



COLDSTREAM RAMSAY
1969 - 1970

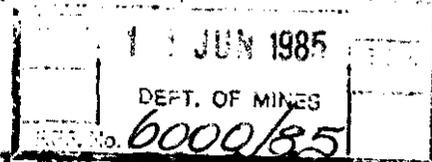
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ANGLO AMERICAN CORPORATION (AUSTRALIA) LIMITED

AMG REFERENCE POINTS ADDED

A RAPID RECONNAISSANCE OF THE COLDSTREAM - RAMSAY
RIVER SYSTEMS (1969-1970)

GENERAL.



The reconnaissance entailed a geochemical and geological mapping programme of the Coldstream-Ramsay river systems (both North bank tributaries of the Huskisson). Initial estimates involved 100,000' of drainage to be sampled and mapped in 4 weeks; in fact, seven weeks were needed to complete the programme owing to unexpected delays and a substantial increase in the length of drainage sampled.

Work accomplished comprised 25 miles of creek sampling and 12 miles of geological mapping including detailed mapping across strike in the south of the area (Maps No. 2 and 4).

Staff comprised 1 geologist and 6 - 7 student field assistants. Work commenced in early December and finished in mid-January, with a break of one week at Christmas.

Previous work in the area was minimal being limited to the Mines Department geological survey of the Coldstream (see Mackintosh Sheet 44 1 mile series).

LOCATION AND ACCESS (see Map No. 1)

The southern most tip of the area (the Ramsay-Huskisson confluence) is approximately 12 miles SSW of Waratah, both the Coldstream and Ramsay flowing from North to South.

Access to the northern drainage is by foot from the 4 mile post on the Waratah-Savage River road; however, the track to Camp 3 (see Map No. 4) is accessible by Bombardier and probably by Hafflinger. The southern-most campsite is accessible only by helicopter.

/2. The terrain.

The terrain, to the north, is flat and largely ill-drained button-grass flats, but becomes increasingly incised to the south having contour differentials up to 1,000'.

In the valleys, the vegetation is largely open woodland with infrequent patches of thick horizontal.

The mainstreams and major tributaries are open and require little cutting but exceedingly steep waterfalls make progress difficult in places.

GEOLOGY.

The Coldstream-Ramsay area lies to the north of, and aligned between, the Huskisson and Que synclines, which initially suggested that the area is an antiform. This has been partially confirmed.

Broadly, the lithology embraces a dull sequence of Lower Palaeozoic mudstones, sandstones, greywackes and tuffs, with infrequent thin, bedded limestones, the whole being an inlier in the Tertiary Basalt, which abuts in the west against the Meredith Granite (Devonian) batholith (see Map No. 4). The contact zone is adequately drained by the Ramsay and its tributaries.

I have divided the region into two distinct major successions:-

- (a) The Ramsay succession - tuffaceous but greywacke free sediments.
- (b) The Coldstream succession - greywacke - mudstone sequence.

/3. (a) THE RAMSAY.

(a) THE RAMSAY SUCCESSION.

This consists of mudstones, shales, sandstones and minor limestones with an increase in tuffaceous sediments to the west. Unlike the Goldstream succession, this succession is essentially greywacke-free and is of Ordo-Silurian (rather than Cambrian) age. The dominant lithology is yellow-brown, laminated, mudstone (with subsidiary shaly texture) which (according to Groves and Solomon) consists of extremely small, angular fragments of quartz, plagioclase, sericite and calcite. The laminations are apparently caused by thin bands of limonite and graphitic material.

The tuffaceous sediments examined were grey green and comprise rock fragments with quartz and feldspar set in a fine-grained, predominately chloritic groundmass. These rocks may be confused, in the field, with the Goldstream sub-greywackes but an Amel description of one of the tuffs states: "The habit of the particles and their sorting is such that it is evident that the elastic components have been subjected to little if any transport. The bulk of the elastic components are derived from an igneous and almost certainly a volcanic provenance. The heterogenous nature of the rock and the lack of evidence for significant transport strongly suggests the rock has formed by a pyroclastic mechanism rather than as a water-laid sediment". The west tuffaceous sequence of the Ramsay succession can probably be equated with the east tuffaceous sequence at Webb's Creek.

