

GEOCHEMICAL SOIL SAMPLING SURVEY

ON

BILL-PELLEY MINERAL CLAIM GROUP

Pelly Lakes Area  
Watson Lake Mining Division  
Yukon Territory

Long.         $130^{\circ} 10'$  West  
Lat.          $62^{\circ} 04'$  North

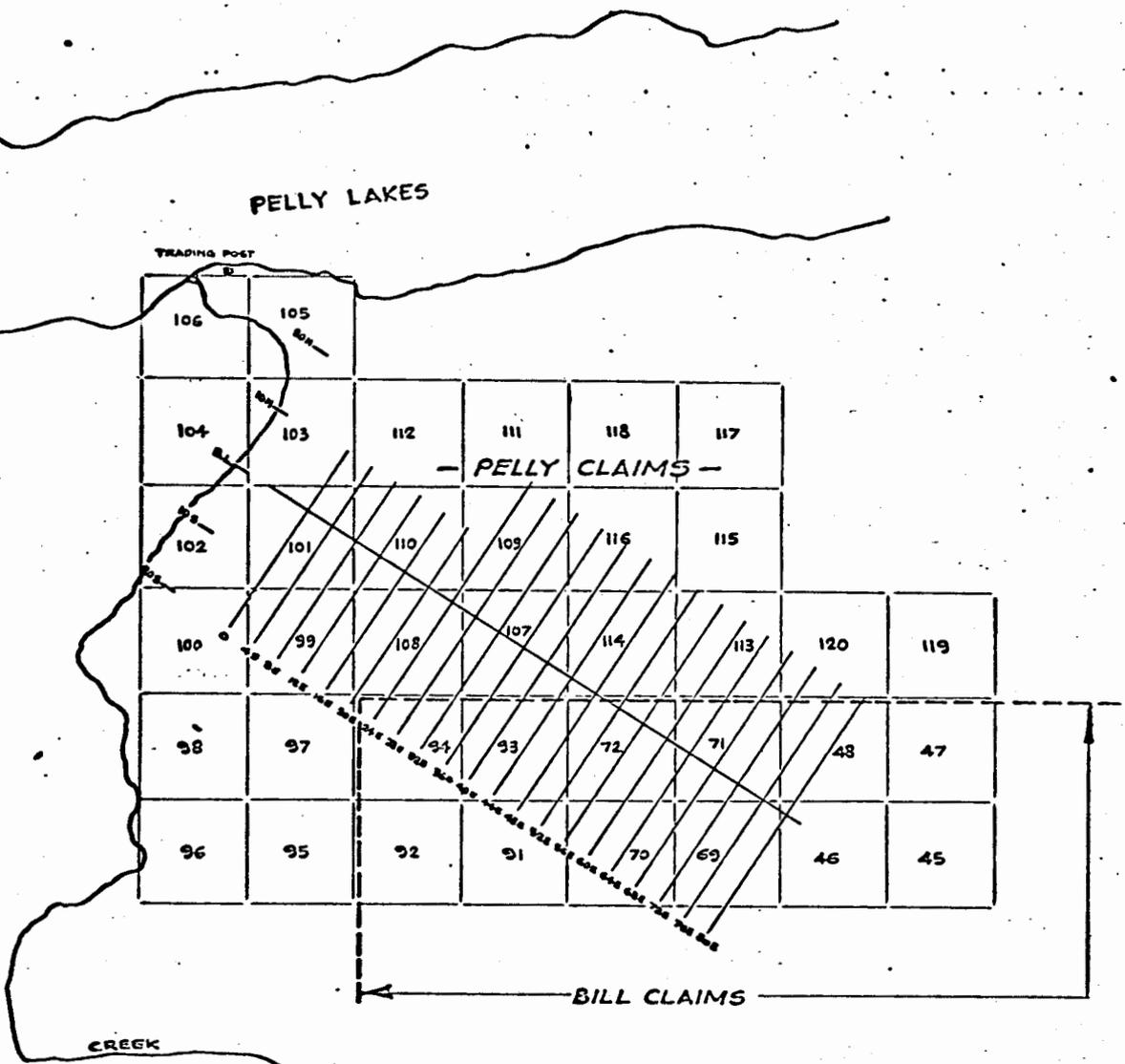
BY

Clyde L. Smith  
Atlas Explorations Limited

June 13 - August 29 1967

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Zinc	
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ATLAS EXPLORATIONS LIMITED  
ROSS RIVER (Y.T.)

