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Report on the Geochemical Recce in the Gladys Valley area between Mt. Llangorse and Line Lake , Atlin Mining Division, for Canadian Johns-Manville Co. Ltd. by Clive Aspinall, Atlin, B.C. January, 1973

104N/6E, 7E&W, 10E&W, 11E

Report on the
Geochemical Reconnaissance
in the Gladys Valley area
between Mt. Llangorse and Line Lake
Atlin Mining Division

for

Canadian Johns-Manville Co. Ltd.

Box 1500, Asbestos, Que.

Covering Mineral Claims:

Fire 1-120, 125, 126

Dog 1-126

Line 1-18,23-182

Kow 1-19 (Fractions)

Tow 1-30

Red 50-53 (Fractions)

Wind 1-6

Located: (1) 59° N 132°W (S.E. Corner)

(2) 32 miles East of Atlin, B.C.

(3) N.T.S. Map 104N, Atlin, B.C.

C.J.M. Project 71

Work Period: June- Sept ., 1972

Report Date: January , 1973

Submitted by: Clive Aspinall, Atlin, B.C.

Clive Aspinall

Summary and Conclusion

A geochem reconnaissance survey was conducted in the Gladys Valley area 28 miles east of Atlin in North Western British Columbia during the 1972 field season. Samples were tested geochemically for Mo, Cu, Pb, Zn, Ag, and Au. Two key areas were located. One area is termed Avalanche Creek, which is immediately east of Line Lake. This area contains visible Cu, Pb, Ag, and Zn mineralization within a concentrated area, and consequently gave anomalous geochem results. The second key area is on Graphite Creek, immediately north east of Mt. Sanford and east of Avalanche Creek. In this area copper carbonates, in addition to traces of chalcopyrite in pyrrhotite and pyrite were discovered. A third area of dubious interest was located south of Mt. Sanford in a creek referred to as South Canyon Creek. Here the copper results were anomalous, but it is possible that these results are due to organic contamination.

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Property and Ownership

Canadian Johns-Manville Co. Ltd. staked and are the owners of four hundred and eighty-five mineral claims including fractions in the area between Mt. Llangorse and Line Lake in the Gladys Valley. These claims are the following:

Fire 1-120, 125-126

Dog 1-126

Line 1-18, 23-182

Kow 1-19 (Fractions)

Tow 1-30

Red 50-53 (Fractions)

Wind 1-6

All these claims were staked between August 1971 and September 1972. Canadian Johns-Manville Co. Ltd. has an option agreement with G.R. Craft (Prospector) of Atlin, B.C. for the mineral rights of the NI 1-40 claim group. These claims were staked by G.R. Craft in June 1969.

Location and Access

The Gladys Valley is located 28 miles due east of Atlin, in Northwestern British Columbia. This valley extends from Bell Lake in the South to the northern end of Gladys Lake, a distance of some 48 miles. The claims mentioned above are located North of Mt. Llangorse and to the north east of Line Lake, Mt. Sanford being in the center of the property.

Access to the property in the summer months can be gained over land by horse trail from Wright Creek to Line Lake via Terrahina Creek. Float equipped aircraft can land on Line Lake, in addition to Angel Lake

and Eva Lake and Llangorse Lake. Due to the fact that over half the area is above treeline, helicopter landing sites are prevailant, and therefore helicopter transportation is highly efficient in this terrain.

Physiography and Climate

Mt. Llangorse is the highest peak in the area, its summit being 6418' (ASL). The elevation of the floor of the Gladys Valley at Line Lake is 3000'. Thus the relief of the terrain is just over 3400(ASL). The area is mountainous but not rugged. However, steep cliff faces are prevailant on the north and west sides of some mountains, as a result of erosion by alpine glaciation.

Treeline is at 4000' (ASL). The terrain above timber is referred to as alpine. It is characterized by scattered willow, buckbrush, caribou moss and alpine grasses. Below treeline, the timber is primarily spruce and poplar. Swampy conditions are prevailent in some of the low catchment areas, in particular south of Angel Lake.

Generally the entire property is snow free from June to mid September. Summer temperatures are cool (45 to 50°F). Winter temperatures fluctuate between +30 and -60°F, and drastic changes in temperature can occur within a few hours. Wind storms are frequent in the Fall and Winter.

Scope of this Report

This report discusses the geochemical sampling done in 1972 in the Gladys Valley area North of Mt. Llangorse and south of Eva Lake. The sampling was done on both sides of the valley but was primarily done between Brecon Creek and Rapid Roy Creek on the East side of Gladys River. This report does not include the geochemical sampling done on Fire Mountain, as the latter is detailed work done on a grid system and is discussed in detail in previous assessment not so

reports. [1]

Two hundred and ninety-two samples were collected in this survey . These samples were tested mainly for copper and molybdenite but a third of them were also tested for lead, zinc, silver and gold. The copper and molybdenite values were subjected to a statistical analyses. A statistical analyses on the other elements was not deemed practical due to the fact that some of these elements indicate spectacular but concentrated anomalies that are self evident.

The key areas covered by this report are:

1) Avalanche Creek Area (Wind Claims 1-6)

2) Graphite Creek Area (Dog 43-46, 67-74)

The Avalanche Creek area is significant for the outcropping of narrow limestone lenses containing traces of copper, argentiferous galena and sphalerite. The Graphite Creek area contains traces of copper in the Cache Creek cherts. Thus, both these creeks are anomalous geochemically for these respective elements. These areas are discussed in more detail in the following and subsequent sections of this report.

Geology:

On the east side of the Gladys Valley the rock formations consist of the following. In the Mt. Llangorse area, the rocks consists primarily of differentiated quartz diorite (Jurassic). North of Mt. Llangorse a contact zone cuts north easterly across the survey area- in which the aforementioned intrusive rocks come into contact with Cache Creek Cherts and Argillites (Permian). Within a few thousand feet of the contact, the Cache Creek rocks have been moderately to slightly metamorphosed. Beyond the contact aureole, the Cache Creek rocks consist primarily of cherts (colour ranges from brown to grey),

argillites (siliceous to graphitic). These rocks are well exposed in the Fire Mountain area, and Fire Creek Canyon, but are exposed best of all East of Angel and Line Lakes in a 3,000' steep cliff. The most significant feature of the Cache Creek rocks in this area is their pervasive brown-red weathering as a result of oxidation of associated pyrite and pyrrhotite. These iron sulphides in most cases are disseminated in these rocks, but also occurs along fractures, shears etc. Other features peculiar to these rocks are distinctive bedding planes that are almost impossible to trace along strike for more than a few tens of feet. In many instances, these bedding planes exhibit folding and other distortions when observed in section. Boudinage or similar structures are present in these formations. Faults and shears, are present but difficult to detect in some cases. Bull quartz veins, and porphyry dikes, as well as two porphyry intrusive plugs (Jurassic) (head of Avalanche Creek and Fire Mountain) have intruded the Cache Creek rocks in this area. Occasional basalt intrusions (Tertiary) and dikes and sills (Fire Mountain and Mt. Llangorse area) are also present.

On the west side of Gladys Valley argillites and Cache Creek limestones are prevailent in the survey area. The chert, although present is less abundant. Bull quartz veins are probably just as scattered as on the east side of the valley. South of the Tintern Mountains a basalt flow exhibits spectacular basaltic jointing.

The Gladys Valley is considered a graben and exhibits distinctive faults on either side of its valley north of Line Lake, as well as in the Tintern Mountain area.

Mineralization in the Avalanche Creek area consists of traces of chalcopyrite, azurite, malachite, argentiferous galena and sphalerite. This mineralization is closely associated with two narrow limestone

lenses. Surface outcroppings indicate these lenses to have a maximum width of 100', and lengths of 975 and 700' respectively. These lenses are about 3000' apart, are conformable with and located in Cache Creek cherts. Both lenses contain a certain amount of silification as well as chert. So far these limestone lenses have primarily been observed on the south side of the creek. The mineralization may be the result of tectonic activity (Gladys Valley Graben?) or may be related to the intrusive plug at the head of Avalanche Creek itself.

Due East from Avalanche Creek and about 1½ miles distant is Graphite Creek. The rocks in this area consist of bedded cherts (in most instances sheared, folded, contorted etc) in contact with graphitic argillites. Mineralization consists of copper carbonates and traces of chalcopyrite in pyrrhotite and pyrite. This mineralization appears to be concentrated near the shears. This writer believes that mineralization on Avalanche Creek is somehow related to that on Graphite Creek. Thus additional prospecting (Geological and Geochemical) as well as geophysical work is required in the area between the two.

Geochemistry:

Procedure Followed in Sample Collection

The following number and corresponding types of samples were collected during the Reconnaissance Survey.

No of Samples	Type of Samples
145	Streams
147	Soils and Talus

They were tested geochemically as follows:

Test for	Stream Samples	Soil and Talus
Copper	145	147
Molybdenite	145	147
Lead	51	63

Zinc	51	63
Silver	51	63
Gold	51	43

In the reconnaissance, samples were primarily collected every ¼ mile along creeks, ridges, and spurs. They were not collected at any specific elevation.

All samples were collected in wet strength paper envelopes and air dried before shipment to the Whitehorse Laboratories of Bondar-Clegg & Co. Ltd.

Analytical Techniques

The samples received in the Laboratory were prepared for analysis as follows. Samples were dried in dust free infra-red dryers and sieved to -80 mesh. The sample material was homogenized to insure reproducability and weighed . Most samples were analized by atomic absorbtion, so were digested for 3 hours in Leport aqua regia, bulked to a uniform 20% acid concentration, and analized in comparison with both matrix and synthetic standards. Machine response was permanently recorded on chart paper to eliminate human error.

Statistical Methods used in order to categorize and interpret Data

The statistical method used in order to classify the geochemical Mo and Cu results is outlined in Claude Lepeltier's paper entitled "A Simplified Statistical Treatment of Geochemical Data by Graphical Representation", Economic Geology, Volume 64, No. 5, pp 538-550, August, 1965.

Lepeltier's method was used because it considers the log normal law distribution of data, or the well known bell-shaped curve (Monjallen 1963). The distribution of such geochemical data is believed to follow the log normal law more often than the normal law(Lepeltier, 1965). The essentials of Lepeltier's method is outlined as follows:

1) Determine the number of groups or classes in the data and establish the number of samples for each.

2) Take each group and calculate as a percentage of the total number of samples, starting with the highest value.

3) Plot on Log Probability Paper, to give a logarithimic plot.

4) Analyse the resulting graph. If the plot is a straight line interpret as follows. Background+ mean value at 50% line. 1st Probit+ 84% The treshold is determined by the 2nd Probit @ 97.7%. If any breaks occur in the plot, these generally imply multiple populations and a modified interpretation.

For the interpretation covered in this report the samples are categorized into two populations. These are:

a) Soil and talus samples

b) Stream samples.

Only copper and Molybdenite results are interpreted this way as the two populations have greater than 100 samples in number, i.e. soil and talus 147 in number and stream samples 145 in number.

The following parameters are statistically computed as being anomalous, using the above method:

	Stream samples	Soil, Talus samples
Copper	200+ppm	190 ppm
Molybdenite	28+ppm	30ppm

All populations proved to be complex and two curves were drawn for each . The higher threshold level was chosen to be anomalous. For the Pb, Zn, Ag soil and talus samples, the following parameters are considered to be significantly anomalous in the Avalanche Creek environment:

Pb	800+ ppm
Ag	4+ ppm

Zn 1000+ ppm .

Discussion of Results: (Ref: 1:1 mile maps in appendix)

Copper: There are two stream copper anomalies and one soil-talus copper anomalie . The stream anomalies are located on

1) South Canyon Creek (CYN Sample series)

2) Graphite Creek (Str, A1 1, Grt Sample series)

There are several possible causes for the stream anomalie on South Canyon Creek. They are as follows:

1) This creek drains from the outer alteration halo on Fire Mountain. This halo contains traces of chalcopyrite associated with pyrrhotite. The copper from the sulphides could have leached away from this halo into the creek along fracture planes.

2) At least two bull quartz veins are present in the canyon of this creek. Copper could be associated at depth with these. On the surface there is no trace of Copper.

3) The creek drains from a small lake, which is partly surrounded by swamp. The creek itself also contains a good deal of organic material. Consequently the copper anomalie could be magnified by the presence of this organic material.

The stream anomalie on Graphite Creek is attributed directly to Copper carbonate (malachite) as well as traces of chalcopyrite associated with pyrrhotite. However, geochemical tests on three fragments containing traces of chalcopyrite gave very low results. These are:

Sample Cr 1 198ppm Cu

Sample Cr 2 63 ppm Cu

Sample Cr 3 100 ppm Cu

The soil and talus copper anomalie is located in a modified cirque drained by Avalanche Creek. The lower portion of the cirque has been

cut by Avalanche Creek into two small canyons. In the Spring these canyons are sometimes damed by snow and ice, allowing ofr hydrostatic pressure to accumulate up stream. When the snow and ice dam breaks, the creek and associated debris rush out on to a narrow alluvial fan downstream. The following samples were collected from the cirque area.

Sample	Cu Result ppm
Ge-02	202
Ge-03	960
Ge -04	700
Ge-05	730
Ge-08	194
Ge-10	350
Ge-11	520
Ge-12	360
Ge-13	364
Ge-14	620
Ge-15	7600
Ge-17	2100
Ge-18	610

Chalcopyrite has been seen to occur in the following locales in the area:

1) In creek fragments at the base of the mountain (Elev. 3500'ASL) on the alluvial fan. Debris containing chalcopyrite and argentiferous galena is present in highly ozidized fragments. Due to the local prevailance of these fragments containing the above sulphides it is believed that the mineralization is from a local contact or shear.

2) On the south side of Avalanche Creek a limestone lense intercalated with chert beds contains traces of chalcopyrite, azurite, malachite, in addition to small globs of massive argentiferous galena

and sphalerite. The mineralization occurs a) along contact walls
b) in fractures.

The limestone lense is 975' long and approximately 100' wide. A second, but much smaller lense occurs 3000' downslope. This lense is traceable for about 700', but is narrower than the previous one. It does contain traces of malachite and azurite. No mineralization has been observed on the north side of Avalanche Creek. The origin of the copper, lead, silver, and zinc sulphides is attributed to remobilization of these metals during some tectonic activity, (i.e. the Gladys Valley Graben?) from the cherts to a more favourable host, the limestone. Splay faults associated with this graben should be examined where exposed. However, geochemical samples GE 20-29 follow a fault associated with the graben, but are by no means anomalous. Basically, except for the Avalanche Creek area and CYN 1-6 geochem samples, all the copper values are very low and would not indicate a large porphyry copper deposit to be in this area. Such an ore body would only be suggested by a prevailance of values greater than 1000 ppm. Additional follow-up work is recommended for the Avalanche Creek showing.

Molybdenite:

Two stream samples are anomalous in Mo to the south east of Angel Lake. These are sample No. 3rd Cr. 2 and 3rd Cr 4 (28 and 70 ppm respectively). This could be due to the contamination of sediments by Mo bearing glacial boulders derived from the Mo deposit 2 miles to the south east of these streams.[2] Bull quartz veins are common in this general area and they could carry some molybdenite thereby causing all these anomalies. This again is unlikely, as bull quartz veins are common throughout the Cache Creek rocks regionally. Also, molybdenite in the Atlin region has an affinity for translucent quartz rather than

for bull quartz. These anomalous samples are of interest, however, they are too local to indicate a sizeable deposit.

The Mo anomalous soil and talus samples in Avalanche Creek are also of interest. No doubt there is some relation of the Mo to the copper and other sulphides. However, to date no molybdenite rock samples have been seen in this general area.

