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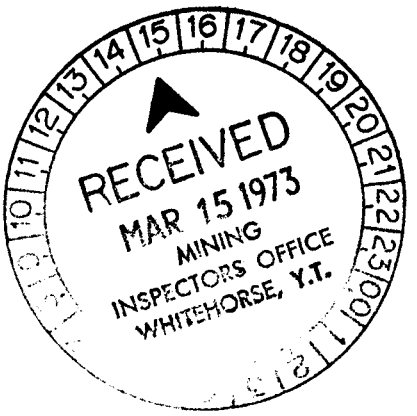


CALEY PROPERTY

FEASIBILITY REPORT ON

CONCENTRATE PRODUCTION

October 1972

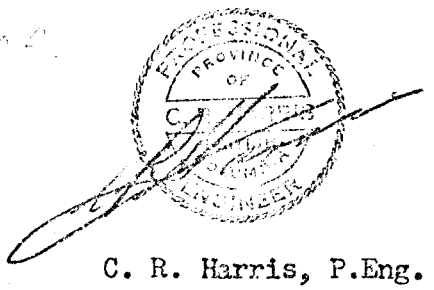
This report has been examined by the Geological Evaluation Unit and is recommended to the Commissioner to be considered as representation work in the amount of

$ 800.00

Resident Geologist or
~~Resident Mining Engineer~~

Considered as representation work under Section 53 (4) Yukon Quartz Mining Act.

Commissioner of Yukon Territory



C. R. Harris, P.Eng.

MELROSE CONSULTANTS LTD.

605 Burley Drive,
West Vancouver, B. C.

October 18, 1972.

Mr. Michele P. Curcio,
3374 Radcliffe Ave.,
West Vancouver, B. C.

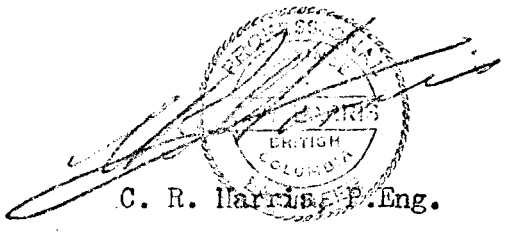
Dear Sir,

Attached is my report entitled, " CALEY PROPERTY FEASIBILITY REPORT ON CONCENTRATE PRODUCTION, October 1972.

This report reviews the possibilities of producing a chrysotile fibre concentrate as well as the anticipated capital and operating costs associated with the production and sale of such concentrate.

As pointed out in the report, many of the assumptions made are based on incomplete information therefore additional work is recommended following which a more detailed analysis should be made.

yours very truly,



C. R. Harris, P.Eng.

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1.10 SUMMARY

Based on the limited information available regarding quantity, grade, quality and value of the ore, there is a good likelihood that the Caley Property can be profitably mined.

Calculations show that an ore concentrate of about 35% fibre can be produced and that the ore has a gross recoverable value of $ 6.23 per ton based upon current prices and fibre grades being produced at the Clinton Creek mine.

Capital costs are difficult to estimate because of the uncertainties in mill design and mining method as well as the extent to which used equipment may be available but it is expected that capital costs would be between $ 2.60 and $ 1.64 per ton. Operating costs are estimated at between $ 3.36 and $ 3.16.

It is recommended that Cassiar Asbestos Corporation be approached and that past records, current costs and concentrate demand be reviewed in order to confirm the assumptions made for this analysis. Further exploration and test work may also be required.

2.10 INTRODUCTION

For a number of years the existence of a small low grade chrysotile asbestos deposit has been known to occur on the " Caley Property ". Because of the low grade and small size of the deposit as well as the high costs associated with remote northern operations, the property has not been considered economic. Recently however, the possibility of marketing an ore concentrate to the Cassiar, Clinton Creek operation has revived interest in this property.

