BAR-WELL RESOURCES LTD.

230-1010-8 Avenue S. W.
CALGARY, ALBERTA T2P 1J2 PHONE 261-6951

LOG NO: 11.07 MGE-F 1
ACTION:
FILE NO:

October 31, 1986

Attention: Dr. John Gammon

Manager, Exploration British Columbia
Mineral Resource Division
Ministry of Energy, Mines and Petroleum Resources
Parliament Buildings
Victoria, British Columbia
V8V 1X4

FILMED

Dear Sir:

Re: Number 10963 M - 11 (Elkhorn)

Please be advised that we have completed our exploration tunnelling at the Elkhorn mine site.

The tunnel has been driven to 123 feet (37.5 m) and another 27 feet (8.23 m) lateral extension driven to follow the bedded barite (150 feet or 45.73 m total).

The size of the tunnel averages 10' x 10'. The total cost of tunnelling as outlined in Schedule A is $63,454.92. The cost/metre is $\frac{\$63,454.92}{45.73m}$ = $1387.60 m or $423.03/foot.

This cost is about 48% higher than our $935/m estimate due to bad ground that required pinning and stabilizing.

When we reached the end of our core holes at 100 feet, the ore was found to be dipping but consistent in stringer form. Therefore, it was unnecessary to core ahead and the tunnel was extended to the 123 foot mark. At this point the ore appeared to be turning right and we followed it 27 feet further. At October 31, 1986, we are at this 123 foot point and we will proceed to tunnel and follow the ore .

Please see Schedule B which is a survey done by Griffith & Associates to verify the tunnelling results.

In summary, we feel that we have determined the presence of barite stringers across a length of 150' - 200'. Extensive coring and tunnelling will be required to prove up tonnage on an economical basis.

.....2

FERNIE

FAME M11 – 15706

Province of British Columbia

Ministry of Energy, Mines and Petroleum Resources

ASSESSMENT REPORT
TITLE PAGE AND SUMMARY

TYPE OF REPORT/SURVEY(S)	TOTAL COST
Physical.	$ 15 863.73

AUTHOR(S) C. Willis SIGNATURE(S)

DATE STATEMENT OF EXPLORATION AND DEVELOPMENT FILED 5 Jan, 87 YEAR OF WORK 1986.

PROPERTY NAME(S) Elkhorn Mine

COMMODITIES PRESENT Barite, Pb, Zn, Ag.

B.C. MINERAL INVENTORY NUMBER(S), IF KNOWN 82 J SW – 2, 8

MINING DIVISION Golden NTS 82 J 5W

LATITUDE 50° 26' LONGITUDE 115° 52'

NAMES and NUMBERS of all mineral tenures in good standing (when work was done) that form the property (Examples: TAX 1-4, FIRE 2 (12 units); PHOENIX (Lot 1706); Mineral Lease M 123; Mining or Certified Mining Lease ML 12 (claims involved)):

Zap 1–3

OWNER(S)

(1) W. Interarity (2) Chevron Standard.

MAILING ADDRESS

OPERATOR(S) (that is, Company paying for the work)

(1) Bar-Wele Resources Ltd. (2)

MAILING ADDRESS

230, 1010 – 8 Ave. SW
Calgary, Alberta
T2P 1J2

SUMMARY GEOLOGY (lithology, age, structure, alteration, mineralization, size, and attitude):

Bedded deposits of pure white barite, now folded, total an estimated 60 000 tonnes minable by open pit.

REFERENCES TO PREVIOUS WORK

A.R. 6358

(over)

TYPE OF WORK IN THIS REPORT	EXTENT OF WORK (IN METRIC UNITS)	ON WHICH CLAIMS	COST APPORTIONED
GEOLOGICAL (scale, area)			
Ground			
Photo			
GEOPHYSICAL (line-kilometres)			
Ground			
Magnetic			
Electromagnetic			
Induced Polarization			
Radiometric			
Seismic			
Other			
Airborne			
GEOCHEMICAL (number of samples analysed for ....)			
Soil			
Silt			
Rock			
Other			
DRILLING (total metres; number of holes, size)			
Core			
Non-core			
RELATED TECHNICAL			
Sampling/assaying			
Petrographic			
Mineralogic			
Metallurgic			
PROSPECTING (scale, area)			
PREPARATORY/PHYSICAL			
Legal surveys (scale, area)			
Topographic (scale, area)			
Photogrammetric (scale, area)			
Line/grid (kilometres)			
Road, local access (kilometres)			
Trench (metres)			
Underground (metres) UNDV	45.7 m		
		TOTAL COST	15863.75

FOR MINISTRY USE ONLY		NAME OF PAC ACCOUNT	DEBIT	CREDIT	REMARKS:
Value work done (from report)	15863.75				
Value of work approved					
Value claimed (from statement)					
Value credited to PAC account					
Value debited to PAC account					
Accepted VEK	Date	Rept. No. 15706			Information Class (4)

As discussed in our letter of May 20, 1986, tunnelling is our only sure method to determine the direction of these barite beds that have been subject to techtonic movement. As such, tunnelling is a pure exploration tool and we ask that these costs be eligible for the full 33 1/3% grant.

In any case, "Exploration British Columbia" has provided my company with a reason to invest exploration dollars which may not have been expended. From the enclosed list of people and services that have gained from these expenditures it is obvious the program is accomplishing it's goals.

Thank you once again for the opportunity to participate and we look forward to further communication from your department if required.

Yours truly,

Craig Willis, President

CW/kb

Enc:

YEAR--1986>									
MONTH--AUG>									
ACTIVITY	ACTUAL	FORECAST	ACTUAL	FORECAST	ACTUAL	FORECAST	ACTUAL	FORECAST	ACTUAL	FORECAST
GEOLOGY										
GEOPHYSICS										
GEOCHEMISTRY										
DRILLING										
OTHER SURVEYS										
UNDERGROUND DEVELOPMENT	10,563.62	20,000								
OTHER COSTS (SPECIFY)										
TOTAL	10,563.62	20,000								

YEAR--1986>			1986						TOTAL	
MONTH--SEPT>			MONTH OCT							
ACTIVITY	ACTUAL	FORECAST	ACTUAL	FORECAST	ACTUAL	FORECAST	ACTUAL	FORECAST	ACTUAL	FORECAST
GEOLOGY										
GEOPHYSICS										
GEOCHEMISTRY										
DRILLING		9,000								
OTHER SURVEYS										
UNDERGROUND DEVELOPMENT	17,232.03	20,000	35,659.27	30,000						
OTHER COSTS (SPECIFY)										
TOTAL	17,232.03	29,000	35,659.27	30,000						

TOTALS

	FORECAST	ACTUAL
AUG	$ 20,000	$ 10,563.62
SEPT	$ 29,000	$ 17,232.03
OCT	$ 30,000	$ 35,659.27
	$ 79,000.00	$ 63,454.92

(b) Goods and Services

Description	Expenditure B.C.	Expenditure Outside
Meals, Groceries, etc.	$	$
Camping Supplies, Equipment, etc.		
Accommodation	1,344.81	
Transportations — Scheduled Air		
— Air Charter		
— Vehicle Rentals (Loader)	3,198.55	
— Vehicle O and M Costs	2,001.57	
— Other (specify) Diesel Fuel	6,424.10	
Equipment Rentals — Miners Rentals	651.48	
Equipment Rentals — Trenching, etc.		
— Geophysical, etc.		
— Other (specify) Compressor, Forklift	1,512.00	
Contract Drilling Ore Hauling	907.00	
Consultant Services Survey	940.00	
Assays and Analyses		$171.75
Communications		
Other (specify) Explosives	7,354.85	
Other (specify) Parts and Repair	5,559.19	

9. IMPACT OF **FAME** GRANT

(a) Please indicate what level of **expansion** of your project was attributable to receiving a FAME grant.

$_____

_____ person/days employment.

(b) Please indicate what you feel to be the main achievement of this FAME funded program.

The Fame Program spurred us on to commence a project earlier than planned (ie. 1987 otherwise). As discussed in our covering letter we feel that exploration tunnelling should qualify for 33 1/3% rather than 25% and not be limited to only $40,000.00 eligibility.

Province of British Columbia
Ministry of Energy, Mines and Petroleum Resources

BC

EXPLORATION BRITISH COLUMBIA

FINANCIAL ASSISTANCE FOR MINERAL EXPLORATION

Grant Identification No. 10963M-11

LOG NO: 1107 MGE-F 1
ACTION: see also mail log 0105.3
FILE NO:

FORM 3

APPLICATION FOR PAYMENT

INSTRUCTIONS:

- Please type or print
- Please submit completed forms, **with a copy of the final technical report**, to:
  Manager, EXPLORATION BRITISH COLUMBIA, Mineral Resources Division
  Ministry of Energy, Mines and Petroleum Resources
  Parliament Buildings, Victoria, B.C. V8V 1X4

1. Date of this Application
October 31/86

2. Applicant's Identification and Location
Name: Bar-Well Resources Ltd.

Address — Street Number and Name, Apt. No.: 230, 1010 - 8 Avenue S. W.
Telephone No.: 261-6951

City, Town, Village: Calgary
Province: Alberta
Postal Code: T 2 P 1 J 2

3. Head Office Location
Address — Street Number and Name, Apt. No.: As above
Telephone No.:

City, Town, Village:
Province:
Postal Code:

4. Mailing Address (if different from above)
Address — Street Number and Name, Apt. No.:
Telephone No.:

City, Town, Village:
Province:
Postal Code:

5. British Columbia Free Miner Certificate No. 235993

6. I/We, _____, hereby apply for payment of a grant under the Exploration British Columbia Financial Assistance for Mineral Exploration Program and declare the information given above to be true and accurate.

Signature of Applicant or Signing Officer

H. C. Willis
Name (please print)

President
Title/Occupation (please print)

10963 - M Elkhorn
Project Name (please print)

Bar-Well Resources Ltd.
Company (please print)

October 31, 1986
Date

7. EXPENDITURES (N.B. Please provide actual all-inclusive costs, including salaries and wages, equipment and machinery rental, supplies, services, transportation and accommodation directly attributable to the field program.)

(a) For the following, the full cost (100% of expenditures) are eligible:

	Total Eligible Expenses
Geological Surveys, Map and Report Preparation and Related Costs	$
Geophysical Surveys (line-kilometres)	
Ground	
Magnetic ..... $	
Electromagnetic ..... $	
Induced Polarization ..... $	
Radiometric ..... $	
Seismic ..... $	
Other ..... $	
Airborne ..... $	
$	$
Geochemical Surveys (No. of samples analysed for _____)	
Soil ..... $	
Silt ..... $	
Rock ..... $	
Other ..... $	
$	$
Drilling	
Surface ..... m @ $ ..... = $	
Underground ..... m @ $ ..... = $	
$	$
Related Technical Surveys	
Sampling/Assaying ..... $	
Petrographic ..... $	
Mineralogic ..... $	
Metallurgic ..... $	
$	$
Preparatory/Physical	
Line/Grid (kilometres) ..... $	
Trenching (metres) ..... $	
$	$
Other Exploration Costs (attach detailed schedules)	
..... $	
..... $	
..... $	
$	$
Total Eligible Expenses	$

(b) For the following activities only 25% of total costs are eligible:

Tunneling, Drifting, Other Lateral Excavation, Shaft Sinking (25% of total expenses are eligible) 15,863.74	
45.73 m @ $ 1387.60 = $ × 25% = $ 15,863.73	
..... m @ $ ..... = $ × 25% = $	
63,454.95 $	$

(c) TOTAL ELIGIBLE EXPENDITURES: $ .....

8. SUPPLEMENTARY INFORMATION: The following information is required in order to help us determine the contribution which mineral exploration activity makes to the economy, and relates to the utilization of B.C. vs. outside labour and services. Only figures directly attributable to the funded program should be included (approximate figures acceptable, but please be as accurate as possible).