LIST OF CLAIMS

<u>CLAIM NUMBER</u>	<u>GRANT NUMBER</u>	<u>DATE RECORDED</u>
Bill 45 - 48	Y 16676 - Y 16680	October 17, 1966
Bill 69 - 72	Y 16701 - Y 16704	October 17, 1966
Bill 91 - 94	Y 16723 - Y 16726	October 17, 1966
Pelly 95 -120	Y 17990 - Y 19015	August 11, 1967

# ATLAS EXPLORATIONS LIMITED

(N. P. L.)

330 MARINE BUILDING  
355 BURRARD STREET  
VANCOUVER 1, B.C.

## INTRODUCTION

The Bill Group was staked in early October, 1966, to cover an area of high copper, lead, and zinc geochemical results discovered as a result of reconnaissance soil sampling in a region of favourable geology. The northwestern corner of the Bill group was covered by a detailed geochemical survey, was mapped, and geochemical surveys were conducted over geochemical anomalies. The Pelly 95-120 claims were staked to cover extensions of geochemical anomalies north of the margin of the Bill group.

## LOCATION AND ACCESS

The Bill-Pelly group is located at and to the southeast of an abandoned trading post on the south side of Pelly Lakes, about 75 air-line miles east of Ross River.

The group may be reached by float aircraft, landing on Pelly Lakes, or by tote trail. The Atlas Tote Trail leaves the Watson Lake - Ross River Road northwest of Finlayson Lake and reaches the claim group at about Mile 43. The road is accessible by bombardier in the summer or by 4-wheel drive truck in the winter.

## REGIONAL GEOLOGIC SETTING

The Bill-Pelly group is underlain by a steeply-dipping, N. 70 deg. W. striking sequence of interbedded black cherts, black slates, dolomites, and quartzites, (of probable Devonian age). The sequence lies with apparent conformity on a thick unit of gray phyllite of probable Proterozoic age. The Devonian (?) sequence occurs along the eastern limb of a tight, gently westerly-plunging anticline cored by the Proterozoic (?) phyllites. The east margin of the group is underlain by granodiorite which intrudes the Devonian (?) meta-sediments.

At least two strong directions of regional fracturing occur. A N. 70 deg. W. striking set of either reverse or normal faults has caused dip-slip displacements between large blocks. A northeasterly trending set parallels the Pelly Lakes lineament and has caused apparent strike-slip movements.

## TOPOGRAPHY AND GROUND CONDITIONS

The Bill-Pelly group lies generally in an area of rugged mountain topography within which outcrop is abundant. The area surveyed geochemically, however, is at the base of a mountain ridge where a gradually-sloping valley re-entrant occurs. The valley is covered by alluvium and glacial moraine. Elevations average 3,500 feet and vegetation is typical Yukon sub-alpine. Soils sampled were generally of the B horizon but in places where A horizon material was thick, it was collected.

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## SURVEY TECHNIQUES

### Grid Lines

The grid consists of an 8,000 foot long base line trending N. 60 deg. W., with 21 cross lines of 3,000 and 4,000 feet in length, spaced 400 feet apart. Total cutline is 86,000 feet.

### Reconnaissance Lines

Prior to line cutting of the Bill-Pelly grid, seven northwesterly-trending lines of 6,000 foot lengths were run over an area of previously high-spot geochemical samples. Samples were taken at 300 foot intervals and total footage covered was 21,000 feet.

### Soil Sampling

The soil sampling survey was carried out in conjunction with the electromagnetic and magnetic survey. One soil sampler was employed for the entire survey.

The samples were obtained by use of a prospector's grub hoe which was found adequate as a tool for cutting through layers of organic material overlying the soil. Samples were taken at 100-foot stations over the same grid areas as geophysical data was obtained from.

