

85-1054-14632

GEOLOGY, ROCK AND SOIL GEOCHEMISTRY

BRIAN BORU PROSPECT

GAM I - IV CLAIMS

**Omineca Mining Division
British Columbia**

Latitude -- 55 deg. 04' N
Longitude -- 127 deg. 38' W

by: Robert Baerg, Geologist

FILMED

**Noranda Exploration Company, Limited
(no personal liability)**

**GEOLOGICAL BRANCH
ASSESSMENT REPORT**

December, 1985

14,632

N.T.S. 93 M/4E

SUMMARY:

The Brian Boru property is located approximately 19.5 km south of New Hazelton, B.C.

The property dates back to the early 1900's and was generally dormant until 1979 when Asarco staked the Gam 1-4 claims.

The property consists of several showings of sphalerite-pyrite +/- galena +/- chalcopyrite +/- arsenopyrite in quartz-sericite-pyrite +/- carbonate altered felsic volcanics and volcanoclastics of the Brian Boru Formation.

During 1985 further soil sampling on the Killarney showing closed off the Pb-Zn-Ag anomaly to the north and west and located a new Zn-Ag-As-Pb anomalous area on the east side of Brian Boru Creek.

Rock, talus and silt samples collected on and along the Oxidation Zone, a large area of felsic volcanics and volcanoclastics which are locally strongly quartz-sericite pyrite altered, indicate that this area is highly anomalous in Zn-Pb-Ag-As. Only scattered mineralization has been found in this area and this does not explain the widespread values.

Further work is recommended for both the Killarney showing and the Oxidation zone.

INTRODUCTION

The Brian Boru prospect consists of four mineralized areas referred to as the Brian Boru, Jones, Killarney and South Oxidation zone showings.

During August 3-9 and September 22-23, 1985, a crew of three and two men respectively under the supervision of R. Baerg conducted prospecting and geochemical surveys on the Brian Boru property. This work consisted of extensions on the Killarney soil grid, detailed silt sampling of the creeks on the property and prospecting and rock-talus sampling along the southern ridge.

Mapping along parts of the southern ridge was greatly hampered by the steep and rugged terrain. A total of 341 soil samples, 46 silt samples and 74 rock/talus were collected.

This work was carried out by employees of Noranda Exploration Company Limited, No Personal Liability, under the direction of R. MacArthur.

LOCATION AND ACCESS

The Killarney showing is located along the south fork of Brian Boru creek on map sheet 93 M/4E approximately 19.5 km south of New Hazelton, B.C. (Figure 1).

The property is near latitude 55 deg. 04' N and longitude 127 deg. 38' W.

The Oxidation zone is located at the eastern end of the ridge which forms the southern edge of the property. This area is all above treeline and the slopes are quite steep. Elevations range from 1450 m to 2000 m.

Access is by helicopter from Smithers, B.C. located about 40 km southeast. The nearest road is along Juniper Creek about 6 km northwest of the showing.

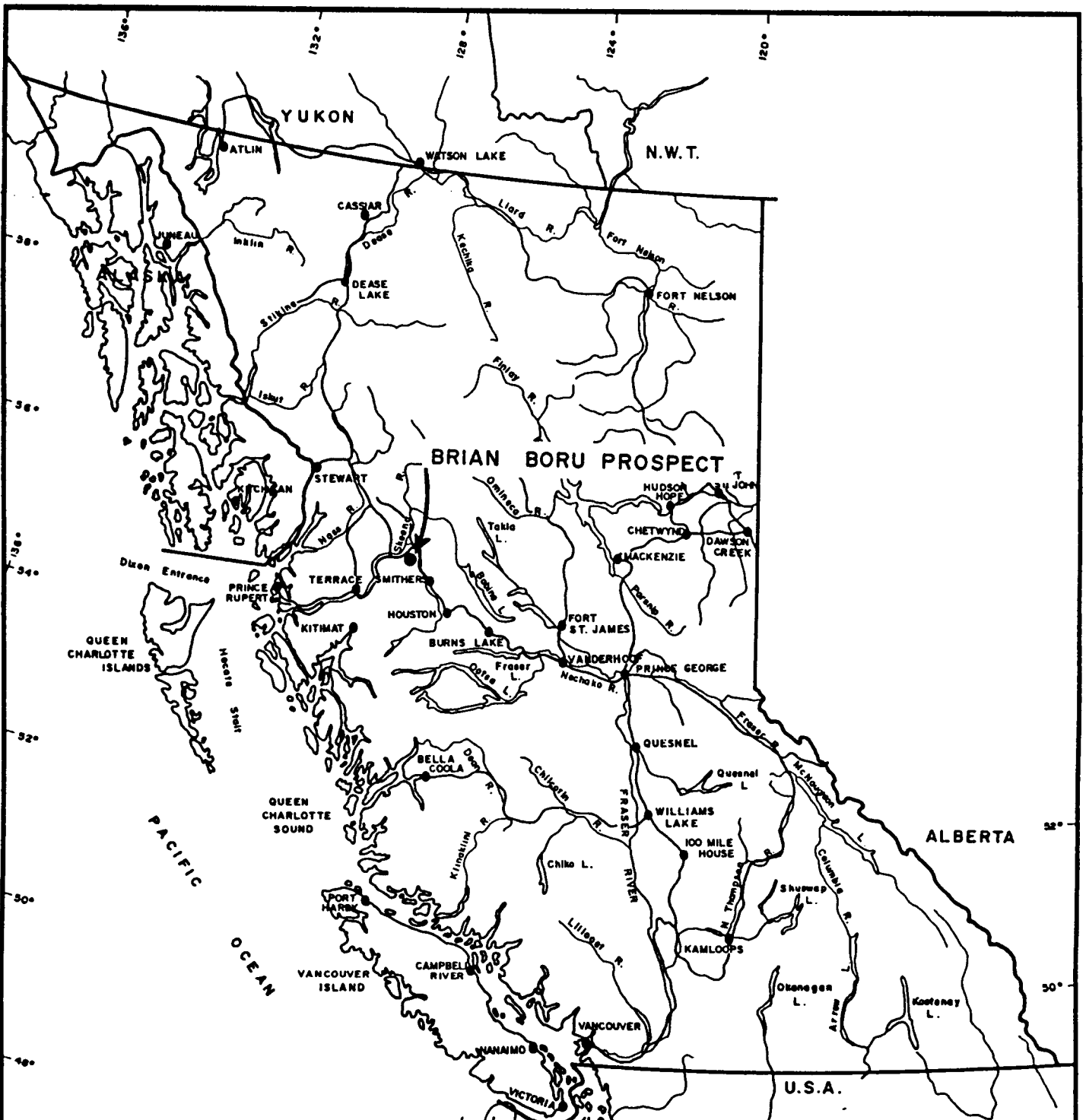
PHYSIOGRAPHY

The property lies in a narrow steep sided valley. Elevations range from 4400' on the valley bottom to 6600' on the ridge tops.

Vegetation varies from mature fir-cedar forests in the western half of the property to alpine meadows in the eastern half.

CLAIMS

In 1979, Asarco, Ltd. staked the GAM I, II, III, & IV claims

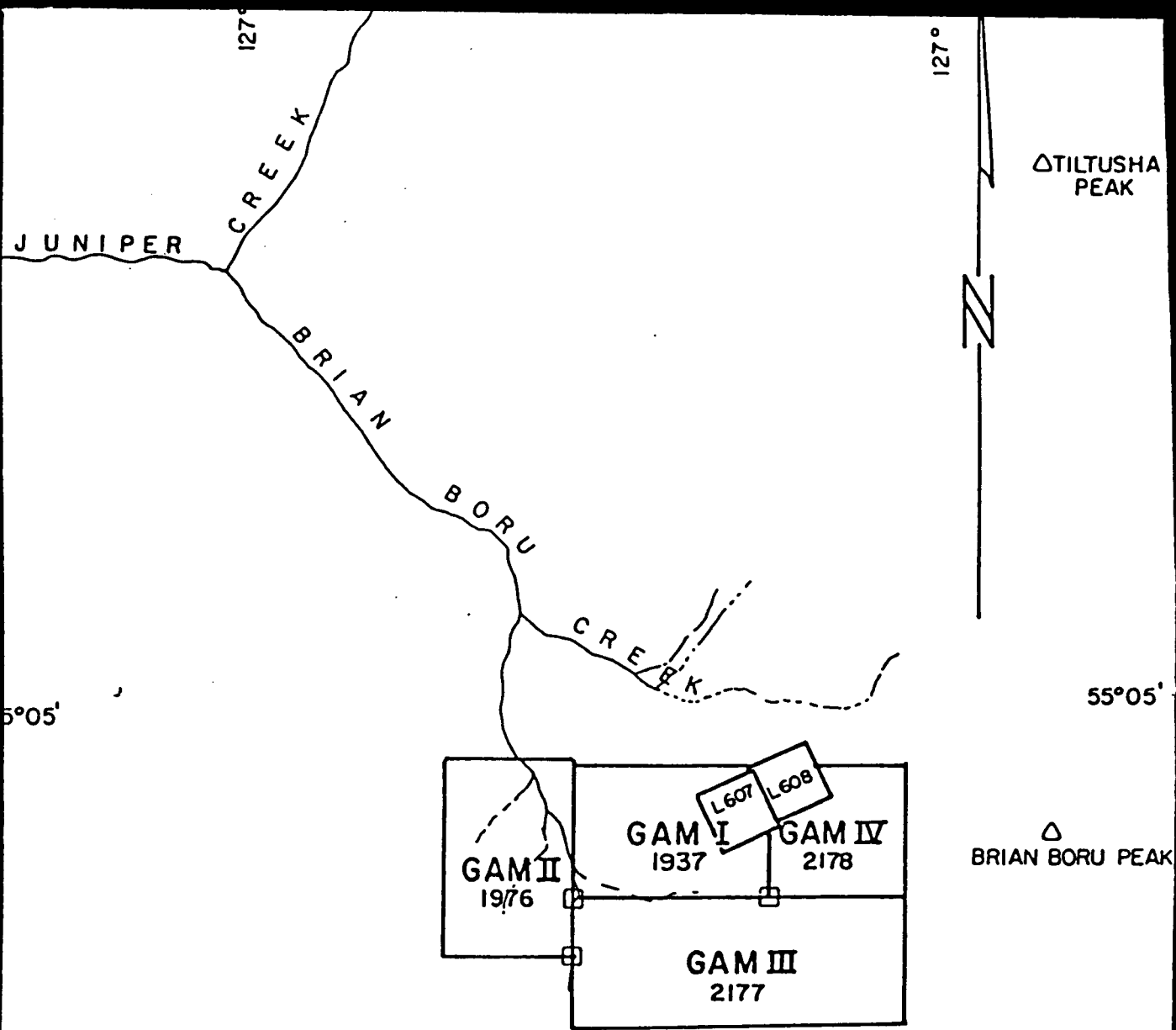


*Robert Baerg
Jan 10/85*

0 100 200 KILOMETRES
SCALE : 1 : 6,000,000

REVISED		
	LOCATION MAP BRIAN BORU PROSPECT	
PROJ No. <u>554</u>	SURVEY BY: <u>R. Baerg</u>	DATE: <u>Nov. 85</u>
N.T.S. <u>93M/4E</u>	DRAWN BY: <u>S.K.B.</u>	SCALE: <u>1:6,000,000</u>
DWG. No. Fig. 1	NORANDA EXPLORATION OFFICE: <u>PRINCE GEORGE, B.C.</u>	

VANCAL 11927



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REVISED		
	BRIAN BORU PROSPECT	
	OMINECA M.D.	
	CLAIM MAP	
PROJ. No. 554	SURVEY BY: R. Baerg	DATE: Nov. 85
N.T.S. 93M/4E.	DRAWN BY: R. Baerg	SCALE: 1:50,000
DWG. No.	NORANDA EXPLORATION	
Fig. 2	OFFICE: Prince George, B.C.	

