

COMINCO LTD.

EXPLORATION  
NTS: 94F 7E & 2E

WESTERN DISTRICT

ASSESSMENT REPORT

GEOLOGICAL AND GEOCHEMICAL REPORT

ON THE

GNOME GROUP

AKIE RIVER AREA

OMINECA MINING DIVISION

BRITISH COLUMBIA

Latitude: 57°14'N      Longitude: 124°33'W

PERIOD OF FIELD WORK

JUNE 3 TO JULY 8, 1980

MINERAL RESOURCES BRANCH  
ASSESSMENT REPORT

8334  
NO. \_\_\_\_\_

OCTOBER 1980

K.R. PRIDE

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LIST OF CLAIMS - GNOME GROUP

<u>Claim No.</u>	<u>Record No.</u>	<u>No. of Units</u>	<u>Recording Date</u>
Gnome 1	2238	9	Oct. 30, 1979
Gnome 2	2239	6	Oct. 30, 1979
Gnome 3	2240	16	Oct. 30, 1979
Gnome 4	2241	9	Oct. 30, 1979
Gnome 5	2242	20	Oct. 30, 1979
Gnome 6	2243	20	Oct. 30, 1979
Gnome 7	2244	6	Oct. 30, 1979
Gnome 8	2245	9	Oct. 30, 1979
Gnome 9	2246	20	Oct. 30, 1979
Gnome 10	2247	9	Oct. 30, 1979
Gnome 11	2248	4	Oct. 30, 1979
Gnome 12	2249	20	Oct. 30, 1979

COMINCO LTD.

EXPLORATION  
NTS: 94F 7E & 2E

WESTERN DISTRICT  
October 14, 1980

ASSESSMENT REPORT

GEOLOGICAL AND GEOCHEMICAL REPORT

ON THE

GNOME GROUP

AKIE RIVER AREA

OMINECA MINING DIVISION

INTRODUCTION

The Gnome Group, totalling 148 units was staked to cover several lead-zinc-barium anomalies on tributaries of the Akie River and several gossans originating from the Upper Devonian Gunsteel Formation. The area is underlain by a thick succession of Devonian "Black Clastics", which host the potentially economic lead-zinc deposits on the Cirque and Drift-pile creek properties.

Cominco Ltd. performed preliminary silt and soil sampling, prospecting and geological mapping and line cutting during the period June 3 to July 8, 1980. Total expenditures on this claim group are estimated to be \$35,737.60.

Preliminary geological mapping on a scale of 1:10,000 was conducted over the central portion of the claim group. A ten kilometer northwest trending baseline was established to provide control for geological mapping and chain and compass grid-soil sampling. Approximately 1142 soils were taken at 50 meter intervals along grid lines 400 meters apart.

LOCATION AND ACCESS

The Gnome claim group is located south of the Akie River and 28 km west of Sikanni Chief Lake on the Fort Ware map sheet, NTS 94F. The center of the claim group is located at latitude 57°14'N and longitude 124°33'W.

Field work on the Gnome Group was conducted using a helicopter based at Sikanni Chief Lake, 28 kilometers to the east. 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 through Kwadacha Wilderness Park, Gataga Lakes, and Driftpile Creek 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, Besa River Formation which is the basinal equivalent of the Devonian Dunedin Formation platformal carbonates to the east, and an upper division of silver-blue-grey weathering siliceous argillite, chert, and carbonaceous, pyritic black shale informally named the Gunsteel Formation. The Gunsteel Formation hosts four 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.

The Devonian "Black Clastics" unconformably overlie Devonian platform to reefal carbonates and Ordovician - Silurian black graptolitic shales and orange weathering dolomitic siltstones. The "Black Clastics" have been preserved in overturned synclinal troughs which are typically over-riden by thrust plates containing older Road River Formation stratigraphy.

## GEOLOGY

Preliminary mapping on the property has outlined a northwest trending belt of "Black Clastics" unconformably overlying Silurian siltstones and are structurally overlain by several imbricate thrust panels of Kechika Group argillaceous limestones.

### Kechika Group (unit $\epsilon O_K$ )

The Kechika Group ranges in age from latest Cambrian to Early Ordovician and occurs along the western boundary of the claim group. The rock units consists of at least 500 meters of cream to light grey-weathering, wavy banded, nodular calcareous mudstone and phyllite. The rocks are typically soft and "soapy" indicating the presence of talc. Preliminary interpretation of the Kechika Group indicates that, from east to west, the successions are the result of deposition at the edge of a subtidal carbonate platform that rapidly passes to shelf facies and approaches the deeper part of the outer shelf. Biostratigraphic correlation shows westward facies change of the upper part of the Kechika with coeval Road River Formation.