Lead, Silver, Zinc

For convenience, these three metals will be discussed under one heading. No Frequency diagrams are drawn for these, but the anomalous samples are evident. These are listed below:

Sample	Pb	Zn	Ag
GE-03			64
GE-05	1540	1540	16.2
GE-08			4.9
GE-09			10.4
GE10			9.3
GE 11	2200	600	11.0
GE 13	1160	850	7.4
GE 14	4600	1930	16.0
GE 15	11600	20000	206
GE 17	850	11000	72
GE 18			4.0

All these samples were collected from Avalanche Creek. The silver is believed to intimately associated with the lead. Both lead and zinc occur together as galena and sphalerite. The dark color of the sphalerite in rock samples collected suggests a high iron content. Both argentiferous galena and sphalerite occurs as globs in the limestone lenses, in the Avalanche Creek area. It should be emphasized that

mineralization observed in place is scattered and does not suggest an economical deposit from the surface. Lead, Zinc, Silver samples collected outside the Avalanche Creek area are much lower than the above listed, and are not believed to be of interest.

Conclusion

The most significant anomaly is on Avalanche Creek. The lead, zinc, and silver highs are spectacular, but the lower values in copper and molybdenite are also of interest. However, mineralization has been found to be closely associated with two narrow limestone lenses on the south side of the creek. The longest lense being 975' long, and is estimated to be 3000' apart from the other lense. The mineralization associated with these lenses is very sparse, and is localized in small pods. Due to the fact that the lenses are situated on the side of a steep valley, the slope being 30°, geochemical dispersion patterns downslope from the showings are easily visualized. The showings themselves are considered too small to form a viable deposit, however more work should be done to prove this theory.

A drill program would be extremely costly due to the nature of the terrain (steep mountain slopes). Trenching may be the only answer. Additional prospecting should be done north and south of Avalanche Creek for similar mineralized situations in order to monitor the general mineral prevailance. A magnetometer survey is also recommended to be carried out at the headwaters of Avalanche Creek to see if the porphyry intrusive can be further delineated. More prospecting should be done at the base of the mountain west of Avalanche Creek Canyon for the source of the chalcopyrite and argentiferous galena creek fragments.

Follow-up geochemical sampling should also be done on a grid system between Avalanche Creek and Graphite Creek to check on the Copper

distribution. A magnetometer survey should also be undertaken along the same grid system to assist in interpreting any rock change, i.e. a porphyry intrusive. However, it should be emphasized that the copper showings on Graphite Creek appear to be too infrequent and too low grade to make up a viable deposit themselves. The purpose of the above mentioned surveys would be to locate the source and higher grade zones, if there are such zones.

The CYN 1-6 sampled area should be checked by drilling. The creek is anomalous in copper, and although the results could be due to organic material, swamp conditions etc., a drilling check would be worthwhile before the claims are allowed to lapse. However, I would not recommend a drill program be undertaken only for this purpose. If a drill program is planned to drill neighbouring Mo anomalies on Fire Mountain[3], only then do I recommend that a short hole be located at the headwaters of Canyon Creek on the west side of the lake-swamp area.

BIBLIOGRAPHY

1,3 Aspinall C; Preliminary Geochemical Report, Mt. Sanford Area, Atlin Mining Division, for Canadian Johns-Manville Co. Ltd. covering Fire 1-20, 125-126 mineral claims, August 8, 1972.

2, Aspinall, C: Preliminary Geological Report of the Fire, NI mineral claims group, Mt. Sanford, Atlin, M.D., B.C., April 8, 1972.

Aitken, J.D.: Atlin Map Area, B.C. 104N, Memoir 307 , 1959

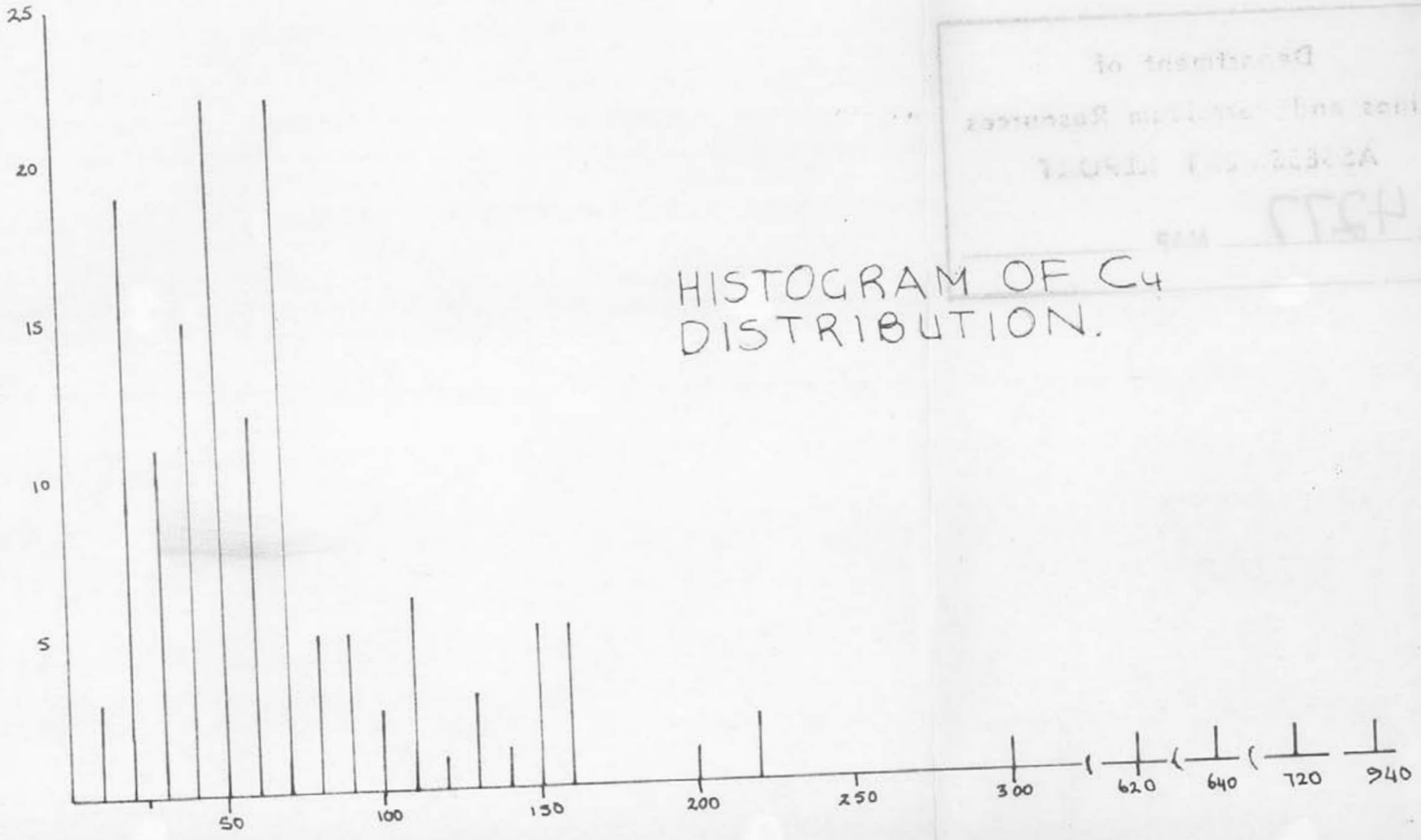
Lepeltier, Claude: A Simplified Statistical Treatment of Geochemical Data by Graphical Representation, Economic Geology, Vol. 64, No. 5, pp. 538-550.

APPENDIX I

HISTOGRAMS FOR Cu, Mo

PROJECT 71 : 1972 GEOCHEM RECCE MT LIANGORSE-LINE LAKE
BONCO REPORTS 42-25, 42-92, 42-86
42-40, 42-47

145 SAMPLES (STREAMS)



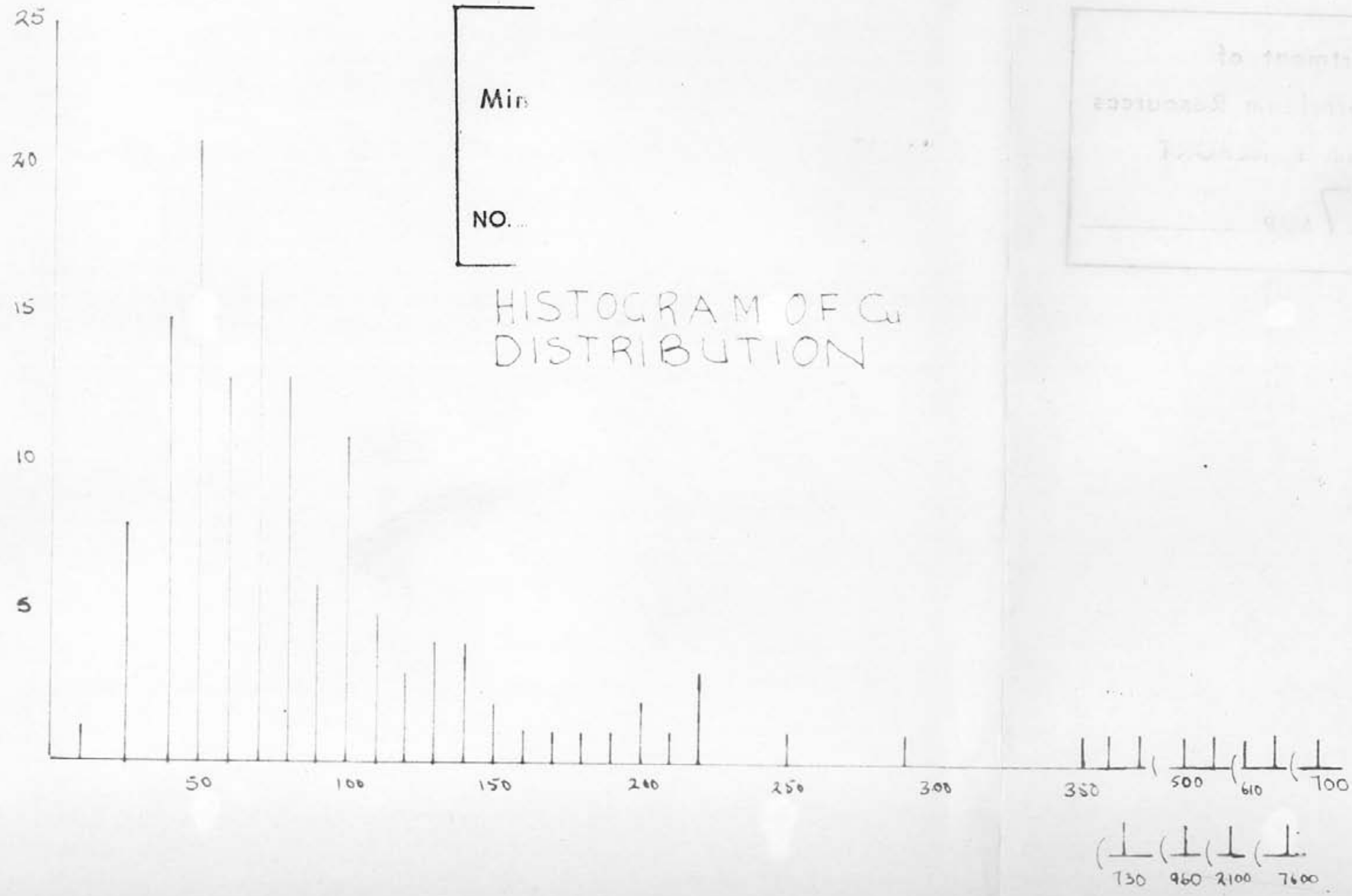
HISTOGRAM OF C_4
DISTRIBUTION.