(b) THE COLDSTREAM SUCCESSION

This consists of greywacke-conglomerates, greywackes, sub-greywackes and chocolate-brown to grey mudstones with infrequent limestones. These are Cambrian in age - and in general rocks become younger in age from east to west. Chocolate-coloured mudstones are the dominant sediments, their colour being produced by haematite and limonite. Thin carbonate veins may sometimes be present.

The sub-greywackes are poorly sorted with an open framework and consist dominantly of angular quartz grains. Other clastic grains include rounded albite, hornblende, augite, chlorite, magnetite and rare rock fragments. They range in grain size from 0.2. to 0.8m.m. in diameter and generally the grains are not quite contiguous. The matrix consists of chlorite, iron ore and small fragments of other minerals. These sub-greywackes may be confused in the field with fine-grained tuffaceous sediments (see above) and some of these rocks may be volcanic but the presence of quartz and sedimentary rock fragments in quantity suggests they are not tuffs but result from the weathering of volcanic and Pre-Cambrian rocks. (Groves and Solomon).

Nye (1923) classified the greywackes and breccias of this region as micaceous or feldspathic "breccia" but the number of sediments in which mica was an important constituent proved to be very small while almost all of them contained feldspar. (Groves and Solomon).

Folding

Folding is complex, with the overall trends still vague. Notwithstanding, present evidence (see Fig. 1) indicates a plunging (?) asymmetric antiform, aligned NNE - SSW; the eastern limb is steeper. Most of the minor folds plunge 50° - 60° at 200° magnetic.

Faulting

Little faulting was observed apart from a minor fault zone on the Ramsay (see Map No. 4); this has no significance as yet.

A possible shear-zone (see Map No. 4) was observed to the north at approximately 10,000' from the Coldstream-Hatfield confluence. This may be a continuation to and the border zone of the dislocation trending north-south in the Chester-Pinnacles-Silver Falls area (see Pinnacles Report 1969-1970); this is very tentative.

The Ramsay succession in the upper Coldstream seems to be faulted against the underlying mudstone-greywacke sequence but the only field evidence for this beside the lithological change is a marked change in strike direction (see Map No. 4).

Metamorphism

This is limited to low-grade chloritic regional metamorphism except near the granite contacts where higher grade thermal metamorphism obtains (see also ultrabasics).

Ultrabasics

Several large boulders and many smaller pebbles of an ultrabasic rock were found at approximately 8 - 9,000' up the Coldstream (see Map No. 4). Unfortunately, limited time and difficult access prevented immediate follow-up of this discovery. However, a specimen of the rock was sent to Andel for petrographic description viz. "---- is a metamorphosed and deformed ultrabasic rock. The sample could represent a marginal phase of an ultrabasic intrusion which has been deformed by intrusion and metamorphosed. The rock is unusual and could have been a mica peridotite with kimberlitic affinities."

Mineralisation

No minerals of any economic significance were found.

GEOCHEMISTRY

Only stream sediment samples were collected, and these at various intervals:-

- (i) every 1,000' on the two mainstreams;
- (ii) every 500' on major tributaries;
- (iii) every 300' on some of the minor tributaries.

Coarse, active, stream-bed material was collected in all cases, the samples being sieved to -80 mesh in Waratah prior to analysis. Samples were also collected from granite and basalt environments to determine individual background characteristics.

/7. Unfortunately.

Unfortunately, only a few pH. readings were taken, these all being between 5.5 - 6.5.

Because of the dearth of mines (Just-in-Time and dubious tin alluvial working on the Ramsay - see Map No. 4) and known economic mineral deposits, stream anomaly orientation work could not be undertaken.

Samples were sent to Geomin (Sydney) and analysed by A.A.S. for Zn., Ag., Bi., Cu., Co., Ni. and colorimetrically for Sn. in the case of samples from waterways draining the granite-sediment contact zone.

(For the following descriptions, refer to Histograms Figs. 2 and 3 and anomaly Map No. 3).

Zinc

Values range between 20 and 2,400 p.p.m. with the most populous grouping between 60 - 80 p.p.m. A standard concave decay curve follows the peak, tailing off at 350 p.p.m. (threshold 1). Threshold 2 was placed at 600 p.p.m. and any values above this have been regarded as anomalous.

Silver

Values range from less than 0.5 p.p.m., to 11 p.p.m., the population peak being below 0.5 p.p.m. The decay curve ends at 2.0 - 2.5 p.p.m. where there is a second peak. Values above 2.0 p.p.m. have been regarded as anomalous.

