

ECONOMIC EVALUATION
OF THE PERLITE 1 AND 2 CLAIMS
EMPIRE VALLEY , BRITISH COLUMBIA

CLINTON MINING DIVISION

N.T.S. 920 - 8W

51° 19.7' 122° 18.8' S.E.

FOR

WILLIAM JACKMAN

PINE LAKE, ALBERTA

BY

E. MEYERS CONSULTING

CLAGARY, ALBERTA



E. Meyers P. Geologist

September, 1978

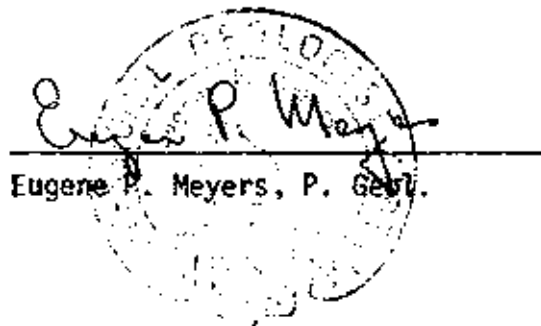
Filmed

CERTIFICATE

I, Eugene P. Meyers, of the City of Calgary, in the Province of Alberta, certify as follows:

1. That I am a geologist residing at 139 Coleridge Rd. N.W. Calgary, Alberta.
2. That I graduated with a Bachelor of Science Degree in Geology from the University of Idaho in 1963.
3. That I am registered as a Professional Geologist in the Province of Alberta.
4. That I have practiced my profession in mining and minerals exploration in Canada and the United States continuously for the past fifteen years.

DATED IN CALGARY THIS 27 DAY OF September, 1978.

A circular seal for the Professional Geologists of Alberta is partially visible behind the signature. The seal contains the text "PROFESSIONAL GEOLOGISTS OF ALBERTA" around the perimeter. The signature "Eugene P. Meyers" is written in cursive over the seal. Below the signature is a horizontal line, and the typed name "Eugene P. Meyers, P. Geol." is printed underneath.

Eugene P. Meyers, P. Geol.

STATEMENT

September 26, 1978

Mr. William Jackman
Pine Lake, Alberta
TOM ISO

RE: Report on Economic Evaluation of
Perlite 1 & 2 Claims
Empire Valley, British Columbia

Professional Services:

Travel & Examination	4 days
Research on Perlite	1 day
Detailed Report	<u>1 1/2 days</u>
	6 1/2 days
6 1/2 days @ \$250.00 p/ day	\$1625.00
Four wheel drive vehicle	
1105 miles @ .22 p/ mile	\$ 243.10
Lodging	\$ 45.94
Meals	\$ 32.05
Typing & Reproduction	<u>\$ 8.00</u>
	\$1954.09

Respectfully submitted,

E. Meyers P. Geol.

E. Meyers

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PERLITE 1 AND 2 CLAIMS
EMPIRE VALLEY, BRITISH COLUMBIA

INTRODUCTION

On June 3,4,5, and again on September 20, 1978, the author conducted an economic evaluation on the Perlite 1 and 2 claims. This evaluation consisted researching the economics of perlite, mapping the areal extent of the deposit, assessing the mining potential, and trenching. The author was assisted by Sven Englund of Clinton, B.C. and John Kruszewski of Calgary, Alberta. This report represents the results of this evaluation.

HISTORY

The property was originally staked by Lawrence Frenier in the 1960ies. Some hand trenching was completed and preliminary testing conducted by the B.C. Department of Mines. The property was allowed to lapse and acquired by John Kruszewski by staking in the early 1970ies. Further hand trenching and testing of the perlite was conducted. The property is currently under option to Mr. William Jackman of Pine Lake, Alberta.

