BRENDA MINES LTD.
EXPLORATION GROUP

GEOCHEMICAL SOIL REPORT (1979)

on

SIWASH SILVER MINERAL PROPERTY

Latitude 49° 47'   Longitude 120° 20'
Similkameen Mining Division
N.T.S. 92H/16

Del W. Ferguson

February, 1980

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I INTRODUCTION

a) History of Property

The Siwash Creek area has been prospected since the early 1900's. Several adits have been driven into rock faces along creek banks and numerous hand trenches, following mineralized leads, have been excavated throughout the valley. Evidence of old placer workings is also apparent along the banks of Siwash Creek.

During the 1960's, mineral exploration was carried out in the area by several companies including Quality Exploration Corporation Ltd., Cyprus Exploration Corporation Ltd. and Diana Explorations Ltd. More recent work on the property was executed by E. Mullin of Princeton, B.C. and D.E. Agur of Summerland, B.C. The holdings of these persons were optioned to Brenda Mines Ltd. in April 1979 for further exploratory work.

b) Topography and Vegetation

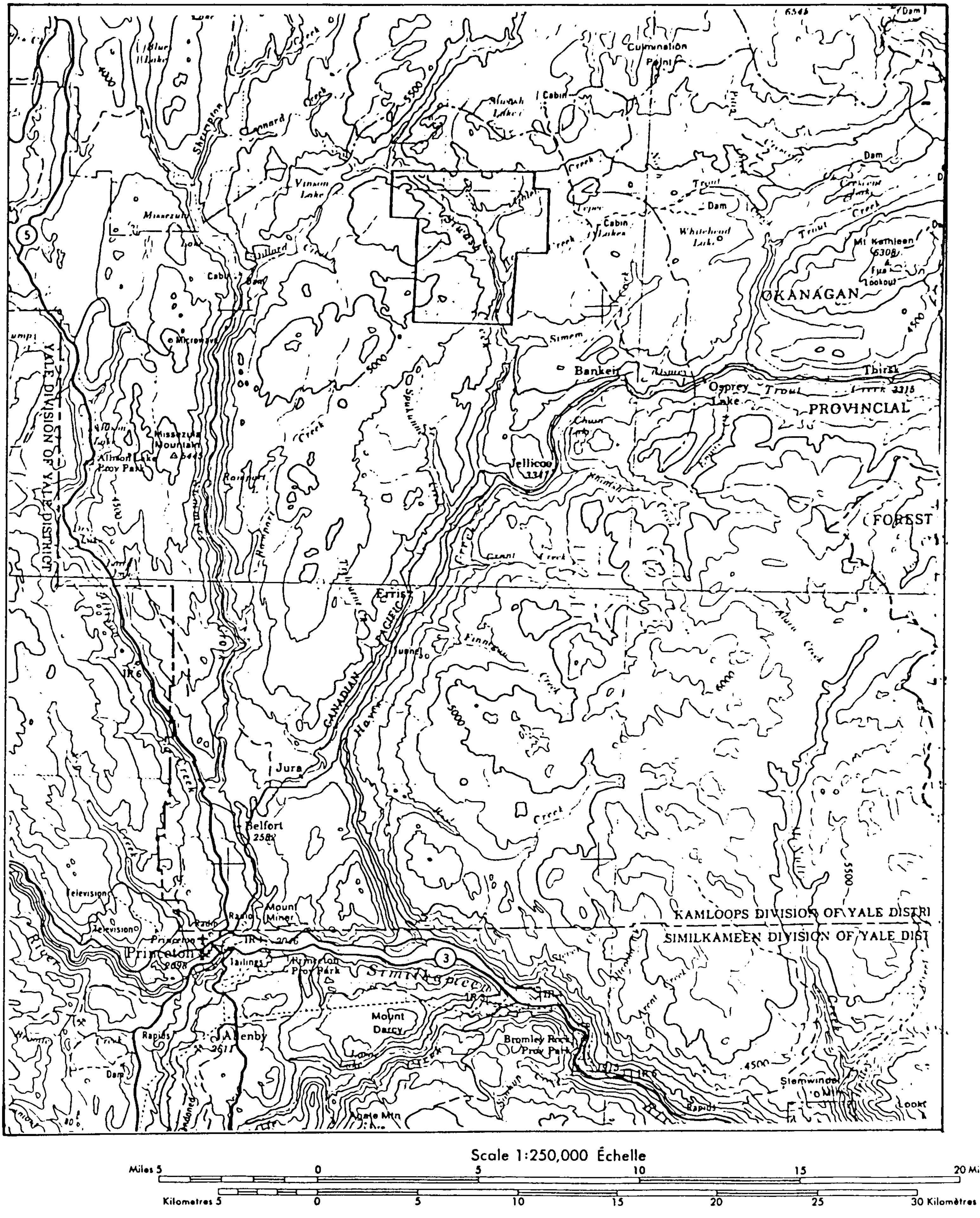
The property occupies the deep, narrow, terraced Siwash Creek valley and its surrounding plateau lands. Major tributaries include Tepee, Galena and Gavin Creeks flowing into the main valley from the east and Saskat Creek entering from the west. All of these creeks occupy the base of very steep, narrow valleys. Vegetation consists generally of well spaced stands of jackpine, fir and spruce with a lush, grassy undergrowth. Some of the more immature forests consist of tight growths of scrawny jackpine. Taigalders flourish in swampy areas within the plateau and along steep valley sides.

II PROPERTY DESCRIPTION

a) Location and Access

The Siwash Silver Property is located 38 air kilometres northeast of Princeton, B.C. The claims are situated along Siwash Creek, west of Tepee Lakes and east of Missezula Lake. There are presently two access roads to the property. One is via an 8 kilometre forestry access road which branches off of the Summerland-Princeton road, north of Osprey Lake. The other branches off of the Trout Creek logging road, 60 kilometres west of Peachland, B.C.

