



REPORT ON GEOLOGY, RADIOMETRICS
AND GEOCHEMISTRY

GNUCKLE CLAIMS 1-8

Mayo Mining Division
Claim Sheet 106D-16
October 30, 1976

Lat. $64^{\circ}56'N$

Long. $134^{\circ}18'W$

Colin J. Riley

Geologist



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GNUCKLE REPORT

INTRODUCTION

The Gnuckle uranium occurrence was located in July, 1976 through follow-up of an anomalous geochemical soil sample which was taken by Wernecke Joint Venture (Standard Oil of B.C., Limited, Acquitaine Company of Canada, Ltd., Messrs. L. and H. Clay) in 1975. The 1976 programme was carried out by Eldorado Nuclear Limited under an option agreement with Wernecke Joint Venture; the programme was managed by Archer, Cathro and Associates, Ltd. Eight claims were staked over an occurrence of radioactive float. Geological mapping, grid soil sampling and radiometric surveys were carried out.

Personnel involved with this programme were James Griffin, geologist on 30 July, 1 and 2 August and field man Jack Dennet on August 2. Work was under the direct supervision of Colin J. Riley who was on the property 30 July and 1 August.

This work was carried out under Atomic Energy Control Board Exploration Permit #MX18/76, issued to Eldorado Nuclear Limited for exploration in the Yukon Territory.

PROPERTY LOCATION AND ACCESS

The Gnuckle property consists of eight contiguous mineral claims recorded in the Mayo Mining Division as follows:

| <u>Claim Name</u> | <u>Grant Numbers</u> | <u>Expiry Date</u> |
|-------------------|----------------------|--------------------|
| Gnuckles 1-8 | YA5935-YA5942 | 20 July, 1977 |

The property is located at latitude $64^{\circ}56'N$ and longitude $134^{\circ}18'W$ on NTS Claim Sheet 106D/16. The property was worked from the Wernecke Joint Venture base camp at Fairchild Lake, 18 miles to the east. Support was by Bell 47G3B helicopter. Access to Fairchild Lake is by float equipped aircraft from a charter base at Mayo, 120 miles to the southwest.

ROCK TYPES

Unit 1 - Argillite; black, thin phyllitic cleavage, may be siliceous in places, locally contorted, may contain up to 5% pyrite giving rise to gossanous areas.

Unit 2 - Quartzite; argillaceous, slaty, black to grey, not as fissile as 1, may contain up to 5% pyrite and gossans.

Note: Units 1 and 2 are probably part of the same Unit with varying amounts of quartz and argillitic material. In this area, it is possible to separate them into two mappable units.

Unit 3 - Diorite; medium green in colour, fine to medium grained, of a diorite to gabbroic composition. May have green epidote alteration, contains fragments of Units 1 and 2, up to 2 metres in size forming an intrusive breccia.

Unit 4 - Breccia; explosive gas vent breccia associated with Unit 3 vent material. Contains varying clasts of rhyolite, chert, volcanic and argillite. The fragments may range from 1 to 2 cm. to 10's of metres. Highly pyritic in places forming large gossans (up to 25% pyrite). May have a silicic, rhyolitic phase at margins.

Unit 5 - Dolomite; cream coloured, medium grained, weathers a deep orange brown. Lies along margins of an explosive breccia.

GEOLOGY AND MINERALIZATION

The area surrounding the Gnuckle Claim is composed of an argillitic sequence containing more or less silica. The portion exposed can be classified as siliceous argillite grading upwards into slaty quartzite. The whole has been intruded and fractured by an explosive gas vent event. A central core of

epidotized diorite or diogabbro is surrounded by an explosive gas driven breccia. The breccia is discordant and contains numerous fragments of the country rock as well as foreign fragments, either brought up from below or fallen back from above after the explosion. The dolomite is an alteration effect associated with the explosive breccia and is located along around the margins of it. It is a massive medium grained alteration product containing small disseminated specks of magnetite. A fault cuts across the strike of the beds towards the centre of the claim group. This fault is marked by bleaching, silicification and injection of quartz. Occurrences of brannerite, both as particles on fractures and as large crystals growing in the rock, are located along this fault. Close to the central vent, the rhyolitic border phase again contains large crystals of brannerite. Specimens submitted to the Geological Survey of Canada have been identified as brannerite in museum sized and shaped crystals. Some intergrown multiple crystals were also located. All of this mineralization was contained in float. No occurrences were located in bedrock.

A dating on one of these large crystals of brannerite by Teledyne Isotopes, Ltd., of Westwood, N.J. using uranium lead methods gave an indicated age of 742 million years. This would place the mineralization in the mid Hadrynian.

GEOCHEMISTRY AND RADIOMETRIC SURVEY

A 1600 m. long baseline was established by topofill and compass along the central line of the claims. Stations were marked along the base line at 100 m. intervals with 1 m. high lathe pickets. Soil samples and radiometric readings were taken on pace and compass cross lines extending 180 m. on either side of the base line stations.

Soil samples were obtained from a C horizon by digging a shallow pit with a grub hoe and were analysed at Chemex Labs Limited, North Vancouver, B.C. for copper, molybdenum and uranium. The uranium analyses was obtained by a standard fluorometric method on an ashed and double acidified minus 80 mesh fraction. Copper and molybdenum were determined using atomic absorption spectrometry of a nitric perchloric extraction of a minus 80 mesh fraction. All three minerals show a correlation of high values. These values are concentrated along the margin of the explosive gas breccia in an acidic or rhyolitic border phase. Molybdenum does not show as distinct a pattern as does copper and uranium but still follows the same trends. It is in the area of the highest uranium concentrations that the breccia is extremely gossanous and pyritic. The sulphides might indicate a reducing environment suitable for the deposition of uranium. The diorite vent is low in values for all of the metals tested. This would indicate that the mineralization was one of the last features.

The radiometric survey was carried out at the soil sampling stations with a McPhar TVI-A spectrometer used in the total count mode. Values were generally in the background range from 5,000 cpm. to 7,000 cpm. At a few isolated localities, off-scale or very high readings were located. These would seem to indicate point highs and do not delineate trends. For this reason radiometrics have not been contoured.

CONCLUSIONS AND RECOMMENDATIONS

No mineralization was located in outcrop. Mineralizations tended to be concentrated in large crystals or accumulations of brannerite widely spaced through the rock. The uranium would appear to be associated with fractures or shears and as no major porosity was located during the mapping, there would not appear to be a potential for tonnage on this property. The crystals of brannerite have been identified

by the Geological Survey of Canada as mineralogical curiosities. A number of these crystals were found weathered out and loose in the soil cover. Closer examination of the property might locate other pockets of these crystals such as those found in the region of 600 metres north along the base line. It is not considered that this property has potential for commercial tonnage or grade.

It is recommended that no further work be carried out on this property.

John T. R. Jones

APPENDIX "A"

A I R M A I L

July 13, 1976

Your file Votre référence

Our file Notre référence

Dr. Richard T. Bell
Geological Survey of Canada
General Delivery
Mayo, Y.T.

Dear Dick:

The specimen submitted with your letter of July 1st is a multiple crystal of brannerite.

The mineral is metamict but on ignition it yields an x-ray diffraction pattern typical for brannerite. Also, titanium and uranium were confirmed as the major elements by a qualitative x-ray fluorescence scan on a pulverized portion of the specimen. A copy of the XRF chart is enclosed.

Brannerite crystals of the size and quality you submitted are of rare occurrence, and would be highly desirable accessions for our mineral collection and for exchange. Would you please collect what you can for us? Also, from your knowledge of the occurrence do the crystals occur in sufficient abundance and quality that we should consider making a trip to the property to collect a quantity for the National Mineral Collection, if permission to collect were to be granted by the property owners?