### Road River Formation (unit $OS_{RR}$ )

The Road River Formation, ranging in age from Middle Ordovician to Upper Silurian, occurs along the eastern boundary of the claim group and con-

TABLE I

TABLE OF GEOLOGICAL FORMATIONS

<u>AGE</u>	<u>UNIT</u>	<u>DESCRIPTION</u>
Upper Devonian		<u>Gunsteel Formation</u>
"BLACK CLASTICS"	UD <sub>GS</sub>	Silvery-grey weathering, black siliceous shale, chert and argillite. (Undivided UD <sub>AR</sub> , UD <sub>BA</sub> )
	UD <sub>AR</sub>	Rusty to black weathering, black thick bedded argillite with minor nodular barite and pyrite
	UD <sub>BA</sub>	White weathering, blebby, nodular and massive dark grey barite
		<u>Besa River Formation</u>
	UD <sub>BR</sub>	Tan brown weathering, brownish black silty shale with interbeds of siltstone and conglomerate
	unconformity	
Silurian	S <sub>SS</sub>	Light orange to buff weathering, massive dark grey dolomitic siltstone
	unconformity	
Ordovician-Silurian		<u>Road River Formation</u>
	OS <sub>RR</sub>	Black to grey weathering, black graphitic graptolitic variably calcareous shale
Ordovician	O <sub>V</sub>	Orange weathering, buff, tan and green calcareous volcanics
		<u>Kechika Group</u>
Cambro-Ordovician	EO <sub>K</sub>	Buff to cream weathering, argillaceous wavy banded, silty and nodular limestone to calcareous grey shale

formably overlies the Kechika Group. The base of the Formation consists of cream and reddish-brown weathering, laminated calcareous siltstone and shale with limestone turbidite interbeds. These rocks are overlain by black carbonaceous basinal shales containing Middle Ordovician to Upper Silurian graptolite assemblages. Black chert horizons are locally interbedded with the shales.

Unit O<sub>v</sub>, a discontinuous volcanic horizon occurring near the base of the black shale unit, consists of greenish grey-weathering massive micro-dioritic flows and orange to brown-weathering vitric crystal and lapillituff with high carbonate content.

### Silurian (Unit S<sub>SS</sub>)

Road River Formation shales are unconformably overlain by up to 500 meters of orange and 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 siliceous sponge spicules and poorly preserved graptolites, (monograptus).

### Besa River Formation (Unit UD<sub>BR</sub>)

The Besa River Formation unconformably overlies the Silurian, unit S<sub>SS</sub> and forms the base of the Devonian "Black Clastic" succession. This unit consists of a very thin accumulation of recessive, brownish to brownish-black weathering silty shale with thin beds of tan siltstone and conglomerate. Crossbedding, graded bedding, and scour marks appear to indicate rapid deposition in a marine environment and probably represents a distal submarine turbidite fan.

### Gunsteel Formation (Unit UD<sub>GS</sub>)

Although stratigraphic relationships are not well defined it appears that Gunsteel rocks unconformably overly the Besa River Formation. The unit is light grey weathering to silver-grey weathering, siliceous black laminated silty shale, medium bedded siliceous argillite or chert and rusty weathering pyritic carbonaceous black shale containing nodular or blebby barite interbeds (UD<sub>BA</sub> and UD<sub>AR</sub>).

### Structure

Structurally, the rocks have undergone major northeast-southwest compression. Northwest trending thrust faults and northeast verging overturned isoclinal folds are the most prominent fractures.

### GEOCHEMISTRY

During the period June 3 to July 8, 1980 approximately 30 stream silt

1142 soil and 28 rock samples were collected on the Gnome Group as a preliminary survey for potential stratiform barite-lead-zinc mineralization. Ketz Enterprises of Ross River, Yukon were contracted to cut a 10 km northwest trending baseline to provide control for a chain and compass soil grid survey. Soil samples were collected at 50 meter intervals along lines spaced 400 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 are dried; sieved to -80 mesh, weighed to half a gram, 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 are crushed, milled and then pulped to -200 mesh and analysed by the same method as the silt and soil samples. All sample pulps from the Gnome 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 on 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 barite stratigraphy in the Gunsteel Formation and the lead response appears to be the best indicator of stratiform barite-sulphide mineralization.