(a) Employment, wages and salaries

Type	No. Employed		No. Person-days		Salaries/Wages Paid	
	B.C.	Outside	B.C.	Outside	B.C.	Outside
Prospectors					$	$
Linecutters						
Technicians						
General Labourers						
Drillers/Helpers						
Equipment Operators						
Geologists						
Geophysicists						
Geochemists						
Engineers						
Supervisory	$ 6,500.00					
Consulting						
Secretarial						
Managerial						
Legal						
Accounting						
Others (specify) Miners	$20,530.82					
Others (specify)						
TOTALS	$27,030.82				$	$

	Initials	Date
Prepared By		
Approved By		

Oct. 31/86 Bar-Well Resources Ltd. - Schedule "A"

	1 Date		2 Amount	3 Cheque #	4 For
1	Aug. 5/86	Bill Inverarity	$ 1,500.00	150	Travel Expenses, etc.
2	Aug. 5	Gulf Canada	2,000.00	151	Diesel Fuel, etc.
3	Aug. 18	Village Inn Motel	300.00	154	Accommodation
4	Aug. 18	Dwight LaFreniere	1,000.00	155	Salary Advance (Miner)
5	Aug. 18	Prime Explosives	2,534.12	156	Explosives
6	Aug. 18	Bill Inverarity	1,500.00	157	Salary (Supervisor)
7	Aug. 18	R. F. Fry & Assoc.	651.48	159	Jack Leg, Fan, Air Hose
8	Aug. 20	Jarvis Clark	628.02	160	Scoop Tram Repair
9	Aug. 29	Dave Belcher	450.00	161	Casual Labour
10	Sept. 2	Dwight LaFreniere	1,000.00	162	Washers, Mesh
11	Sept. 16	Rec. Gen. of Canada	1,405.85	164	Payroll Deducts
12	Sept. 16	McMillan Services	261.89	165	Scoop Tram Repair
13	Sept. 16	Kimberley Texaco	364.63	166	Fuel
14	Sept. 16	Dwight LaFreniere	1,408.01	167	Salary (Miner)
15	Sept. 16	Dwight LaFreniere	143.91	168	bal. owing on ck. 162
16	Sept. 16	Village Inn Motel	644.81	169	Accommodation
17	Sept. 16	Bill Inverarity	200.00	170	Expense Account
18	Sept. 16	Red Foster	1,000.00	171	Stoppers, steel, bits
19	Sept. 16	Capitol Tire	896.34	172	Tire Repairs
20	Sept. 16	Real Levesque	250.83	173	Salary (Miner)
21	Sept. 16	Joe Ackert	322.50	174	Salary (Miner)
22	Sept. 16	Wayne Powers	250.83	175	Salary (Miner)
23	Sept. 16	Ralph Wismer	522.82	176	Salary (Miner)
24	Sept. 16	Darel McFadden	312.00	177	Salary casual labor
25	Sept. 23	Gulf Canada	424.10	178	Diesel Fuel
26	Sept. 24	Byers Transport	117.78	179	Coil Air hose
27	Sept. 24	Gulf Canada	2,000.00	180	Diesel Fuel, etc.
28	Sept. 30	Dwight LaFreniere	1,511.37	183	Salary (Miner)
29	Sept. 30	Richard Heikkila	847.18	184	Salary (Miner)
30	Sept. 30	Henry Rakebrand	847.18	185	Salary (Miner)
31	Sept. 30	Bill Inverarity	2,500.00	186	Salary (Supervisor)
32	Oct. 1	Prime Explosives	729.71	187	Explosives
33	Oct. 7	Motorways	661.25	190	Auger Steel
34	Oct. 8	Rec. Gen. of Canada	2,554.44	191	Payroll Deducts
35	Oct. 10	WCB	964.63	192	To Sept. 30
36	Oct. 10	Kimberley Texaco	637.90	193	Fuel
37	Oct. 10	Dwight LaFreniere	2,218.48	194	Loader Rent, casual labor
38	Oct. 15	Dwight LaFreniere	1,582.93	195	Salary (Miner)
39	Oct. 15	Richard Heikkila	866.88	196	Salary (Miner)
40	Oct. 15	Henry Rakebrand	866.88	197	Salary (Miner)
41	Oct. 16	Henry Rakebrand	311.99	199	Salary - Bonus (Miner)
42	Oct. 16	Richard Heikkila	431.99	200	Salary - Bonus (Miner)
43	Oct. 16	~~Prime Explosives~~	306.45	201	Safety Fuses
44	Oct. 15	Bill Inverarity	2,500.00	203	Expense Account
45	Oct. 21	Star Electric	400.00	205	Motor Repair
46	Oct. 21	Gulf Canada	2,000.00	207	Diesel Fuel, etc.

Oct. 31/86

	Initials	Date
Prepared By		
Approved By		

Bar-Well Resources Ltd.

	Date		1 Amount	2 Cheque #	3 For	4
1	Oct. 21/86	Kimberley Texaco	$ 946.99	208	Fuel, etc.	
2	Oct. 22	Dwight LaFreniere	980.07	210	Loader Rental	
3	Oct. 22	Stay Sales	450.00	211	Cable & Hose	
4	Oct. 24	Invermere Sales & Rent	1,512.00	214	Forklift & Compressor	
5	Oct. 27	Kathy Brown	116.68	215	Signs & Travel Exp.	
6	Oct. 31	Dwight LaFreniere	1,773.76	217	Salary (Miner)	
7	Oct. 31	Richard Heikkila	1,062.08	218	Salary (Miner)	
8	Oct. 31	Henry Rakebrand	986.67	219	Salary (Miner)	
9	Oct. 31	Bill Inverarity	2,500.00	225	Salary (Supervisor)	
10	Oct. 31	Bill Inverarity	2,094.17	226	Expense Account	
11	Oct. 31	Village Inn Motel	400.00	228	Accommodation	
12	Oct. 31	Max Helmer Construct.	907.00	227	Haul Ore	
13	Oct. 31	Loring Labs	171.75	229	Assays	
14	Oct. 31	Griffith & Associates	940.00	230	Surveys	
15	Oct. 31	Prime Explosives	3,784.57	231	Explosives	
16						
17		TOTAL	$63,454.92			
18						
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GRIFFITH & ASSOCIATES
B.C. LAND SURVEYORS

Robert A. Griffith, B.C.L.S.
Frank R. Maag, B.C.L.S.

Our File .52986..........
Your File ....

October 27, 1986.

Bar Well Resources
230-10108 th Avenue S.W.
T2T 0P9

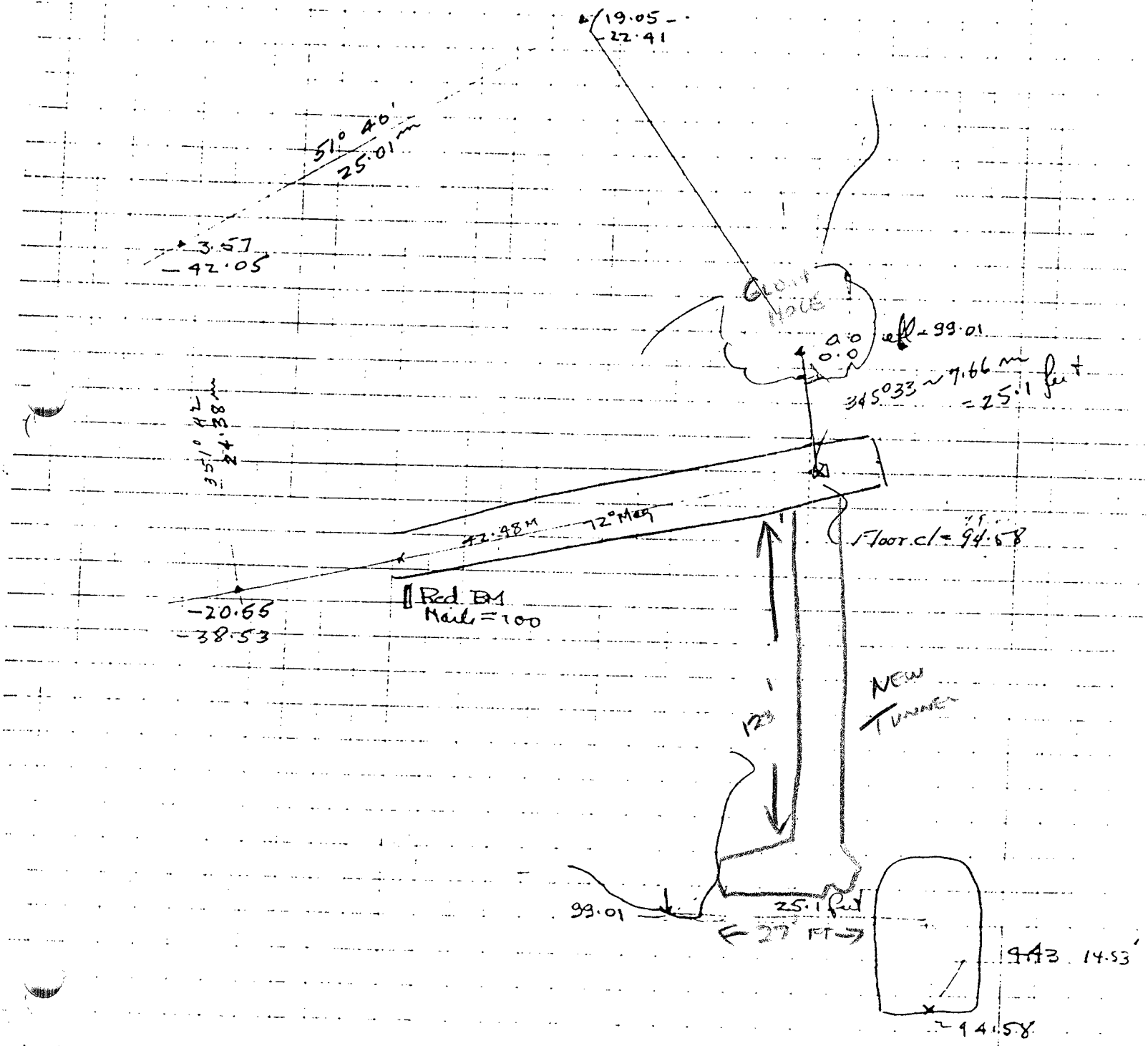
For professional services with respect to:
Mine control, shale plane location and ground profile, located near Invermere.

FEE: $940.00

ck 230
Oct 31

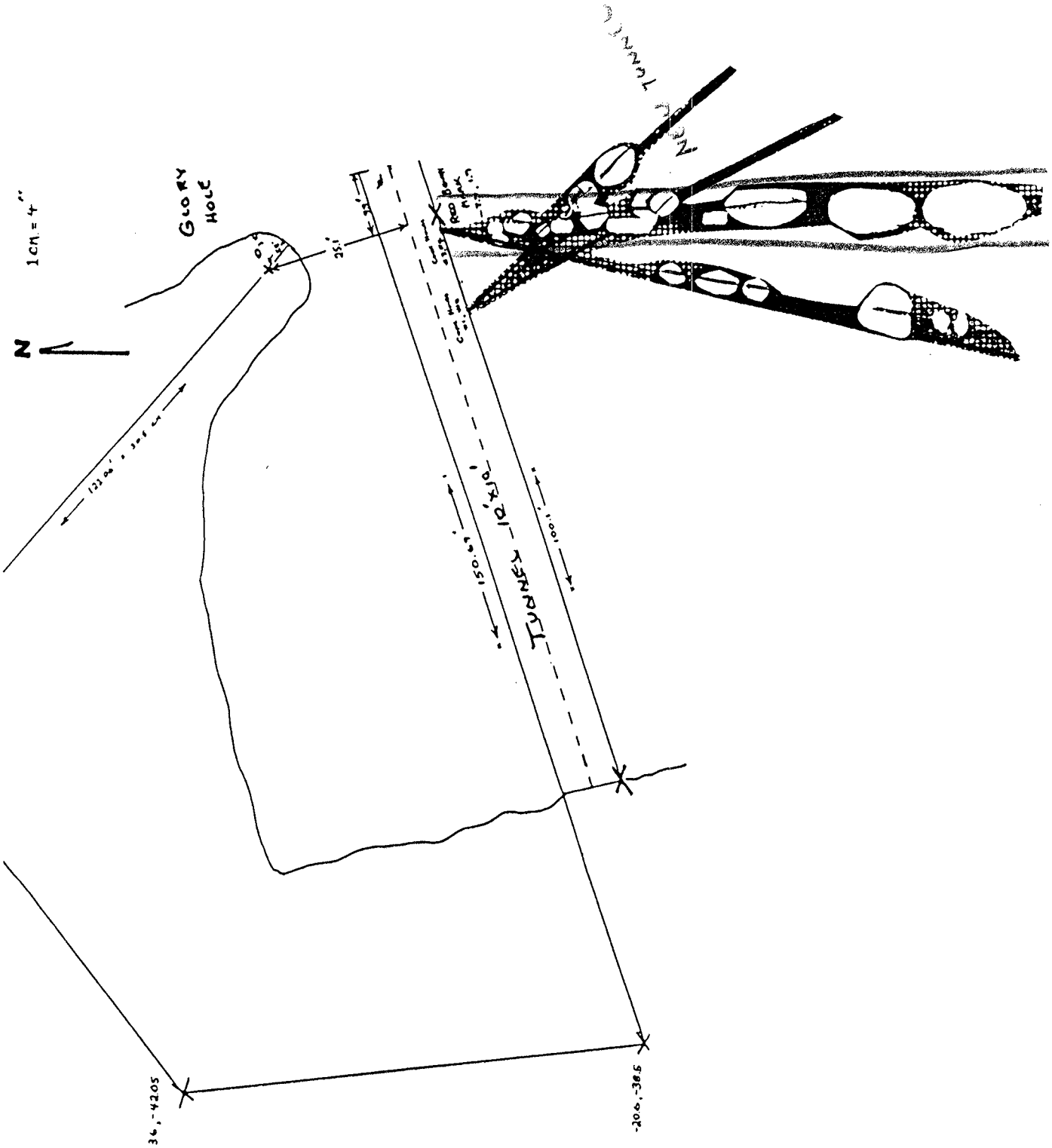
☐ P.O.Box 1488, 906 - 7th Ave., North, Creston, B. C. V0B 1G0 (604)428-5810
☒ P.O.Box 304, 26-12th Ave., South, Cranbrook, B. C. V1C 4H8 (604)426-2624
XXXXXXXXXXXXXXXXXXXXXXXXXXXXX

Reference #2



15ft 12ft

REFERENCE #2



1 CM = 11.1
1.5Q = 10.1'

REFERENCE

25' TO FLOOR OF OLD TUNNEL

BENCHMARK

PROPOSED 10' x 10' TUNNEL

36'

CASING

70'