Best regards,

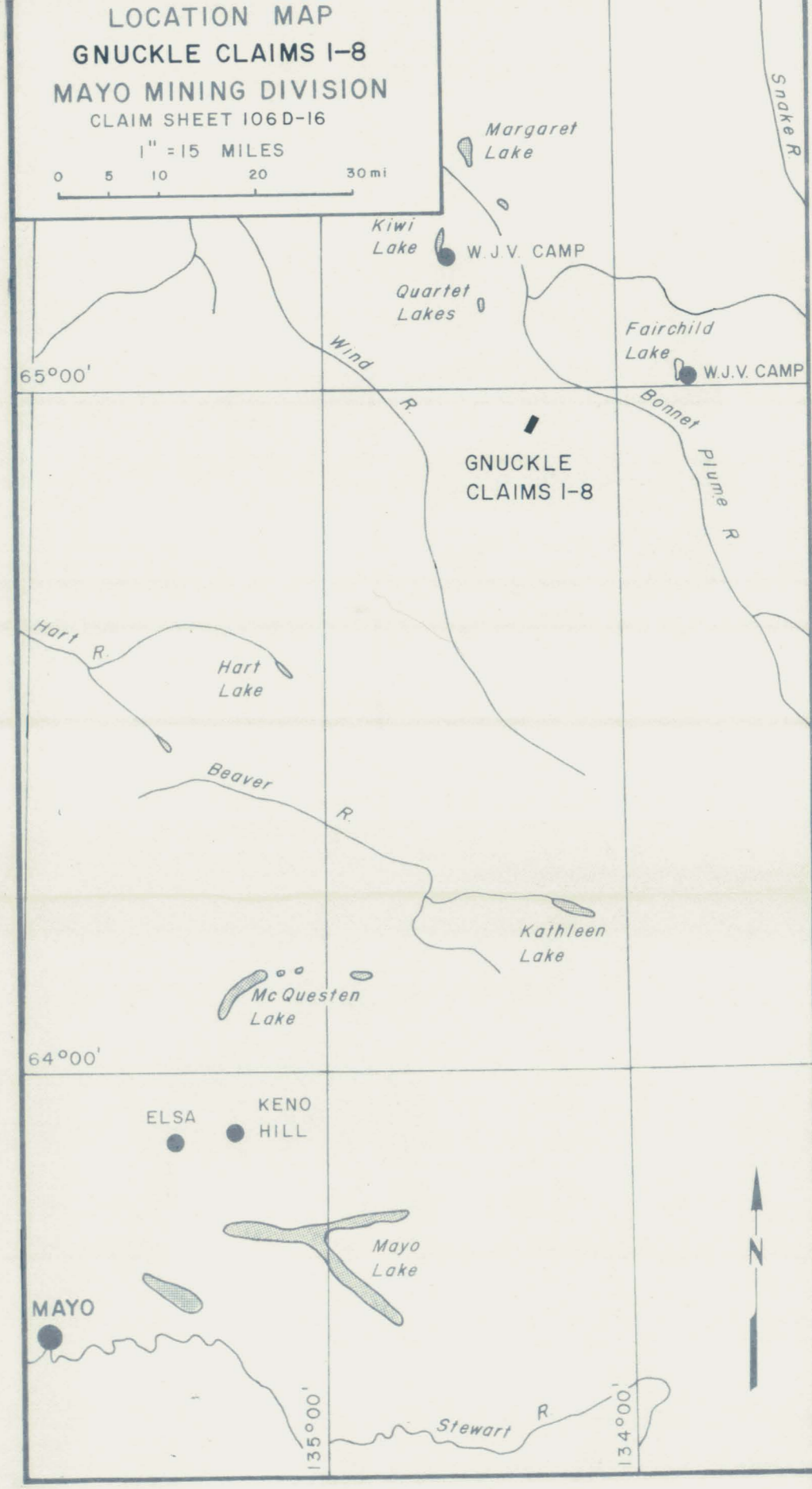
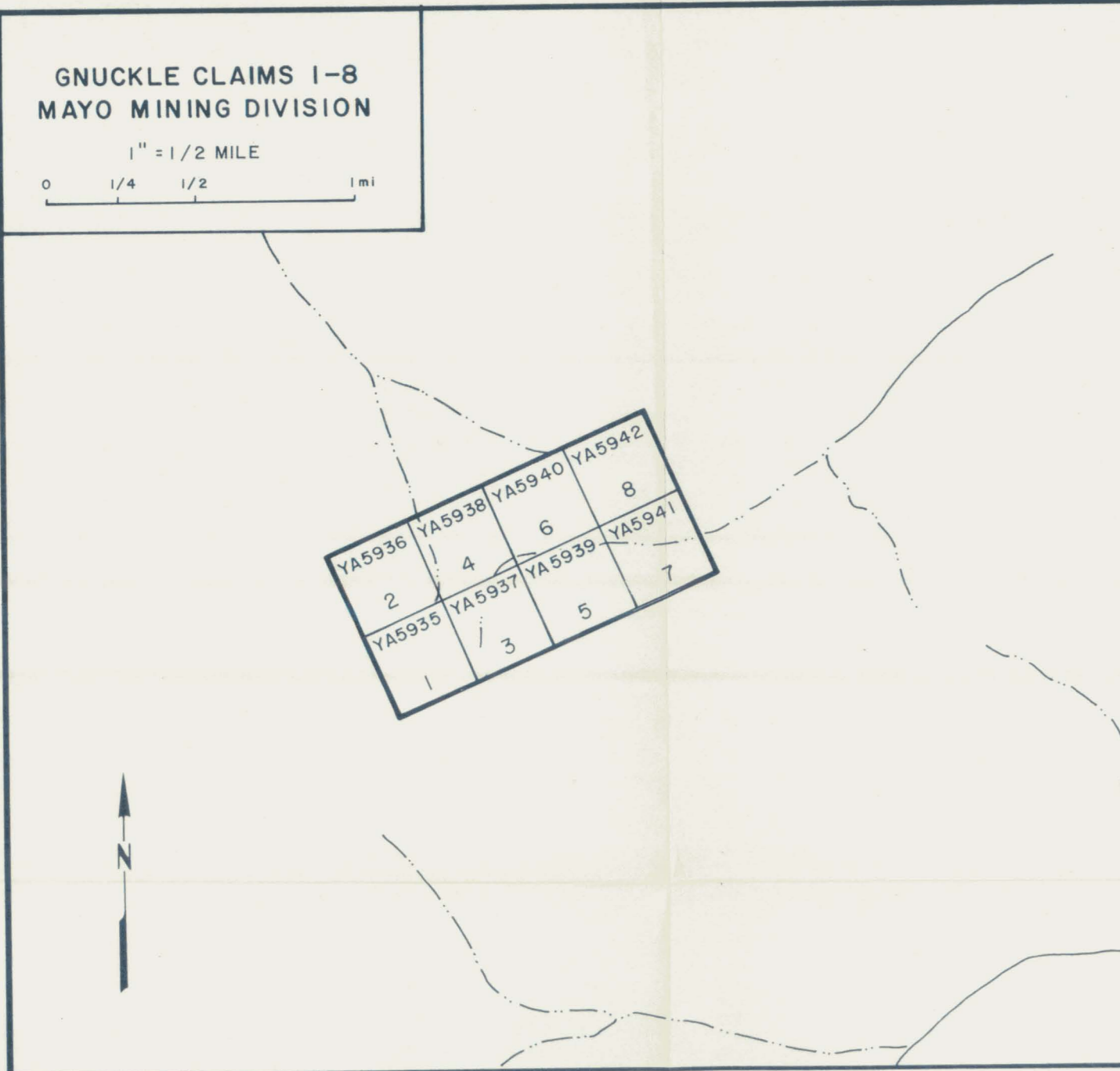
Yours sincerely,



H. R. Steacy

HRS/jc

Attachment



- LEGEND**
- 1 Argillite, siliceous, black, thin phyllitic cleavage
 - 2 Quartzite, argillaceous, slaty black to grey
Not as fissile as 1
 - 3 Diorite to dia-gabbro, vent material, assimilating
1 and 2 to form a breccia with fragments to
2 metres.
 - 4 Explosive breccia associated with 3. Clasts of
varying materials, may have a rhyolitic phase at
edges. Highly pyritic in places.
 - 5 Dolomite, cream, weathers deep orange brown.
- ~ Fault
 - ↗ Bedding, strike and dip.
 - Outcrop
 - - - Geologic contact
 - - - Talus line
 - - - Base line and claim line
 - ~ Creek
 - Specimen station
 - X Radioactive boulders and crystals greater
than 30,000. McPhar TV 1-A

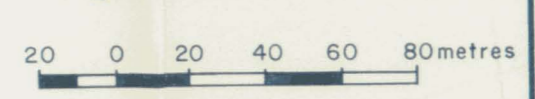
Figure G1 ARCHER, CATHRO & ASSOC.