(26 units) to cover the Brian Boru prospect. These claims overlap the Brian Boru No. 1 (Lot 607) and Brian Boru No. 2 (Lot 608) Crown Grants which were originally granted in 1916 or 1917 (Figure 2).

The GAM claims were grouped on August 7, 1980.

Table 1 -- CLAIM DATA

<u>Claim Name</u>	<u># Units</u>	<u>Tag #</u>	<u>Mining Div.</u>	<u>Record #</u>	<u>Record Date</u>
GAM I	6	125187E	Omineca	1937	Aug. 9/79
GAM II	6	07902	"	1976	Aug. 23/79
GAM III	10	01919	"	2177	Oct. 30/79
GAM IV	4	01920	"	2178	Oct. 30/79
BORU GRP.					Aug. 7/80

HISTORY

Most of what are now called the Brian Boru, Jones and South Oxidation Zone showings were first discovered in 1914-1915. Small open cuts, pits and adits exposed small irregular sphalerite-pyrite veins and veinlets containing variable amounts of lead, silver, arsenic and gold.

In 1926, the Killarney showings were discovered and several open pits and a short adit dug.

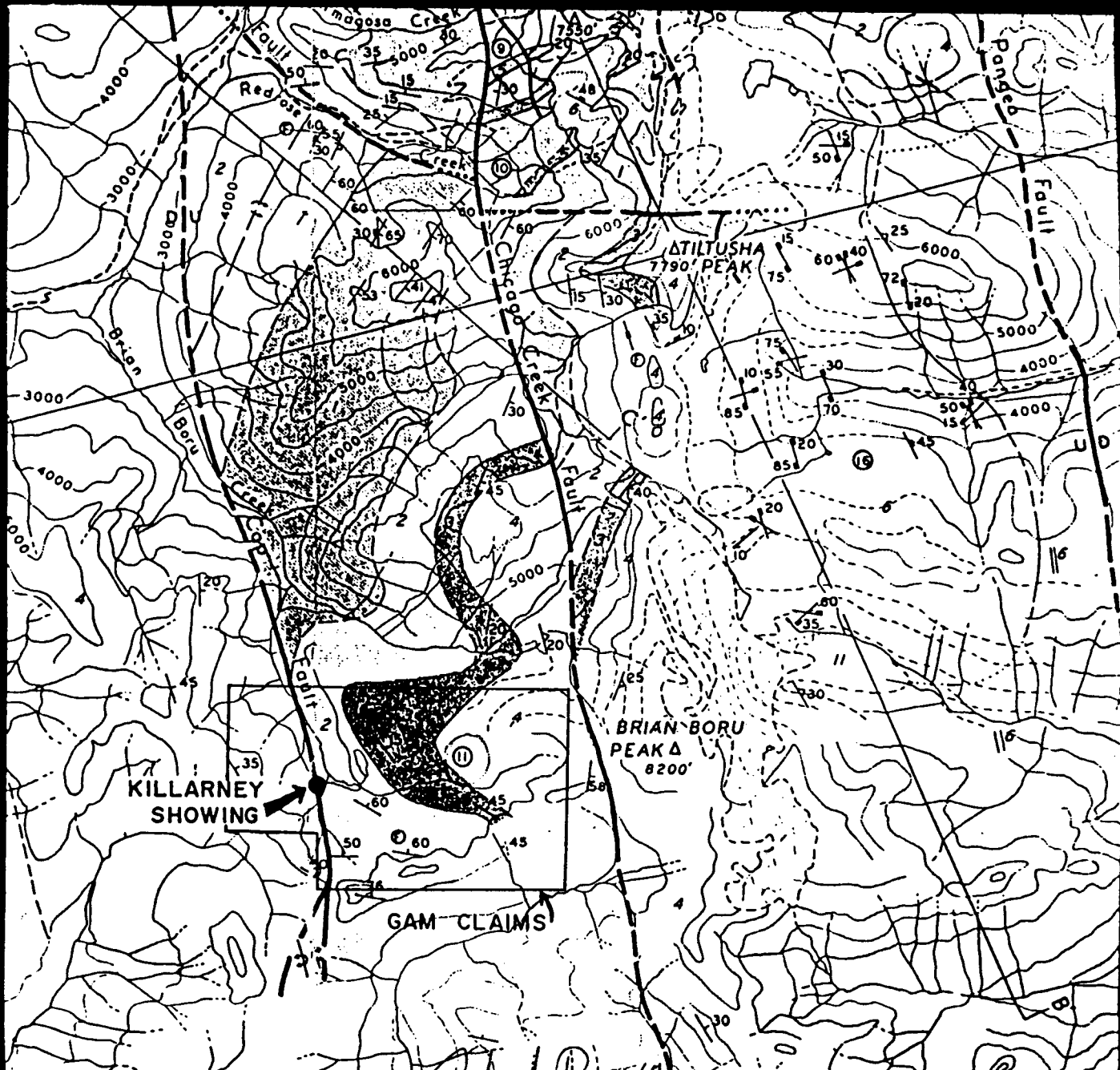
In 1979, Asarco, Inc. staked the GAM claims. In 1980 they geologically mapped the property on a 1:5,000 scale and established a flagged grid over the Killarney showing. Soil sampling and a magnetometer survey were completed over the grid. In 1981, VLF, Magnetic and I.P. geophysical surveys were completed over the Killarney and Jones showings.

REGIONAL GEOLOGY

The GAM claims are underlain by rocks of the later lower and early upper Cretaceous Brian Boru and Red Rose Formations about 5.7 km west of the south end of the Rocher Deboile Stock. The showings are hosted by the Brian Boru Formation.

In the vicinity of the Killarney showings, the two formations are separated by the NNW trending Cap fault. Brown (1960) believed the fault to be a normal fault dipping 50 deg. to 70 deg. westerly but recent mapping by Richards (1978) show much of the Cap fault to be a thrust fault. A dip-slip displacement of 1500 m to 3000 m along the fault was estimated by Brown (1960).

The Brian Boru Formation was described by Brown (1960) to consist largely of porphyritic andesite flows and breccias with



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LEGEND

- PLEISTOCENE AND RECENT**
- 11 Drift and alluvium
- PALEOCENE OR LATER**
- 10 Andesite, basalt flows and dykes
- PALEOCENE**
- 9 Greywacke, shale, conglomerate, coal
- CRETACEOUS**
- BULKLEY INTRUSIONS (5-8)
- 6 ROCHER DEBOULE STOCK: 6-porphyrific granodiorite; 7-quartz monzonite; 8 Undivided
- Diorite dykes
- UPPER JURASSIC AND LOWER CRETACEOUS**
- HAZELTON GROUP (IN PART) (1-4)
- 4 BRIAN BORU FORMATION: varicoloured porphyritic andesitic flows and breccias, tuffs, minor volcanic sandstone and conglomerate
- RED ROSE FORMATION (1-3)
- MEMBER D: conglomerate, greywacke, shale, and hornfelsic equivalents
- 1/2 MEMBER B: shale, siltstone, and hornfels. 2-MEMBERS A and C: greywacke, shale, siltstone, and hornfelsic equivalents; minor conglomerate and coal



REVISED	BRIAN BORU PROSPECT	
	REGIONAL GEOLOGY (GEOLOGY BY A. SUTHERLAND BROWN 1960)	
PROJ. No. 554	SURVEY BY: R. Baerg	DATE: Nov. 85
N.T.S. 93 M.	DRAWN BY: R. Baerg	SCALE: lin. = 1 mile
DWG. No.	NORANDA EXPLORATION	
Fig. 3	OFFICE: Prince George, B.C.	

minor tuffs. However, recent mapping by Richards (1977) has indicated rhyolitic pyroclastics and flows also occur.

The Red Rose Formation consists of greywacke, shale and siltstone with minor conglomerate and coal. Brown (1960) suggests a conformable contact between the Brian Boru and underlying Red Rose Formations.

One should note that the early geological mapping by Armstrong (1944) and Brown (1960) considered the Brian Boru and Red Rose Formations as part of the Hazelton Group. However, recent mapping by Richards (1978) and Tipper (1979) consider the formations as being separate from the Hazelton Group.

The Late Cretaceous Rocher Deboule stock consists of porphyritic granodiorite and quartz monzonite. Porphyritic andesite dykes and fine grained diorite dykes also occur.

Hornfelsing is common within sediments adjacent to the stock.

ECONOMIC GEOLOGY OF ROCHER DEBOULE STOCK

At least 40 mineral prospects occur within or near the Rocher Deboule Stock. Most mineralization occurs along shear or fracture zones within quartz veins or vein-like replacements.

Metals occurring include Cu, Mo, W, Sn, Co, U, As, Au, Ag, Sb, Bi, Pb, Zn. The two major producing mines, the Rocher Deboule and the Red Rose Mines, were principally W-Cu deposits.

These showings can be divided in two groups; W-Cu mineralization occurring within or adjacent to the Rocher Deboule Stock, and Pb-Zn-Ag mineralization occurring further from the stock. The Brian Boru prospect would be classified within the latter group.

LOCAL GEOLOGY:

The following description of the geology of the Killarney showing is taken from the 1984 report by D. Gorc.

GEOLOGY OF KILLARNEY SHOWING

The Killarney showings are hosted by fractured and bleached Brian Boru volcanics. Exposures along the ridge to the west of the showings and in angular talus near the showing indicate a rhyolitic volcanic sequence consisting of acid pyroclastics and flows.

Acid Pyroclastics

The pyroclastics range in texture from agglomerate with clasts to 10 cm across to fine lapilli tuff with clasts of 2-3 mm. Lapilli tuff with clasts 1-2 cm across would be the most common pyroclastic.

Clasts of black argillaceous sediments are commonly found within the pyroclastic rocks. Whether such rocks are fragments of the underlying Red Rose Formation is not known.

Both angular and subrounded clasts occur within the pyroclastic rocks. In some uses, volcanic breccia would be a more appropriate description. The appearance of the pyroclastics suggest some explosive activity in their formation.

Rhyodacite Flows

Such rocks are very fine grained, siliceous, hard and competent. They are medium to dark grey in colour and are characterized by small lath-like phenocrysts of plagioclase and occasional phenocrysts of hornblende. The hornblende phenocrysts often have a thin rim of rusty alteration. These rocks contain traces of disseminated pyrite. Many of these rocks may be fine grained tuffs.

Rhyolite Flows

These rocks are almost identical to the rhyodacite rocks except that they have a much lighter grey colour and generally contain more disseminated pyrite which can be as high as 2-3%. These rocks also contain hornblende phenocrysts. Occasional flecks of dark mineral may be sphalerite. In some cases, such rocks could be bleached rhyodacite, especially where there is high disseminated pyrite.

Greywacke

Abundant greywacke assigned to the Red Rose Formation is found to the north and east of Brian Boru Creek. The greywacke is dark grey, massive and evenly textured except for occasional thin (1-2 cm) pebble layers. Thin carbonaceous layers were noted and are the likely source for the I.P. response obtained over these rocks. Neither sulphides or alteration were noted within these rocks.

Greywacke talus identical to that of the Red Rose formation is commonly found within the Killarney grid. Whether these rocks are part of the Brian Boru or of the Red Rose formation is not known.

Shale

Black argillaceous rocks were also noted east of Brian Boru

Creek. The shales are soft and weathered into 3-5 cm thick plates. Occasional fossils were seen along bedding surfaces. No sulphides or alteration were noted within these rocks.

ALTERATION

The Killarney pyrite-sphalerite mineralization is hosted by bleached volcanic rocks altered to clay minerals and sericite. The proportion of clay minerals to sericite is difficult to estimate. The altered rock is characteristically light grey to white in colour, soft with up to 2% disseminated pyrite. Original pyrite content was higher since much of the pyrite has been leached out. Occasional pyrite veinlets also occur. Occasional flecks of a green translucent mineral may be fluorite.