Bismuth

Values range between zero and 60 p.p.m., the population peak being approximately 10 p.p.m. It is clear from the histogram that there are no anomalous values.

/8. Copper.

Copper

Values range between 4 and 180 p.p.m., the peak population being between 20 and 40 p.p.m. Threshold 1 was placed at 100 p.p.m. and anything above this value regarded as anomalous.

Cobalt

Values vary from zero to over 200 p.p.m. the latter figure being regarded as the threshold figure. One anomaly was noted between 220 and 240 p.p.m.

Nickel

The histogram of nickel values shows a straightforward decay curve tailing off at 240 p.p.m. and with a population peak between 20 and 30 p.p.m. There are no anomalous values.

Tin

The histogram is a confused picture but nevertheless values above 260 p.p.m. are regarded as anomalous. The highest values fall within the West Ramsay area at a small alluvial tin show outside lease EL 5/63; they are not shown, therefore, on the geochemical-anomalies map.

GENERAL

Values of samples collected from granite were excluded from the histogram populations to avoid the influence on geochemical calculations of a different known lithological environment.

At the time of writing, the results for the North Coldstream samples were not available.

FUTURE PROGRAMME (see Map No. 5)

On the basis of data in hand at this time, the following is recommended for work in the immediate future.

Geological Mapping

1. The Ramsay river, north of sample site 11 and any newly sampled creeks (see below).
2. Tributaries between the proposed Ramsay grid and Webb's Creek.
3. The lower Coldstream to ascertain the position and field relationships of the ultrabasics.

Anomalies R₁ (17 anomalous silver values)
1 anomalous copper value.

A grid, with baseline 6,000' long and aligned 026° magnetic with 5,000' lines each 1,000' apart should be positioned as shown.

The A° sample interval proposed is 50 feet.

If necessary, the 3 northernmost lines may be extended to the west to cross the granite contact.

South of this (but north of Webb's Creek) the streams are to be sampled at 200' intervals and geologically mapped.

All anomalous samples and adjacent samples should be analysed by A.A.S. for Pb., Mo, and Sb.

/10. Anomaly R₂.

Anomaly R₂ (Zinc - 1 sample)

Further stream sampling to be undertaken at 200' intervals. Depending on the results of the samples, a grid may or may not be positioned over the anomalous area. I suggest that anomalous samples be analysed for Pb., Mo. and Sb. also.

Anomalies R₃ (Zinc - 2 samples)

Adopt similar procedure to previous anomaly R₂.

Anomaly R₄ (tin (2) + silver (1)) - outside lease area.

These tin anomalies are downstream of an old tin working and hence are of dubious significance. No immediate work is recommended on the anomalies.

FUTURE WORK

A road of 8 - 9 miles should be constructed as shown between the Ramsay and Coldstream to give access to the Coldstream-Hatfield confluence and Anomaly R₁. It is expected that this road will cost no more than \$1,300 per mile as most of it will be on a flat basalt plateau.