PROPERTY DISPOSITION

The disposition of the perlite property, which is held by staking, is as follows:

<u>Claim Name</u>	<u>Tag No.</u>	<u>No. Units</u>	<u>Total Acreage</u>	<u>Assessment Due</u>
Perlite 1	205	6	313	May 19, 1979
Perlite 2	206	6	313	May 19, 1979

LOCATION AND ACCESS (Map 1 & 2)

The perlite property is located in the Empire Valley, in the Southern Interior of British Columbia. Access is from Clinton, B.C. on Highway 97 for 9 miles to the all weather Gang-Ranch gravel road. The Gang-Ranch road is travelled for 61 miles to the Empire Valley Ranch. The property can be reached either by tote road from the Empire Valley Ranch for 6.5 miles, or the Black Dome Road for 19.7 miles. The Black Dome Road turns off 3 miles before reaching the Empire Valley Ranch. The tote road passes within 500 feet of the perlite outcropping.

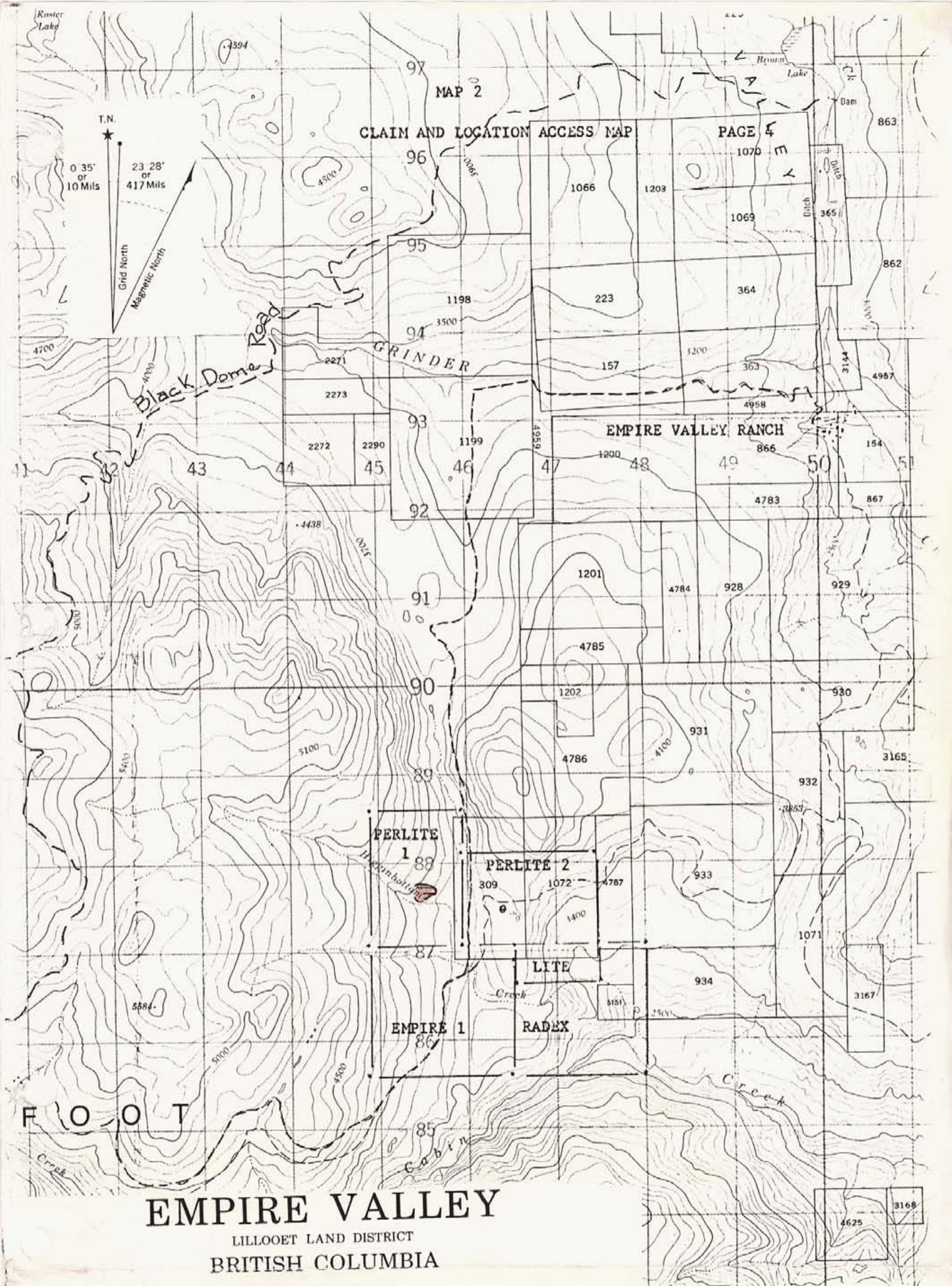
TOPOGRAPHY (Map 2)