CORE HOLE #1
55' @ 12° UP

CORE HOLE #2
65' @ 6° UP

NEW TUNNEL

CORE HOLE #3
101' @ 3° UP

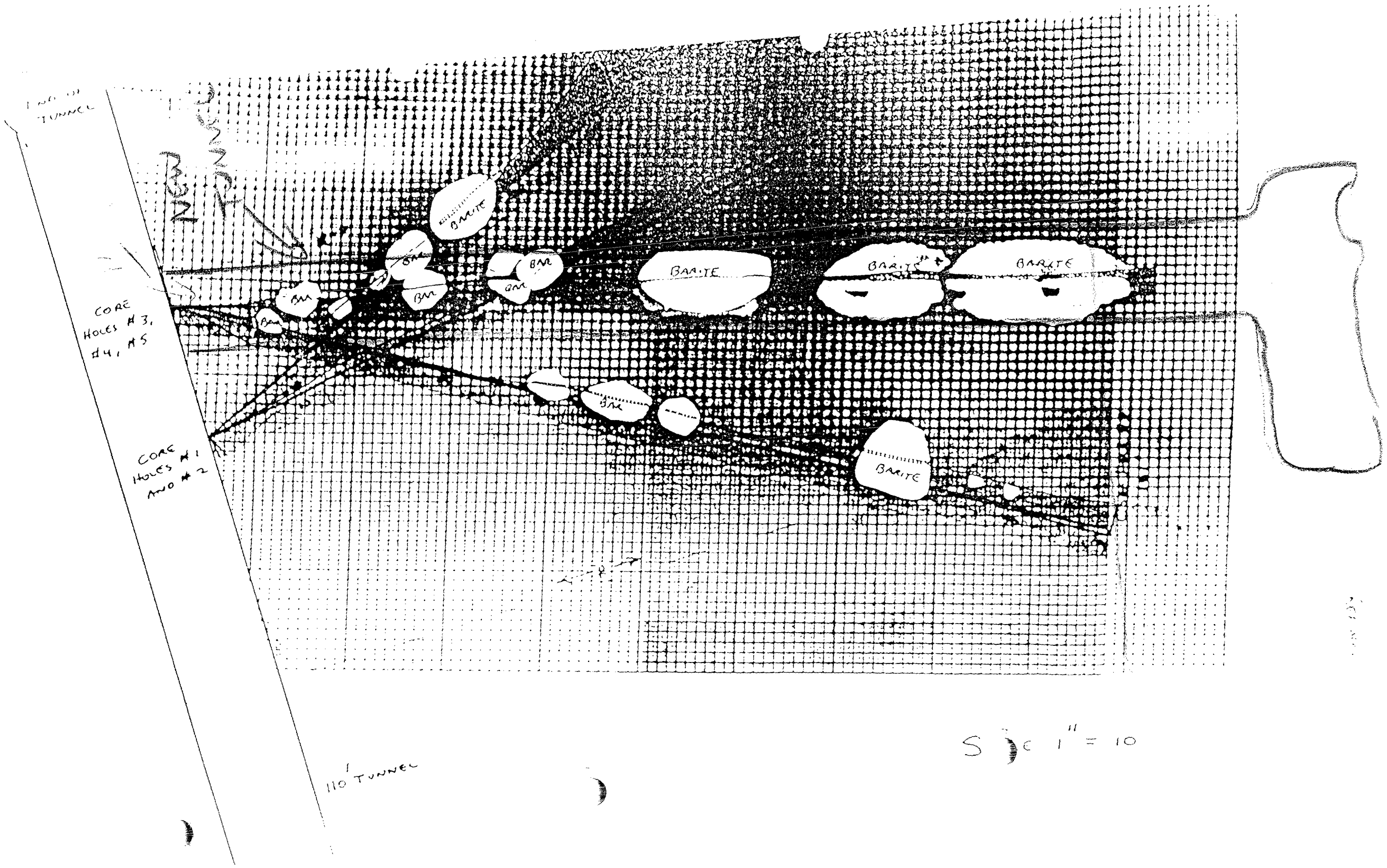
CORE HOLE #4, 100'
@ 3° UP

CORE HOLE #5
11' @ 3° DOWN

CORING NOT DONE
TUNNELLED AHEAD
INSTEAD

BY CRAIG WILLS
MARCH 31/81

PROPOSED FIRST STAGE OF CORING AFTER FIRS


BARITE
BARITE
BARITE
BARITE
BARITE
BARITE
BM
BM
BM
BM
BM
BM
BM
CORE
HOLES #3,
#4, #5
CORE
HOLES #1
AND #2
110' TUNNEL
SCALE 1" = 10'

Bar-Well Resources Ltd.
230, 1010 - 8 Avenue S. W.
Calgary, Alberta
T2P 1J2

January 2, 1987

Attention: Dr. John Gammon

Manager, Exploration British Columbia
Mineral Resource Division
Ministry of Energy, Mines and Petroleum Resources
Parliament Buildings
Victoria, British Columbia
V8V 1X4

Dear Sir:

Re: Number 10963 M - 11 (Elkhorn)

In response to your letter of December 11, 1986, enclosed please find a copy of technical data on the exploration activity carried out in the form of an assessment report.

We hope that this information will be suitable for your purposes and that you will be able to finalize the processing of our application for payment.

Yours truly,

Craig Willis,
President

CW/kb

Enc:

LOG NO: 0105 MGE-F 3.
ACTION:

FILE NO:

REPORT
ON THE
ELKHORN BARITE DEPOSIT
ZAP MINERAL CLAIM

Record Nos. 86(8), 87(8), 862(12) (Total 26 Units)

GOLDEN MINING DIVISION
WINDERMERE LAKE - MADIAS CREEK AREA
WINDERMERE, B.C.

N. Lat. 50°26' W. Long. 115°52'

for

BAR-WELL RESOURCES LTD.
230, 1010 - 8 Ave. S. W.
Calgary, Alberta
T2P 1J2

by

Craig Willis, President
Bar-Well Resources Ltd.

January 2, 1987

TABLE OF CONTENTS

	Page
Introduction	1
Summary, General Description	1
Property - Location, Access Physiography	11
Claims	12
History - Previous Development	13
References	13
Geology - Regional, Local	14
Mineralization	14
Maps	15
Objective of Present Work	21
Results of Present Work	21
Summary and Conclusions	21
Maps, Drawings and Surveys of Present Work	22 - 24
Certificate of Consulting Geologist 1981 Report	28
Statement of Author (Craig Willis) of this Report	29

INTRODUCTION

This report was prepared pursuant to a request by the Directors of FENWAY RESOURCES LTD., Suite 810, 837 West Hastings Street, Vancouver, British Columbia.

The purpose of this report is to assess the mine-making potential of the ZAP mineral claim group and study the feasibility of producing barite from a known deposit on the claim area. The property also appears to have indications for discovery of lead and zinc and other deposits of barite.

The property was examined in the field on November 17, 1980 in company with Mr. W. Inverarity.

A two-stage program of work is recommended.

SUMMARY, GENERAL DESCRIPTION, CONCLUSIONS

The Elkhorn barite deposit occurs in an open pit on the ZAP 2 mineral claim. Numerous outcrops of this mineral barite interbedded with limestone occur along the strike of the open pit development (Figure 5). According to the record the Elkhorn pit was stripped in 1956 and a test sample of direct shipping ore was mined in 1965.

The ZAP mineral claim group consists of three claims comprising twenty-six claim units located on the southwest slope of Mount Tegart about two kilometres east of the south end of Windermere Lake in the Golden Mining Division, British Columbia. The property lies along the east boundary of Columbia Indian Reserve No. 3.

Previous work by Chevron Canada Ltd. has indicated the presence of lead, zinc and barium in the soil over the claim area. The property may also have a potential for base metals as well as barite as indicated from both geochemical and gravity geophysical testing in the recent past.

The mineral barite occurs in nature as barium sulphate and is the chief barium mineral. It is often called "barytes" or "heavy spar". Pure barite is white and opaque to transparent. Impurities cause a wide variation in color, commonly buff, gray and white and less frequently in shades of yellow, green, blue, brown and black. The mineral crystallizes in the orthorhombic system often with twinning. The pure barite mineral contains 65.7 percent baryta and 34.3 percent sulphur trioxide. The specific gravity is 4.5 and this figure will vary downward depending on the impurities present. Most commercial barite ores have a specific gravity between 4.2 and 4.5. The hardness varies between 2.5 and 3.5 on the Moh scale. Barite is brittle and breaks with an uneven fracture. It has low abrasiveness, chemical stability and lacks magnetic and toxic effects.

The occurrence of barite is widespread. It has been reported on all the continents and in all the major countries of the world. Deposits vary from those containing millions of tons down to scattered rock fragments. Workable deposits are chiefly of two types: Veins of total or partial replacement of dolomite and limestone frequently banded due to the complete replacement of sedimentary beds and a secondary type of deposit derived from the residual weathering of barium-bearing dolomites. Both types of deposits produce barite in various areas of the world. The choice of deposit to be mined is generally not a question of geology but rather of geography. Quality and nearness to consuming areas are the important factors.

The history of barite production in North America dates back to about 1845 when this mineral was produced in Fauquier County, Virginia. Production on the North American continent increased substantially during the period of the Second World War. By 1957 barite was produced at Walton, Nova Scotia and near Brisco, British Columbia. Currently, barite production comes mainly from production by Mountain Minerals Co. Ltd. from deposits near Parson, Brisco and Windermere; Baroid of Canada, Ltd. has some production from Spillimacheen, British Columbia. Barite is also produced from a deposit near Matachewan, Ontario. Total production was recorded in Canada for 1978 at 105,741 tonnes. An additional 15,635 tonnes was imported from the United States. It is of interest to note that in 1978 about 53% of the Canadian production was exported to the United States and Venezuela. Of this 75% was for oil-well drilling operations.

A general summary and description of the technical characteristics and industrial uses of barite is as follows:

(a) Tests and Specifications

There are no standard tests or specifications for barite. The specifications vary with the end use and the wishes of the consumer. For the production of lithopone and barium chemicals, the most common specification is that the product shall contain 95 pct $BaSO_4$ and not over 1 pct Fe_2O_3. The size of product is usually specified by the consumer.

Barite for use in the preparation of drilling muds in the drilling of oil wells is specified generally to have no more than a 5 pct residue on 325-mesh screen. Some consumers specify that the extreme fines shall not be excessive. The only other specification is that of

specific gravity, which varies according to the deposit being worked. Generally, a specific gravity exceeding 4.2 is desired, although considerable material has been used with a specific gravity in the neighborhood of 4.0.

Barite for use in glass is specified as having no residue on a 10 or 20-mesh screen and often with no more than 40 pct passing a 100-mesh screen. It should not contain more than 0.2 pct Fe_2O_3. Some specifications demand an even lower Fe_2O_3 content, although this is not extremely important, because in the ratio in which the barite is used in glass, the amount of iron introduced into the glass by the barite is negligible. Some glass manufacturers prefer extremely fine barite and have used bleached barite as well as that prepared for use in oil-well drilling.

Barite for use as a filler is generally specified to have no more than a 5 pct residue on 325-mesh screen. Specifications as to color usually are relative, it being necessary to meet the color of a standard mutually agreed upon by the producer and the consumer.

(b) Marketing and Uses

There are two broad markets for barite, ground barite for various uses, of which the petroleum industry is a major consumer, and crude barite used principally for the production of lithopone (used in paints and fabrics) and barium chemicals.

Oil-well Drilling Muds

In the rotary drilling of oil wells, a drilling bit is rotated by a hollow central shaft. A mud, pumped down this hollow shaft, removes the cuttings as they are formed and carries them up the annular space between the

drill stem and the wall of the hole to the surface. In addition, this fluid or mud lubricates and cools the bit, seals off the wall of the hole and develops sufficient head to withhold abnormal pressures encountered in the drilling. It is in the performance of this last function that barite is useful.

Some oil fields have abnormally high pressures in the producing zones. When this pressure is greater than the hydrostatic head of the mud the oil or gas will blow out of the well, frequently with disastrous results. These pressures are controlled by increasing the gravity of the drilling fluid by the addition of barite. Unweighted muds generally are clay-water mixtures and barite can be added to this mixture by adjustment of the clay content to produce a heavy but still pumpable mud fluid. Materials other than barite, chief of which is iron oxide, have been employed for this purpose successfully. However, because of the color of iron oxide, barite appears to be preferred by the drillers. Barite is inexpensive, has the necessary high specific gravity, is clean to handle and is generally free from harmful impurities. Consequently, its use has increased markedly and it is employed in all parts of the world. Muds having a specific gravity as high as 4.5 can be prepared with pure barite, although such heavy muds are not always necessary. These muds should have a particle size of 95% minus 325 mesh and a maximum water soluble solids content of 250 ppm.

Lithopone and Barium Chemicals

Because of the similarity in methods of production, lithopone and barium chemicals can be treated together. Both kinds of crude barite are roasted in a rotary kiln together with carbon at a temperature approximating

2400° F and the barium sulphate is reduced to barium sulphide. While barium sulphate is extremely insoluble in water, barium sulphide is quite soluble. The "black ash" or barium sulphide product is leached with water to yield a solution, which, owing to hydrolysis, is a solution of $Ba(OH)_2$ and $Ba(SH)_2$. Impurities and excess carbon are removed by filtering. The crude barite used for this operation should be as free as possible from impurities, since iron oxide, and to some extent alumina and silica, react with the barium sulphide in the course of the furnace operation, forming barium compounds that are generally insoluble. One percent of iron oxide can render insoluble as much as 4 pct of barium sulphide, hence it is desirable to have the kiln-feed material as nearly pure as possible.