The widely spaced soil sampling grid outlined several areas of moderate lead-zinc, and barium response that require detailed grid sampling.

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

TABLE 2

TABLE OF CALCULATED THRESHOLDS (ppm)

<u>SAMPLE TYPE</u>	<u>POSSIBLY ANOMALOUS</u>			<u>ANOMALOUS</u>		
	Pb	Zn	Ba	Pb	Zn	Ba
SOIL	40	1000	3000	50	1500	5000
SILT	40	1000	3000	50	1500	5000
ROCK	60	1000	3500	100	2000	3000



Two large gossans with associated zinc anomalies occur on lines 16S between stations 300E and 600+50E and at Line 9S between stations 200+50W and 500+50W. The high zinc content could be due to the scavenging effect of iron hydroxide in the gossan.

Barium anomalies show linear trends which reflect the barium rich shale portion of the Gunsteel Formation. The largest barium anomaly occurs on lines 63S through to 75S between stations 0+00 to 400+50W.

The source of the above anomalies has not been determined to date.

### CONCLUSIONS

Preliminary mapping on the property has outlined the Gunsteel Formation, which is the host for stratiform barite-sulphide occurrences at the Drift-pile Creek, Cirque and Elf properties.

Widely spaced soil lines established throughout the claim group have outlined several coincident lead-barium, zinc-barium and lead-zinc-barium anomalies situated over the Gunsteel Formation stratigraphy.

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

G. Harden, Manager  
Exploration  
Western District

REFERENCES

- Carne, R.C. (1978): Driftpile Lead-Zinc District, B.C. Ministry of Energy, Mines & Pet. Res., Assessment Report 6666.
- Cecile, M.P. and Norford, B.S. (1979): Basin to Platform Transition, Lower Paleozoic Strata of Ware and Trutch Map-Areas, Northeastern British Columbia, in Current Research, Part A, Geol. Surv., Canada, Paper 79-1A, Report 36.
- Gabrielse, H. (1962): Geological Map of the Kechika Map-Area, Geol. Surv., Canada, Map 42-1962.
- . . . (1977): Geological Map of Ware West Half and Toodoggone River Map-Areas, Geol. Surv., Canada, Open File Report 483.
- MacIntyre, D.G. (1979): Driftpile Creek - Akie River Project, B.C. Ministry of Energy, Mines & Pet. Res., Geological Fieldwork, 1979, Paper 1980-1, pp. 55-67.
- MacQueen, R.W. and Thompson, R.I. (1978): Carbonate-Hosted Lead-Zinc in Northeastern British Columbia, With Emphasis on the Robb Lake Deposit, Cdn. Journ. Earth Sci., Vol. 15, pp. 1737-1762.
- Roberts, W.J. (1977): Geological and Geochemical Report on the Cirque Group, B.C. Ministry of Energy, Mines & Pet. Res., Assessment Report 6743.
- Taylor, G. (1979): Geological Map of the Ware East Half and Trutch Map-Areas, Geol. Surv., Canada, Open File Report 609.
- Taylor, G.C. Cecile, M.P., Jefferson, C.W., and Norford, B.S. (1979): Stratigraphy of the Ware East Half Map-Area, in Current Research, Part A, Geol. Surv., Canada, Paper 79-A, Report 37.
- Taylor, G.C. and MacKenzie, W.S. (1970): Devonian Stratigraphy of Northeast British Columbia, Geol. Surv., Canada, Bull. 186.
- Taylor, G.C. and Stott, D.F. (1973): Tuchodi Lakes Map-Area, British Columbia, Geol. Surv., Canada, Mem. 373.