The claims lie on both provincial government land and Lot 309 and 1072 which is apart of the Empire Valley Ranch. The main exposure of perlite is on government land, at an approximate elevation of 3800 feet, on a low ridge about 100 feet above Higgenbottom Creek. The country in the vicinity of the claims is characterized by open slopes having sparsely timbered fur trees. Overburden appears to be light.

PERLITE TECHNOLOGY

Perlite is a glassy volcanic rock, containing 2-5% combined water that upon heating, expands or "pops" to a frothy mass of low density material.





MAP 2
 CLAIM AND LOCATION ACCESS MAP
 PAGE 4

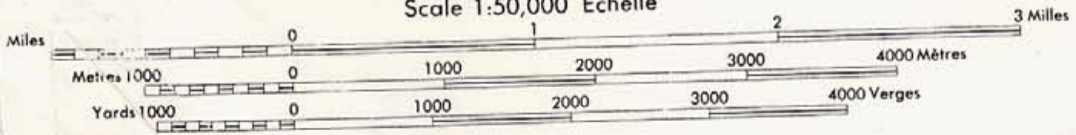


F O O T

EMPIRE VALLEY

LILLOOET LAND DISTRICT
 BRITISH COLUMBIA

Scale 1:50,000 Échelle



MAP 2

Roads:	Routes:		
loose or stabilized surface, all weather...	gravier aggloméré, toute saison...	2 lanes or more 2 voies ou plus	less than 2 lanes moins de 2 voies
loose surface, dry weather and unclassified streets.....	de gravier, temps sec et rues hors classe.....		
cart track.....	de terre.....		
trail or portage.....	sentier ou portage.....		

PERLITE OUTCROP

The specific gravity of perlite ranges between 2.2 - 2.4. Crushed and sized perlite, usually around $\frac{1}{2}$ " in size, has a bulk weight of from 65 - 75 lbs/ p. cu. ft.; whereas the bulk density of the expanded product ranges from about 3 to 12 lbs./ p.cu.ft. Expansion of perlite is accomplished by injection of sized perlite into a furnace with a temperature above 1400° F.

About 75% of all expanded perlite is used in the construction industry. Other uses include abrasives, caulking compounds, filteraids, insulation, and paint texturing. There is currently no domestic production of perlite in Canada.

SPECIFICATIONS

Seive analysis tests were conducted on the coarse grained variety of perlite from the claims supplied by John Kruszewski . Domtar of Canada performed the expansion and seive analysis at their Calgary plant. Results of this testing is included in Appendix I. The green line on the graph represents the limits of Domtars specifications for lightweight aggregate by volume. The red line on the graph represents the cumulative % volume of perlite from the claims. It is understood that the perlite supplied by Kruszewski was blasted instead of the conventional method of mining by ripping with a bulldozer. Further testing is required in order to supply a more uniform and larger bulk sample without excessive fines.

ECONOMIC CONSIDERATIONS

Transportation

The perlite property is 69.4 miles to the B.C. Railroad, 9 miles from Clinton. The Gang-Ranch Bridge across the Frazer River is 19.1 miles from the property. This bridge is antiquated and has weight restrictions imposed on it. The 6.5 miles from the Empire Valley Ranch to the property consist of a tote road which would require up-grading to facilitate heavier vehicle traffic. A possible alternative to using the existing bridge would be a road access for 3.5 miles directly to the Frazer River. A bucket conveyor system or trailer lift would transport the broken ore across the river. This new road would cut off approximately 30 miles of road haulage, eliminate using the bridge, and place the perlite within 40 miles of the B.C. Railhead at Kelly Lake B.C.