1-17-73

PROJECT 71 : 1972 GEOCHEM RECCE MT LIANGORSE-LINE LAKE

BONCO REPORTS 42-25, 42-60, 42-86, 42-47
42-92

147 SAMPLES (SOILS AND TALUS)

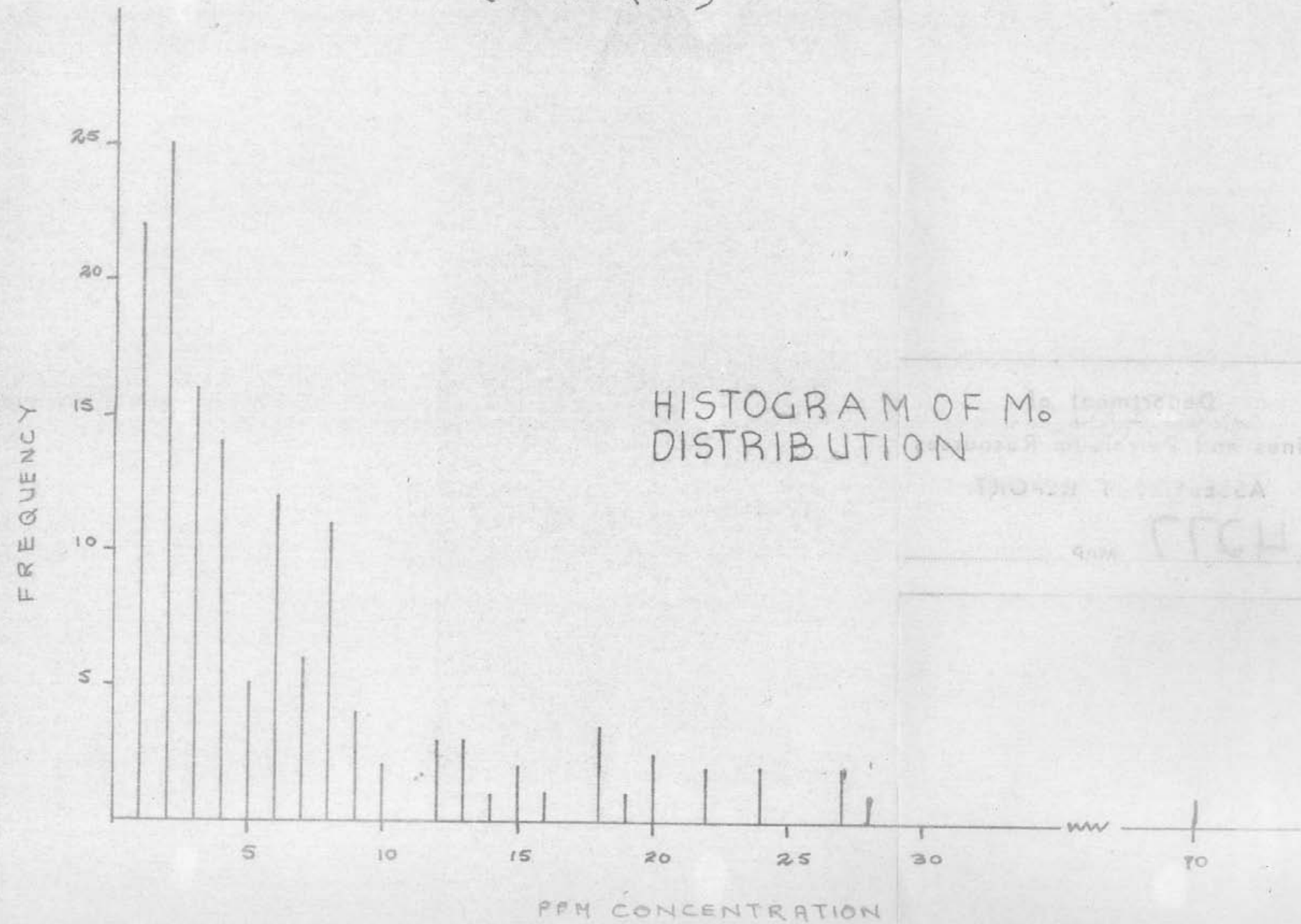


HISTOGRAM OF Cu DISTRIBUTION

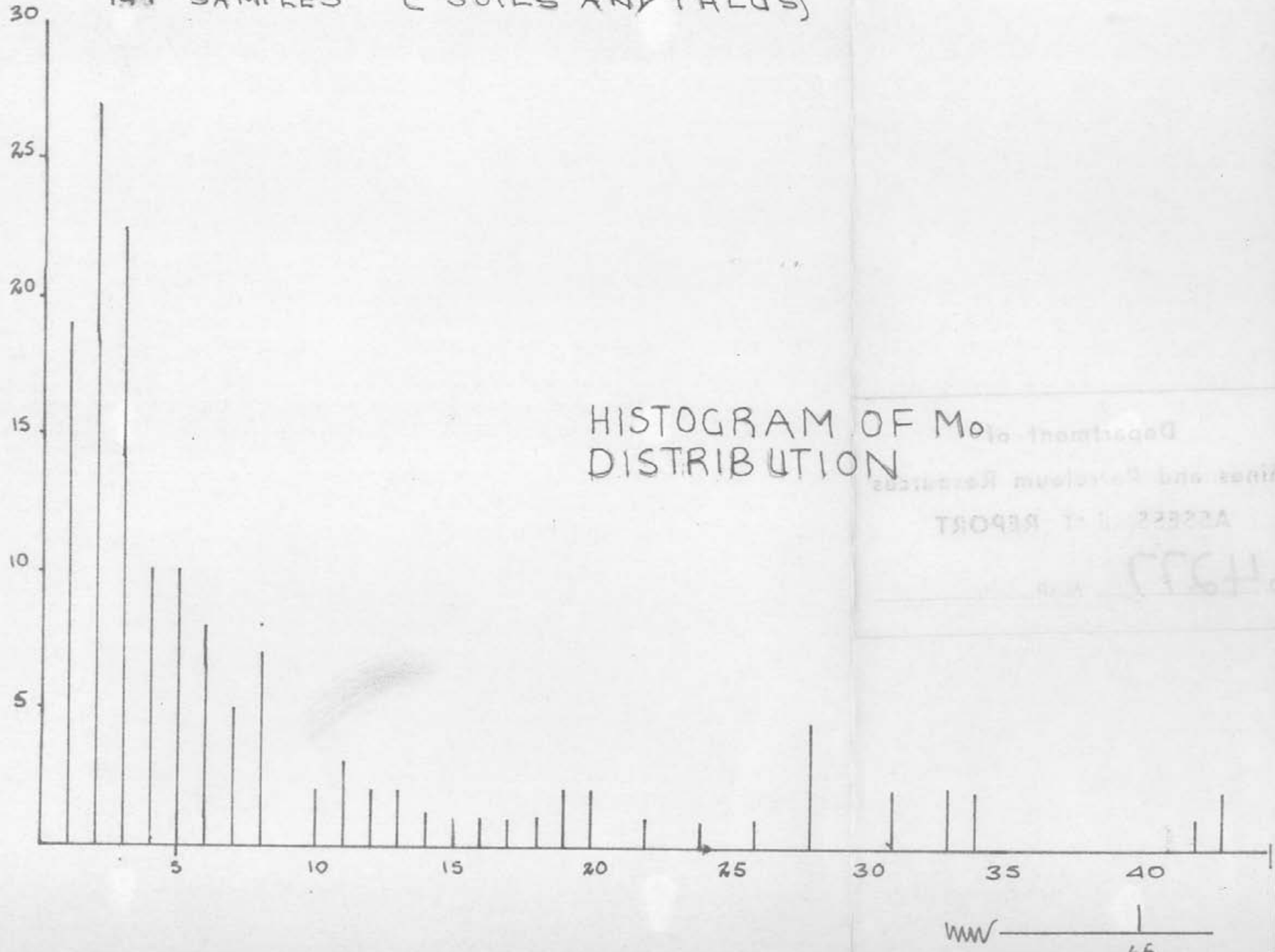
APPENDIX II

FREQUENCY DISTRIBUTION FOR Mo AND Cu STREAMS

PROJECT 71 1972 GEOCHEM RECCE MT LIANGORSE-LINE LAKE
BONCO REPORTS 42-25, 42-92, 42-86
42-40, 42-47
145 SAMPLES (STREAMS)



PROJECT 71. 1972 GEOCHEM RECCE MT: LIANGORSE-LINELAKE AREA
BONCO REPORTS 42-25, 42-60, 42-86, 42-47
42-92
147 SAMPLES (SOILS AND TALUS)



HISTOGRAM OF Mo
DISTRIBUTION

Mo STREAMS #1

CUMULATIVE FREQUENCY DISTRIBUTION FOR Mo (STREAMS)

143 SAMPLES

MT LIANGORSE-LINE LAKE GEOCHEM RECCE

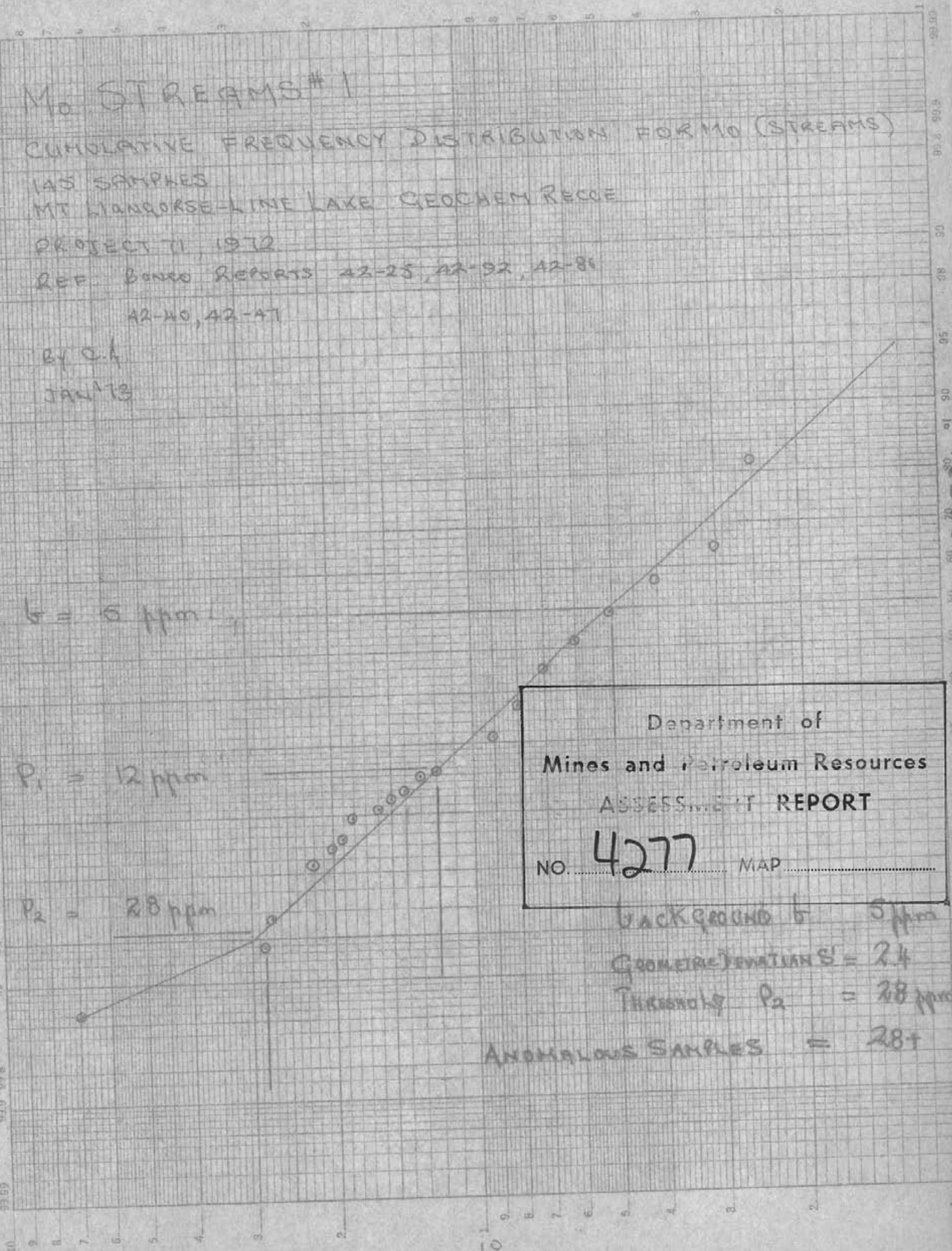
PROJECT 71, 1972

REF. BONDO REPORTS 42-25, 42-92, 42-86

42-40, 42-47

BY G.A.

JAN '73



BACKGROUND b = 5 ppm

GEOMETRIC DEVIATION S = 2.4

THRESHOLD P_2 = 28 ppm

ANOMALOUS SAMPLES = 28+

Mo: STREAMS #2

CUMULATIVE FREQUENCY DISTRIBUTION

FOR Mo (STREAM). REJECTED ONE SAMPLE (70 ppm) FROM ORIGINAL TOTAL OF 145 TO GIVE TOTAL OF 144 SAMPLES USED IN THIS PLOT.

MT LIANGORDE - LINE LAKE GEOCHEM RECCE. PROJ. 71: 1972.

REF: BONGO REPORTS 42-25, 42-32, 42-36, 42-40, 42-47.

B.C.A.
Jan. 73.