The barium solution prepared by leaching the "black ash" is used to precipitate lithopone and other barium chemicals. If the precipitant employed is a solution of zinc sulphate, the precipitate produced is a mixture of barium sulphate and zinc sulphide. When this precipitate is filtered, washed, dried and calcined under properly controlled conditions, quenched in water, wet-ground and subsequently dried, the product is lithopone. Although lithopone is only 70 pct barium sulphate, approximately one ton of crude barite is consumed for each ton of lithopone produced. The product is used as a pigment in paints and inks.

If the precipitant employed with the black-ash solution is sodium carbonate, the precipitate is barium carbonate. It may be filtered, washed, dried and disintegrated for use as barium carbonate. In addition, barium carbonate may be converted to other barium chemicals. If barium carbonate is heated with carbon, barium oxide is

produced. This can be oxidized to barium peroxide or hydrated to barium hydroxide.

If the precipitant employed is sodium sulphate, the precipitate produced is barium sulphate or blanc fixe. This is filtered, washed, dried and employed as a filler in paints, inks, rubber, and other materials.

Barium nitrate and barium chloride usually are produced by the action of the corresponding acids on barium carbonate. Barium chloride may be electrolyzed in the fused state to produce barium metal.

Barium chemicals, in the order of their tonnage, are barium carbonate, blanc fixe, barium chloride, barium nitrate, barium oxide, barium hydroxide, and barium peroxide.

Specifications call for 95% barium sulphate and not more than 2% ferrous iron.

For Glass and as Filler

Barite crushed to pass 10 or 20-mesh is employed in the production of glass in continuous tanks. Its function is primarily one of fining or homogenizing the glass. Of the various glass-batch ingredients, the soda ash is the first to melt. The barite dissolves readily in the soda ash, increasing its density so that the liquid tends to drain toward the bottom of the batch. As the melting progresses and the temperature is increased, the dissolved barium sulphate subsequently reacts with silica, producing gaseous sulphur dioxide and oxygen. These gases rise from the bottom of the tank, stirring the glass and sweeping

occluded gases from the melt. The glass has the appearance of boiling during this process. As the molten glass moves into the working end of the tank, which is somewhat cooler, the gassing ceases and any free sulphur dioxide and oxygen are resorbed by the glass. The presence of the small amount of barium oxide in the finished glass tends to increase the brilliance of the glass, in addition to improving its appearance by the process of homogenization.

Bleached ground barite has been used as an extender pigment in paint for some time. Originally it was employed as an adulterant for white-lead paint, on the basis of its high gravity. Its low index of refraction means that it contributes little to hiding power in a paint, but it does have low oil absorption and other desirable properties in the production of paints of many kinds. Other extender pigments have made serious inroads on the use of bleached barite in paints and inks. It is used also as a filler in oilcloth, linoleum, rubber, X-ray-proof plaster and concrete, brake linings and other materials.

(c) Preparation for Market

Barite is sold in the form of crude lumps, jig concentrates, and ground barite. Lump ore generally is prepared from vein or lenticular deposits and is essentially a product of hand sorting. The bulk of the barite produced, however, is in the form of jig concentrate or flotation concentrate.

In most instances the preparation depends on the end use for which the barite is intended. Barite for oil-well drilling is ground to pass 325-mesh; that to be used

for the production of lithopone and barium chemicals is usually sold as jig concentrate, since the minus ½ in. material is the proper size for subsequent reduction to black ash. Crude lump is acceptable, of course, but the consumer must then crush the lump. The barite for use in glass is crushed to pass 10 or 20-mesh and if the quantity of iron present is high it is removed by magnetic separation. Acid bleaching was formerly employed for the production of barite to be used in glass but this practice has been discontinued. Barite for use as a filler is crushed to pass 325-mesh. If color is important, as in paint, the barite is bleached with an acid treatment to remove the objectionable iron stain. Other treatments are used to remove other objectionable coloring materials, such as pyrite and galena.

Minus 325-mesh barite may be produced by either wet grinding or dry grinding. Where iron is not a factor, the barite is ground in ball mills and the choice between wet and dry grinding depends upon the other operations involved. If the ground material is to be concentrated by flotation wet grinding is the obvious choice. If the mill feed has been concentrated by jigging, it is simpler to continue with the material wet. Also, if the barite is to be subsequently bleached, it is wet-ground. In Georgia and Missouri, some barite is ground dry. All of the ground barite is bagged automatically in standard paper bags holding 100 lbs. except bleached barite, for which a 50-lb. unit is used.

Two flotation processes are frequently employed. One process floats barite from the gangue while the other depresses the barite and floats the gangue. The concentrate is filtered, dried and calcined to remove the flotation agents. The concentrate is high in barium sulphate and is

used exclusively for oil-well drilling.

Heavy media separation systems have been used with success in the beneficiation of barite ores depending on grain size and the gravity differential between the minerals in the ore at the size of liberation following the grinding process.

Price History

Prices at the point of production are governed largely by the cost of transportation to the marketing centers. The fact that freight frequently consumes a large portion of the delivered price has influenced strongly the location of the deposits worked.

The average price of chemical grade crude barite in the central United States in 1929 was quoted at $7.42 per short ton f.o.b. mine. In 1947, the price was essentially the same at $7.39 per short ton. In Canada, by 1956, the price was $8.15 per short ton f.o.b. Walton, Nova Scotia.

In the past five years the price of barite has increased substantially largely due to the demands of the petroleum industry. Figures from Mineral Policy Sector, Department of Energy, Mines and Resources, Ottawa show the following grade and price schedule for 1979 in the United States:

Unground barite containing 95% barite and not over 1% Fe.....	$55-60 per short ton
Magnetic or flotation grade containing 96-98% barium sulphate and not over 0.5% Fe.....	$60-70 per short ton

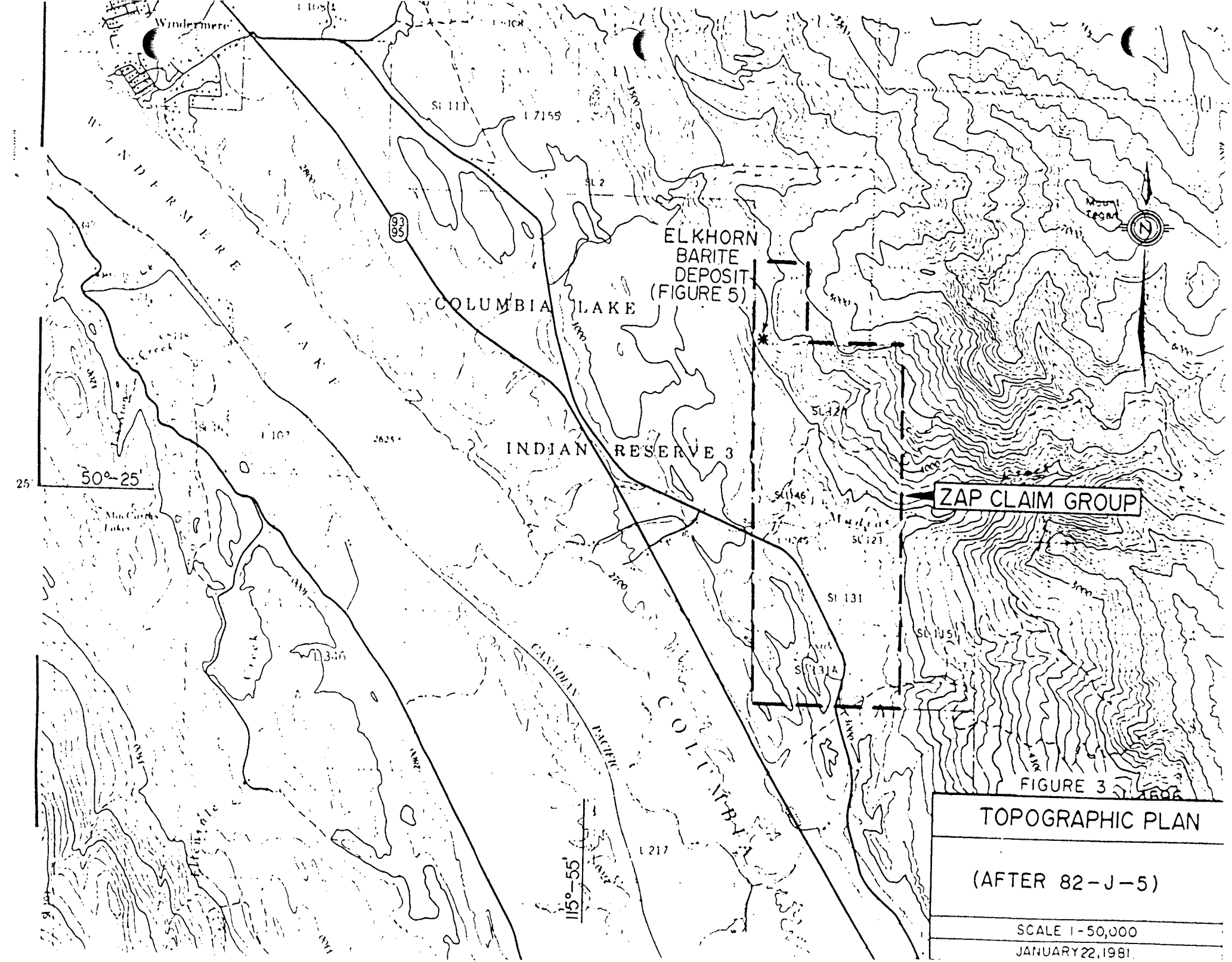


FIGURE 3

TOPOGRAPHIC PLAN

(AFTER 82-J-5)

SCALE 1-50,000

JANUARY 22, 1981

Imported drilling grade mud of specific gravity 4.20-4.30	
Gulf Ports.....	$24-47 per short ton
Canada.....	$19 per short ton
Ground barite -	
Water ground containing 95% barium sulphate, 325 mesh in 50 lb. bags.....	$80-90 per short ton
Dry ground drilling grade mud 83-93% barium sulphate, 3-12% Fe and specific gravity of 4.20-4.30.....	$96-165 per short ton
According to information given the writer this dry ground grade is currently priced f.o.b. Lethbridge at.....	$156 per short ton

PROPERTY - LOCATION, ACCESS, PHYSIOGRAPHY

The property consists of three mineral claims located on the east boundary of Columbia Indian Reservation #3 (Figure 4). These three claims comprise twenty-six units located on the southwest slope of Mt. Tegart and astride Madias Creek approximately two kilometres east of the south end of Windermere Lake in the Golden Mining Division.

Highway No. 93 passes close to the southwest corner of the claim group and a 4WD access road affords easy access to the claims from the highway along the north side of Madias Creek. The distance from the claim area to Windermere is about 8 kilometres.

The south sector of the property is generally rolling with a gentle rise northward between elevations

2900 and 3500 feet. In the north portion of the claims in the area of ZAP #1 and 2, the topography rises rapidly to about 5000 feet above sea-level.

The forest cover is mostly pine, spruce, fir and poplar.

Water for any immediate industrial purposes is available from Madias Creek. The CP Rail line to Kimberley traverses the area west of the Columbia River (Figures 2 and 3). Hydro-electric power, if required, is presently at the Town of Windermere.

The claim area is occupied by five surface lots namely SL 124, 131, 131A, 146 and L9245.

CLAIMS

Claim Name	Record No.	Units	Record Date	Recorded Holder
ZAP 1	86(8)	2x3 = 6	August 26, 1980	Chevron Std.
ZAP 2	87(8)	1x2 = 2	August 26, 1980	
ZAP 5	862(12)	3x6 = 18	December 3, 1980	W. Inverarity
	Total	26		

The claims are shown on British Columbia Claim Map M82J-5W.

Surface Lots SL 124, 131, 131A, 146 and L9245 occupy the surface area of the claim group. A search of the ownership of the surface rights pertaining to the surface lots is beyond the scope of this report.

HISTORY - PREVIOUS DEVELOPMENT

The Elkhorn Barite Deposit was said to have been opened in 1956 and a trial sample of direct shipping ore was mined out in 1963. It is estimated some 450 cubic metres of barite rich limestone were mined from this open pit.

Chevron Canada Limited did limited exploration work including geochemical soil sampling over part of the claim area in the period 1974-1976 (Figure 7).

The present owners have done additional geochemical soil sampling and some preliminary gravity surveying (Figure 8). The reader is referred to a report by J.S. Carter (See References and Appendix).

REFERENCES

Information from the following public and private publications has been used to supplement the data contained in this report:

Barite Deposits in Virginia, USGS Bulletin 53 (1938)

Industrial Minerals and Rocks, AIME, Seeley W. Mudd Series (1949)

The Geology of Canadian Industrial Mineral Deposits, Sixth Commonwealth Mining and Metallurgical Congress (1957)

Metallurgical, Operating and Economic Characteristics of the Dyna Whirlpool and the OCC Heavy Media Separation Systems, T.J. Lien, J.M. Keane, F.K. Kristofofl and R.B. Bhappu. (A Course sponsored by the MacKay School of Mines, University of Nevada, Reno, NV, October 13-17, 1978

Economic Evaluation of an Industrial Mineral Project. Paper presented to the Annual Meeting AIME February, 1958, by J.E. Castle, Manager, Industrial Minerals Division, International Minerals and Chemical Corporation

Canada Energy, Mines and Resources Mineral Policy Sector Bulletin - BARITE 1978

Geological Survey of Canada Memoir 148 and Map #2070

B.C. Minister of Mines Annual Reports for years 1944 through 1964

The reader is directed to an excellent report on the Elkhorn Barite Prospect by J.S. Carter dated December, 1980

GEOLOGY - REGIONAL AND LOCAL

The claim group is underlain by limestones and dolomites of the Windermere sedimentary horizon in this area. The host rock of the barite deposits appears to be dolomitic in nature and is probably a facies of the Horsethief Formation.