2.11 OBJECTIVE

Using past interpretations of tonnage, fibre quality and ore grade or value as estimated by Cassiar and Canadian Johns-Manville investigators, re-interpret these in light of present fibre prices and marketable grades to determine the economic feasibility of producing an ore concentrate.

2.12 LOCATION, WEATHER, TRANSPORTATION Etc.

The Caley property is located approximately 28 air miles northwest of Dawson City, Yukon at Latitude 64 18', Longitude 140 12'.

Crossing of the Yukon River at Dawson City is accomplished during summer by ferry, during winter by ice-bridge and during freeze-up and break-up by skyline (freight only). Airstrips at Dawson City and Clinton Creek are serviced daily by schedule airline.

Weather is typically sub-arctic with severe winters and warm pleasant summers. During winter, temperatures of 50 to 60 degrees below zero are common. Snowfall is moderate but frequent high winds create very difficult operating conditions either by extreme wind-chill factors or drifting snow. Summers are generally dry and hot. As the property is only

some 160 miles south of the arctic circle the winter and summer solstice can be considered days of complete darkness or daylight.

The topography is described as "mature" with low rounded hills and steep river or creek valleys. Hilltops and ridges are seldom forested but valleys and sidehills are well covered with mixed small timber generally unsuitable for other than light construction, cribbing or mine-prop use. Permafrost is prevalent on northern slopes and in valley bottoms.

2.13 HISTORY

The deposit was first staked by F. Caley's associates in the mid fifties following which Cassiar Asbestos Corp., Ltd., optioned the property and carried out extensive surface and underground exploration as well as test milling of underground samples. The results of this work were unsatisfactory to Cassiar and the option was terminated.

During the early nineteen sixties, Canadian Johns-Manville Co. Ltd., optioned the property and a programme of diamond drilling and surface exploration was completed. The primary objective of this work was to determine if additional tonnages could be proven. This was not sucessful and the option was terminated.

The reports and maps available from the above explorations are listed as Appendix I.

Since 1964, no major work has been performed on the property.

3.10 PRODUCTION

The rate, quality and value of concentrate production are dependent upon the following major factors;

1) Quantity, quality and value of the ore available.

2) Scale or rate of mining and milling.

3) Mill design and recovery.

4) Ability to market concentrate.

These and other factors influencing the quantity and quality of production are discussed in the following sections.

3.11 ORE QUANTITY, GRADE AND VALUE

Unfortunately, the quantity and quality of the deposit have been established by only limited exploration and laboratory test work. However, for this analysis, the previous estimates will be assumed correct and re-evaluated in terms of present prices and grades.

The information on which Cassiar based their estimate of 1,000,000 tons of ore containing 3.66% recoverable fibre valued at $ 6.74 per ton is not available in full but, from a review of the geological maps, drill logs, wall readings and laboratory test results for No.2 West drift, the tonnage, grade and value assumed appear reasonable. Further, in 1964, Canadian Johns-Manville estimated the deposit to contain 1,000,000 tons valued at $ 10.00 per ton.

To arrive at an ore grade of 3.66% and value of $ 6.74 per ton, Cassiar conducted test milling on the basis of fibre grades being produced at Cassiar in 1959. The test results shown on the No.2 West drift assay plan show these as AK, AS, AX. Calculations based on the same assay plan indicate that these were probably the only tests performed.

Table 1 below shows a comparision of 1959 and 1972 prices and fibre grades.

TABLE 1

Fibre Grade		1959 ($/ton)	1972 ($/ton)	Increase (%)
Cassiar	A	494	529	7.1
	AC	325	380	16.9
	AK	220	263	19.5
	AS	181	228	26.0
	AX	142	208	46.4
	AY	np	147	
	AZ	np	120	
Clinton	CC	np	380	
	CP	np	248	
	CT	np	223	
	CY	np	147	
	CZ	np	120	

Note- AZ & CZ prices assumed as per 6D Quebec grade.
Prices F.O.B. Vancouver, B. C.
np - not produced.

