3434

SCINTILLOMETER SURVEY

GEOLOGICAL MAPPING

RECONNAISSANCE ULTRA VIOLET LIGHT SURVEY

ON

SPAR GROUP OF CLAIMS

LUMBY, B. C.

Lat. 50° 15' Long. 118° 47'

82 L /2W , 7W

in the

VERNON MINING DIVISION

for

BORAWAY MINES LTD. (N.P.L.)

Vancouver, B. C.

December 13, 1971.

James R. Glass, B. Sc.

Consulting Geologist

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2. Claim Map, Scale 1" = 1/2 mile
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6. Map "C" - Detailed Survey, scale 1" = 20'

SUMMARY

During the months of April, May and June, 1971 a program consisting of line cutting, a Scintillometer Survey, Geological Mqpping, an Ultra Violet Survey and very minor geochemical soil work was done on the 33 Claims comprising the Spar Group of claims owned by Boraway Mines Ltd. The work was carried out under the direction of the writer, as recommended by John S. Vincent, P. Eng. in his Report to the Company dated February 22nd, 1971.

The field crew consisted of a crew of line cutters, geologist, an instrument man for the scintillometer, an instrument man for the ultra violet light and two field helpers. The crew was housed in the town of Vernon and a four wheel drive vehicle used for transportation.

PROPERTY AND LOCATION

The property consists of 33 mineral claims located in the Vernon Mining Division some eight miles east of the town of Lumby, British Columbia at 50° 15' N, 118° 47' W.

The claims are owned by Boraway Mines Ltd. (N.P.L.) and are in good standing until October-November, 1971.

Claim Name	Record Numbers
Spar 1, 3, 5, 8, 12, 14	14725 - 14731 Incl.
Spar 15, 16, 18, 20, 22, 25, 27, 29	14749 - 14756 Incl.
Spar 2, 4, 6, 7, 9, 11, 13	14732 - 14738 Incl.
Spar 17, 19, 21, 23, 24, 26, 28	14757 - 14763 Incl.
Spar 30, 31, 32, 33	14839 - 14842 Incl.

HISTORY

The property was prospected sometime in the past for the industrial minerals - feldspar and quartz. In October of 1970 the property was staked by prospectors R. Bechtel and L. Williams of Penticton when it was discovered that parts of the pegmatite zone showed high radio-activity when scanned with a scintillometer.

During the month of February, 1971 the property was examined by D. W. Pringle and Associates and a report was prepared by Mr. John Vincent, P. Eng.

During the month of April, 1971 additional blasting and trenching was done by prospectors employed by Boraway Mines Ltd. (N.P.L.). After this work was done the writer visited the property.

In the months of April, May, 1971, a preliminary exploration program on the Spar Group of Claims was carried out and the following work was done.

1. Line cutting 37.5 miles
2. Scintillomter survey 27.5 miles
3. Ultra violet light survey - over anomalous area
4. Geological mapping - reconnaissance over anomalous area
5. Geochemical soil sampling - around main showing

REGIONAL GEOLOGY

The rock formations of the region consists of Precambrian schists and granite gneiss, part of the Monashee Group. These rocks were intruded by granitic rocks of the Coast Intrusion; Jurassic to Cretaceous in age. Overlying these are Tertiary volcanic rocks of the Kamloops group.

A series of pegmatites have been found in the area. It is believed that some of these pegmatites are pre-Permian in age and some are allied to Mesozoic intrusions. Locally, pegmatite is the dominant rock type and is reported as both concordant and disconcordant masses.

A series of north-easterly trending faults cut both the formations and a series of earlier north-westerly trending faults. Fold axis are in a general east-west direction.

LOCAL GEOLOGY

The rock underlying the claim group consists of extensive zones of massive pearly white coarse pegmatite and small dyke bodies of gneissic material which is felt by the writer to be foliation as a result of shear and faulting in the pegmatite host which causes a thickening in the formation by repetition. Megascopically the pegmatite consists of crystals of k-feldspar with irregular masses of white to dark grey quartz, books of fine to very coarse biotite, zones and books of muskovite and minor amounts of garnet.

The pegmatite does not have apparent lineation or direction and appears as a large mass and not as a dyke or a series of dykes. Neither the aerial extent or the apparent thickness of the pegmatite is known at this time but fairly continuous pegmatite outcrops have been traced over a mile in length in an east westerly direction and intermittently over a width of more than 3000 feet with a relief of approximately 400 feet. Overburden masks the down slope extensions of the pegmatite but pegmatite boulders in the valley over one-half mile northwest of the main showing suggest a much larger mass than has currently been noted. Future geological mapping will delineate this mass.

MINERALIZATION

(a) URANIUM

It has been demonstrated that uranium mineralization occurs intermittently over an area of approximately one mile by 600 feet and that all of the mineralization found to date has been hosted by the pegmatite. The ultimate size of this zone however is unknown since the very limited prospecting work done on the property has been limited to this small area.

The uranium mineralization appears to be in two forms:

1. Primary uranium mineralization which has been identified only as U_3O_8 by various laboratories using wet analysis.
2. Secondary uranium salts which have been identified using ultra violet light.

The primary uranium mineralization identified to date appears to be associated with both coarse books of biotite in the massive pegmatite and with small zones of dense dark grey finer grained material of uncertain direction which appears to occur as streaks in the pegmatite. Grab samples and chip samples from three blast areas or trenches over a length of approximately 1000 feet which were selected by the prospectors who staked the claims have returned uranium values as high as 0.236% U_3O_8. John Vincent in his report of February, 1971 states that the prospectors appear to be competent in their sample selection and that his work with an integrating gamma ray spectrometer confirmed the high uranium content in samples from the bed rock of these trenches.