At the Elkhorn deposit the barite occurs as pods in a rock that in aspect resembles a dolostone. The barite is frequently crystalline and twinned in the pods which trend more or less with the host formation.

The strike of the formation is north 10 to 30 degrees east and has a 20 degree dip to the east.

MINERALIZATION

The writer examined the Elkhorn Barite Showing in the open pit on ZAP claim #2 (Figures 4 and 5) on November 17, 1980 and sampled the north wall of excavation across the strike and dip of the formation at thirty centimetre intervals for a sample length of 20 metres (± 66 feet). The sample was taken from east to west along an angle of

about 26° down to the west in two segments as shown on Figure 5. This composite sample was assayed for barium sulphate ($BaSo_4$) and iron oxide (FeO). The analysis showed:

Barium sulphate - 25.7%
Iron oxide - 0.27%

over a sampled width of 20 metres or a true width of 17 metres (57 feet).

The assay results show the substantial width of the zone of barite. An examination of the sampled zone shows local zones of gray-white crystalline barite, generally twinned, up to two metres in width in the dolomitic limestone host rock. The host rock has a breccia aspect. Individual sampling of the local barite zones would indubitably show a much higher grade of barium sulphate over narrower widths. It is estimated some 450 cubic metres of rock have been broken in the open pit.

The content of barium sulphate of the sampled zone (25.7%) shows the need to beneficiate this indicated zone to about 62-65% barium sulphate to meet normal industrial requirements. This would mean a concentration ratio of more or less 1:2.5 of mined barite to shipping concentrate (assay 25.7% vs pure barite content of 65.7%).

The amount of iron oxide present is not sufficient to affect the industrial applications of this rock, even when concentrated $2\frac{1}{2}$ times, for the petroleum industry. The content of silica and strontium have not been determined and it is recommended that additional sampling and assaying be done to determine characteristics and impurities in this barite deposit.

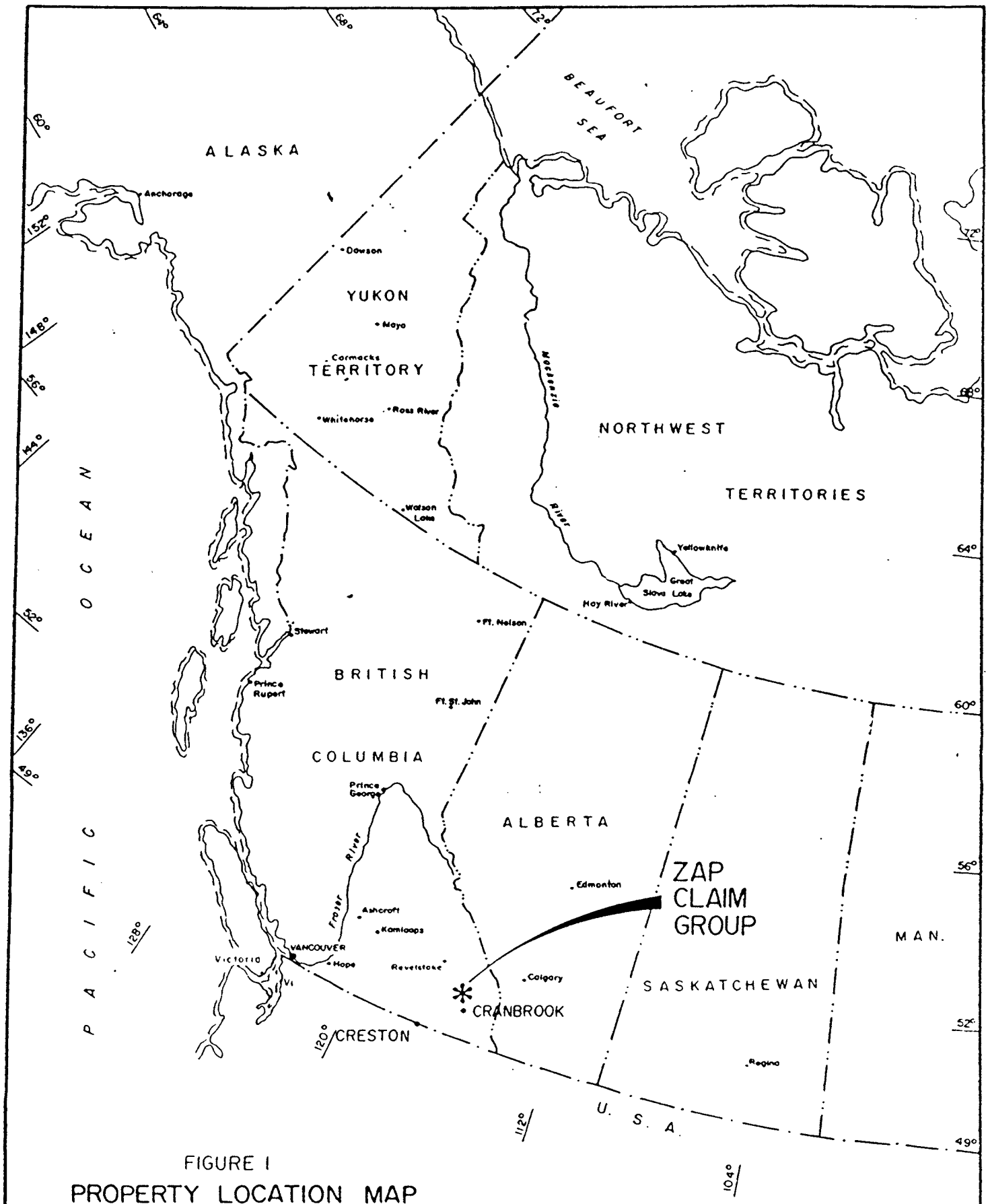


FIGURE 1

PROPERTY LOCATION MAP

JANUARY 22, 1981.

SCALE IN KILOMETRES

0 500 1000

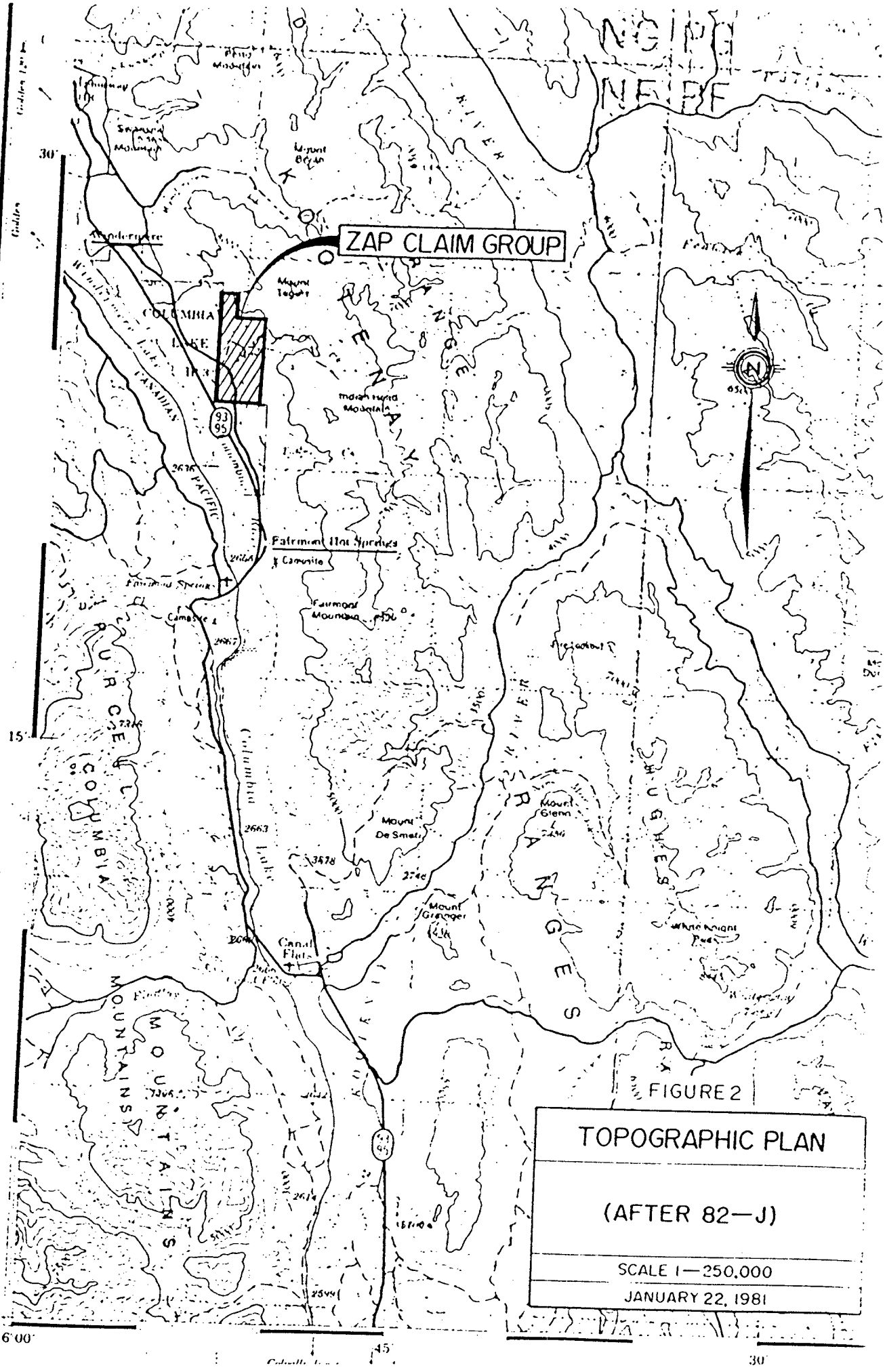


FIGURE 2

TOPOGRAPHIC PLAN

(AFTER 82—J)

SCALE 1—250,000

JANUARY 22, 1981

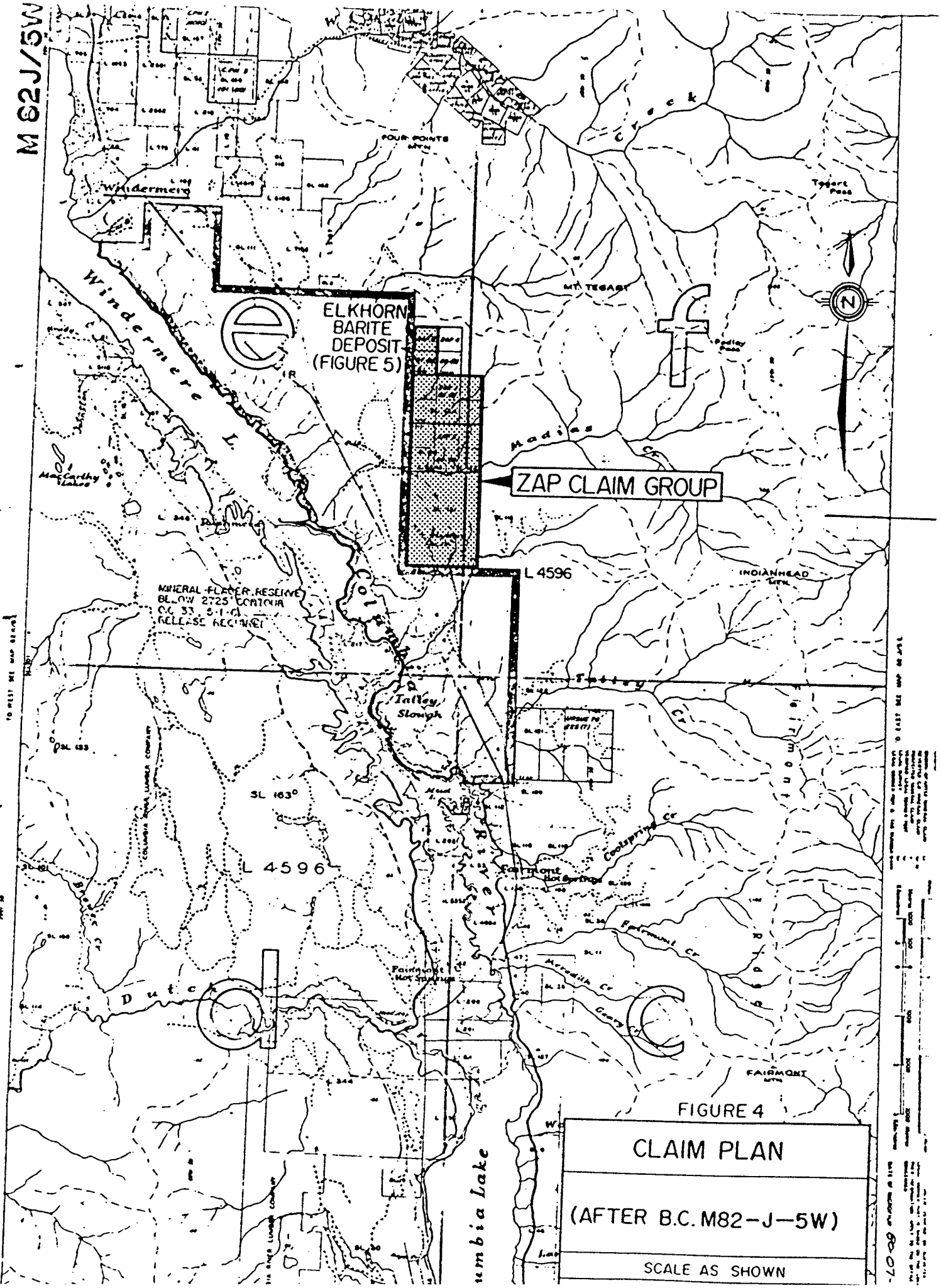


FIGURE 4

CLAIM PLAN

(AFTER B.C. M82-J-5W)

