rocks, and differ from them only in the content of carbonaceous material.

Deformation has caused extreme changes locally in the apparent thicknesses and stratigraphic succession within the Broadview formation. Blocky grits interbedded with phyllitic grits tend to pinch out abruptly and phyllitic beds may be greatly thickened, or tightly squeezed and sheared (*see* Fig. 4). Detailed stratigraphy can be determined only by closely following individual beds relatively great distances. Primary sedimentary features that might be useful in determining stratigraphic tops of beds have not been found in the Broadview, and secondary structures such as bedding-cleavage relationships and dragfolds are complex and difficult to interpret.

Two generalized sections of the Broadview formation are given in the following table. The succession on Mount Homer is well exposed and is recognized at many places in the northeastern belt between Ferguson and Gainer Creeks. The succession on Silvercup ridge is not as well exposed as that on Mount Homer but is known at several localities and can be recognized at many places along the southwest side of the Silvercup anticline. The two sections are lithologically similar but cannot be correlated in detail. Differences in the stratigraphy are considered to be the result of sedimentary facies changes. In the northeastern part of the area the Broadview overlies the Jowett formation, but on the Silvercup anticline where the Jowett forma-

* The term "grit" is used in this report for poorly sorted clastic sedimentary rocks with rounded and angular grains, mainly of quartz, up to several millimetres in diameter. The term is descriptive, and is not restricted, as in the classic usage, to rocks with angular grains.

tion is missing (*see* p. 26) the Broadview formation overlies the Sharon Creek formation. Sedimentary facies changes are found on the Silvercup anticline, particularly between Silvercup ridge and Great Northern Mountain.

Generalized Sections of the Broadview Formation

MOUNT HOMER AND NETTIE L MOUNTAIN

Approximate Thickness (Ft.)	Lithology
	Top not found within the map-area.
700	Grey to greenish-grey grit with dark-grey phyllitic partings, beds 6 inches to 1 foot thick.
300–500	Dark-grey to black phyllite and phyllitic grit.
500–1,000	Blocky light-grey grit, beds up to 6 feet thick, few phyllitic or thin-bedded rocks.
100	Greenish grit with buff-weathering limy beds less than 1 foot thick.
1,000–1,500	Green and grey grit in beds up to 1 foot thick with greenish-grey phyllitic interbeds.
50	Dark-grey to black argillite.
	Jowett formation.

SILVERCUP RIDGE

	Approximate Thickness (Ft.)	Map Unit	Lithology
			Milford group.
Upper Division	Several thousand.	10d	Light-green and light greenish-grey grit, greenish phyllitic grit, minor grey grit and dark-grey phyllite.
Middle Division	Several thousand.	10c	Dark-grey to black phyllite and phyllitic grit with relatively few interbeds of blocky grey grit.
	500–1,000		Grey and greenish-grey grit with phyllitic interbeds; beds a few inches thick.
Lower Division	400	10b	Pyroclastic member. Green phyllitic tuff, lapilli-tuff, agglomerate, and breccia.
	1,000–1,500	10a	Green and grey grits with interbeds of dark-grey phyllite and phyllitic grit.
	50		Green to dark-green somewhat limy phyllite.
			Sharon Creek formation.

The section on Mount Homer was measured on the southeast side where the rocks are well exposed, and individual beds can be seen from a distance and traced through a series of complex folds (*see* Fig. 3). Overlying the Jowett formation is dark-grey to black argillite which has been followed along strike to the limits of the map-area. It ranges from a few feet to 200 feet thick and locally is complexly infolded with the overlying grits. The grits immediately overlying the argillite are characteristically thin bedded with light-grey blocky beds separated by dark greenish-grey phyllitic beds. These rocks are a few hundred feet thick and grade up into a sequence of grits and phyllites, without distinctive markers, which in turn are overlain by greenish grit containing buff-weathering limy beds. The limy beds, though not mapped, have been recognized at a number of places between Gainer and Ferguson Creeks. They include buff-weathering interbeds of limestone a few inches thick in grit and greenish phyllite, coarse grits with a limy cement (Plate XII), and locally lenses of limestone a few feet thick. On Mount Homer the limy beds are overlain by very blocky light-grey grit, but to the southeast grits overlying the limy beds contain dark-grey phyllitic partings. The highest member of the Broadview formation shown in the table is exposed on the crest of the ridge about midway between Mount Homer and the summit of Nettie L Mountain. Probably stratigraphically higher rocks occur lower on the slopes southwest of Nettie L Mountain (*see* Fig. 3), but they are broken by faults and their exact relationship to the section described is uncertain.