Freight rates quoted for crushed and sized perlite is as follows:

<u>Company</u>	<u>Source</u>	<u>Conveyance</u>	<u>Origin</u>	<u>Destination</u>	<u>Rate per ton</u>
Grefco	Wm Howell	Rail	Antinito N. Mex.	Edmonton	\$30.67 U.S.
" "	"	"	"	"	Winnipeg \$26.00 U.S.
"	"	"	"	"	Vancouver \$32.00 U.S.
"	"	"	"	"	Toronto \$33.95 U.S.
Trimac	R. Harry	Truck	Perlite Prop.	Edmonton	\$42.80 Can
C.N.	A. Bonkowski	Rail	Ashcroft B.C.	Vancouver	\$11.20 Can
C.N.	" "	Rail	Clinton	Edmonton	\$27.00 Can

Prices And Production

Mine production in the United States for the year 1976, was

660,000 tons, crushed and sized perlite F.O.B. mine site, at an average price of \$15.73 U.S. The selling price quoted for perlite in May, 1978 was \$22.00 U.S. p/ ton. The price of raw perlite ore has increased over 100% since 1972.

The consumption of perlite ore in Canada is unknown, however the potential is large depending on the transportation costs with respect to market location.

DESCRIPTION OF THE PERLITE DEPOSIT AND ESTIMATED RESERVES

Perlite outcropping on the property occurs in both a coarse grained, highly fractured, and fine grained variety. Outcropping of the coarse variety can be traced for over 1000 feet in an east-west direction and approximately 800 feet in a north-south direction.

Exposures of perlite along Higgenbottom Creek indicate a continuous thickness ranging from 40 to 164 feet.

The fine-grained variety can be traced for 1300 feet in a north-south direction. Assuming the fine grained variety of perlite is suitable for commercial use, a possible total reserve estimate of perlite is as follows:

$$\frac{1300' \times 1000' \times 100'}{13.9 \text{ cu ft/ p ton}} = 9,350,000 \text{ tons}$$

s.g. 2.3 = 3,482,000 Tons

MINING POTENTIAL

The perlite is ideally situated for open-pit mining operations. Stripping of overburden would be minimal. Quarrying operations could be carried on during the summer with sufficient stock piling at the mill site to insure a sustained milling operation. The high fracture density of the coarse variety indicates that the perlite can be removed by surface ripping with a D-8 cat. The broken perlite would be shoved into a loading crib erected along the bank of Higgenbottom Creek where it could be gravity fed into dump trucks. The actual milling of perlite will probably be conducted on a site on the east side of the Frazer River. Such a site could ensure year-round access and adequate stockpile sites for various sized perlite ore.

TRENCHING (Map 3 folder)

Trenching on the property was undertaken during the month of June, 1978. Map 3 shows locations and approximate dimensions of trenches. All trenches were excavated by hand. Some of the trenching consisted of deepening of existing trenches. A total of 86.7 cu. meters of trenching has been completed.

SUMMARY AND RECOMMENDATIONS

The Perlite 1 claim has a possible total tonnage of 9,350,000 tons.

The location, light overburden, and high fracture density of the deposit insure a low cost open-pit mining operation

The deposit is situated on provincial land.

There is currently no domestic production of perlite in Canada.

Past testing on the perlite demonstrate that the ore is readily expandable and of potential commercial value.

Existing roads provide access to the property. Provincial mones are available for up-grading and new construction of roads leading to the deposit.

RECOMMENDATIONS

1) Limited bulldozer work should be undertaken to establish depth of overburden, expose limits of perlite, test ripibility, and provide representative samples for testing, and provide vehicle access to top of deposit.

2) Conduct further bulk testing of both coarse and fine-grained variety of perlite. Seive analysis testing is essential in establishing potential range of market, and determine expansion qualities.