Figure 1 - Location Map

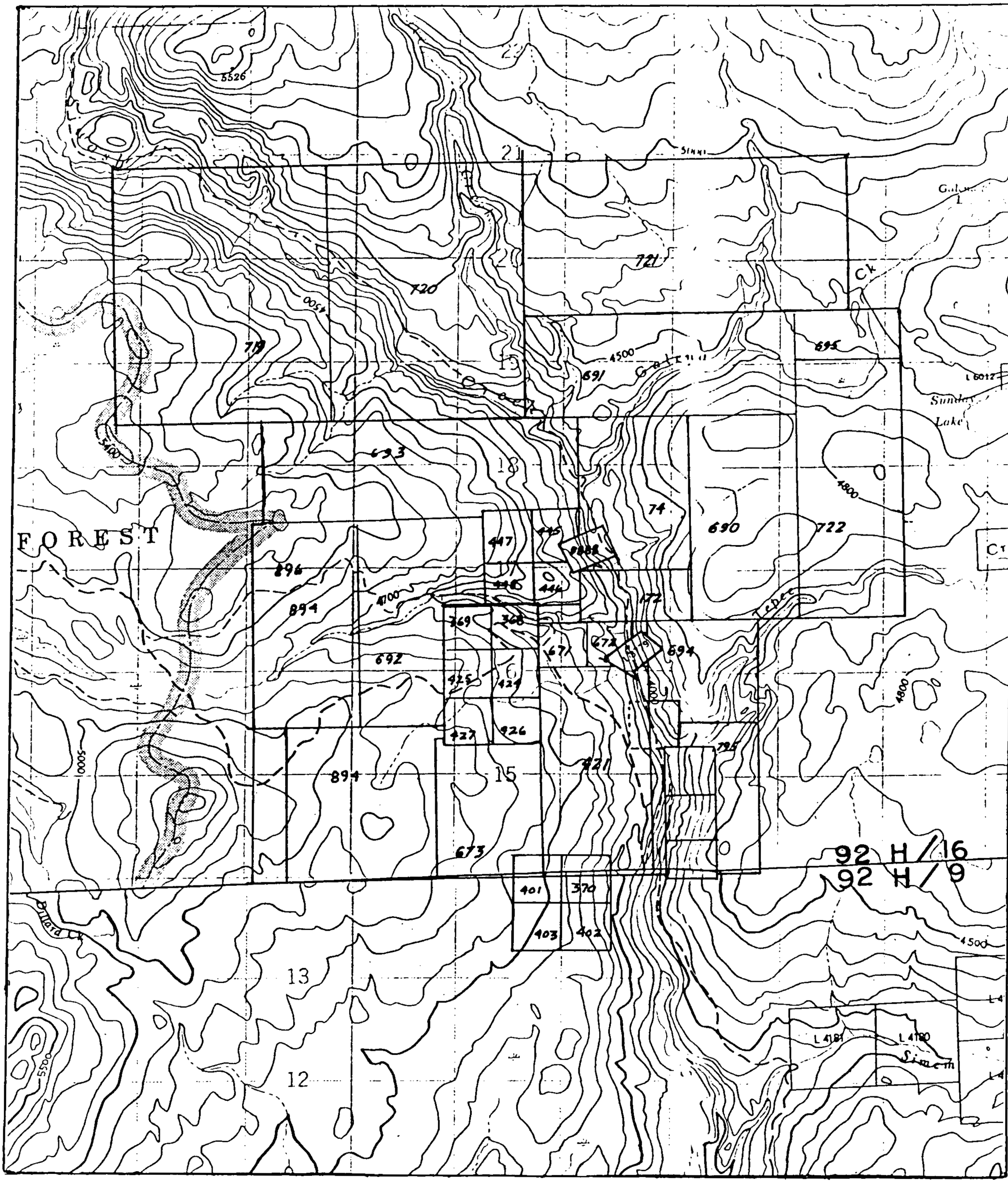


b) Claim Inventory

Claim Name	Record No.	Units	Record Date	Assessment Date
ED	74	6	June 29/76	June 29/82
ED #2	172	2	Nov. 23/76	Nov. 23/82
Saskat 1	368	1	June 29/78	June 29/84
Saskat 2	369	1	June 29/78	June 29/84
June 1	370	1	June 29/78	June 29/85
Skye 1	401	1	Aug. 15/78	Aug. 15/82
Skye 2	402	1	Aug. 15/78	Aug. 15/82
Skye 3	403	1	Aug. 15/78	Aug. 15/82
June 2	421	8	Sept. 1/78	Sept. 1/85
Pat 1	424	1	Sept. 14/78	Sept. 14/83
Pat 2	425	1	Sept. 14/78	Sept. 14/83
Pat 3	426	1	Sept. 14/78	Sept. 14/83
Pat 4	427	1	Sept. 14/78	Sept. 14/83
V.M. 1	445	1	Oct. 5/78	Oct. 5/82
V.M. 2	446	1	Oct. 5/78	Oct. 5/82
V.M. 3	447	1	Oct. 5/78	Oct. 5/82
V.M. 4	448	1	Oct. 5/78	Oct. 5/82
Jean 1	671	1	July 26/79	July 26/82
Jean 2	672	1	July 26/79	July 26/82
Hawk	673	6	July 26/79	July 26/82
Nanci P-1	690	6	Aug. 13/79	Aug. 13/80
Nanci P-2	691	10	Aug. 13/79	Aug. 13/80
Skylab	692	12	Aug. 13/79	Aug. 13/80
B & B	693	12	Aug. 13/79	Aug. 13/80
Herdel	694	4	Aug. 13/79	Aug. 13/80
Teepee	695	2	Aug. 13/79	Aug. 13/80
ARP	719	20	Sept. 13/79	Sept. 13/80
Fergito-Allendo 1	720	20	Sept. 13/79	Sept. 13/80
Fergito-Allendo 2	721	18	Sept. 13/79	Sept. 13/80
Timbo-Tavish	722	10	Sept. 13/79	Sept. 13/80
Charlie	795	6	Oct. 25/79	Oct. 25/80
Bisbee	894	9	Dec. 12/79	Dec. 12/80
~~Climax~~	~~895~~	~~18~~	~~Dec. 12/79~~	~~Dec. 12/80~~
Bingham	896	8	Dec. 12/79	Dec. 12/80
Peterson	8888			Feb. 6/87
Fissure Maiden	171	(Crown Grant)		Nov. 8/82

All claims are located in the Similkameen Mining Division.

Figure 2 - Claim Map



Scale 1:50,000

0 1 2 3 Km.

III REGIONAL SETTING

The Siwash Silver mineral property is underlain predominantly by granites, granodiorites and diorites related to the Otter Intrusions of Upper Cretaceous-Early Tertiary age. Volcanic rocks, younger than the Otter Intrusions, also outcrop throughout the property. The Siwash Creek body intrudes slightly gneissic granodiorite of the Pennask Batholith, related to the Coast Intrusions.

Several porphyritic lithologies have been noted within the area of concern. One such intrusive, a coarse grained quartz feldspar porphyry, trends east-west, extending from the Headwaters Lakes area to the Siwash Creek body. It is thought that this unit may be a border phase of the Kathleen Mountain intrusive body located to the east of Siwash Creek.

Surface mineralization occurring throughout the mineral property is hosted in:

1. Thin veinlets and brecciated areas within zones of intense chloritization and silicification.

2. Fractures crosscutting zones of intense alteration.

3. Quartz veins.

In order of abundance the following mineralization occurs within the various host environments described; pyrite, specular hematite with minor amounts of sphalerite, galena, chalcopyrite, tetrahedrite, bornite and gold. Mineralization is not homogeneous throughout the area, but varies from one location to the next with respect to the kind of mineralization incurred and the concentrations thereof.

IV WORK PROGRAM DESCRIPTION

a) Grid Establishment

The 1979 grid has been established on a bearing of N 30° W in order to run geological, geochemical and geophysical surveys perpendicular to observed geological structures. A 24 kilometre picket base line trending N 30° W was cut across the central portion of the property, west of Siwash Creek. A second picket base line trending N 60° E was cut from the north end of the primary base line, easterly across Siwash Creek for a distance of 24 kilometres. Location lines spaced at 100 and 200 metre intervals were run across these base lines. All lines were marked at 50 metre stations for relevant surveys.

b) Geochemical Survey

The geochemical soil survey on Siwash Silver mineral property commenced in mid June 1979, being temporarily terminated towards the end of the same month. Sampling was subsequently completed during the months of August and September 1979. A total of 2,363 soil samples were collected for analysis including a number of check samples. Total silt samples collected numbered 15. Soil samples were taken at 50 metre intervals along the established grid lines previously described. Mattocks were implemented to obtain soils from BF horizons where possible. Samples were sent to Brenda Mines Assay Lab for preparation and analysis (Appendix 1).

Treatment of Results

1. Statistical Analysis

Statistical presentation of the various sample types were made so as to better compare bulk characteristics of the geochemical data. The two statistical formats used in this report are cumulative frequency distribution and histogram frequency. The histogram is the more obvious of the two, enabling the reader to make quantitative observations regarding data grouping made etc., while the cumulative frequency plot may be used to graphically derive qualitative information such as standard deviations, background values, low anomalous values and threshold values.

The following is not meant to be a definitive treatment of the statistical analysis of geochem data, but rather a guide to the more important statistical parameters considered in this report.

2. Distribution

In beginning the treatment of a large body of geochemical data, it is necessary to determine the distribution which best fits the data. It has been determined (by concentration vs. frequency plots) that most geochemical data follows a lognormal distribution often referred to as the bell-shaped curve. Natural geochemical values often tend to form negatively skewed distribution curves when plotted. This results from the fact that it is more common to have low values in geochemical data, than high values. If, instead of the actual value itself, it's logarithm is plotted in the abscissa, the frequency curve takes a symmetrical, bell-shaped form, typical of the normal distribution. Plotting the actual geochemical values on a logarithmic graph will achieve the same results. This is the procedure used for the data considered.

3. Histogram

The histogram used in preparing this report is a plot of the interval frequency vs. interval (see Figure). Several important statistical parameters may be determined such as the total range of data in sample, modes, and the range with the highest frequency of values. Finally, the general form of the density distribution of the data can be determined quickly.

4. Cumulative Frequency

Cumulative frequency paper is generally constructed with a probability scale as the ordinate and a logarithmic scale as the abscissa (Figure). By replacing the arithmetic ordinate scale of the histogram with a probability scale, the cumulative frequency curve is represented by a straight line or a line of "best fit". This line joins points calculated from frequencies, cumulated from the highest to the lowest values; thus the 100% will correspond to the lowest class and can be eliminated.

There are essentially three parameters defining the geochemical population, which may be obtained graphically, using the cumulative probability plots. These are:

1) Geometric mean or background value (b) located by the intersection of the cumulative frequency curve at the population mean (50%). Trace intersection down to ppm scale.

2) Low anomalous value (l) located by the intersection of the cumulative frequency curve at the 16%. Trace intersection down to ppm scale. The 16% line expresses the scatter of the values around the population mean, incorporating the addition of one standard deviation (s) to the mean.

3) Anomalous or threshold value (t) located by the intersection of the cumulative frequency curve at the 2.5%. Trace intersection down to ppm scale. The threshold value is a fairly complex geochemical parameter and is supposed to be the upper limit of the background fluctuation (b). This incorporates the addition of two standard deviations (2s) to the mean.

Geochemical results for each element have been plotted on accompanying maps and contoured to correspond with element distributions.