SCALE AS SHOWN

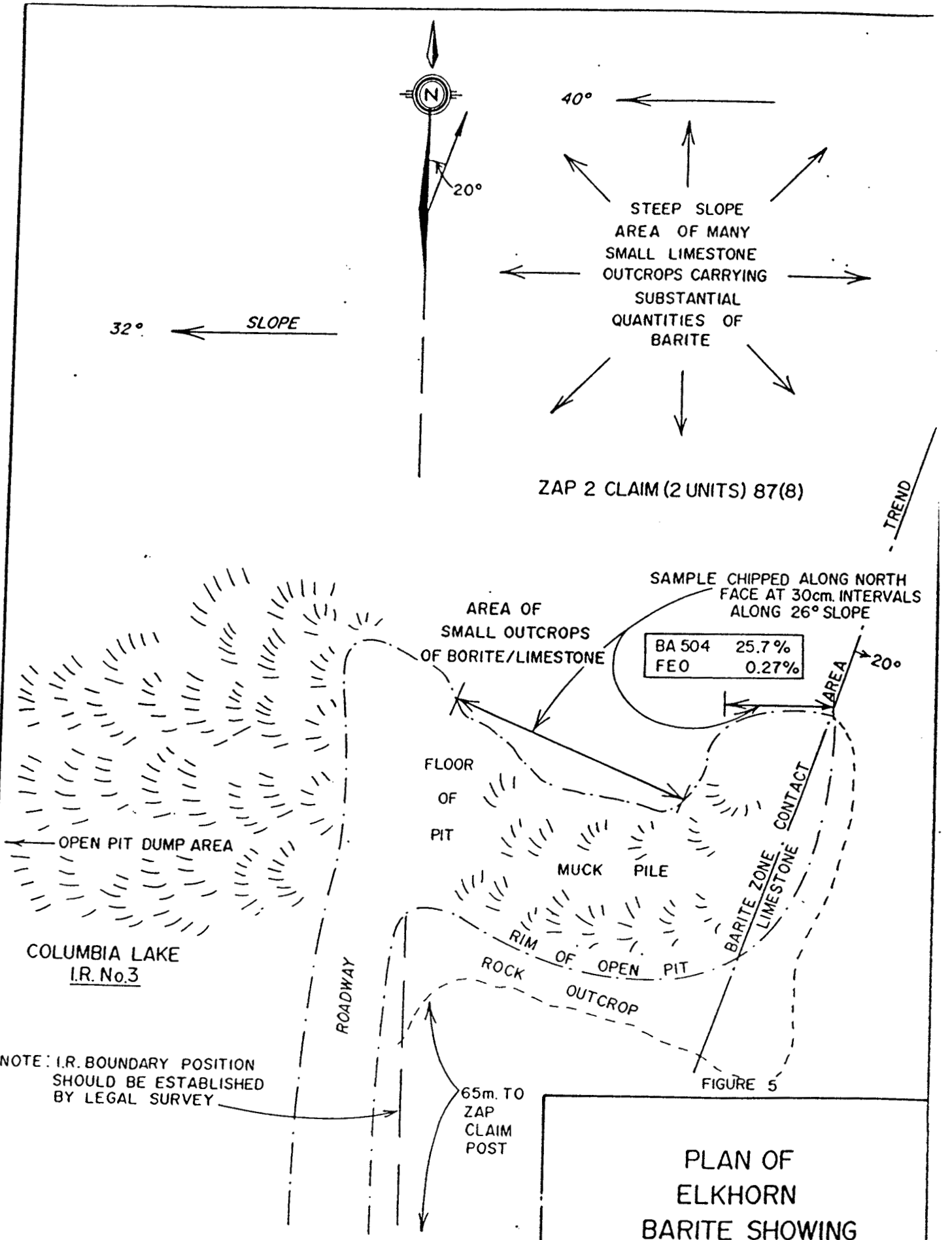
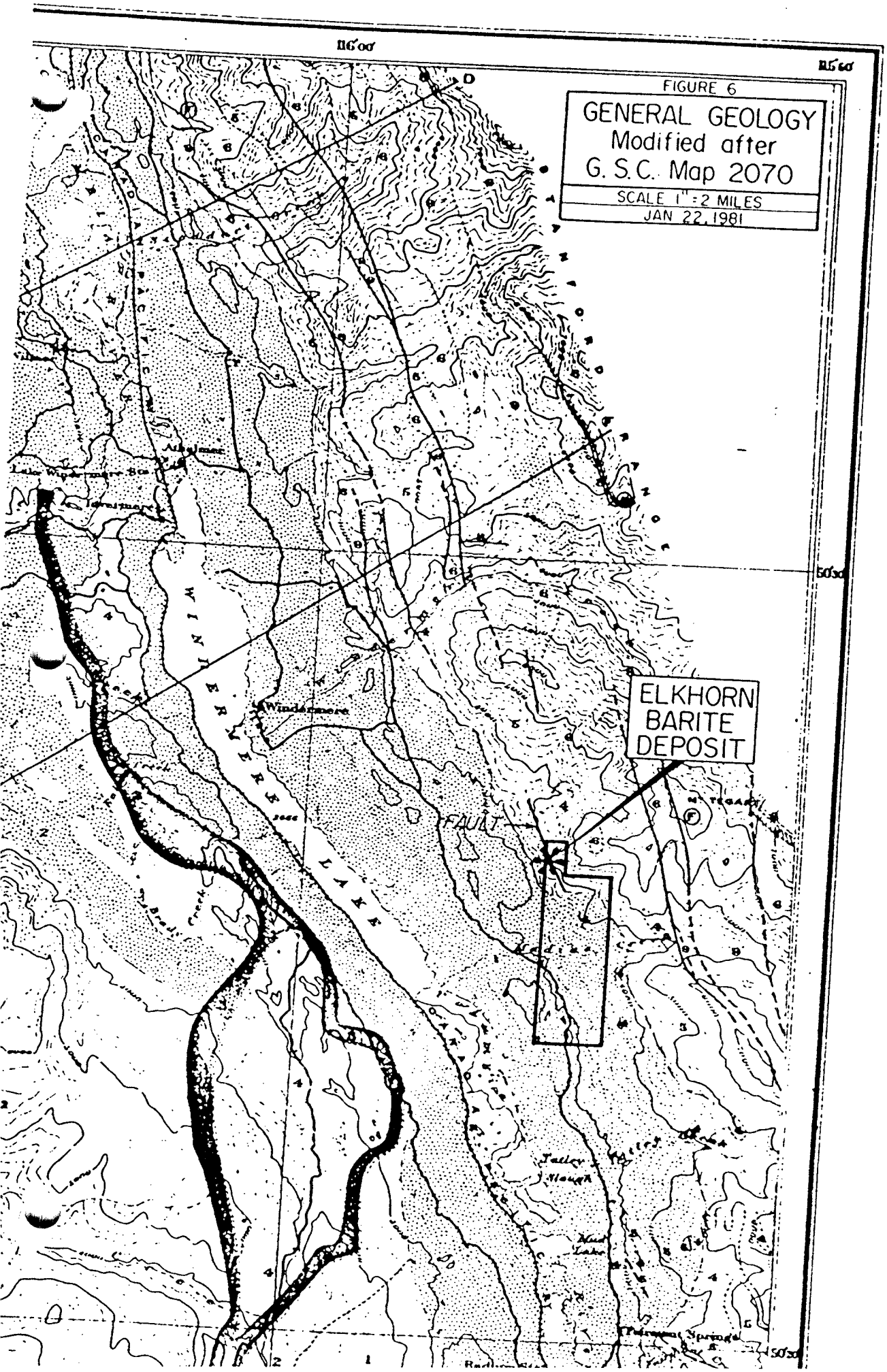


FIGURE 5

PLAN OF ELKHORN BARITE SHOWING

SCALE 1cm = 2.5m.


116°00'
115°60'
50°30'
FIGURE 6
GENERAL GEOLOGY
Modified after
G. S. C. Map 2070
SCALE 1" = 2 MILES
JAN 22, 1981
ELKHORN
BARITE
DEPOSIT
FAULT
PACIFIC
RANGE
PURCELL
TROUGH
WINDERMERE
LAKE
Lake Windermere
Windermere
Fairmont
Hot Springs
Tabor Creek
Tabor Mountain
Mount Nelson
Fairmont Springs
LEGEND
Culture
Roads and buildings
Roads
(not well defined)
Pack trails
Trails
Trails
(not well defined)
Railways
Churches
Schools
Post Offices
Mines
Dams
Water
Rivers and lakes
Streams
(shown approximately)
Watercourses
(with intermittent flow)
Glaciers
Springs
Marshes
Relief
Contours
(showing land forms and elevations above sea level)

OBJECTIVE OF PRESENT WORK:

1. Main target of the program - Extend the zone cored in January/February, 1986, @ Elkhorn by tunnelling and coring.

2. Recommended work program:

   It is recommended that a 10 x 10 tunnel following the last drill hole, which had barite for 100 feet and estimated 40% barite by volume. When the tunnel has been extended to the 100 foot mark, underground coring will once again be done to determine the direction and dip of the barite beds to provide the direction of the next 100 feet of tunnel. This process will be repeated.

RESULTS OF PRESENT WORK:

Results of recent work that qualify for funding under the Financial Assistance for Mineral Exploration Program.

1. The tunnel has been driven to 123 feet (37.5 m) and another 27 feet (8.23 m) lateral extension driven to follow the bedded barite (150 feet or 45.73 m total).

The size of the tunnel averages 10' x 10'. The total cost of tunnelling as outlined in Schedule A is $63,454.92. The cost/metre is $\frac{\$63,454.92}{45.73\ m}$ = $1387.60 m or $423.03/foot.

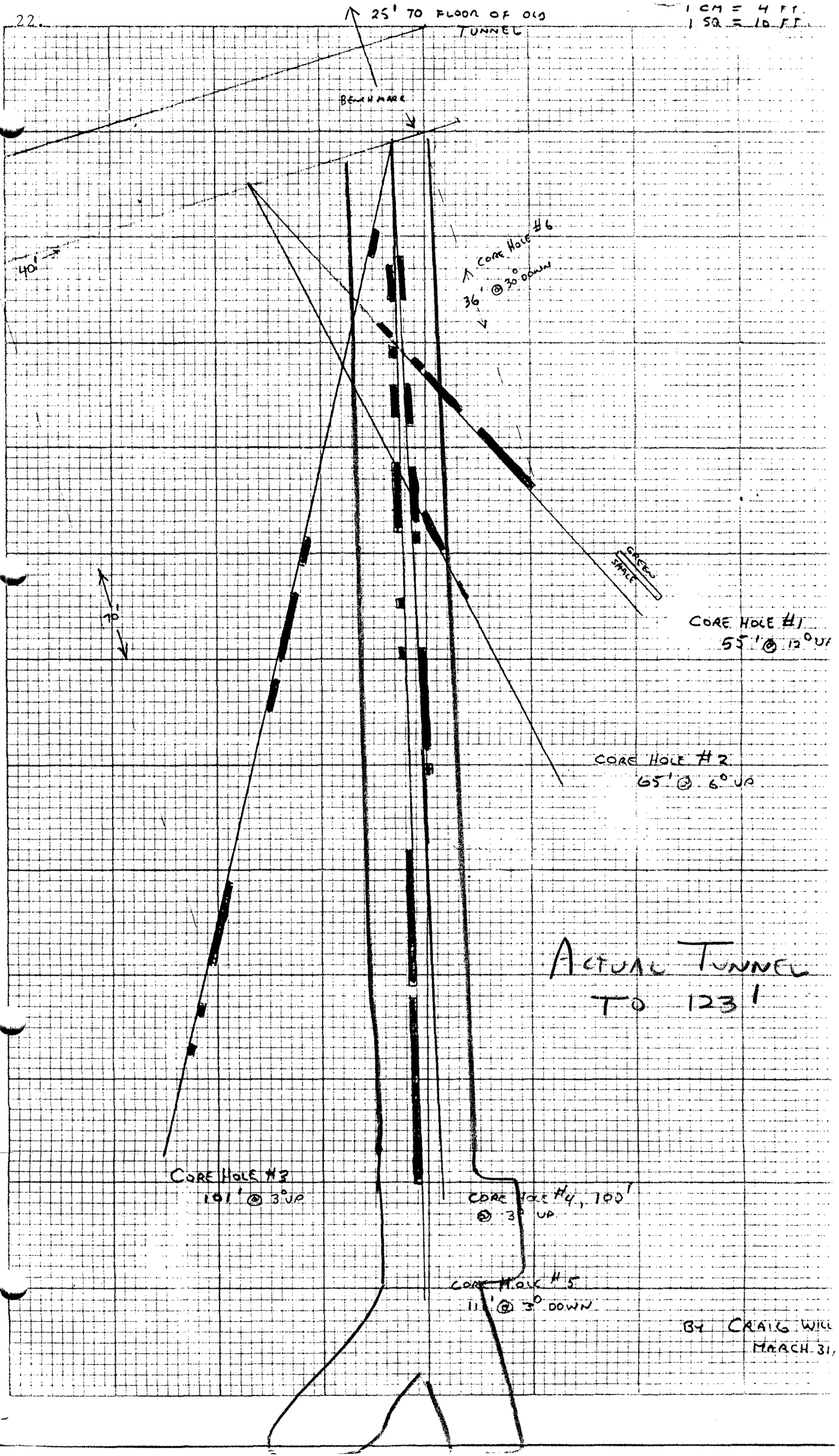
Please see refernce #2 for survey details of tunnel.