Although this alteration is most noticeable within the mineralized rock in the Killarney showing, it is also present in talus throughout the grid and in several outcrops (sample sites 14810, 14825) along the eastern edge of the grid. The distribution of such alteration is impossible to map since such talus is mixed with unaltered volcanic and sedimentary talus.

One of the characteristics of rocks affected by this alteration is a rusty brown rim of highly weathered rock. Such rims are generally 1-2 cm thick but are often 10 cm or more thick. Some of the rhyolite flow rocks also exhibit such weathered rims suggesting that some of these rhyolites may represent a less intense form of the same alteration.

Manganese stain is also common on weathered surfaces.

During 1985 the accessible areas of the Oxidation zone, the southern ridge southwest of the Killarney showing and the creeks to the northwest of the Killarney showing were prospected.

Prospecting to the west of the Killarney showing confirmed the continuation of the altered felsic volcanic package to the west and northern edge of the property. Outcrop of brown, silty mudstone, presumed to be part of the Red Rose Formation, occurs near the mouth of the most northerly creek on the map (Figure 4) and appears to mark the limit of the felsic package in that direction.

Southeast of the Killarney showing and west of the Cap Fault (Figure 4) is a section, approximately 1.5 km wide, of Red Rose Formation greywacke, sandstone, siltstone and minor conglomerate. These sediments appear to be in conformable contact with a pile of felsic flows, volcanoclastics and pyroclastics to the east. The contact is marked by an approximate 10 m thick coarse conglomerate horizon. Bedding within the sediments generally trends east to southeast with northerly dips. The volcanics are commonly intensely quartz-sericite-carbonate-pyrite altered. This alteration appears to be confined to the volcanics but it is

unclear whether the alteration is syn-depositional or post-depositional and structurally controlled. The volcanics are cut by local 1-2 meter wide green-grey dykes. The author was unable to examine these dykes due to the steep terrain.

MINERALIZATION

The mineralization at the Killarney showing was described in a previous report by D. Gorc 1984 and will not be discussed here.

Mineralization in the Oxidation Zone consists of: (1) disseminated pyrite +/- sphalerite +/- arsenopyrite +/- galena in quartz-sericite-carbonate altered felsic volcanics and pyroclastics, (2) massive pyrite patches in quartz-sericite-carbonate altered felsic volcanics, (3) narrow 1-10 cm wide, quartz veins mineralized with pyrite and minor sphalerite, galena and arsenopyrite, (4) narrow 1-4 cm wide fractures mineralized with sphalerite and minor galena and pyrite, (5) 1-10 cm wide pyrite-arsenopyrite +/- sphalerite +/- galena +/- chalcopyrite filled shear zones and, (6) chalcopyrite on narrow fractures in a chlorite altered hornblende feldspar porphyry. Types 4 and 5 were exposed in a small adit along the lower edge of outcrop on the north-facing slope. The results from samples of the different mineralization are included in Table 2.

TABLE 2 (All values in ppm except Au in ppb)

Sample #	Cu	Zn	Pb	Ag	As	Mn	Au	Min.* Type
88351	220	19000	88	3.0	64	5800	10	1
88434	76	344	38	1.0	38	--	10	1
88435	250	5400	104	1.4	164	--	10	1
88436	82	1320	114	2.8	66	--	10	1
88437	80	3360	50	1.4	26	--	10	1
88439	178	1920	10000	19.8	2540	--	240	1
88440	82	5800	38	1.4	48	--	10	1
88480	6	60	14	0.4	16	160	--	1
88484	10	30	1100	9.2	700	80	50	1
88491	180	270	180	15.0	>25000	40	1000	1
88432	28	50	316	59.0	5400	--	360	2
88433	60	354	2440	22.2	670	--	20	2
88441	140	120	560	31.0	360	80	90	2
88443	58	210	2300	43.0	2600	80	50	2
88490	380	1900	60	3.8	2800	80	110	2
88438	760	13200	35800	386.0	146	--	10	3
88448	180	10000	5800	76.0	6000	4200	170	3
88449	320	2100	200	9.6	800	5600	10	3
88447	1600	120000	6000	180.0	140	5000	60	4
88445	13000	55000	36000	2100.0	56	10000	260	5
88446	2800	2400	2500	210.0	>25000	640	6000	5
88444	7800	170	48	24.0	60	1500	10	6

* Mineralization

GEOCHEMISTRY:

Grid Preparation

Initially the baseline on the Killarney grid was extended, using a hipchain and compass, 450 m to the east and 150 m to the west. Stations on the baseline were marked at 25 m intervals with orange and blue flagging. The following crosslines were established perpendicular to the baseline: L9500E, L9550E, L9600E, L10050E, L10100E, L10150E, L10200E and L10450E. As well, extensions were added to the southern ends of L9650E and L9700E and to the northern ends of L9850E, L9900E, L9950E and L10000E. Line 10450E was then extended to L11,000S and L11,000S was used as a tieline from which four perpendicular crosslines were run. All crosslines were established using a hipchain and compass and stations were marked at 25 m intervals with orange and blue flagging.

Soil Sampling Method

Soil samples were collected at 25 or 50 m intervals on the crosslines. The samples were collected from the B-horizon at a depth of 20 to 30 cm with the use of a grub hoe. The sample material was then placed in Kraft wet-strength paper bags, dried and then shipped to Noranda Labs in Vancouver, B.C. for analysis. For the analytical procedure, refer to Appendix III. A total of 341 soil samples were collected and analyzed for Pb, Zn, Ag, As, and Mn.

KILLARNEY SHOWING - SOIL GEOCHEMISTRY During 1985 a total of 341 soil samples were collected on extensions of the Killarney grid. These samples were analyzed for Pb, Zn, Ag, As and Mn. (Fig. 4-7)

The soil sampling did not enlarge the main anomaly located in the central and southern portions of the grid. This anomaly has now been closed off to the north and west. Sampling on the northern ends of lines 9850E to 10000E located several small Zn-Ag +/- Pb anomalies but these do not appear to represent any new significant zones.

Sampling on the southern ends of lines 9550E to 9700E delineated a small Zn-Pb-Ag-Mn +/- As anomaly. This anomaly is open to the southwest however rock samples collected from this general area in 1984 returned disappointing results. It appears that the source of this anomaly is either small or of low grade.

Sampling to the east, on lines 10050E to 10450E, indicated a large area with anomalous Zn, Ag, As, Pb, and Mn values north and east of the small lake on the east side of Brian Boru Creek. The anomalous values on Line 10450E appear to be cut off at the creek which drains the area of the Jones Showing.

Soil sampling on Gam 3 consisted of a small grid which is tied to the Killarney grid by L10450E. This grid was established as a follow-up on silt sample SL-137 which was highly anomalous in Cu, Pb, Zn, Ag and As. The sampling defined a large weak Zn anomaly with local Pb-Ag-As-Mn values. (Fig. 8)

ROCK/TALUS GEOCHEM - KILLARNEY SHOWING A total of 7 rock samples were collected on or adjacent to the Killarney grid. Of these, 2 samples, 88496 and 88497 returned anomalous values in Pb-Zn-Ag-As. These two samples are coincident with a strong Pb-Zn soil anomaly on Lines 9550E and 9600E. (Fig. 4)

OXIDATION ZONE A total of 22 rock samples and 35 talus samples were collected. For analysis, all talus samples were treated as rock samples. (Fig. 8)

A large proportion of the rock samples returned anomalous values in all elements. However, most of the rock samples with high base and precious metal values represent very narrow veins or shears (Types 3-5) but do indicate the presence of precious metals in the system. As well, Type 2 mineralization confirms the widespread presence of Pb, As, Ag, and Au in the hydrothermal alteration assemblage.

Talus samples collected along the northwest facing slope of the Oxidation Zone indicate that almost the entire east end of the ridge has associated anomalous Zn, Pb, Ag, As, Mn +/- Cu +/- Au values. Samples collected at the head of the valley on the south facing slope however, were not anomalous in any of the elements. The center of the valley appears to be the rough break between the anomalous area and the non-anomalous area. As well, four talus samples were collected on the south side of the ridge at the eastern end. These samples were collected below areas of intense alteration, identical to those located on the north side of the ridge. The four samples were highly anomalous in Zn, Pb, Ag, As +/- Cu. (Fig. 9)

Silt Sampling

A total of 36 silt samples were collected on creeks draining the north facing slope of the southern ridge. The sampling reconfirmed that the eastern portion of the ridge, on Gam 3 and 4, is anomalous in Pb, Zn, Ag, As, Mn, +/- Cu +/- Au (Figure 8). Silt sampling on the western end of the ridge, on the north end of the Killarney grid (Fig. 4), has closed off the anomalous area in that direction.

As well, a total of 6 silt samples were collected on the south facing side of the eastern end of the southern ridge (Fig. 9). Four of these samples were very anomalous in Pb, Zn, Ag and As and confirm that the anomalous area located on the north side of the ridge probably continues through to the south side. The

results of these silt samples are compiled in Table 3.

TABLE 3

(All values in ppm except Au in ppb)

<u>Sample #</u>	<u>Sample Type</u>	<u>Cu</u>	<u>Zn</u>	<u>Pb</u>	<u>Ag</u>	<u>As</u>	<u>Au</u> (ppb)
56117	silt	38	260	70	0.4	46	10
56118	talus	130	2600	2800	14.0	1100	10
56119	talus	120	4100	2000	9.4	5000	10
56120	talus	110	2500	980	3.2	880	10
56121	silt	34	190	34	0.2	50	10
56122	silt	48	120	20	0.4	6	10
56123	silt	44	150	18	0.2	10	10
56124	silt	36	130	16	0.2	16	10
56125	silt	44	130	12	0.2	18	10
82073	talus	86	520	370	1.4	100	10
82075	silt	90	1800	840	5.0	510	10
13951	silt	58	920	250	3.0	480	10
13952	silt	50	1800	140	2.0	2600	10
13953	silt	38	230	50	0.4	40	10
13954	silt	70	1000	200	3.2	290	10

CONCLUSIONS:

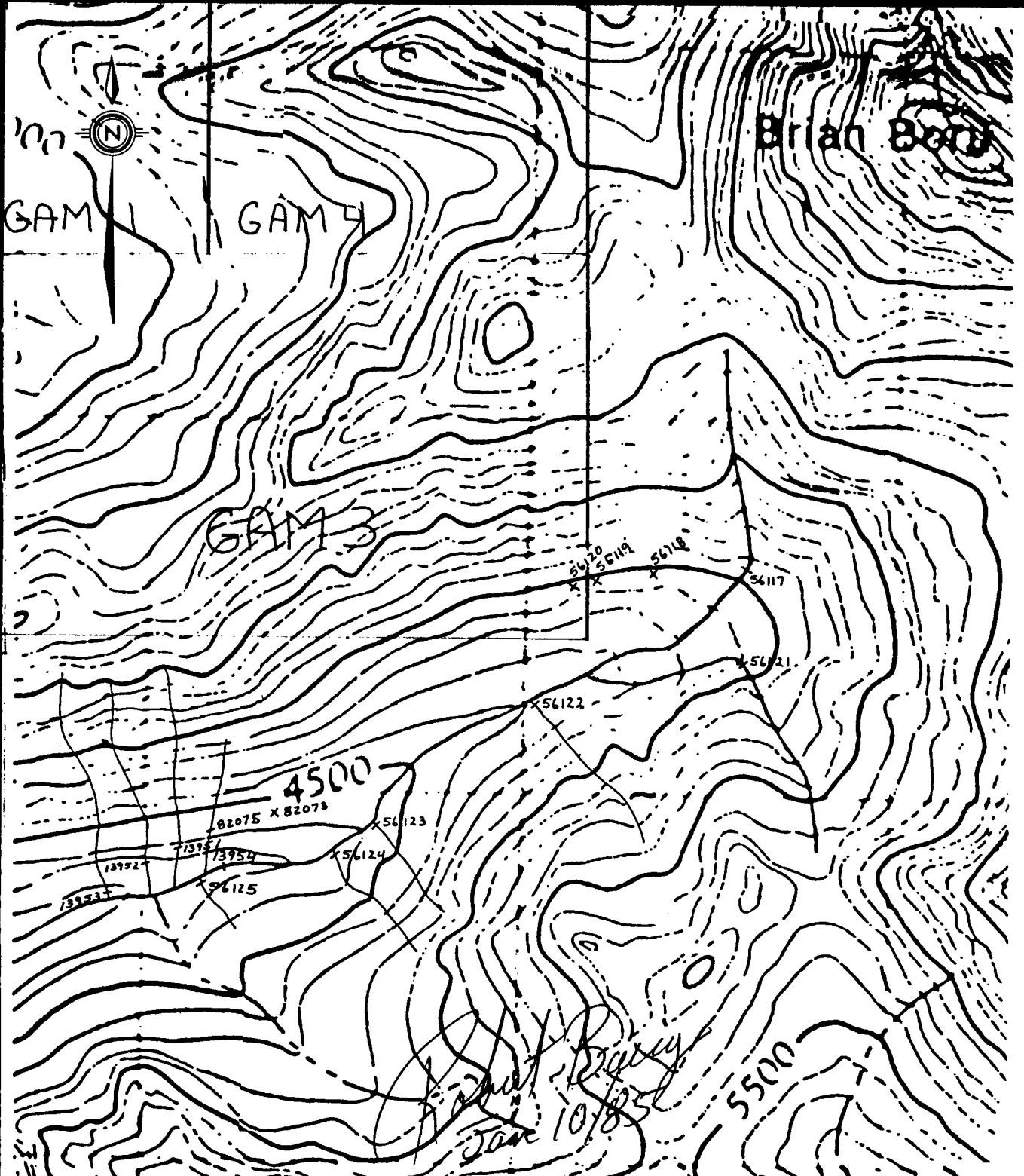
Killarney_Grid_Area

Soil, silt and rock sampling on the western and northern sides of the Killarney grid has closed off possible extensions of the Killarney Showing. Local spot high soil samples appear to be related to small, low grade Pb-Zn occurrences which contain only minor amounts of silver.

Soil sampling on the eastern side of the Killarney grid, on the east side of Brian Boru Creek, has identified a large area with anomalous Zn, Ag, Pb, As values. The anomalous area occurs on a southwest facing slope and does not appear to be related to drainage. As well, the area is located approximately one kilometer from the Brian Boru and Jones Showings and thus appears to be distinct from these as well. The small Zn-Ag-As anomaly on the southern ends of Lines 10100E and 10150E could be related to the above anomaly but it is also possible that it is due to the creek which flows through the middle of the anomaly.

Oxidation_Zone

Soil sampling in the north central portion of Gam 3 failed to confirm a high Asarco silt sample. No anomalies warranting further work were located.



x = Talus
 x = Silt

REVISED	BRIAN BORU	
	South Oxidation Zone Sample Locations	
PROJ. No. 554	SURVEY BY: R.B.	DATE: Jan. 7/85
N.T.S. 93M/4	DRAWN BY: R.B.	SCALE: 1:15,000
DWG. No. 9	NORANDA EXPLORATION OFFICE: Prince George	

Silt, rock and talus sampling along both sides of the northeast trending ridge at the eastern end of Gam 3 and 4 has confirmed the widespread presence of anomalous Zn, Pb, Ag, As, Mn +/- Cu +/- Au values coincident with a large area of felsic to intermediate volcanics and volcanoclastics which are locally strongly quartz-sericite-pyrite +/- chlorite altered. Mineralization sampled to date, consisting of local narrow shears and quartz veins and local strongly pyrite altered volcanics, does not fully explain the extent and strength of the values. The potential for this area therefore, would appear to lie at depth. Based on the presence of felsic volcanics and local strong quartz-sericite-pyrite +/- chlorite alteration, this area may have potential for massive sulphides.

RECOMMENDATIONS:

1. Extend the Killarney Soil Grid to cover the area north and east of the small lake. These extensions should be prospected and soil sampled to locate and define the source of the Zn-As-Ag-Pb anomaly.
2. Conduct a program of prospecting/mapping and lithogeochem sampling on the Oxidation zone. If the mapping and geochem indicate the potential for massive sulphide mineralization, a limited airborne EM survey (approximately 5 - 1.4 km long lines) should be flown over the area.

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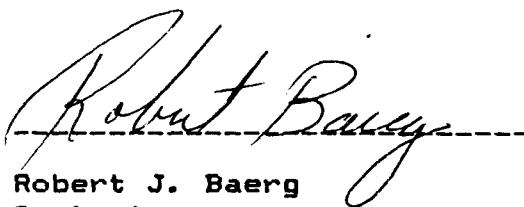
- Olson, D.H.; "Memorandum to R.E. Gole - Brian Boru Prospect, Brian Boru Group, 93 M/4E", Asarco Incorporated, April 2, 1981.
- Perkins, E.W.; "Report on Geophysical Surveys, Brian Boru Prospect, Jones Showing - Omineca Mining Division, British Columbia", Asarco Incorporated, October 7, 1981.
- Perkins, E.W.; "Report on Geophysical Surveys, Brian Boru Prospect, Killarney Showing, Omineca Mining Division, British Columbia", Asarco Incorporated, October 15, 1981.

APPENDIX I

STATEMENT OF QUALIFICATIONS

I, Robert J. Baerg of the City of Prince George, Province of British Columbia, do certify that:

1. I have been employed as a geologist by Noranda Exploration Company, Limited since May, 1984.
2. I am a graduate of the University of British Columbia with a Bachelor of Science (Honors) in Geology (1984).
3. I supervised and assisted with the work described in this report.

A handwritten signature in cursive script that reads "Robert Baerg". The signature is written in black ink and is positioned above a horizontal dashed line.

Robert J. Baerg
Geologist
Noranda Exploration Company, Limited
(No Personal Liability)

APPENDIX II

NORANDA EXPLORATION COMPANY, LIMITED

STATEMENT OF COST

DATE: October 1985

PROJECT - BRIAN BORU
 TYPE OF REPORT - Geology and Geochem

a) **Wages:**

No. of Days -	33 mandays	
Rate per Day -	\$88.55	
Dates From -	July - September 1985	
Total Wages -	33 X \$88.55	\$ 2,922.15

b) **Food and Accommodation:**

No. of Days -	33	
Rate per Day -	\$20.57	
Dates From -	July - September 1985	
Total Cost -	33 X \$20.57	\$ 678.81

c) **Transportation:**

No. of Days -	33	
Rate per Day -	\$58.16	
Dates From -	July - September 1985	
Total Cost -	33 X \$58.16	\$ 1,919.28

d) **Analysis:**

22 rocks	Cu,Pb,Zn,Ag,Au,As X \$10.40/sample	\$ 228.80
52 rocks	Cu,Pb,Zn,Ag,Au,As,Mn X \$11.00/samp.	\$ 572.00
7 rocks	Pb,An,Ag,As,Mn X \$ 6.90/sample	\$ 48.30
10 silts	Cu,Pb,Zn,Ag,Au,As X \$ 8.40/sample	\$ 84.00
17 silts	Cu,Pb,Zn,Ag,Au,As,Mn X \$ 9.00/samp.	\$ 153.00
360 soil/silt	Pb,Zn,Ag,As,Mn X \$ 4.90/sample	\$ 1764.00

		\$ 2850.10

e) **Cost of Preparation of Report:**

Author	\$ 300.00
Drafting	300.00
Typing	300.00

f) **Other:**

TOTAL COST: \$ 9,270.34

UNIT COSTS

Unit Costs of Geology

No. of Days - 23
No. of Units - 23 mandays
Unit Costs - \$151.91/day
Total Cost - 23 X \$151.91 \$ 3,493.90

Unit Costs for Geochem

No. of Units - 468 Samples
Unit Costs - \$12.34/sample
Total Cost - 468 X \$12.34 \$ 5,776.44

TOTAL COSTS: \$ 9,270.34

APPENDIX III

ANALYTICAL METHOD DESCRIPTIONS FOR GEOCHEMICAL ASSESSMENT REPORTS

The methods listed are presently applied to analyse geological materials by the Noranda Geochemical Laboratory at Vancouver.

Preparation of Samples

Sediments and soils are dried at approximately 80°C and sieved with a 80 mesh nylon screen. The -80 mesh (0.18 mm) fraction is used for geochemical analysis.

Rock specimens are pulverized to -120 mesh (0.13 mm). Heavy mineral fractions (panned samples * from constant volume), are analysed in its entirety, when it is to be determined for gold without further sample preparation.

Analysis of Samples

Decomposition of a 0.200 g sample is done with concentrated perchloric and nitric acid (3:1), digested for 5 hours at reflux temperature. Pulps of rock or core are weighed out at 0.4 g and chemical quantities are doubled relative to the above noted method for digestion.

The concentrations of Ag, Cd, Co, Cu, Fe, Mn, Mo, Ni, Pb, V and Zn can be determined directly from the digest (dissolution) with a conventional atomic absorption spectrometric procedure. A Varian-Techtron, Model AA-5 or Model AA-475 is used to measure elemental concentrations.

Elements Requiring Specific Decomposition Method:

Antimony - Sb: 0.2 g sample is attacked with 3.3 ml of 6% tartaric acid, 1.5 ml conc. hydrochloric acid and 0.5 ml of conc. nitric acid, then heated in a water bath for 3 hours at 95°C. Sb is determined directly from the dissolution with an AA-475 equipped with electrodeless discharge lamp (EDL).

Arsenic - As: 0.2 - 0.3 g sample is digested with 1.5 ml of perchloric 70% and 0.5 ml of conc. nitric acid. A Varian AA-475 equipped with an As-EDL is used to ~~measure~~ arsenic content in the digest.

Barium - Ba: 0.1 g sample digested overnight with conc. perchloric, nitric and hydrofluoric acid; Potassium chloride added to prevent ionization. Atomic absorption using a nitrous oxide-acetylene flame determines Ba from the aqueous solution.

Bismuth - Bi: 0.2 g - 0.3 g is digested with 2.0 ml of perchloric 70% and 1.0 ml of conc. nitric acid. Bismuth is determined directly from the digest with an AA-475 complete with EDL.

Gold - Au: 10.0 g sample is digested with aqua regia (1 part nitric and 3 parts hydrochloric acid). Gold is extracted with MIBK from the aqueous solution. AA is used to determine Au.

Magnesium - Mg: 0.05 - 0.10 g sample is digested with 4 ml perchloric/nitric acid (3:1). An aliquot is taken to reduce the concentration to within the

range of atomic absorption. The AA-475 with the use of a nitrous oxide flame determines Mg from the aqueous solution.

Tungsten - W: 1.0 g sample sintered with a carbonate flux and thereafter leached with water. The leachate is treated with potassium thiocyanate. The yellow tungsten thiocyanate is extracted into tri-n-butyl phosphate. This permits colourimetric comparison with standards to measure tungsten concentration.