The writer took chip samples from one of the blast areas which are listed as follows:

Sample No.	Remarks	U_3O_8
2847 C	Chips from east end of trench over 2.5'	0.104%
2848 C	Repeat of No. 28476 C	0.15%
28477 C	Chips from middle of trench over 5'	0.03%
28481 C	Repeat of No. 28477 C	0.038%
28478 C	Chips from middle of trench over 5'	0.024%
28482 C	Repeat of No. 28478 C	0.026%
28479 C	Chips from west end of pit over 4'	0.015%
28483 C	Repeat of 28479 C	0.007%
28484 C	Separate small pit 10' west of main pit. Chips over 3.5'	0.017%
28485 C	Repeat of No. 28484 C	0.020%
28486 C	Small pit 35' west of sample No.84 Chips over 3'	0.045%
28487 C	Repeat of No. 28486 C	0.057%

A copy of these analyses is included with this report.

The ratio of thorium to uranium in the samples ranges from 6:1 to 12:1. If this ratio remains constant in any ore zone developed during future work there is a possibility that a metalurgical problem will be encountered in extracting the uranium mineralization.

The secondary mineralization which consists of fluorescent uranium salts has been seen in varying amounts in the pegmatite over a length

of one mile. Near the blast areas and trenches these uranium salts are very spectacular and can be seen as large areas coating both the quartz and the feldspar crystals.

The limits of the area containing uranium salts have not been determined. Future work will be directed towards finding the size of of this area and the source of the primary mineralization causing such a widespread secondary halo.

(b) RARE EARTH

A number of samples have been analyzed for rare earths and have returned high content in these materials.

At this stage no check work or metallurgical work has been done.

Preliminary indications however indicate that careful sampling and metallurgical work should be carried out to assess the true value and the feasibility of extracting this material from source.

LINE CUTTING

During the periods April 21 to May 2 inclusive and May 17 to May 23 inclusive, 1971 a total of 35 cross lines spaced 400 feet apart were cut, chained and marked at 100 foot intervals from a base line of measured length 14,000 feet. An additional 12 cross lines were cut, chained and marked to give added control. A total of 37.5 line miles were cut and chained. The location of these lines is marked on the maps of scale 1" = 200' included with this report.

SCINTILLOMETER SURVEY

A scintillometer survey using a Scintrex G.I.S.-Z Gamma Ray Spectrometer was carried out by Mr. L. Williams, P. Eng. The energy threshold level of the instrument was set at 5 so that any interference from potassium would be nullified and any energy measurements would be the result of uranium or thorium. Since thorium is more stable than uranium under surface conditions and is sometimes left as "tracer" to uranium mineralization a thorium anomaly is a legitimate target for further work.

The survey was carried out along the cut lines, with readings taken at 50 foot intervals. The probe was placed on the ground and readings recorded in field books.

Maps of scale 1" = 200' showing the location of the readings have been prepared and are included with this report.

A detailed scintillometer survey was done over the main showing area and over the trenched areas. The results of this survey are plotted on a map of scale 1" = ~~200~~ 20' J.E.L. included with this report.

This work was done from April 7, 1971 until June 9, 1971 with a total of 34½ man days spent on these surveys.

GEOLOGICAL MAPPING

A number of days were spent by the writer traversing the property to determine the limits and the general characteristics of the pegmatite.

At the extreme southeast corner of the property there is an outcrop of Tertiary volcanic rock.

On lines 40+00E and 44+00E at 22+00N there is a large outcrop of granite gneiss.

The remaining rock seen is pegmatite. The pegmatite exhibits evidence of thrust faulting. The thrust planes are granitized with the platy minerals lining up to form what appears to be a narrow band of granite gneiss. It is suspected that this thrusting has thickened the pegmatite. The fracturing associated with this thrusting may be intimately associated with the uranium mineralization.

The location of outcrops and the general interpretation are plotted on the map of scale 1" = 200' which is included in this report.

A number of soil samples were taken to aid the writer in tracing the known uranium mineralization. A map of scale 1" = 20' showing the soil samples in relation to the outcrop and the detailed scintillometer survey is included with this report.

All assay returns and geochemical analysis are included with this report.

This work was carried out by the writer during the months of May and June, 1971 with a total of 13 man days spent on the mapping.

ULTRA VIOLET LIGHT SURVEY

An ultra violet lamp survey using a M.S.L.-48 short and long wave ultra violet lamp produced by Ultraviolet Products Inc. of California, U. S. A. was carried out over parts of the property which were found to be anomalous during the scintillometer survey. This involved scanning the outcrops during the night and locating areas which fluoresced under the lamp. This work was carried out by Mr. Denis Atkinson and two field helpers who were responsible for "tying in" the outcrops to the cut lines.

The fluorescence was caused by secondary uranium salts identified as one of the automite series of minerals.

Since it is believed that the secondary uranium salts could be the daughter product of nearby primary uranium mineralization with a down slope migration, the position of these areas of fluorescence in relation to the known mineralization and the scintillometer anomalies is extremely important.

The outcrop areas which were found to fluoresce are plotted on the maps of scale 1" = 200' included in this report.

This work was carried out from April 7, 1971 until May 15, 1971 with a total of 24 man days spent carrying out the field surveys.

INTERPRETATIONS

(a) SCINTILLOMETER SURVEY

Low radiometric anomalies are associated with the known uranium mineralization when surveyed on a reconnaissance basis. This anomalous zone is approximately 4500 feet long and from 800 feet to 2500 feet in width. This zone is directly along strike from the main showing area and is underlain by pegmatite.