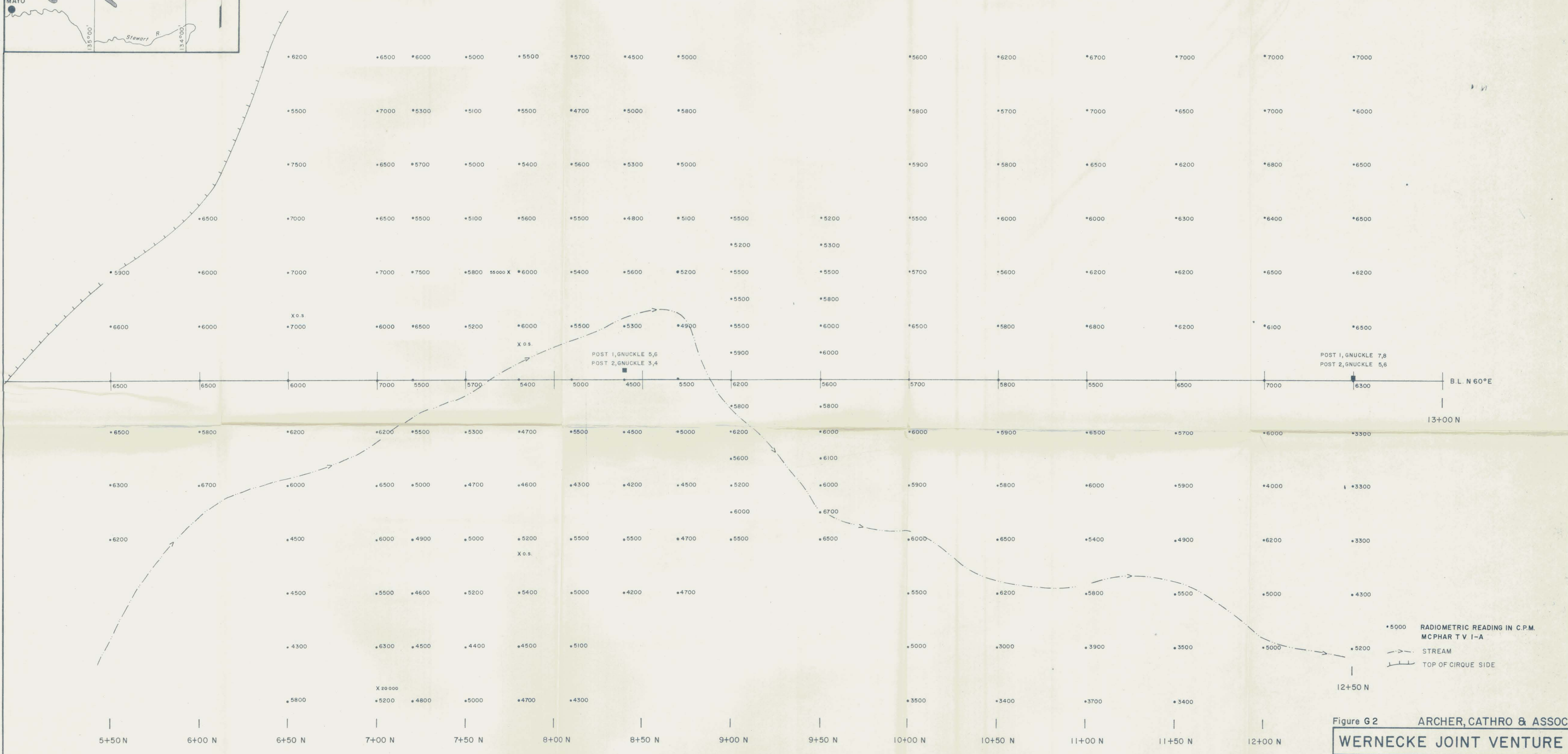
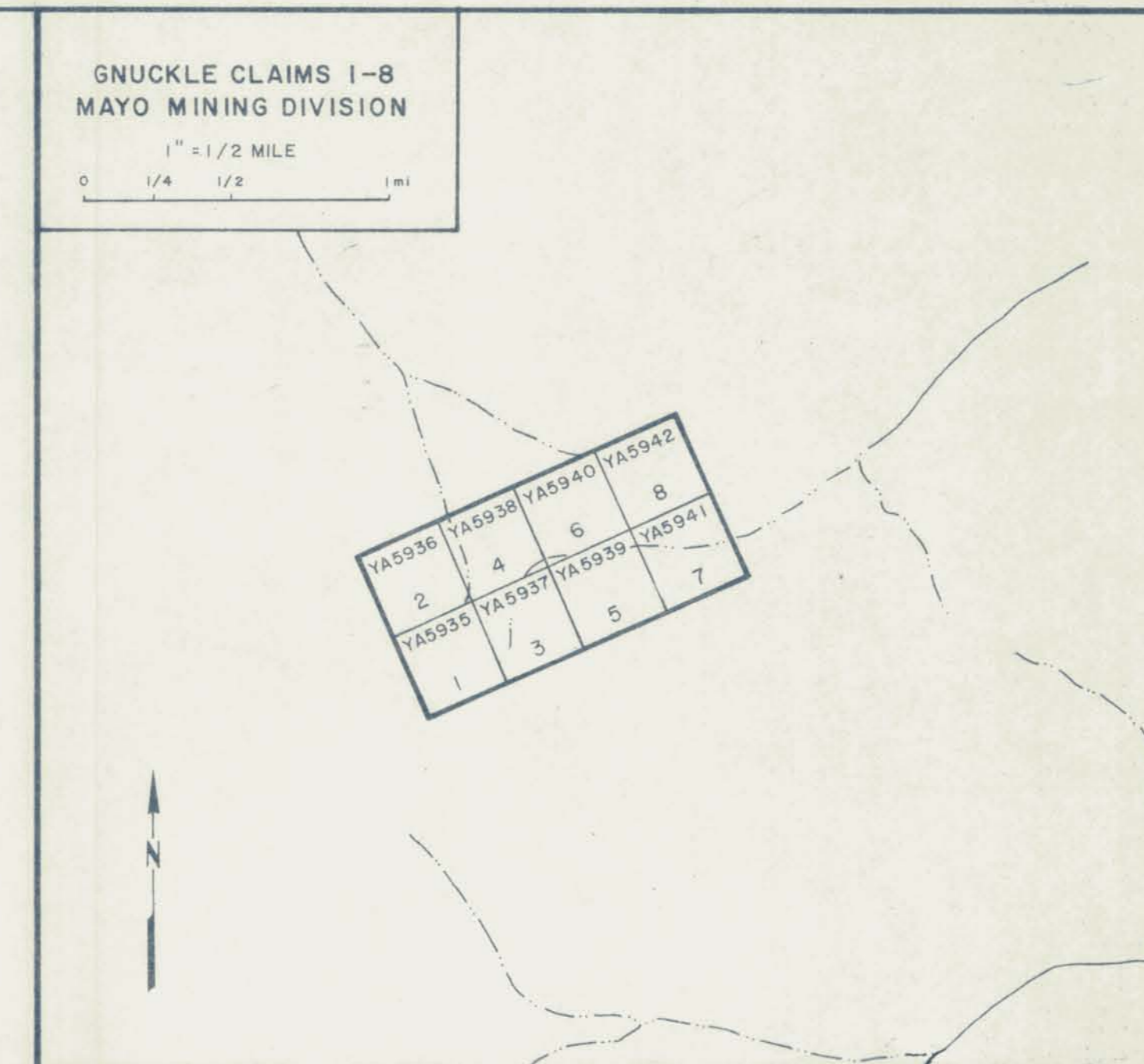
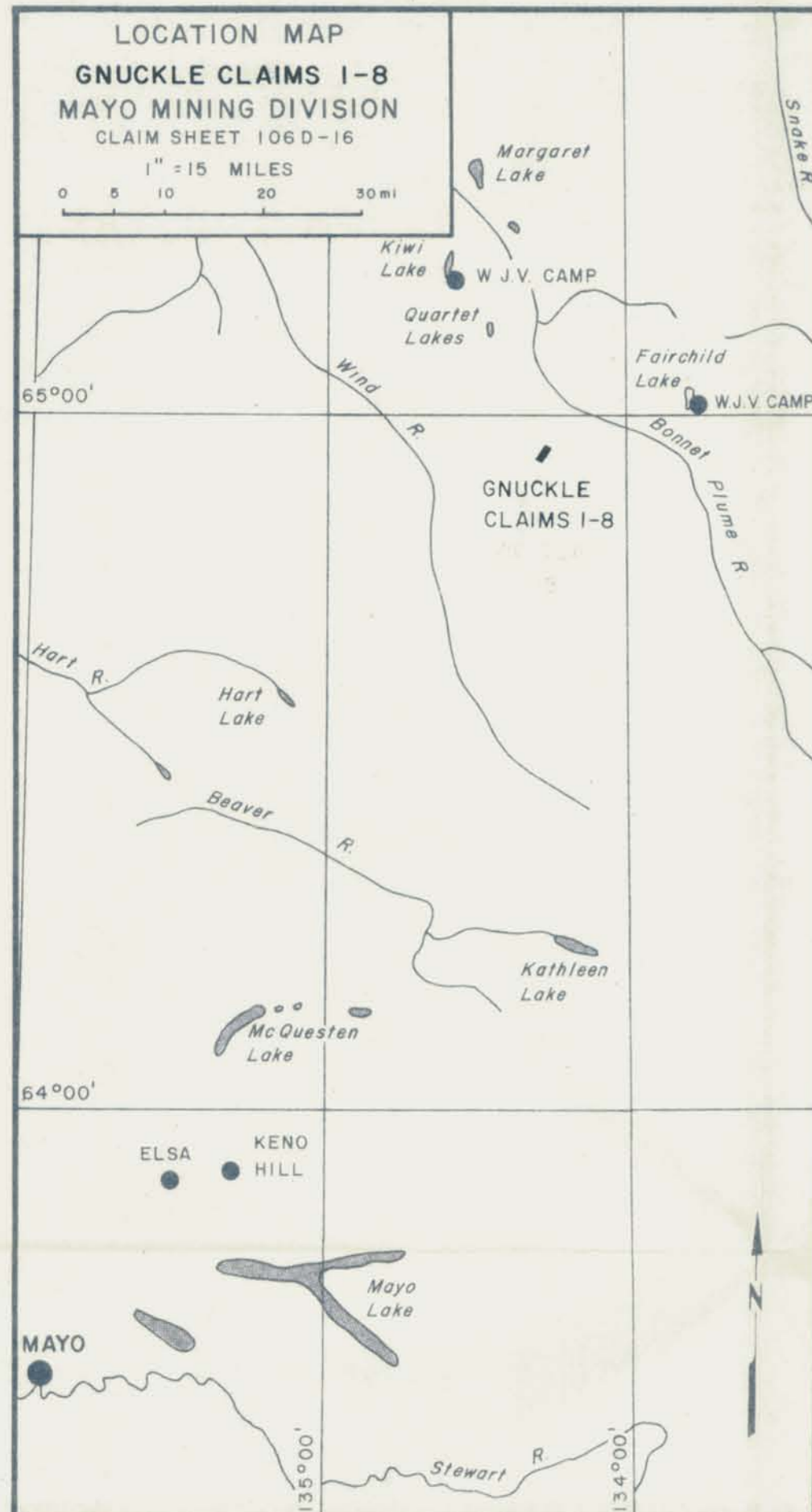
WERNECKE JOINT VENTURE