Due to the inconsistency of specific soil horizons as well as variable depths to favourable horizons, samples were taken from an average depth of approximately one and one-half feet. Soils of the upper "B" horizon were usually encountered. Soils of large organic content were not sampled. In areas of immature soils, the "C" horizon was sampled. Approximately 100 grams of soil from each sample site

were placed in Kraft bags which were then periodically shipped to the soil testing laboratory at Ross River.

### Method of Analysis

All samples were analysed at a complete testing laboratory at Ross River. When the samples were received, each was dried while in its own little Kraft bag, then screened to 80 mesh, weighed out to 0.5 grams and digested in hot aqua regia. Samples were then diluted until they could not stand it any longer, clarified for 20 hours, and then tested for copper, lead, and zinc content on an atomic absorption spectrophotometer machine. The 'AA' units used were a Perkins Model 290 (1966) and a Model 320 (1967) and accuracy of the instrument ideally is 1% of the amount of metal present. Individual cathode lamps were used for each little element determination, a direct readout is given of the element being tested and, amasingly, two determinations per minute can be made with ease.

### Treatment of Data

All results of geochemical tests were returned to the field as soon as possible. Results in parts per million (ppm) were plotted on field data sheets kept by the field soil sampler. The field data sheets were kept as a record of each sample taken, noting particulars concerning drainage, topography, physiography, soil type and depth of sample. This information was compiled for use in further detailed geochemical studies.

Separate maps were prepared using a scale of 1" = 400' and 1" = 1,000' as was used for geophysical data, showing values obtained for copper, lead and zinc, profiles of values and contoured values. Contour intervals varied according to results obtained in parts per million. Maps for each element were compiled separately in order to aid in

comparative study of geophysical, geologic and geochemical results. A development map for each area has also been prepared showing general compilation of geochemical-geophysical data.

### GEOCHEMICAL RESULTS AND CONCLUSIONS

Statistical determinations of background and threshold values were not undertaken, however, approximate threshold values appear to be as follows: Cu, 90 p.p.m.; Pb, 60 p.p.m.; and Zn, 300 p.p.m.

Because it was found that significant mineralization in similar geologic environments in the Sheldon region is closely reflected by Zn values in excess of 800 p.p.m. and areas in excess of this value on the Bill-Pelly group are treated as anomalous.

#### Zinc

Four isolated anomalies were located within which values range from 600 to over 2300 p.p.m. Zn. The most extensive anomaly occurs between lines 28E and 68E, is elongate and narrow averaging about 500 feet in width. A small showing of Pb-Zn in limestone breccia occurs within the anomaly on line 56E. It is believed that the main as well as the smaller Zn geochemical anomalies indicate the presence of Zn mineralization. One of the anomalies or of neighbouring geological anomalies will adequately explain the geochemistry.

#### Lead

Lead geochemical results are nowhere markedly anomalous although slightly higher values can in places be related to Zn highs. It is believed that depth of overburden cover is too deep over most of the area for

dispersion of lead.

Copper

High copper values commonly occur with anomalous Zn; values reach 380 p.p.m. in a background of about 50 p.p.m. Although copper mineralization is now known in the area it is believed that geochemistry is reflecting its presence.

Geochemical anomalies in the Bill-Pelly group are believed to be very significant and efforts should be made to explain their source. Because of depth of overburden, however, a good deal of migration may have occurred. It is therefore recommended that follow-up drilling be done on geophysical targets found to be related to geochemical anomalies rather than on anomalies themselves.

Respectfully submitted,

Clyde L. Smith,  
Atlas Explorations Limited

PERSONNEL

C. Scott	Geochemical Sampler	Vancouver, B.C.
S. McLeod	Line Cutter	Ross River, Y. T.
J. Ollie	" "	" " "
C. Ollie	" "	" " "
J. Atkinson	" "	" " "
F. Tom	" "	" " "
S. Tom	" "	" " "