Grits and phyllites in a belt one-half to 1 mile wide along the northeast side of the Cup Creek fault zone belong to the Broadview formation but have not been correlated with the section on Mount Homer, either because they are highly sheared and broken by faults or because they have no structural continuity with the Mount Homer section. Northwest of Triune Creek the rocks are mainly blocky grey grit with dark-grey phyllitic interbeds. Locally a bed of green phyllite, probably of volcanic origin, is found. One such bed a few hundred feet thick is exposed in Cup Creek near Lardeau Creek, and another occurs on the northwest side of Triune Creek near the Cup Creek fault zone. Attempts to trace and correlate these green phyllites were not successful. Between Finkle Creek and the ridge southwest of Nettie L Mountain the rocks are highly sheared dark-grey to black phyllitic grits.

Southwest of the Silvercup anticline on Silvercup ridge three more or less well-defined divisions of the Broadview formation are recognized. The lower division, roughly 2,000 feet thick, is mainly grey and green grit with a distinctive green limy phyllite at the base and a pyroclastic member at the top. The middle division, several thousand feet thick, contains a few hundred feet of thin-bedded grit in the lower part but is predominantly soft black phyllite and phyllitic grit. The upper division is light-green or grey grit, locally very coarse grained.

The basal member of the lower division, which is a soft, somewhat limy green phyllite, lies directly on the Sharon Creek formation. It is generally a few tens of feet thick and locally is as much as 200 feet thick. Study of thin-sections indicates that the green phyllite is an altered limy argillaceous rock composed of actinolite, chlorite, and plagioclase and containing clastic quartz grains and crystal and rock fragments probably of volcanic origin. The green phyllite is overlain by a thick sequence of green and grey grit and phyllitic grit without distinctive characteristics or marker beds. The basal green phyllite and part of the overlying sequence of grits are repeated across the Silvercup anticline, but the upper part of the grit sequence and the overlying rocks are not exposed on the northeast limb of the anticline because they are transected by the Cup Creek fault zone.

The green and grey grits are overlain by a striking pyroclastic member about 400 feet thick, which is taken as the top of the lower division and has been traced from the southwest slopes of Triune Peak to Broadview Creek, where it is transected by the Broadview fault. The member is phyllitic and is composed of green agglomerate and breccia and phyllitic green crystal tuff. The agglomerate and breccia are composed of vague, rounded and angular fragments of green volcanic rock scattered in a somewhat darker-green tuffaceous matrix. Relatively scarce beds a few feet thick are crowded with well-defined rounded fragments up to about 2 inches in diameter, many of which are amygdaloidal. The fragmental rocks are interbedded with green fine-grained clastic rocks, some of which have prominent white beds a fraction of an inch thick and others contain scattered well-formed crystals of augite up to a few millimetres across. The crystals and rock fragments are broken and are probably of volcanic origin. Study of thin-sections shows rocks of this member to be composed mainly of a very fine-grained aggregate of epidote, chlorite, actinolite, and plagioclase. Whitish beds contain feldspar crystals and detrital quartz grains.