Various methods of re-evaluating the ore value were attempted such as weighted average of price increases and conversion of the Cassiar test results to Clinton fibre types at present prices. These methods indicate a present gross fibre value of between $ 9.00 and $ 9.50 per ton. However, these methods did not include the grades of fibre below AX that are presently being produced at both Cassiar and Clinton Creek.

It was finally decided to re-evaluate on the basis of Cassiar fibre grades AK and AX in the percentage ratios indicated by the test mill results, and to include an arbitrary but reasonable percentage of AY and AZ fibres. Although these are Cassiar not Clinton Creek fibre grades, the dollar value arrived at is very nearly the same since the difference in grades is reflected in difference in prices.

Appendix II lists the test results for No.2 West drift.

Table 2 following shows the assumed fibre distributions and gross fibre value used for this evaluation.

TABLE 2

ASSUMED FIBRE DISTRIBUTION AND VALUE

Grade	Percent	Fibre Value ($/ton)	Ore Value ($/ton)
AK	1.10	263	2.89
AX	2.56	208	5.32
AY	1.80	147	2.64
AZ	1.00	120	1.20
TOTAL	6.46 %		$ 12.05

Normally, test mill results indicate the percent and value of " recoverable " fibre that can be expected from a conventional asbestos mill and therefore anticipate a tailings loss. However, since production of only an ore concentrate is being considered, additional tailings losses of much greater magnitude will be incurred therefore the percent fibre and ore value given above will be used for ore in place.

The anticipated gross recoverable value of the ore is estimated in Section 3.15 where tailings losses are estimated.