Detailed work on the main showing area with readings taken 10 feet apart at certain highly anomalous areas have indicated the mineralized sections which contain the known U_3O_8 .

It is recommended that detailed follow up work be done on the higher portions of the broad anomalous zone.

(b) ULTRA VIOLET LIGHT SURVEY

Areas containing fluorescent secondary uranium salts as a coating on the outcrop were found to be coincident with and slightly down slope from the main radiometric anomaly. One large area of outcrop containing this fluorescence is approximately 3000 feet long and 400 feet wide. Three other smaller areas are found, two of which are coincident with the radiometric anomaly and one along strike from the radiometric anomaly. All of this outcrop found to fluoresce is pegmatite.

It is recommended that follow up work be done on the large area which is coincident with the radiometric anomaly.

Respectfully submitted,

James R. Glass

James R. Glass, B. Sc.

CERTIFICATE

I, James R. Glass of 910 Ash Street, Richmond, British Columbia certify that:

1. I graduated from McGill University in Montreal in 1961 and hold a Bachelor of Science in Geology.

2. I am a Fellow of the Geological Association of Canada, a member of the American Institute of Engineers and have practised by profession continuously for nine years.

3. I have based the Conclusions and Recommendations in this report on experience and knowledge gained during my work on the property between May 4th and September 20th, 1971 and on the results and discussions with the claim owners and by the Report written by John S. Vincent, P. Eng.

4. I hold no interest directly or indirectly in this property or the company mentioned in this report and do not expect to receive any such interest.

Vancouver, B. C.

December 13, 1971.

James R. Glass, B. Sc.

GEOPHYSICIST CERTIFICATE

I, Fred J. R. Syberg, HEREBY CERTIFY that:

1. I am a geophysicist, residing at 150 East Queens Road, North Vancouver, British Columbia.

2. I am a graduate of the University of British Columbia where I obtained the Bachelor of Science degree in the Department of Geophysics.

3. I am a member of the Society of Exploration Geophysicists and the European Association of Exploration Geophysicists.

4. I have actively engaged in mining and petroleum exploration in British Columbia, Yukon Territories, North West Territories, Alaska, Alberta, The Canadian Arctic, Ontario and Quebec for the past eleven years.

5. I have inspected the data and the maps submitted in the Scintillometer, Ultra Violet and Geochemical Surveys on the Spar Group of Claims, Lumby, British Columbia, Lat. 50° 15', Long. 118° 47' by James R. Glass, B. Sc. for Boraway Mines Ltd. (N.P.L.) from April 7 to September 30, 1971.

F. J. R. Syberg

December 13, 1971.

F. J. R. SYBERG

DOMINION OF CANADA:

PROVINCE OF BRITISH COLUMBIA.

To WIT:

In the Matter of Scintillometer, Ultra Violet and Geochemical Surveys performed on the SPAR GROUP of Claims, in the Vernon Mining Division.

I, James R. Glass

of 910 Ash Street, Richmond, British Columbia

in the Province of British Columbia, do solemnly declare that the following is a detailed true Statement of costs entailed.

And I make this solemn declaration conscientiously believing it to be true, and knowing that it is of the same force and effect as if made under oath and by virtue of the "Canada Evidence Act."

Declared before me at the City of Vancouver, in the Province of British Columbia, this 16 day of December, 1971, A.D.

James R Glass

Joan Turner

A Commissioner for taking Affidavits for British Columbia or A Notary Public in and for the Province of British Columbia.

Sub-Mining Recorder

PERSONNEL EMPLOYED

Name	Position	Dates Worked	No. of Days	Rate	Total
James R. Glass	Geologist	May 4, 5, 6, 10, 11, 12, 19 June 1, 2, 3, 15, 16, 20 Sept. 20	14	$150.00 p/d	$ 2,100.00
Lawrence M. Williams	Scintillometer Operator	April 7, 8, 13, 14, 15, 19, 20, 21, ½ of 22 May 4, 5, 6, 7, 10, 11, 12, 13, 17, 18, 19, 20, 21, 24, 25, 26, 27, 28, June 1, 2, 3, 4, 5, 7, 8, 9	34½	$ 75.00 p/d	2,587.50
Denis Atkinson	Ultra Violet Light Operator	April 7, 8, 12, 13, 14, 15, 16, 19, 20 21, ½ of 22 May 4, 5, 6, 7, 10, 11, 12, 13, 17, 18 19, 20, 21 June 7, 8, 9	26½	$ 75.00 p/d	1,987.50
Les Clarke	Ultra Violet Light Helper	May 4	5 hrs.	2.50 p/h	12.50
Tim Oven	ditto	May 4, 17	20 hrs.	2.50 p/h	50.00
Archie Donner	ditto	May	5 hrs.	2.50 p/h	12.50
C. S. Powner	Line Cutting Contract, Approx. 38 miles @ $72.50 per mile				2,757.02

DIRECT COSTS RELATED TO ASSESSMENT:

Drafting -	87.16
Assaying -	262.45
Equipment Rental - Scintillometer	1,026.00
Vehicle Rental -	217.37
TOTAL -	$ 11,100.00