The volcanic member is overlain by the middle division of the formation, which comprises several hundred feet of relatively thin-bedded grey and greenish-grey grits grading upward into a thick sequence of dark-grey to black phyllite and phyllitic grit. These rocks are strongly sheared, contorted, and crushed. They contain disseminated pyrite which commonly, in alpine basins, gives rise to large rusty " iron caps." The middle division has been traced from Silvercup ridge, where it is most easily recognized, northwest across Lardeau Creek and is well exposed in the lower part of Alpha Creek.

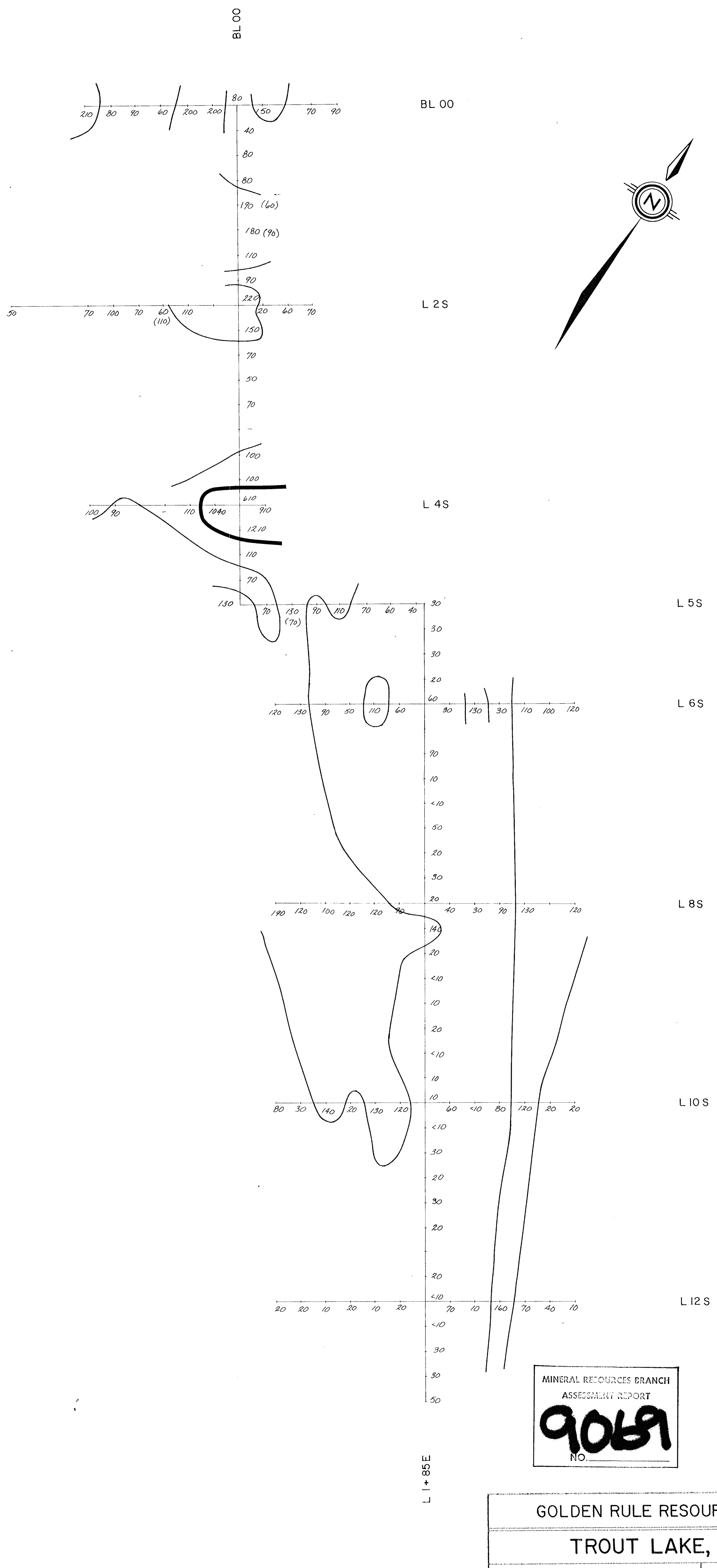
The upper division of the Broadview formation on Silvercup ridge is mainly light-coloured, relatively blocky grit. It is dominantly green but contains light-grey members. Dark-grey phyllitic grits are present locally. The contact with the underlying middle division is gradational, and its location on Figure 2 is approximate. The uppermost part of the upper division is characteristically coarse grained and contains several massive beds of green grit which form prominent bluffs in the lower part of Silvercup ridge and along Lardeau Creek.

