GEOLOGY AND GEOCHEMISTRY
ESS 1-48 CLAIMS
MAYO MINING DISTRICT, Y.T.
CLAIM SHEET 1050/1

Lat. 63°05'N　　　　Long. 130°18'W

R.J. Cathro, P.Eng.

090293

This report has been examined by the Geological Evaluation Unit and is recommended to the Commissioner to be considered as representation work in the amount of

8100.00

Chief Geologist or
~~Resident Mining~~ Engineer

Considered as representation work under Section 53 (4) Yukon Quartz Mining Act.

B. R. BAXTER
Supervising Mining Recorder

Commissioner of Yukon Territory

ARCHER, CATHRO
AND ASSOCIATES LTD.
CONSULTING GEOLOGICAL ENGINEERS

BOX 4127, WHITEHORSE, Y.T. Y1A 3S9 667-4415 STANDARD BUILDING, VANCOUVER, B.C. 688-2568

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V6B 1L8

REPORT ON
GEOLOGICAL MAPPING
AND
GEOCHEMICAL SURVEYS

ESS 1-48 CLAIMS
ITSI JOINT VENTURE

MAYO MINING DISTRICT, Y.T.
CLAIM SHEET 105O/1

Latitude 63°05'N Longitude 130°18'W

R.J. CATHRO, P.Eng.
JANUARY 25, 1978

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APPENDIX

FIGURES

INTRODUCTION

The Ess claims were staked by Itsi Joint Venture (Union Oil Co. of Canada Ltd., Aquitaine Co. of Canada Ltd., and St. Joseph Exploration Ltd.) in February, 1977 to protect an area underlain by the Canol Formation near the stratiform, barite hosted, Tom and Jason lead-zinc deposits. No mineralization has been found on the property but the area is considered to be favourable because the geologic setting is apparently the same as that of the known deposits located to the northeast.

The area was outlined and explored on behalf of Itsi Joint Venture by an Archer, Cathro crew led by Trevor Bremner under the direct supervision of the writer. Field work in 1977 consisted of preliminary geological mapping and prospecting, geochemical surveys and a test EM survey between August 15 and August 30. Field personnel consisted of geologists Trevor Bremner and assistants Mike Maser and Grant Lowey. The work was performed from a basecamp on the Canol Road at MacMillan Pass.

The test EM survey was conducted by Grant Hendrickson of Aquitaine over the Tom and Jason deposits and the Ess claims. This survey utilized a five frequency Maxmin II, which is a horizontal coplanar loop instrument operated in the metric mode. The method proved to be a very useful mapping tool although it could not differentiate between the response from sulphides and graphitic shale. The results of this survey with profiles of the test lines are described in a separate report dated October, 1977 that is appended to this report.

PROPERTY, LOCATION AND ACCESS

The Ess property consists of 48 contiguous claims which form an L-shaped block along Hess Creek at 63°05'N and 130°18'W. The Canol Road passes within 5 km of the property and the MacMillan Pass airstrip is situated 9 km to the northeast of it. Access is by helicopter or foot only. The Canol Road is open to traffic in the summer and helicopters have been available for casual charter from MacMillan Pass airstrip for the last two years. The nearest permanent settlement is Ross River, located 250 km to the southwest.

The claims are registered at Mayo in the name of Archer, Cathro and Assoc. Ltd. with tag numbers YA14847 through YA14894. They expire on February 21, 1978.

GEOLOGY AND GEOMORPHOLOGY

The Ess property is situated within the Selwyn Mountains, where peaks commonly reach elevations of greater than 2000 m and locally greater than 3000 m. With the exception of the higher peaks, local relief is about 600 to 700 m or less and terrain is relatively subdued and gentle. Main valleys within the central part of the range are U-shaped with truncated spurs below elevations of about 1800 m. Valleys in low areas along the edge of the range are generally broad and poorly defined. The Ess claims are situated below timberline along the floor of the U-sahped glaciated valleys of Hess Creek. Local relief is about 700 m.

The region has been covered by two or more continental ice sheets, one of which reached a minimum elevation of about 2200 m. Younger, less extensive valley and alpine glaciers also covered much of the area. Small glaciers still occur on some of the higher peaks, notably the Itsi Range and Keele Peak.

Glacial deposits in the district tend to be rather thin and discontinuous in the mountains and are most common on the floor of the main valleys. Above timberline, particularly in places where the effects of younger glaciation are weak or absent, fissile rocks such as shale have been severly frost shattered into fine felsenmeer and talus. The floor of the Hess creek valley is covered by an extensive blanket of fluvial and glacial till and outcrop is confined to a few stream cuts. The thickness of the till probably varies sharply from a few metres to several tens of metres. Outcrop and felsenmeer are extensive along the margins of the valley above timberline at elevations of about 1700 m.

The geology of the property is shown at a scale of 1" = 1/2 mi on Figure E-1 (in pocket). The Table of Formations on the following page shows the various map units in the vicinity of the property.

The Ess property is situated along the eastern margin of Selwyn Basin, which comprises a varied sequence of clastic and carbonate rocks that range in age from Upper Proterozoic through Upper Paleozoic. Clastic rocks of the Hadrynian Grit Unit are the oldest in the vicinity. Shale and chert of the Ordovician, Silurian and Devonian Road River Formation are the next youngest group.

The property itself is underlain by clastic rocks of the Middle Devonian through Mississippian Canol and Imperial Formations. Black, thin bedded chert, fetid limestone and carbonaceous, slightly calcareous shale of the Ordovician to Lower Devonian Road River Formation (unit Ral) are unconformably overlain by the Canol Formation. Because of the very recessive nature of Road River sediments, the precise nature of this contact is not known. Field evidence suggests that relief along the unconformity is subdued, probably indicating scouring by deposition of overlying clastic rocks rather than uplift and subsequent erosion by subaerial exposure.

TABLE OF FORMATIONS

RECENT

Q	Unconsolidated alluvial and glacial till

CRETACEOUS

Kg	Granitic stocks and quartz-feldspar porphyry dikes; mostly quartz monzonite in composition

MISSISSIPPIAN TO PERMIAN (?)

