

GEOLOGICAL AND GEOCHEMICAL REPORT

on the

KELSAL CLAIM GROUP

located at

KELSALL LAKE, 100 MILES E.N.E. OF ATLIN,
LATITUDE 59° 52'N., LONGITUDE 136° 30'W.,
ATLIN MINING DIVISION,
BRITISH COLUMBIA

by

R. B. ROWE AND W. D. COWAN

for

PACIFIC PETROLEUMS LTD.

during

September 10 - September 24, 1970

January 11, 1971

Jan. 26, 1971

GULF MINERALS COMPANY

Re: geol. & geochem. Report - Kalsal L.
by R.B. Rowe & W.D. Cowan, Pacific Pete.

Report reviewed - following points:

1. Are there any vents, where the submarine lavas come from?
2. The felsite is of great interest.
Is it a rhyolite or dacite?

compare Noranda, Uchi L., Texas Gulf Kiddle,
Caroba Japan. All have in common
basic flows with

"Rhyolite Domes". Black ore (Pb-Zn)
and yellow ore Pyrite; Chalcopyrite on the
flanks of each dome. LARGE SCALE

EXHALATION FROM THE VENTS
SUPPLIED SULPHUR AND SULPHIDES.
Possibly we keep these things in mind
when drilling starts H. D. Knipping
in June HDK.

PACIFIC PETROLEUMS LTD.

#408 - 580 Granville Street,
Vancouver 2, B.C.



January 25, 1971.

Mr. Fred Perry,
Gulf Minerals Company,
Suite #1300 - 10 King St., East,
Toronto 1, Ontario.

Dear Fred:

Enclosed please find a copy of the geological and
geochemical report on the Kelsal Claim Group.

Only the Mo soil map is in the pocket. The geolog-
ical map and the Cu and Zn soil maps were sent to Gulf last
November.

Best regards,

Yours truly,
PACIFIC PETROLEUMS LTD.

A handwritten signature in cursive script that reads "R. B. Rowe".

R. B. Rowe

rbr/vb

Enclosure: (1)

Two handwritten signatures in cursive script. The top one reads "Roy Glover" and the bottom one reads "Joe Irwin".

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SUMMARY AND RECOMMENDATION

Geochemical, geophysical and geological surveys suggest that Cu - Zn sulphide mineralization of possible economic interest occurs at depth on the Kelsal claims.

It is recommended that 4 diamond drill-holes totalling approximately 2,000 feet be put down as a test.

INTRODUCTION

This report deals with geological mapping and soil sampling on the Kelsal claims from September 10th., to September 24th., 1970 by W. D. Cowan assisted by M. Linn and under the general supervision of R. B. Rowe.

Thirty-two Kelsal claims were staked in 1969 by W. M. Tupper (1969), on behalf of Pacific Petroleum Ltd., to cover an area of anomalous silts associated with springs and streamlets extending for about 2,500 feet along the base of a slope.

Grid soil sampling by Tupper (1969 and 1970) in the area of interest located Cu and Zn anomalies.

Magnetometer, electromagnetometer and induced polarization surveys were conducted by Tri-Con Exploration Surveys Ltd., during June and July of 1970 on a grid with line spacings of 300 feet (White, 1970).

Three chargeability anomalies were located. The most intense occurs at the intersection of two linear electromagnetic conductors that are probably faults.

Cowan used the grid established for the geophysical surveys as control. The soils were resampled on this grid to provide better correlation with the geophysical data.

Six fractions were found and these have been staked and recorded.

THE PROPERTY

The mining claims and fractions comprising the Kelsal Claim Group are as follows:

<u>Claims</u>	<u>Tag Numbers</u>	<u>Record Numbers</u>
Kelsal #1 to #32 incl.	24561M to 24592M incl.	13212H to 13243H incl.
<u>Fractions</u>		
Kelsall #1 F.M.C.	151886M	15347H
Kelsall #2 F.M.C.	151887M	15348H
Kelsall #3 F.M.C.	151888M	15349H
Kelsall #4 F.M.C.	151885M	15350H
Kelsall #5 F.M.C.	151883M	15351H
Kelsal #6 F.M.C.	validation of recording not received as yet	

LOCATION, ACCESS, TOPOGRAPHY AND VEGETATION

The Kelsal Claim Group is located 100 miles eastnortheast of Atlin, B.C. at Kelsall Lake, latitude 59° 52' N., longitude 136° 30' W., N.T.S. 114 - P - 15 E, 16 W. (See Figures 1 and 2).