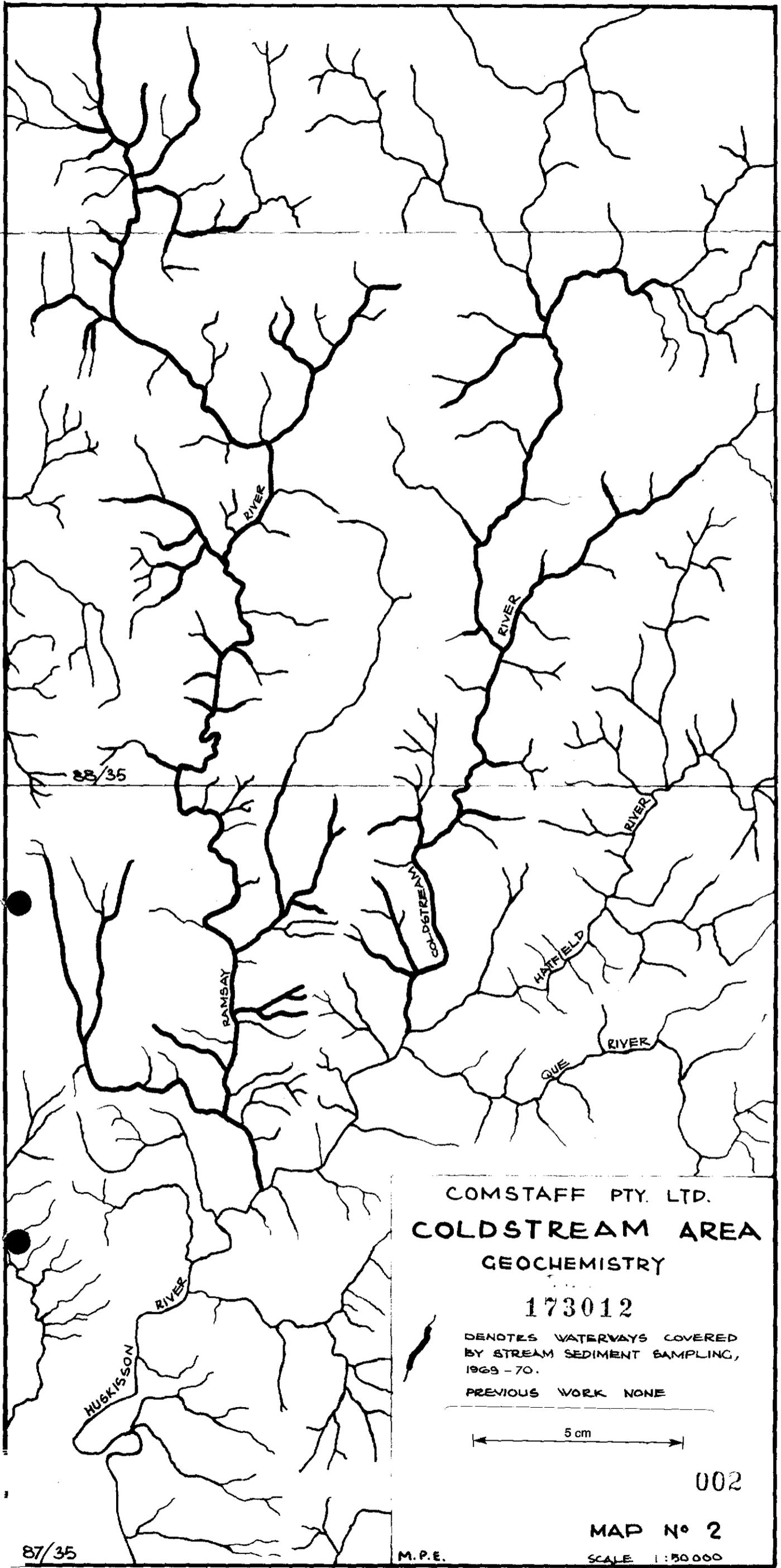
CONCLUSION

The area is certainly interesting both geologically and geochemically but of course at this early stage it is impossible to assess its potential with any degree of confidence.

However, access is cheap and follow-up work on the scale proposed previously seems warranted.

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Waratah, 30.3.1970.
M. P. EVERETT - GEOLOGIST.



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HUCKISSON RIVER

RAMSAY RIVER

COLDSTREAM RIVER

HATFIELD RIVER

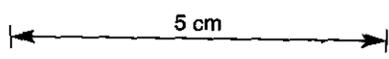
RIVER

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COLDSTREAM AREA
GEOCHEMISTRY

173012

DENOTES WATERWAYS COVERED
BY STREAM SEDIMENT SAMPLING,
1969-70.