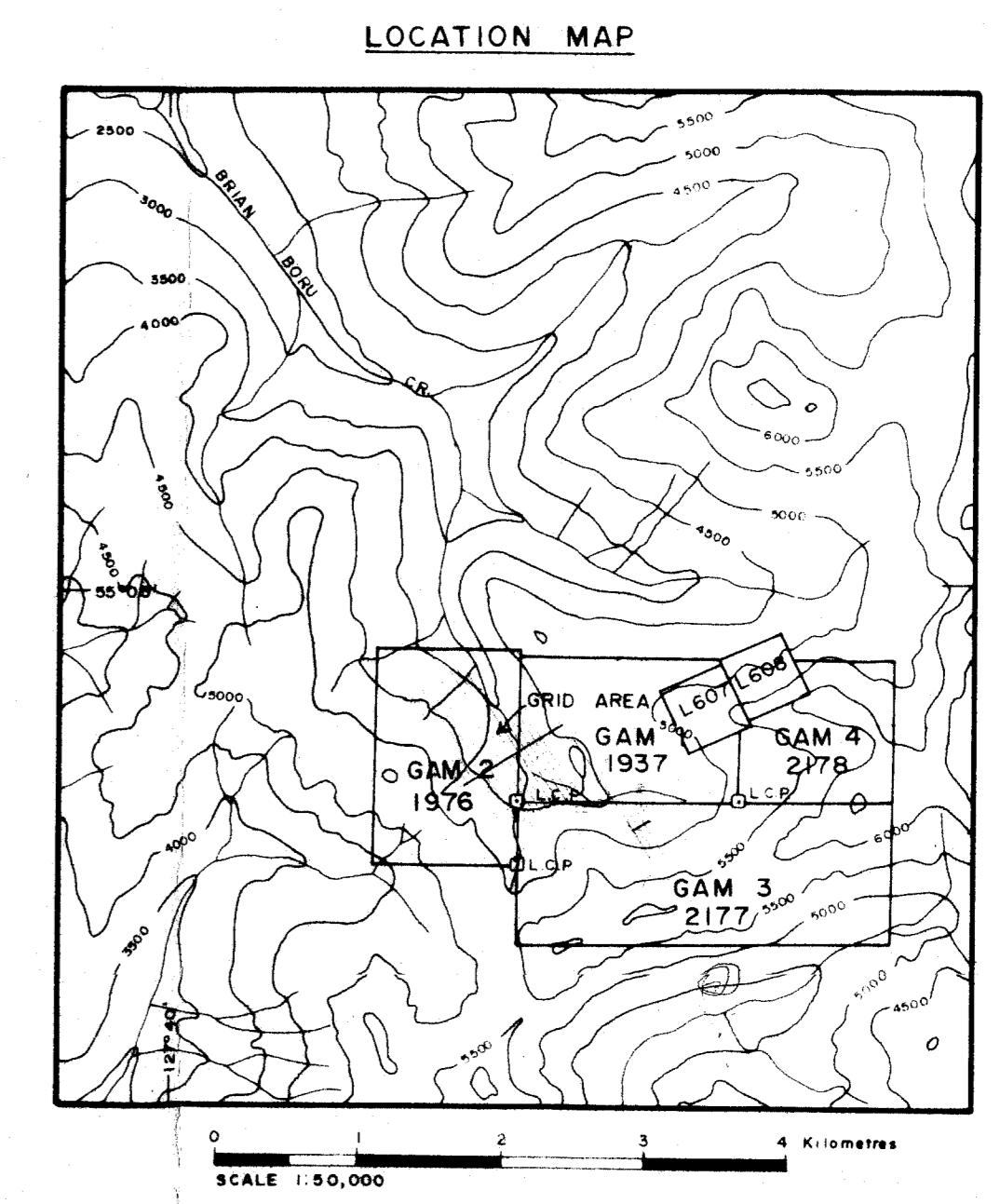
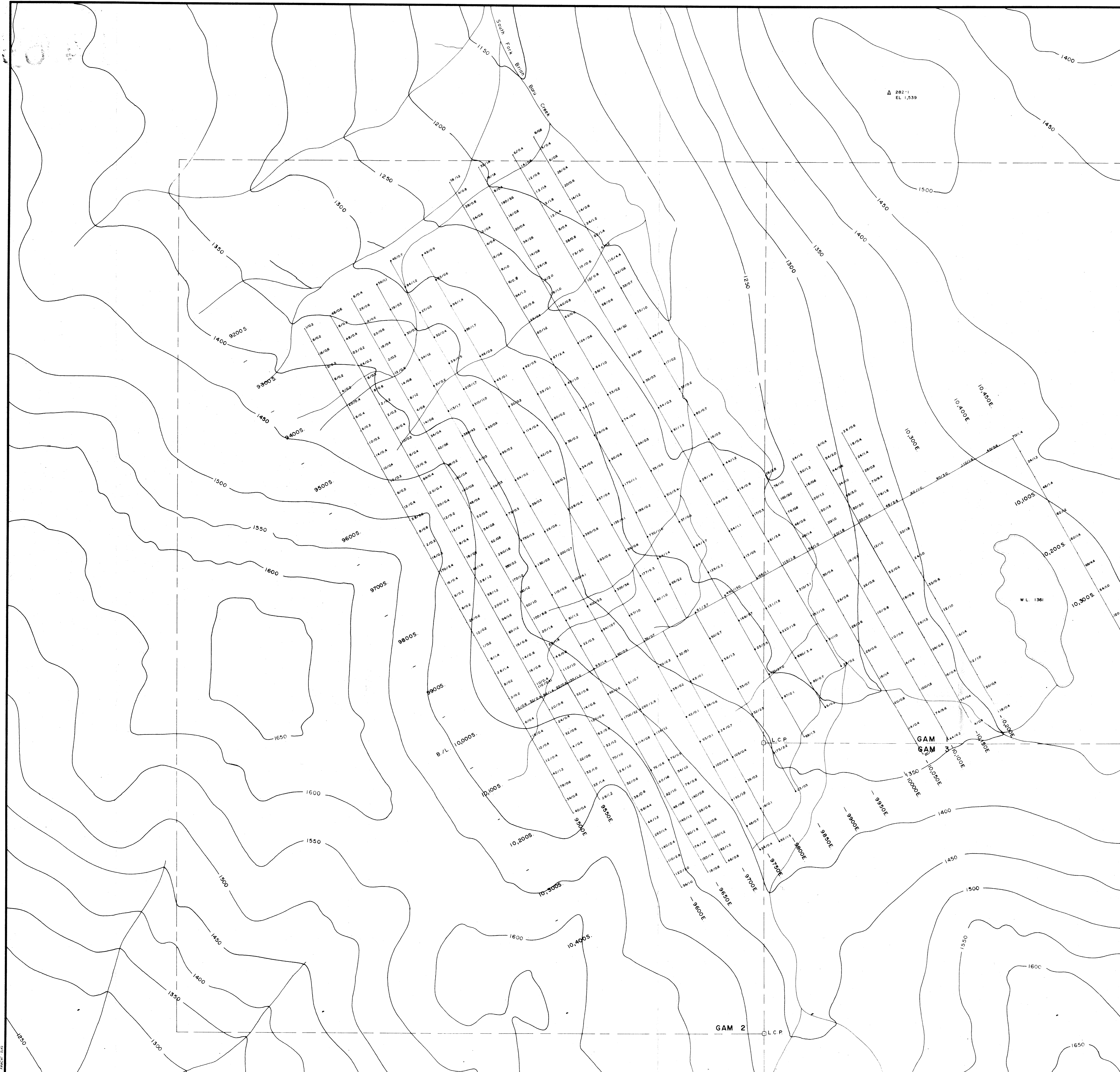
Uranium - U: An aliquot from a perchloric-nitric decomposition, usually from the multi-element digestion, is buffered. The aqueous solution is exposed to laser light, and the luminescence of the uranyl ion is quantitatively measured on the UA-3 (Scintrex).

* N.B. If additional elemental determinations are required on panned samples, state this at the time of sample submission. Requests after gold determinations would be futile.

LOWEST VALUES REPORTED IN PPM

Ag - 0.2	Mn - 20	Zn - 1	Au - 0.01
Cd - 0.2	Mo - 1	Sb - 1	W - 2
Co - 1	Ni - 1	As - 1	U - 0.1
Cu - 1	Pb - 1	Ba - 10	
Fe - 100	V - 10	Bi - 1	

EJvL/ie
March 14, 1984



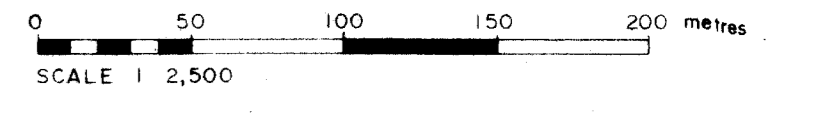
LEGEND

- LAKE
- L.C.P. CLAIM BOUNDARY
- GRID SAMPLE LOCATION (Pb/Ag)
- TRIANGULATION POINT
- ASARCO GEOCHEM ASSAYS

GEOLOGICAL BRANCH ASSESSMENT REPORT

14,632

Robert Baer
Jan 10 1986

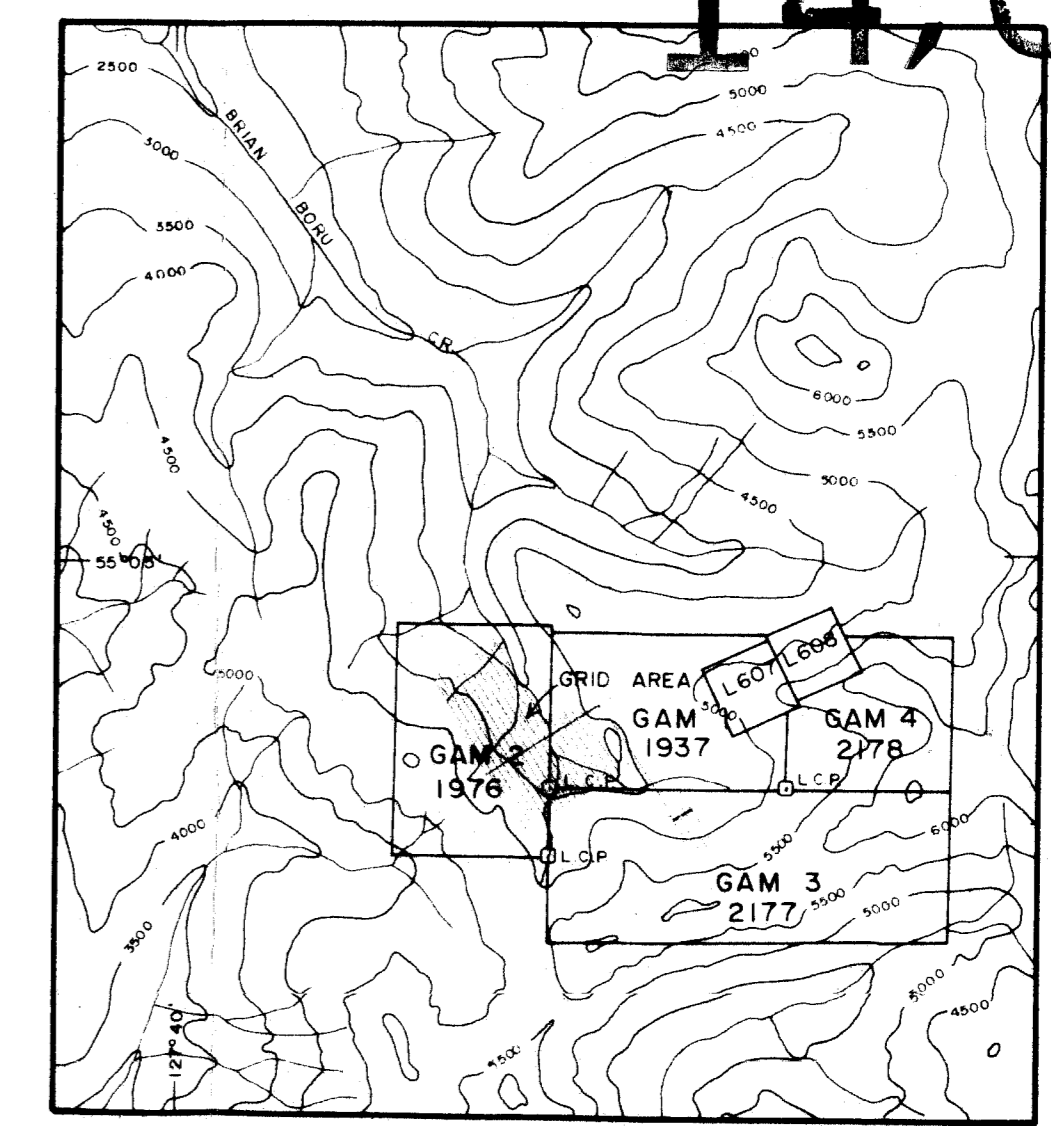


REVISED	BRIAN BORU PROSPECT	
	KILLARNEY SHOWING	
	SOIL GEOCHEM ASSAYS	
	Pb/Ag in ppm.	
PROJ No. 5-54	SURVEY BY: R. BAER	DATE: AUG., 1985
NTS: 93M/4E	DRAWN BY: S. E. B.	SCALE: 1:2500
DWG No.	NORANDA EXPLORATION	
FIG. 5	OFFICE: PRINCE GEORGE, B.C.	