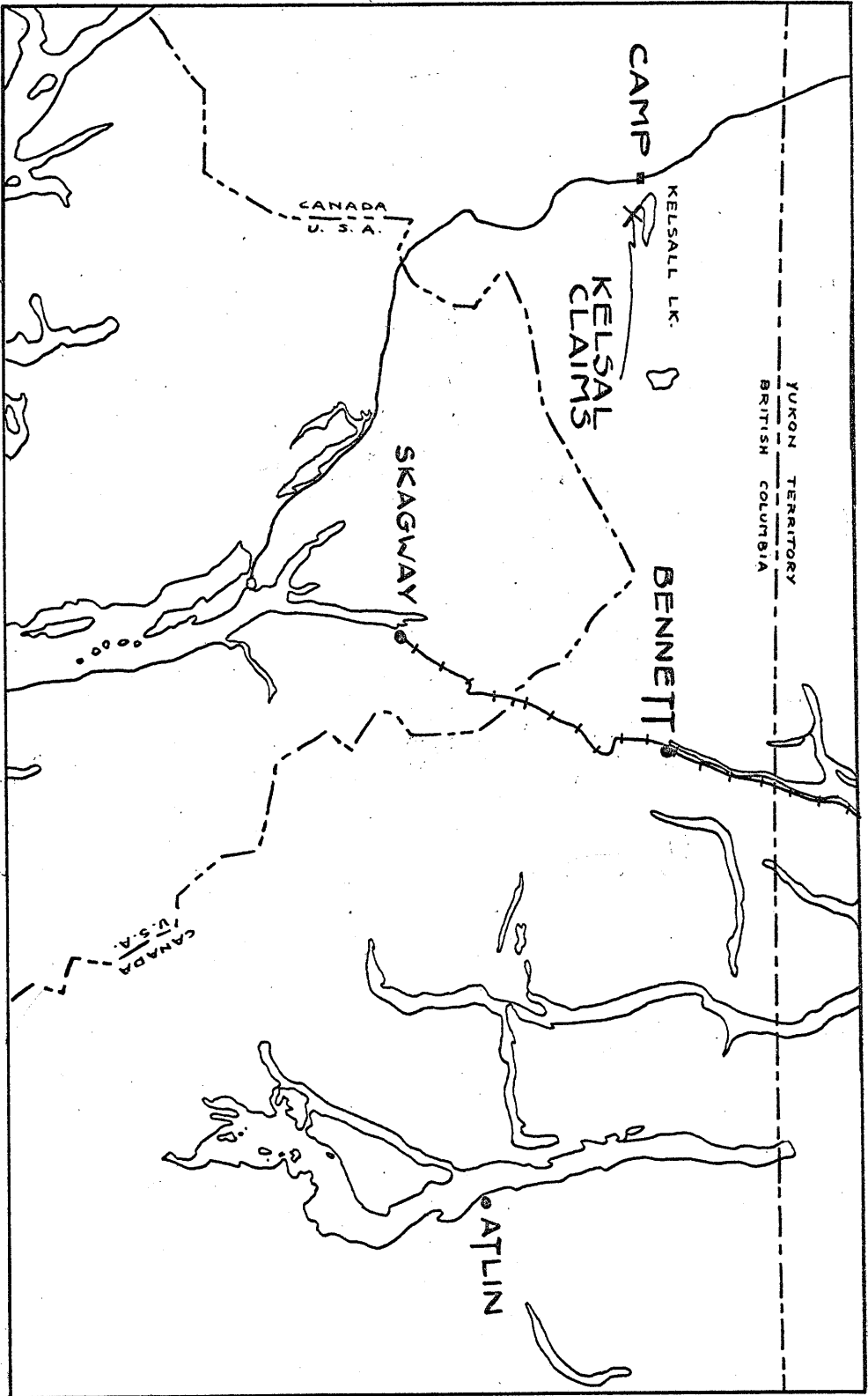
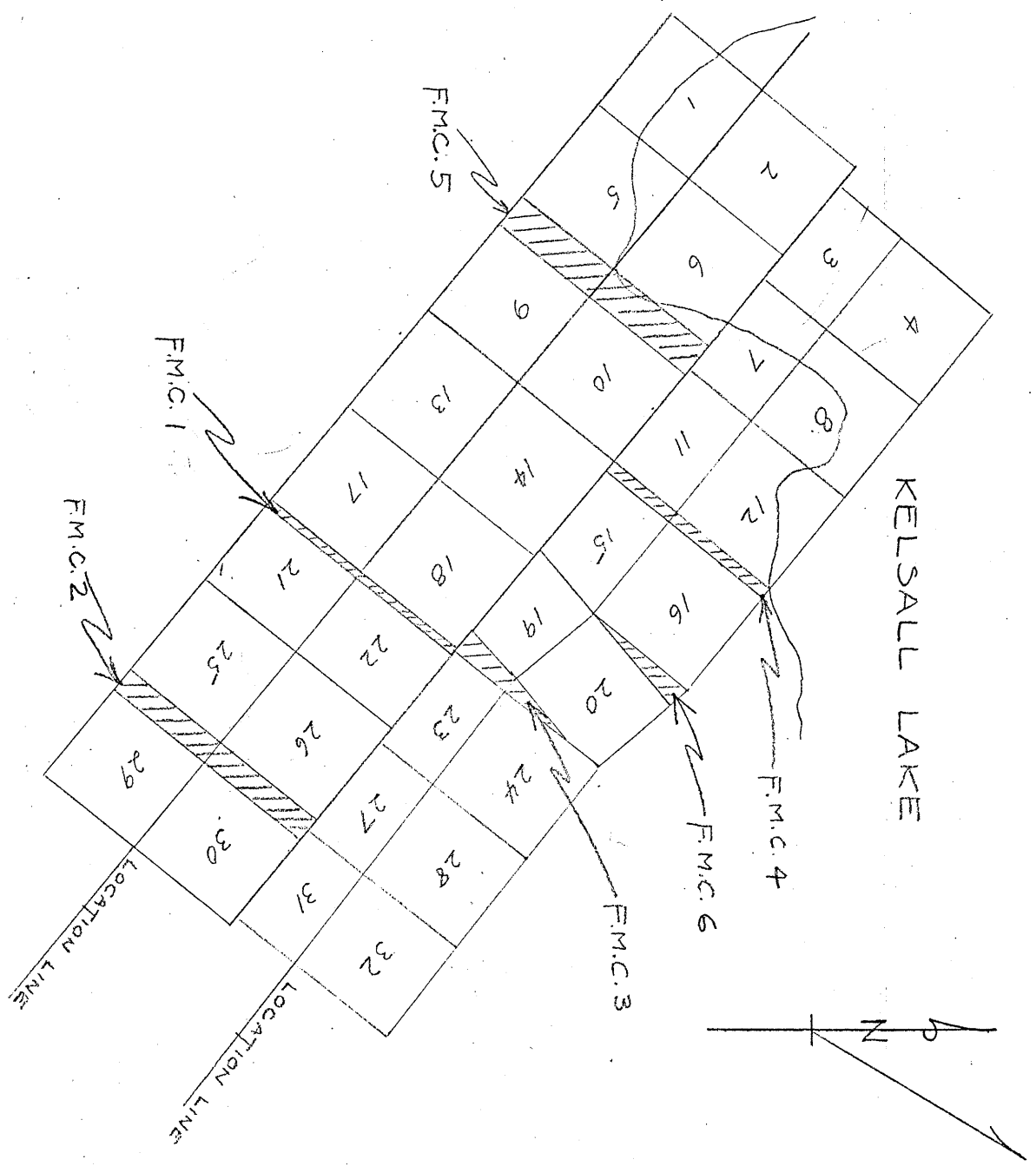
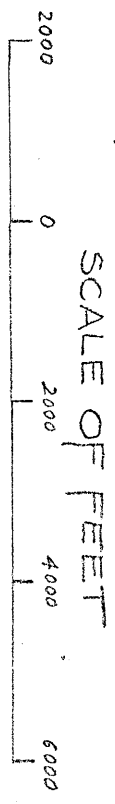


FIG. 1 - MAP SHOWING LOCATION OF
KELSAL CLAIM GROUP

FIG. 2 - SKETCH-MAP OF KELSALL GROUP



Facile access to the property is by float-equipped aircraft from Whitehorse, Y.T., a distance of 80 airmiles.