BACKGROUND = 5 ppm
Geometric Mean 2.5 ppm
THRESHOLD = 8.1 ppm

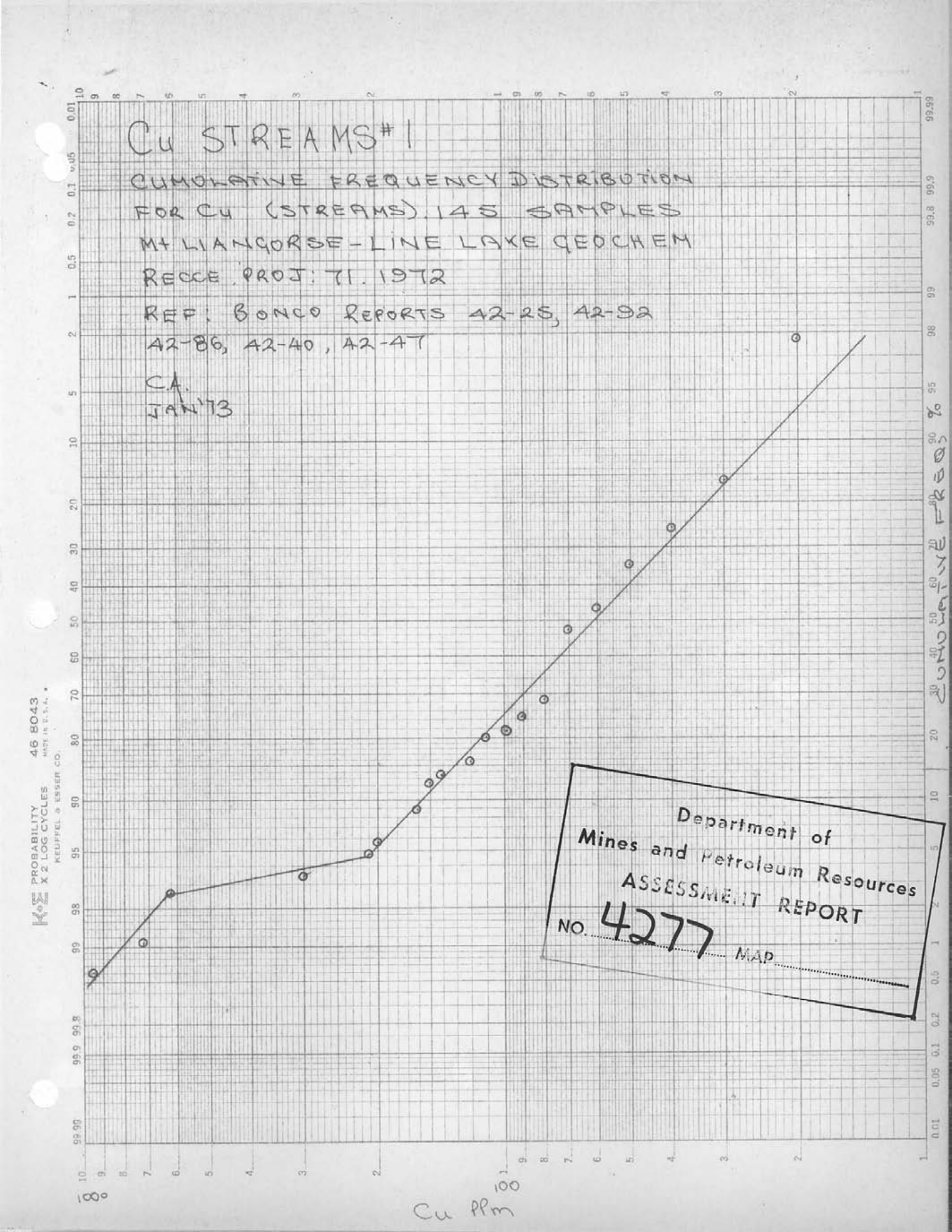
$\bar{x} = 2.7$

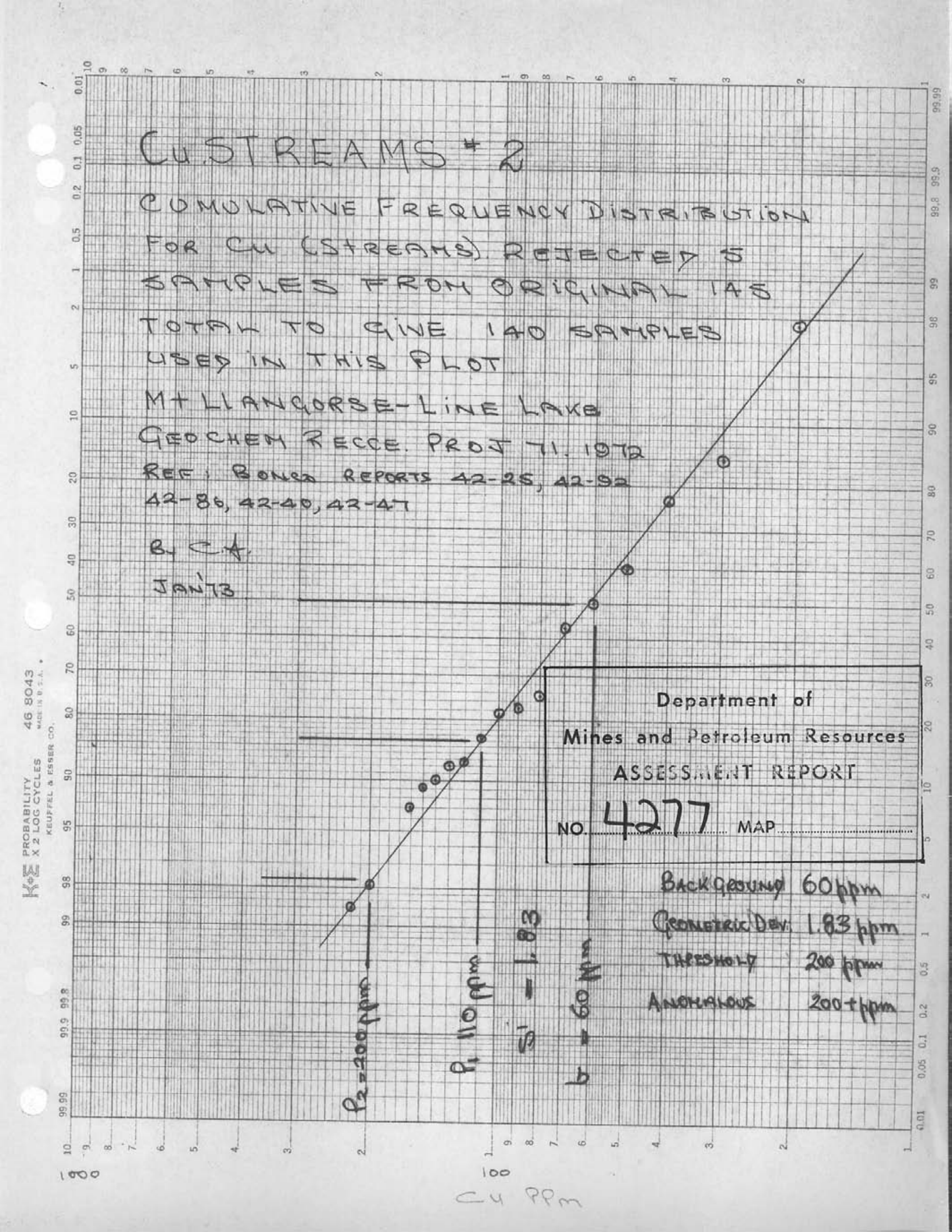
$R = 13 (11.5)$ ppm

$SD = 2.5$

$5 (4.5)$ ppm

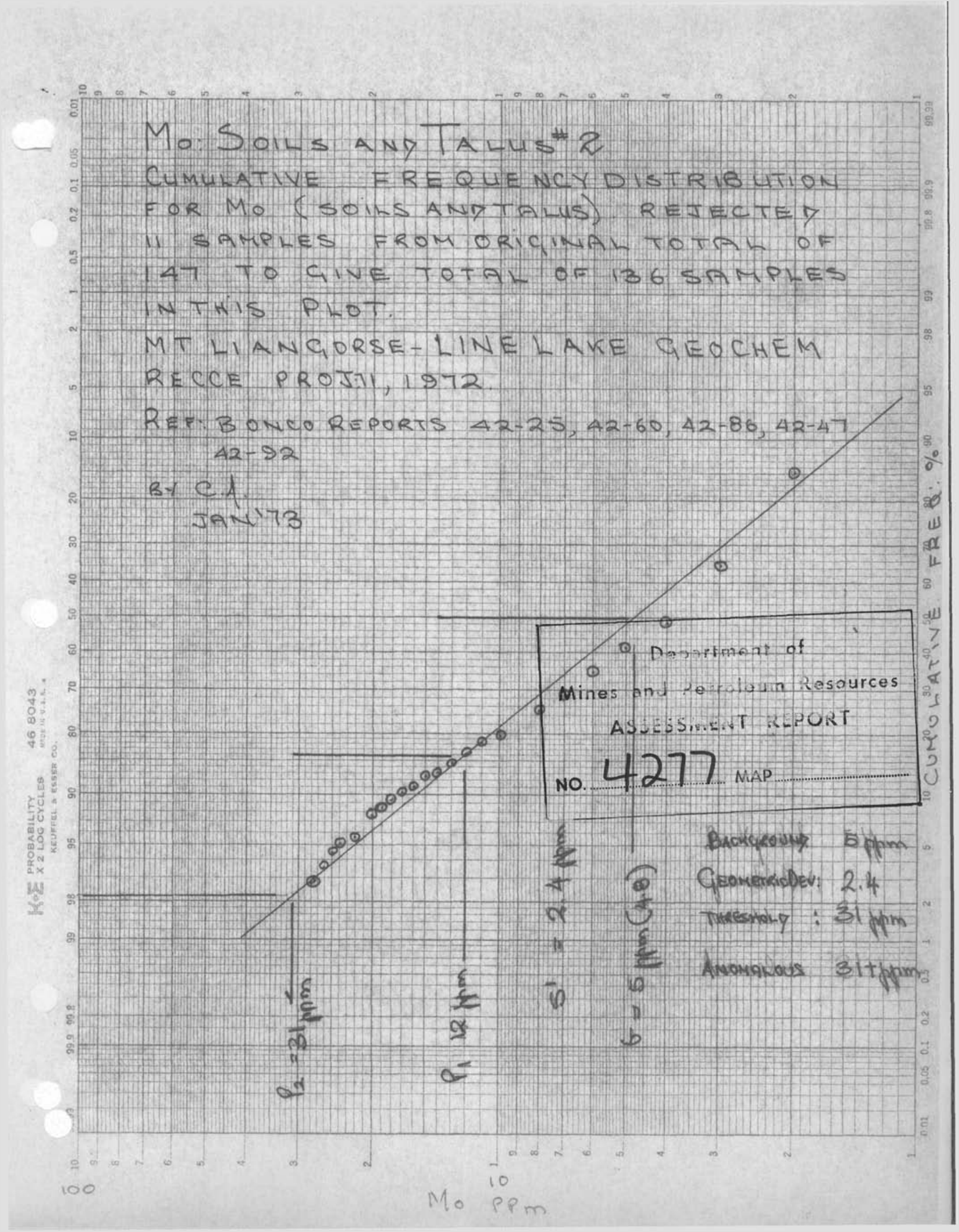
Mo ppm.


Cu STREAMS #1
CUMULATIVE FREQUENCY DISTRIBUTION
FOR Cu (STREAMS). 145 SAMPLES
Mt LIANGORSE-LINE LAKE GEOCHEM
RECCE. PROJ: 71. 1972
REF: BONCO REPORTS 42-25, 42-92
42-86, 42-40, 42-47
C.A.
JAN '73
Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4277 MAP
Cu PPm
CUMULATIVE FREQUENCY %
PROBABILITY
X 2 LOG CYCLES
KEUFFEL & ESSER CO.
46 8043


CU STREAMS # 2
CUMULATIVE FREQUENCY DISTRIBUTION FOR CU (STREAMS). REJECTED 6 SAMPLES FROM ORIGINAL 146 TOTAL TO GIVE 140 SAMPLES USED IN THIS PLOT
MT LIANGORSE-LINE LAKE
GEOCHEM RECCE. PROJ 71.1972
REF: BONER REPORTS 42-25, 42-92
42-86, 42-40, 42-47
B. C.A.
JAN '73
Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4277 MAP
BACKGROUND 60 ppm
GEOMETRIC DEV. 1.83 ppm
THRESHOLD 200 ppm
ANOMALOUS 200+ ppm
P2 = 200 ppm
P1 110 ppm
S = 1.83
b = 60 ppm
PROBABILITY
X 2 LOG CYCLES
KEUFFEL & ESSER CO.
46 8043
MADE IN U.S.A.
CU PPM

APPENDIX III

FREQUENCY DISTRIBUTION FOR MOANDCH SOILS AND TALUS


Mo. Soils and Talus #2
Cumulative Frequency Distribution for Mo (Soils and Talus). Rejected 11 samples from original total of 147 to give total of 136 samples in this plot.
Mt Liangorse - Line Lake Geochem Recce Proj. 1972.
Ref: Bonco Reports 42-25, 42-60, 42-86, 42-47 42-92
By C.A. Jan '73
Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4277 MAP
Background 5 ppm
Geometric Dev: 2.4
Threshold : 31 ppm
Anomalous 31+ppm
θ_2 = 31 ppm
θ_1 = 12 ppm
S_1 = 2.4 ppm
$\theta_1 - \theta_2$ = 19 ppm (2.4)
Cumulative Freq. %
Mo ppm
PROBABILITY X 2 LOG CYCLES
KEUFFEL & ESSER CO.
46 8043

Mo: SOILS AND TALUS #1

CUMULATIVE FREQUENCY DISTRIBUTION FOR Mo (SOILS AND TALUS). 147 SAMPLES MT LIANCORSE - LINE LAKE GEOCHEM RECCE PROJECT 71, 1972

REF. BONCO REPORTS 42-25, 42-60, 42-86, 42-47 42-92

BY CLIVE ASPINALL. JAN. 1973

POPULATION C + 1/2 B
BACKGROUND 25 ppm
GEOMETRIC DEV. 1.6 ppm
THRESHOLD 66 ppm

POPULATION A + 1/2 B
BACKGROUND 4 ppm
GEOMETRIC DEV: 1.8
THRESHOLD : 13 ppm

C + 1/2 B

A + 1/2 B

1/2

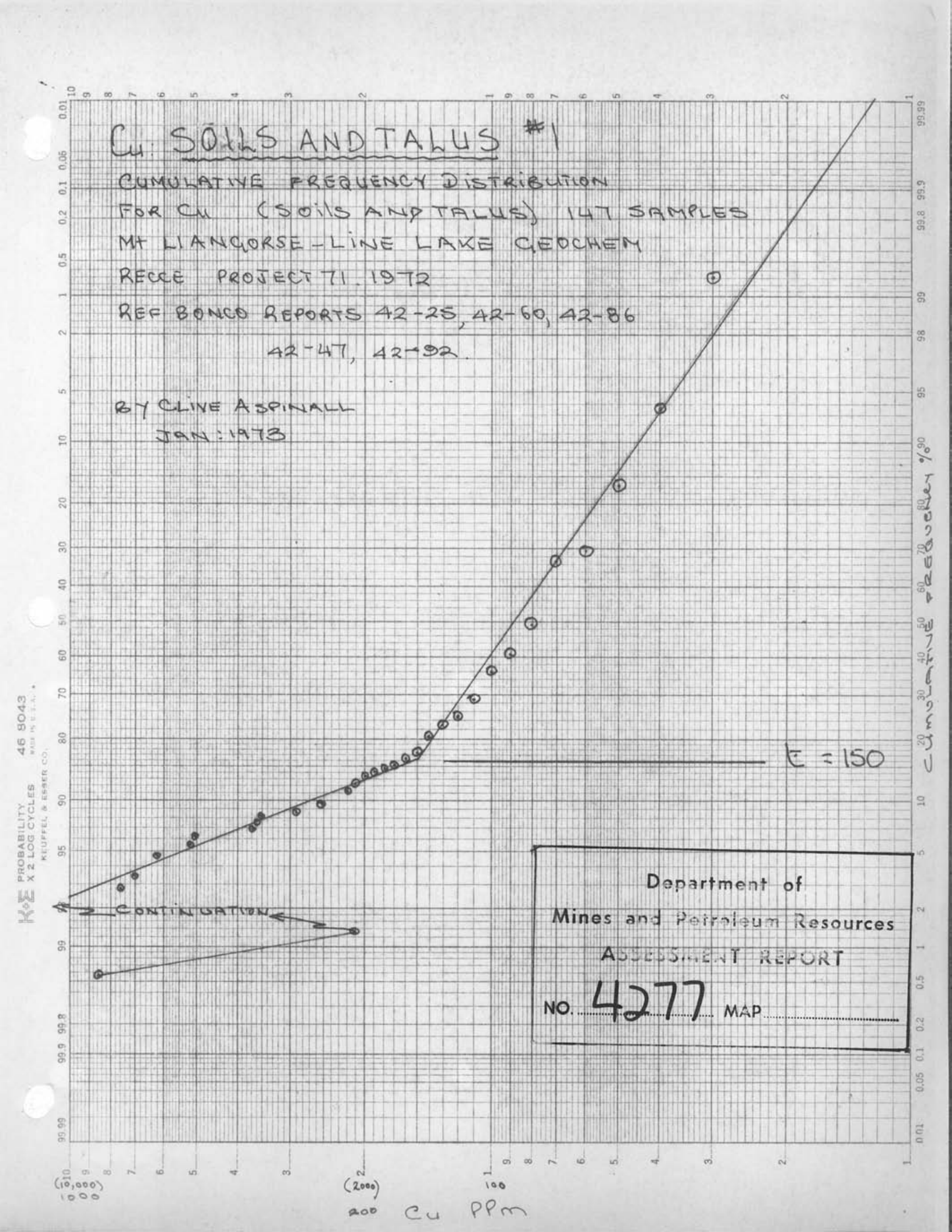
B

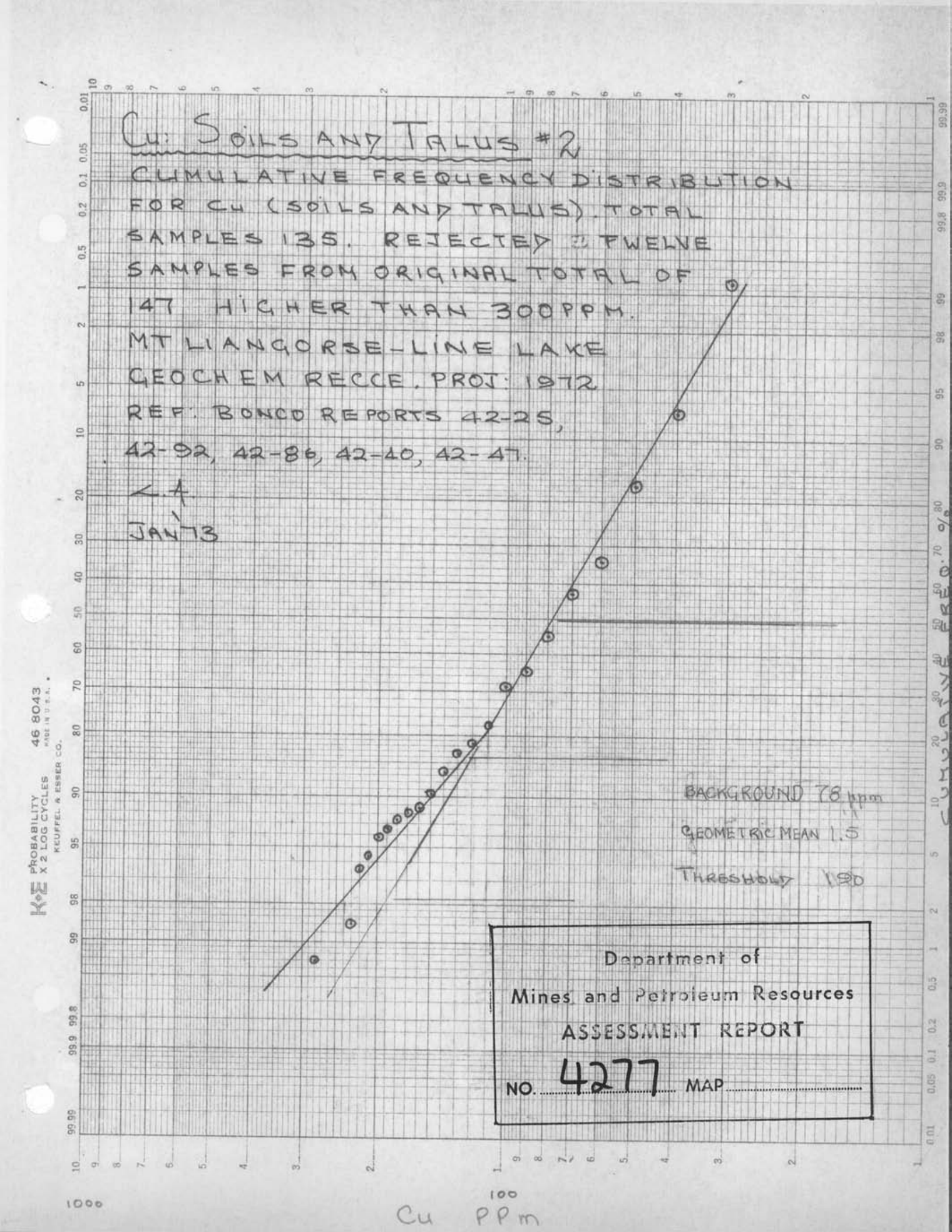
A

C

PROBABILITY X 2 LOG CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.
46 8043

Mo (ppm)


Cu SOILS AND TALUS #1
CUMULATIVE FREQUENCY DISTRIBUTION
FOR Cu (SOILS AND TALUS) 147 SAMPLES
Mt LIANGORSE - LINE LAKE GEOCHEM
RECCE PROJECT 71.1972
REF BONCO REPORTS 42-25, 42-60, 42-86
42-47, 42-92.
BY CLIVE ASPINALL
JAN: 1973
E = 150
CONTINUATION
Cu PPm
CUMULATIVE FREQUENCY %
PROBABILITY
X 2 LOG CYCLES
KEUFFEL & ESSER CO.
46 9043
Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4277 MAP


Cu: Soils and Talus #2
Cumulative frequency distribution for Cu (soils and talus). Total samples 135. Rejected twelve samples from original total of 147 higher than 300ppm.
Mt Liangorse-Line Lake
Geochem recce. Proj: 1972
Ref: Bonco reports 42-25, 42-92, 42-86, 42-40, 42-47.
L.A.
Jan '73
Background 78 ppm
Geometric mean 1.5
Threshold 190
Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4277 MAP
Cu ppm
Probability x 2 log cycles
46 8043
Keuffel & Esser Co.