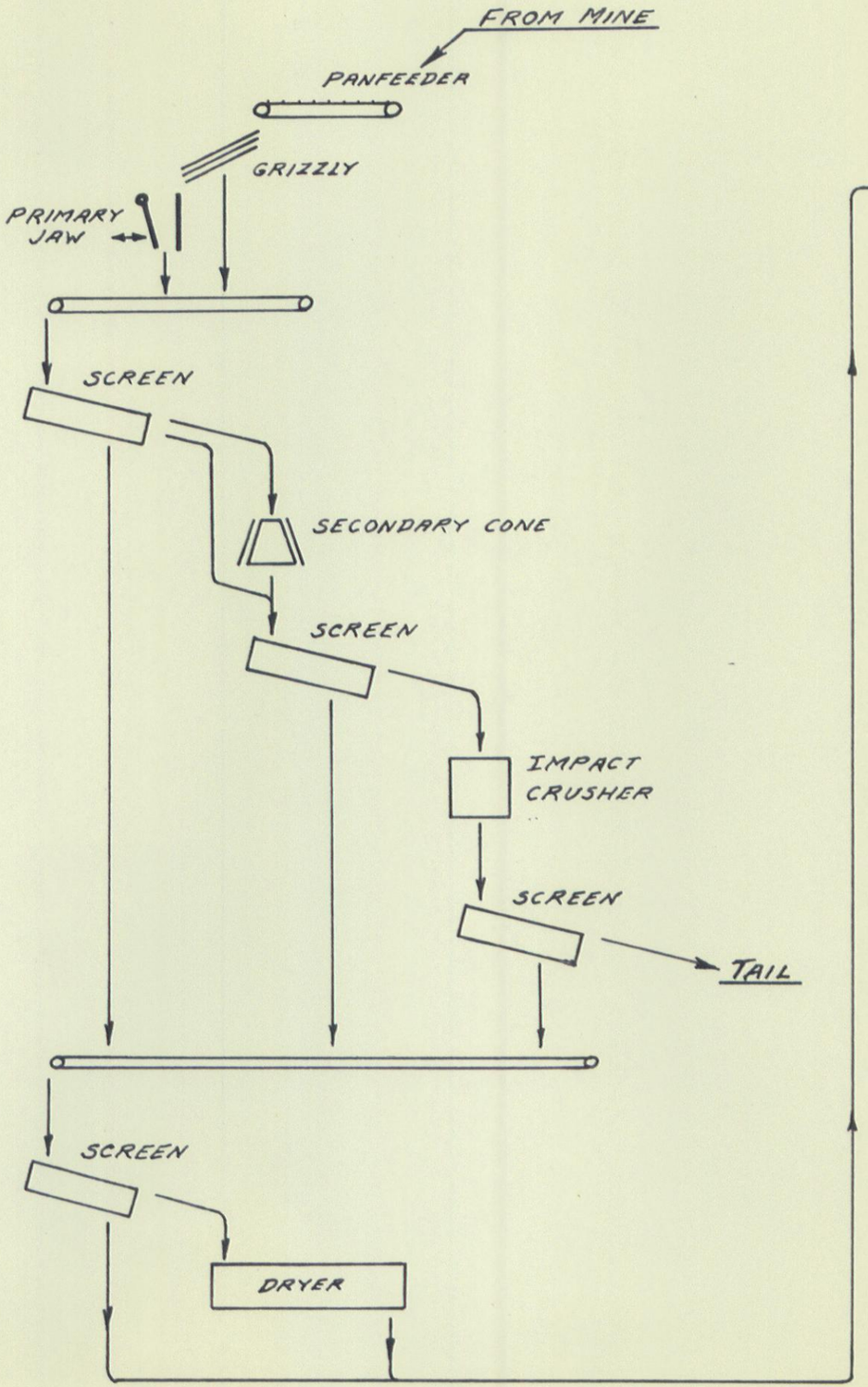
3.12 MINE PRODUCTION RATE

Several alternative production rates and operating schedules are possible but because of the limited ore tonnage available, the unknown ability of the Clinton Creek mine to absorb concentrate and the extreme difficulty and cost of operating during winter, only one alternative is considered at this time.

That is, a summer only, six month, six day a week, 24 hour per day production schedule. Assuming an average mining and milling rate of 100 tons per hour the full six month mine production would be 374,000 tons.