The property can also be reached via a rough road to the northwest shore of Kelsall Lake from the Haines Road near the highway camp, thence by boat across Kelsall Lake.

Topography is relatively gentle with relief being about 1,200'.

Vegetation consists of ground-covers, and bushes in patches-- there are no trees.

GEOLOGY

Observations

The rocks outcropping on the Kelsal claims are classified macroscopically as meta-andesite, argillite, tuff, and felsite (See Figure 3). *Figure 1*

The meta-andesite is aphanitic to coarse grained, grey-green to dark green to black, and massive to slightly schistose. Hornblende and plagioclase can be recognized in the coarser-grained varieties which probably represent the centres of flows. In places, the rock contains abundant, very fine-grained magnetite. Epidote, quartz, calcite and pyrite are also common, and minor amounts of chalcopyrite were observed at two places. Quartz veinlets were seen in several outcrops and some of these contain pyrite and chalcopyrite in vugs and hairline fractures. Amygdules containing quartz and calcite were found in the northernmost outcrops mapped.

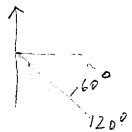
Interbedded tuff and argillite appear to occur as small lenses in the meta-andesite. The tuff is characterized by brilliant blue quartz eyes in a slightly foliated matrix. Pyrite is common and hornblende and chlorite are recognizable in places. The argillite is black and somewhat slaty. Strongly foliated chloritic rock, probably formed from argillite,

occurs in places at the contact of tuff-argillite and meta-andesite.

The felsite is aphanitic, light brown, and massive to slightly schistose. It could not be determined whether the felsite is extrusive or intrusive.

Quartz float, some of which contains chalcopyrite, was found at several places.

It was not possible to distinguish flow contacts or bedding, however, limestone beds about 1 mile south of the claims strike 120° and dip 60° northeast.



The strike of the schistosity ranges from 100° to 140° with most of the readings between 130° and 140° . Dips are generally moderate to steeply southwest, however, some are to the northeast.

A strong topographic lineament trends across the centre of the claim group and probably represents a southwesterly-dipping fault. ?

check photo

Interpretation

On the basis of lithology and location, there appears to be little doubt that the Kelsal claims are on the southeast extension of a fold belt of the Mush Lake Group, a eugeosynclinal pile of volcanic and sedimentary rocks of Triassic age mapped by Kindle (1953) in the Dezadeash map-area to the north.

The presence in outcrop and float of quartz veinlets, pyrite and chalcopyrite supports the geophysical and geochemical indications of more intense sulphide mineralization at depth.

GEOCHEMISTRY

Procedure

<u>Type of Sample</u>	<u>Number Collected</u>	<u>Horizon</u>	<u>Depth of Sample</u>
Soil	298	B	8 to 10"
Soil	10	A? (not possible to obtain organic- free material)	8 to 10"
Silt	33		8 to 10"

Location Control: Soil samples -- taken at 200-foot intervals on grid with line-spacing of 300 feet.

Silt samples -- sample sites tied-in to grid.

Method of Sample Collection: by hand.

Packaging: geochemical sample envelopes of Kraft paper.

Drying Procedure: dried for 1 day at 98° C. in cabinet with bottom elements.

Screening Procedure: by hand.

Fraction Analyzed: -80 mesh screenings, 0.50 g.

Method of Analysis: atomic absorption with HClO₄ - HNO₃ extraction and Techtron AA₄ and AA₅ detection.

Final Volume: 10 ml.

Analyzed for: Cu, Zn, Mo

Laboratory: Vancouver Geochemical Laboratories Ltd.,
1521 Pemberton Ave., North Vancouver, B.C.

Supervising chemist: L. J. Nicol

Interpretation

Cumulative frequency distribution curves indicate that anomalous soil values for Cu, Zn and Mo are +320, +250, and +8 ppm. respectively (See Figures 4, 5 and 6).

Anomalous Cu, Zn and Mo values in the soil support the geophysical evidence that sulphide minerals are present in some concentration at depth (White, 1970).

The largest areas of higher Cu, Zn and Mo soil values appear to be related to the major induced polarization anomaly (See Figure 3).

Overall soil patterns are somewhat confused. Lack of perfect coincidence is probably due, in part at least, to differences in ion mobilities. The weathering of sulphide minerals in quartz veinlets in the outcrops probably also contributes to the complexity.

REFERENCES

Kindle, E. D.

1953: Dezadeash Map-Area, Yukon Territory; Geol. Surv. Can., Mem. 268

Tupper, W. M.

1969: A Report on Phase II of the Mineral Exploration Program for the Carcross Project, Yukon Territory and British Columbia; unpub. rept.