	0-E	4E	8E	12E	16E	20E	24E	28E	32E	36E	40E	44E	48E	52E	56E	60E	64E	68E	72E	76E	80E
20 N							26.8330	4.19.144	35.14.113	64.00.156	48.21.205	36.20.145	28.20.93		50.20.113	34.24.350	44.39.580		82.55.000	33.53.480	66.55.540
16 N							41.38.980	46.19.180	51.20.120	30.10.166	33.16.124	10.15.760	44.15.118		126.44.180	23.28.475	17.04.460		93.19.620	13.24.350	158.56.430
12 N							55.08.400	101.56.760	58.28.168	95.15.136		22.10.116	27.23.113		128.14.116	34.42.400	27.15.670		34.7.500	76.7.640	6.87.490
8 N							44.28.500	47.43.820	24.20.152	102.15.128	25.24.140	32.20.145	104.15.140		123.34.580	148.86.1950	38.36.930		51.29.1560	81.18.890	82.24.990
4 N							25.30.930	40.36.360	28.14.130	104.20.200	102.24.160	18.12.196	31.18.61		60.34.410	34.54.1050	54.28.800		50.36.810	150.25.680	20.10.178
0							40.12.660	38.57.200	81.2.96		32.18.118	36.20.240	26.18.18		63.20.260	41.56.800	70.57.200		48.28.480	61.23.480	20.14.185
4 S							46.30.430	70.44.880	43.18.88	41.19.54	14.18.100	74.28.510	60.18.410		82.26.540	116.59.1600	48.28.800		44.80.790	50.35.420	88.24.610
8 S							36.20.530		18.52.200	133.16.116	30.26.128	61.12.160	116.16.72		54.44.440	48.22.520	34.44.440		16.11.430	30.16.270	17.91.170
12 S							60.16.960		28.16.90	18.10.83	36.10.160	73.38.160	103.24.990		41.18.550	120.20.310	19.24.470		40.28.280	35.24.890	42.29.31
16 S							70.44.660		20.10.70	16.24.250	27.16.970	36.17.100	106.28.810		54.40.230	46.07.480	44.81.440		36.19.110		13.10.10
20 S							80.59.800		30.14.30	118.56.280	38.51.210	38.10.152	84.27.300		78.34.670	44.21.860	20.36.540		17.14.970	35.11.112	68.10.120
							89.59.550		40.7.780	41.7.380	80.18.260	69.14.350	85.25.900		6.19.17	92.16.960	25.14.800		87.56.200	69.19.170	31.10.84
							99.59.550		50.18.100	81.24.350	30.18.100	45.12.940	30.18.100		103.26.580	56.11.1010	64.34.540		16.15.200	35.5.87	60.16.250
							109.59.550		60.18.142	45.18.174	60.14.104	45.17.920			138.30.700	380.20.450	192.70.1300		152.14.175	93.14.8	40.7.170
							119.59.550		70.24.400	46.18.145	52.40.810	34.18.160	76.38.480		160.40.750	190.35.870	70.52.950		43.23.1660	25.9.955	93.4.28
							129.59.550		80.28.400	54.17.170	66.36.360	46.18.170	74.36.510		193.48.360	142.64.510	75.31.780		19.10.15	120.4.200	15.16.80
							139.59.550		90.32.400	64.26.400	82.17.980	74.36.510									17.24.78

B.L.

