COMINCO LTD.

EXPLORATION

WESTERN DISTRICT

NTS: 94F/11

ASSESSMENT REPORT

GEOLOGICAL AND GEOCHEMICAL REPORT

ON THE

KWAD GROUP

KWADACHA RIVER AREA

OMINECA MINING DIVISION

BRITISH COLUMBIA

LATITUDE: 57°37'N LONGITUDE: 125°17'W

PERIOD OF FIELD WORK

MAY 27 to AUGUST 22, 1980

30 OCTOBER 1980

K.R. PRIDE

LIST OF CLAIMS - KWAD GROUP

CLAIM NO.	RECORD NO.	No. of UNITS	RECORDING DATE
KWAD 1	2335	20	Nov. 8, 1979
KWAD 2	2336	20	Nov. 8, 1979
KWAD 3	2337	20	Nov. 8, 1979
KWAD 4	2338	20	Nov. 8, 1979
KWAD 5	2339	5	Nov. 8, 1979
KWAD 6	2340	20	Nov. 8, 1979
KWAD 7	2341	20	Nov. 8, 1979
KWAD 8	2342	18	Nov. 8, 1979

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COMINCO LTD.

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INTRODUCTION

The Kwad Group, totalling 143 units was staked to cover the baritic shale facies of the Gunsteel Formation and the possible strike extension of the Mount Alcock barite-lead-zinc occurrence.

Cominco Ltd. performed preliminary silt, soil and rock sampling, prospecting and geological mapping and linecutting during the period May 27 to August 22, 1980. Total expenditures on the Kwad Group are estimated to be $37,588.26.

Preliminary geological mapping on a scale of 1:10,000 was conducted over the southern and central portion of the claim group. Two 5 kilometer northwest trending baselines were established to provide control for geological mapping and chain and compass grid-soil sampling. Approximately 625 soil samples were collected at 50 meter intervals along grid lines 400 to 500 meters apart.

LOCATION AND ACCESS

The Kwad Group is located on the south side of the Kwadacha River approximately 7 kilometers south of Mount Alcock. The center of the claim group is located at latitude 57°37'N and longitude 125°17'W.

Field work on the Kwad Group was conducted using a Bell 206 B Jet Ranger helicopter based at Sikanni Chief Lake, 80 kilometers to the southeast. Logistical support was provided by float equipped aircraft based at MacKenzie, 233 kilometers to the south.

REGIONAL GEOLOGY

A northwest trending belt of Devonian "Black Clastics" stratigraphy has been outlined by regional mapping programs conducted by the Geological Survey of Canada. The belt is located within the Rocky Mountain thrust and fold belt of the Columbian Orogen and is centered approximately 40

kilometers east of the Rocky Mountain Trench. The Devonian "Black Clastics" are continuous from the Ospika River, northwesterly to Braid Creek, a distance of 200 kilometers. This belt is part of the northwest trending Kechika Trough which may represent a southeasterly extension of the larger Selwyn Basin.

The Devonian "Black Clastics" succession is divisible into a lower proximal to distal turbidite assemblage formally named the Besa River Formation, which is the basinal equivalent of the Devonian Dunedin Formation platformal carbonates, and an upper division of silver-blue-grey weathering argillite, chert and pyritic carbonaceous black shale informally named the Gunsteel Formation.

The Gunsteel Formation hosts four significant stratiform barite-lead-zinc occurrences, namely: Driftpile Creek, Mount Alcock, Cirque and Elf. These occurrences are comparable to the Tom and Jason barite-lead-zinc prospects of Selwyn Basin at MacMillan Pass in the Yukon.

GEOLOGY

Preliminary mapping on the property has outlined a northwest trending belt of "Black Clastics" which unconformably overly Middle Devonian limestones and are structurally overlain by several thrust panels of Silurian siltstone and Road River Formation graptolitic shales.

Road River Formation (Unit OS_{RR})

The Road River Formation, ranging in age from Ordovician to Silurian, occurs along the western portion of the claim group and structurally overlies the Devonian Gunsteel Formation. The unit consists of a sequence of interbedded black graptolitic shale, argillite, and chert.

Silurian (Unit S_{SS})

Road River Formation shales are overlain by thrust panels of Silurian siltstone, unit S_{SS}. The unit consists of 100 meters of orange-brown weathering dolomitic siltstone of Upper Silurian age. The prominent lithologies are interbedded platy, thin laminar-bedded and blocky thick flaser-bedded dolomitic siltstone with minor orange weathering limestone interbeds. Overall, the succession is strongly bioturbated and contains spiral feeding tracks and poorly preserved graptolites (monograptus).