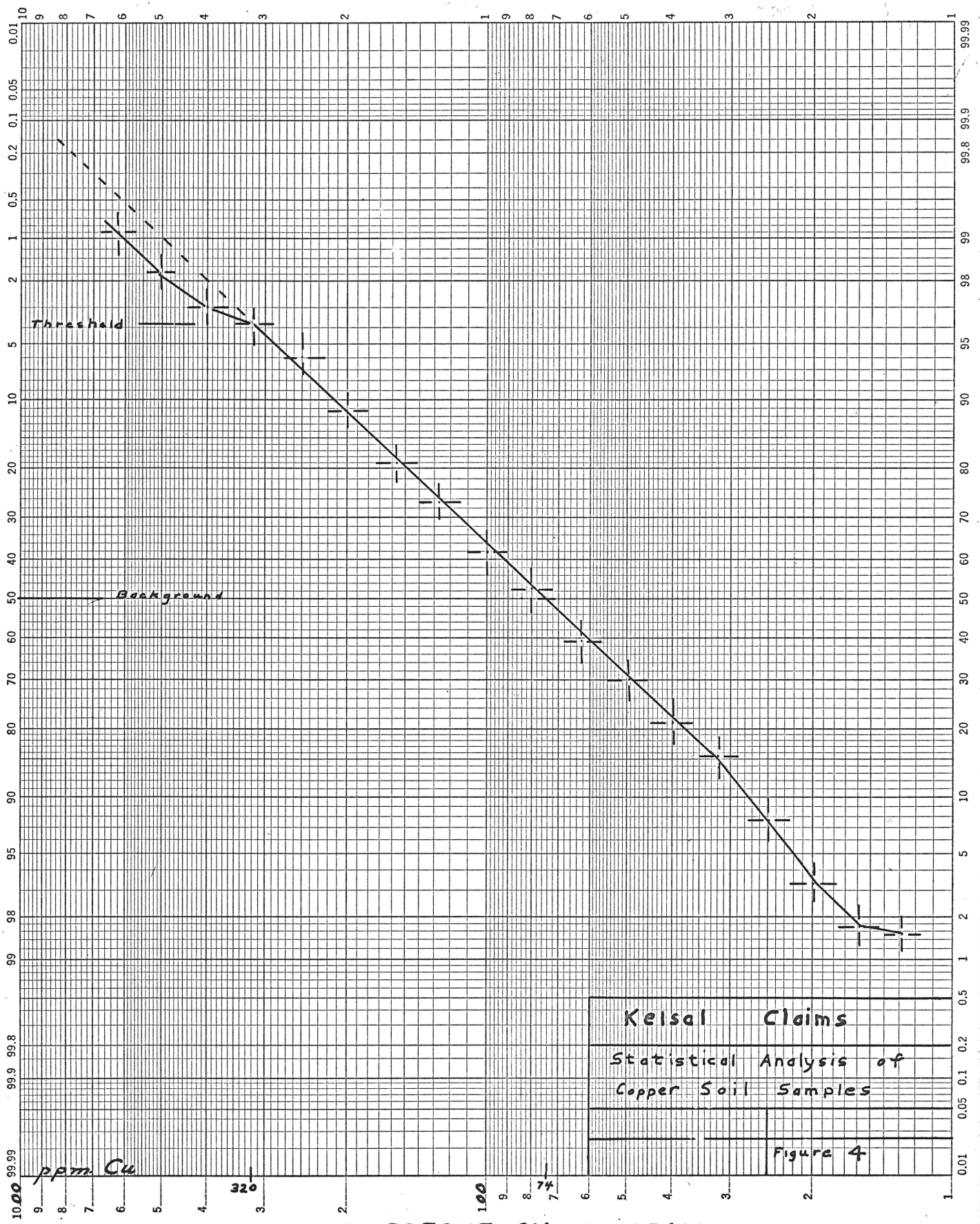
* 1970: Geological and Geochemical Report on the Kelsal Claim Group, Latitude 59° 52'N., Longitude 136° 30'W., unpub. rept.

White, G. E.

* 1970: Geophysical Report, Kelsal Claim Group, Southwestern Shore of Kelsall Lake, 136° 35' W. Longitude, 59° 47' N. Latitude; unpub. rept.

* Submitted in support of assessment work requirements.

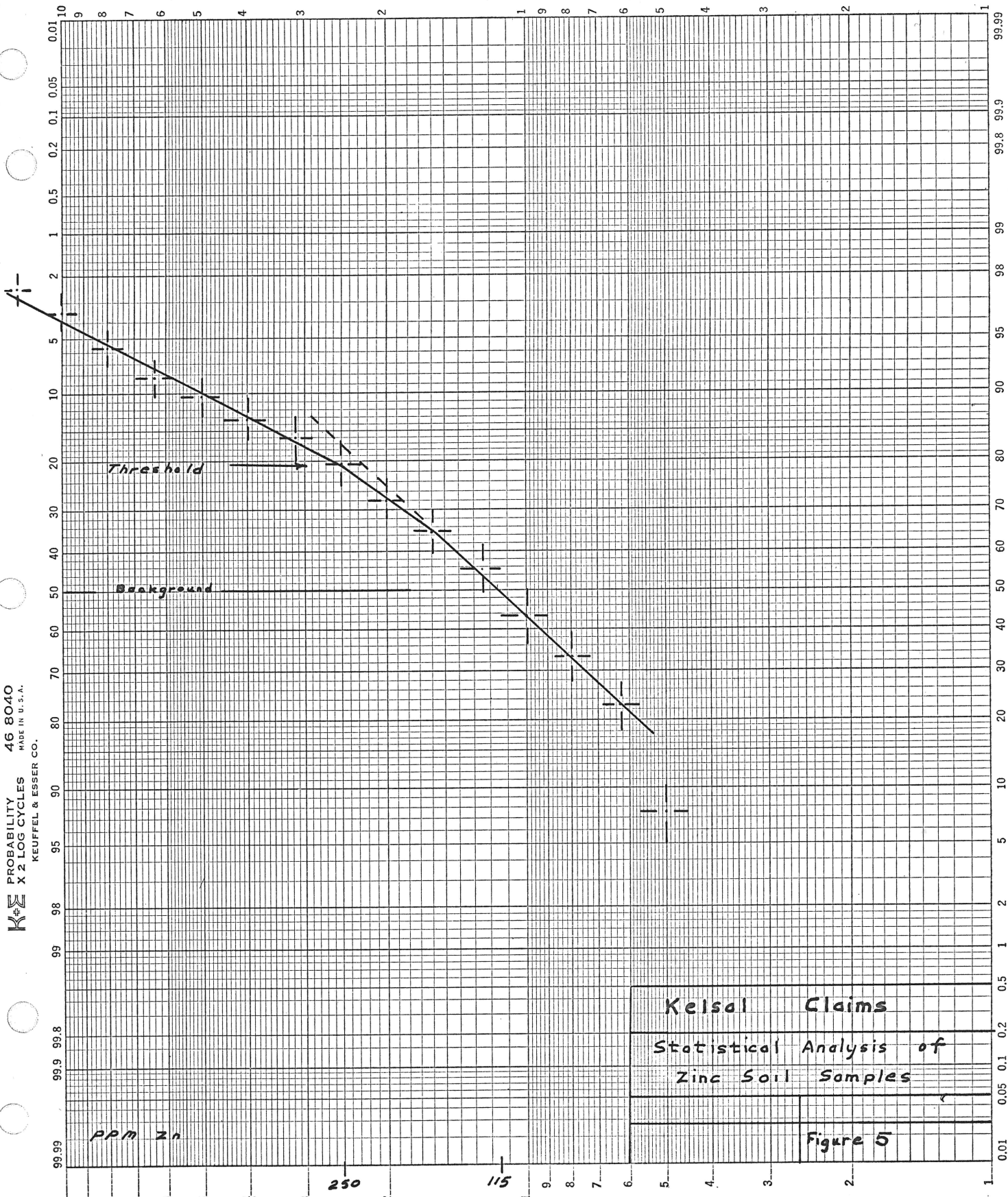
KE PROBABILITY
X 2 LOG CYCLES
KEUFFEL & ESSER CO.
46 8040
MADE IN U.S.A.