GEOLOGICAL BRANCH
ASSESSMENT REPORT

14,632

LOCATION MAP



SCALE 1:50,000

ROCK TYPES

- X Rv Rhyolite
- X Rd Rhodocite
- X Zn Zinc - Pyrite mineralization (Open space filling)
- X Bl Bleached altered volcanic
- X Gw Greywacke

LEGEND

- LAKE
- L.C.P. & CLAIM BOUNDARY
- GRID SAMPLE LOCATION (1984)
- TRIANGULATION POINT
- OPEN CUT
- 1985 SILT SAMPLE LOCATION (NORANDA)
- 1985 ROCK SAMPLE LOCATION (NORANDA)

1984 ROCK, SOIL & SILT ANALYSES
CONCENTRATIONS IN P.P.M. & PERCENT

SAMPLE NO.	Cr	Fe	Zn	As	Ag	Cd	Cu	Pb	Se
14761 S	46.0	550.0	78.0	0.6	42	...	...	...	...
14769 S	18.0	114.0	44.0	0.6	42	...	...	...	...
14780 S	40.0	374.0	90.0	5.8	14	...	...	...	...
14781 S	0.005	0.345	0.265	16.5*	100	...	...	...	...
14773 S	0.005	1.835	0.315	23.3*	11,000	...	...	...	...
14772 S	50.0	480.0	50.0	3.0	10	...	...	...	...
14775 S	20.0	560.0	64.0	2.0	31	...	...	...	...
14774 S	0.005	0.905	0.645	13.2*	120	...	...	...	...
14775 S	34.0	110.0	44.0	1.0	37	...	...	...	...
14776 S	34.0	110.0	150.0	1.0	56	...	...	...	...
14777 S	34.0	110.0	40.0	0.1	92	...	...	...	...
14778 S	30.0	100.0	12.0	0.2	28	...	...	...	...
14779 S	10.0	110.0	27.0	0.2	31	...	...	...	...
14780 S	24.0	230.0	96.0	4.0	50	...	...	...	...
14781 S	140	28	0.6	52	1000	...	...	...	...
14782 S	240	0.8	30	800	...	...	...	...	...
14783 S	170	30	0.6	38	1000	...	...	...	...
14784 S	150	0.8	30	800	...	...	...	...	...
14785 S	700	150	1.4	22	4300	...	...	...	...
14786 S	200	170	1.2	30	3500	...	...	...	...
14787 S	500	150	1.4	18	3000	...	...	...	...
14788 S	130	10	0.4	12	1400	...	...	...	...
14789 S	120	10	0.4	24	1200	...	...	...	...
14790 S	120	10	0.4	12	1400	...	...	...	...
14791 S	0.015	0.655	0.105	49.1*	950	...	...	...	...
14792 S	0.005	0.095	0.065	26.4*	270	...	...	...	...
14793 S	18.0	100.0	8.0	0.2	28	...	...	...	...
14794 S	0.015	0.235	0.075	3.8*	41	...	...	...	...
14795 S	0.015	0.615	0.015	1.1*	58	...	...	...	...
14796 S	30.0	124.0	20.0	0.2	20	...	...	...	...
14797 S	24.0	230.0	12.0	0.8	22	...	...	...	...
14798 S	34.0	100.0	8.0	0.2	34	...	...	...	...
14799 S	34.0	78.0	10.0	0.1	28	...	...	...	...
14800 S	28.0	154.0	16.0	0.5	56	...	...	...	...
14801 S	28.0	114.0	12.0	0.4	46	...	...	...	...
14802 S	44.0	138.0	30.0	1.2	30	...	...	...	...
14803 S	0.015	0.335	0.045	19.3*	95	...	...	...	...
14804 S	0.015	0.265	0.045	12.4*	60	...	...	...	...
14805 S	0.015	1.155	0.215	58.4*	25	...	...	...	...
14806 S	0.015	0.435	0.215	40.5*	18	...	...	...	...
14807 S	0.015	0.065	0.015	8.9*	68	...	...	...	...
14808 S	70.0	9000.0	5200.0	20.0	50	...	...	...	...
14809 S	36	168	168	1.0	74	...	...	...	...
14810 S	36	168	168	1.0	74	...	...	...	...
14811 S	34	78	56	0.4	74	...	...	...	...
14812 S	32	108	90	0.6	34	...	...	...	...
14813 S	24	80	18	0.4	80	...	...	...	...
14814 S	16	94	32	0.6	30	...	...	...	...
14815 S	22	84	40	0.8	36	...	...	...	...
14816 S	16	12	12	0.2	16	...	...	...	...
14817 S	32	76	14	0.2	16	...	...	...	...
14818 S	34	110	16	0.2	34	...	...	...	...
14819 S	26	270	58	0.2	26	...	...	...	...
14820 S	26	260	68	0.2	26	...	...	...	...
14821 S	30	220	60	7.4	36	...	...	...	...
14822 S	20	110	40	0.4	14	...	...	...	...
14823 S	30	88	22	9.1	52	...	...	...	...
14824 S	22	72	12	0.2	44	...	...	...	...
14825 S	24	110	60	0.2	72	...	...	...	...
14826 S	30	560	10	0.4	24	...	...	...	...
14827 S	26	340	100	1.0	42	...	...	...	...
14828 S	0.015	0.015	0.015	0.2*	52	...	...	...	...
14829 S	28	132	68	0.6	32	...	...	...	...
14830 S	30	420	54	0.4	44	...	...	...	...
14831 S	22	1,620	84	0.2	50	...	...	...	...
14832 S	24	1,180	1,100	2.7	60	...	...	...	...
14833 S	10	270	110	2.6	90	...	...	...	...
14834 S	24	150	37	1.4	24	...	...	...	...
14835 S	4	38	12	0.2	42	...	...	...	...
14836 S	12	56	20	0.2	40	...	...	...	...
14837 S	14	58	8	0.2	22	...	...	...	...
14838 S	14	54	8	0.8	50	...	...	...	...
14839 S	30	68	20	0.5	32	...	...	...	...
14840 S	10	50	12	0.2	26	...	...	...	...
14841 S	32	136	74	0.8	14	...	...	...	...
14842 S	22	80	16	0.6	44	...	...	...	...
14843 S	32	1,360	620	8.0	38	...	...	...	...
14844 S	20	1,630	750	2.8	46	...	...	...	...

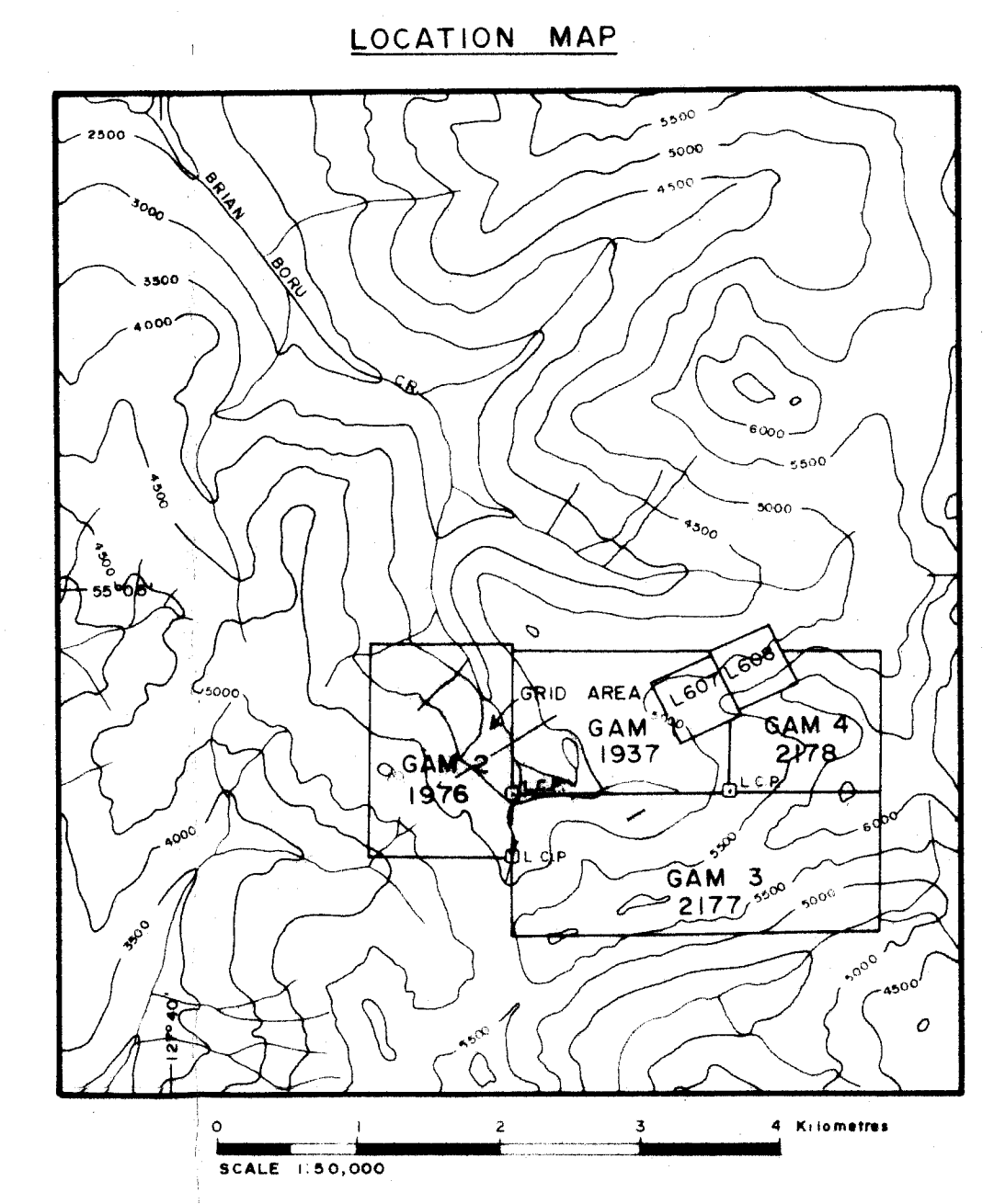
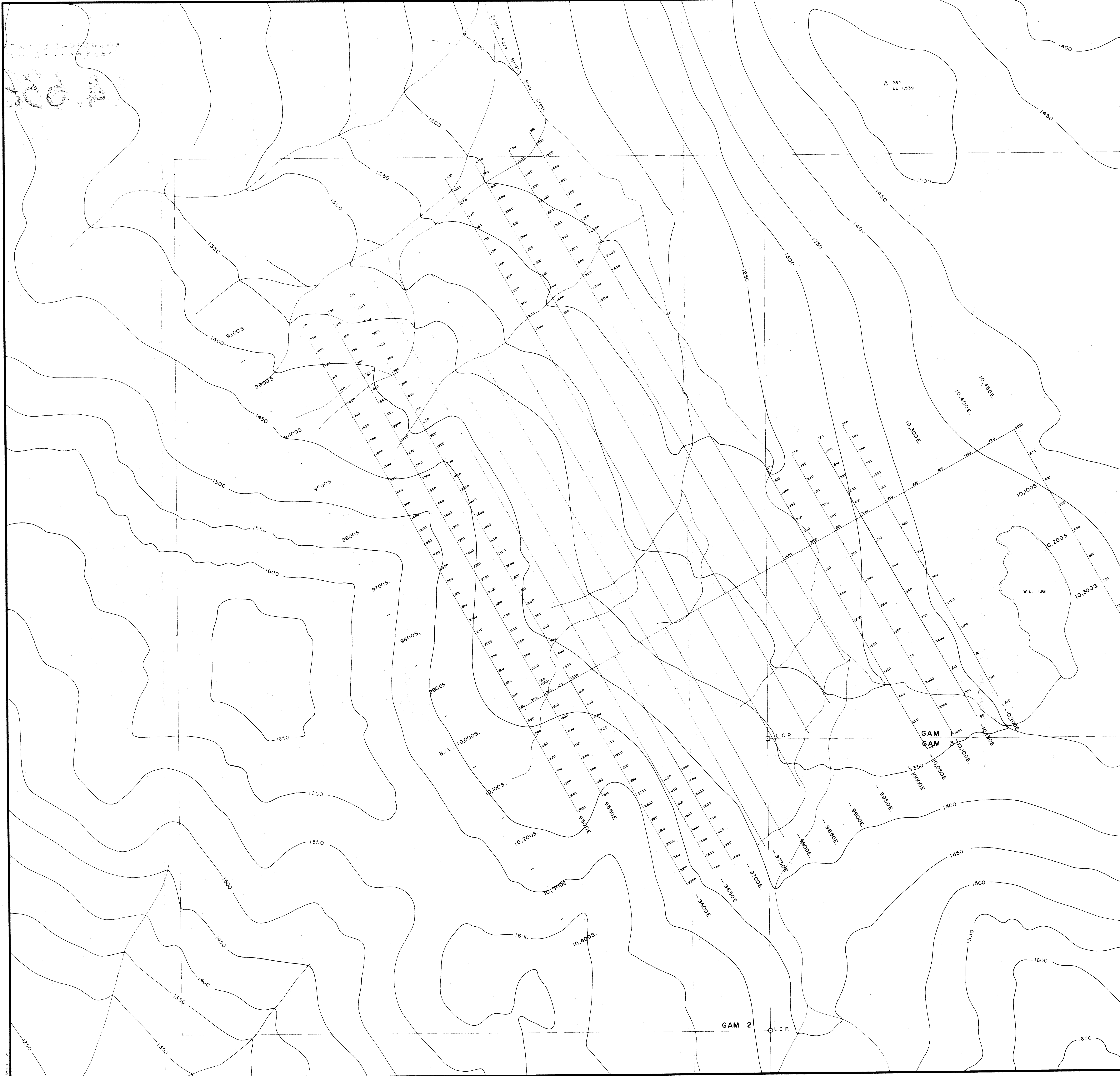
1985 ROCK & SILT GEOCHEM ANALYSES