GEOLOGY
of
Gnuckle Claims 1-8
1 cm = 20 metres

TO ACCOMPANY REPORT DATED 30/10/76

DATE July, 1976 C.J. RILEY





*5000 RADIOMETRIC READING IN C.P.M.
 MCPHAR TV 1-A

— STREAM

— TOP OF CIRQUE SIDE

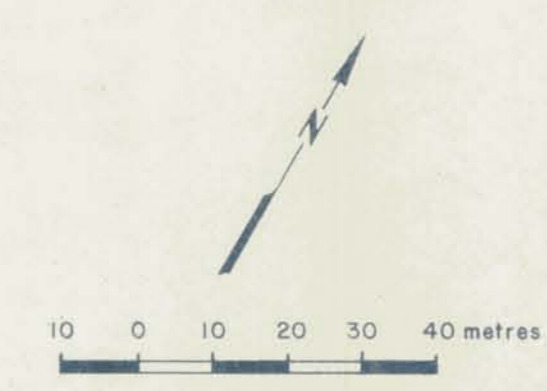
Figure G2 ARCHER, CATHRO & ASSOC.

WERNECKE JOINT VENTURE

RADIOMETRIC SURVEY
 of
 Gnuckle Claims 1-8
 1 cm = 10 metres

TO ACCOMPANY REPORT DATED 30/10/76

DATE : July 1976 C. J. RILEY



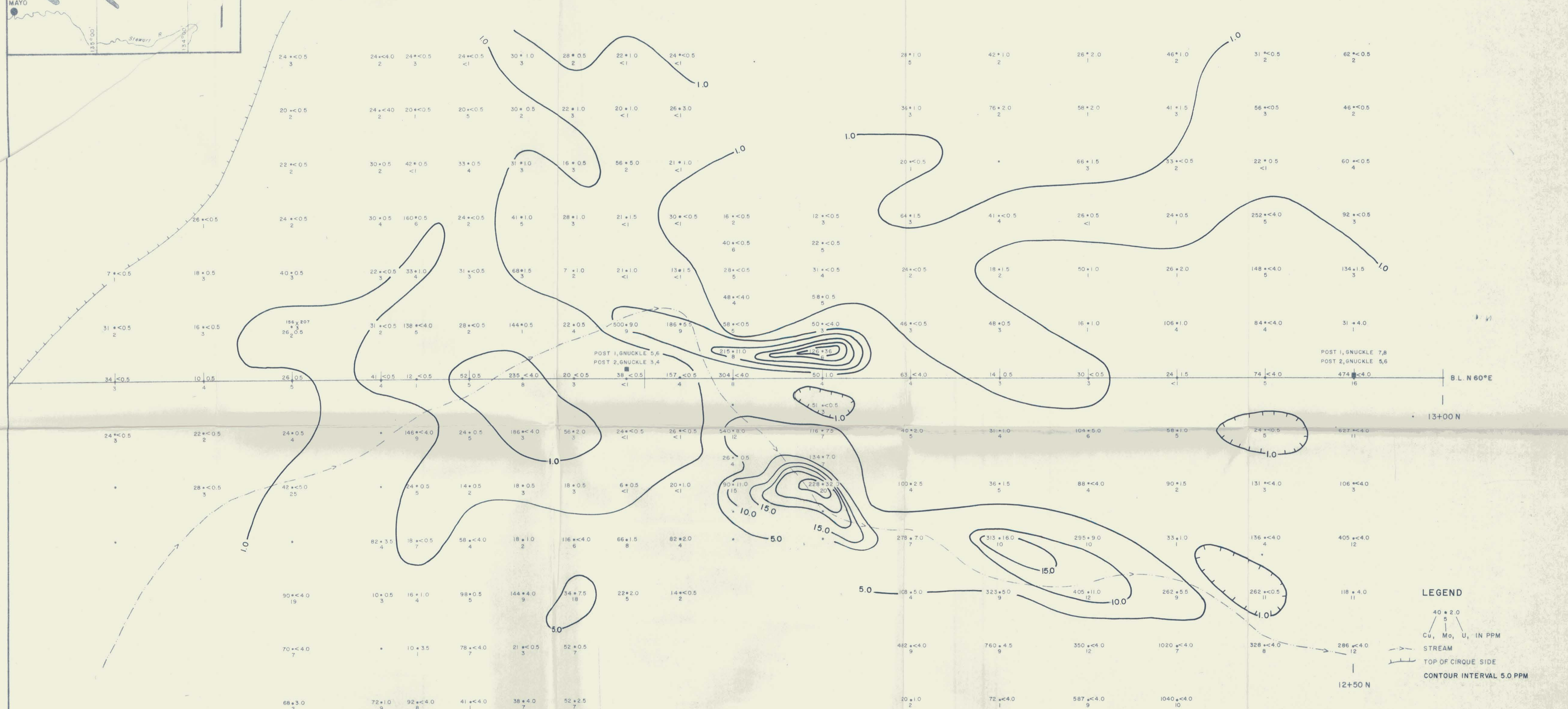
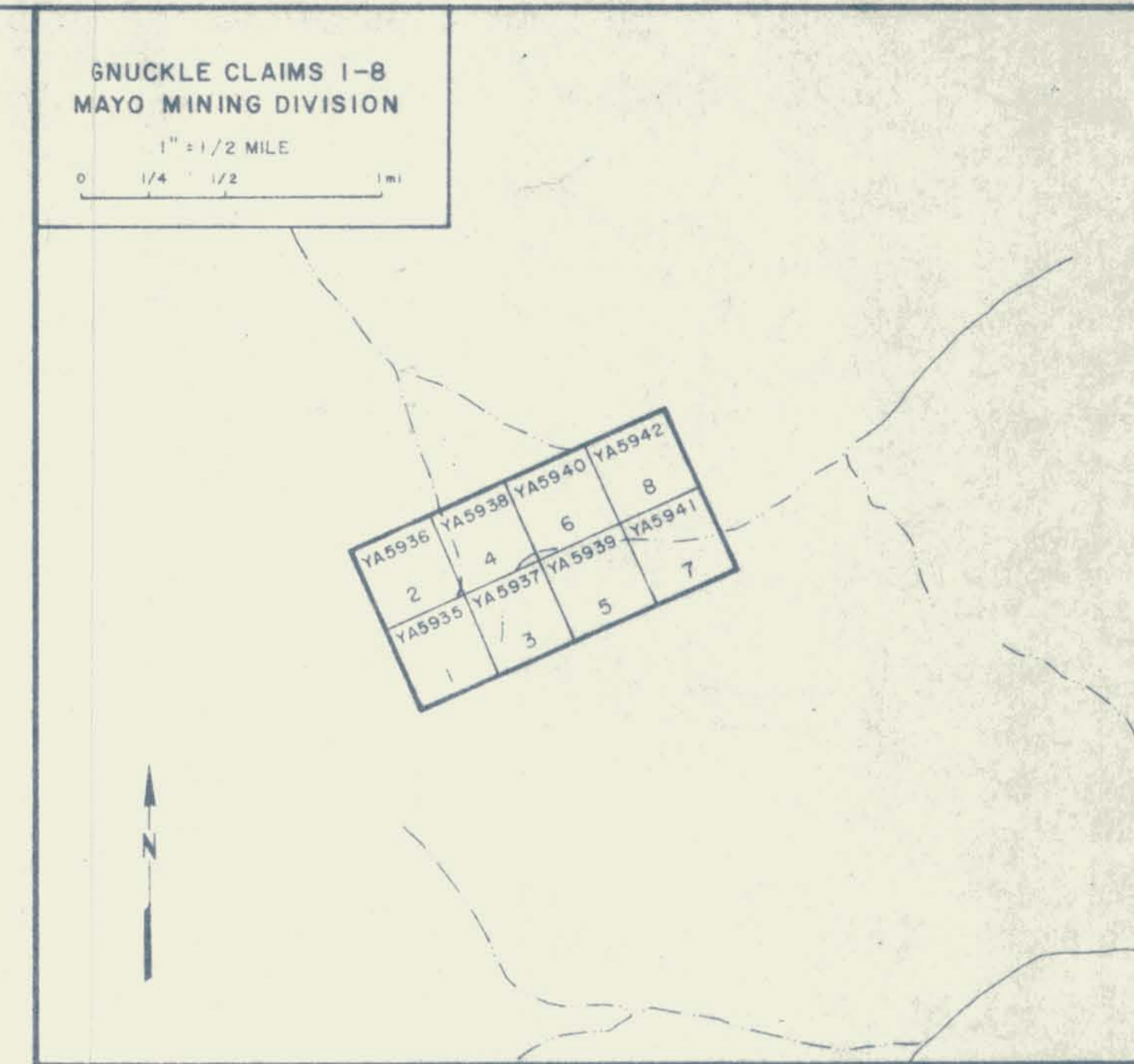
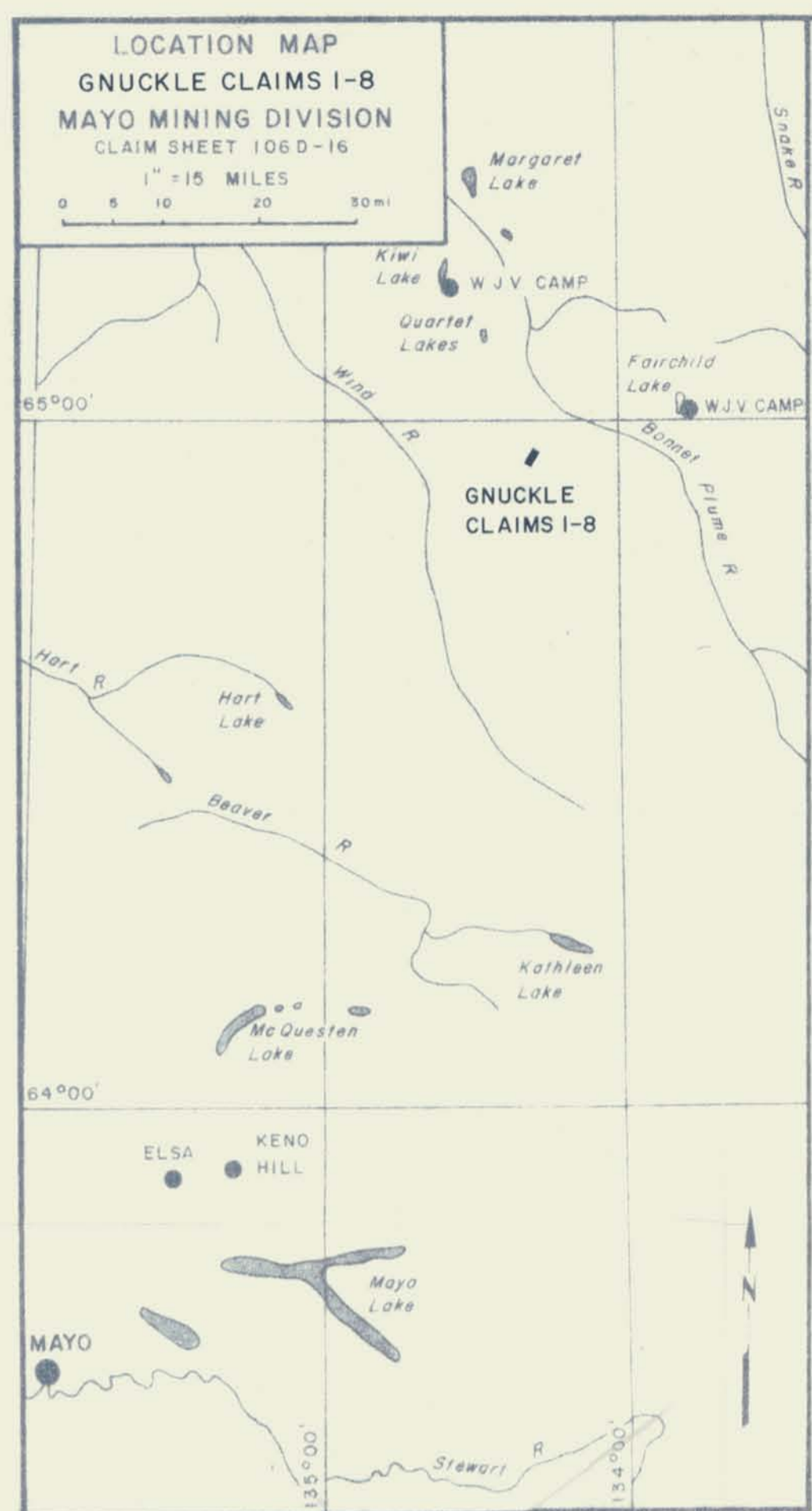