2. When we reached the end of our core holes at 100 feet, the ore was found to be dipping but consistent in stringer form. Therefore, it was unnecessary to core ahead and the tunnel was extended to the 123 foot mark. At this point the ore appeared to be turning right and we followed it 27 feet further. At October 31, 1986, we are at this 123 foot point and we will proceed to tunnel and follow the ore.

   Please see Pages 25, 26 which is a survey done by Griffith & Associates to verify the tunnelling results.

3. In summary, we feel that we have determined the presence of barite stringers across a length of 150' - 200'. Extensive coring and tunnelling will be required to prove up tonnage on an economical basis. Further work on this project will proceed as dictated by further funding from the affiliate company (Dynamic Drilling Fluids Ltd.). This funding will be dependent on rig activity in B.C. and Alberta which goes hand in hand with the market demand for barite.

1 CM = 4 FT.
1 SQ = 10 FT.

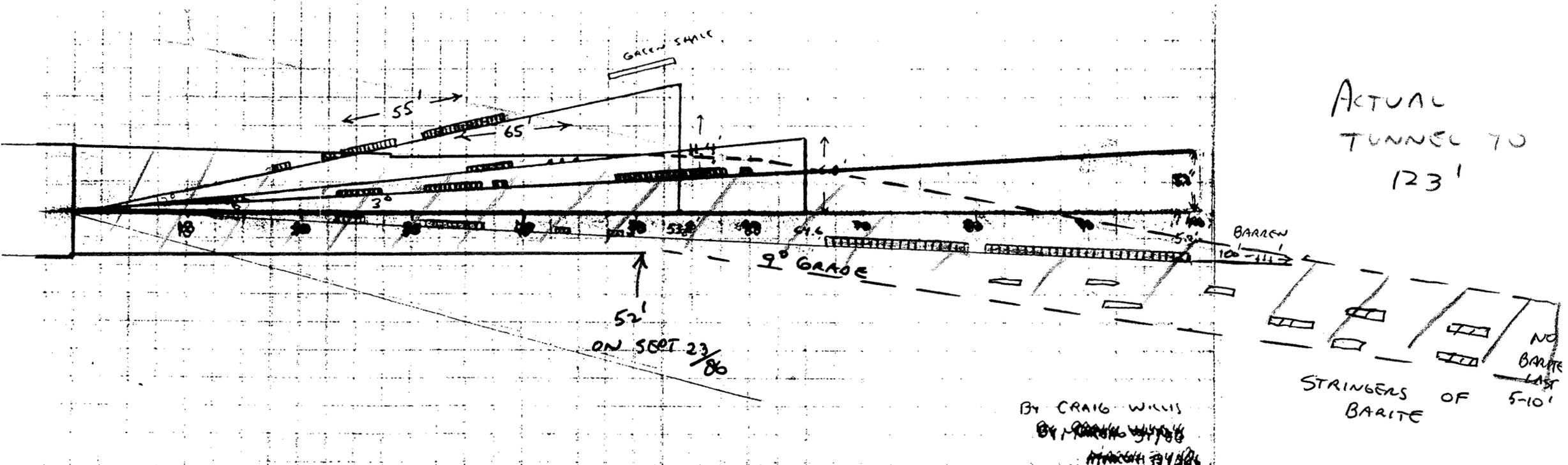


BY CRAIG WILL
MARCH 31,

1 CM = 1'
1 SQ = 2.5 SQ = 2.5

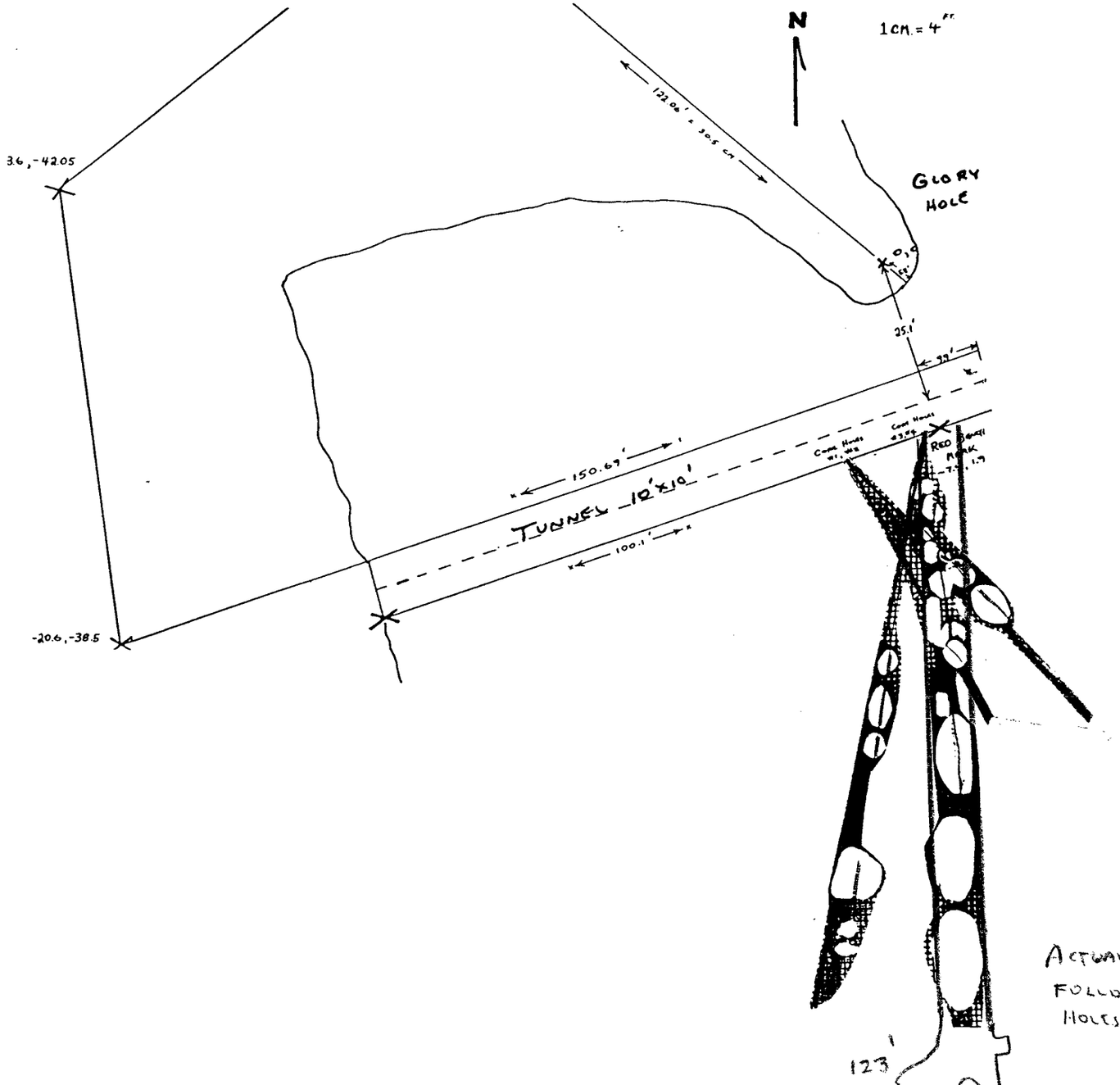
Hole #21 ((3° 12TH 565' @ 75° 88ON TORTUNNEL WATERLINE DRAIN) TUNNEL
16' WEST OF [illegible]

NOTE CORE HOLE #3 OFF TO S.W @ 3° VA 101' IS NOT ON THIS PLOT BECAUSE THIS IS A SIDE VIEW OF THE TUNNEL AREA ONLY



ACTUAL TUNNEL TO 123'

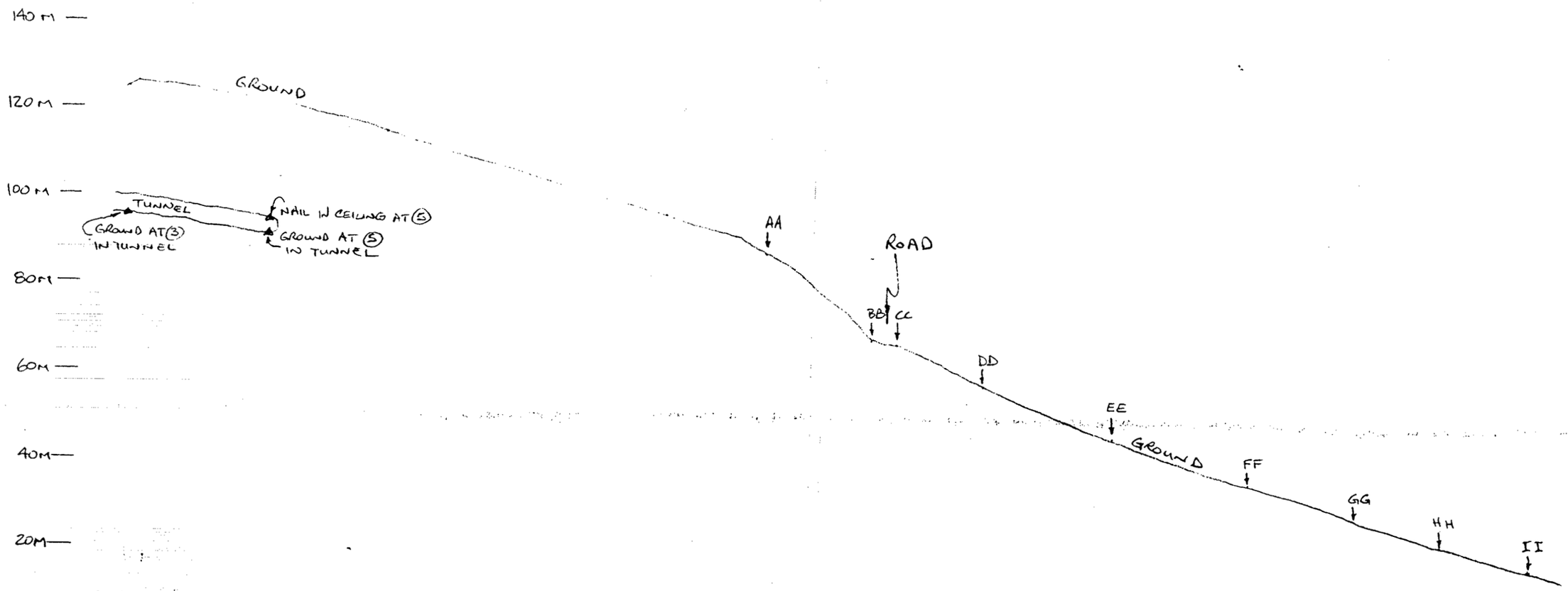
BY CRAIG WILLIS
BY [illegible]
[illegible]



ACTUAL TUNNEL FOLLOWING CORE HOLES TO 123'

SKETCH OF GROUND PROFILE RUNNING THROUGH TUNNEL STATIONS ② AND ⑤

SCALE: HORIZONTAL 1:1000
VERTICAL 1:1000



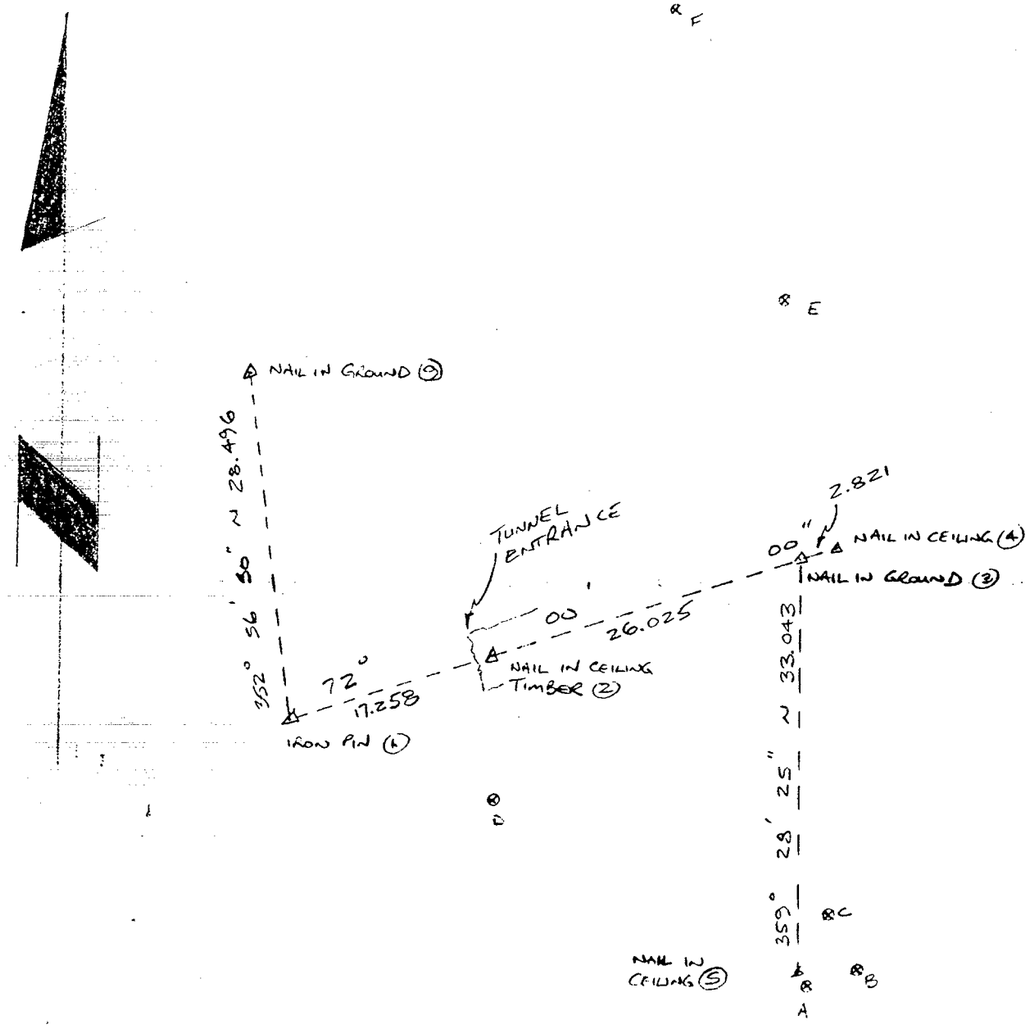
ELEVATIONS BASED ON LARGE SPIKE IN PAINT MARK IN SECOND TIMBER ON RIGHT AT ENTRANCE TO TUNNEL (FROM SKETCH OF PREVIOUS SURVEY)
BM 1 = 100.000 METRES