PREVIOUS WORK NONE



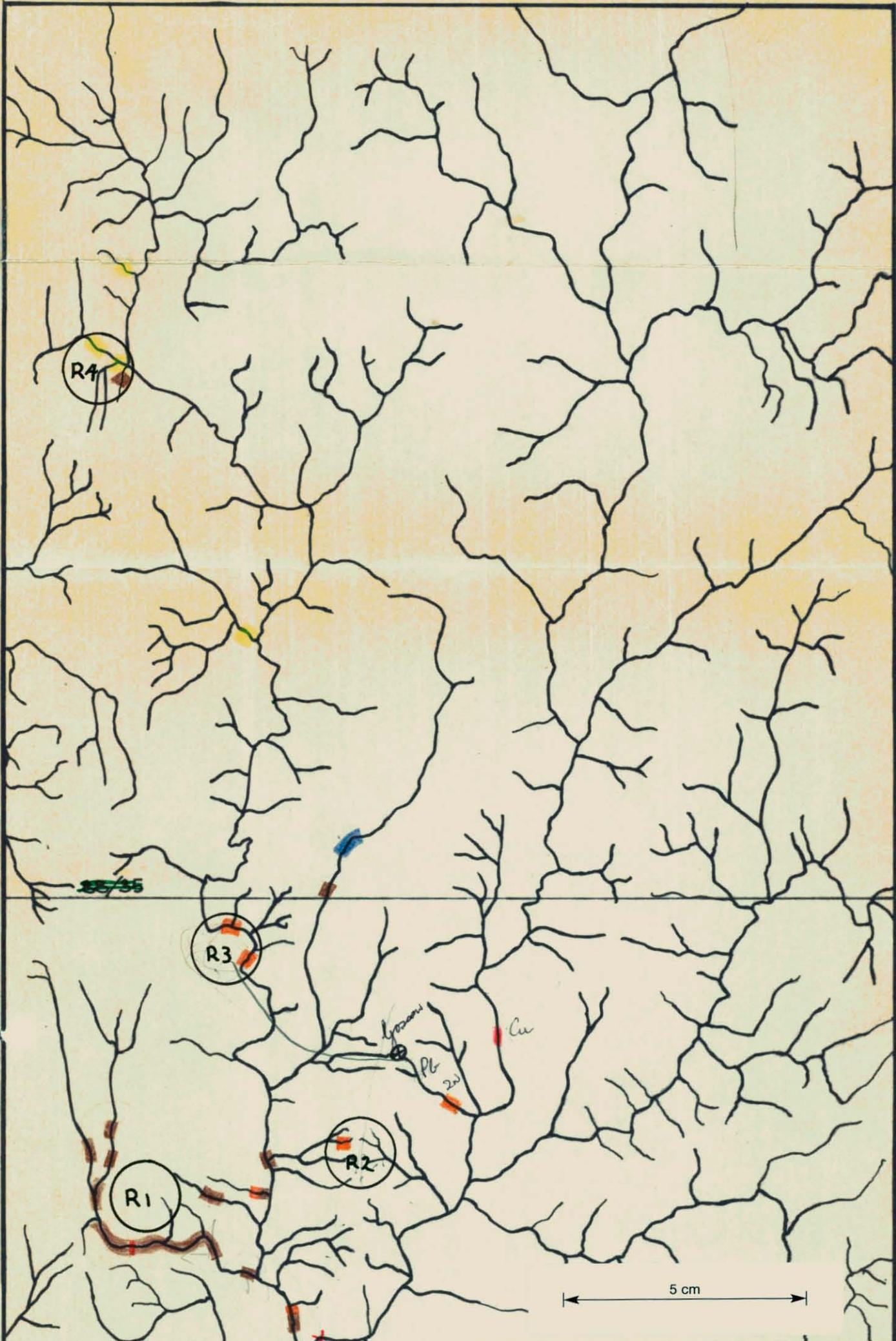
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MAP No 2

SCALE 1:50000

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M.P.E.



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COLDSTREAM AREA GEOCHEMICAL ANOMALIES