APPENDIX "A"

STATEMENT OF EXPENDITURES

GNOME CLAIM GROUP

JUNE 3 - JULY 8, 1980

SALARIES AND WAGES

K.R. Pride	June 3-5, 12, July 5,6	@ \$173.36 per day =	\$ 1,040.16
A.L. MacGregor	June 10, July 5,6	@ \$130.24 per day =	390.72
A.B. Mawer	June 12	@ \$200.00 per day =	200.00
V. Kuran	June 21-30	@ \$105.60 per day =	1,689.60
A. Mueller-Wilm	June 21-30	@ \$105.60 per day =	1,689.60
I. Kokan	July 1-8	@ \$ 74.80 per day =	598.40
S. Melville	July 1-8	@ \$ 74.80 per day =	598.40
F. Jay	July 1-8	@ \$ 80.96 per day =	647.68
D. Faubert	July 1-8	@ \$ 68.64 per day =	549.12

LINECUTTING

Ketz Enterprises, Ross River Yukon  
10 km @ \$310 per km. = 3,100.00

ASSAYS AND GEOCHEMICAL ANALYSIS

Cominco Lab. 1172 silt and soil samples @ \$6.10 per sample = 7,149.20  
28 rock samples @ \$7.90 per sample = 221.20  
\$ 7,370.40

FIELD EQUIPMENT AND SUPPLIES = 2,750.00

CAMP MAINTENANCE

58 man days @ \$25.00 per man day = 1,450.00

TRANSPORTATION

Fuel 17 hr. x 22 gal./hr. x 2.5/gal. = 935.00  
Rotary Wing Northern Mountain Helicopter 17 hr @ \$305.00/hr = 5,185.00  
Fixed Wing N.T. Air 800 miles @ \$1.95 per mile = 1,560.00  
Miscellaneous Transportation = 1,500.00

Total Direct Field Costs = \$31,254.08

REPORT WRITING, RESEARCH, DRAFTING

K.R. Pride 12 days @ \$173.36 = 2,080.32  
D. Kuran 5 days @ \$117.90 = 589.60  
V. Kuran 6 days @ \$105.60 = 633.60

Pencil Manuscript, Pacific Survey, Vancouver, B.C. = 1,180.00

Total Cost = \$35,737.60

APPENDIX "B"

IN THE MATTER OF A GEOLOGICAL AND GEOCHEMICAL  
PROGRAM PERFORMED ON THE GNOME CLAIM GROUP

AIKIE 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 Gnome Claim Group;
- (3) THAT the said expenditures were incurred between the 3rd day of June and the 8th day of July 1980 for the purpose of performing geological and geochemical exploration on the Gnome 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 Gnome Claim Group and have interpreted all the data resulting from this work.

Signed: K.R. Pride  
K.R. Pride  
Geologist





LEGEND

MIDDLE DEVONIAN - UPPER DEVONIAN

GUNSTEEL FORMATION

UD<sub>GS</sub> - Undivided UD<sub>GS</sub>, UD<sub>GA</sub>, UD<sub>GR</sub>; silvery-grey weathering, black siliceous shale, chert and argillite. (UD<sub>GA</sub>: pyritic shale, UD<sub>GA</sub>: massive Ba, UD<sub>GR</sub>: ribbon chert)

RESA RIVER FORMATION

UD<sub>RR</sub> - Tan brown weathering, brownish black silty shale with interbeds of siltstone and conglomerate

SILURIAN

SS

Light orange to buff weathering, massive dark grey dolomitic siltstone

ORDOVICIAN - SILURIAN

ROAD RIVER FORMATION

ORR

Black to grey weathering, black graphitic granitic variably calcareous shale

ORDOVICIAN

OV

Orange weathering, buff, tan and green calcareous volcanics

CAMBRO - ORDOVICIAN

KECHIKA GROUP

KV

Buff to cream weathering, argillaceous wavy bedded, silty and nodular limestone to calcareous grey shale

SYMBOL LIST

- Geological Boundary, defined, assumed, projected
- Outcrop Boundary
- Elevation Contours (metres)
- Thrust Fault
- Syncline
- Gossan