Fig. 3

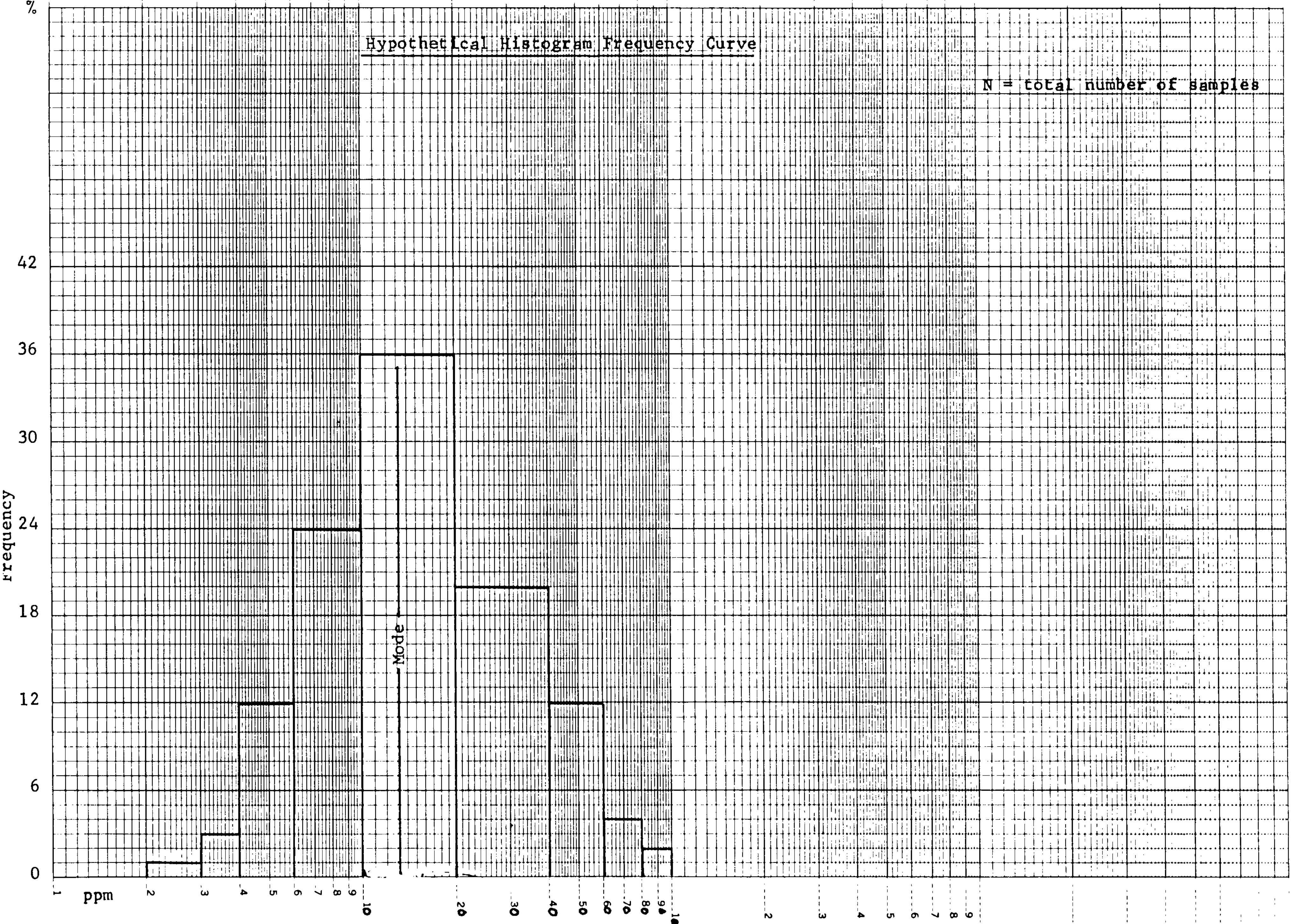
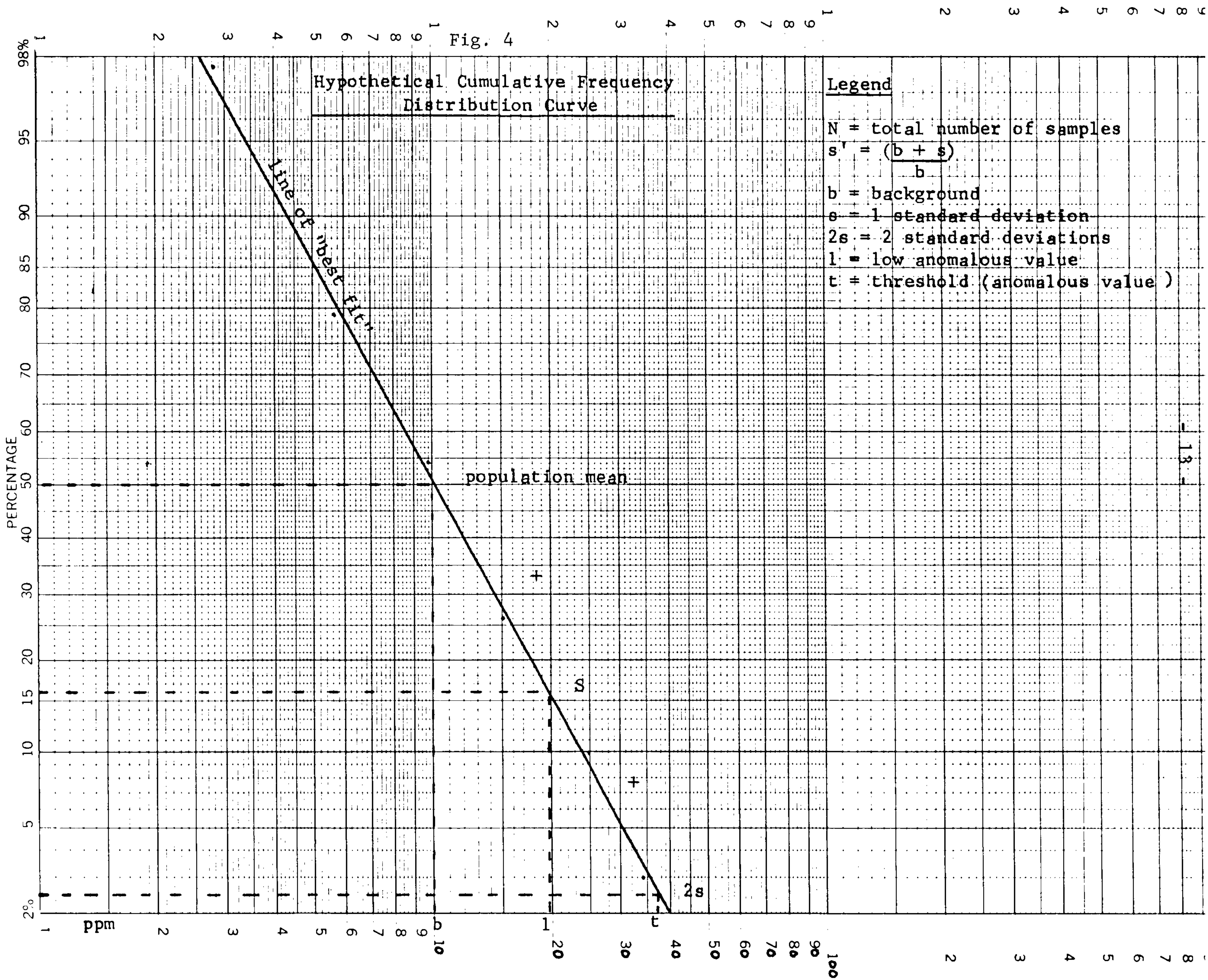
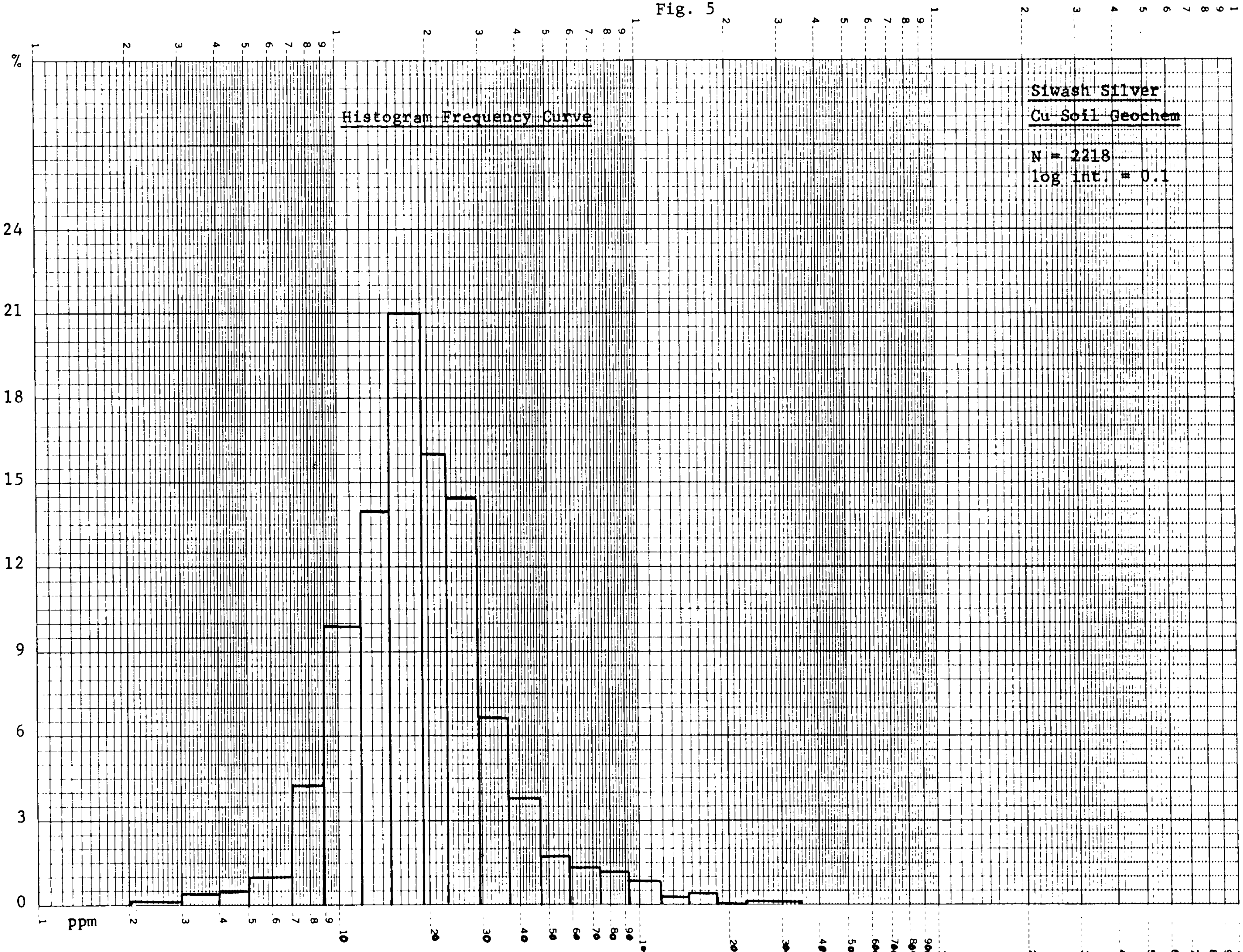