Few of the rock types in the Broadview formation recognized on Silvercup ridge have been traced up onto Great Northern Mountain. The lower division is not exposed north of Broadview Creek. Grey and greenish-grey grits at the base of the middle division at the True Fissure mine are overlain by interbedded dark-grey grits and black phyllites. These rocks are succeeded to the southwest, and apparently overlain, by soft, black, gritty, micaceous argillite and phyllite, in which occur scattered thick beds of blocky, coarse-grained grey grit. These rocks are in turn overlain by greenish-grey phyllitic grits which exhibit lustrous, wavy cleavage surfaces. These greenish, lustrous rocks outcrop on the summit of Great Northern Mountain and another peak 3,000 feet to the east, and occur extensively around the head of Mountaingoat Creek. To the southwest on the Lardeau Valley slope they become greener and less phyllitic, grading to light-coloured blocky grit typical of the upper division. The relationship of the greenish phyllitic rocks to the middle and upper divisions is not understood.

MILFORD GROUP

The Milford group is named from Milford Peak (*see* Bancroft, 1919, p. 43), on the west side of Kootenay Lake about 6 miles north of Kaslo (*see* Fig. 1). The stratigraphy and structure of the group near Milford Peak are described in detail by Cairnes (1934, pp. 38–43). Near the type locality the group is a few thousand feet thick and is mainly black argillite and slate with interbeds of limestone and chert. Fossils from the lower part of the group are late Palæozoic, those from the upper part are Triassic, and the sequence is apparently conformable. The group was throught to overlie the Lardeau group with unconformity even though the lower contact is concordant with the Lardeau group.

The Milford group was traced northwest from Milford Peak and into the Lardeau map-area (*see* Walker and Bancroft, 1929, Map 235A) to the southwest side of Trout Lake, a little more than 10 miles south of Ferguson. Farther to the northwest Carboniferous fossils were found in limestone near the mouth of Lardeau Creek, on Mount Thompson between 4 and 8 miles northwest of Lardeau Creek,



MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
NO. 9069

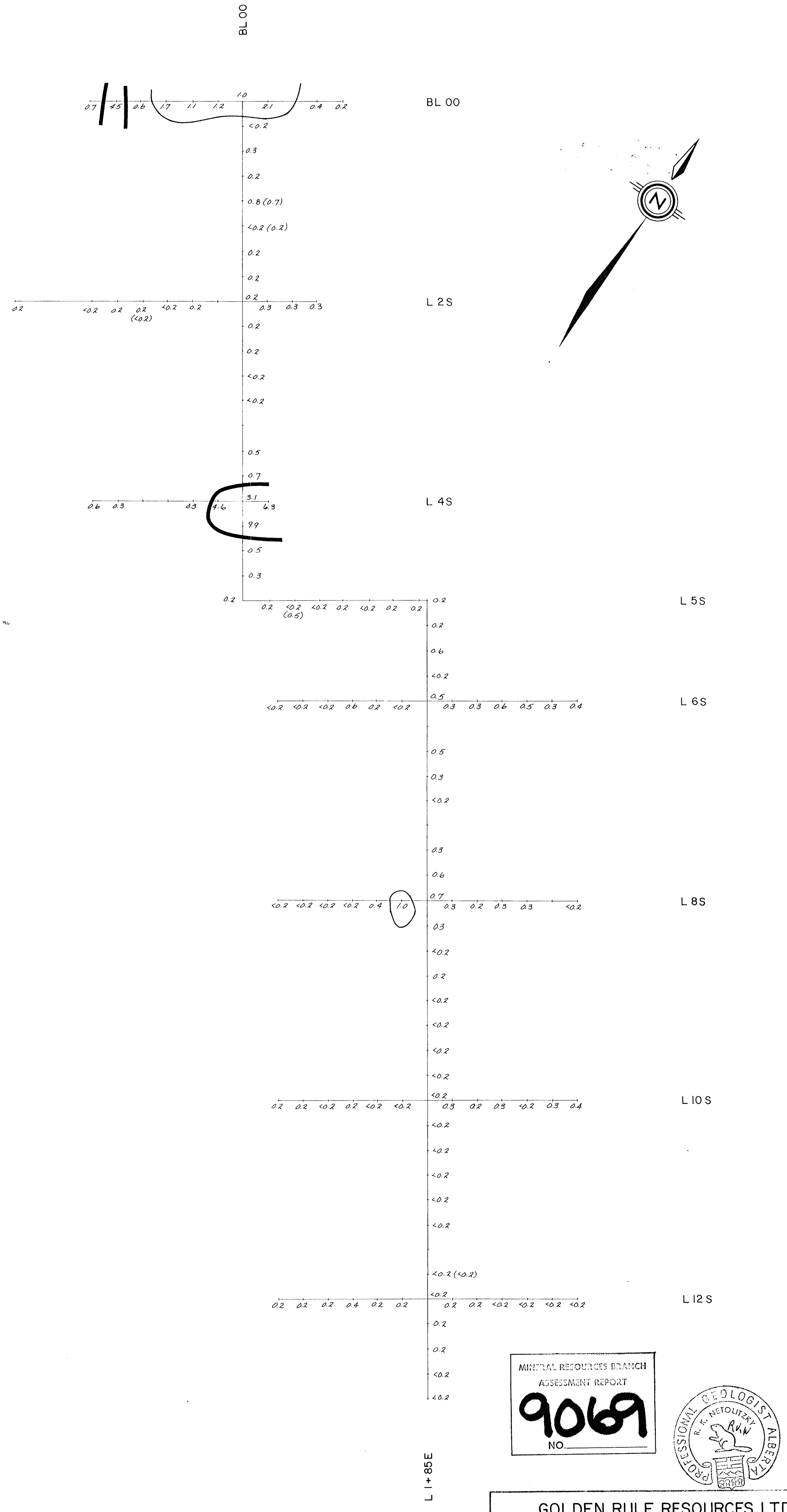
PROFESSIONAL GEOLOGIST ALBERTA
R. K. NETOLITZKY

GOLDEN RULE RESOURCES LTD.