SCALE  
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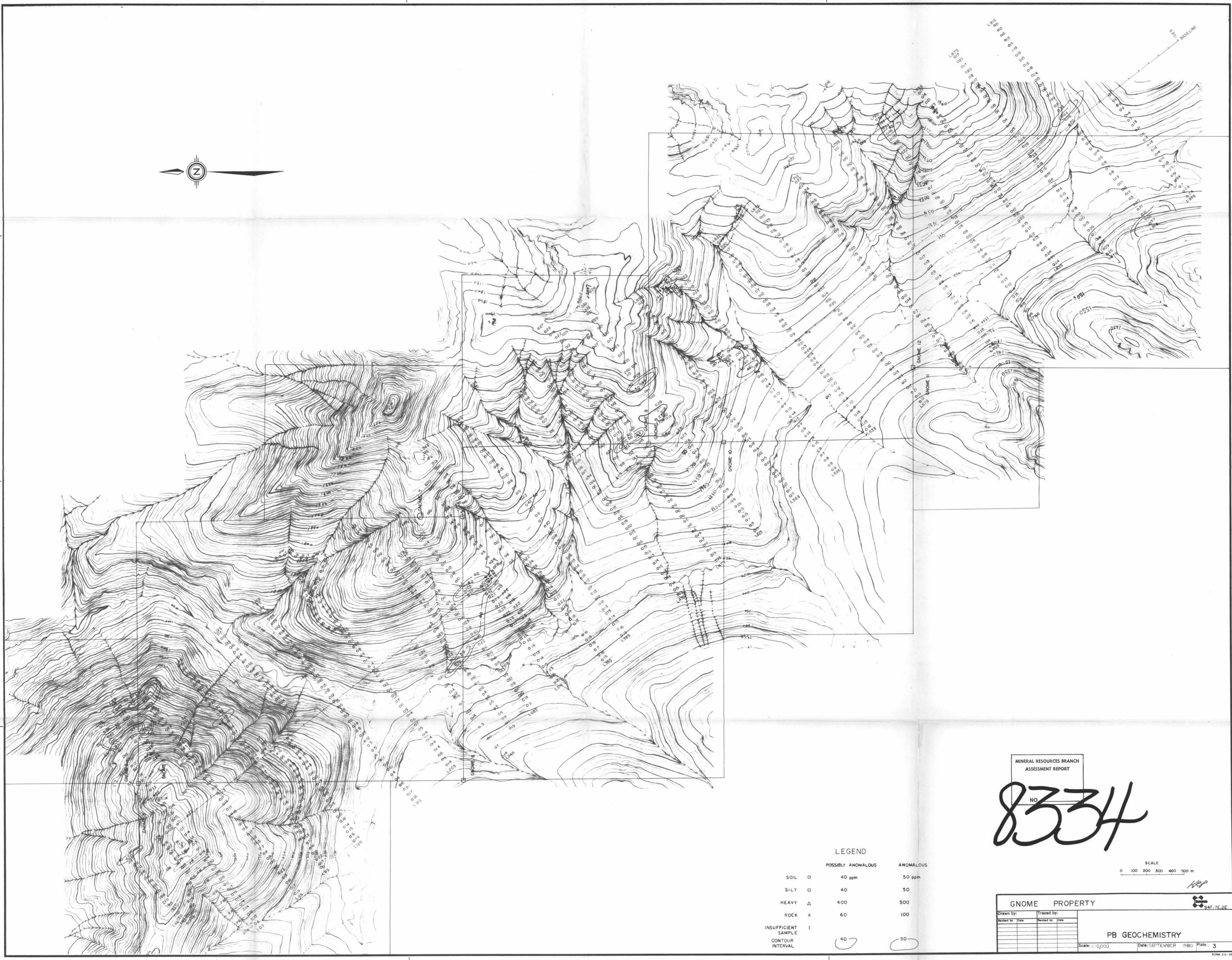
MINERAL RESOURCES BRANCH  
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GNOME PROPERTY

Drawn by: V.K.	Traced by:
Checked by:	Checked by:
Scale: 1:10,000	Date: SEPTEMBER, 1980