IMPERIAL FORMATION

Ist	Buff to brown weathering, light to medium grey siltstone and calcareous siltstone; shale content increases upward to 10%; beds up to 1.5 m but mostly 10-20 cm thick; cross-bedded with pervasive climbing cross ripple laminations; well developed slaty cleavage; contains a quartzite unit near top

LOWER DEVONIAN TO MISSISSIPPIAN

CANOL FORMATION

Cst v	Grey pinstripe weathering non-calcareous siltstone; contains light to dark grey vesicular to porphyritic volcanic layer up to 3m thick near base and white oval barite concretions in 3m bed near top; commonly bioturbated, with shallow water features such as mudcracks and red beds seen to northeast
Csh	Black, carbonaceous, silvery blue weathering shale with minor interbedded cherty argillite, chert and black fetid limestone; a zone of bedded barite up to 70m thick with local zinc-lead deposits occurs about 30m above base, overlain by thin pyrite laminations in shale
Ct	Massive, blocky and resistant weathering chert pebble conglomerate, minor turbidites, rhythmites and cherty argillite

ORDOVICIAN TO LOWER DEVONIAN

ROAD RIVER FORMATION

Ral	Light grey weathering, black silty and cherty argillite; graptolitic with thin carbonaceous laminae, contains orange weathering, greenish grey volcanic flow or tuff horizon up to 6 m thick and micritic limestone bed up to 10m thick near top

PROTEROZOIC

H	Undifferentiated phyllite and grits

Unit Ct forms the base of the Canol Formation and consists of interbedded siltstone and shale overlain by massive, resistant chert pebble conglomerate. The conglomerate varies from 30 to 300 m in thickness and is composed mainly of well rounded chert clasts that range in size from sand to cobbles. Poor sorting, lack of sedimentary structures and massive nature, supported by modal analyses of grain size, suggest that the conglomerate was emplaced in a single event as a large debris flow. Uplift, exposure and subsequent erosion of the cherts of the Road River Formation within a portion of Selwyn Basin to the southwest of MacMillan Pass has been suggested as a possible source terrane.

Unit Ct is overlain by Unit Csh, which includes black, carbonaceous, silvery-blue weathering shale with minor interbedded cherty argillite, chert and black fetid limestone.

The unit varies abruptly in thickness from 100 m or less over 1000 m and is at least 800 m thick on the Ess claims. Unit Csl is thickest in the vicinity of the Tom and Jason lead-zinc deposits and a genetic relationship between thickness and mineral deposits has been proposed by some workers. A bedded barite horizon that ranges up to 70 m in thickness occurs about 30 m above the base of the unit. The barite is host to the Tom and Jason deposits.

Fine grained, disseminated pyrite commonly occurs within the argillites but is leached from most surface exposures. Pyrite occurs as numerous thin layers of disseminated fine grains up to 1 mm thick that are spaced at intervals of 2 to 10 cm. In an outcrop on the bank of Hess Creek near the middle of the claim group, one particularly continuous and massive bed about 10 cm thick is also present (Figure E-7). It consists of very fine grained to medium grained pyrite laminae varying in thickness from 0.1 to 1.6 mm that are interbedded with fine shale partings.

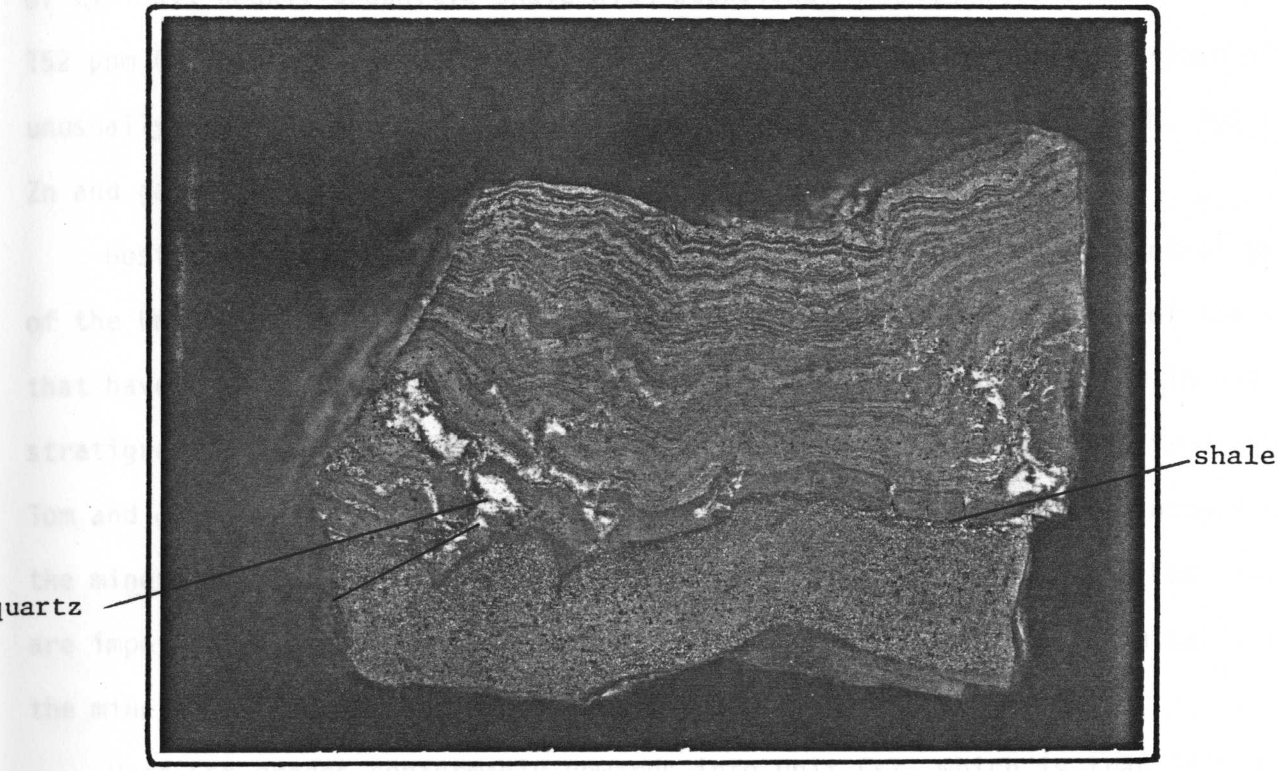

Figure E-7 Specimen of finely laminated massive pyrite from Canol Formation shales underlying the Ess claim group.

Small quartz lenses occupy dilatant zones caused by small scale folding and dislocation. A representative specimen of the main 10 cm wide bed assayed 10 ppm Cu, 10 ppm Pb and 40 ppm Zn and showed a loss-on-ignition (LOI) of 0.5%. A specimen of typical, weakly graphitic shale with occasional 1 mm pyrite laminae assayed 152 ppm Cu, 6 ppm Pb and 375 ppm Zn with a LOI of 10.4%. A nearby horizon of unusually sooty, black carbonaceous shale assayed 152 ppm Cu, 4 ppm Pb, 260 ppm Zn and gave a LOI of 1.4%.

Host rocks to this mineralization are phyllitic shales of the central part of the Unit Csh, approximately 800 m stratigraphically below the top of the unit, that have been exposed in the axis of a major anticline. This is the lowest stratigraphic level in unit Csh seen in the MacMillan Pass area away from the Tom and Jason properties. A thin bed of black, fetid limestone also occurs near the mineralization. The limestone and pyritic outcrops found on the Ess claims are important because similar rocks occur less than 200 m stratigraphically above the mineralized barite horizon on the Tom and Jason properties.

Unit Csh grades conformably upwards into Unit Cst, which is transitional with the base of the Imperial Formation. This unit is dark grey, finely laminated and phyllitic at the base and changes to siltstone or argillite of highly variable colour near the top. On the nearby Moonlight property, this unit is unusually grey. The colour variation is interpreted as rapid fluction from oxidizing to reducing deposition in shallow water. The argillite consists of fine, angular, silt-sized material composed mainly of quartz, feldspar and black chert or argillite fragments. The transitional unit changes upwards into several hundred feet of thick bedded, black silty sandstone that weathers pale yellow-brown and forms talus blocks up to two feet in length. Cross bedding is common and consistently shows southerly directed current direction.