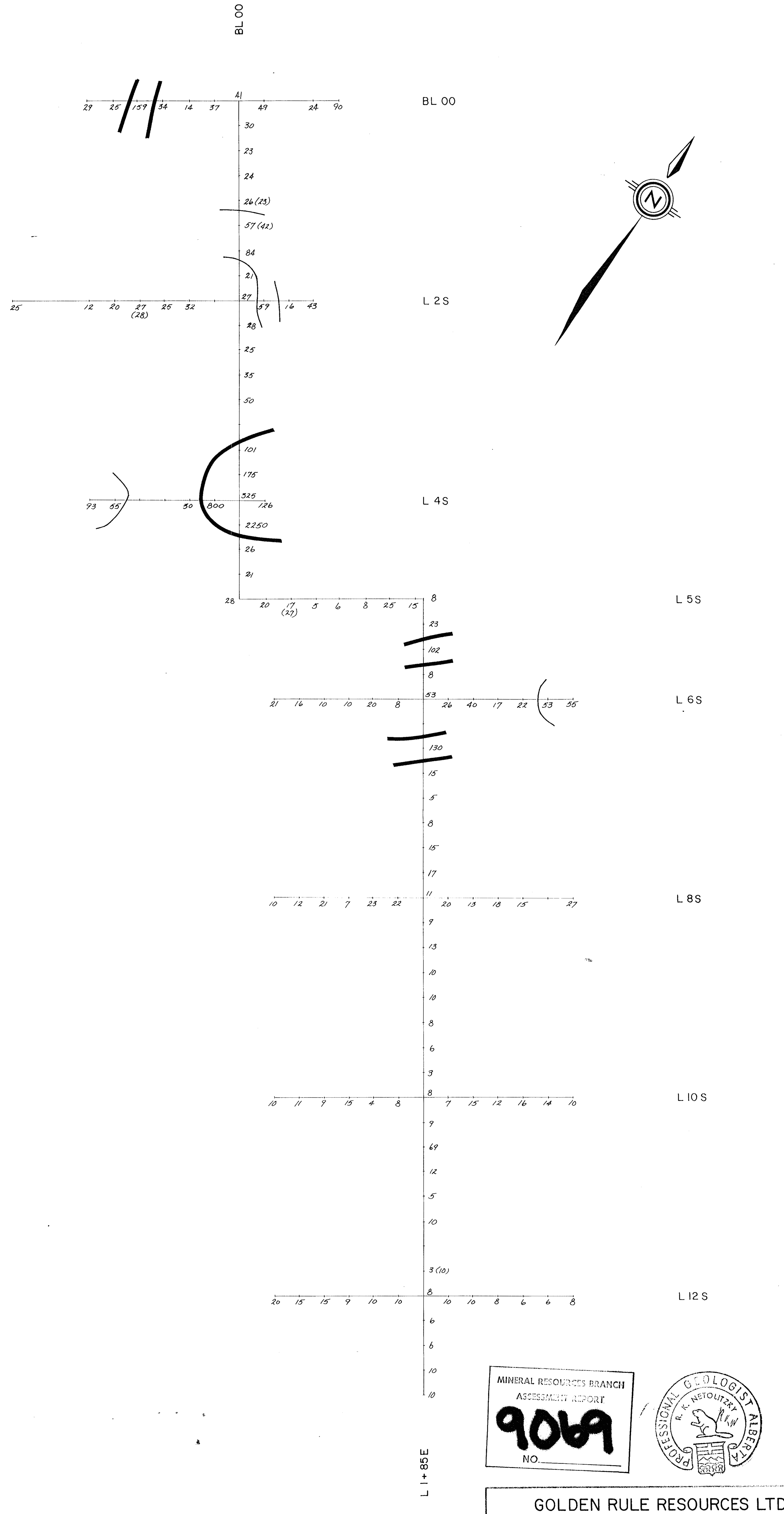
TROUT LAKE, B.C.