FIGURE 3

POSSIBLE CONCENTRATOR FLOWSHEET



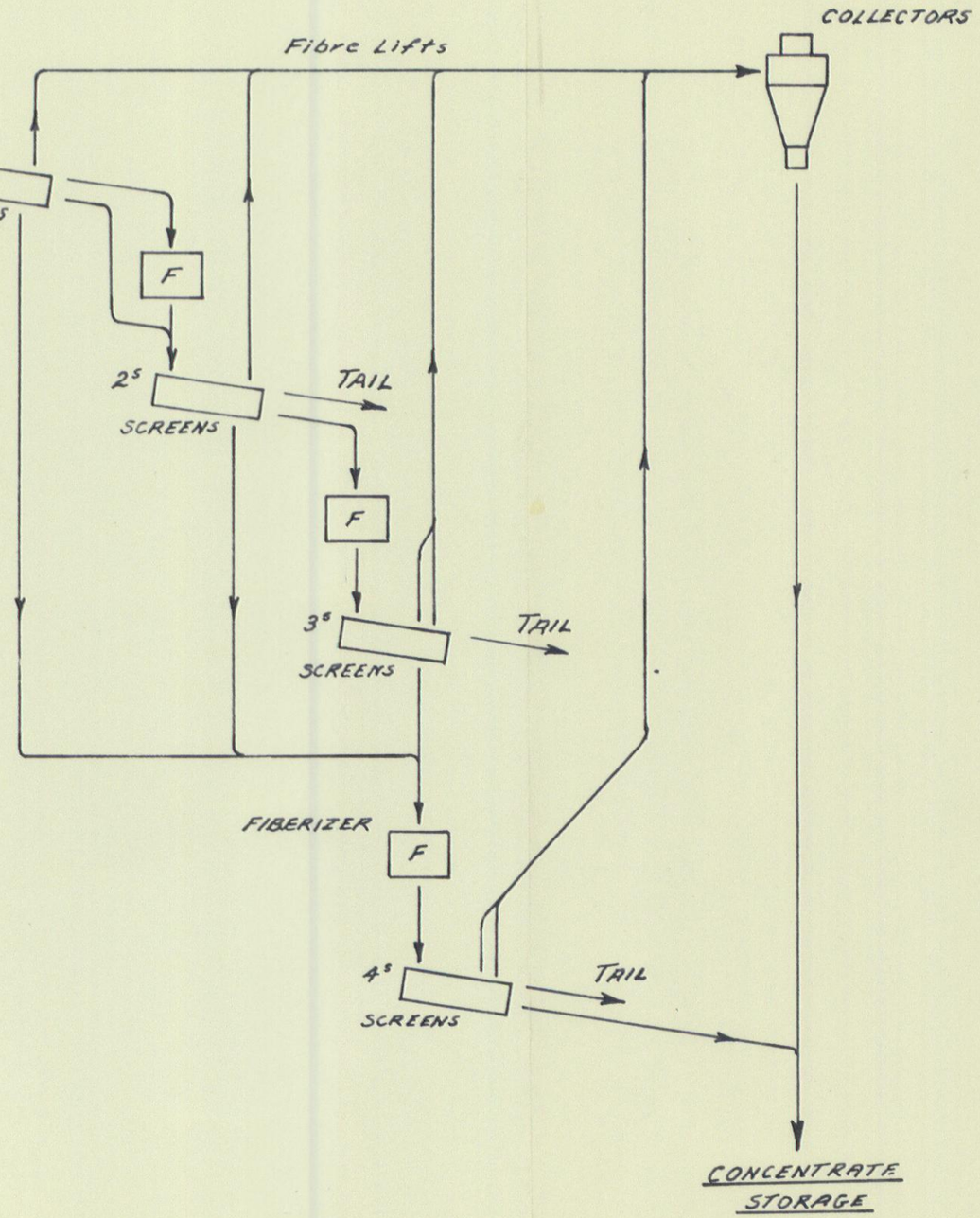


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TABLE 4

FLOWSHEET ANALYSIS

PRODUCT	TOTAL WEIGHT (Lbs)	ROCK		FIBRE									
				TOTAL		AK		AX		AY		AZ	
		%	WT.	%	WT.	%	WT.	%	WT.	%	WT.	%	WT.
FEED	2000	93.54		6.46	129.2	1.10	22.0	2.56	51.2	1.80	36.0	1.00	20.0
Reject Tail	600			1.50	9.0	.20	1.2	.50	3.0	.40	2.4	.40	2.4
Feed to 1^s	1400				120.2		20.8		48.2		33.6		17.6
1^s Lift	42	20.0		80.0	33.6		13.6		15.0		5.0		–
1^s Overs	700				36.2		5.0		23.1		6.1		2.0
1^s Mids	518				40.0		2.2		10.1		17.0		10.7
1^s Thrus	140				10.4		–		–		5.5		4.9
Feed to 2^s	1218				76.2		7.2		33.2		23.1		12.7
2^s Lift	37	20.0		80.0	29.6		6.7		17.0		5.0		0.9
2^s Overs	609				10.0		0.5		4.0		3.5		2.0
2^s Mids	450				25.0		–		11.0		11.0		3.0
2^s Thrus	122				11.6		–		1.2		3.6		6.8
Feed to 3^s	450				25.0		–		11.0		11.0		3.0
3^s Lift	22	30.0		70.0	15.4		–		10.0		5.0		0.4
3^s Overs & Mids	315				4.0		–		1.0		2.0		1.0
3^s Thrus	113				5.6		–		–		4.0		1.6
Feed to 4^s	375				27.6		–		1.2		13.1		13.3
4^s Lift	30	40.0		60.0	18.0		–		0.6		9.4		8.0
4^s Overs	200				4.6		–		0.3		2.3		2.0
4^s Mids	145				5.0		–		0.3		1.4		3.3
TOTAL PRODUCTS													
1^s Lift	42				33.6		13.6		15.0		5.0		–
2^s "	37				29.6		6.7		17.0		5.0		0.9
3^s "	22				15.4		–		10.0		5.0		0.4
4^s "	30				18.0		–		0.6		9.4		8.0
4^s Mids	145				5.0		–		0.3		1.4		3.3
	276			36.8	101.6	7.35	20.3	15.55	42.9	9.35	25.8	4.55	12.6