Mid-Cretaceous granitic rocks of intermediate composition form batholiths and plutons that are generally resistant to weathering and make up many of the higher mountains. The granitic rocks cut regional structures but commonly produce local domes or arches within enclosing rocks. Near the intrusions, penetrative schistose fabrics are common within older metamorphosed rocks and hornfels haloes have been produced in the younger units. None of the rocks underlying the Ess claims are obviously metamorphosed by the granitic rocks.

STRUCTURE

Structures near the Ess claims are dominated by a series of broad, open, northwest trending folds about 1/2 mile across. These structures are accompanied by a steeply dipping, penetrative, axial plane cleavage. The most important of these structures is the anticline located along the headwaters of Hess Creek. The oldest rocks in the immediate area occur within the core of this structure. A number of smaller scale northeasterly trending folds deform the northwesterly trending structures and may be younger and related to the deformation that accompanied the emplacement of the granitic rocks.

GEOCHEMISTRY

Introduction

The geochemical survey of the Ess claims included analysis of 49 soil samples and 33 silts for lead, zinc and copper and 45 stream water samples for pH, Zn and SO_4. The soil and silt assays are plotted on Figure E-2 (lead), E-3 (copper) and E-4 (zinc). Water analyses are plotted on Figures E-5 and E-6.

Analytical Procedures

The analyses were performed at Chemex Labs Ltd., North Vancouver, B.C. Standard procedure for each soil and silt sample consisted of screening to minus 80 mesh screen size, digestion in nitric-perchloric acid and analysis for copper, lead and zinc by atomic absorption spectrometry.

The analytical procedure used on the water samples in 1977 was as follows. Following pH measurement in the field and shipment to the lab by air freight, the samples were carefully vacuum filtered through Watman GF/c 0.45 micron glass-fibre paper. The filtrate was returned to the original bottle and was retained, along with the filtered residue, for possible future analysis. An aliquot of the filtrate was then assayed for SO_4 content, adjusted to a pH of 2.5 to 3.0 with the addition of 3M HNO_3 and analyzed for zinc using the APDC/MIBK method, in which the element was chelated or complexed with ammonia pyrrolidine dithiocarbamate (APDC) and extracted into the organic solvent methy isobutyl ketone (MIBK). After the organic and aqueous phases separate, the metal content of the MIBK fraction was determined by AAS.

Soil and Silt Results

Silt, soil and rock samples from the Ess claims assayed uniformly low in lead (Figure E-2) and copper (Figure E-3). Zinc assays (Figure E-4) were also low except for a few silt samples in the range 200 to 410 ppm that are almost certainly caused by precipitation of dissolved zinc due to pH change.

Water Sampling Results

Regional orientation surveys conducted by IJV in 1976 and 1977 have shown that water is the only sampling medium that gives a strong Zn contrast from the

Canol Formation. It was discovered that most of the lead in water samples can be removed by filtering and is therefore transported mainly as particles in suspension and not as a complex. Therefore, although lead is a useful element for detecting exposed deposits from which clastic material is directly shed into stream silt, it is not useful for detecting buried deposits. This does not hold true for zinc, which is so soluble at low pH levels that it will not show up in silt in anomalous quantities for a considerable distance downstream even where waters are strongly anomalous.

Although there is still much to be learned about the interpretation of the data, a combination of water testing for pH, SO_4 and Zn and silt sampling for Pb appears to provide the best approach possible with existing technology for detecting the presence of buried, oxidizing sulphide concentrations. Interpretation is hampered by insufficient case history data on the relative importance of the various water parameters (e.g. SO_4 vs pH) and the factors that inhibit water response from some units, such as the Road River argillite. This data will only become available when more water anomalies have been drilled and when more whole rock analyses are completed on the shale units.

Water sample results are plotted on Figures E-5 and E-6. Several strong acidic waters were found on the Ess claims and at the northwest corner of the Moonlight claims and are listed in the following table. They have SO_4 values that are weakly anomalous compared to those on the nearby Moonlight claims but that are strongly anomalous compared to regional background levels. Some of the lowest pH readings obtained from streams throughout the region were measured on the Ess claims, ranging from 2.6 to 3.0.

Zinc response in water from the Ess claims (Figure E-6) is comparable in intensity to that from the Moonlight and Tom properties. The assays range from a background of about 30 ppb up to 830 ppb, which is surprisingly high in view of the fact that the waters are apparently draining beds that occur higher in the Canol Formation than the pyritic horizon outcropping in the creek canyon or the barite horizon.

MAP AREA	ANOMALY NO.	SAMPLE NO.	pH	Zn (ppb)	SO_4 (ppm)
1050/SE	Ess claims	H2015	2.9	380	45
		H2021	3.0	420	40
		H2032	2.6	830	60
		H2039	6.4	1900	230
		H2054	6.2	425	55
		H2056	2.9	330	40

Although the water samples are anomalous they are apparently derived from a part of the Canol Formation that is known to be barren of lead-zinc deposits. These anomalies therefore reflect the unusually high sulphide content of these rocks.

SUMMARY AND CONCLUSIONS

The Ess claims were staked as part of a two year program of regional exploration by Itsi Joint Venture to explore for shale-hosted stratiform mineralization in the Selwyn Basin of Yukon and N.W.T. Heavy emphasis was given to regional stratigraphic mapping and to identifying and tracing the various lithological units in the project area, distinguishing facies relationships in the favourable Canol Formation and mapping the facies and structural factors in the older rocks that may have influenced the localization of mineralization.

The relatively high pyrite content, high carbon content and the presence of black fetid limestone confirms that the Canol shale was laid down in an euxinic environment. The great thickness of the Canol shale exposed on the Ess claims shows that they lie within the same zone of rapid thickening that encloses the Tom and Jason deposits. Since this rapid thickening is presumably related to a fault zone in the underlying rocks that is associated with exhalative centres that produced the mineralization, then by inference, the Ess claims must lie close to this fault line. The contact between shale and conglomerate is probably close enough to surface on the Ess claims to be explored with holes less than 250 m in depth.

RECOMMENDATIONS

Further geological mapping, geochemical or geophysical surveys of the Ess claims would not be useful at this time. A diamond drill hole should be drilled along the crest of the Hess Creek anticline to investigate the stratigraphy of the lower part of the Canol shale unit and determine if barite and lead-zinc mineralization are present on the claims.

Respectfully submitted,

ARCHER, CATHRO & ASSOCIATES LTD.

R.J. Cathro, P.Eng.