Middle Devonian (Unit MD_L)

Silurain siltstone is unconformably overlain by up to 300 meters of light grey weathering bioclastic limestone of Middle Devonian age. Unit MD_L is thickbedded and massive with alternating beds of crinoids, corals and stromatoporoid debris.

TABLE I

TABLE OF GEOLOGICAL FORMATIONS

AGE	UNIT	DESCRIPTION
		Gunsteel Formation
BLACK CLASTICS	UD_{GS}	Silvery-grey weathering, black siliceous shale, chert and argillite. (Undivided UD_{AR}, UD_{BA})
	UD_{AR}	Rusty to black weathering, black thick bedded argillite with minor nodular barite and pyrite
	UD_{BA}	White weathering, blebby, nodular and massive dark grey barite
		Besa River Formation
	UD_{BR}	Tan brown weathering, brownish black silty shale with interbeds of siltstone
	unconformity	
Middle Devonian	MD_L	Light grey weathering, massive grey fossiliferous limestone
Silurian	S_{SS}	Light orange to buff weathering, massive dark grey dolomitic siltstone
	unconformity	
Ordovician-Silurian		Road River Formation
	OS_{RR}	Black to grey weathering, black graphitic graptolitic variably calcareous shale, argillite and chert

Besa River Formation (Unit UD_{BR})

The Besa River Formation unconformably overlies the Middle Devonian limestone unit and forms the base of the Devonian "Black Clastic" succession. The unit consists of a very thin accumulation of recessive brownish-black weathering silty shale with thin beds of tan siltstone, calcareous shale and siliceous argillite. It appears that Unit UD_{BR} represents a distal turbidite fan fining westward away from the carbonate platform margin.

Gunsteel Formation (Unit UD_{GS})

Although stratigraphic relationships are not well defined it appears that Gunsteel rocks unconformably overlie both unit MD_L and the Besa River Formation, unit UD_{BR}. The unit is light grey to silver-blue-grey weathering and consists of siliceous black laminated silty shale, medium bedded siliceous argillite or chert. Rusty weathering pyritic carbonaceous black shale, unit UD_{AR} and black carbonaceous shale with nodular, blebby and massive barite interbeds, unit UD_{BA} are recognized as distinct units within the Gunsteel Formation.

GEOCHEMISTRY

During the period May 27 to August 22, 1980, approximately 625 soil and silt samples and 15 rock samples were collected on the Kwad Group as a preliminary survey for potential stratiform barite-lead-zinc mineralization. Ketza Enterprises of Ross River, Yukon were contracted to cut two 5 kilometer northwest trending baselines to provide control for a chain and compass soil grid survey. Soil samples were collected at 50 meter intervals along lines spaced 400 to 500 meters apart.

Soil samples were collected from the "B" horizon using picks or mattocks. All samples were packaged in kraft sample bags and sent to the Cominco Laboratory at 1486 East Pender Street, Vancouver, B.C. The soil and silt samples were dried, sieved to -80 mesh, digested in perchloric acid and analysed by atomic absorption for lead and zinc. Soil and silt samples analysed for barium were quantitatively determined by X-Ray fluorescence. Rock samples were crushed and pulped to -200 mesh and analysed by the same method as silt and soil samples. All sample pulps from the KWAD Group are stored at the Cominco Laboratory in Vancouver.

Thresholds for lead, zinc and barium in soil, silt, and rock samples were calculated by cumulative frequency plots to distinguish the response of mineralization from the response of background values and can be seen in Table 2. The resulting calculated thresholds outline the anomalous levels for the Gunsteel Formation. The barium response appears to be the best indicator of the baritic shale in the Gunsteel stratigraphy.

The widely spaced soil sampling grid outlined several areas of moderate lead-barium responses situated over the Gunsteel Formation that will require detailed grid sampling.

Results of the grid sampling may be noted on the accompanying 1:10,000 scale maps, Plates 3,4,5 for lead, zinc and barium respectively. The contour intervals for each element was calculated graphically from cumulative frequency plots.

TABLE 2

Calculated Thresholds (ppm)

Sample Type	Possibly Anomalous			Anomalous		
	Pb	Zn	Ba	Pb	Zn	Ba
SOIL	40	1000	3000	50	1500	5000
SILT	40	1000	3000	50	1500	5000
ROCK	60	1000	2500	100	2000	3000

CONCLUSIONS

Preliminary mapping on the KWAD property has outlined the Gunsteel Formation, which is the host for stratiform barite lead-zinc occurrences at the Driftpile Creek, Mount Alcock, Cirque and Elf properties.

Widely spaced soil lines established throughout the claim group have outlined several coincident lead-barium anomalies which are situated over the Gunsteel Formation.