Kelsal Claims
Statistical Analysis of
Copper Soil Samples
Figure 4

CUMULATIVE FREQUENCY DIAGRAM

KE PROBABILITY 46 8040
X 2 LOG CYCLES
MADE IN U.S.A.
KEUFFEL & ESSER CO.

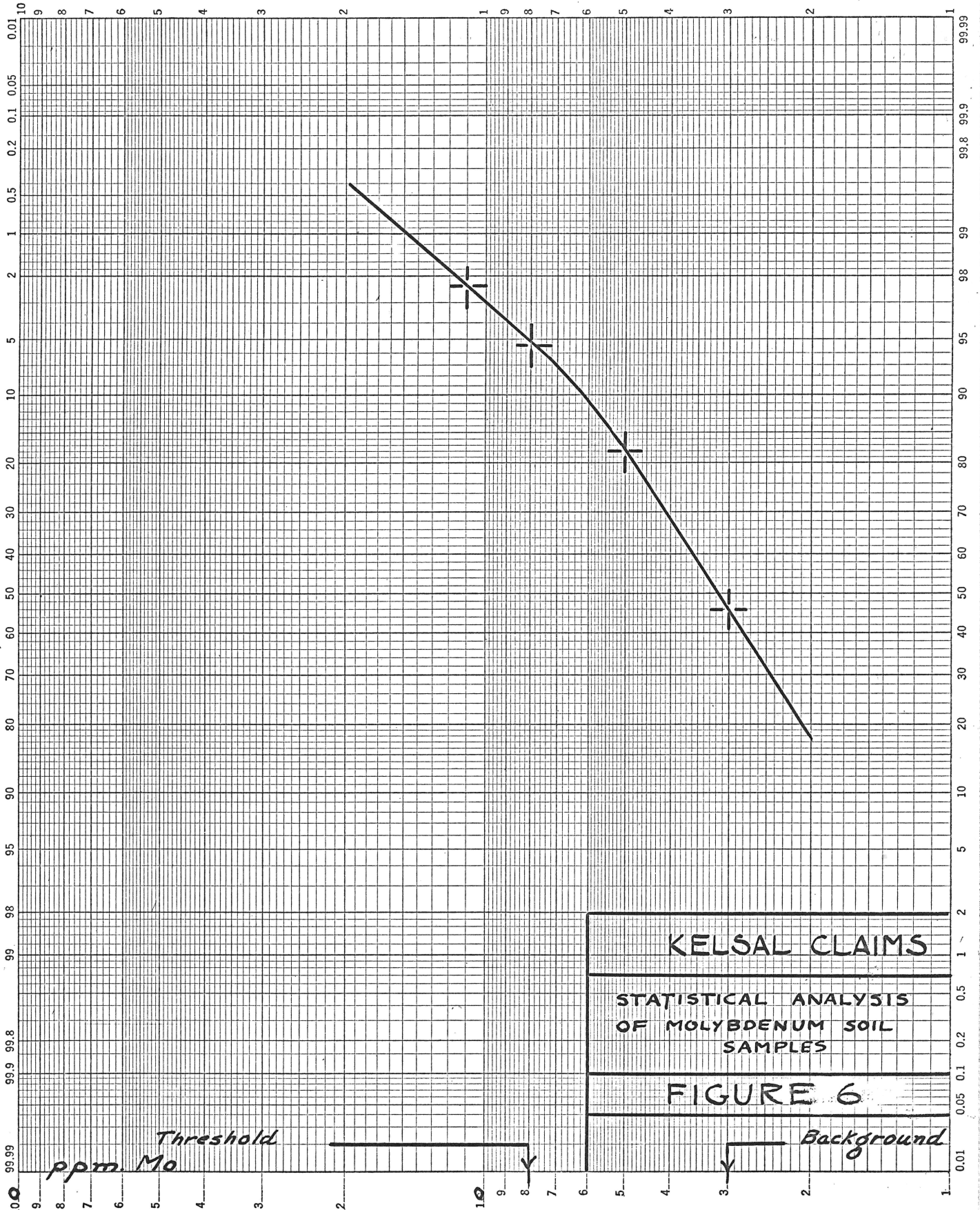


Kelsal Claims
Statistical Analysis of
Zinc Soil Samples

Figure 5

CUMULATIVE FREQUENCY DIAGRAM

KE PROBABILITY 46 8040
X 2 LOG CYCLES
MADE IN U.S.A.
KEUFFEL & ESSER CO.