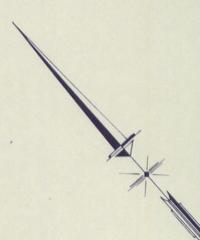
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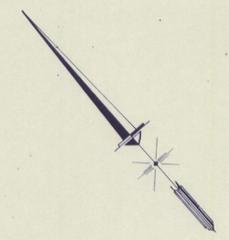
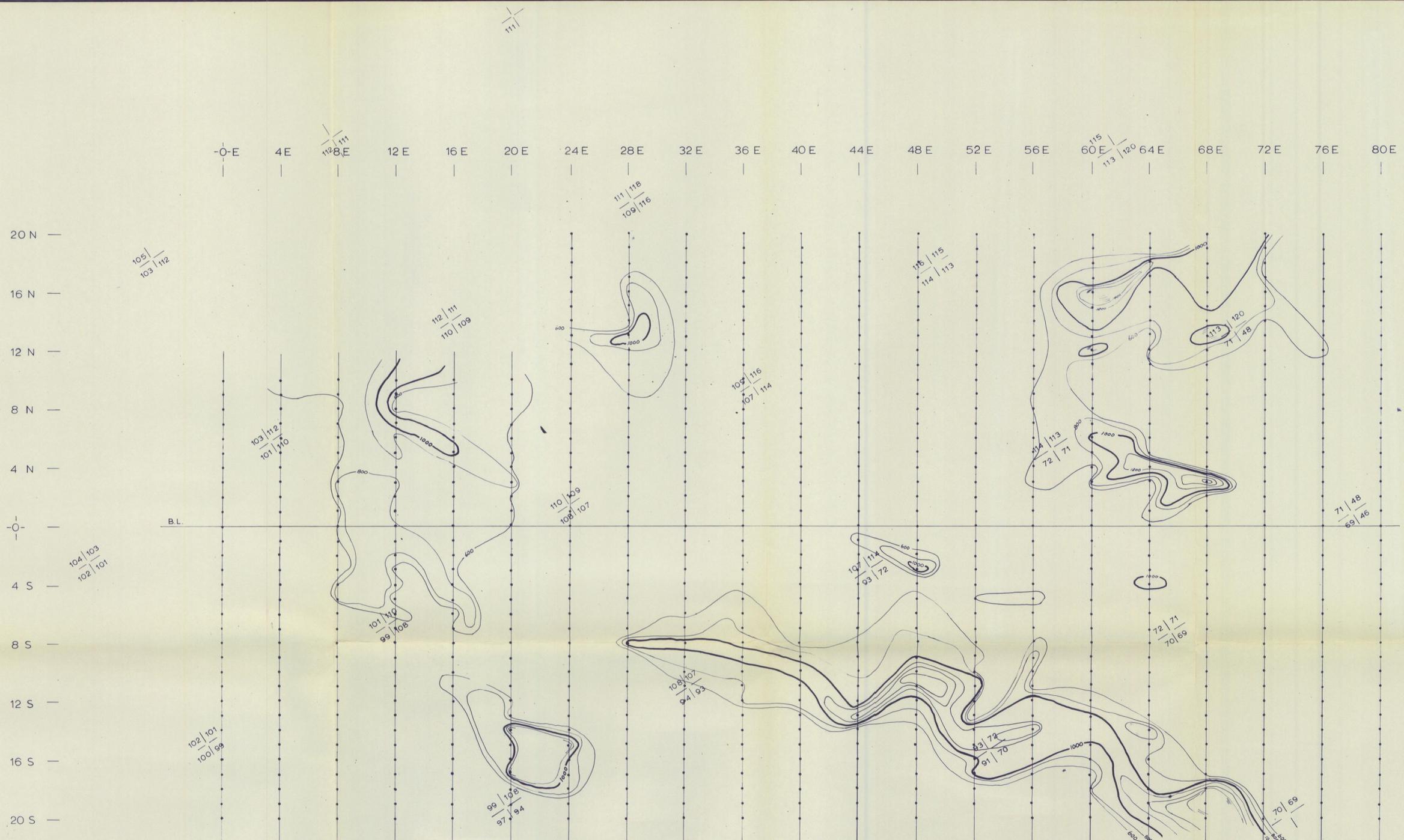
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ATLAS EXPLORATIONS LIMITED  
ROSS RIVER (Y.T.)  
SHELDON REGION  
**BILL MINERAL CLAIMS**  
GEOCHEMICAL SOIL SAMPLING SURVEY, COPPER, LEAD & ZINC  
RESULTS, BY ATOMIC ABSORPTION  
SPECTROPHOTOMETER ANALYSIS

SOIL SAMPLER : M. SIMPSON      DRAWN BY : P.J.F. VLASVELD  
DATE : AUGUST 1967

0      400      800  
Scale in feet



ATLAS EXPLORATIONS LIMITED  
 ROSS RIVER (Y.T.)  
 SHELDON REGION  
 BILL MINERAL CLAIMS  
 GEOCHEMICAL SOIL SAMPLING SURVEY  
 ZINC CONTOURS

SOIL SAMPLER : M. SIMPSON  
 DRAWN BY : R. J. DARNEY  
 DATE : OCTOBER 1967

400 0 400 800  
 scale in feet