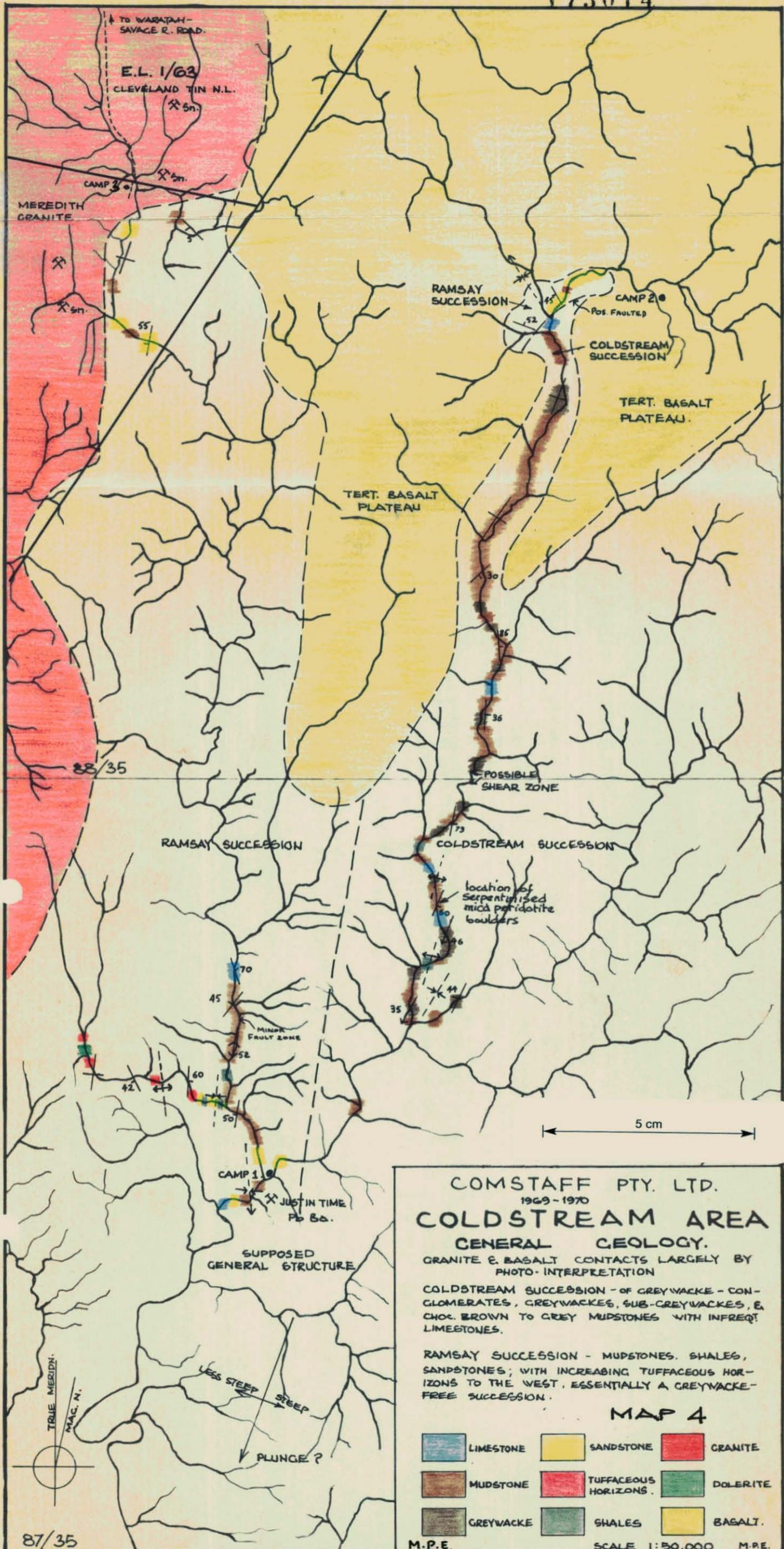
ZINC		SILVER	
COPPER		COBALT	
TIN			

X-RAY ACTUALLY APPEARS IN MAIN REPORT

MAP N° 3

SCALE 1:50,000 M.P.E.

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**COLDSTREAM AREA
GENERAL GEOLOGY.**

GRANITE & BASALT CONTACTS LARGELY BY PHOTO-INTERPRETATION

COLDSTREAM SUCCESSION - OF GREYWACKE - CONGLOMERATES, GREYWACKES, SUB-GREYWACKES, & CHOC. BROWN TO GREY MUDSTONES WITH INFREQ. LIMESTONES.

RAMSAY SUCCESSION - MUDSTONES, SHALES, SANDSTONES; WITH INCREASING TUFFACEOUS HORIZONS TO THE WEST, ESSENTIALLY A GREYWACKE-FREE SUCCESSION.

MAP 4

	LIMESTONE		SANDSTONE		GRANITE
	MUDSTONE		TUFFACEOUS HORIZONS		DOLERITE
	GREYWACKE		SHALES		BASALT

M.P.E. SCALE 1:50,000 M.P.E.

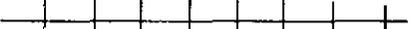
APPROX. 1 M. TO VARATAH-SAVAGE RIVER ROAD

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ALTERN. ROUTE

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1969-1970
COLDSTREAM AREA

SHOWING LOCATIONS FOR FOLLOW-UP PROGRAMMES AND PROPOSED ROAD.

- PROPOSED ROAD 
- GRIDS 
- FURTHER STREAM SAMPLING 
- FURTHER GEOLOG. MAPPING. 