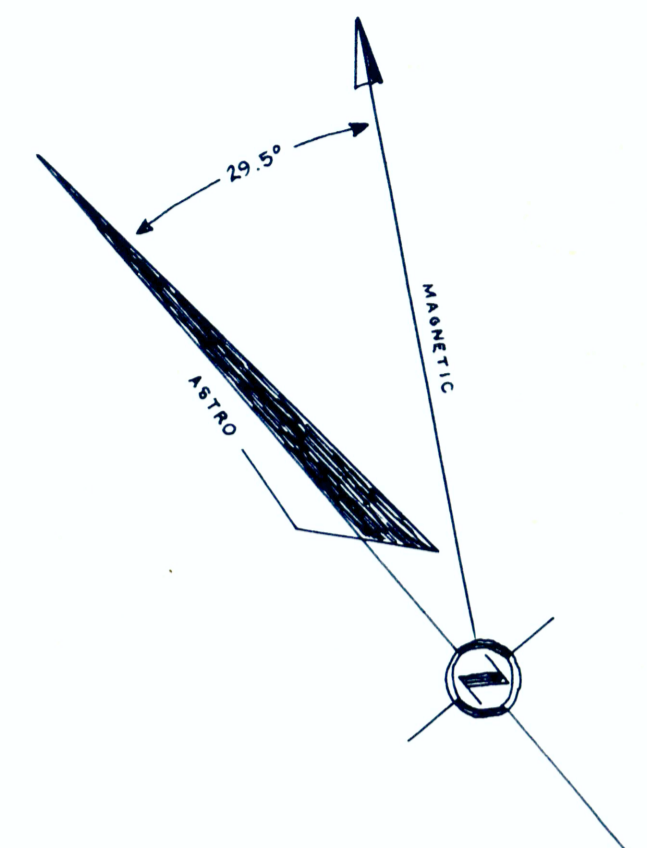
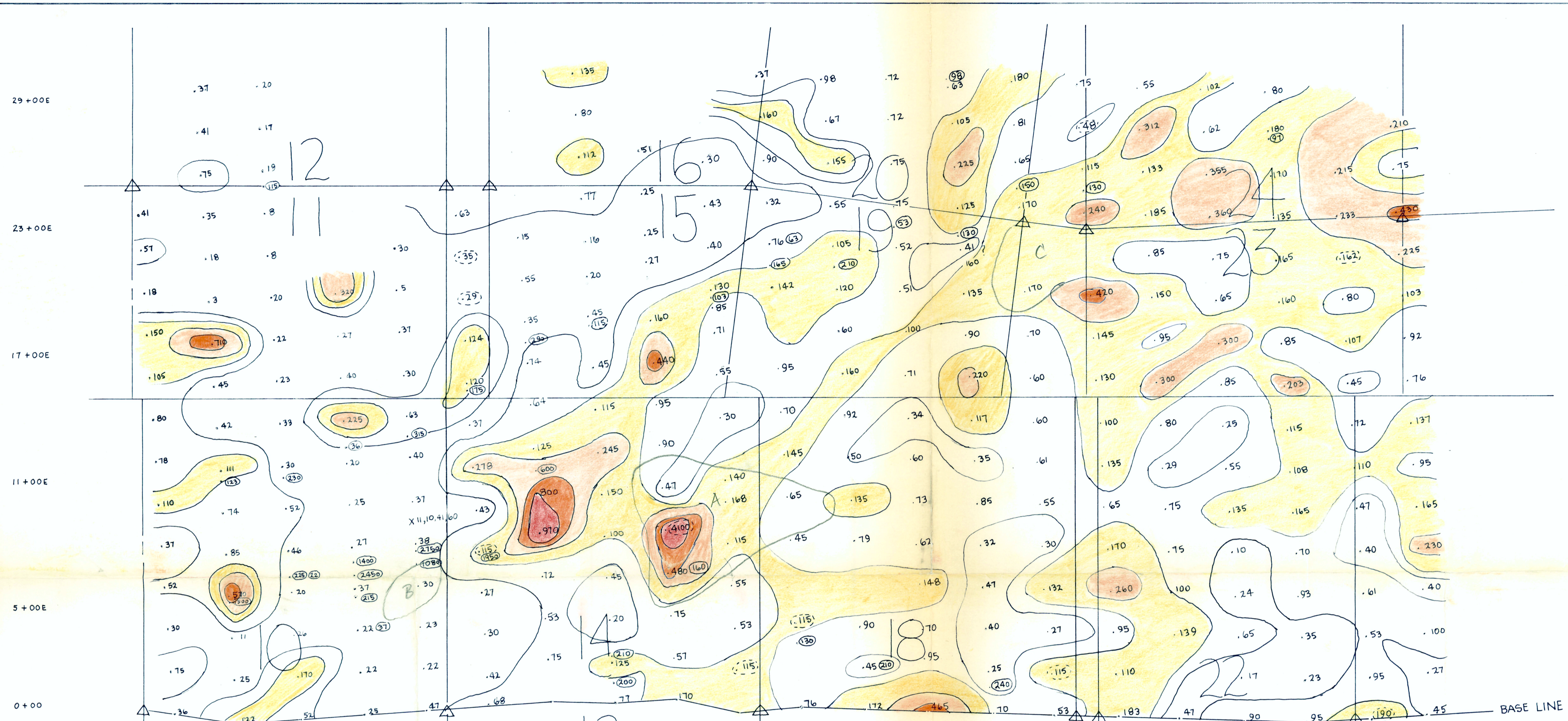


KELSAL CLAIMS

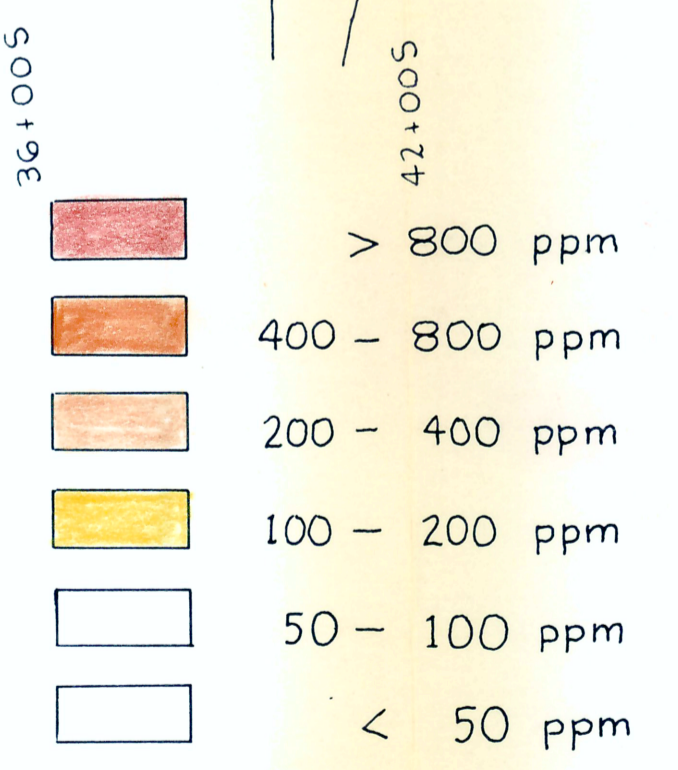
STATISTICAL ANALYSIS
OF MOLYBDENUM SOIL
SAMPLES