/mc

REPORT ON HORIZONTAL COPLANAR LOOP
ELECTROMAGNETIC SURVEYING IN THE
MACMILLAN PASS AREA OF THE YUKON

FOR

ITSI JOINT VENTURE

G. HENDRICKSON,
AQUITAINE CO. OF CANADA LTD.
OCTOBER, 1977

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INTRODUCTION

During the latter part of August, 1977, several test EM lines were run by Aquitaine in the MacMillan Pass area of the Yukon. The purpose of these tests was to see what role horizontal coplanar loop EM surveying could play in the detection of lead zinc mineralization. From the outset, it was realized that graphitic zones would cause many anomalies and that some of these graphitic zones may be associated with possible ore zones. Test lines were run on the following:

a) Tom Deposit
b) Jason Deposit
c) Ess claims.

INSTRUMENT

The new five frequency Maxmin II was used on this survey. This instrument was set up in the metric mode. Inphase and Quadrature compensator were both set at 5.0, the electrical 0 postion, thus all values shown on the accompanying profiles are absolute.

SURVEY PROCEDURE

A topographic profile of the line was first obtained using a small portable inclinometer. From the topographic profile, the information necessary to keep the coils coplaner is obtained. Survey stations were put in at a 25 metre horizontal interval. Corrections were made to the inphase response. These corrections were due to the fact that the coil separation was varying with the topography.

DISCUSSION OF RESULTS
(refer to accompanying profiles)

A. Tom Deposit

Three conductive zones were picked up on this line. The conductive shale at the west end of the line is the most obvious anomaly. The interpretation of this anomaly as graphitic shales is based on a conversation with a H.B. M. & S. field crew working on the deposit.

At 4+60W there appears to be a rather deep, thin conductor. The conductivity of this zone appears to be good, however, the low amplitude of the response makes any calculations of its conductivity thickness suspect.

At 3+92W a moderate conductor has been mapped. The width appears to be 15 to 20 m. This zone appears to be dipping steeply east.

It is not known for sure if any of these conductive zones are due to lead-zinc mineralization. The response at 3+92W is probably a part of the Tom deposit. The conglomerates are not conductive.

b) Jason Deposit

The electromagnetic response indicates a rather sharp change in conductivity near station 4+00E. West of station 4+00E the rocks are more conductive, probably shales. East of station 4+00E the rocks are quite resistive, probably the conglomerates. There may be another shale zone around 6+75E.

The anomaly centered around station 3+68E may be reflecting the graphitic zone associated with the mineralization at the Jason. It is unfortunate that we have no drill hole information on this property.

c) Test Line on Ess claims

This short line was put in to survey an area where bedded pyrite was known to outcrop. Aquitaine does not know exactly where the pyrite sample was obtained however, Archer, Cathro have this information. As indicated on the accompanying profile, three anomalies were picked up with only the response centered around 2+30E being significant. This particular anomaly appears to be about 8 m wide and is very conductive.

The carbon content of some of some of the shales in this area is very high, thus it is probable that this anomaly is due to graphitic material.

CONCLUSION

Horizontal coplaner loop electromagnetic surveying is a useful mapping tool in this type of geological environment. It is not possible to differentiate between the responses of sulphides and graphitic shales since they both cover a broad range of conductivity. Additional information, such as geochemistry and gravity, will be required to screen the numerous conductors that will be picked up when surveying in this area.

If more geological information had been available before the test work, the geophysical program could have been designed better for each particular case. Additional lines and, in some cases, longer lines would have helped.

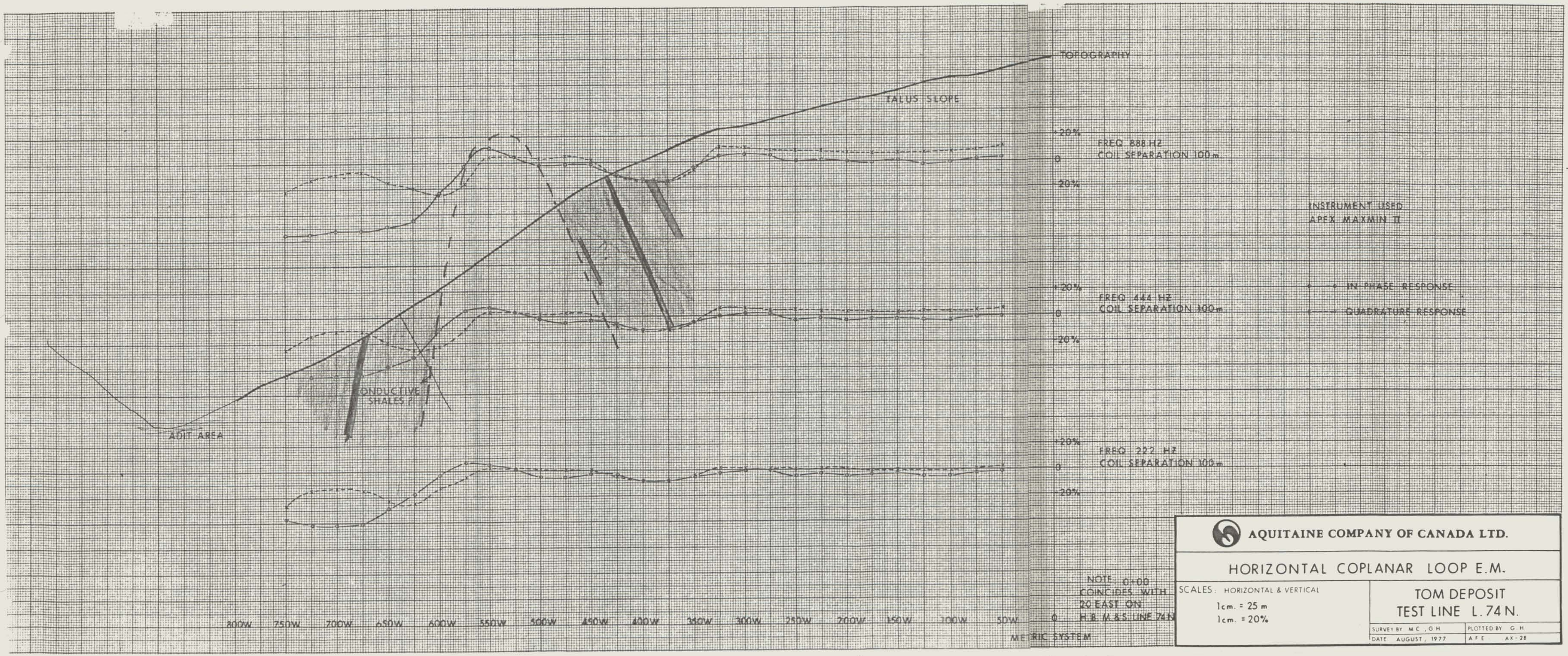
RECOMMENDATION

In reconnaissance electromagnetic surveys in this area, the Maxmin II should be used with coil separations of 50 m or 100 m. The choice of coil separation will depend on overburden depth. Two frequencies should generally be read, 888 Hz and 222 Hz. The shorter coil separations and low frequencies should reduce the conductive background.