APPENDIX IV

GEOCHEM RESULTS FOR MO, CU STREAMS AND TALUS

ALSO INCLUDED ARE RESULTS FOR

Pb, Ag, Zn, Au, As, Hg

Canadian Johns - Manville Co Ltd.
Asbestos, Que.

PROJECT 71 DATE: 12 Aug. 72
AREA: GLADYS VALLEY RANGE SAMPLER: A.J.S. C.B.

SAMPLE NO.	BRONCO RPT. NO.	MO ppm	CU ppm	PB ppm	ZN ppm	AG ppm	AU ppb	AS ppm	HG ppb	HORIZON	TEXTURE	COLOUR	DATE	Remarks
GE-01	23-11	6	132	60	260	1.5	10	135	25	Stream	F/C	Grey/Br	AUG 25/72	East of Gladys Valley 3640'
GE-02	42-86	5	202	54	207	1.7	5	220	60	Talus	Coarse Med ag	Dk Brown	*Jan 19/73	" " " " 4350'
GE-03	42-86	15	960	270	317	6.4	35	900	40	"	M/C	Rd/Br	*Oct 6/72	" " " " 4600'
GE-04	42-122	33	700	113	192	2.9	10	50	25	"	F/C	Med Br		" " " " 4670
GE-05		28	730	1540	1540	16.2	15	175	80	Talus	F/C	Dk Br		" " " " 4850'
GE-06		28	80	94	120	3.5	45	100	90	"	F/C	Black		" " " " 4690'
GE-07		14	150	75	168	1.6	25	90	50	Stream	Coarse	Grey		East of Gladys Valley 4610' in argillite
GE-08		28	194	220	480	4.9	10	120	125	Talus	F/C	Dk Br.		" " " " 4950'
GE-09		31	500	600	228	10.4	25	225	155	"	F/C	" "		" " " " 4910'
GE-10		31	350	990	260	9.3	35	600	45	"	F/C	Dk Br		" " " " 4900'
GE-11		33	520	2200	600	11.0	15	1320	65	Talus fines	C/F	Brown		East side of Gladys Valley 4870'
GE-12		65	360	400	314	3.5	20	280	40	"	"	"		" " " " 4870 More argillaceous
GE-13		41	364	1160	850	7.4	10	165	125	"	C/F	Dk Br.		" " " " 4890'
GE-14		34	620	4600	1930	16.0	15	260	110	"	"	"		" " " " 4880'
GE-15		8	7600	11600	20000	206	35	60	135	Talus fines	C/F	Rd/Br		" " " " 4650'
GE-16		16	282	98	204	3.5	5	25	50	"	M/F	R/Br		" " " " 4005'
GE-17		34	2100	850	11,000	72	20	135	80	"	M/F	Yellow/Br		" " " " 3960'
GE-18		22	610	180	500	4.0	15	150	30	Stream	Coarse	Brown		" " " " 3460'
GE-19		4	48	13	68	0.6	5	15	15	Talus	F/C	Dk Brn		East side of Gladys Valley 3570'
GE-20		3	70	20	98	1.0	10	20	30	B 6"	fine with clay organics	Dk Brn		" " " " 3300' mossy damp slope
GE-21		6	110	28	163	1.0	20	55	35	Talus	F/C	Dk Brn		" " " " 3450'
GE-22		4	65	16	90	1.3	5	15	60	A+B	fine clay some organics	very Dk Brn		" " " " Bottom of old dry channel 3460'
GE-23		3	25	13	60	0.8	5	10	20	A+B	" "	Dark Grey		" " " " 3550 below moss
GE-24		6	54	19	140	1.3	5	20	65	Stream	Silty Coarse	Grey		" " Soggy gravel on edge of soggy marker 3520
GE-25		7	50	18	158	1.0	125	30	65	"	Coarse	Grey		" " 3550
GE-26		5	122	20	106	1.0	30	220	15	"	"	"		" " chert float, trace pyrite 3580'
GE-27		5	70	20	156	1.4	15	150	85	"	Organic	Black		3470 + 3 cts
GE-28		8	84	20	190	1.2	10	200	60	"	Coarse	Brn/Grey		3400'
GE-29		5	35	14	98	0.8	15	15	30	B	Fine	Rd/Br		Beneath tree roots, 3430

Canadian Johns Manville Co Ltd
Asbestos, Que

Project 71
Area Graphite Creek

Date July 3/72
Sampler A Cousens

Sample No	Bronco RPT No	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	As ppm	Hg ppb	Au ppb	Horizon	Texture	Colour	DATE	Remarks
A-1-L	42-128			18	124	09			L20	-2	m	Brown	Oct 5, 1972	Small creek flowing east from Sanford Mt granite qtz float.
A-2-L	42-128			8	42	08			L10	-2	m	Brown	Oct 3/72	4400, small creek flowing west.
A-3-L				24	134	16			L20	+1	m	Brown		Main creek 4400 organic
A-4-L				22	182	18			5	+2	m	Brown		Main creek 4300
A-5-L				16	68	08			75	-2	Coarse	Brown		Small creek flowing west 4280
A-6-L				14	158	12			25	-2	m	Brown		Main creek high organic 4180
A-7-L				22	270	18			5	-3	m	Brown		Main ~ minor ~ 4080
A-8-L				16	123	09			L15	-3	m	~		Gossan area, Pyrite o/c cliffs 4100
A-9-L				12	98	12			L10	-3	~	~		small creek flowing east, o/c rusty rock.
A-10-L				20	218	13			15	-2	m	~		~ ~ ~ ~ ~ ~ cliffs pyrite
A-11-L				18	225	11			L20	-2	m/c	L Br.		Pyrite gossan area 4600
A-12-L				12	72	08			L10	-3	m	L Br		small creek flowing west 3920
A-13-L				18	208	10			15	-3	m	L Br		Main creek, last sample 3880

Canadian Johns-Manville Co. Ltd
Asbestos, Que.

Project 71 Date: 15 Aug 72
Area: Mt. Sanford Sample: NCH-455

Sample No	Bronco Rpt No.	Mo	Cu	Pb	Zn	Ag	As	Hg	Au	Horizon	Texture	Colour	Date	Remarks
GW-L-1	42-86	2	54	10	139	07	25		20	Stream	F/C sand	Grey Br.	15 Aug 72	Grey creek above limestone
2	23-20	3	26	8	76	06	3		L20	✓	Silt mod organic	Brown		4480' gray chert + chert argillite
-3	42-131	2	35	15	112	08	15		L25	✓	C/sand	Grey		4270' grey cherty argillite
-4		2	42	14	123	09	12		L30	Ctr Stream	C/sand	Grey		4200' grey chert in Stream
-5									10					
-6		4	54	14	129	09	7		15	Stream	VC to fine	Brown		Lots of organic
-7		2	29	8	58	06	6		L30	✓	M/C	Black		Lots of organic some iron oxide
-8		8	141	18	149	08	23		50	Dry Stream	F/C	Br Grey		Grey chert trace pyrite
-9		2	41	17	274	10	8		10	Stream	Clay some organic	Lt Brown		Sample taken adjacent to stream 4800
-10		6	72	15	116	08	10		15	✓	F/C	Med Br		4580- Dark grey chert Some talus in sample
-11		6	97	15	87	07	13		35	Stream	Clay + Sand	Med Br.		Cherty argillite 4650'
-12		2	47	11	68	08	3		35	✓	F/C	Dk Br		Argillite, chert 4280' 200' above Bull Cr.
GW-L 13		2	51	12	92	10	17		75	✓	V fine silt	Dk Br		Org chert 4280'
14		2	56	12	77	08	30		35	✓	V Coarse	Grey		4440'
15		2	63	15	92	09	20		L25	Dry Stream	fine ~~to coarse~~	Brown		4020'
16		2	45	10	74	07	11		40	Stream	F/C	Brn Grey		Org cherts, qtz veins, bedded
-17		4	49	14	94	10	30		40	Stream	fine silt	Dk Brown		4200'
18		2	31	7	44	04	4		15	F/M	Brn-Grey	Brn. Grey		Cherty argillite bedded fractured 3500'
GW-L 19		2	45	8	74	06	10		10	Fine Sand	Brown	Brown		4320'
GW-T-5		2	37	15	129	08	6		10	Talus fines	fine silt stained	Brown		Silted limestone, M/O
GR-T 1			260		19					Surface	Fine silt	Lt Brown		Elev 5100' N side Graphite Cr
GR-T 2			160		20					Surface	" "	" "		4870'
GR-T 3			240		13					" "	" "	" "		4615' below ribbon chert
GR-T 4			300		13					Surface	Silt mixed	R/B mix		4500 No organics
GR-T 5			300		12					Surface	Fine/Coarse	Med Br		4380 No organic argillite
GR-T 6			300		15					Surface	Fine Silt	Med Br		4055, N side Graphite Creek

Canadian Johns-Manville Co. Ltd.
Asbestos, Que.

Area MT. SANFORD SAMPLER J. B. & J. H.

Sample No	BRONCO Rpt NO	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Au ppb	As ppm	Hg ppb			Horizon	Texture	Colour	Date	Remarks
SF-01	28-11	2	28	43	142	1.2	20	25	25			3"	M/F	BROWN	Jan 19/73	Plateau above Rapid Roy Creek
SF-02	42-122	3	48	28	62	09	10	20	25			FB	m	"	Sept 30/72	Plateau talus, o/c above.
SF-03	42-47	3	96	25	91	08	15	25	40			FB	m	"	July 28/72	Small depression
SF-04		3	44	88	50	09	15	25	30			FB	m	"		Grassy hillside
SF-05		2	45	31	70	0.8	5	18	35			3"	m/c	"		Grass, gravel hillside
SF-06		3	109	20	82	08	10	15	45			3"	m	"		" talus "
SF-07		3	69	19	62	08	10	30	35			3"	m	Brown		Southerly slope of N. Peak
SF-08		4	56	18	55	09	10	30	35			3"	m	G/B		Southerly " " "
SF-09		8	96	29	94	1.0	35	50	35			3"	m	G/B		Saddle area
SF-10		24	99	29	102	0.9	115	70	40			3"	m	G/B		Saddle area
SF-11		11	98	22	70	1.0	55	45	65			3"	m	G/B		Small dome E/W ridge
SF-12		2	66	20	70	0.9	5	12	40			3"	m	G/B		N/E slope
SF-13		11	95	22	87	1.0	35	25	45			3"	m	G/B		Large gossan area overlooking N end Angel Lake
SF-14		3	61	41	71	08	15	40	75			3"	m	Brown		Gossan area below mountain southerly line
SF-15		3	220	31	122	1.2	10	45	130			3"	m	Brown		East side below ridge
SF-16		3	105	18	82	1.0	45	20	60			3"	m	Brown		" " " gossan area
SF-17		2	79	23	98	1.3	10	15	160			Surface	m	Brown		Talus gopher hole
SF-18		5	80	17	85	1.0	15	20	55			3"	F	L. Brown		Saddle area, N.E. Sanford Peak.
SF-19		2	40	12	51	08	10	12	40			FB	m	G/B		Head of large creek drainage. Saddle area, N.E. Sanford Pk
SF-20		19	110	24	120	0.9	10	55	50			3"	m	G/B		Hillside Sanford Pk
SF-21		7	77	18	100	0.9	10	30	55			3"	m	G/B		overlooking south end Angel Lk to side Sanford pk
SF-22		1	32	15	62	0.7	<10*	12	35			3"	m	G/B		Sanford Peak
SF-23		8	54	19	73	0.7	10	18	55			3"	m	G/B		NE slope & Graphite Cr.
SF-24		5	42	14	65	0.7	15	12	30			3"	m	G/B		" " " " "
SF-25		13	72	18	85	1.1	10	15	80			3"	m	G/B		" " " " "
SF-26*		4	40	18	63	0.9	10	18	30			3-1	FB	m	G/B	" " " " "
SF-33		2	32						35			FB		m	Bn.	Northerly slope
SF-34		3	48						40			FB		m	Bn.	" " many "
SF-35		2	65						45			FB		m	Bn.	" " mass "
SF-36		4	58						35			FB		m	Bn.	" " "
SF-37		8	190						110			FB		m	Brown	Talus slope overlooking camp
SF-38		43	168						110			FB		Coarse	G/B	" " " "

*SF-27-32 on next page

Canadian Johns-Manville Co Ltd.
Asbestos, Que

Project 71
AREA MT Sanford

Date July 22/72
SAMPLER J B

Sample No.	Bronco Rpt. No.	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Au	As	Hg			Horizon	Texture	Colour	Date	Remarks
SF 27	42-47	4	48									3"	Med	Bn	July 28/72	above three small lakes (knobs
SF 28		2	67									FB	M	Bn		top of first dome
SF 29		4	40									FB	M	Bn		saddle area between domes
SF-30		2	96									FB	M	Bn		Talus slope northerly exp
SF-31		3	44									FB	M	G'Bn		ridge, top of second dome
SF-32x		2	41									~~FB~~ 4"	M	D. Bn		Southerly slope M O.
SF-39		2	36									B 3	Med	Bn		Frost Boil Summit of Mtn
SF-40		5	103									B 4	M/C	Bn		O/c above sample pt on ridge
SF-41		2	121									B 3	Coarse	Bn		Frost boil. talus area
SF-42		1	55									B 5	Med	Bn		Talus frost boil O/c
SF-43		2	155									B/3	Med	Bn		talus 5% o/c ridge frost boil
SF-44		2	70									B 4		L Bn		— —
SF-45		2	65									B 4		L Bn		Knob talus + frost boil
SF-46		2	123									B 5		L Bn		— —
SF-47		2	91									gopher hole	—	Bn.		organic talus slide, quartz veins
SF-48		4	53									B 4	—	L Bn		Frost boil talus + o/c
SF-49		3	84									Surface	Med	Bn		steep slope overlooking Rapid Ry test o/c + talus
SF-50		3	32									B 5	Med	Dark Br		M.O. moss frost boil + brush
SF-51		2	82									Surface	—	L Bn		frost boil talus + moss
SF-52		3	38									B 4		Dark Br		M O brush soil talus
SF-53		2	58									B/3		L Bn		grass brush covered slope below large O/c M O
SF-54		11	89									Slow -5 C F S	Med T/=16/c	Dark Bn		Small stream organics
SF-55		2	26									gopher hole	M/F	Bn		level rea brush talus o/c stone
SF-56		2	70									Frost boil	—	L Bn		O/c + talus brush
SF-57		5	53										M	Bn		O/c + talus moss
SF-58		6	91									gopher hole	Med	Bn		frost boil O/c moss + brush
SF-59		ND	44									Frost Boil	—	L Bn		talus + O/c ~~moss~~ moss
SF-60		ND	41									—	—	—		— —
SF-61		ND	32									—	—	—		— —
SF-62		1	37									—	—	—		rusty chut frost boil moss
SF-63		1	44									—	—	Bn		— —
SF-64		2	44									—	—	L Bn		— —

Canadian Johns Manville Co. Ltd
Asbestos Que.