In the Matter of

Scintillometer, Ultra Violet

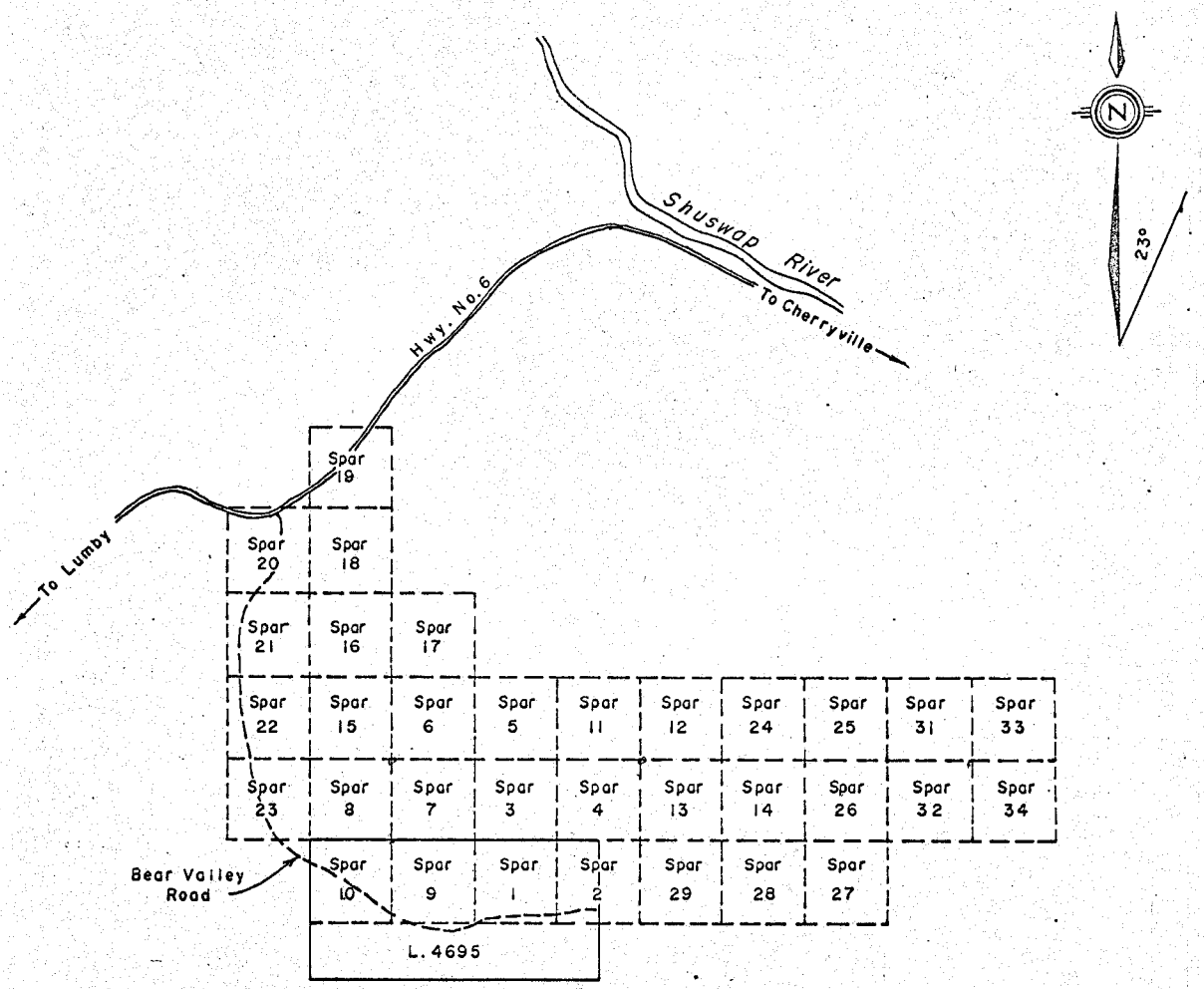
and Geochemical Surveys performed

on the SPAR GROUP of Claims

in the Vernon Mining Division

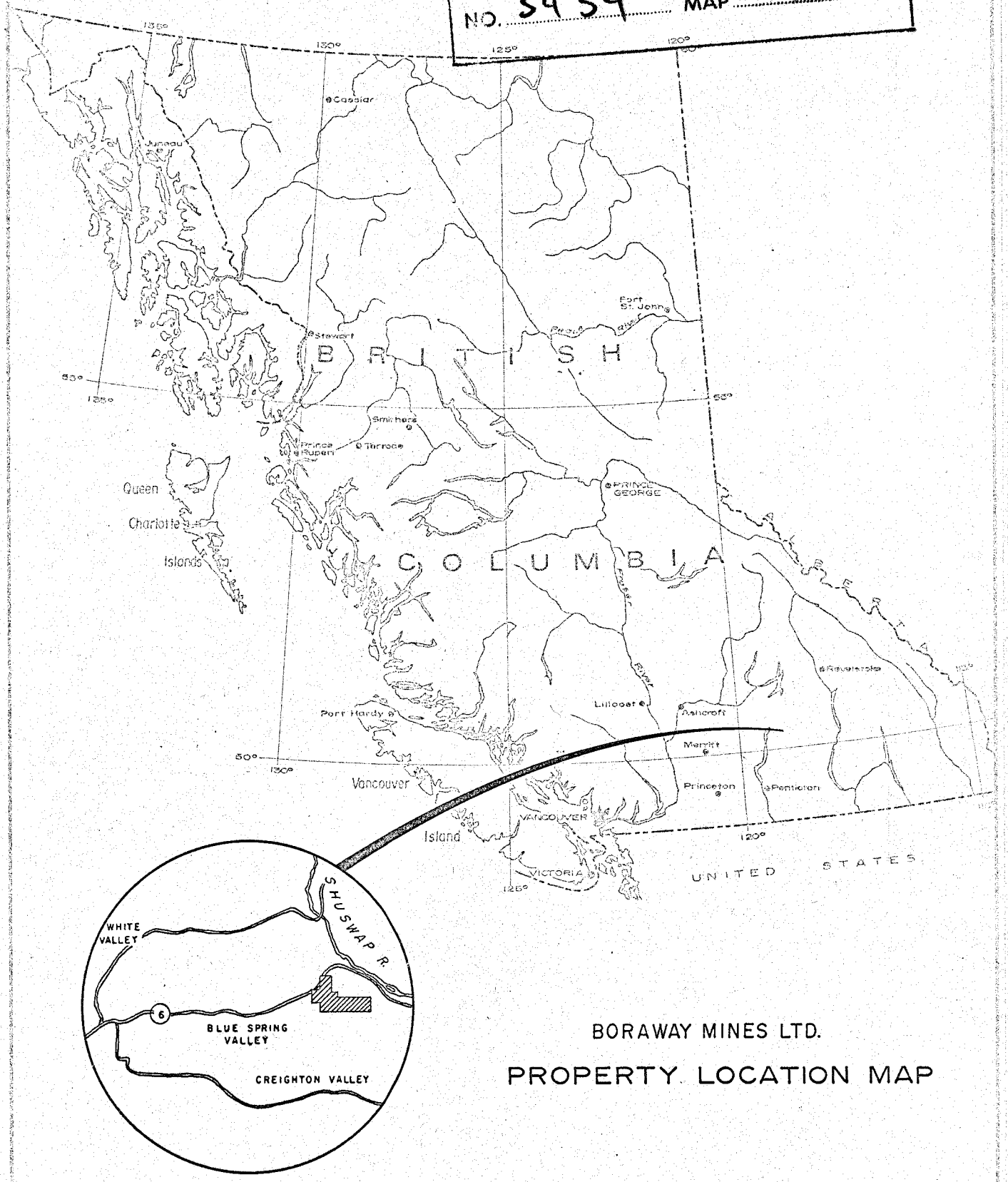
Statutory Declaration

(CANADA EVIDENCE ACT)



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3434 MAP #2

BORAWAY MINES LTD.
SPAR MINERAL CLAIMS
PROPERTY MAP
Scale 1" = 1/2 mi Apr. 1971 Fig. 2
JAMES R. GLASS, CONSULTING GEOLOGIST



BORAWAY MINES LTD.

PROPERTY LOCATION MAP

Fig. 1

ALTAIR drafting services ltd.

Your File: 166-Vernon

BORAWAY MINES LTD. (N.P.L.)
433 Marine Building,
355 Burrard Street,
Vancouver 1, British Columbia.

January 21st, 1972.

Mr. R. H. McCrimmon,
Chief Gold Commissioner,
VICTORIA, British Columbia.

Dear Mr. McCrimmon:-

Re: Spar, Windor Mineral Claims
Geophysical-Geochemical Report

Please find enclosed a copy of the soil analysis as done by Bondar-Clegg & Company Ltd. of Vancouver.

All samples with the exception of B-1 to B-7 inclusive were taken from the "B" soil horizon.

Samples B-1 to B-7 were taken as a soil profile and were from depths -

B-1	.5'	B-5	2.5'
B-2	1'	B-6	3'
B-3	1.5'	B-7	3.5'
B-4	2'		

Analysis Procedure:
(a) Nitric Acid digestion; then
(b) Fusion with sodium fluoride; then
(c) Analysis by fluorimetry.

Since this work was of an exploratory nature and did not survey the property it was not included in our assessment credits.

Yours truly,

James R. Glass, B. Sc.
Consulting Geologist

Encls.

C.G.C.	✓
C.G.	
D.C.G.C.	
D.C.G.	
ACCTS.	
C.M.B.	✓
C.I.	
C.A.	
R. T.	
G.P.E.	
FILING CLERK	

JAN 26 '72 AM

DEPT. OF MINES
AND PETROLEUM RESOURCES

BONDAR-CLEGG & COMPANY LTD.
geologists • geochemists • analysts
1500 PEMBERTON AVENUE, NORTH VANCOUVER, B.C.
PHONE 988-5315