Hypothetical Histogram Frequency Curve
N = total number of samples
%
42
36
30
24
18
12
6
0
Frequency
Mode
ppm
10
20
30
40
50
60
70
80
90

Fig. 4


Hypothetical Cumulative Frequency
Distribution Curve
Legend
N = total number of samples
s' = (b + s) / b
b = background
s = 1 standard deviation
2s = 2 standard deviations
l = low anomalous value
t = threshold (anomalous value)
"line of "best fit"
population mean
S
2s
b
l
t
ppm
PERCENTAGE

46 5890

Fig. 5



Histogram Frequency Curve
Siwash Silver
Cu Soil Geochem
N = 2218
log int. = 0.1
%
24
21
18
15
12
9
6
3
0
ppm

K+E PROBABILITY X 3 LOG CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.

46 8080

Fig. 6

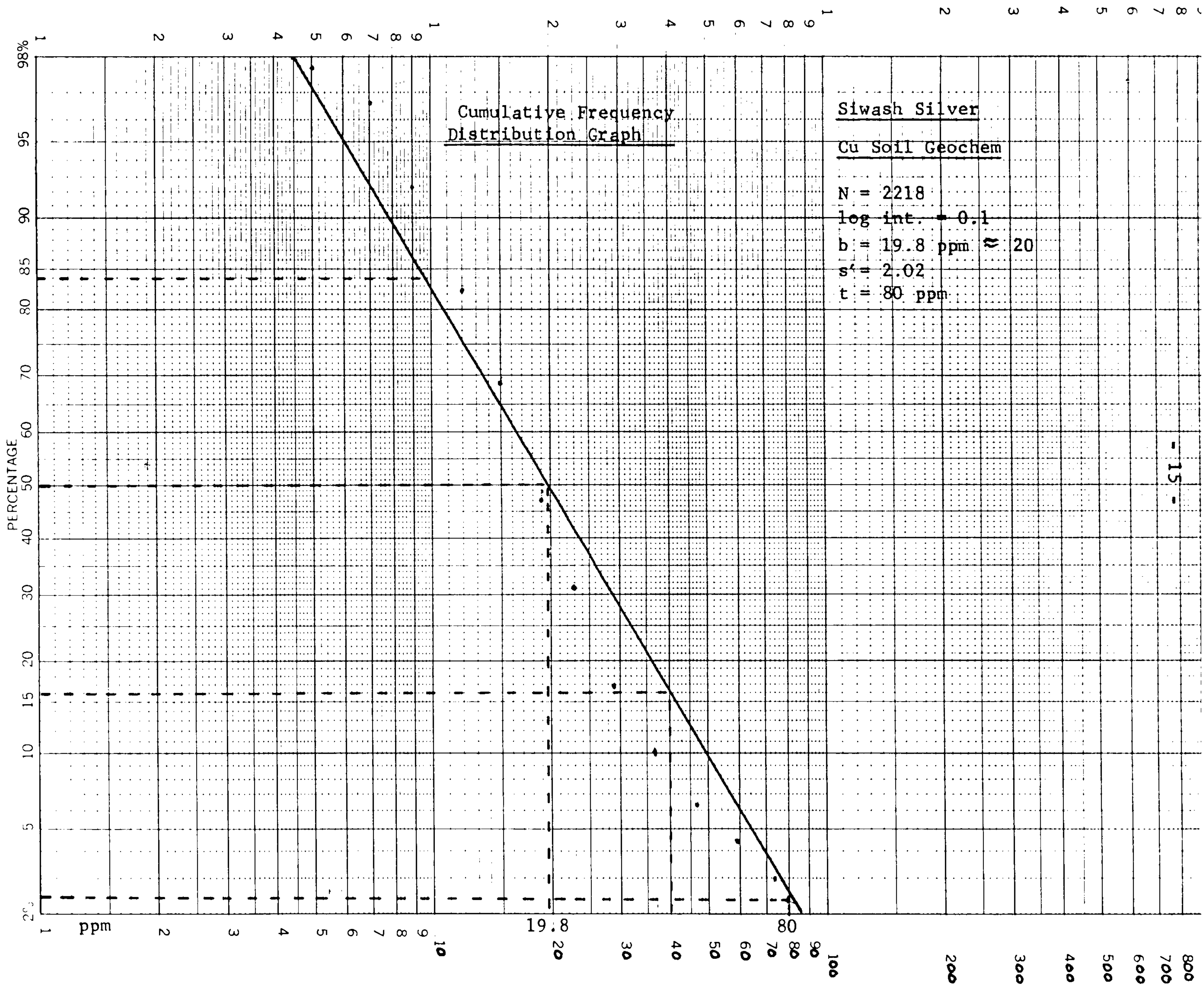
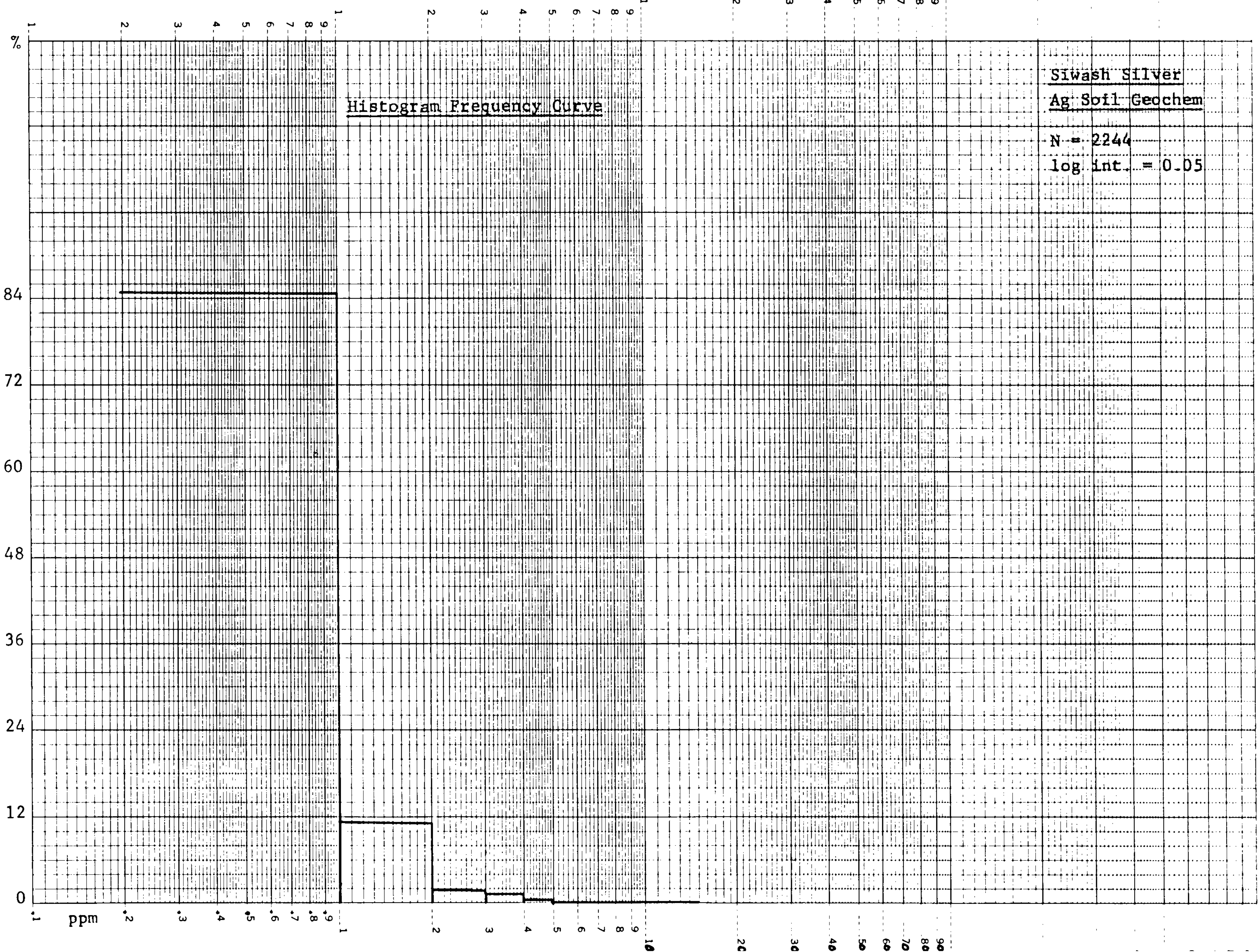