3) Consider drilling a series of rotary holes on a truck mounted vehicle to a depth of 50 feet. Such a program would establish vertical continuity and monitor gradational changes if present.

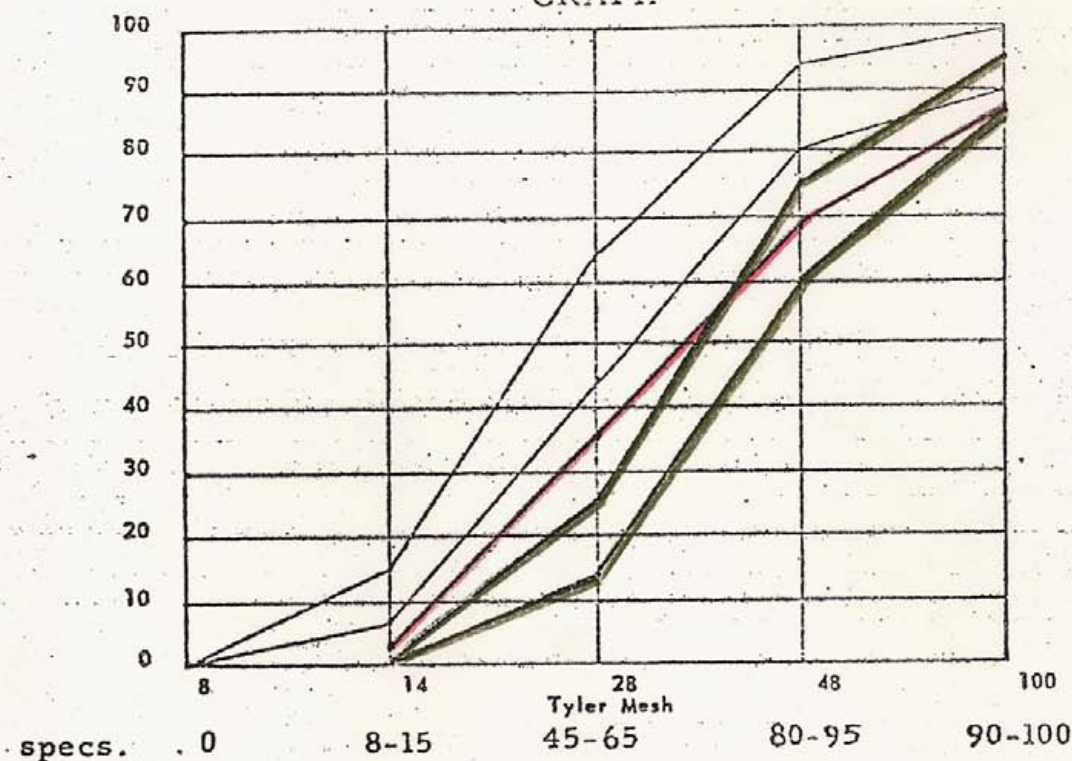
4) Conduct a feasibility study on the potential domestic market of perlite in Canada , and determine transportation costs which may hold an advantage over competing products shipped in from the states



DATE PRODUCED _____ SHIFT _____
 DATE TESTED _____

E PA 115
 LIGHT WEIGHT

GRAPH



Tyler Screen	Fractional Density lb/cu. ft.	Density gm/cc	Wt. gm.	Vol. cc	Vol. %	Wt. %	Cumul. % Vol.	Cumul. % Wt.
8	0		0	0	0	0	0	0
14	4.3		2.2	32	3.2	3.1	3.2	3.1
28	3.8		20.0	325	32.7	28.2	35.9	31.3
48	3.6		19.0	330	33.2	26.8	69.1	58.1
100	4.6		13.1	175	17.6	18.4	86.7	76.5
-100	7.9		16.6	130	13.1	23.4	99.8	99.7
	4.4		70.9	992				

OPERATING & SAMPLE DATA

Temperature _____
 Primary Air _____
 Rotation _____ RPM
 Feed Setting _____
 Preheat by pass _____
 Draft _____
 Bags/hr. _____
 Bulk Density, lb/cu. ft. _____
 Friability _____ PSI
 Bag Wt. _____ LBS.
 Time Sampled _____
 Volumetric Fineness Modulus _____