Detailed geological mapping, closer spaced grid soil geochemistry and detailed prospecting will be required to determine the source of the geochemical anomalies.

Report by: K.R. Pride
K.R. Pride
Geologist

Endorsed by: A.B. Mawer
A.B. Mawer
Senior Geologist

Approved for Release by :
G. Harden
Manager, Western District

KRP/skg

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APPENDIX "A"

STATEMENT OF EXPENDITURES

KWAD CLAIM GROUP

MAY 27 - AUGUST 22, 1980

SALARIES AND WAGES

K.R. Pride	May 27, 28, Aug. 24	3 days @ $173.36	=	$ 520.08
A.L. MacGregor	May 27, 28, June 14, July 21	4 days @ $130.24	=	520.96
A.B. Mawer	July 21	1 day @ $200.00	=	200.00
A. Mueller-Wilm	Aug. 15	1 day @ $105.60	=	105.60
V. Kuran	Aug. 14-21	8 days @ $105.60	=	844.80
D. Kuran	Aug. 14-21	8 days @ $117.92	=	943.36
A. Weiszmann	Aug. 15	1 day @ $ 87.12	=	87.12
I. Kokan	Aug. 14-18, 21,22	7 days @ $ 74.80	=	523.60
F. Jay	Aug. 14-18, 21,22	7 days @ $ 80.96	=	566.72
D. Faubert	Aug. 14-18, 21,22	7 days @ $ 68.64	=	480.48

ASSAYS AND GEOCHEMICAL ANALYSIS

Cominco Lab	soils - silts	625 @ $6.10/sample	=	3,812.50
	rocks	15 @ $7.90/sample	=	118.50

FIELD EQUIPMENT AND SUPPLIES = 2,100.00

CAMP MAINTENANCE 47 days x $25/man day = 1,175.00

TRANSPORTATION

Fuel	1056 gal. @ $2.50/gal.	=	2,640.00
Rotary Wing	Northern Mountain Helicopter 48 hr. @ $305/hr.	=	14,640.00
Fixed Wing	N.T. Air 950 mi. @ $1.95/mile	=	1,852.50
Miscellaneous		=	1,750.00
	Total Direct Field Costs	=	$32,881.22

REPORT WRITING, RESEARCH, DRAFTING

K.R. Pride	12 days @ $173.36	=	2,080.32
D. Kuran	6 days @ $117.92	=	707.52
V. Kuran	7 days @ $105.60	=	739.20
Pencil Manuscript, Pacific Survey, Vancouver, B.C.		=	1,180.00
	Total Cost	=	$37,588.26

APPENDIX "B"

IN THE MATTER OF A GEOLOGICAL AND GEOCHEMICAL

PROGRAM PERFORMED ON THE KWAD CLAIM GROUP

KWADACHA RIVER AREA

OMINECA MINING DIVISION

BRITISH COLUMBIA

A F F I D A V I T

I, K.R. PRIDE OF THE MUNICIPALITY OF BURNABY, IN THE PROVINCE OF BRITISH COLUMBIA, HEREBY DECLARE:-

(1) THAT I am employed as a geologist by Cominco Ltd., and, as such, have a personal knowledge of the facts to which I hereinafter depose;

(2) THAT annexed hereto and marked as APPENDIX "A" to this report is a true copy of expenditures incurred in connection with a geological and geochemical program on the Kwad Claim Group;

(3) THAT the said expenditures were incurred between the 27th day of May and the 22nd day of August, 1980 for the purpose of performing geological and geochemical exploration on the Kwad Claim Group.

Signed: K.R. Pride

K.R. Pride
Geologist

APPENDIX "C"

STATEMENT OF QUALIFICATIONS

I, K.R. PRIDE, GEOLOGIST, WITH BUSINESS ADDRESS AT 700-409 GRANVILLE STREET VANCOUVER, BRITISH COLUMBIA AND RESIDENTIAL ADDRESS AT 3770 FIR STREET, BURNABY, BRITISH COLUMBIA, HEREBY CERTIFY THAT:-