Fig. 7


Histogram Frequency Curve
Siwash Silver
Ag Soil Geochem
N = 2244
log int. = 0.05
%
84
72
60
48
36
24
12
0
ppm
.1
.2
.3
.4
.5
.6
.7
.8
.9
1
2
3
4
5
6
7
8
9
10
20
30
40
50
60
70
80
90

K+E PROBABILITY X 3 LOG CYCLES KEUFFEL & ESSER CO. MADE IN U.S.A. 46 8080

Fig. 8

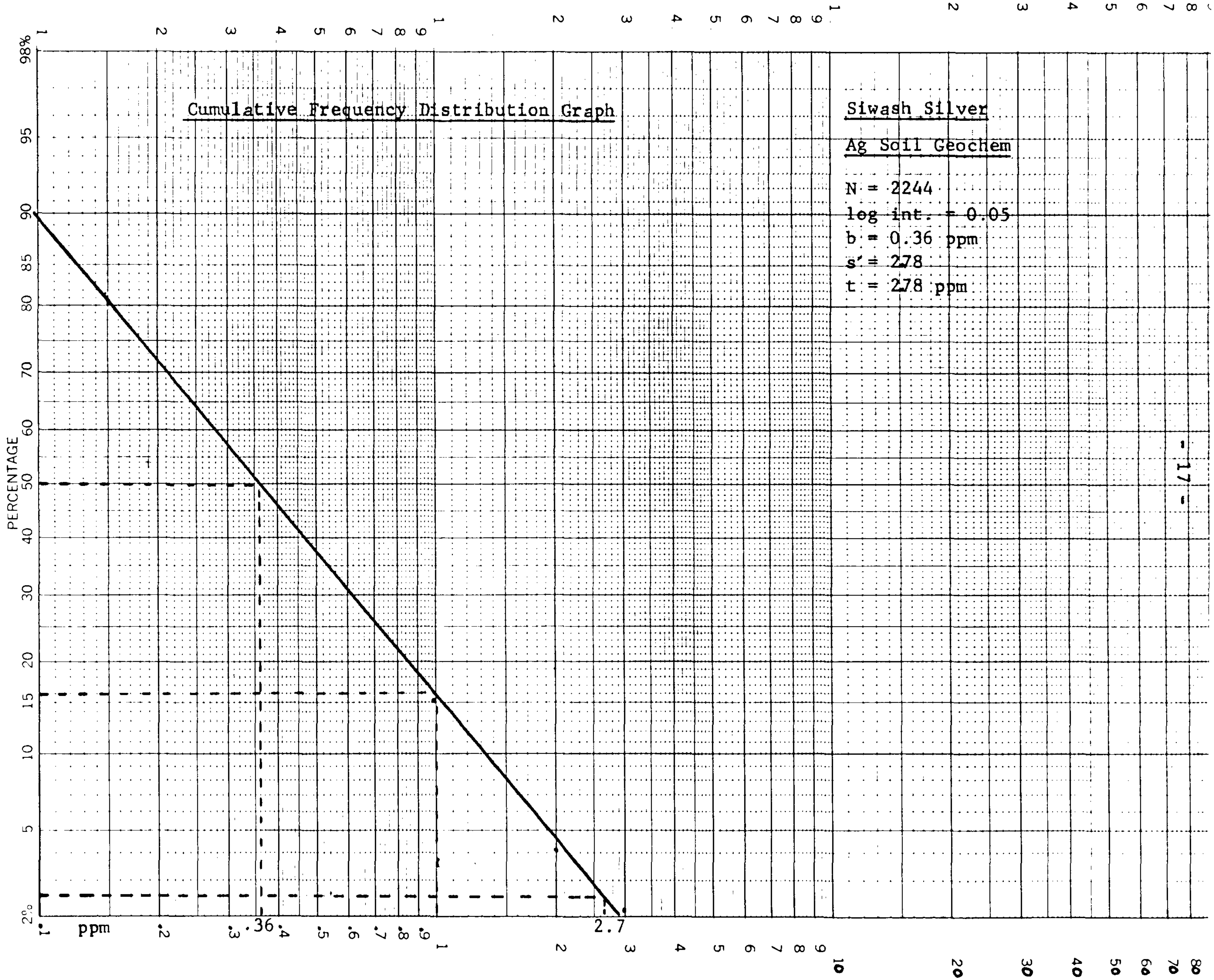
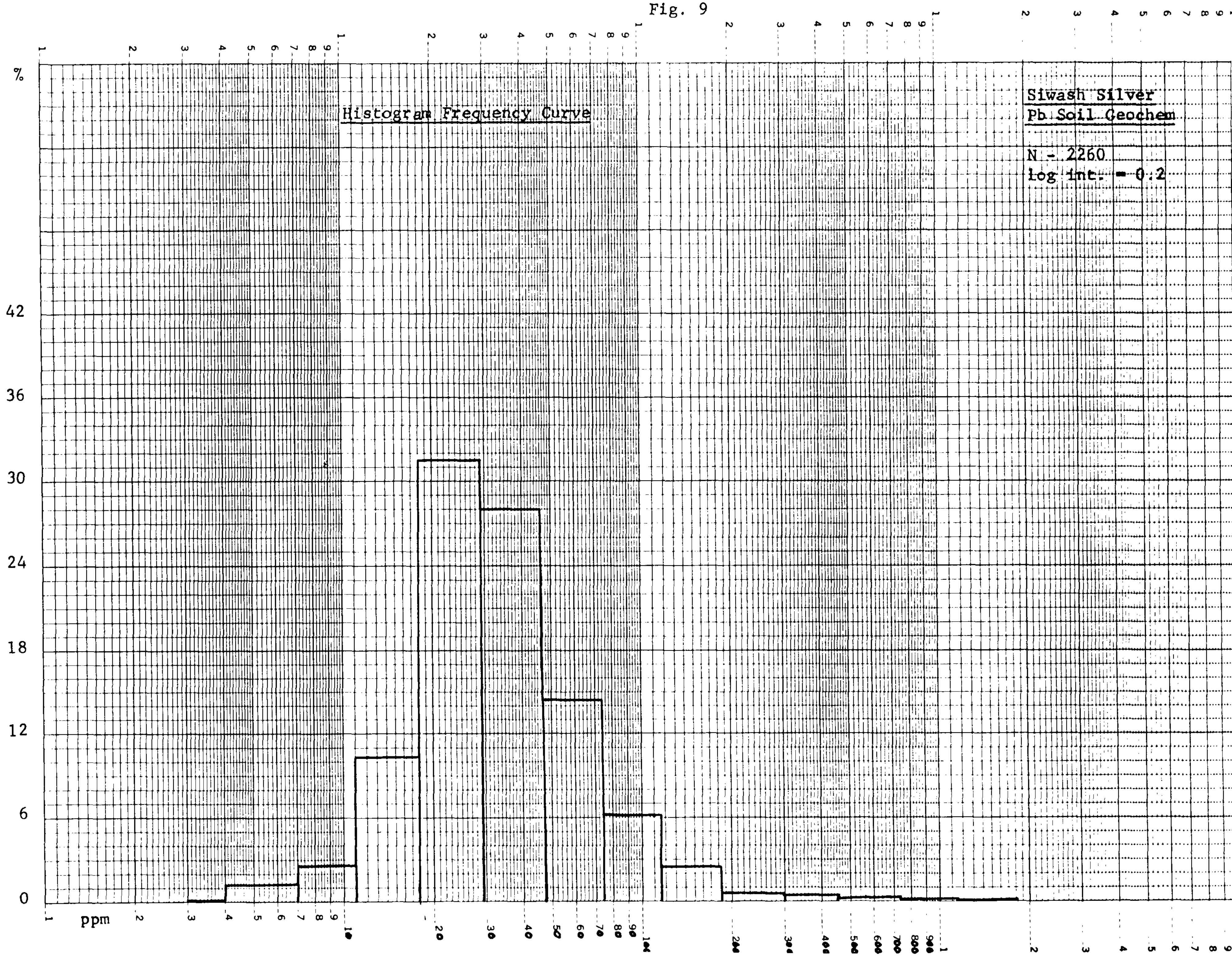
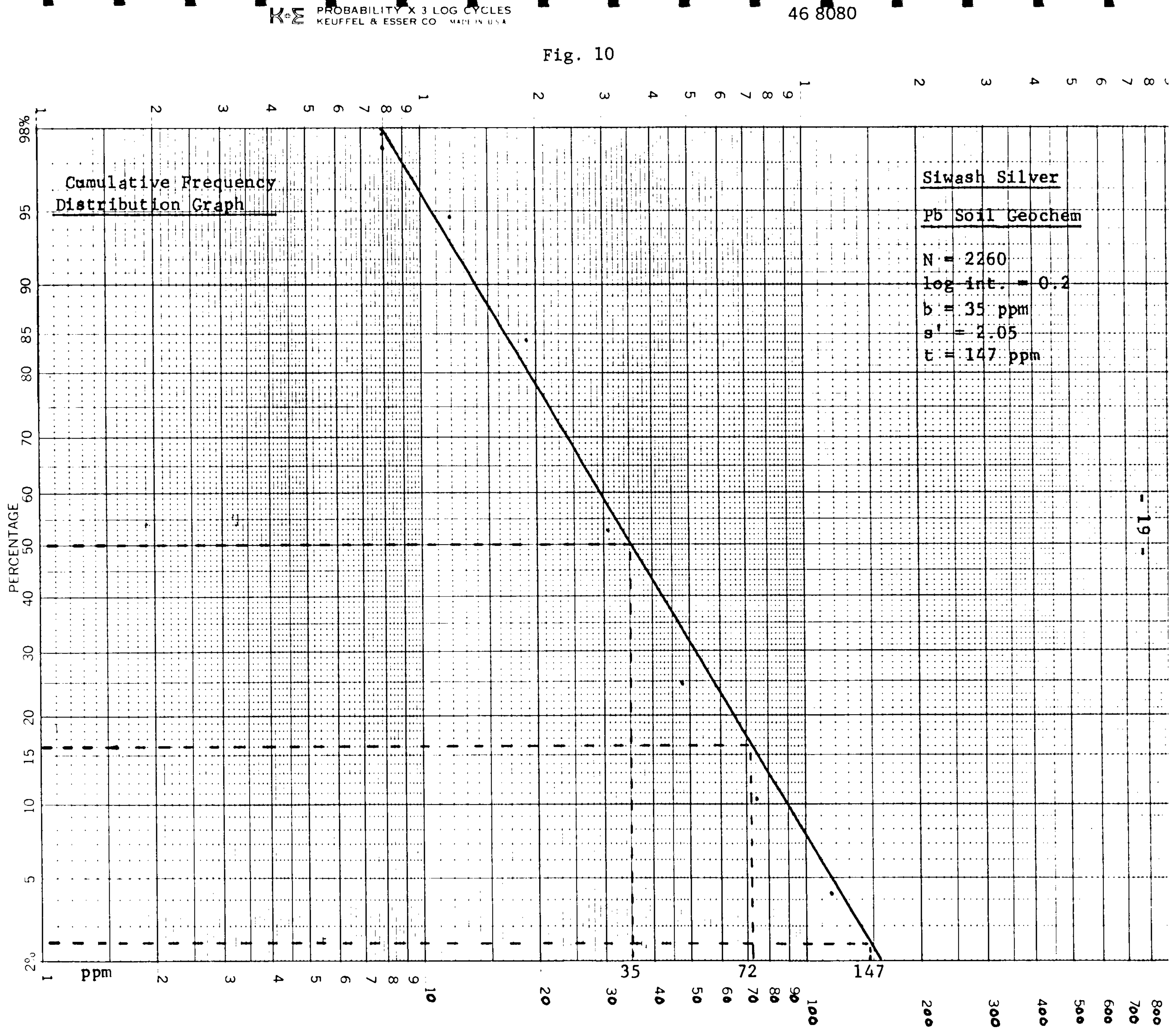