HEAVY IMPURITIES

% Sinkable by _____
 % Sinkable by weight _____

REMARKS

Sampled as per spec. 115
Accepted as per spec. 115



Province of
British Columbia
Ministry of Mines and
Petroleum Resources

Suspense
C/L 990.00 3766
C/W 135.00 3765
1125
MAY - 8 1978

MINERAL ACT

Statement of Exploration and Development

I, WILLIAM JACKMAN Agent for HARVEY GADWAY AND ALFRED EDIE
(Name) (Name)
PINE LAKE ALBERTA 1775 SPRINGVIEW PLACE
(Address) (Address)
TOM 150 KAMLOOPS BC
Valid subsisting F.M.C. No. 141055 Valid subsisting F.M.C. No. 170823
170824

STATE THAT

1. I have done, or caused to be done, work on the ~~RADAX~~ EMPIRE GROUP
(RADAX EMPIRE & PERLITE 1 & 2) Mineral Claim(s)
Record No.(s) 133, 205, 206, 257
Situate at EMPIRE Valley in the CLINTON Mining Division,
to the value of at least \$2700.00 dollars. Work was done from the 23 day
of AUGUST 1978, to the 30 day of SEPTEMBER 1978

2. The following work was done in the 12 months in which such work is required to be done:

(COMPLETE APPROPRIATE SECTION(S) A, B, C, D, FOLLOWING)

A. PHYSICAL (Trenches, open cuts, adits, pits, shafts, reclamation, and construction of roads and trails)

(Give details as required by section 13 of regulations.)

ROBOTA TRACTOR / FRONT END LOAD AND
DRILL UNIT

8 HOLES DRILLED - 3 1/4 FT DEEP
BULLDOZING CLEARING
8 DAYS @ \$20 PER DAY

COST

960

TOTAL PHYSICAL

960

B. PROSPECTING (Details in report submitted as per section 9 of regulations.)
(The itemized cost statement must be part of the report.)

COST

TOTAL PHYSICAL AND PROSPECTING

MINERAL RESOURCES ACT
7009
NO.

C. DRILLING (Details in report submitted as per section 8 of regulations.)
 (The itemized cost statement must be part of the report.)

COST

D. GEOLOGICAL, GEOPHYSICAL, GEOCHEMICAL
 (Details in report submitted as per section 5, 6, or 7 of regulations.)
 (The itemized cost statement must be part of the report.)
 (State type of work in space below.)

GEOLOGICAL ECONOMIC EVALUATION.

1900⁰⁰

TOTAL OF C AND D

1900⁰⁰

Who paid for the above-described work? Name WILLIAM JACKMAN.
 Address PINE LAKE, ALBERTA.
TOM 150

Portable Assessment Credits (PAC) Withdrawal Request

Amount to be withdrawn from owner(s) account(s):

Name of Owner		AMOUNT
(May be no more than 30 per cent of value of the approved work submitted as assessment work in C and (or) D.)	1. _____	
	2. _____	
	3. _____	
	4. _____	
TOTAL WITHDRAWAL		
TOTAL OF C AND (OR) D PLUS PAC WITHDRAWAL		

I wish to apply \$ 1900⁰⁰ of this work to the claims listed below.

(State number of years to be applied to each claim and its month of record.)

1 YEAR WORK TO APPLY TO

<u>RADEX (133) 9 UNITS</u>	<u>\$900</u>
<u>EGGARE 1 (257) 6 UNITS</u>	
<u>PERLITE 1 (205) 6 UNITS</u>	<u>\$600</u>
<u>PERLITE 2 (206) 6 UNITS</u>	<u>\$400</u>

Value of work to be credited to portable assessment credit (PAC) account(s).

(May only be credited from the approved value of C and (or) D not applied to claims.)