SOIL GEOCHEMICAL MAP	GOLD in ppb
PROJECT GR-BC-4	1
SCALE 1:2500	0 — 100 METERS

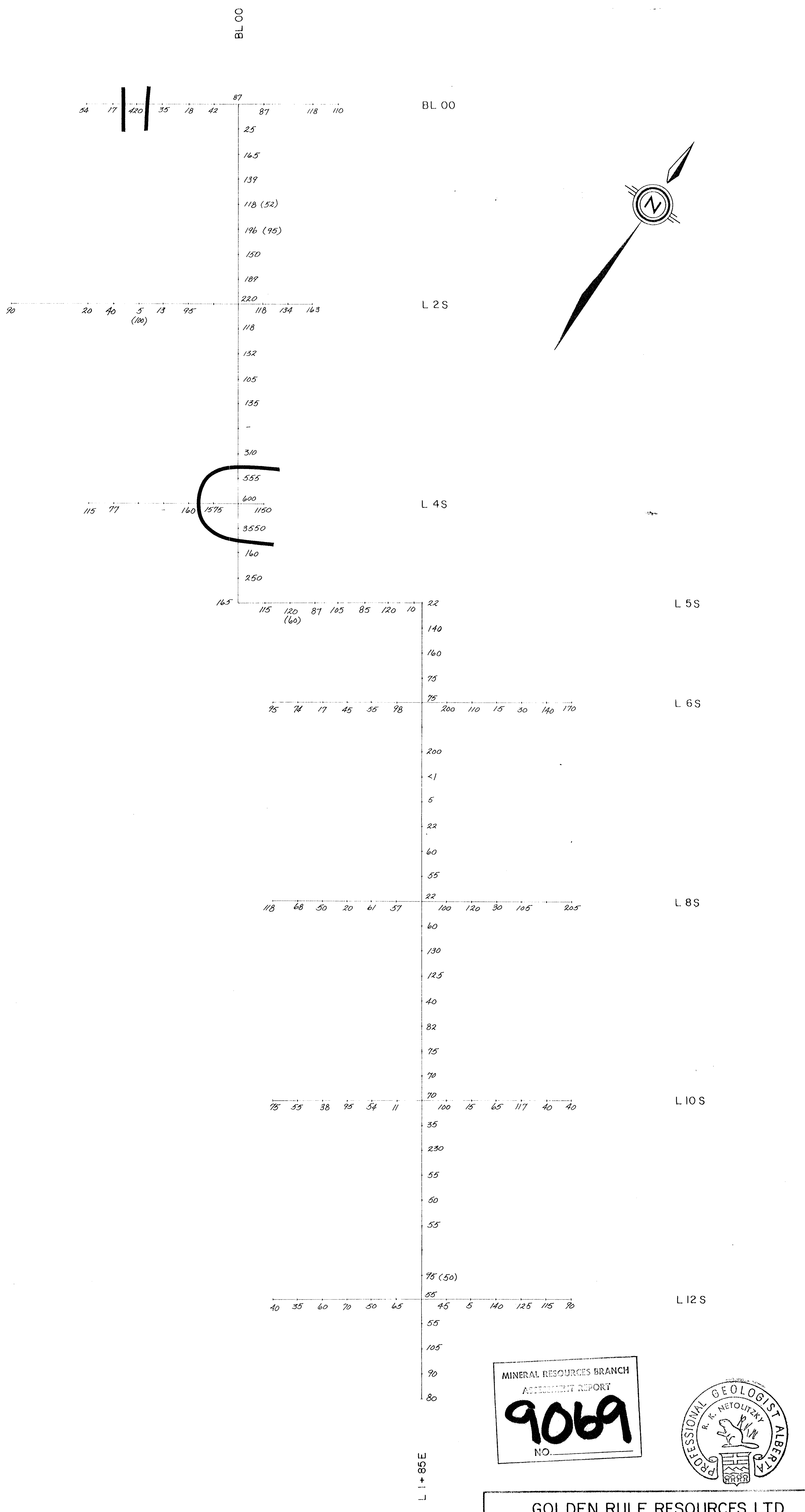
TAIGA CONSULTANTS LTD.



GOLDEN RULE RESOURCES LTD.	
TROUT LAKE, B. C.	
SOIL GEOCHEMICAL MAP	SILVER in ppm
PROJECT GR-BC-4	2
SCALE 1:2500 (0 – 100 METERS)	
TAIGA CONSULTANTS LTD.	



GOLDEN RULE RESOURCES LTD.	
TROUT LAKE, B. C.	
SOIL GEOCHEMICAL MAP	LEAD in ppm
PROJECT GR-BC-4	3
SCALE 1:2500 (0–100 METERS)	
TAIGA CONSULTANTS LTD.	