GEOLOGY



MINERAL RESOURCES BRANCH  
ASSESSMENT REPORT

NO  
**8334**

SCALE  
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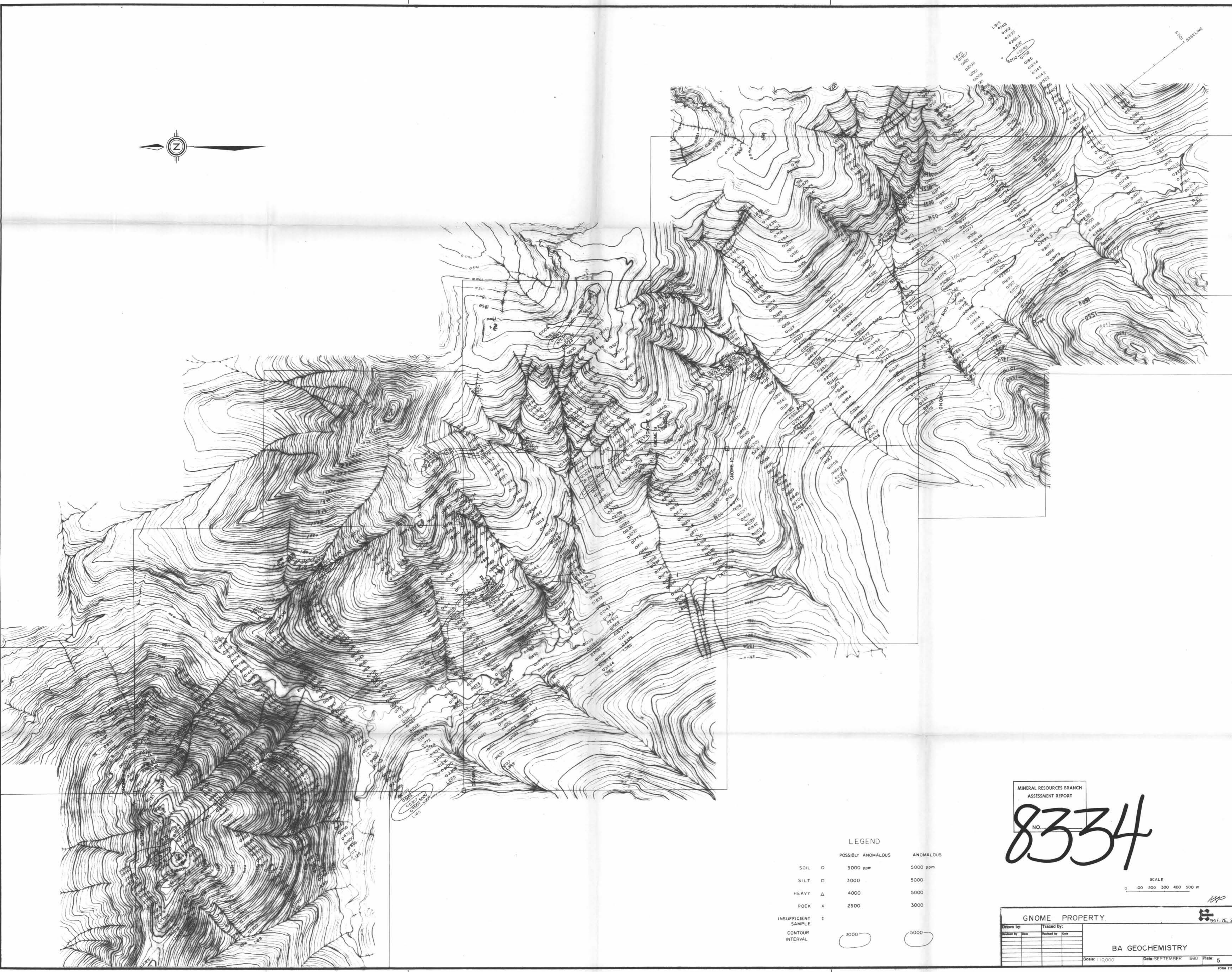
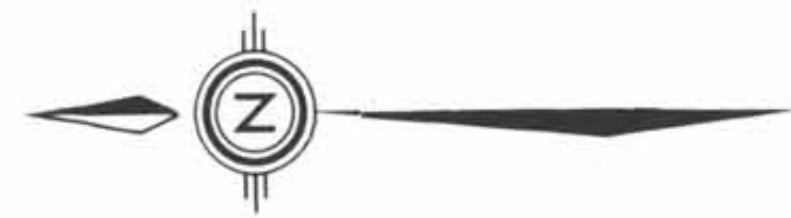
LEGEND

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

GNOME PROPERTY		
Drawn by:	Traced by:	
Revised by:	Revised by:	PB GEOCHEMISTRY
Scale: 1:10,000		Date: SEPTEMBER 1980 Plate: 3



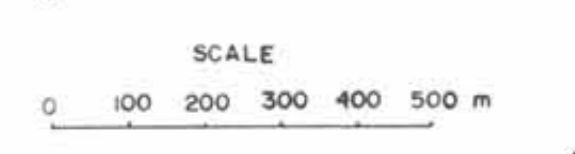




LEGEND

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

MINERAL RESOURCES BRANCH  
ASSESSMENT REPORT  
**8334**  
NO.



GNOME PROPERTY

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

BA GEOCHEMISTRY

Scale: 1:10,000 Date: SEPTEMBER 1960 Plate: 5