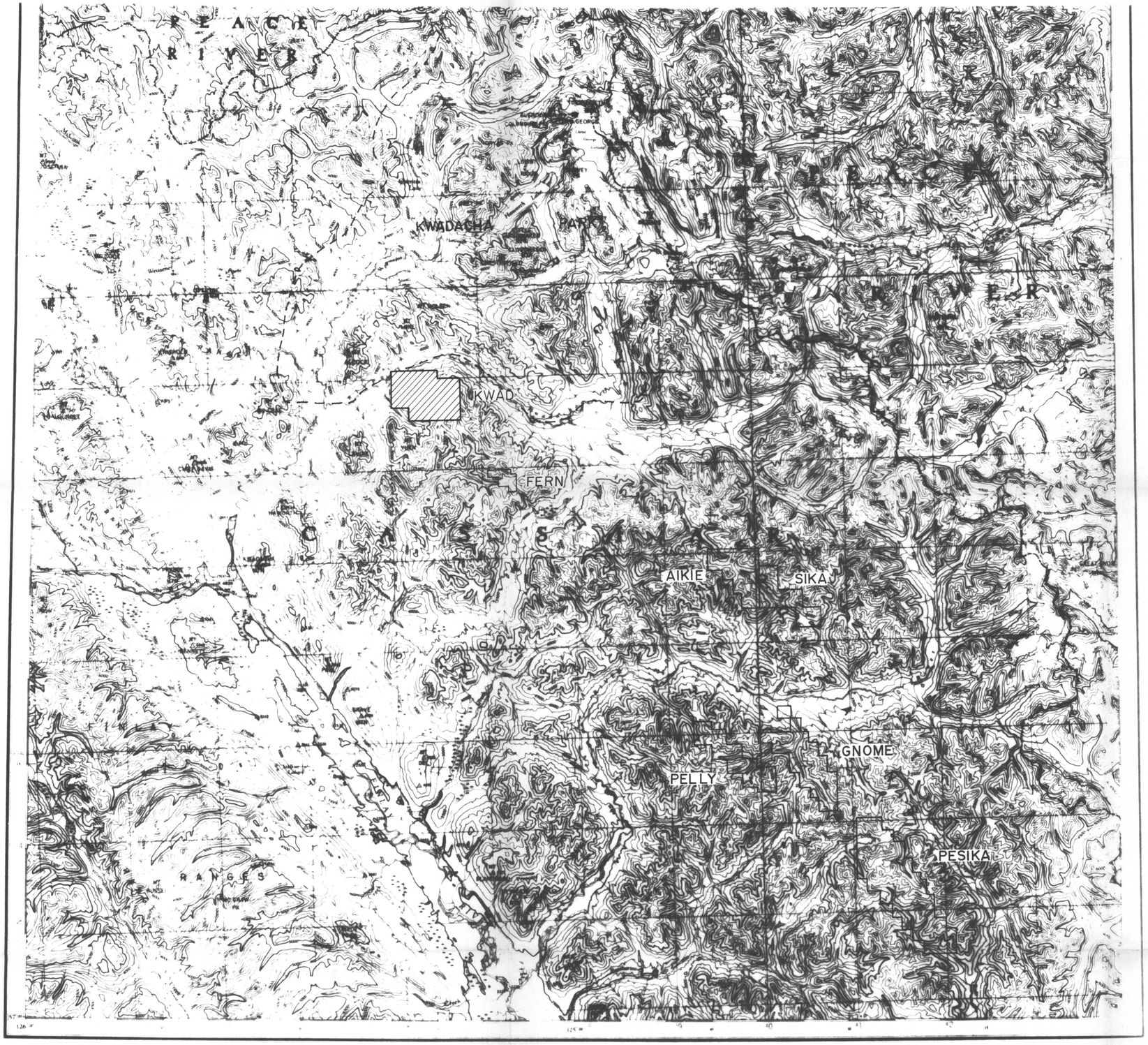
(1) THAT I am a graduate in Geological Sciences with a B.Sc. (Hons.) in 1973 from the University of British Columbia.

(2) THAT from 1973 to the present I have been employed by Cominco Ltd. as a geologist and have been actively engaged in mineral exploration in British Columbia, Yukon, Northwest Territories, Mexico and Saudi Arabia.

(3) THAT I personally participated in the field work on the Kwad Claim Group and have interpreted all the data resulting from this work.