Name		AMOUNT
In owner(s) name.	1. _____	
	2. _____	
	3. _____	
In operator(s) name (person paying for	1. _____	

STATEMENT

September 26, 1978

Mr. William Jackman
Pine Lake, Alberta
TOM ISO

RE: Report on Economic Evaluation of
Perlite 1 & 2 Claims
Empire Valley, British Columbia

Professional Services:

Travel & Examination	4 days
Research on Perlite	1 day
Detailed Report	<u>1½ days</u>
	6½ days
6½ days @ \$250.00 p/ day	\$1625.00
Four wheel drive vehicle	
1105 miles @ .22 p/ mile	\$ 243.10
Lodging	\$ 45.94
Meals	\$ 32.05
Typing & Reproduction	<u>\$ 8.00</u>
	\$1954.09

Respectfully submitted,

E. Meyers P. Geol.

E. Meyers

B.K. PRODUCTS Ltd

CONSTRUCTION MATERIALS DIV.
 CELITE MASONRY SYSTEMS
 SILICA & MINERAL PRODUCTS

Eric Locke
 1323—21st Ave. N.W.
 Calgary Alta..

709 2237 282-5439

Breakdown of account for work done on
 Perlite claims.

August 30 '78	3 hrs with hand machine	160 ⁰⁰	PAID \$5.00
31	6 hrs	120	
Sept 5	3 hrs	60	
Above. exploratory & mapping mainly on Empire 1 6 units. Below. work applied to 'LADEX' 7 unit			
Sept 5 '78	1 man with loader 3 hrs.	60 ⁰⁰	
6	6 hrs.	120 ⁰⁰	
7	" with grader/loader 8 hrs	160 ⁰⁰	
8	2 men 4' x 4' with drill 8	240 ⁰⁰	
11	" " " 5	150 ⁰⁰	
12	" " " 8	240 ⁰⁰	
		<u>\$970⁰⁰</u>	

You should apply \$900 of this account
 to your assessment work on Ladex claims
 or towards the group.