PROJECT: 11
AREA: Sanford

DATE: July 25/72
SAMPLER: A. Brown

Sample No	Bronco Rpt. No.	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppb	As	Hg	Horizon	Texture	Colour	Date	Remarks
SF-65	42-60	3	29						–	–	–	Aug 12/72	rusty creek, o/c moss
SF-66		4	62						-3 o FS.	–	Dark Brown		Organic small creek bank
B-01	42-47	7	69						3"	Med	Brown	July 28/72	Granite outcrop, boulders, M.O.
B-02		8	39						3"	Med	D. Brown		Bushmoss covered slope M.O.
B-03		6	22						3"	Med	Grey		Entering Tie Creek cgn hillside
B-04		7	135						Surface	Med	R/B		o/c gossan Tie Cr.
B-05		28	250						Surface	Med	Grey		" " " "
B-06		25	220						Surface	Med	Grey		" " " "
B-07		13	75						Surface	Med	Grey		" " " "
B-08		12	117						3	Med	Gray		very steep contour 4250 ft below tree line
B-09		20	149						Surface	Med	Grey		Graphite o/c steep wash
B-10		15	121						flow-05	Coarse	Grey		small o/c stream sample
B-11		18	130						3"	Med	Grey		Graphite o/c bank
B-12		7	119						3"	Med	Grey		ORew side hill
B-13		6	220						3"	Med	Rusty Brown		small gossan area
B-14		18	147						-1 flow	Coarse	Grey		small cirque-like valley
B-15		5	44						3"	Med	L. Brown		open hillside above Trellene
B-16		2	28						3"	Med	Brown		open hillside above Hunter Creek?
B-17		5	75						FB	Med	Grey.		N. side Hunter Creek

Canadian [illegible] Exploration Ltd.
Telkwa, B.C.

Project 71 Area Sanford (Bluey) Date July 5/72 Samples C A W. J. Scandrett

Sample No	Bronco Rpt No.	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Au ppb	As ppm	Hg ppb	Horizon Flow	Texture	Colour	Date	Remarks
Rad 1	42-25	8	86							50 gals ea	Sand	Brown Grey	July 5/72	overflow material on side of bank
-2		8	70							✓	✓	Grey		Med to Coarse
-3		5	64							✓		✓		Fine to med
-4		6	63							✓	Sand	Grey		Good deal of Mica
-5		6	47							40 gals	✓	Grey		Fine - med overflow
-6		27	165							3 ✓	✓	Grey		Fine - Fine rock dist
-7		3	45							40 ✓		✓		Fine sand, w: small eddy
-8		2	37							✓ ✓		✓		Fine - med sand on Bank
-9		2	28							35 gls ✓	✓	Grey		Med grained
-10		1	35							✓		✓		Fine - med
-11		1	34							5 gls sec	Sand	✓		Coarse
-12		1	43							1/2 ✓ ✓		✓		Fine
-13		1	34							1/10 ✓ ✓		Grey / Br		Fine sand, scarce
-14		1	36							10 ✓ ✓		Grey		Overflow
-15		14	44							Surface	Lake	Br / Grey		Sample taken on Cache Creek schist zone
-16		1	18							3 gls sec	Sand	Lt Grey		Very coarse
-17		2	38							Lake	Very fine	Brown		
-18		1	11							Lake	Sand	Grey		Med - Coarse - fine
-19		1	4							45 gls sec	✓	✓		Med Grained
-20		8	13							1 gl sec	✓	Grey / Brown		Fine
L-1s		2	24							6"		Brown		4500
-2s		6	76							6"		Black		4580
-3s		15	72							6"		Brown		4700
-4s		1	47							6"		Brown		4775
-5s		2	45							6"		✓		4830
-6s		1	48							6"		✓		4850
-7s		1	55							✓		✓		4960
-8s		1	59							✓		✓		5020
-9s		3	99							✓		✓		5160
L-10s		1	8							Gopher dipping	Sand	Lt brown		Soil just off edge of basalt 200' from contact

Canadian Johns-Manville Co Ltd
Asbestos, Que.

Project 71 Date July 5/72
Area Sanford (Blitz) Sampler Sanderson [illegible]

Sample No	Bronco Rpt No	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Au ppb	As ppm	Hg ppb	Horizon	Texture	Colour	Date	Remarks
L-11-L (rocks)	42-25	1	7							under ~~[illegible]~~ boulder	F gr	Brown	July 5	4800, taken 3' above water ~~[illegible]~~ boulders
-12-L		4	15							12 off	Gravel	Br.		Granite boulders
L-13-L		6	10							5 off	Coarse sand	[illegible] Br		" "
D 1L	42 25 Stream Sed	ND	11							2 off	Sand + gravel	Br		West fork east of Keg
-2L		ND	18							3	" "	Br		Stream on Boulders
-3L		ND	20							6	Sand - [illegible]	Br		West fork, granitic material
-4L		ND	17							3	" "	"		East "
-5L		1	18							10	" "	"		Below junction
-6L		2	28							2	" "	"		East tributary
-7L		1	12							5	"	"		
-8L		1	6							4	" "	Br		More Silt
-9L		3	13							6	Silt + Sand	Br		in boggy area, Granite
-10L		2	33							4	" "	Br		Bushy
-11L		2	53							Flow 2	" "	"		Very close to contact, trib flowing [illegible] right at headwaters
-12L		3	17							< 1/2	bog Silt	Br		- S flowing -
-13L		1	13							Dry	Gr	Br		Mix sand, chert + granite
-14L		1	18							12	~~[illegible]~~ Gr	Dk Br		Langorse
-15L		6	41							12	Silty Gr	" "		between Lakes
D-16L		2	24							8	Silty	Brown		S Granite
S 1-S		5	56											
2-S		6	144											
D17-S		2	40							5"	Clay Loam	Br		Top Keg Mtn 6090'
18-S		1	69							5"	Clay Sand			Front area
19-S		1	30							5"	"			5410
20-S		1	30							5"				5740
21-S	—	1	52							5"	"			6020
22-S		1	34							5"				[illegible]
23-S		1	39							5"				5120
24-S		1	37							5"				[illegible]
25-S		1	37							5"				[illegible]

Canadian Johns Manville Co Ltd
Asbestos, Que

Project 71
Area: Sanford

Date: Aug 19 72.
Sampler: D.J.

Sample No	Bronco Rpt No	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Au ppb	As ppm	Hg ppm	Horizon	Texture	Colour	Date	Remarks
3nGr #1	42-92	22	62	17	117	0.9	15			Surface	Med	Black	Aug 30/72.	See Map.
-2		28	164	30	106	2.1	15			Surface	Fine	Grey		
-3		20	129	21	121	1.3	10			✓	Coarse	✓		
-4		70	153	49	165	2.2	30			Surface	Fine	Lt. Brown		
-5		24	149	27	209	1.6	15			✓	✓	Brown		
-6		19	104	25	148	1.2	20			✓	Med.	Dk Brown		
-7		22	108	24	156	1.4	15			✓	✓	Brown		
-8		18	101	20	133	1.2	15			✓	Coarse	Brown.		
-9		24	141	21	198	1.2	20			✓	✓	Brown.		
-10		27	137	21	194	1.2	25			✓	Coarse	Lt Brown.		
T-1		12	57	17	91	1.0				Seep	Fine	Brown		
2		10	41	15	86	0.8				Gopher Hole	Fine	Dk Brown		
-3		5	83	15	74	0.7				Surface	Med	Lt. Brown		
-4		3	80	13	85	0.7				Surface	Fine	Brown		
-5		20	130	22	287	2.0				✓	Med	Black Brwn.		
-6		7	64	15	97	1.0				Surface	Fine	Lt Brown		
-7		6	53	15	96	0.9				✓	✓	Dk Brown		
-8		17	99	22	142	1.5				✓	Fine	Lt Brown		
-9		4	70	11	63	0.6				Surface	✓	Lt Brown.		
-10		5	55	12	78	0.9				✓	Fine	Brown.		
ST-1		35	220	858	1200	3.0								
-2		33	101	730	1020	1.5								
-3		17	16	44	190	0.8								
T-11		4	70	12	74	1.0				Gopher Hole	Fine	Dk Brown		
-12		3	83	17	57	2.2				Surface	Coarse	Brown		
-13		6	68	19	69	1.4				✓	Med	Dk Brown		
-14		5	49	22	63	0.9				✓	Coarse	Brown		
-15		3	116	179	112	2.4				✓	Fine	Brown		
-16		26	180	49	133	1.6				✓	Fine	Brown.		
-17		19	135	44	128	1.4				Surface	✓	Dk Brown		
-18		43	156	140	124	2.9				✓	Fine	Brown.		
19		43	88	730	72	1.0								
20		8	49	55	106	1.8								

Canadian Johns Manville Co Ltd
Asbestos, Que.

Project 71 Date Aug 7/72
Area Mt Sanford Samples A-J

Sample No.	Bronco Ref. No.	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Au ppb	As ppm	Hg ppb	Horizon	Texture	Colour	Date	Remarks
PC H 1	42-92	9	9	45	12	13								
-2		4	2	31	63	05								
-3		10	10	120	138	08								
-4		2	2	32	126	05								
-5		8	54	94	770	1.2								
-6		3	2	19	58	05								
-7		11	25	45	364	0.8								
-8		13	100	240	630	1.6								
Soil -1-T		2	15	32	78	0.8								
-2-T		27	90	650	720	2.6								
1st Cr. 1		13	100	40	101	2.5	20			surface	F			See Map
-2		10	108	41	73	1.6	15			"	"			
-3		8	104	18	160	20	20			surface	"			
-4		10	81	28	127	1.4	30			"	fine			
-5		13	72	33	95	1.2	10			"	fine			
-6		14	79	32	115	0.9	10			surface	"			
-7		16	69	34	63	1.6	5			"	coarse			
-8		15	66	35	98	1.2	5			"	"			
-9		12	68	22	72	0.8	5			"	"			
-10		7	56	19	74	0.9	20			surface	fine			
2nd Cr. 1		7	69	11	83	0.8	5			"	"			
-2		5	63	10	75	0.8	5			"	"			
-3		4	47	7	56	0.6	65			surface	"			
-4		4	49	8	57	0.6	10			surface	coarse			
-5		6	50	7	57	0.6	10			"	"			
-6		5	50	8	57	0.6	10			surface	coarse			
-7		6	52	10	65	0.6	10			"	"			
-8		5	53	9	64	0.7	70			"	coarse			
-9		5	58	10	71	0.6	20			"	fine			
-10		3	64	10	16	0.9	5			surface	fine			

NOT INCLUDED

Canadian Johns Manville Co Ltd
Asbestos, Que.

Project 71 — Date July 5/72
Area Sanford B[illegible] Creek — Sampler [illegible]

Sample No	Bronco Rot. No.	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag	Au	As	Hg	Horizon Flow	Texture	Colour	Date	Remarks
BR # 1	42-25	3	13							NIL	F	Grey	July 14/72	Granite Boulder
2		4	25							-1	M	Dk Grey		small stream, enters from right
3		2	9							+1	F	Grey		Main Stream
4		3	13							+1	C	Grey		side stream slope from left
5		2	16							-1	Med	G/B		side stream from left
6		9	70							+1	C	R B		″ ″ ″ ″ missing upper lake
7		9	70							-1	C	R B		Stream near contact
8		1	80							-1	C	Grey		″ ″ ″
9		1	87							-1	Fine	Black		muck from swamp to left
10		3	23							+1	C	D G		Main creek 500' east of contact
11		3	19							+2	M	R B		large slide from the right
12		4	21							-1	F	Dk Grey		small ck. from the right
13		2	48							-1	V Coarse	G/B		″ ″ ″ left
14		3	30							+2	Med	G/B		Main ck. above 1st lake
15		2	41							-1	Med coarse	G/B		small ck. steep bluff
16		13	20							+2	C	G/B		outlet of 1st lake
17		1	35							+1	C	B/light		Med size ck entering from right
18		2	52							+2	Med	G/B		Main stream slightly [illegible]
19		1	87							-1	Med	G/B		side stream from right
20		2	152							+1	Coarse	D/G		″ ″ ″ left
21		1	38							+10	Med	G B		Main creek
22		4	89							+1	M	Blk Br		side creek from left
23		1	68							-1	Muck	Black		″ ″ ″ ″
24		3	49							-1	″	″		″ right
25		1	20							-1	Med	Grey		″ ″ ″
CYN 1		12	940							3 places	Silt	Brown		reg. side of bank qtz
2		9	720							5 ″ ″	″ Sand	″		″ ″
3		6	620							10 ″	Silt	″		″ rust adjacent to outcrop
4		7	640							8 ″ ″	Silt	″		organic material
5		7	292							5 ″ ″	Sand	Brown		overflow material, side of bank
6		7	210							″ ″ ″		″		″

APPENDIX V

Statement of Qualifications

Statement of Costs

STATEMENT OF QUALIFICATIONS

I, Nicholas Clive Aspinall do hereby certify that:

1) I am a geologist employed by Canadian Johns-Manville Co. Ltd, Box 1500, Asbestos, Que.

2) I am a graduate of McGill University of Montreal, Que, 1964, B.Sc in Geology.

3) I have attended Memorial University of Newfoundland for 1 year for the study of geology, 1970-71.

4) I have practised in the Geological Profession for the last 9 years.

5) I am a fellow of the Geological Association of Canada and a member of the Canadian Institute of Mining and Metallurgy.

6) This report is based on field work and statistical interpretation.

January, 1973

Clive Aspinall
Atlin, B.C.

Statement of Costs

Collection of Geochemical Samples

Geochemical Samplers:

3 days by C. Aspinall @ $54.16 per day.	$ 162.24
3 days by L. Schoen @ $36.00 per day	$ 108.00
1 day by J. Leanderson @ $32.00 per day	$ 96.00
7 days by D. Jack @ $25.00 per day	$ 175.00
7 days by C. Binnie @ $22.00 per day	$ 154.00
7 days by A. Gussen @ $22.00 per day	$ 154.00
Total	$ 849.24

Supervision:

1½ days by Dr. E.L. Mann @ $75 per day	$ 112.50
1½ days by Dr. D.S. Evans @ $75 per day	$ 112.50
Total	$ 225.00
Helicopter, 5 hours @ $155 per hr. Bell 47G-3B-1	$ 775.00
Living Expenses:	
31 man days @ $10 per day	$ 310.00
Geochem Laboratory Tests:	
292 Tests for Cu. and Mo. @ $2	$ 584.00
342 tests for Pb, Zn, Ag @ $1.50	$ 513.00
94 tests for Gold @ $3.00	$ 282.00
Total	$1379.00
Office Work	
Statistical Computation, map drafting, report writing: 20 days @ $54.16 per day	$1083.20
Typing of Report, Map Reproduction	$ 200.00
Total	$1283.20
Total Cost	$4821.44

STATEMENT OF QUALIFICATIONS

I, Herbert Keith Conn, of the town of Asbestos, do hereby declare that:

1. I am a mining geological engineer employed as Exploration Manager for Canadian Johns-Manville Company, Limited, P.O. Box 1500, Asbestos, Quebec.