ALL DISTANCES ARE IN METRES UNLESS OTHERWISE NOTED

STAKES IN GROUND AT STATIONS AA TO II

GRIFFITH + ASSOCIATES
B.C. LAND SURVEYORS
BOX 304. (426-2624)
CRANBROOK, B.C.
V1C-4H8

52986



SKETCH SHOWING LOCATION OF CONTROL POINTS AND SHALE PLANE MARKS AT MINE SITE.

SCALE 1:500

LEGEND

BEARINGS ARE DERIVED FROM SKETCH OF PREVIOUS SURVEY SHOWING CENTRELINE OF TUNNEL TO BE 72° 00' 00"
ALL DISTANCES ARE IN METRES UNLESS OTHERWISE NOTED
△ - SURVEY STATIONS
⊗ - SHALE PLANE LOCATION (PAINT MARKS IN FIELD)
ELEVATIONS BASED ON LARGE SPIKE IN PAINT MARK IN SECOND TIMBER ON RIGHT AT ENTRANCE TO TUNNEL (FROM SKETCH OF PREVIOUS SURVEY) BM 1 = 100.000 METRES

STATION	NORTHING	EASTING	ELEVATION
1 IRON PIN	994.667	983.587	97.88 M
2 NAIL IN TIMBER	1000.000	1000.000	101.21 M
3 NAIL IN GROUND	1008,042	1024.751	95.30 M
4 NAIL IN CEILING	1008.914	1027.434	98.29 M
5 NAIL IN CEILING	975,001	1025.055	94.86 M
A SHALE PLANE	973.54	1025.70	93.24 M
B SHALE PLANE	974.90	1029.71	92.01 M
C SHALE PLANE	979.20	1027.32	94.41 M
D SHALE PLANE	988.34	1000.24	102.10 M
E SHALE PLANE	1028.87	1023.32	109.07 M
F SHALE PLANE	1052.24	1014.34	119.34 M
G SHALE PLANE	1067.13	1012.81	125.83M

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BOX 304 (426-2624)
CRANBROOK B.C.
V1C-4H8

52986

GRIFFITH & ASSOCIATES
B.C. LAND SURVEYORS

Robert A. Griffith, B.C.L.S.
Frank R. Maag, B.C.L.S.

Our File 52986.....
Your File .....

October 27, 1986.

Bar Well Resources
230-10108 th Avenue S.W.
T2T 0P9

For professional services with respect to:
Mine control, shale plane location and
ground profile, located near Invermere.

FEE: $940.00

chk 230
Dt 31

☐ P.O.Box 1488, 906 - 7th Ave., North, Creston, B. C. V0B 1G0 (604)428-5810
☒ P.O.Box 304, 26-12th Ave., South, Cranbrook, B. C. V1C 4H8 (604)426-2624
XXX Fax Telephone XXX-XXX-XXXX

CERTIFICATE

I, DONALD WILLIAM TULLY, of the City of West Vancouver, Province of British Columbia, hereby certify as follows:

1) I am a Consulting Geologist with an office at Suite 102, 2222 Bellevue Avenue, West Vancouver, B.C.

2) I am a registered Professional Engineer of the Provinces of British Columbia and Ontario.

3) I graduated with a degree of Bachelor of Science, Honours Geology, from McGill University in 1943.

4) I have practiced my profession for thirty-five years.

5) I have no direct, indirect or contingent interest in the shares of Fenway Resources Ltd., or the ZAP mineral claims, subject of this report, nor do I intend to have any interest.

6) This report dated January 22, 1981 is based on a personal field examination I made on November 17, 1980, and from information gathered from available maps and reports.

7) Written permission from the author is required to publish this report dated January 22, 1981 in any Prospectus or Statement of Material Facts.

DATED at West Vancouver, Province of British Columbia, this 22nd day of January, 1981.

Donald W. Tully, P. Eng.,
Consulting Geologist

DON TULLY ENGINEERING LTD.
SUITE 102 - 2222 BELLEVUE AVENUE
WEST VANCOUVER, BRITISH COLUMBIA
V7V 1C7

STATEMENT OF AUTHOR

I, Craig Willis of the City of Calgary, Province of Alberta, hereby certify as follows:

1. I am a businessman with an office at 230, 1010 - 8 Ave. S. W., Calgary, Aberta.

2. I am a graduate of the Southern Alberta Institute of Technology in Chemistry, 1963.

3. I am President of Dynamic Drilling Fluids Ltd. and Bar-Well Resources Ltd. and have been since the formation of these two companies in 1976 and 1981 respectively.

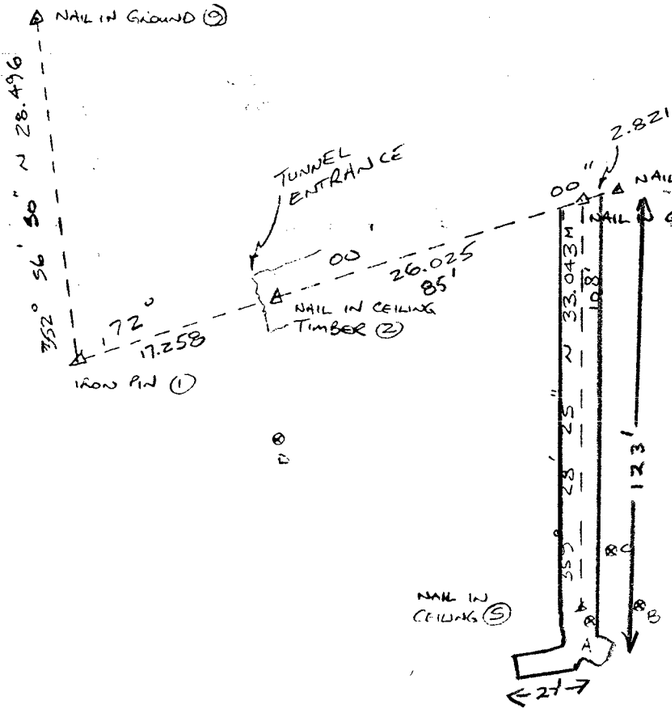
4. Bar-Well Resources Ltd. employed Griffith and Associates (B.C. Land Surveyors Box 304, Cranbrook, B.C. 426-2624) to survey the completed tunnel in November, 1986. (Survey enclosed - Pages 25 and 26).

5. This report dated December 24, 1986, is based on personal field examination I made in October, 1986.

Dated at Calgary, Province of Alberta this 24th day of December, 1986.

H. C. Willis, President
Dynamic Drilling Fluids Ltd.,
Bar-Well Resources Ltd.

SCHEDULE "B"



SKETCH SHOWING LOCATION OF CONTROL POINTS AND SHALE PLANE MARKS AT MINE SITE.

SCALE 1:500

LEGEND

BEARINGS ARE DERIVED FROM SKETCH OF PREVIOUS SURVEY SHOWING CENTRELINE OF TUNNEL TO BE 72° 00' 00"
ALL DISTANCES ARE IN METRES UNLESS OTHERWISE NOTED
△ - SURVEY STATIONS
⊗ - SHALE PLANE LOCATION (PAINT MARKS IN FIELD)
ELEVATIONS BASED ON LARGE SPIKE IN PAINT MARK IN SECOND TIMBER ON RIGHT AT ENTRANCE TO TUNNEL (FROM SKETCH OF PREVIOUS SURVEY) BM 1 = 100.000 METRES

STATION	NORTHING	EASTING	ELEVATION
1 IRON PIN	994.667	983.587	97.88 M
2 NAIL IN TIMBER	1000.000	1000.000	101.21 M
3 NAIL IN GROUND	1008.042	1024.751	95.30 M
4 NAIL IN CEILING	1008.914	1027.434	98.29 M
5 NAIL IN CEILING	975.001	1025.055	94.86 M
A SHALE PLANE	973.54	1025.70	93.24 M
B SHALE PLANE	974.90	1029.71	92.01 M
C SHALE PLANE	979.20	1027.32	94.41 M
D SHALE PLANE	988.34	1000.24	102.10 M
E SHALE PLANE	1028.87	1023.32	109.07 M
F SHALE PLANE	1052.24	1014.34	119.34 M
G SHALE PLANE	1067.13	1012.81	125.83 M

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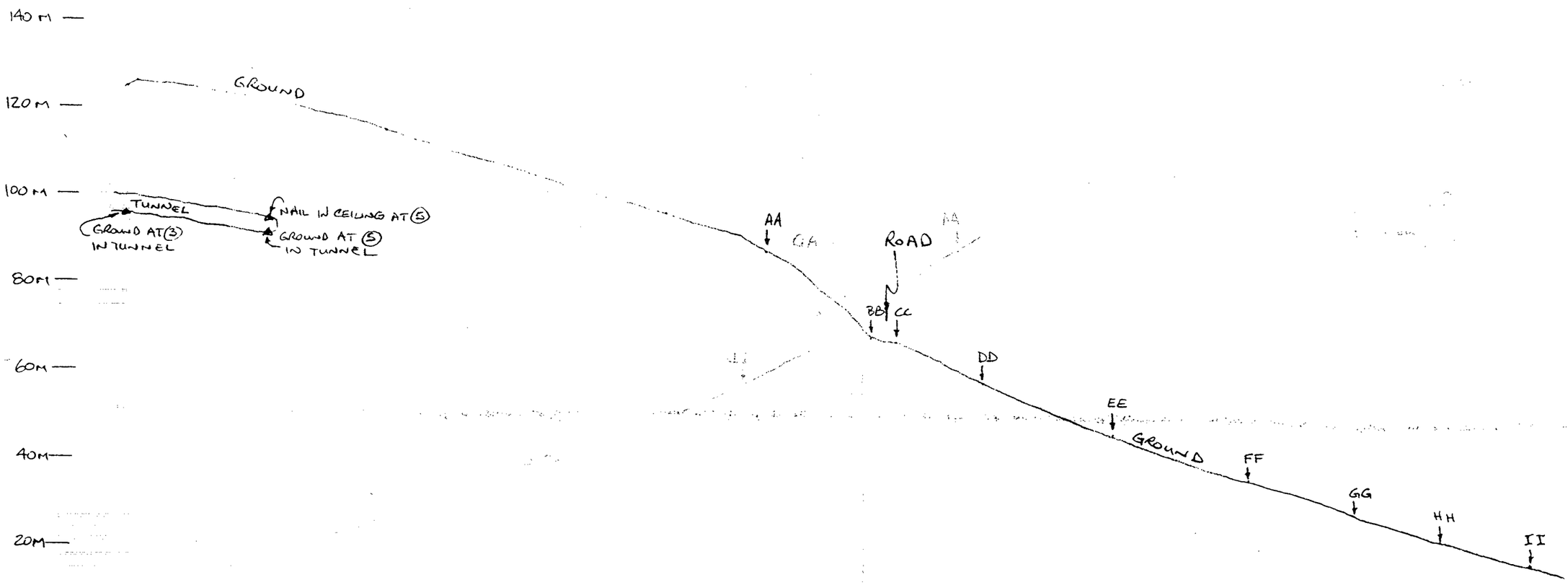
SKETCH OF GROUND PROFILE RUNNING THROUGH TUNNEL STATIONS (3) AND (5)

SCALE: HORIZONTAL 1:1000
VERTICAL 1:1000



ELEVATIONS BASED ON LARGE SPIKE IN PAINT MARK IN SECOND TIMBER ON RIGHT AT ENTRANCE TO TUNNEL (FROM SKETCH OF PREVIOUS SURVEY)
BM 1 = 100.000 METRES

ALL DISTANCES ARE IN METRES UNLESS OTHERWISE NOTED

STAKES IN GROUND AT STATIONS AA TO II

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