Fig. 9



Histogram Frequency Curve
Siwash Silver
Pb Soil Geochem
N - 2260
log int. = 0.2
%
42
36
30
24
18
12
6
0
ppm
10
20
30
40
50
60
70
80
90
100
200
300
400
500
600
700
800
900

Fig. 10


K+E PROBABILITY X 3 LOG CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.
46 8080
Cumulative Frequency
Distribution Graph
Siwash Silver
Pb Soil Geochem
N = 2260
log int. = 0.2
b = 35 ppm
s' = 2.05
t = 147 ppm
PERCENTAGE
ppm
35
72
147

K&E SEMI-LOGARITHMIC 4 CYCLES x 60 DIVISIONS
KEUFFEL & ESSER CO. MADE IN U.S.A.

46 5890

Fig. 11

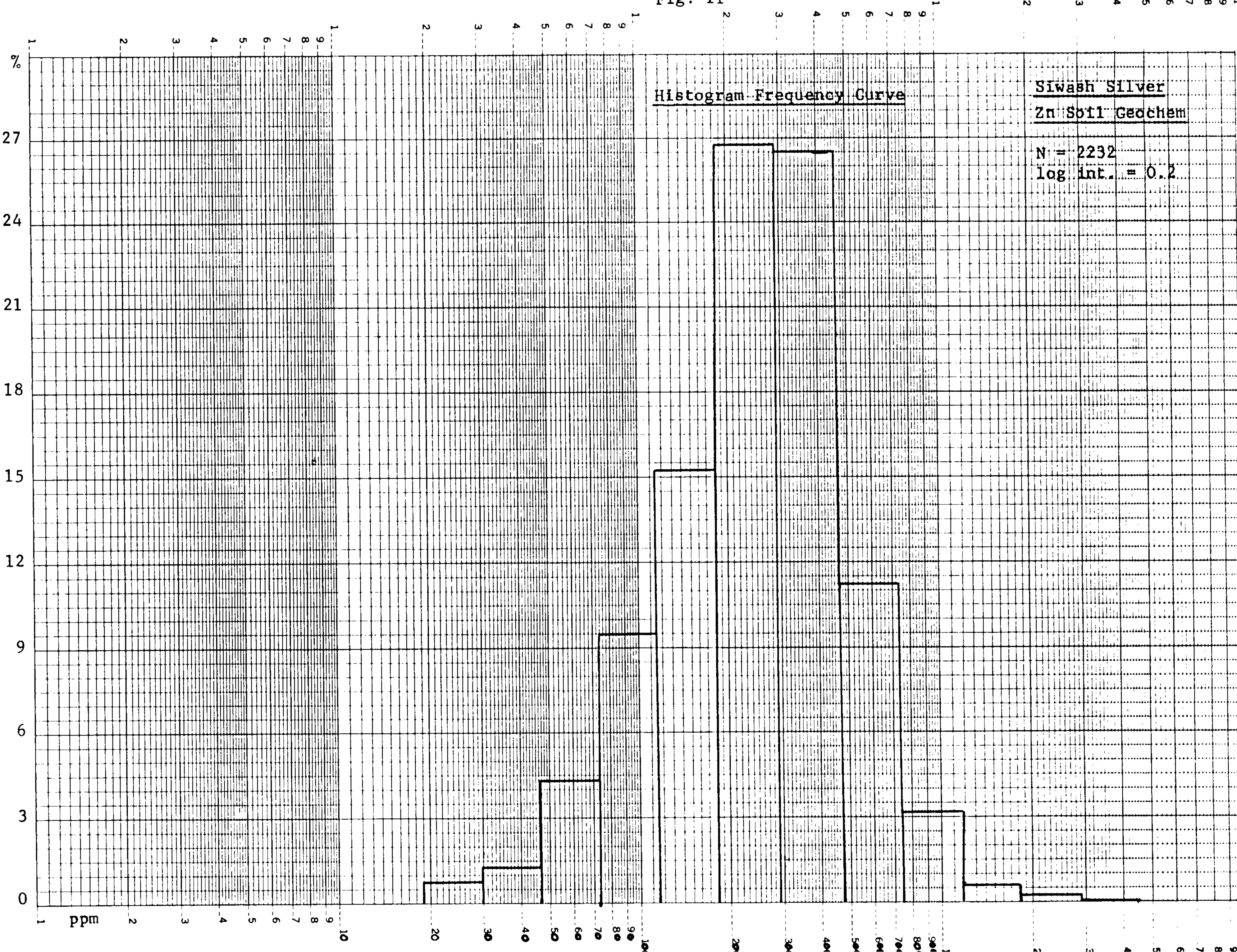
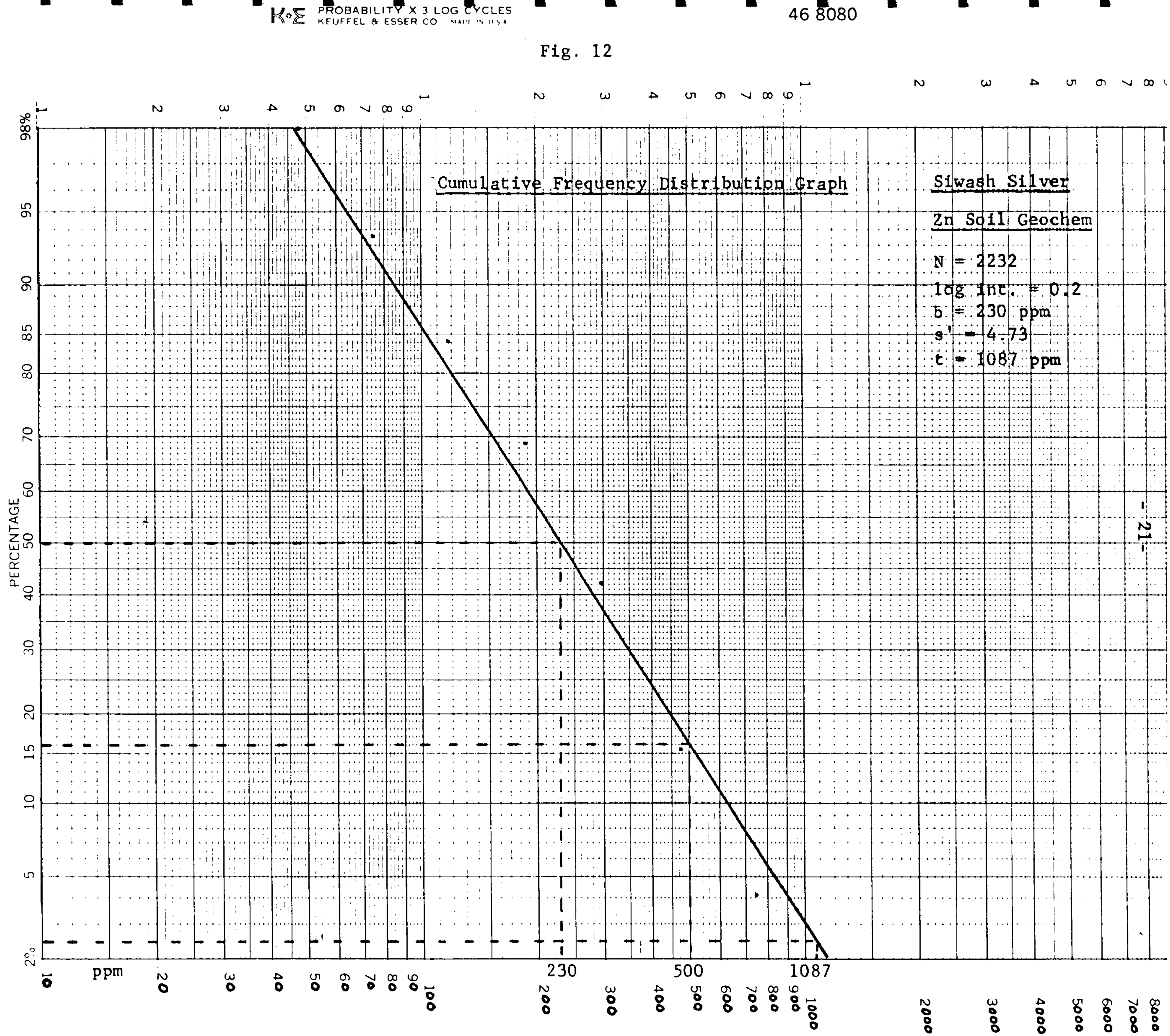