DATE REC'D June 3, 1971

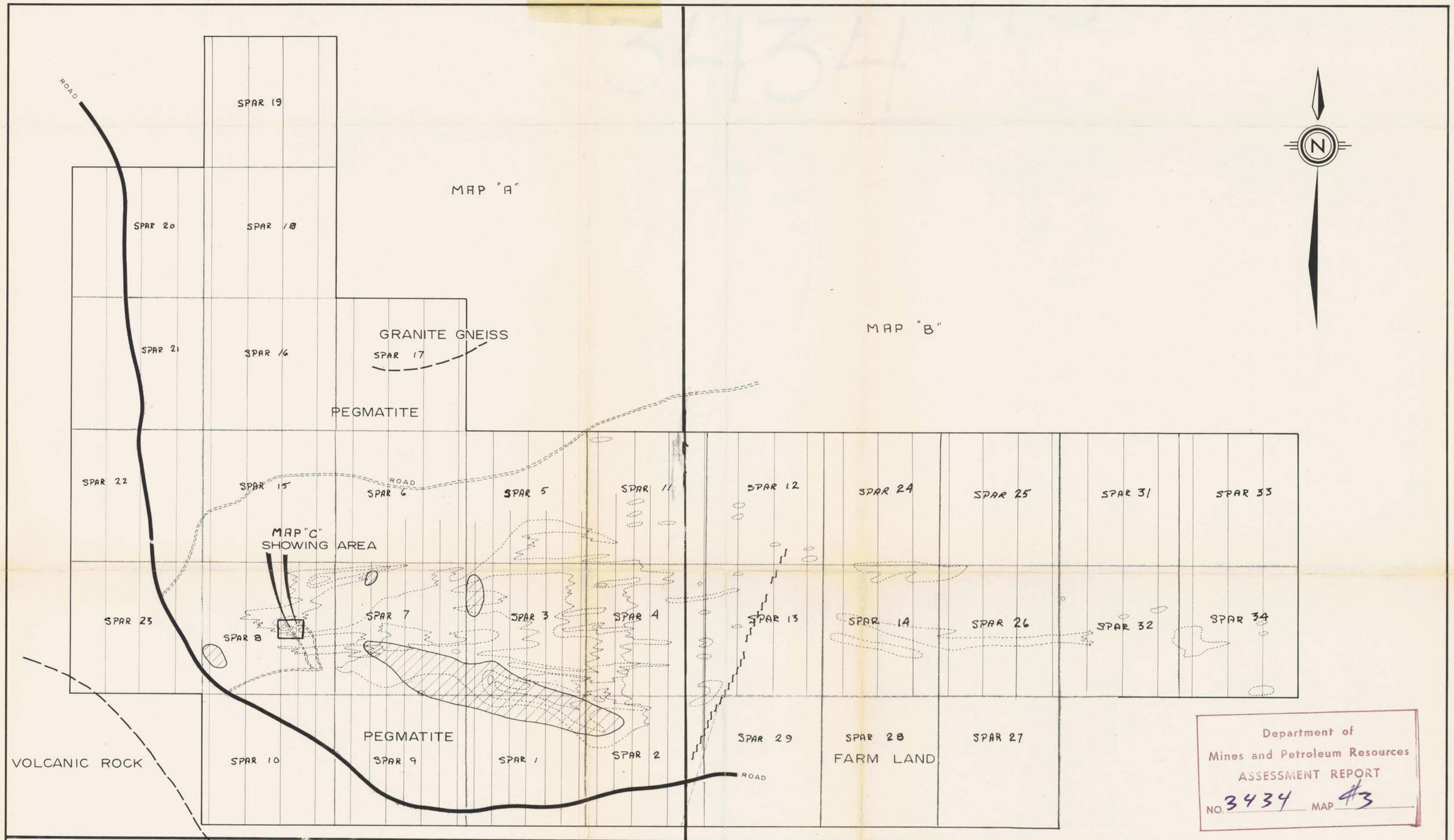
GEOCHEMICAL LAB REPORT

No: 21-192

Extraction: U HNO_3
Method: U Fluorimetric
Fraction Used: As Received

From: Amadeus Investments Ltd.
Date: Completed June 7, 1971 19 71
Analyst: K.B.

SAMPLE NO.		U ppm		SAMPLE NO.		U ppm	REMARKS
B-1		3		L28 9S		0.6	
2		3		10S		2	
3		0.6		11S		1	
4		0.6		6+50S		ND	
5		1		7+50S		ND	
6		1		8+50S		2	
7		ND		9+50S		3	
L24 - 7S		1		10+50S		2	
8		ND					
9		2					
10		1					
7+50S		1					
8+50S		1					
9+50S		0.8					
L25 - 7S		0.4					
8S		0.2					
9S		0.4					
10S		2					
7+50S		0.6					
8+50S		ND					
9+50S		ND					
L26 - 6S		0.8					
7S		0.4					
9S		0.2					
10S		0.2					
6+50S		3					
8+50S		0.8					
9+50S		0.6					
L28 - 6S		ND					
7S		0.2					
8S		1					



LEGEND

Flourescent Uranium Salts

Uranium and Thorium Energy Levels:

2x Background

3x Background

+3x Background

— Location of Picket Lines

3434 M-3

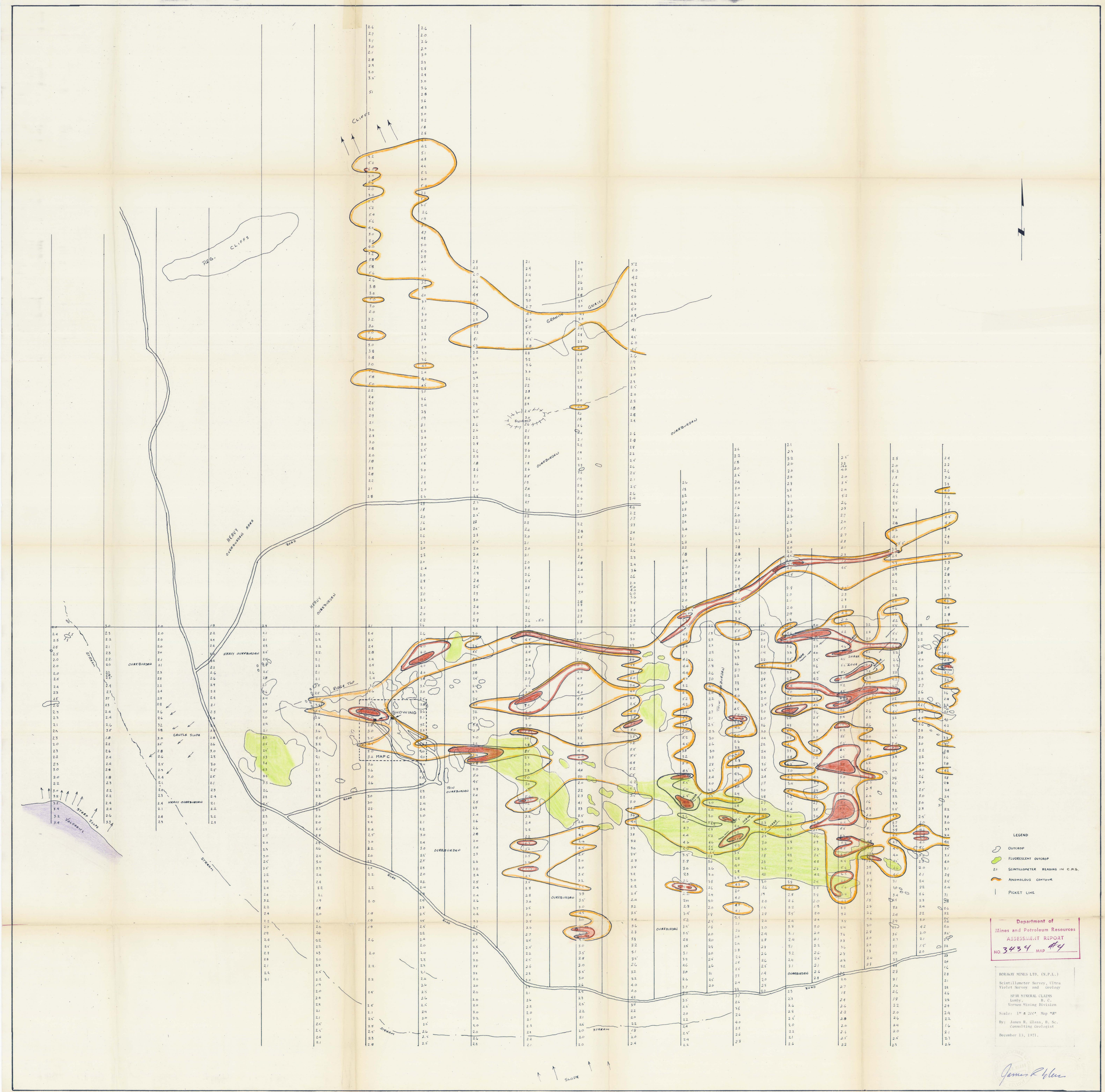
BORAWAY MINES LTD.
SPAR MINERAL CLAIMS
LUMBY, B.C.
VERNON MINING DIVISION

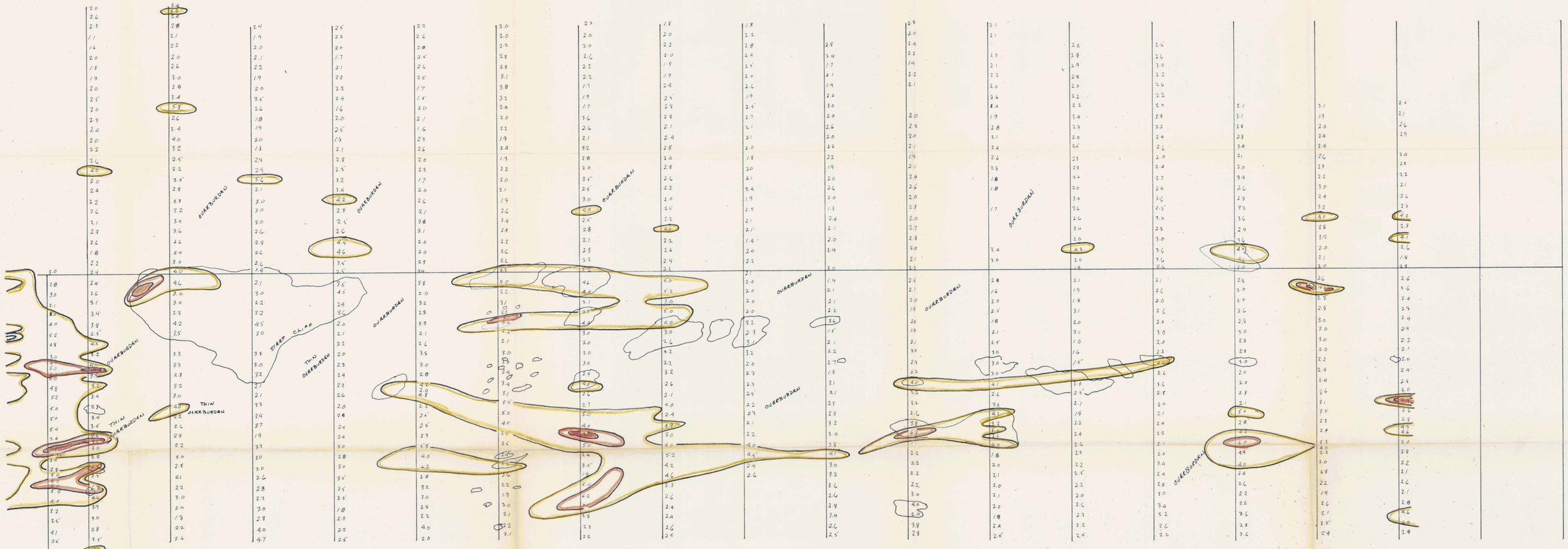
SKETCH SHOWING ANOMALIES

SCALE
FEET 0 1000 2000 3000 FEET

JAMES R. GLASS-CONSULTING GEOLOGIST

APRIL 1971


CLIFFS
PEG.
CLIFFS
HEAVY OVERBURDEN ROAD
ROAD
HEAVY OVERBURDEN
GRANITE
GNEISS
SWAMP
OVERBURDEN
OVERBURDEN
HEAVY OVERBURDEN
STREAM
OVERBURDEN
RIDGE TOP
SHOWING
MAP C
GENTLE SLOPE
THIN OVERBURDEN
HEAVY OVERBURDEN
STEEP SLOPE
VOLCANICS
ROAD
OVERBURDEN
ROAD
STREAM
SHEAR ZONE
OVERBURDEN
ROAD
STREAM
SLOPE
LEGEND
OUTCROP
FLUORESCENT OUTCROP
2.1 SCINTILLOMETER READING IN C.P.S.
ANOMOLOUS CONTOUR
PICKET LINE
Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3434 MAP #4
BORAWAY MINES LTD. (N.P.L.)
Scintillometer Survey, Ultra Violet Survey and Geology
SPAR MINERAL CLAIMS
Lumby, B. C.
Vernon Mining Division
Scale: 1" = 200', Map "A"
By: James R. Glass, B. Sc.
Consulting Geologist
December 13, 1971.