FIGURE 6

CUMULATIVE FREQUENCY DIAGRAM



300 150 0 300 600
Scale in Feet

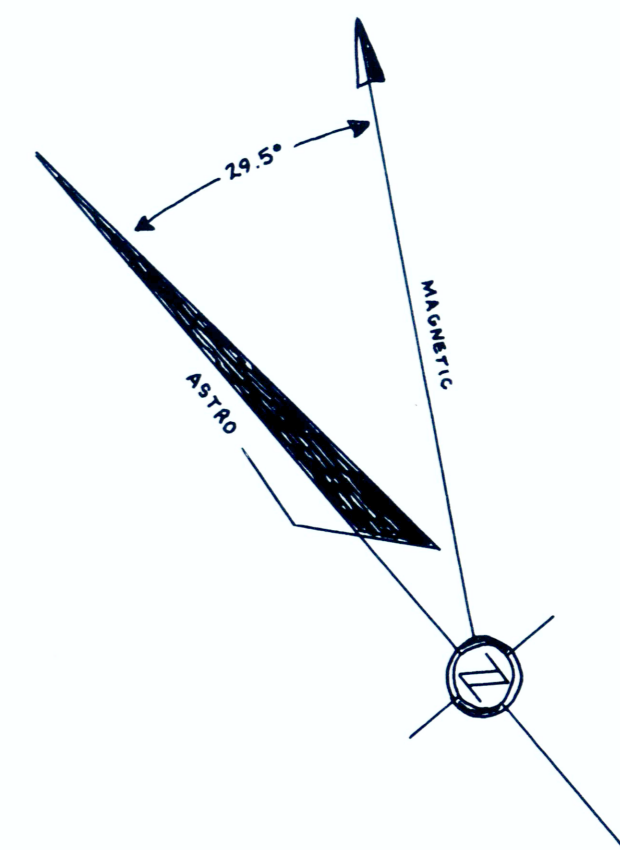
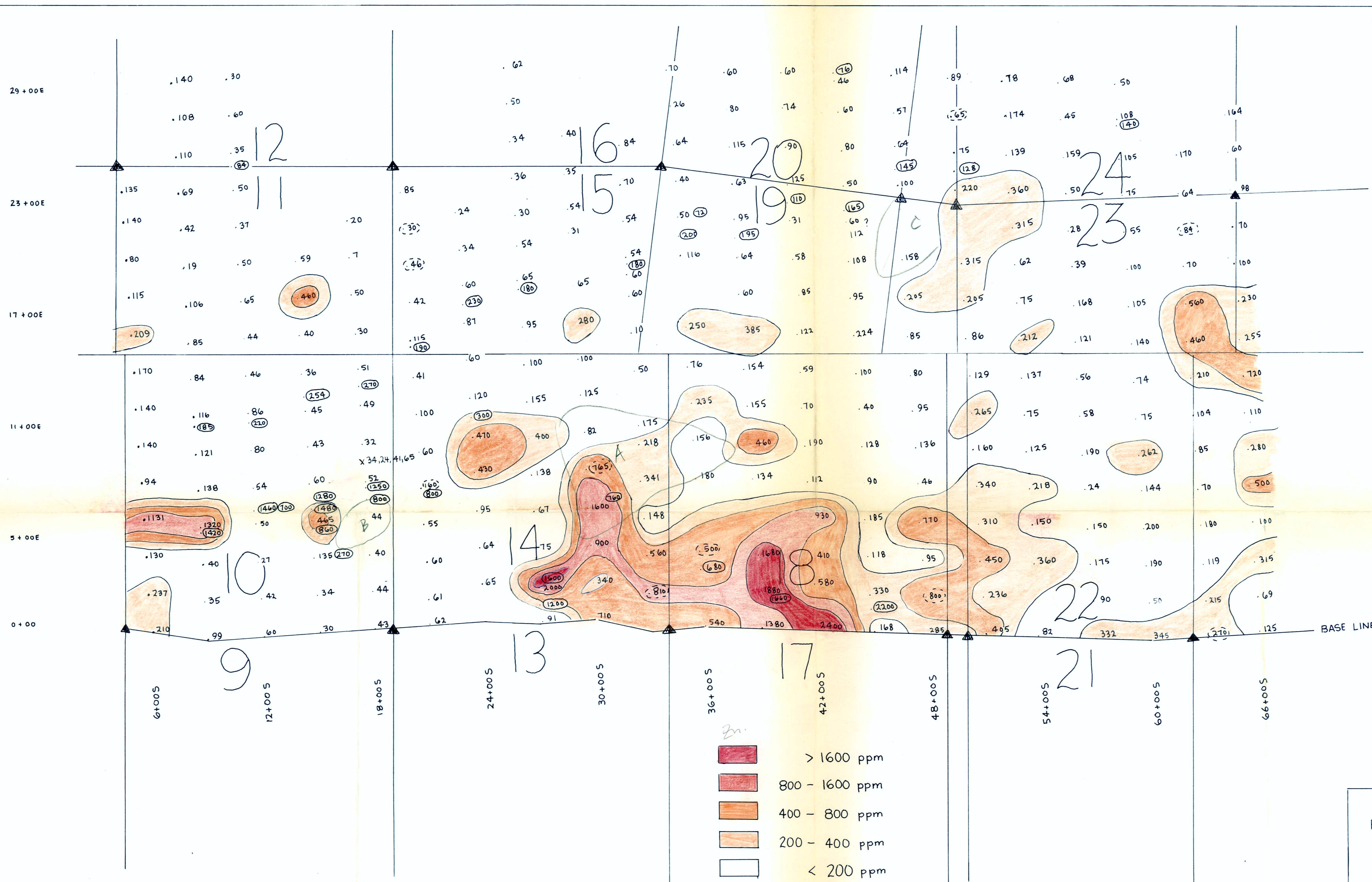


LEGEND
 (160) Silt Sample
 (190) High organic content
 — Claim line
 Δ Claim post

PACIFIC PETROLEUMS LTD.
 KELSAL CLAIMS
 ATLIN MINING DIVISION - BRITISH COLUMBIA, CANADA
 Copper (ppm) in Soils
 SEPT. 1970 | REVISED | DWN. M. J. LINN

KELSALL LAKE CLAIM GROUP
 Copper (ppm) in Soils

1000559290
 0123-96260
 TN 27. Y8
 C4
 0375



300 150 0 300 600
Scale in Feet

LEGEND

- (160) Silt Sample
- (190) High organic content
- Claim line
- ▲ Claim post

Zn

	> 1600 ppm
	800 - 1600 ppm
	400 - 800 ppm
	200 - 400 ppm
	< 200 ppm

KELSALL LAKE CLAIM GROUP

PACIFIC PETROLEUMS LTD.
KELSALL CLAIMS
ATLIN MINING DIVISION - BRITISH COLUMBIA, CANADA
Zinc (ppm) in Soils

OCT. 1970	REVISED	DWN. M. J. LINN
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29+00E