SAMPLE #	TYPE	Cr	Fe	Zn	As	Cd	Cu	Pb	Se
88458 S	S	150	10	0.4	34	...	...	...	...
88459 S	S	200	66	1.0	52	...	...	...	...
88460 S	S	210	14	3.2	20	...	...	...	...
88461 S	S	40	30	1.8	28	...	...	...	...
88462 S	S	120	12	0.2	20	...	...	...	...
88463 S	S	110	2	0.2	2	...	...	...	...
88464 S	S	100	4	0.4	14	...	...	...	...
88465 S	S	140	28	0.6	52	...	...	...	...
88466 S	S	150	0.8	30	800	...	...	...	...
88467 S	S	170	30	0.6	38	...	...	...	...
88468 S	S	150	0.8	30	800	...	...	...	...
88469 S	S	700	150	1.4	22	...	...	...	...
88470 S	S	200	170	1.2	30	...	...	...	...
88471 S	S	500	150	1.4	18	...	...	...	...
88472 S	S	130	10	0.4	12	...	...	...	...
88473 S	S	120	10	0.4	24	...	...	...	...
88474 S	S	120	10	0.4	12	...	...	...	...
88475 S	S	120	14	0.2	10	...	...	...	...
88476 S	S	120	10	0.2	16	...	...	...	...
88477 S	S	120	6	0.4	28	...	...	...	...
88478 S	S	1500	54	0.8	520	...	...	...	...
88479 S	S	1500	2000	3.8	100	...	...	...	...

Robert B. Bary
Jan 10, 1985

SCALE 1:2,500

REVISED	BRIAN BORU PROSPECT
SEPT 15, 1985 S.K.B.	KILLARNEY SHOWING
	SAMPLE LOCATIONS
PROJ. No. S-54	SURVEY BY: D. GORC, R. BAERS, DATE: AUG. 1984
N.T.S. 93M/4E	DRAWN BY: S.K.B. SCALE: 1:2500
DWG. No.	NORANDA EXPLORATION
FIG. 4	OFFICE: PRINCE GEORGE, B.C.



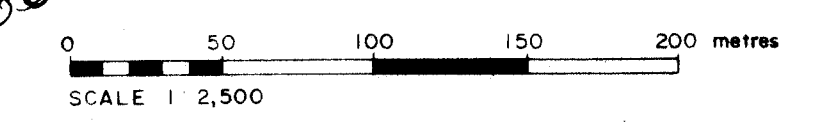
LEGEND

- LAKE
- L.C.P. & CLAIM BOUNDARY
- GRID SAMPLE LOCATION (Mn)
- TRIANGULATION POINT

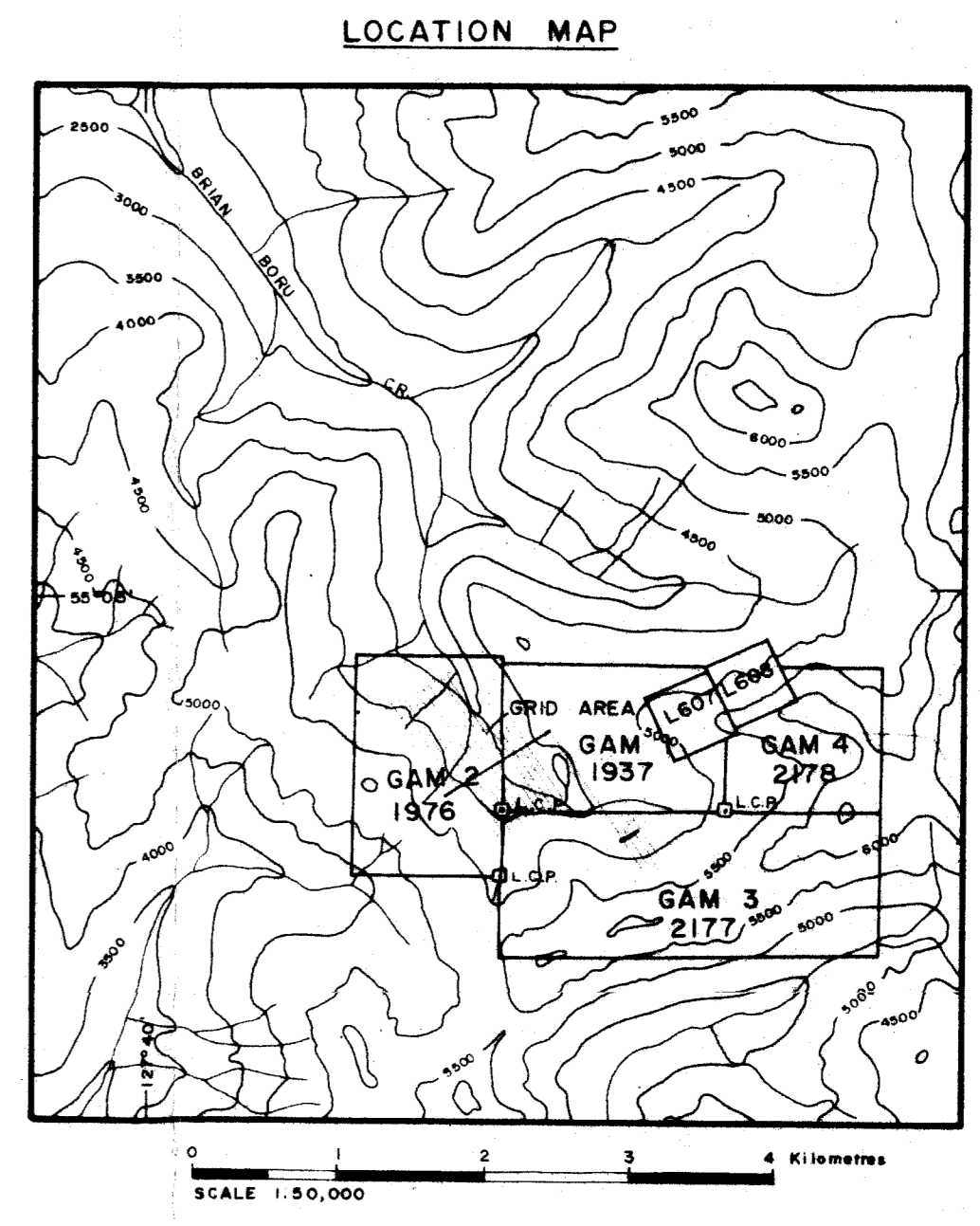
**GEOLOGICAL BRANCH
ASSESSMENT REPORT**

14,632

*Robert Baerg
Jan 10/88*



REVISED	BRIAN BORU PROSPECT	
	KILLARNEY SHOWING	
	SOIL GEOCHEM ASSAYS	
	Mn in ppm.	
PROJ. No. S-54	SURVEY BY: R. BAERG	DATE: AUG. 1985
N.T.S. 93M/4E	DRAWN BY: S.K.B.	SCALE: 1:2500
DWG. No.	NORANDA EXPLORATION	
FIG. 7	OFFICE: PRINCE GEORGE, B.C.	