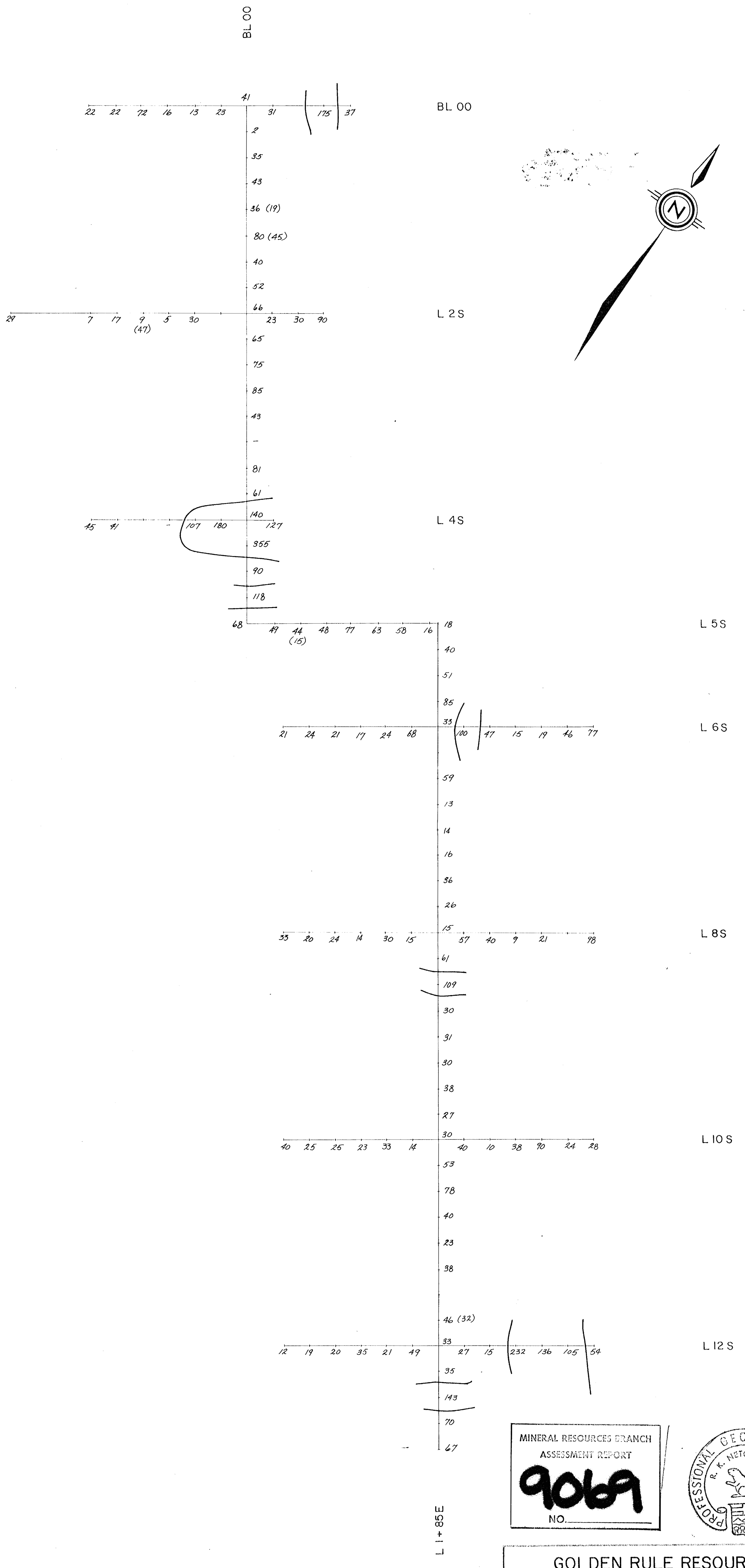


GOLDEN RULE RESOURCES LTD.

TROUT LAKE, B. C.

SOIL GEOCHEMICAL MAP	ZINC in ppm
PROJECT GR-BC-4	4
SCALE 1:2500	0 — 100 METERS

TAIGA CONSULTANTS LTD.



GOLDEN RULE RESOURCES LTD.

TROUT LAKE, B. C.

SOIL GEOCHEMICAL MAP	COPPER in ppm
PROJECT GR-BC-4	5
SCALE 1:2500	0 — 100 METERS

TAIGA CONSULTANTS LTD.