LEGEND

- OUTCROP
- FLUORESCENT OUTCROP
- 2.1 SCINTILLOMETER READING IN C.P.S.
- ANOMALOUS CONTOUR
- PICKET LINE

BOROWAY MINES LTD.

Scintillometer Survey, Ultra Violet Survey and Geology

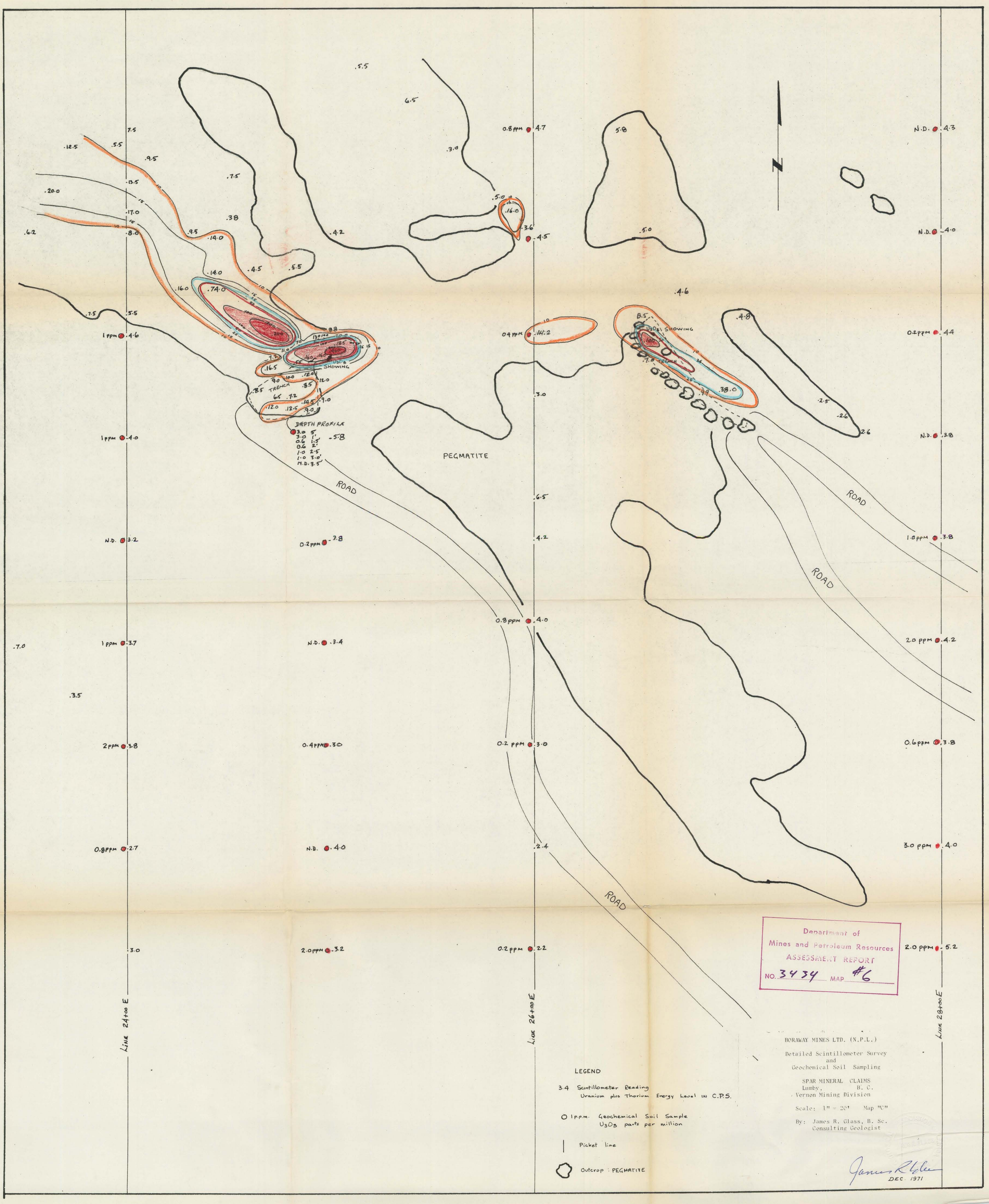
SPAR MINERAL CLAIMS
Lumby, B. C.
Vernon Mining Division

Scale: 1" = 200' Map PB"

By: James R. Glass, B. Sc.
Consulting Geologist

December 14, 1973

James R Glass


SHOWING
TRENCH
DEPTH PROFILE
PEGMATITE
ROAD
ROAD
ROAD
ROAD
LINE 24+00 E
LINE 26+00 E
LINE 28+00 E
LEGEND
3.4 Scintillometer Reading
Uranium plus Thorium Energy Level IN C.P.S.
O 1.p.p.m. Geochemical Soil Sample
U_3O_8 parts per million
Picket line
Outcrop : PEGMATITE
BORAWAY MINES LTD. (N.P.L.)
Detailed Scintillometer Survey
and
Geochemical Soil Sampling
SPAR MINERAL CLAIMS
Lumby, B. C.
Vernon Mining Division
Scale: 1" = 20'
Map "C"
By: James R. Glass, B. Sc.
Consulting Geologist
DEC. 1971
Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3434 MAP #6