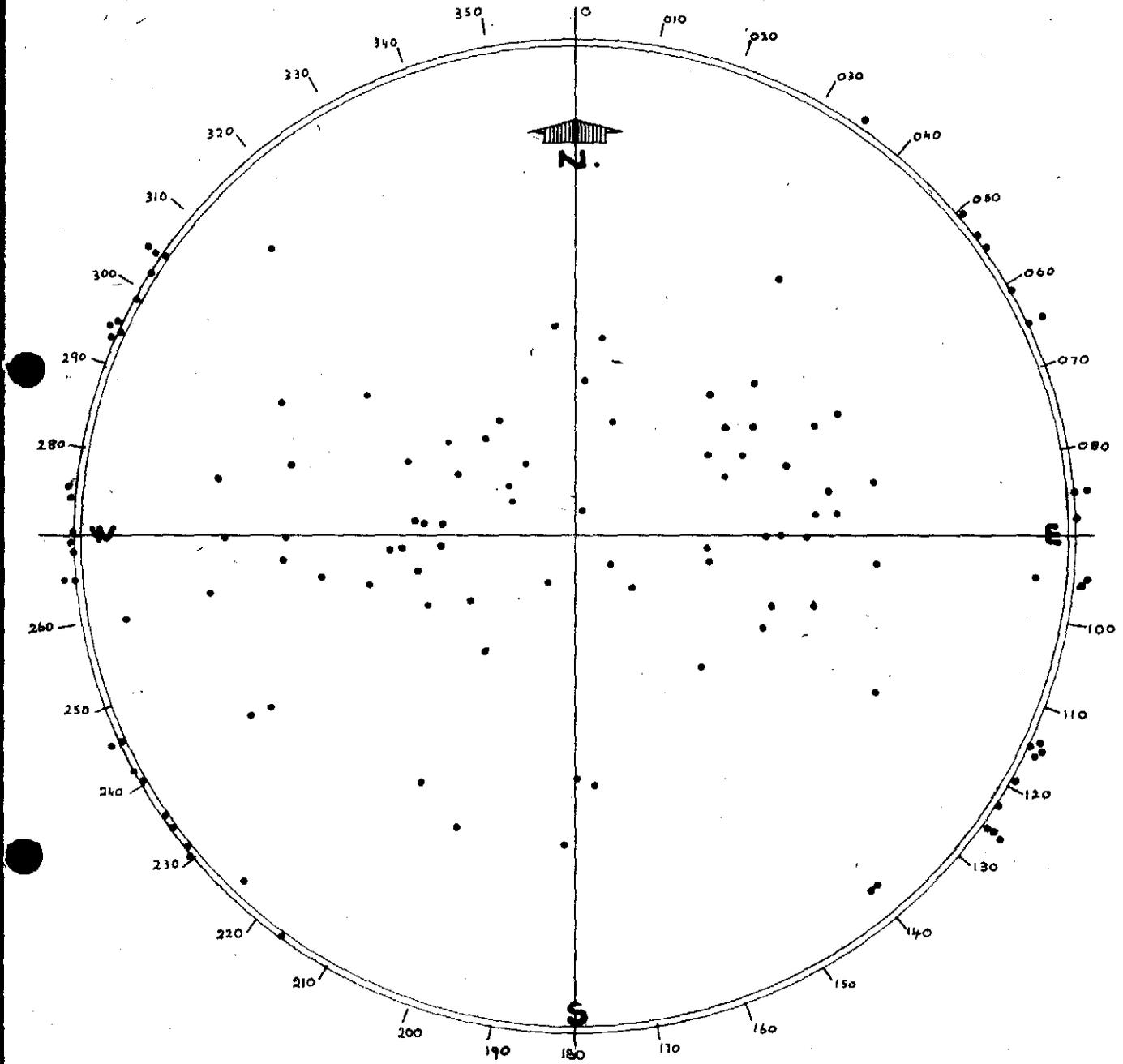
5 cm

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M.P.E.

MAP N° 5
SCALE 1:50000

173016



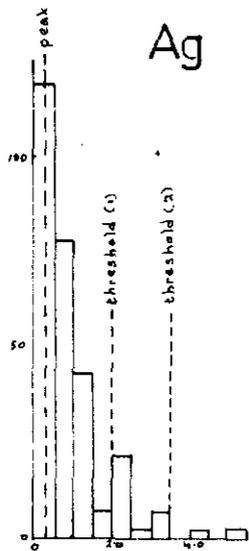
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COLDSTREAM AREA
STRUCTURAL STEREOGRAM.
(poles of bedding plotted.)