Signed: K.R. Pride

K.R. Pride
Geologist



WARE

BRITISH COLUMBIA

Scale 1: 250,000

REFERENCE

REFERENCE

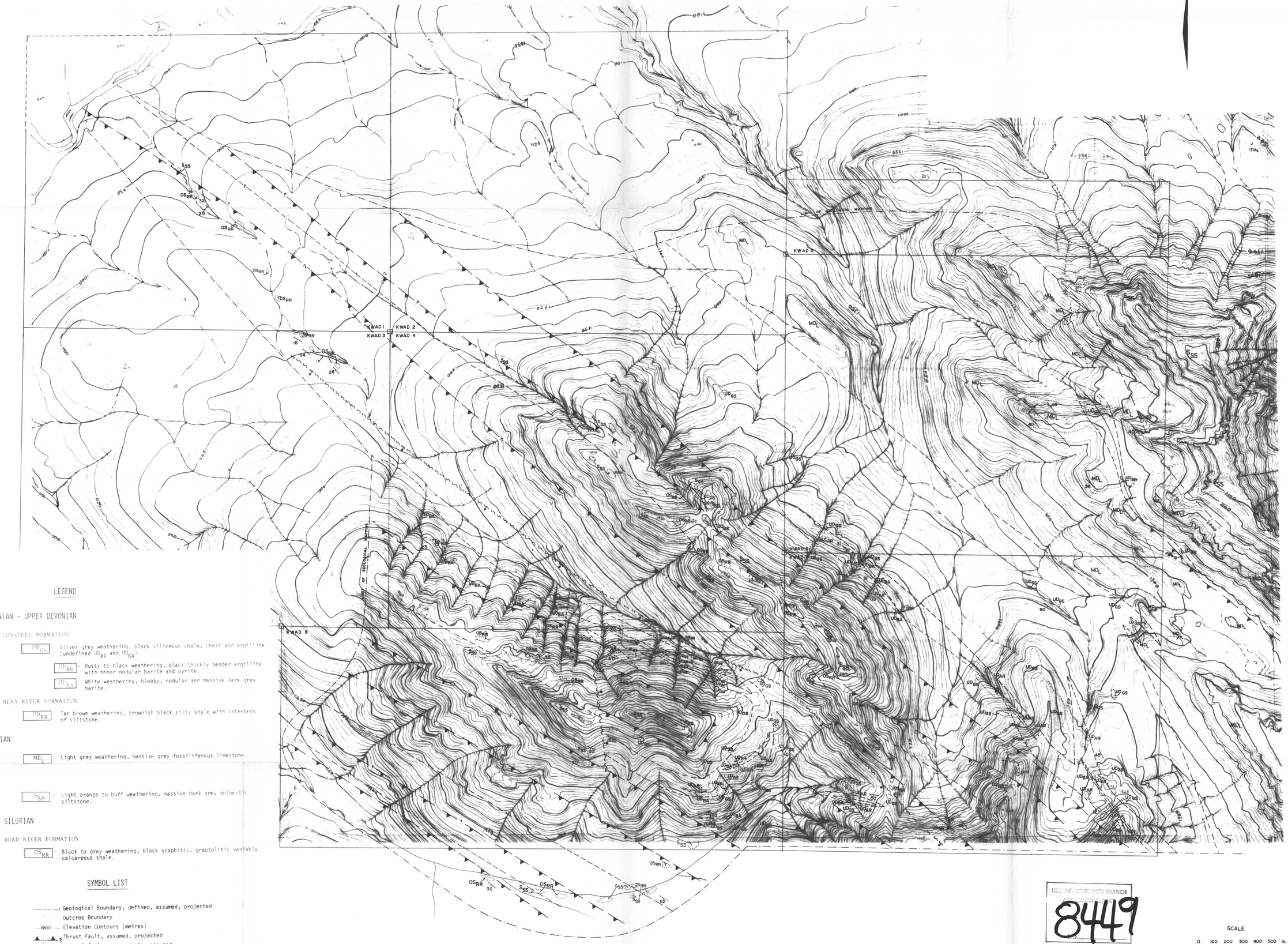
AIKIE PROPERTIES - 1980

94F-11E,11W

Drawn by:		Traced by:	
Revised by	Date	Revised by	Date

KWAD GROUP LOCATION MAP

Scale: 1: 250,000 | Date: October, 1980 | Plate: No. 1



LEGEND

MIDDLE DEVONIAN - UPPER DEVONIAN

GUNSTEEL FORMATION

- UD_{GS} - Silver grey weathering, black siliceous shale, chert and argillite (undefined UD_{AP} and UD_{BA}).
- UD_{AR} - Rusty to black weathering, black thickly bedded argillite with minor nodular barite and pyrite.
- UD_{BA} - White weathering, blebby, nodular and massive dark grey barite.

BESA RIVER FORMATION

- UD_{BR} - Tan brown weathering, brownish black silty shale with interbeds of siltstone.

MIDDLE DEVONIAN

- MD_L - Light grey weathering, massive grey fossiliferous limestone.

SILURIAN

- S_{SS} - Light orange to buff weathering, massive dark grey dolomitic siltstone.

ORDOVICIAN - SILURIAN

ROAD RIVER FORMATION

- OS_{RR} - Black to grey weathering, black graphitic, graptolitic variably calcareous shale.

SYMBOL LIST

- Geological Boundary, defined, assumed, projected
- Outcrop Boundary
- 1900 Elevation Contours (metres)
- Thrust Fault, assumed, projected
- Lateral Fault, approximate, assumed (solid circle indicates downthrow side)
- Syncline
- Anticline
- Bedding, tops known
- Minor Fold (arrow indicates plunge)
- Minor Multiple Fold (arrow indicates plunge)
- Gossan

SCALE
0 100 200 300 400 500 m.