Figure G3 ARCHER, CATHRO & ASSOC.
WERNECKE JOINT VENTURE
GEOCHEMISTRY
 of
 Gnuckle Claims 1-8
URANIUM
 1 cm = 10 metres
 TO ACCOMPANY REPORT DATED 30/10/76
 DATE: July 1976 C. J. RILEY

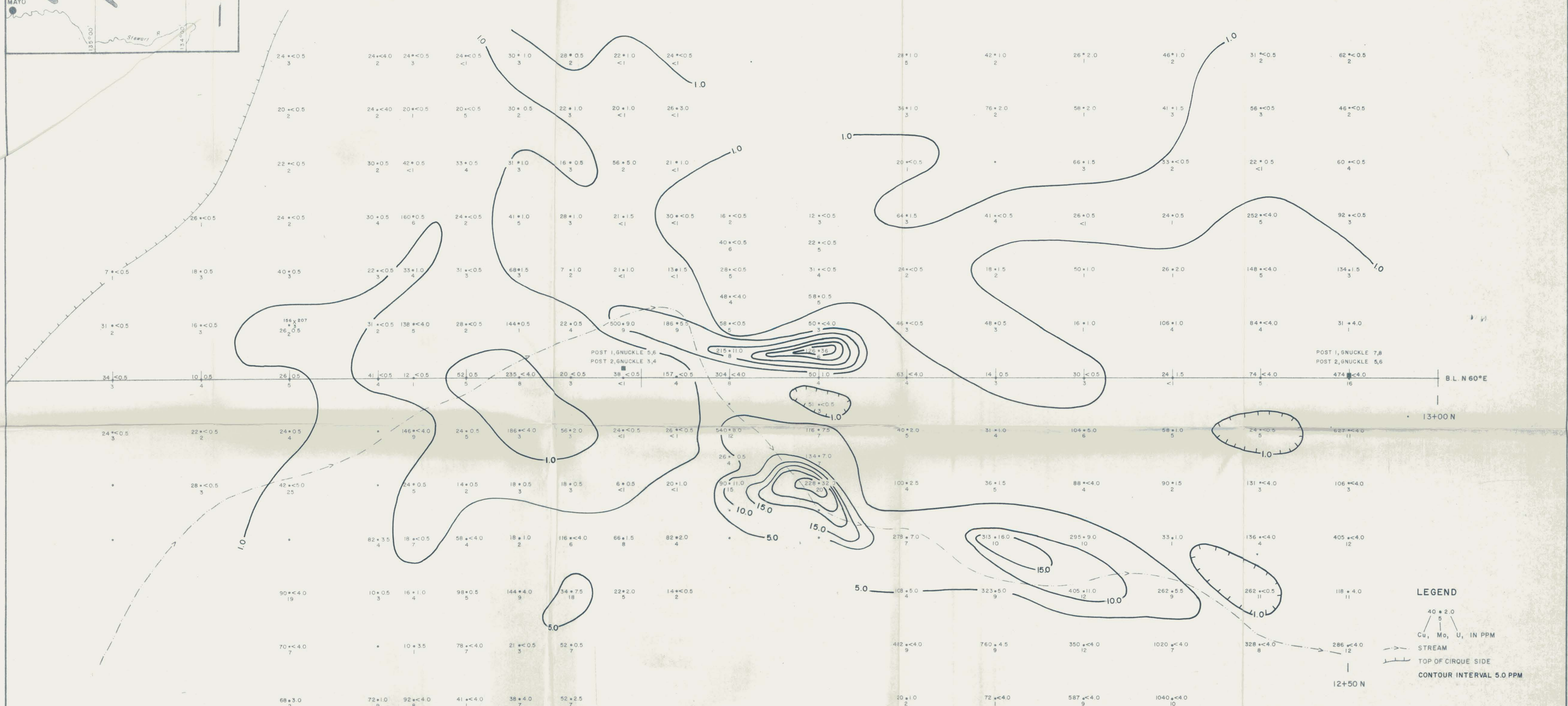
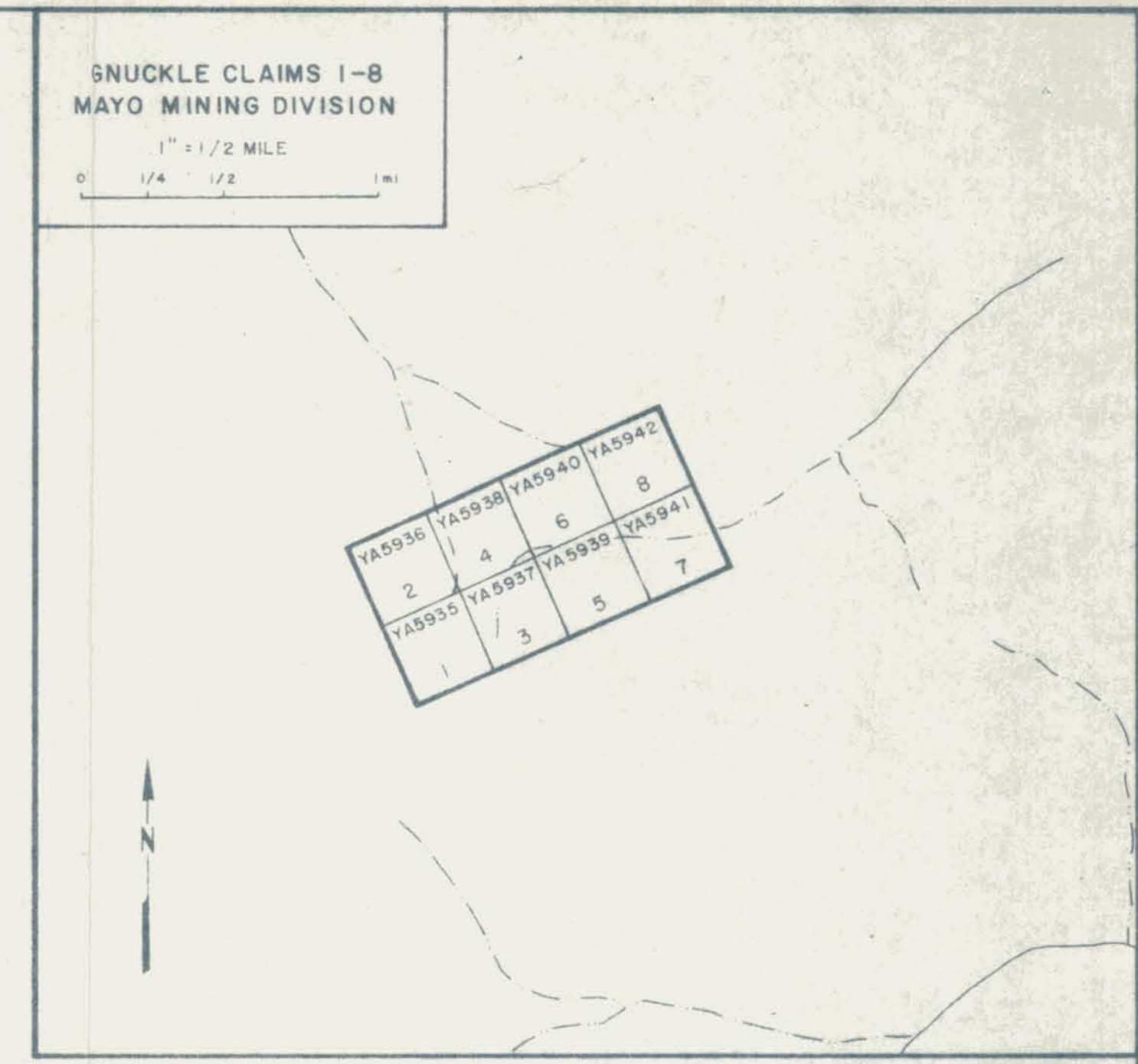
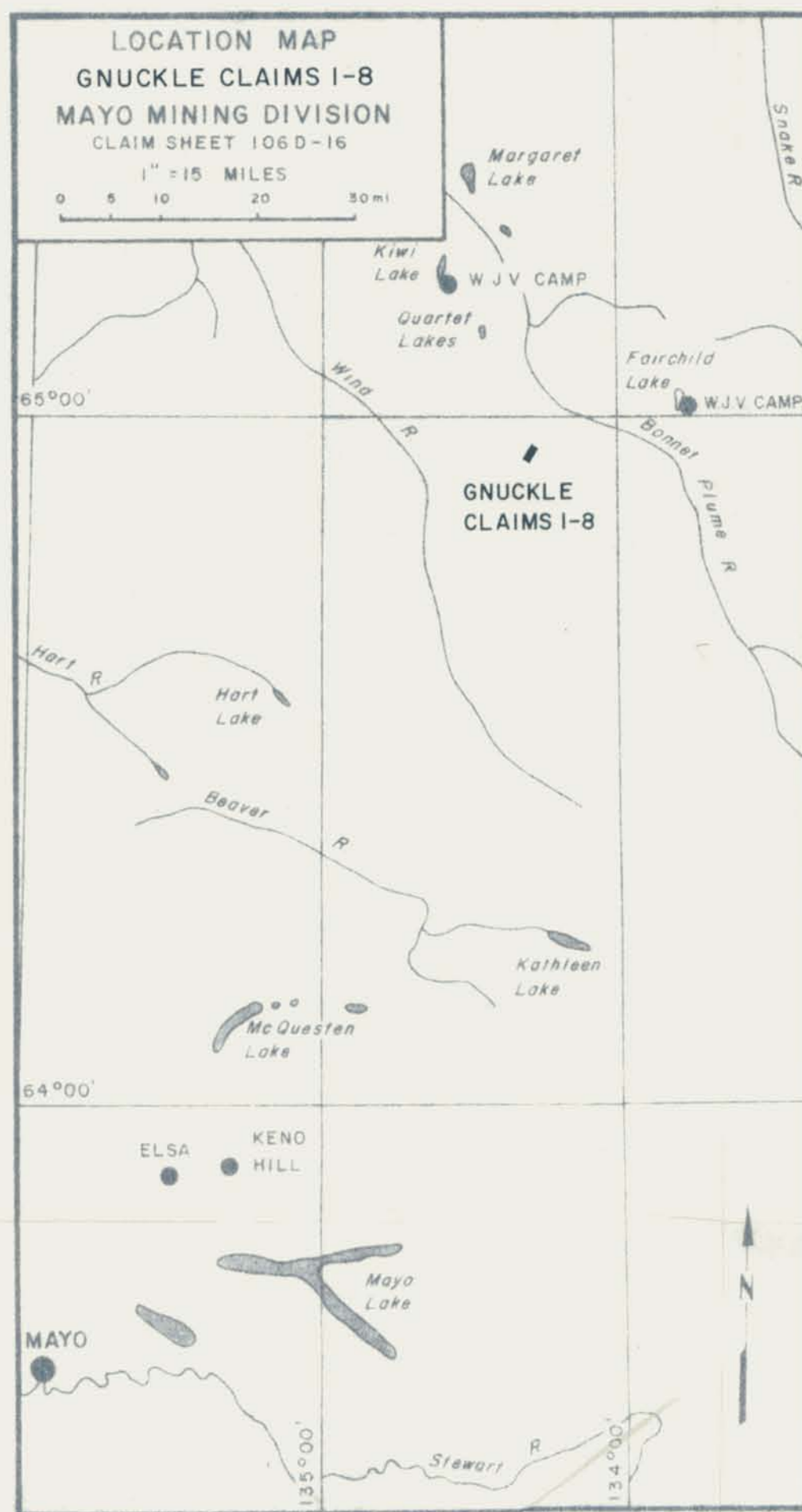