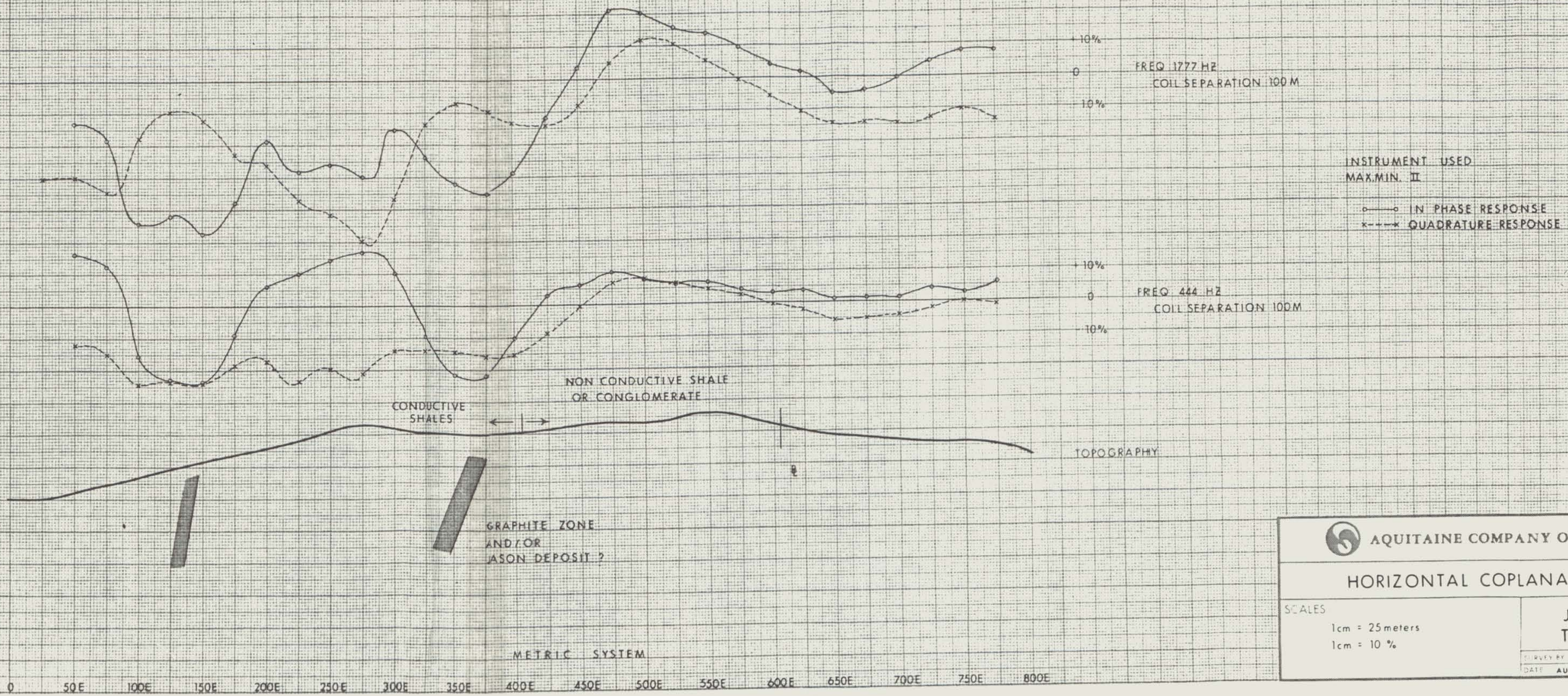
In areas of special interest, all five frequencies of the Maxmin should be read and one should try a couple of different coil separations. More interpretable information will be obtained by doing this.

Grant Hendrickson

Grant Hendrickson.



TOPOGRAPHY
TALUS SLOPE
ADIT AREA
CONDUCTIVE SHALES ?
+20%
0
-20%
FREQ 888 HZ
COIL SEPARATION 100 m.
FREQ 444 HZ
COIL SEPARATION 100 m.
FREQ 222 HZ
COIL SEPARATION 100 m.
INSTRUMENT USED
APEX MAXMIN II
IN PHASE RESPONSE
QUADRATURE RESPONSE
800W 750W 700W 650W 600W 550W 500W 450W 400W 350W 300W 250W 200W 150W 100W 50W 0
METRIC SYSTEM
NOTE: 0+00
COINCIDES WITH
20 EAST ON
H B M & S LINE 74 N
AQUITAINE COMPANY OF CANADA LTD.
HORIZONTAL COPLANAR LOOP E.M.
SCALES: HORIZONTAL & VERTICAL
1cm. = 25 m
1cm. = 20%
TOM DEPOSIT
TEST LINE L. 74 N.
SURVEY BY M C , G H
PLOTTED BY G H
DATE AUGUST, 1977
A F E AX - 28



NOTE
0+00 WAS SET AT
STATION 20 SW ON O.I.V.
LINE 20 SE

AQUITAINE COMPANY OF CANADA LTD.

HORIZONTAL COPLANAR LOOP E.M.

SCALES
1cm = 25 meters
1cm = 10 %

JASON DEPOSIT
TEST LINE 20 S.E.

SURVEY BY M.C., G.H. PLOTTED BY G.H.
DATE AUG 1977

TABLE OF FORMATIONS

RECENT

Q	Unconsolidated alluvial and glacial till

CRETACEOUS

Kg	Granitic stocks and quartz-feldspar porphyry dikes; mostly quartz monzonite in composition

MISSISSIPPIAN TO PERMIAN (?)

IMPERIAL FORMATION

Ist	Buff to brown weathering, light to medium grey siltstone and calcareous siltstone; shale content increases upward to 10%; beds up to 1.5 m but mostly 10-20 cm thick; cross-bedded with pervasive climbing cross ripple laminations; well developed slaty cleavage; contains a quartzite unit near top

LOWER DEVONIAN TO MISSISSIPPIAN

CANOL FORMATION

Cst	Grey pinstripe weathering non-calcareous siltstone; contains light to dark grey vesicular to porphyritic volcanic layer up to 3 m thick near base and white oval barite concretions in 3m bed near top; commonly bioturbated, with shallow water features such as mudcracks and red beds seen to northeast
Csh	Black, carbonaceous, silvery blue weathering shale with minor interbedded cherty argillite, chert and black fetid limestone; a zone of bedded barite up to 70m thick with local zinc-lead deposits occurs about 30m above base, overlain by thin pyrite laminations in shale
Ct	Massive, blocky and resistant weathering chert pebble conglomerate, minor turbidites, rhythmites and cherty argillite

ORDOVICIAN TO LOWER DEVONIAN

ROAD RIVER FORMATION

Ral	Light grey weathering, black silty and cherty argillite; graptolitic with thin carbonaceous laminae, contains orange weathering, greenish grey volcanic flow or tuff horizon up to 6m thick and micritic limestone bed up to 10m thick near top

PROTEROZOIC

H	Undifferentiated phyllite and grits

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R. J. CATHRO
GEOLOGICAL ENGINEER
February 15/78