KWAD PROPERTY

94F,IIE,IIW

Drawn by:	Traced by:	GEOLOGY
Revised by / Date	Revised by / Date	Scale: 1:10,000 · Date: SEPT. 1980 · Plate: No. 2

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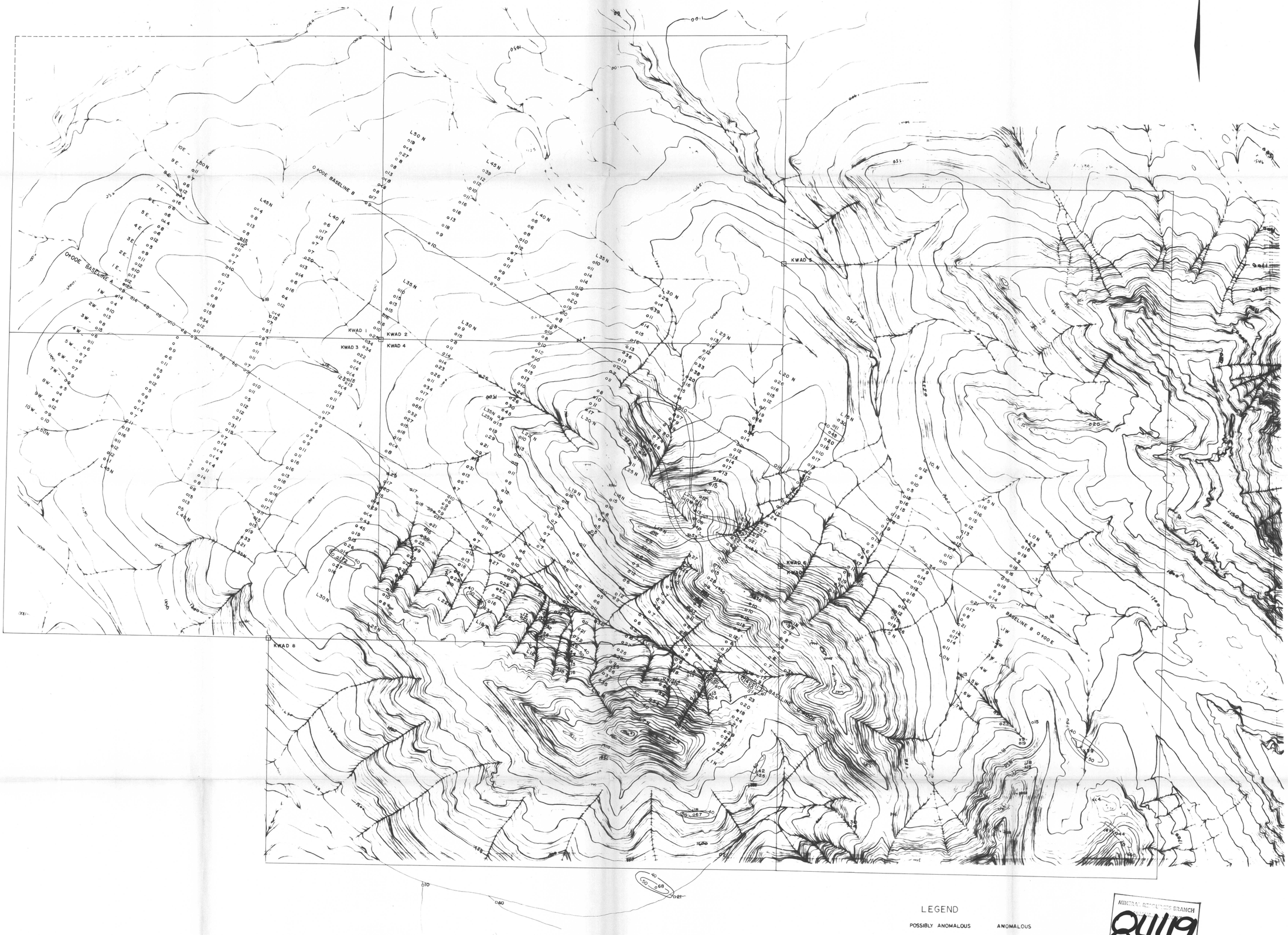


LEGEND

		POSSIBLY ANOMALOUS	ANOMALOUS
SOIL	O	40 ppm	50 ppm
SILT	□	40	50
HEAVY	△	400	500
ROCK	X	60	100
INSUFFICIENT SAMPLE	I		
CONTOUR INTERVAL		40	50

SCALE
0 100 200 300 400 500 m.