Figure G3 ARCHER, CATHRO & ASSOC.
WERNECKE JOINT VENTURE
GEOCHEMISTRY
 of
Gnuckle Claims 1-8
URANIUM
 1 cm = 10 metres
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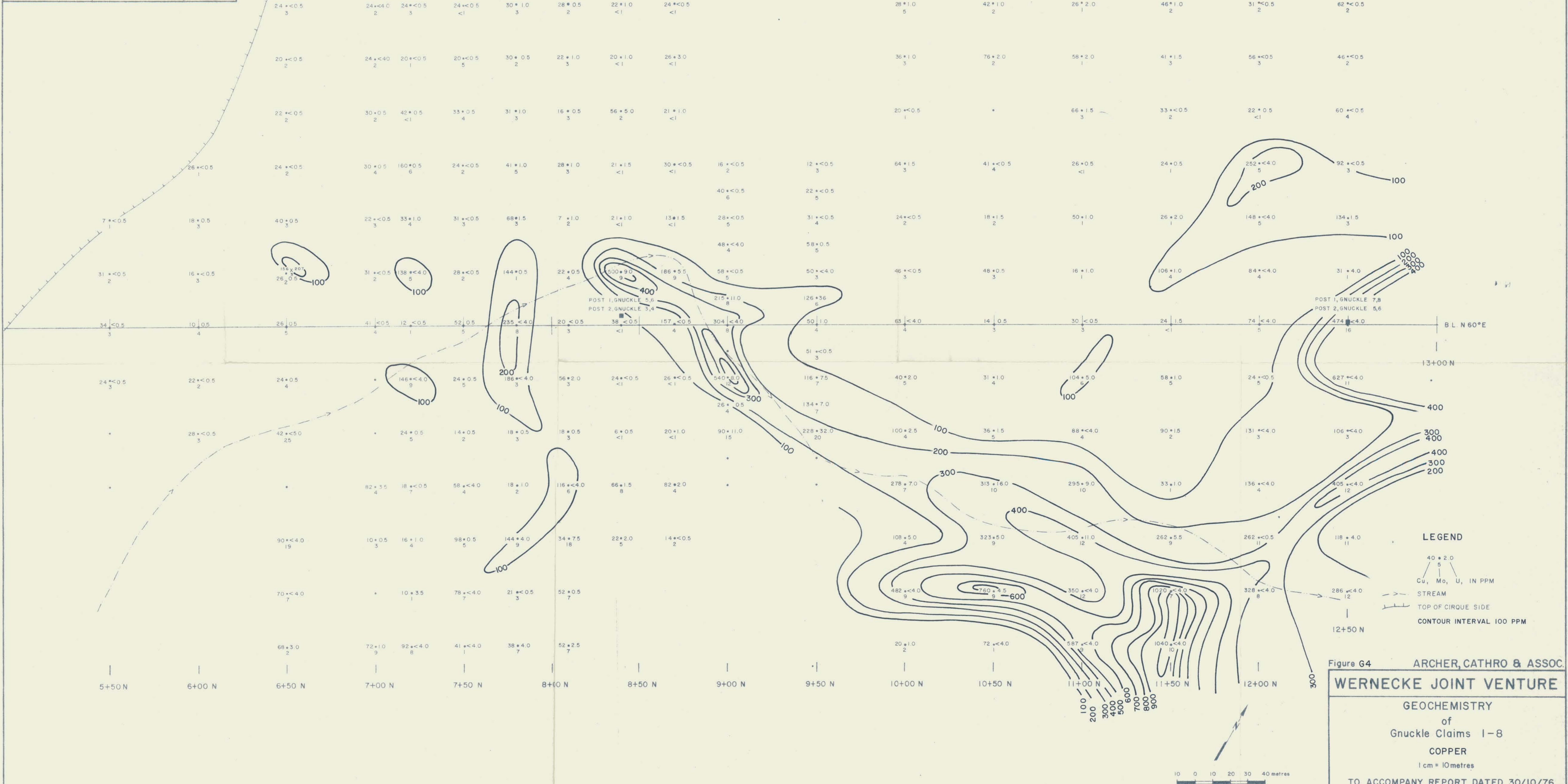
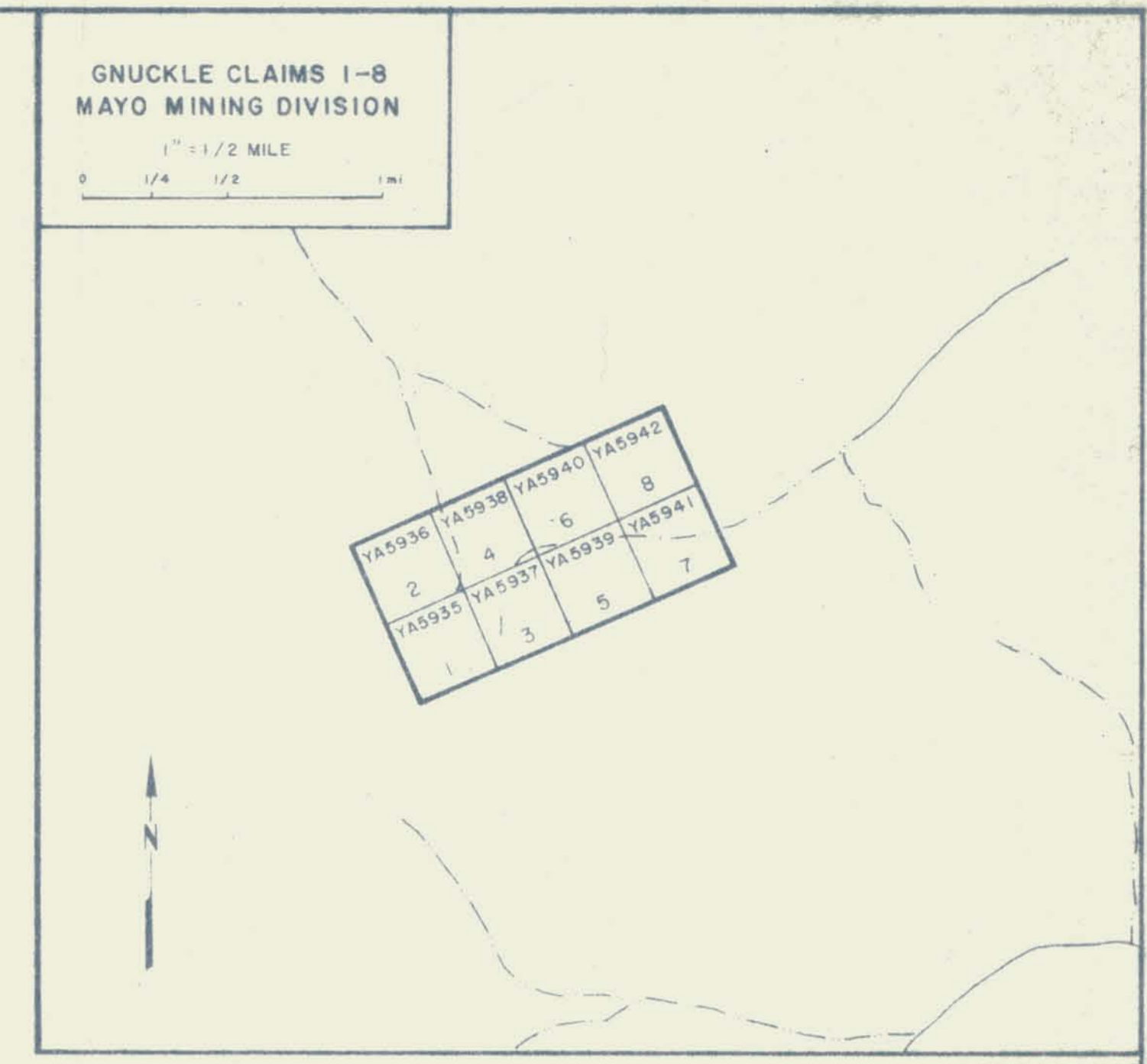