FIG. E-1

ARCHER, CATHRO & ASSOCIATES LTD

GEOLOGY

ESS CLAIMS

MACMILLAN PASS DISTRICT

ITSI JOINT VENTURE

Scale 1" = 1/2 mile

FEET 500 0 1500 3000 4500 6000 7500 9000 10500 FEET

To accompany a report by

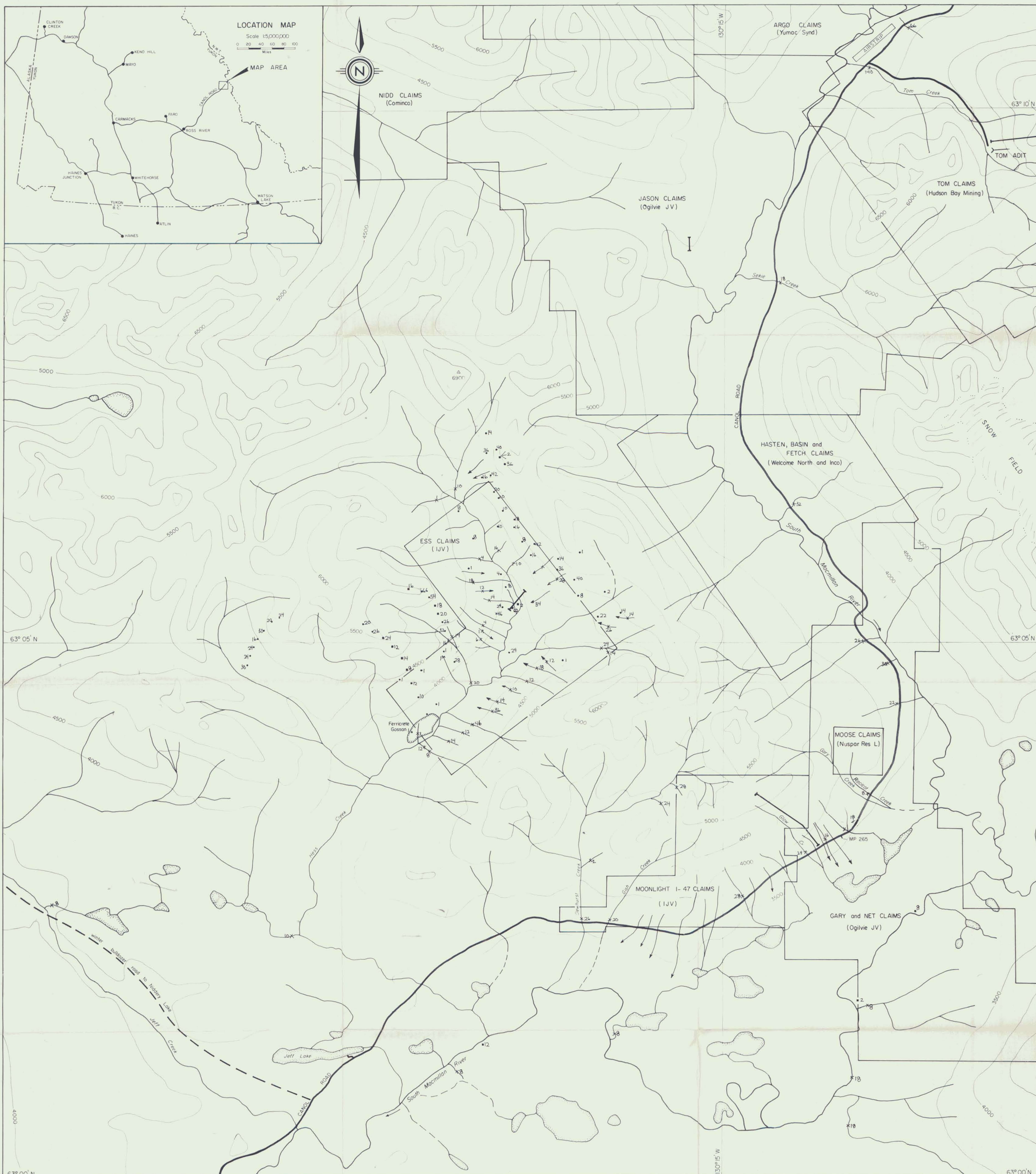

FIG. E-2

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LEAD GEOCHEMISTRY

ESS CLAIMS

MACMILLAN PASS DISTRICT

ITSI JOINT VENTURE

Scale 1" = 1/2 mile

FEET 1500 0 1500 3000 4500 6000 7500 9000 10500 FEET

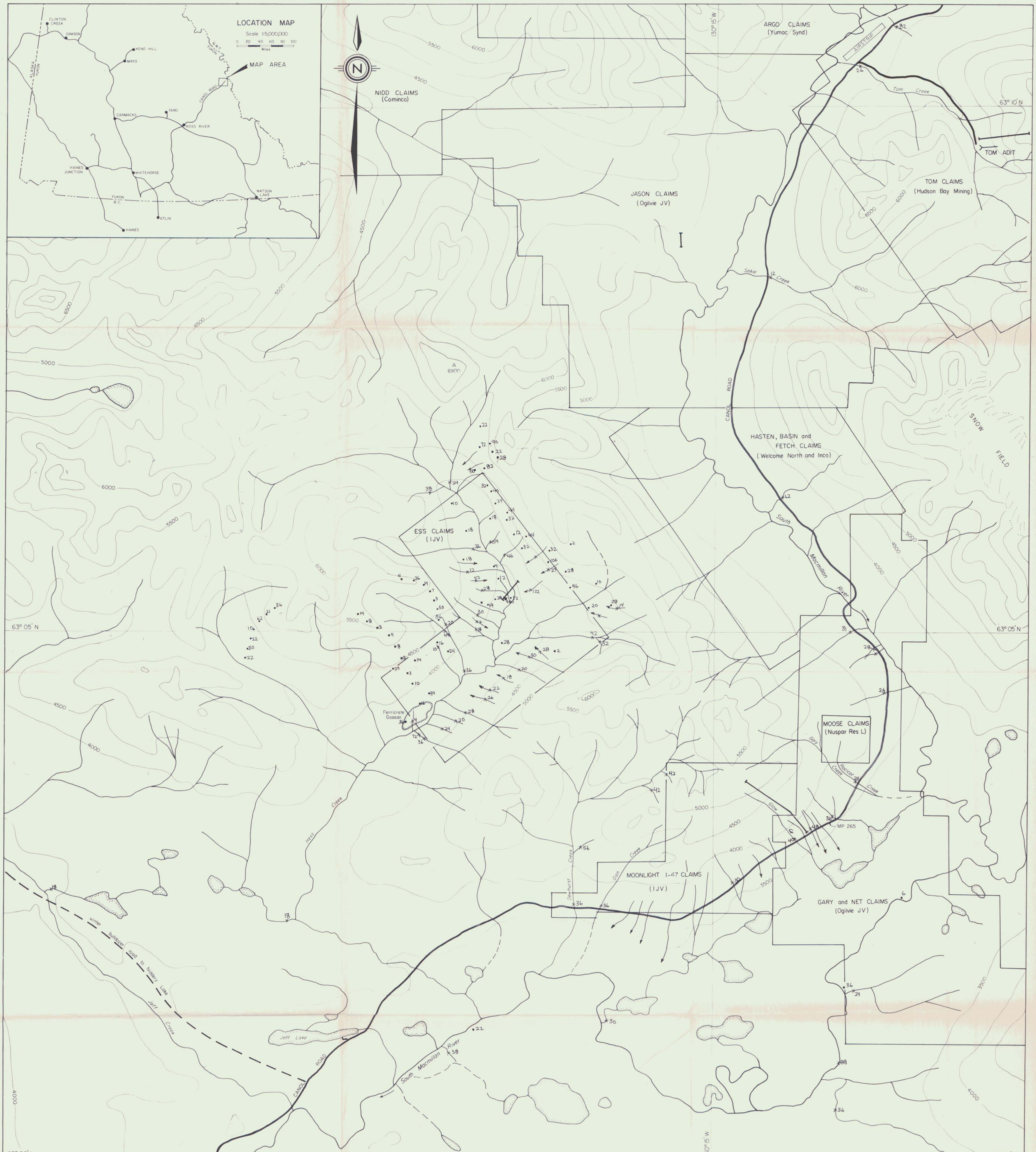

FIG. E-3

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COPPER GEOCHEMISTRY