Fig. 12



K+E PROBABILITY X 3 LOG CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.
46 8080
Cumulative Frequency Distribution Graph
Siwash Silver
Zn Soil Geochem
N = 2232
log int. = 0.2
b = 230 ppm
s' = 4.73
t = 1087 ppm
PERCENTAGE
ppm
230
500
1087

Figure 13

Soil Geochemical Parameters Tabulated for the Siwash Silver Mineral Property.

Element	Background Value	Low Anomalous	Anomalous (Threshold)	High Anomalous
Cu	20 ppm	40 ppm	80 ppm	> 160 ppm
Ag	0.5 ppm	1 ppm	3 ppm	> 4 ppm
Pb	35 ppm	75 ppm	150 ppm	> 300 ppm
Zn	230 ppm	500 ppm	1000 ppm	> 2000 ppm

* Rounded values from calculations

d) Discussion of Results

Varying depths of glacial overburden present an immediate problem in the interpretation of geochemical results over the Siwash Silver mineral property. Drift, occuppying the terraced slopes of Siwash Creek valley can vary from zero to over thirty metres in thickness, within a very short horizontal distance. When the soil geochem data is correlated with areas of thick overburden, values tend to be below average. Conversely, the stronger anomalies often correspond with areas having little soil cover. It is therefore, highly possible that several altered mineralized areas may in fact lie at depth beneath this overburden, but are not traceable by existing geochemical methods of sampling. Despite overburden problems, the contoured geochemical data does point out several areas of mineral concentration.

Known mineralized areas such as Three Adit Gap (1400E - 00S), the Camp Show (1400S - 1000E) and the Spud Trenches (2200S - 00E) show anomalously high concentrations of Cu, Ag, Pb and anomalous to low anomalous Zn values. These geochemical highs are related to observed high grade veining in the case of Three Adit Gap and to a moderate to highly chloritized zone in the case of the latter two.

On the east side of Siwash Creek, in the vicinity of 1800E to 1900E and 650S on the grid, high anomalous values of Cu, Ag and Zn are encountered. Although trenching in this area did not uncover any visible mineralization, it is possible that this high may be related to mineralization along the contact between the granite body and the quartz feldspar porphyry. Alternatively, anomalous values could be the result of a northeast extension of the Fissure Maiden vein, at depth. High Pb, Ag values detected at 1200E - 700S denote the presence of the Fissure Maiden vein along Siwash Creek. The northern extension of a N 20° E trending chloritized zone along Siwash Creek is supported by high Pb, Zn values at 1300E - 1000S to 1100S.

Highly anomalous Pb values and anomalous Zn values occur with the quartz feldspar porphyry east of Siwash Creek. Trenching of the area did not expose any mineralization, but outcrop exposed was well weathered. Thus, there remains the possibility of Pb, Zn mineralization at depth within this unit. A similar widespread area of high anomalous Pb values and low anomalous Zn values exists to the north of Saskat Creek, directly west of the quartz feldspar porphyry unit. Thus, the data may suggest an extension of the quartz feldspar porphyry unit on the west side of Siwash Creek.

In the area of the Western Trenches (200E - 00S), highly anomalous Pb values and anomalous Ag values are related to high grade veining located in the vicinity. Anomalous Cu geochem and low anomalous Zn are likely a reflection of thin mineralized veinlets located within the highly silicified granite and copper-zinc mineralization noted in andesitic units. Due to previous trenching in this area it is also possible that a few of the anomalous geochem values may have been upgraded by soil contamination.

High anomalous Cu, Zn geochem and anomalous Pb, Zn values in the vicinity of 800S - 200E may be related to thin (up to 2") mineralized quartz veins cutting through relatively unaltered granites in this area. Likewise, high anomalous Pb values located near the Aspen Grove access road, in the far west portion of the grid, north of the E-W baseline are possibly related to thin mineralized quartz veins in the area.

At the mouth of Saskat Creek, the high anomalous Pb and anomalous Ag values may be related to fluvially transported soils. Alternatively, there is the possibility that such values are a reflection of a nearby high grade Pb, Ag vein. This theory seems reasonably probable, due to the close proximity of this area to the high grade veining of Three Adit Gap immediately to the north and the Fissure Maiden to the south.

Several small isolated areas of highly anomalous Cu and anomalous Ag are evident to the west of the N-S baseline. Such values may reflect mineralized zones within the granite of this area, however geological surveys have not accomplished such a relationship to date. The other possible reason for anomalous soils located in this area of the grid may be due to the presence of organic soil regimes scattered throughout the west.

Significantly high Au geochem values correspond to areas anomalous in other metal values, ie: Three Adit Gap, Western Trenches, Fissure Maiden extension, Camp Show, Spud Trenches and localized areas throughout the southwestern part of the grid. Anomalous Au values are considered to be anything greater than 3 grams per metric tonne. The highest Au value obtained was 15 grams per metric tonne over the highly chloritized Camp Show.

V CONCLUSIONS

The geochemical survey has proven to be reasonably successful over the 1979 grid area. It serves very well as a complimentary survey to that of geology in that it substantiates observed areas of mineralization. A few areas, not detected by the geological survey have been detected by soil geochemistry. Included in these are the area north of Saskat Creek, the Fissure Maiden extension and localized areas to the west of the N-S base line. Most of these areas present an overburden problem and outcrops are few and far between, but more thorough prospecting is required. Anomalous Pb, Zn values picked up over the quartz feldspar porphyry unit still remains a puzzle, although sufficient trenching and prospecting has been accomplished.

BIBLIOGRAPHY

Lepeltier, Claude (1969) - A Simplified Statistical Treatment of Geochemical Data by Graphical Representation. Economic Geology, Vol. 64 pp 538-550.

STATEMENT OF QUALIFICATIONS

I, Delbert W. Ferguson of Peachland, Province of British Columbia, do certify that:

1) I am presently employed as an exploration geologist by Brenda Mines Ltd.

2) I am a graduate of the University of Western Ontario with an Honours Bachelor of Science Degree in Geology (1979).

Delbert W. Ferguson
Exploration Geologist
Brenda Mines Ltd.

STATEMENT of QUALIFICATIONS

I, Arnold R. Pollmer of Peachland, Province of British Columbia, do certify that:

1) I have been employed as a geologist by Noranda Mines Limited from December 1973 to June 1977; I am presently employed as the chief geologist by Brenda Mines Ltd.