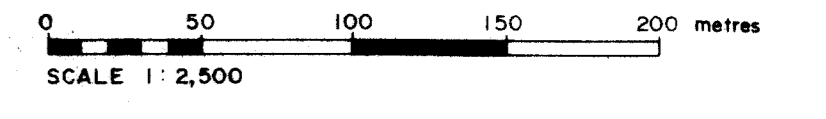
LEGEND

- LAKE
- L.C.P. & CLAIM BOUNDARY
- GRID SAMPLE LOCATION (Zn/As)
- TRIANGULATION POINT
- ASARCO GEOCHEM ASSAYS

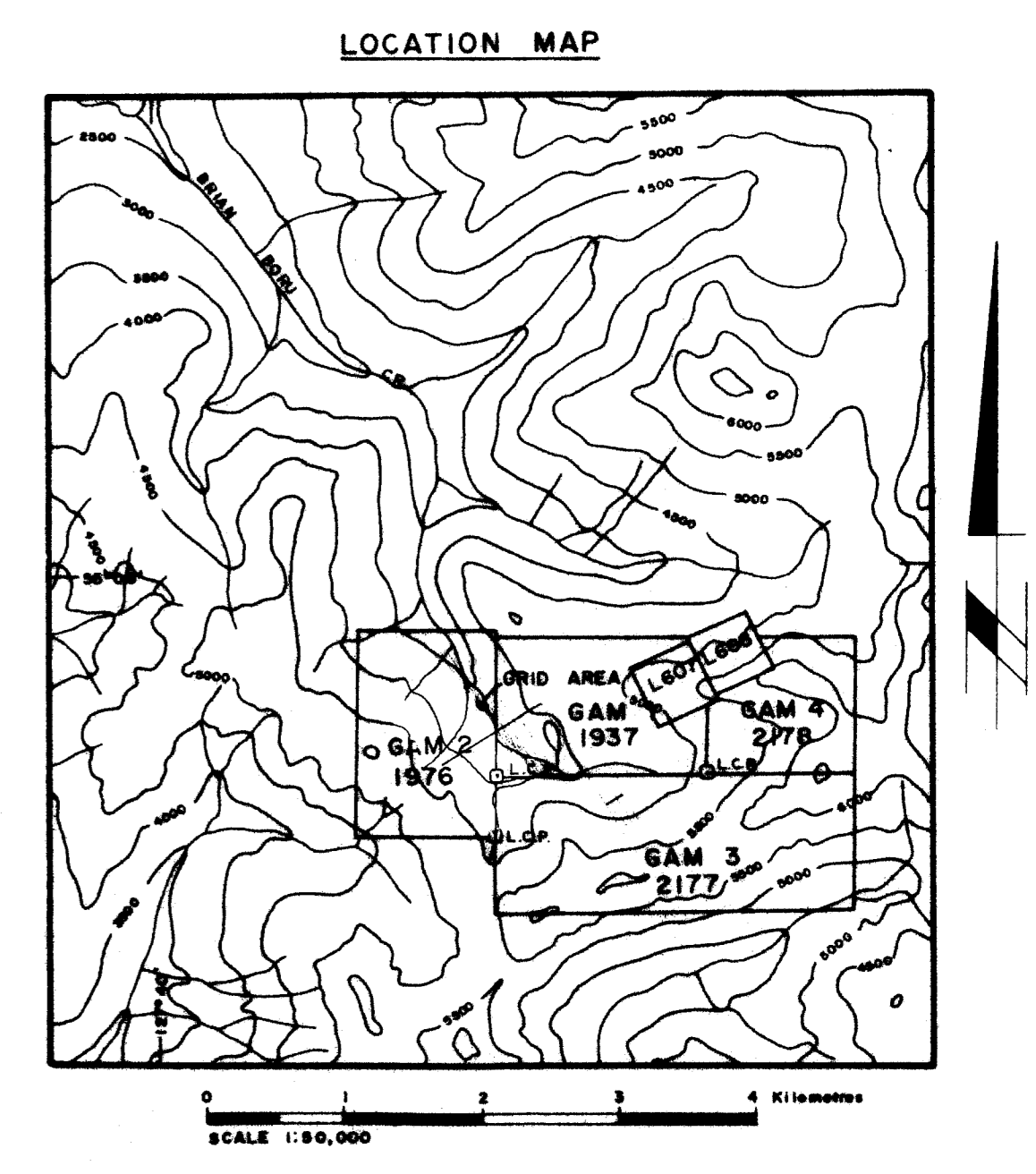
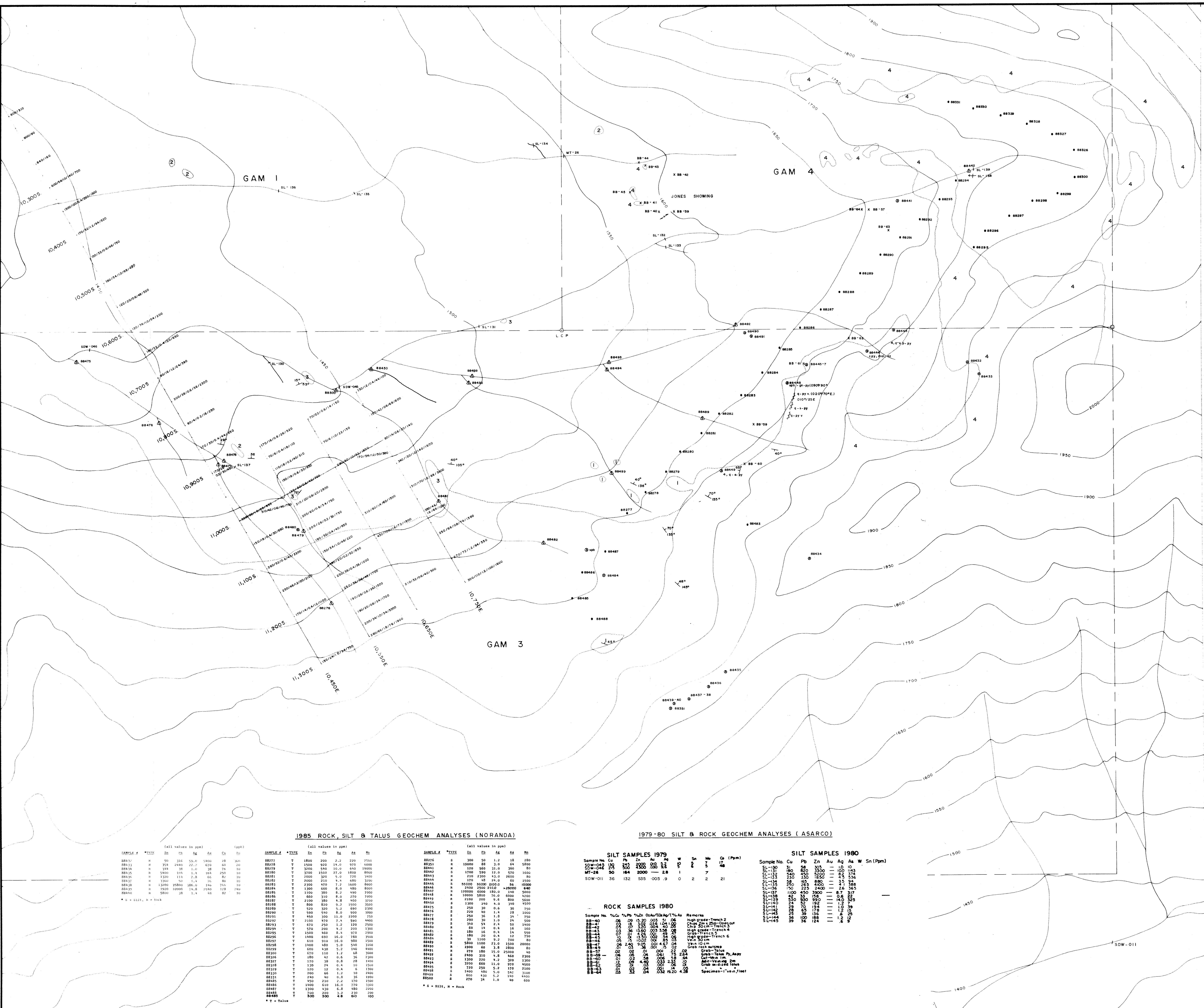
**GEOLOGICAL BRANCH
ASSESSMENT REPORT**

14,632

Robert Bailey
Jan 10/88



REVISED	BRIAN BORU PROSPECT	
	KILLARNEY SHOWING	
	SOIL GEOCHEM ASSAYS	
	Zn/AS in ppm.	
PROJ. No. 5-94	SURVEY BY: R. BEERS	DATE: AUG. 1985
N.T.S. 93M/4E	DRAWN BY: S.K.B.	SCALE: 1:2500
DWG. No.	NORANDA EXPLORATION	
FIG. 6	OFFICE: PRINCE GEORGE, B.C.	



LEGEND

ROCK TYPES

6	Tuff, grey-green	BRIAN BORU FORMATION
5	Lepidite Tuff, grey	
4	Andesite, Basaltic flow, Pyroclastic	HAZELTON GROUP (UPPER JURASSIC AND LOWER CRETACEOUS)
3	Argillite & mudstone	
2	Greywacke	RED ROSE FORMATION
1	Conglomerate	

SYMBOLS

- Silty sample location (ASARCO 1979-'80)
- ✕ Rock sample location (ASARCO 1979-'80)
- Silty sample location (NORANDA 1985)
- ⊙ Rock sample location (NORANDA 1985)
- ⊙ Talus sample location (NORANDA 1985)
- Outcrop
- L.C.P. and claim boundary
- Trench
- ⊙ Strike and dip of bedding
- ⊙ Strike and dip of joints
- ⊙ Shear (strike and dip)
- ⊙ Silty sample location, 2x/Pa/Ar/Al/Mx (NORANDA 1985 GRID)

1985 ROCK, SILT & TALUS GEOCHEM ANALYSES (NORANDA)

SAMPLE #	TYPE	Si	Al	Fe	Mn	Zn	Pb	Cu	Ag	Au	As	Sb	Bi	Mo	Co	Ni	Cr	V	Se	Te	U	Th	Pu
88437	T	50	116	59.0	1400	28	64	6															
88438	T	30	240	22.7	400	20																	
88439	T	34	18	1.0	28	76	10																
88440	T	3400	181	1.4	184	250	10																
88441	T	1320	111	2.4	64	82	10																
88442	T	1300	301	1.4	79	86	10																
88443	T	1300	1000	19.8	134	176	10																
88444	T	1500	1000	19.8	134	176	10																

1979-'80 SILT & ROCK GEOCHEM ANALYSES (ASARCO)

SILT SAMPLES 1979

Sample No.	Cu	Pb	Zn	As	Sb	Bi	Mo	Co	Ni	Cr	V	Se	Te	U	Th	Pu
SDW-011	36	132	535	005	9	0	2	2	21							

SILT SAMPLES 1980

Sample No.	Cu	Pb	Zn	As	Sb	Bi	Mo	Co	Ni	Cr	V	Se	Te	U	Th	Pu
SL-130	31	58	508	1.0	10											
SL-131	80	820	3300		103											
SL-132	230	330	1850		43											
SL-133	38	65	880		13											
SL-134	38	65	880		13											
SL-135	38	65	880		13											
SL-136	38	65	880		13											
SL-137	1100	250	3600		87											
SL-138	42	33	560		0.4											
SL-139	310	330	1950		143											
SL-140	24	52	192		1.2											
SL-141	28	50	194		1.2											
SL-142	28	50	194		1.2											
SL-143	36	100	184		1.2											
SL-144	39	54	124		4											

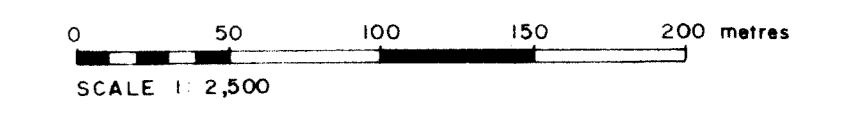
ROCK SAMPLES 1980

Sample No.	%Cu	%Pb	%Zn	Quartz	Diap	%As	Remarks
88445	0.2	0.2	0.2	0.2	0.2	0.2	High grade - Trench 2
88446	0.2	0.2	0.2	0.2	0.2	0.2	High grade - Trench 2
88447	0.2	0.2	0.2	0.2	0.2	0.2	High grade - Trench 2
88448	0.2	0.2	0.2	0.2	0.2	0.2	High grade - Trench 2
88449	0.2	0.2	0.2	0.2	0.2	0.2	High grade - Trench 2
88450	0.2	0.2	0.2	0.2	0.2	0.2	High grade - Trench 2
88451	0.2	0.2	0.2	0.2	0.2	0.2	High grade - Trench 2
88452	0.2	0.2	0.2	0.2	0.2	0.2	High grade - Trench 2
88453	0.2	0.2	0.2	0.2	0.2	0.2	High grade - Trench 2
88454	0.2	0.2	0.2	0.2	0.2	0.2	High grade - Trench 2
88455	0.2	0.2	0.2	0.2	0.2	0.2	High grade - Trench 2
88456	0.2	0.2	0.2	0.2	0.2	0.2	High grade - Trench 2
88457	0.2	0.2	0.2	0.2	0.2	0.2	High grade - Trench 2
88458	0.2	0.2	0.2	0.2	0.2	0.2	High grade - Trench 2
88459	0.2	0.2	0.2	0.2	0.2	0.2	High grade - Trench 2
88460	0.2	0.2	0.2	0.2	0.2	0.2	High grade - Trench 2

GEOLOGICAL BRANCH ASSESSMENT REPORT

14,632

Robert Bailey
Jan 10/88



REVISED	BRIAN BORU PROSPECT	
R.B. Oct., 1985	(OXIDATION ZONE)	
	GEOLOGY & ASSAY PLAN	
PROJ. No. 5-54	SURVEY BY: R. BAERS	DATE: AUG., 1985
N.T.S. 93M/4E	DRAWN BY: S.K.R.	SCALE: 1:2500
DWG. No.	NORANDA EXPLORATION	
FIG. 8	OFFICE: PRINCE GEORGE, B.C.	