Eric Locke

B.K. PRODUCTS Ltd

CONSTRUCTION MATERIALS DIV.
CELITE MASONRY SYSTEMS
SILICA & MINERAL PRODUCTS

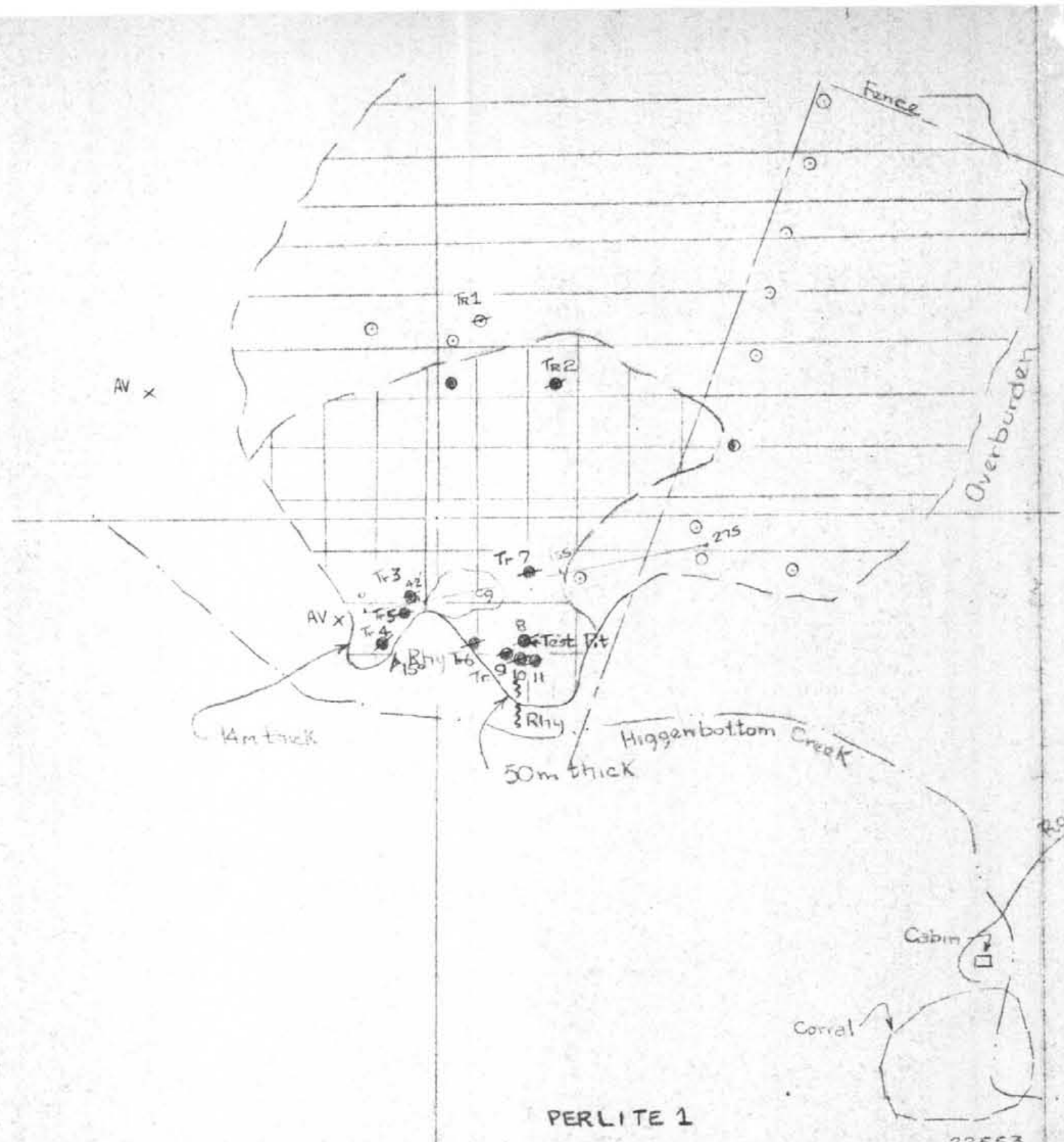
Paul Locke
1323—21st Ave. N.W.
Calgary Alta..

749 2237 282-5439

Breakdown of account for work done on
Perlite claims.

August 30 '70	3 hrs with hand machine	160 ⁰⁰	PAID \$5 ⁰⁰
31	6 hrs	120	
Sept 5	3 hrs	60	
Above exploratory & mapping mainly on Empire 1 to units. Below work applied to RADEX 7 unit			
Sept 5 '70	1 man with loader 3 hrs.	60 ⁰⁰	
6	6 hrs.	120 ⁰⁰	
7	" with grader/blade 6 hrs	160 ⁰⁰	
8	2 men 40ft with drill 8	240 ⁰⁰	
11	" " " 5	150 ⁰⁰	
12	" " " 8	240 ⁰⁰	
		<u>\$970⁰⁰</u>	

You should apply \$900 of this account
to your assessment work on Radex claim
or towards the group.



Dimensions of Trenches (meters)

1	2.3 X 1.9 X .3	= 1.59
2	1.1 X .5 X .3	= .165
3	1.7 X 2.4 X 1.	= 4.08
4	1. X 1. X 1.	= 1.00
5	1. X 1. X .5	= .50
6	.9 X 1. X .75	= .67
7	.5 X .8 X .7	= .17
8	2.6 X 1.6 X 1.	= 4.16
9	1.7 X 1.3 X 1.1	= 2.43
10	3. X 3 X 2	= 18.
11	3 X 3 X 6	= 54.
Total		86.76 (113.47 cu.yds.)

LEGEND

- Perlite, fine grained
- Approximate boundary
- Perlite, coarse grained
- Approximate limits Defined
- AV - Altered siliceous volcanic w/hematite inclusions
- Rhy - Rhyolite
- Tr 6 - Trench location
- Scale 1" = 100m (328')

PERLITE 1

PERLITE 2

22553

22554

SW CORNER PERLITE 2
SE CORNER PERLITE 1

MINERAL RESOURCES DIVISION
ASSESSMENT REPORT

7009

MAP 3