ESS CLAIMS

MACMILLAN PASS DISTRICT

ITSI JOINT VENTURE

Scale 1" = 1/2 mile

FEET 1500 0 1500 3000 4500 6000 7500 9000 10500 FEET

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W. J. CATHRO
GEOLOGICAL
ENGINEER

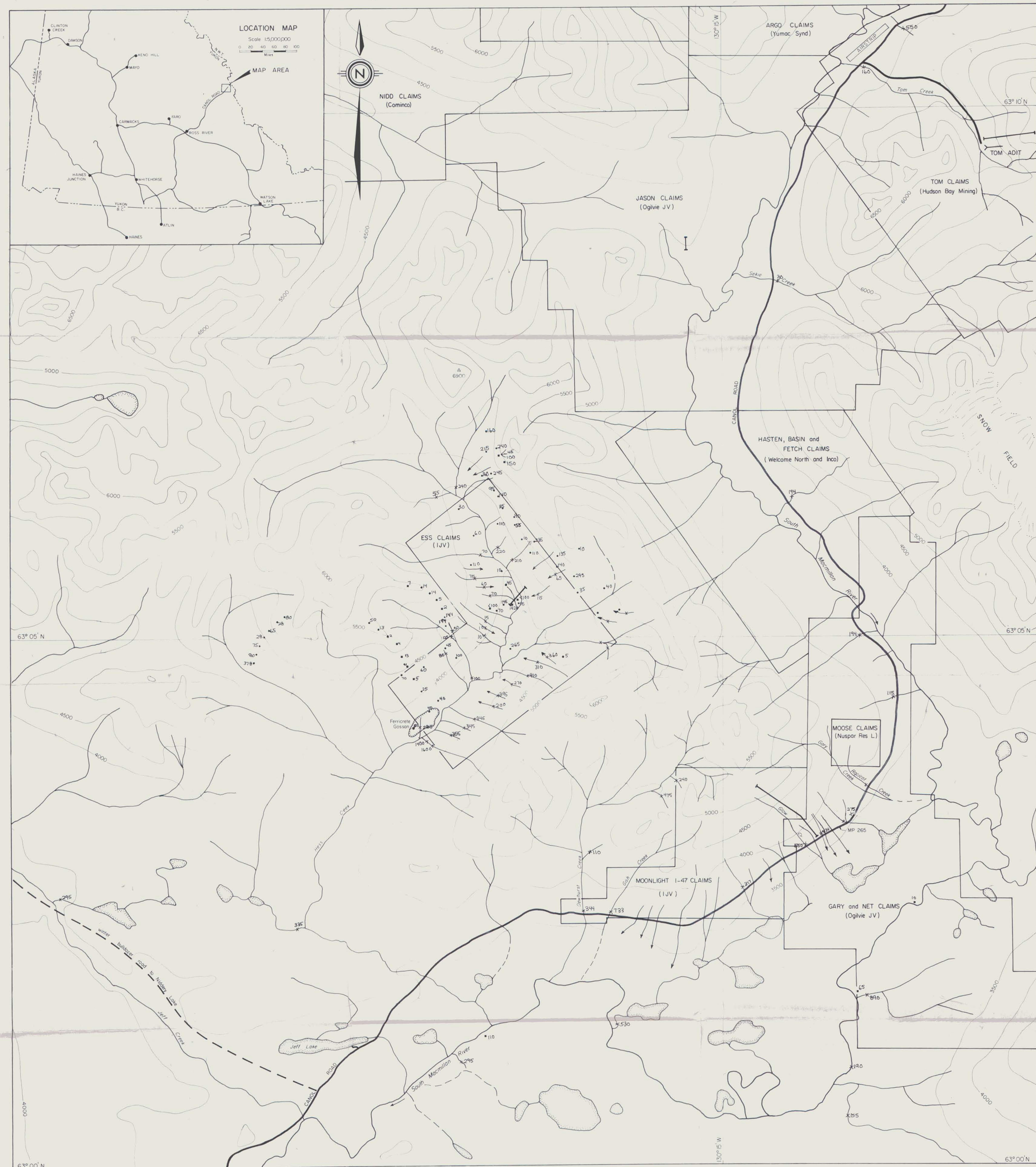

FIG. E-4

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ZINC GEOCHEMISTRY

ESS CLAIMS

MACMILLAN PASS DISTRICT

ITSI JOINT VENTURE

Scale 1" = 1/2 mile

FEET 1500 0 1500 3000 4500 6000 7500 9000 10500 FEET

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R. J. CATHRO
GEOLOGICAL ENGINEER