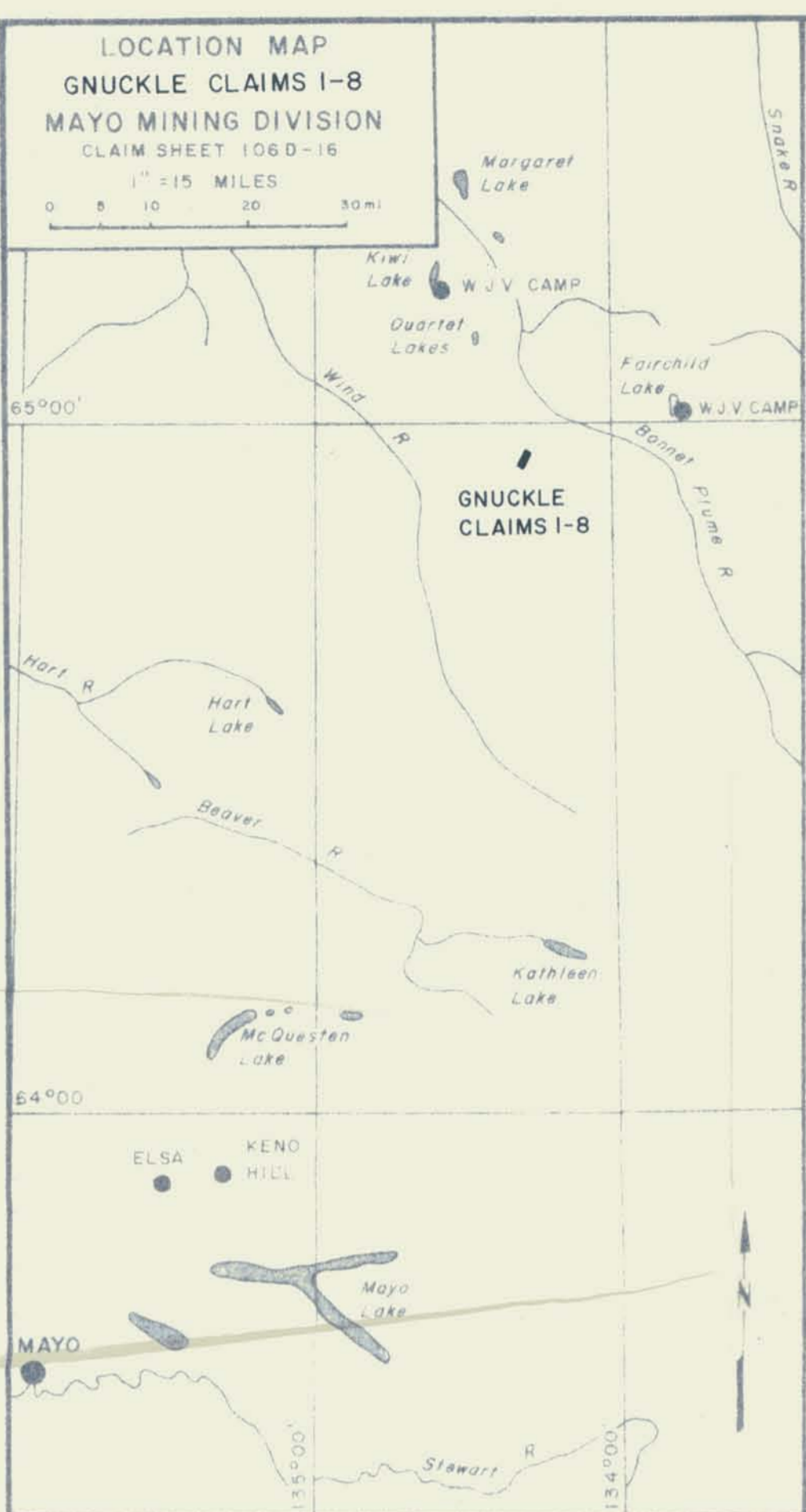


Figure 64 ARCHER, CATHRO & ASSOC.
WERNECKE JOINT VENTURE
 GEOCHEMISTRY
 of
 Gnuckle Claims 1-8
 COPPER
 1 cm = 10 metres
 TO ACCOMPANY REPORT DATED 30/10/76
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