2. I have practised in the geological profession for twenty-three years and specialized in economic geology and exploration procedures for the past twenty-two years.

3. I am a graduate of the University of Toronto, Toronto, Ontario, with a degree of B.A.Sc. (Mining Geology), 1948.

4. I am a member of the following professional associations:

   (a) Corporation of Engineers of Quebec

   (b) Non-resident member of the Association of Professional Engineers of the Province of British Columbia

   (c) Fellow of the Geological Association of Canada

   (d) Fellow of the Society of Economic Geologists

   (e) Member of the Canadian Institute of Mining and Metallurgy

   (f) Member of the American Institute of Mining Engineers

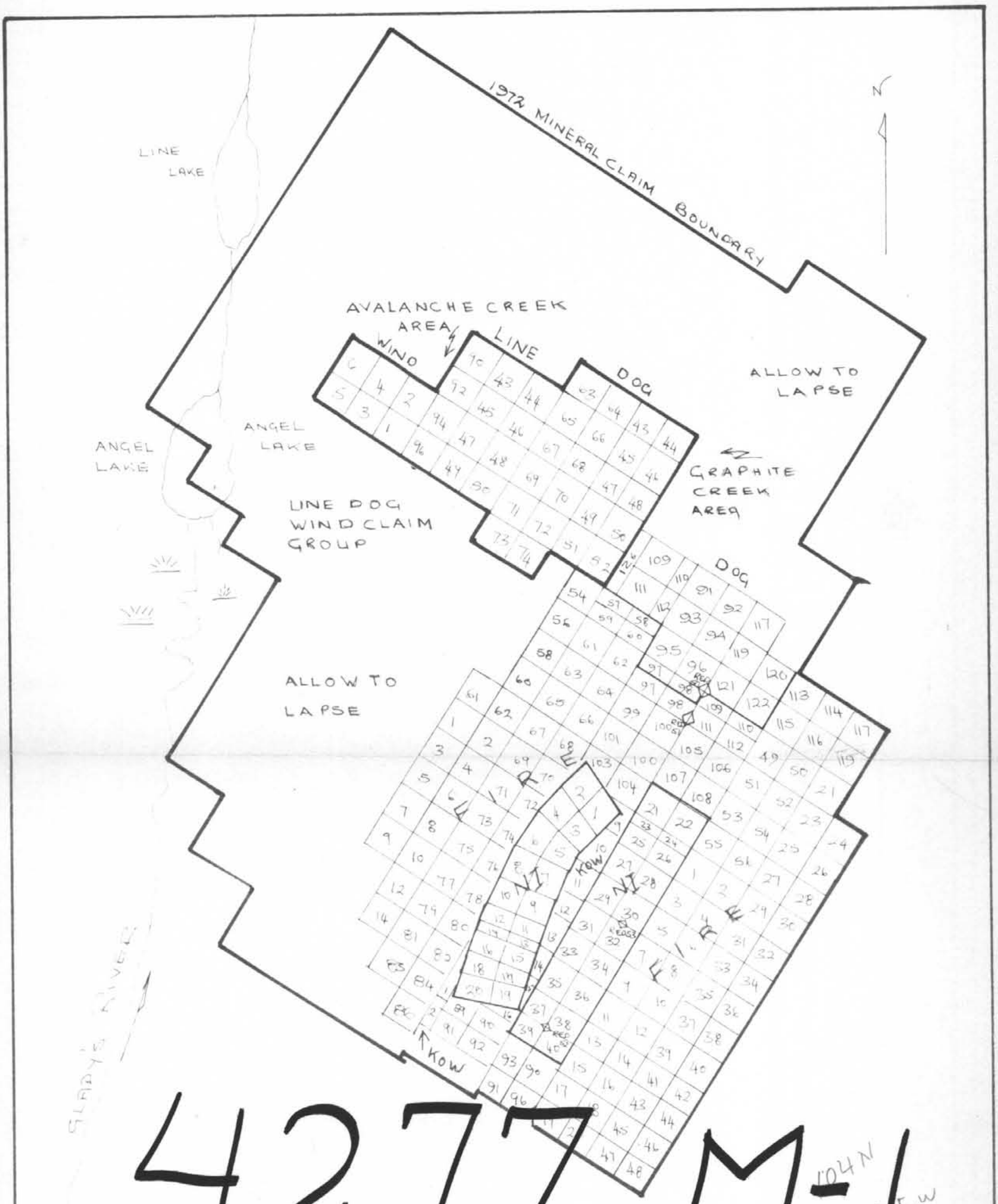
5. This report is based on published and unpublished information.

March 1973

H.K. Conn, P.Eng., Exploration Manager
Canadian Johns-Manville Co., Limited

H. K. CONN
BRITISH COLUMBIA

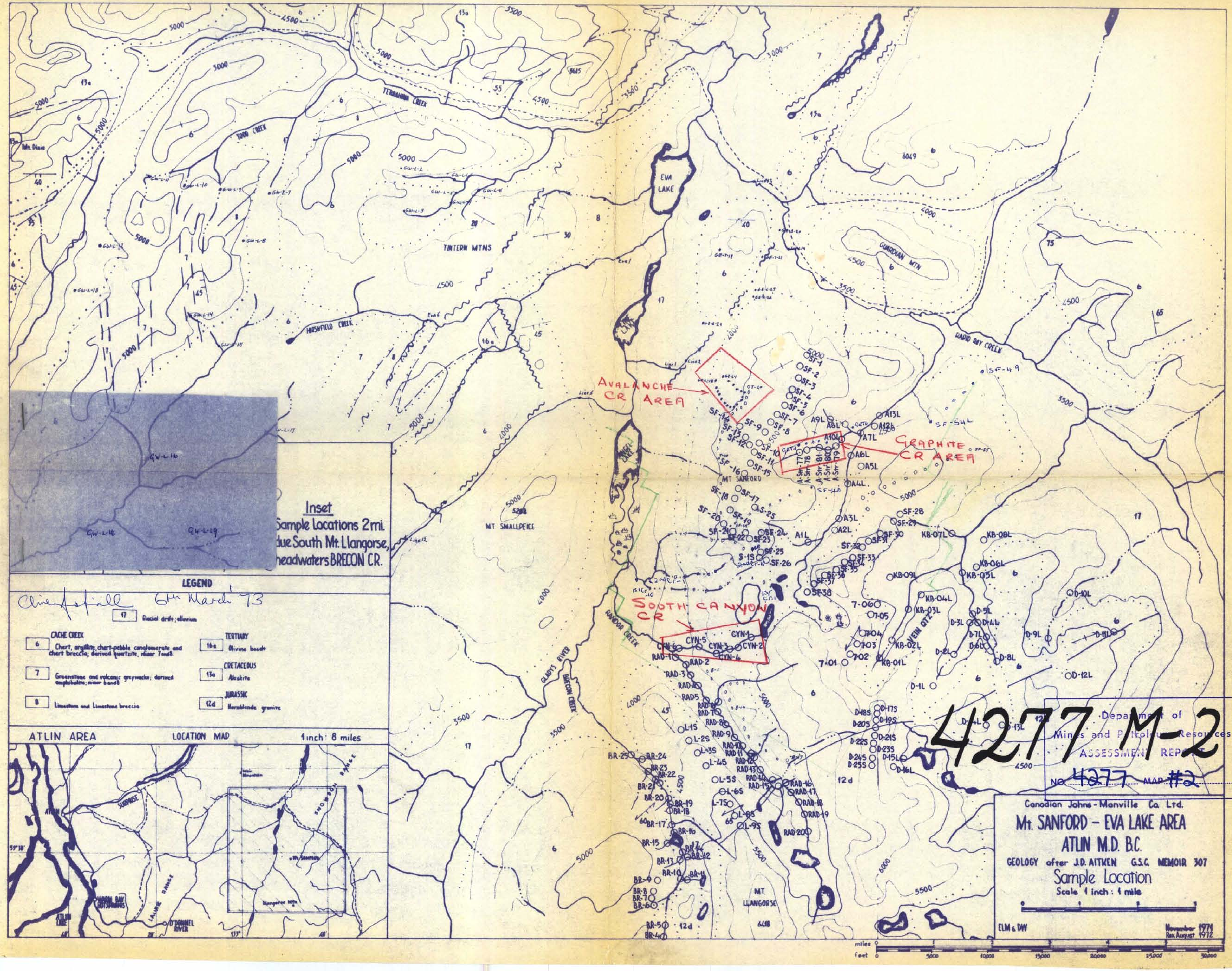
Expiry Date: Jan. 28, 1974



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4277 MAP #1

CANADIAN JOHNS-MANVILLE Co LTD, ATLIN MD, B.C.

1973 MINERAL CLAIMS
Mt SANFORD-EVA LAKE
AREA SCALE 1" 4500'


4277 M-2
Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4277 MAP #2
Canadian Johns-Manville Co. Ltd.
Mt. SANFORD - EVA LAKE AREA
ATLIN M.D. B.C.
GEOLOGY after J.D. AITKEN G.S.C. MEMOIR 307
Sample Location
Scale 1 inch : 1 mile
ELM & DW
November 1971
Rev. August 1972
Inset
Sample Locations 2 mi. due South Mt. Llangorse, headwaters BRECON CR.
LEGEND
Clive Astall 6th March '73
17 Glacial drift; alluvium
CACHE CREEK
6 Chert, argillite, chert-pebble conglomerate and chert breccia; derived quartzite, minor 7 and 8
7 Greenstone and volcanic greywacke; derived amphibolite; minor 6 and 8
8 Limestone and Limestone breccia
TERTIARY
16a Olivine basalt
CRETACEOUS
13a Alaskite
JURASSIC
12d Hornblende granite
ATLIN AREA
LOCATION MAP
1 inch : 8 miles
AVALANCHE CR AREA
GRAPHITE CR AREA
SOUTH CANYON CR
EVA LAKE
MT SANFORD
MT SMALLPEICE
MT LLANGORSE
TINTERN MTNS
GUARDIAN MTN
TERRAHINA CREEK
TODD CREEK
HIRSHFIELD CREEK
RAPID RAY CREEK
RANDOR CREEK
GLADYS RIVER
BRECON CREEK
Mt Dixie
miles
feet

Inset
Sample Locations 2mi due South Mt Llangorse headwaters BRECCON CR

Clive Jeffrell
6th March 73

LEGEND

Glacial drift alluvium

CACHE CREEK

6 Chert, argillite, chert pebble conglomerate and chert breccia, derived quartzite, minor 7, 8

7 Greenstone and volcanic greywacke, derived amphibolite: minor 6 and 8

8 Limestone and Limestone Breccia.

TERTIARY

16a Olivine basalt

CRETACEOUS

13a Alaskite

JURASSIC

12d Hornblende granite

Ag
PPm

ATLIN AREA LOCATION MAP 1 inch: 8 miles

ATLIN
ATLIN LAKE
SNO WORM RANGE
J.H. SANFORD
LLANGORSE MTN

TINTERN MTNS.
EVA LAKE
ANGEL LAKE
MT. SMALLPEICE
MT SANFORD
GIBBONAN MTN.
DAVID RAY CREEK
RANDOR CREEK
GLADYS RIVER
BARCON CREEK
MT. LLANGORSE 6418

4277 M-3

Canadian Johns-Manville Co. Ltd.

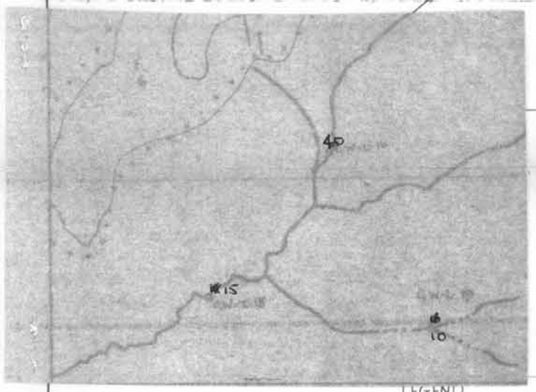
Mt. SANFORD – EVA LAKE AREA
ATLIN M.D. B.C.

GEOLOGY after J.D. AITKEN G.S.C. MEMOIR 307

Scale 1 inch : 1 mile

November 1974

miles 0 1 2 3 4 5
feet 0 5000 10000 15000 20000 25000 30000



Inset
Sample Locations 2 mi due South Mt Llangorse headwaters BRECCON CR

LEGEND

Clive Ashfield 6th March 73

17 Glacial drift alluvium

CACHE CREEK

6 Chert, argillite, chert-pebble conglomerate and chert breccia, derived quartzite, minor 7, 8

7 Greenstone and volcanic graywacke, derived amphibolite; minor 6 and 8

8 Limestone and Limestone Breccia.

TERTIARY

16a Olivine basalt

CRETACEOUS

13a Alaskite

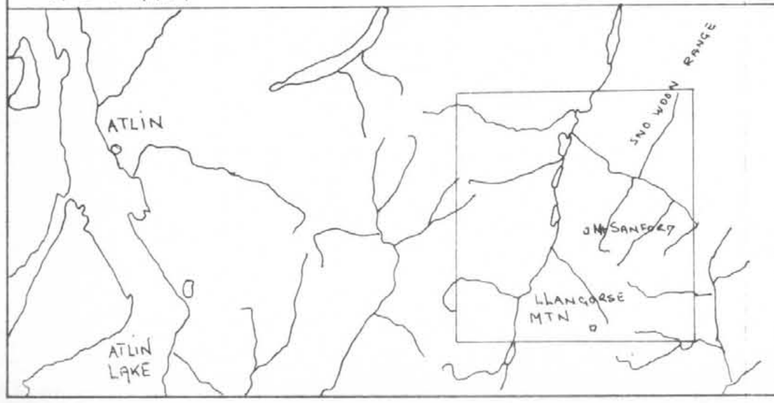
JURASSIC

12d Hornblende granite

Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4277 MAP #4

Au
PPb

ATLIN AREA LOCATION MAP 1 inch: 8 miles



TINTERN MTNS
EVA LAKE
GUARDIAN MTN
RAPID RAY CREEK
MT SANFORD
MT. SMALLPEICE
RANDOR CREEK
GLADYS RIVER
BRECCON CREEK
MT LLANGORSE
6458

4277 M-4

Canadian Johns-Manville Co. Ltd.