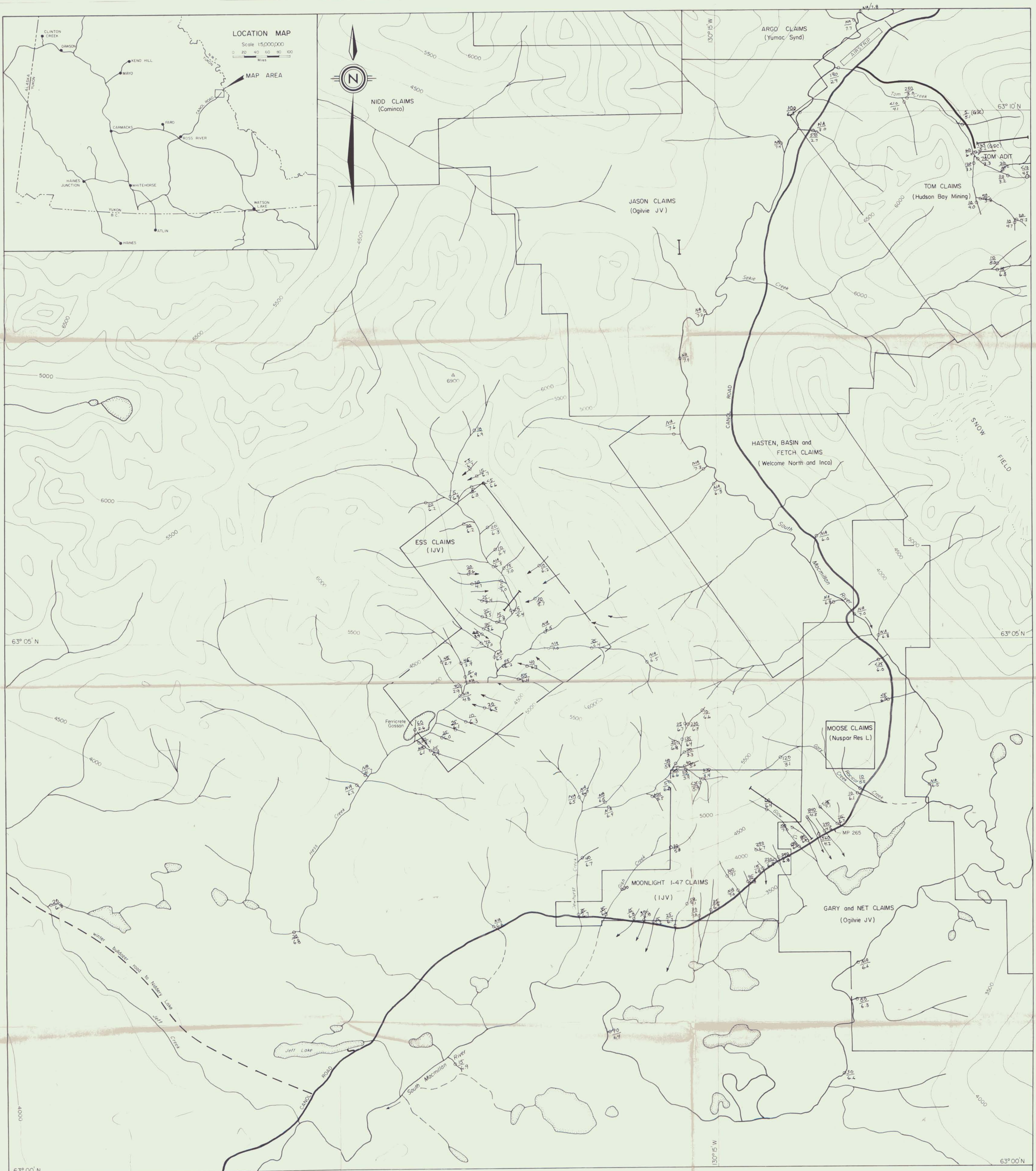

FIG. E-5

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SO$_4$ CONTENT and pH of STREAM WATERS

ESS CLAIMS

MACMILLAN PASS DISTRICT

ITSI JOINT VENTURE

Scale 1" = 1/2 mile

FEET 1500 0 1500 3000 4500 6000 7500 9000 10500 FEET

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GEOLOGICAL ENGINEER
February 10/78

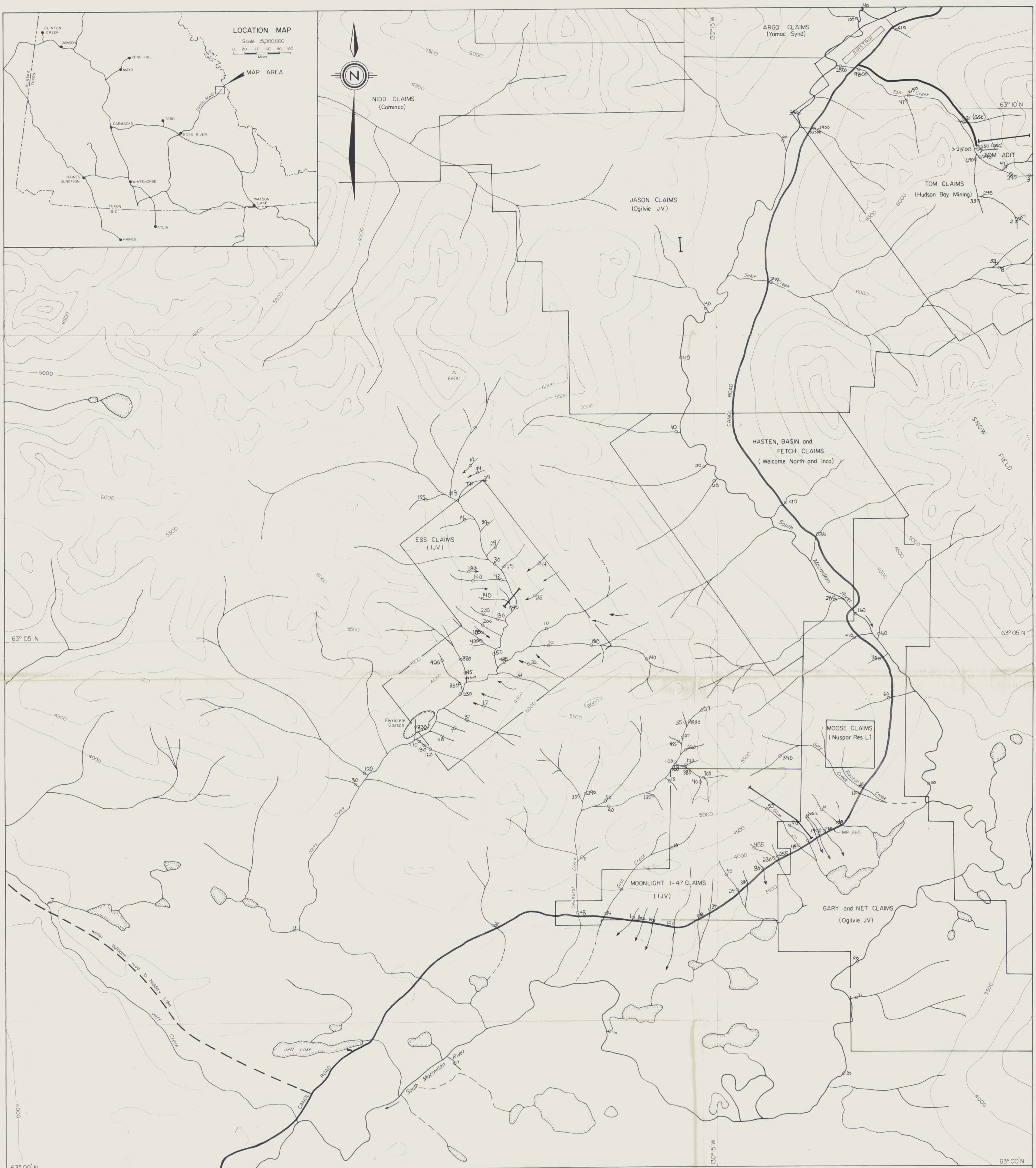

FIG. E-6

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ZINC CONTENT OF STREAM WATERS

ESS CLAIMS

MACMILLAN PASS DISTRICT

ITSI JOINT VENTURE

Scale 1" : 1/2 mile

1500 0 1500 3000 4500 6000 7500 9000 10500 FEET

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