2) I am a graduate of the University of Wisconsin with a Bachelor of Science Degree in Geology (1972).

3) I am a member of the Canadian Institute of Mining and Metallurgy.

4) I am a fellow of the Geological Association of Canada.

Arnold R. Pollmer
Chief Geologist
Brenda Mines Ltd.

APPENDICIES

PREPARATION of SOILS and SILTS for GEOCHEMICAL ANALYSIS

1. Empty soil sample into the pan and then place the sample packet into the pan with the sample.

2. Place the pan containing the sample into the oven (Temp=105 C) and leave until dry approx. 2 hours.

3. Remove from the oven when dry and remove rocks and twigs etc.

4. Break up the clay lumps with a rubber bung and then transfer the sample to an 80 mesh screen.

5. Screen approx. 50 - 100 grams of sample through the screen and transfer to the original packet and seal.

6. Discard the +80 mesh fraction of the sample.

ANALYSIS by A.A. for Cu, Pb, Zn, Ag and Mo.

1. Weigh 2.00 GM on the top pan balance into a 150 ML beaker (check that beaker No. is the same as written on work sheets)

2. Add 15 MLS Nitric Acid, cover with watchglass and heat on low heat until brown Nitrous fumes are gone.

3. Remove beakers from hot plate, cool for 5 minutes.

4. Add 10 ML Hydrochloric Acid. Place on hot plate. When all brown Nitrous fumes are gone, remove watchglasses and take just to dryness on a low plate.

5. Remove from plate, cool, add 20 MLS distilled water, 5 MLS Conc. Hydrochloric Acid and boil salts into solution.

6. Cool in water bath, when cold transfer to 100 MLS Volumetric flask, add 1 MLS Superfloc solution and dilute to 100 MLS with distilled water.

7. Mix thoroughly and then transfer to original beaker.

8. When all samples ready, transfer to A.A. room for reading.

9. If Mo is required, 10.00 MLS of this solution is transfered to a test tube and 1.00 MLS of ALC_3 solution added.

APPENDIX II

Cost Statement and Account Breakdown

A. Geochemical Survey - June 1979

Labour - 58 line km ÷ 2 km/man day = 29 man days; 29 man days x $56/man day	1,624.00
Assaying - 1,160 samples x $6.82/sample	7,911.20
Field Supplies - topofil thread ÷ 58 km - 5.4 km/spool = 11 spools x $6.96/spool	76.56
- Soil sample bags - 1,160 sample - bags x $0.0579/bag	67.16
- Tags - 1,160 x $0.04	46.40
Report Preparation - 7 days x $80/day	560.00
Total Expenditures	$10,285.32

520	soil samples were collected over SS 1 Mineral Group = 45% of survey	$4,628.39
640	soil samples were collected over SS 2 Mineral Group = 55% of survey	$5,656.93
1,160		

B. Geochemical Survey - August - September 1979

Labour - 26.7 line km ÷ 2 km/man day = 13 man days x $56/man day	728.00
Assaying - 534 samples x $6.82/sample	3,641.88
Vehicle Rental - one 4 x 4 truck x $15/day x 30 days	450.00
Fuel Costs - $10/day x 30 days	300.00
Food Expenses - $10/man/day x 3 men x 30 days	900.00
Field Supplies - topofil thread - 26.7 km ÷ 5.4 km/spool = 5 spools x $6.96/spool	34.80
- Soil sample bags - 534 bags x $0.0579	30.92
- Tags - 534 x $0.04	21.36
Miscellaneous Field Expenses and Supplies	255.58
Report Preparation - 3 days x $80/day	240.00
Total Expenditures	$6,602.54

APPENDIX II (Cont'd)

106 soil samples were collected over SS 1 Mineral Group = 20% of survey	=	$1,320.51
192 soil samples were collected over SS 2 Mineral Group = 36% of survey	=	$2,376.91
76 soil samples were collected over SS 3 Mineral Group = 14% of survey	=	$924.36
160 soil samples were collected over SS 4 Mineral Group = 30% of survey	=	$1,980.76
534		

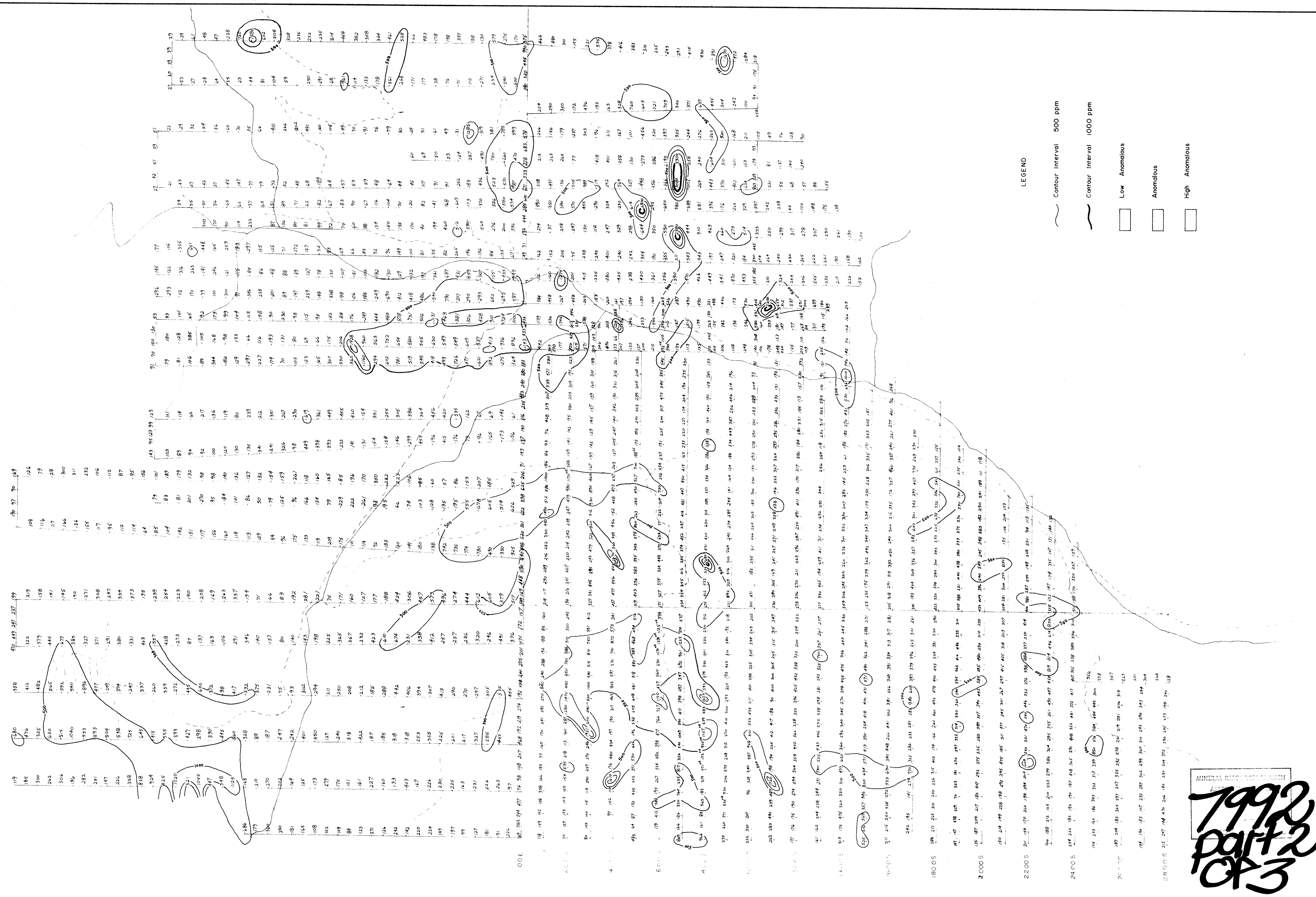

FIGURE 14
LEGEND
Contour Interval 40 ppm
Contour Interval 80 ppm
Low Anomalous
Anomalous
High Anomalous
MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
7992
part 2 of 3
BRENDA MINES LTD.
Design
Drawn
Check
Approv. FEB. 1980
SIWASH SILVER
GEOCHEM Cu
SCALE: 1: 7500
DWG. No.
Rev. No.
Revision

FIGURE 15
LEGEND
Contour Interval 1 ppm
Contour Interval 2 ppm
Low Anomalous
Anomalous
High Anomalous
MINERAL RESOURCES BRANCH
7992 part 2 of 3
BRENDA MINES LTD.
Design
Drawn
Check
Approv. FEB. 1980
SIWASH SILVER
GEOCHEM Ag
SCALE: 1 : 7500
DWG. No.
Rev. No.
Revision

BRENDA MINES LTD.	
Design	SIWASH SILVER
Drawn	GEOCHEM Pb.
Check	
Approv. FEB. 1980	SCALE: 1: 7500 / DWG. No.

Rev. No. | Revision

FIGURE 17



BRENDA MINES LTD.

Design	SIWASH SILVER	
Drawn	GEOCHEM Zn	
Check		
Approv. FEB. 1980	SCALE 1:7500	DWG. No.