KWAD PROPERTY

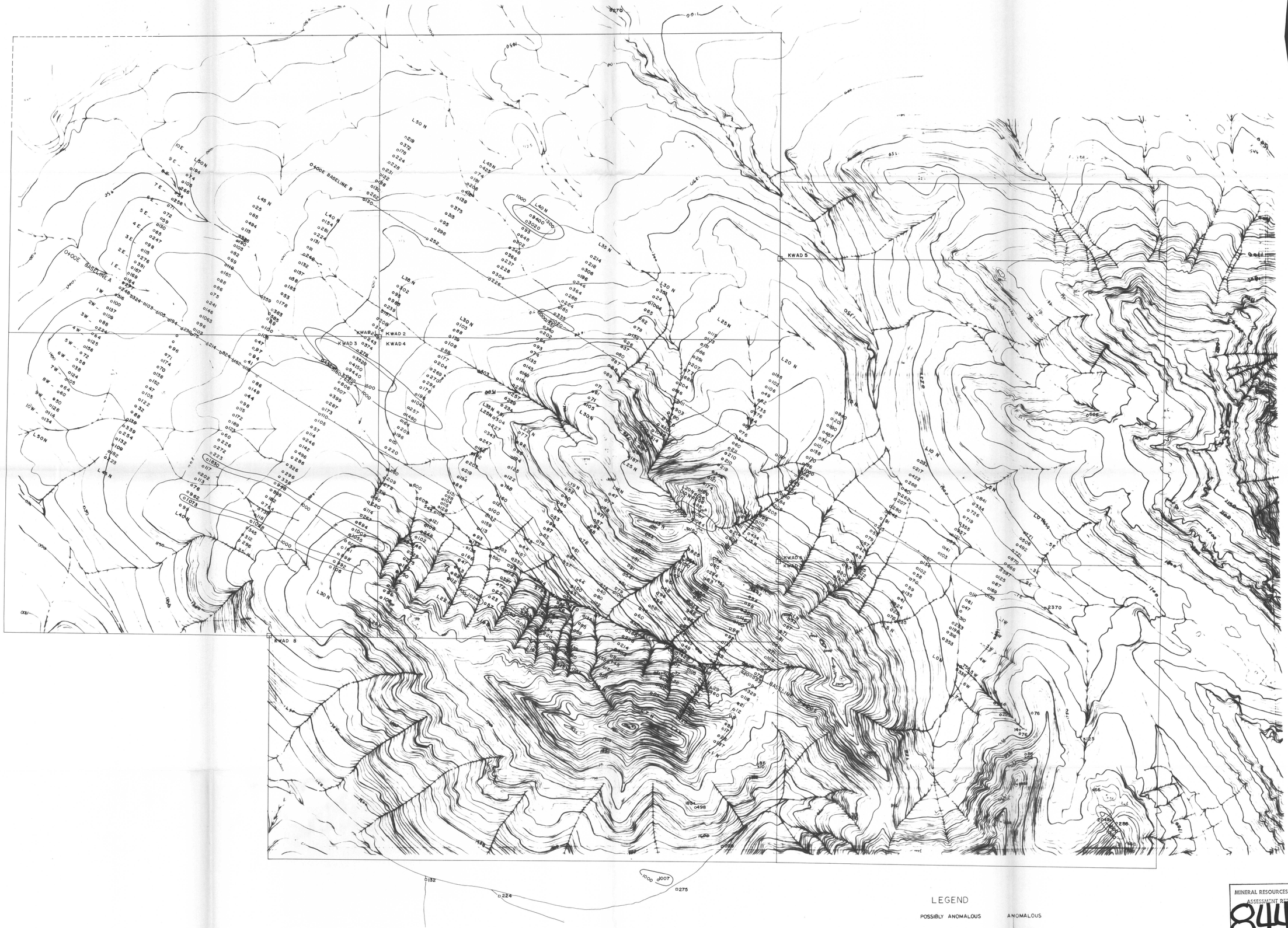
94F-11E,11W

Drawn by | Traced by | Revised by | Date

LEAD GEOCHEMISTRY

Scale 1:10,000 | Date SEPT. 1980 | Plate No. 3

FORM 210 3680



LEGEND

		POSSIBLY ANOMALOUS	ANOMALOUS
SOIL	O	1000 ppm	1500 ppm
SILT	□	1000	1500
HEAVY	△	4000	5000
ROCK	X	1000	2000
INSUFFICIENT SAMPLE	I		
CONTOUR INTERVAL		1000	1500

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
NO. 8449

0 100 200 300 400 500 m.