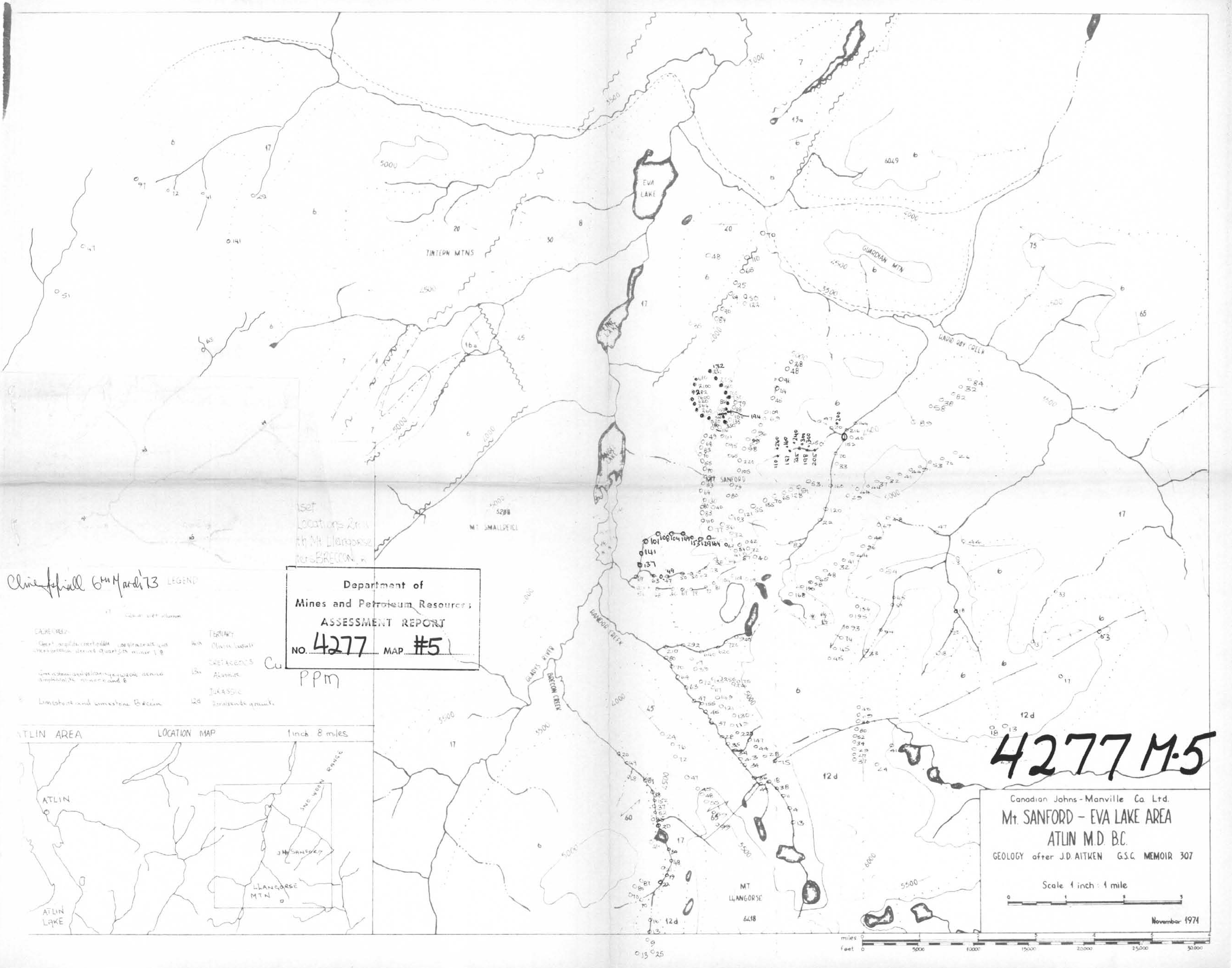
Mt. SANFORD – EVA LAKE AREA
ATLIN M.D. B.C.

GEOLOGY after J.D. AITKEN G.S.C. MEMOIR 307

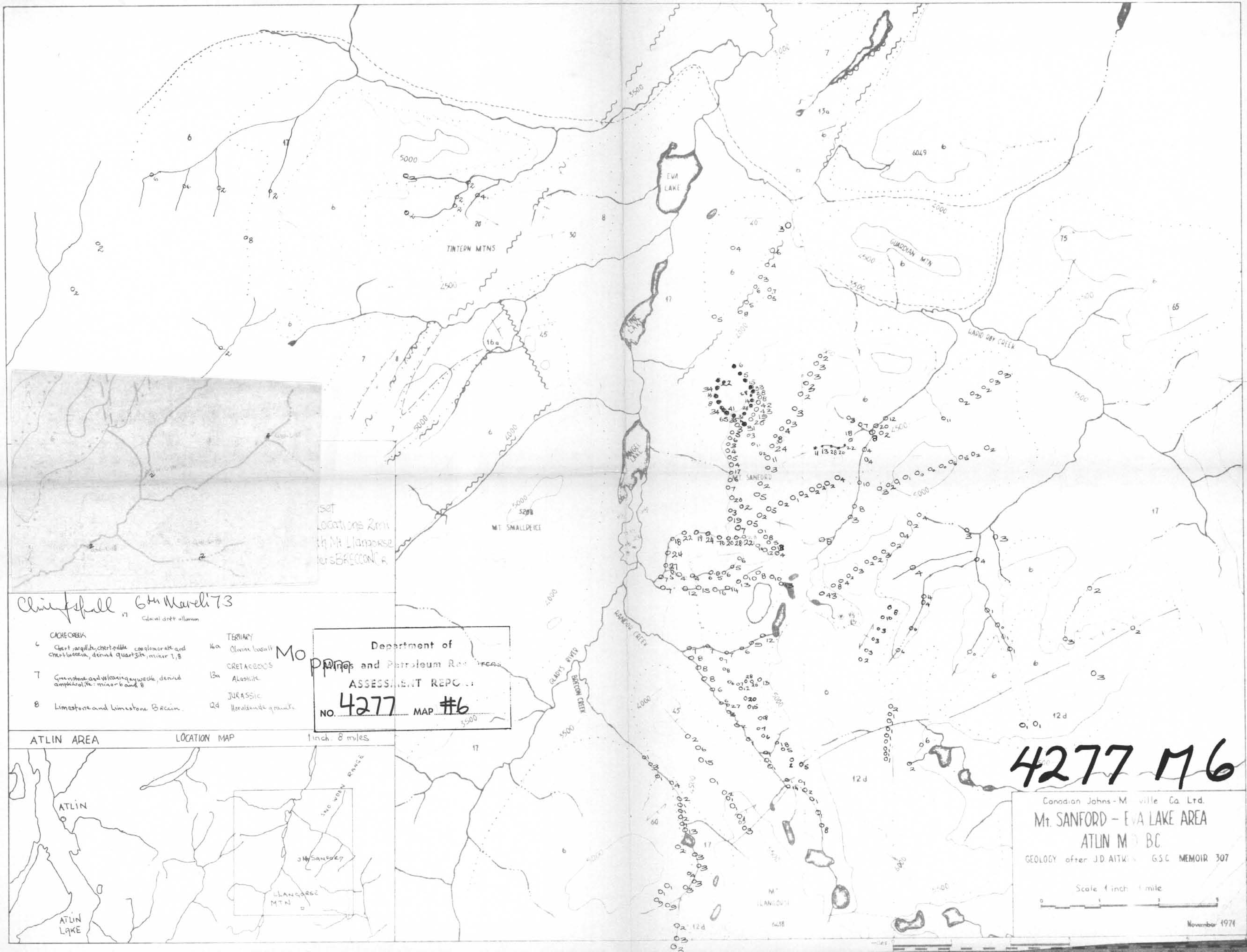
Scale 1 inch : 1 mile

November 1974

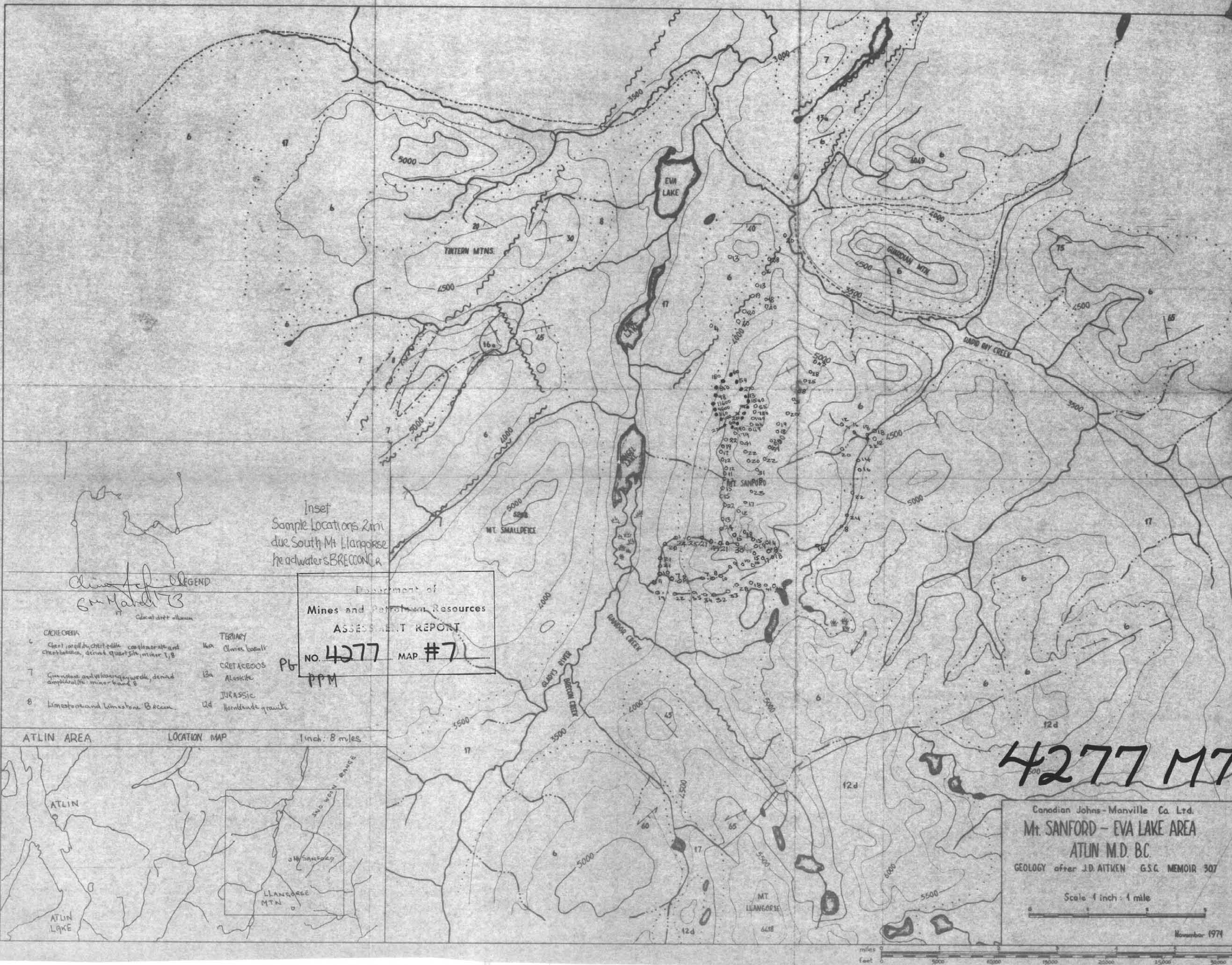
miles 0 1 2 3 4 5 6
feet 0 5000 10000 15000 20000 25000 30000



Canadian Johns-Manville Co. Ltd.
Mt. SANFORD - EVA LAKE AREA
ATLIN M.D. B.C.
GEOLOGY after J.D. AITKEN G.S.C. MEMOIR 307
Scale 1 inch : 1 mile
November 1971
4277 M-5
Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4277 MAP #5
Cu PPM
LEGEND
ATLIN AREA
LOCATION MAP
1 inch 8 miles
ATLIN
ATLIN LAKE
LLANGORSE MTN
EVA LAKE
TINTERN MTNS
GUARDIAN MTN
MT SANFORD
MT SMALLPEICE
MT LLANGORSE
6418
5288
6049
BRECON CREEK
GLADYS RIVER
miles
feet
0
5000
10000
15000
20000
25000
30000



Canadian Johns-Manville Co. Ltd.
Mt. SANFORD - EVA LAKE AREA
ATLIN M. D. BC
GEOLOGY after J.D. AITKEN G.S.C. MEMOIR 307
Scale 1 inch 1 mile
November 1974
4277 M6
EVA LAKE
TINTERN MTNS
GUARDIAN MTN
RAPID RAY CREEK
MT SANFORD
MT SMALLPEICE
GLADYS RIVER
BRECCON CREEK
MT LLANGORSE
17 Glacial drift alluvium
CACHE CREEK
6 Chert, argillite, chert-pebble conglomerate and chert breccia, derived quartzite, minor 7, 8
7 Greenstone and volcanic graywacke, derived amphibolite: minor 6 and 8
8 Limestone and Limestone Breccia
TERTIARY
16a Olivine basalt
CRETACEOUS
13a Alaskite
JURASSIC
12d Hornblende granite
Mo ppm
Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4277 MAP #6
ATLIN AREA
LOCATION MAP
1 inch 8 miles
ATLIN
ATLIN LAKE
MT SANFORD
LLANGORSE MTN



TINTERN MTNS.
EVA LAKE
GUARDIAN MTN
MT. SANFORD
MT. SMALLPEICE
MT. LLANGORSE
Inset
Sample Locations 2mi
due South Mt Llangorse
headwaters BRECCON CR
LEGEND
6th March '73
Glacial drift alluvium
CACHE CREEK
6 Chert, argillite, chert pebble conglomerate and chert breccia, derived quartzite, minor 7, 8
7 Greenstone and volcanic greywacke, derived amphibolite, minor 6 and 8
8 Limestone and Limestone Breccia
TERTIARY
16a Olivine basalt
CRETACEOUS
13a Alaskite
JURASSIC
12d Hornblende granite
Pb
PPM
Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4277 MAP #7
ATLIN AREA
LOCATION MAP
1 inch: 8 miles
ATLIN
ATLIN LAKE
LLANGORSE MTN
Mt SANFORD
4277 M7
Canadian Johns-Manville Co. Ltd.
Mt. SANFORD – EVA LAKE AREA
ATLIN M.D. B.C.
GEOLOGY after J.D. AITKEN G.S.C. MEMOIR 307
Scale 1 inch : 1 mile
November 1971
miles
feet

Inset
Sample Locations 2mi due South Mt Llangorse headwaters BRECCONCR

Clive Ashwell
6th March 73

LEGEND

17 Glacial drift alluvium

CACHE CREEK

6 Chert, argillite, chert-pebble conglomerate and chert breccia, derived quartzite, minor 7, 8

7 Greenstone and volcanic greywacke, derived amphibolite: minor 6 and 8

8 Limestone and limestone Breccia

TERTIARY

16a Olivine basalt

CRETACEOUS

13a Alaskite

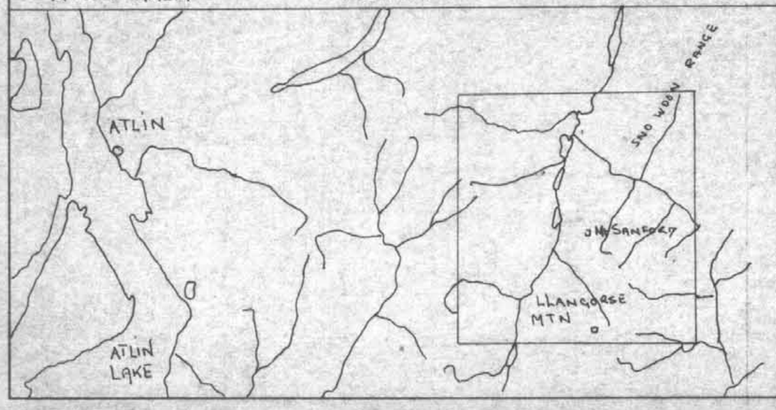
JURASSIC

12d Hornblende granite

Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4277 MAP #8

Zn ppm

ATLIN AREA LOCATION MAP 1 inch. 8 miles



EVA LAKE
TINTERN MTNS
GUARDIAN MTN
RANDOR CREEK
GLADYS RIVER
BARCON CREEK
DAVID DAY CREEK
MT SMALLPEICE
MT SANFORD
MT LLANGORSE 6418

4277 #7-8

Canadian Johns-Manville Co Ltd.

Mt. SANFORD – EVA LAKE AREA
ATLIN M.D. B.C.

GEOLOGY after J.D. AITKEN G.S.C. MEMOIR 307

Scale 1 inch : 1 mile

0 1 2 3

November 1974

miles 0 1 2 3 4 5 6
Feet 0 5000 10000 15000 20000 25000 30000