FIG 1

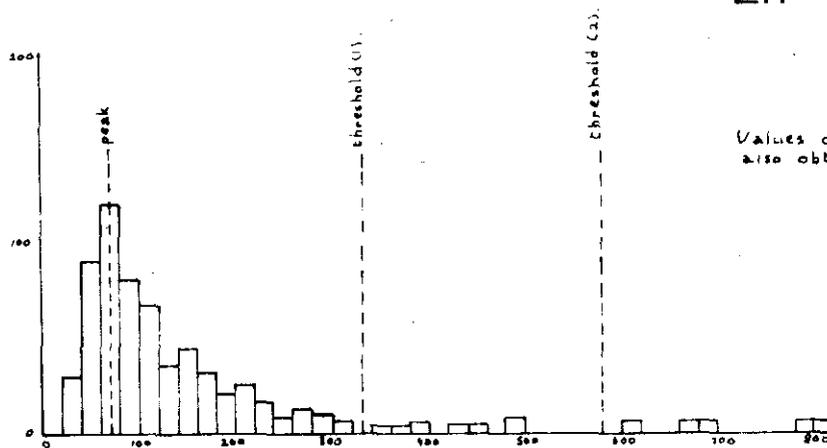
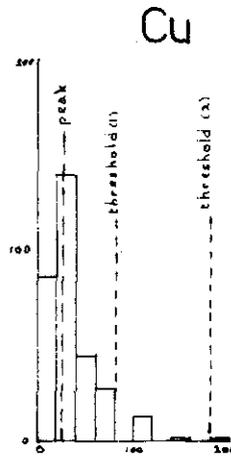
M.P.E.

006

173017



one value of 110 p.p.m.
also obtained.



Values of 1320 and 1400
also obtained (one of each)

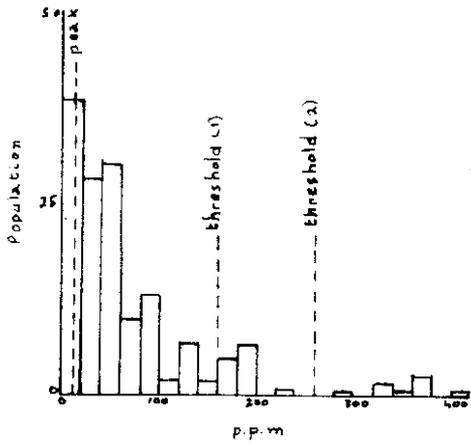
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1969-1970
COLDSTREAM AREA
STREAM SEDIMENT HISTOGRAMS
population against p.p.m.

FIG. 2

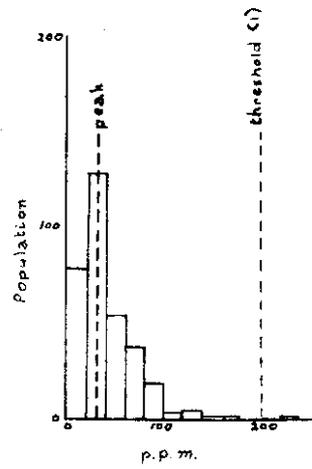
M.P.E.

007

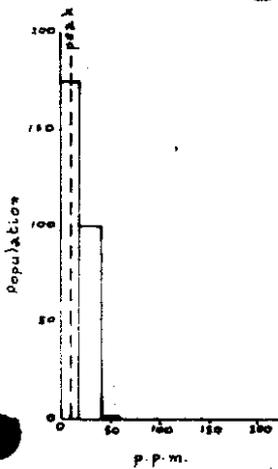
Sn



Co

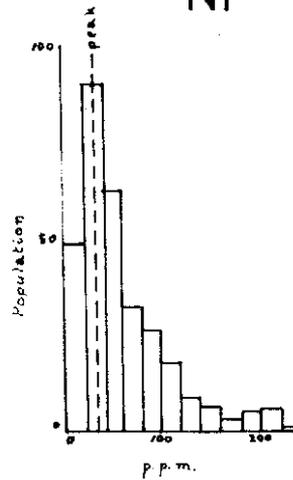


Bi



Standard Decay Curve
- no Anomalies Noted

Ni



Standard Decay Curve
- no Anomalies Noted

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COLDSTREAM AREA
STREAM SEDIMENT HISTOGRAMS
population against p.p.m.

FIG. 3