KWAD PROPERTY

94F-11E,11W

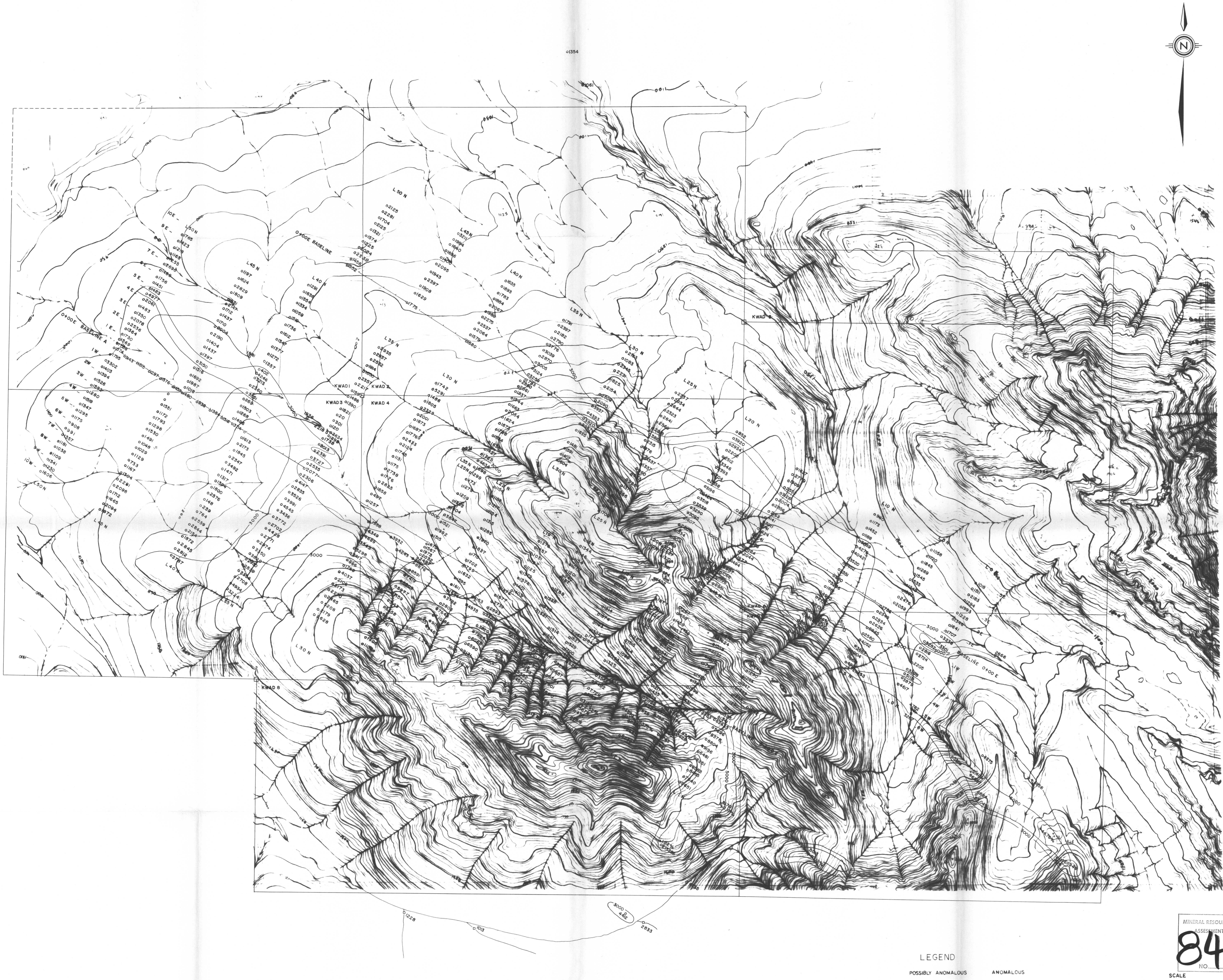
Drawn by D.A.K. | Traced by

Revised by | Date | Revised by | Date

ZINC GEOCHEMISTRY

Scale 1:10,000 | Date SEPT. 1980 | Plate No. 4

FORM 210 1980



LEGEND

		POSSIBLY ANOMALOUS	ANOMALOUS
SOIL	○	3000 ppm	5000 ppm
SILT	□	3000	5000
HEAVY	△	4000	5000
ROCK	x	2500	3000
INSUFFICIENT SAMPLE	I		
CONTOUR INTERVAL		3000	5000

SCALE
0 100 200 300 400 500 m.

KRP

KWAD PROPERTY			94F-11E, 11W
Drawn by: D.L.K.	Traced by:	BARIUM GEOCHEMISTRY	
Revised by / Date	Revised by / Date		
Scale: 1:10,000	Date: SEPT. 1980	Plate: No. 5	

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