23+00E

17+00E

11+00E

5+00E

0+00

6+00S

12+00S

18+00S

24+00S

30+00S

36+00S

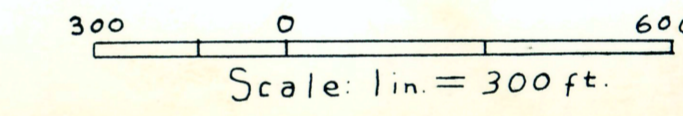
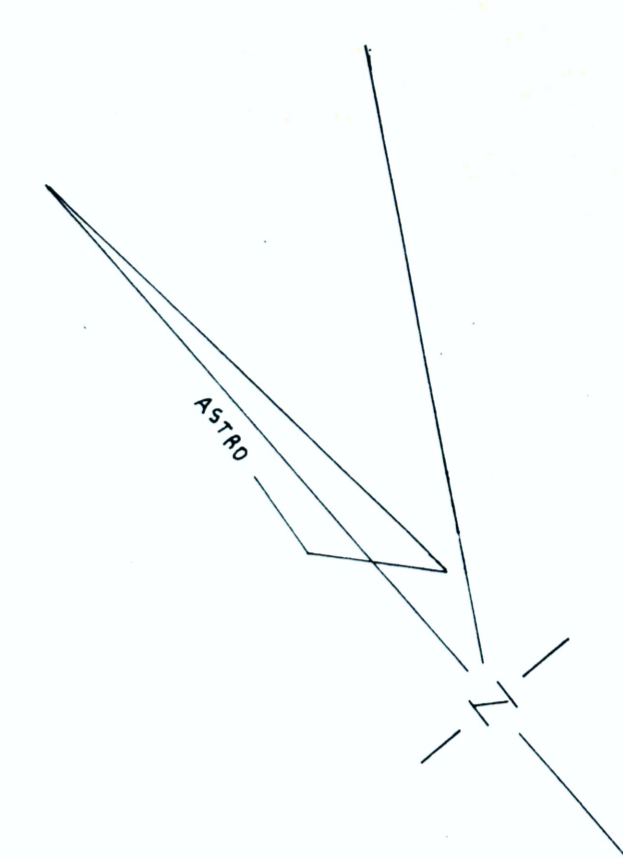
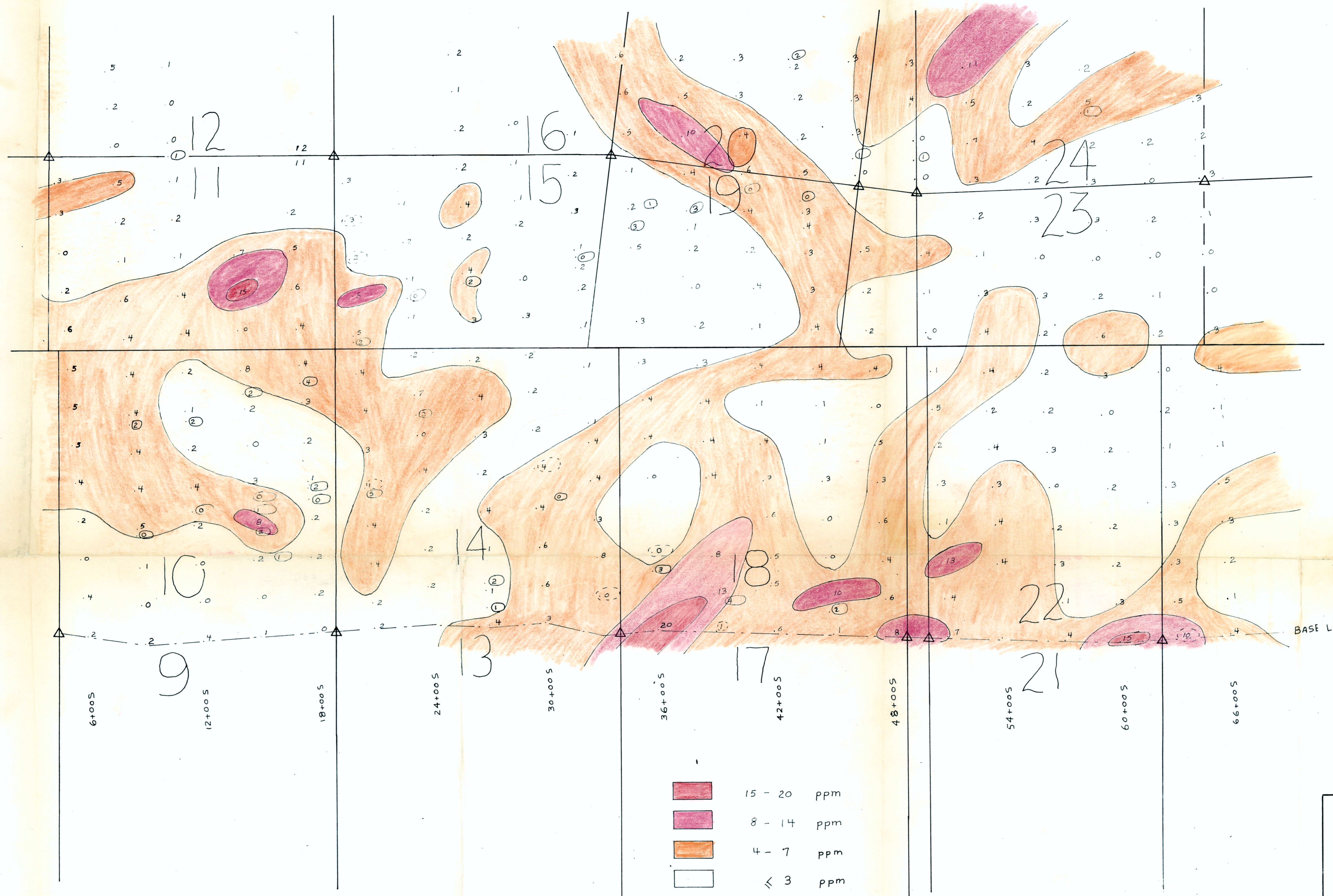
42+00S

48+00S

54+00S

60+00S

66+00S



LEGEND	
(160)	Silt Sample
(190)	High organic content
—	Claim line
△	Claim post

	15 - 20	ppm
	8 - 14	ppm
	4 - 7	ppm
	< 3	ppm

PACIFIC PETROLEUMS LTD.
 KELSAL CLAIMS
ATLUN MINING DIVISION - BRITISH COLUMBIA, CANADA
 Mo. (ppm) in Soils

Jan. 1971 DWN. W.D. Cowan

1000559290 0123-96260
 TN 27.48
 C4
 C375