CONCENTRATE GRADE $^{101.6}/_{276}$ = 36.8 %

FIBRE RECOVERY $^{101.6}/_{129.2}$ = 78.6 %

RECOVERY & DISTRIBUTION

AK	92.2 %	1.015 %
AX	83.8 %	2.145 %
AY	71.7 %	1.290 %
AZ	63.0 %	0.630 %
	TOTAL RECOVERABLE	5.080 %

RECOVERABLE VALUE OF ORE

AK	1.015 × 263^{00}	= $ 2.67
AX	2.145 × 208^{00}	= $ 4.47
AY	1.290 × 147^{00}	= $ 1.89
AZ	0.630 × 120^{00}	= $ .76
	TOTAL	$ 9.79

GROSS VALUE OF CONCENTRATE

AK	7.35 × 263^{00}	= $ 19.35
AX	15.55 × 208^{00}	= $ 32.35
AY	9.35 × 147^{00}	= $ 13.75
AZ	4.55 × 120^{00}	= $ 3.80
	TOTAL	$ 69.25

CONCENTRATION RATIO

2000 / 276 = 7.25

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TABLE 5

ITEM	TOTAL COST EST.	YEAR 1	YEAR 2	YEAR 3	YEAR 4	PRESENT VALUE (6%)
TRUCK & LOADER MINING WITH DRYER						
ALL NEW EQUIPMENT						
Tons mined			252,000	374,000	374,000	
Value of production			1,570,000	2,330,000	2,330,000	
Cost - Capital	2,601,000	1,701,000	900,000			
- Operating ($ 3.36/T)			845,000	1,260,000	1,260,000	
GROSS PROFIT (LOSS)		(1,701,000)	(175,000)	1,070,000	1,070,000	(16,000)
ALL USED EQUIPMENT						
Tons Mined			252,000	374,000	374,000	
Value of production			1,570,000	2,330,000	2,330,000	
Cost - Capital	1,739,000	1,139,000	600,000			
- Operating ($ 3.36/T)			845,000	1,260,000	1,260,000	
GROSS PROFIT (LOSS)		(1,139,000)	125,000	1,070,000	1,070,000	828,000
MIXED NEW & USED EQUIPMENT						
Tons Mined			252,000	374,000	374,000	
Value of production			1,570,000	2,330,000	2,330,000	
Cost - Capital	2,200,000	1,500,000	700,000			
- Operating ($ 3.36/T)			845,000	1,260,000	1,260,000	
GROSS PROFIT (LOSS)		(1,500,000)	25,000	1,070,000	1,070,000	373,000
LOADER ONLY MINING WITHOUT DRYER						
ALL NEW EQUIPMENT						
Tons Mined			252,000	374,000	374,000	
Value of production			1,570,000	2,330,000	2,330,000	
Cost - Capital	2,451,000	1,700,000	751,000			
- Operating ($ 3.16/T)			795,000	1,180,000	1,180,000	
GROSS PROFIT (LOSS)		(1,700,000)	24,000	1,150,000	1,150,000	323,000
ALL USED EQUIPMENT						
Tons Mined			252,000	374,000	374,000	
Value of production			1,570,000	2,330,000	2,330,000	
Cost - Capital	1,639,000	1,100,000	539,000			
- Operating ($ 3.16/T)			795,000	1,180,000	1,180,000	
GROSS PROFIT (LOSS)		(1,100,000)	236,000	1,150,000	1,150,000	1,122,000
MIXED NEW & USED EQUIPMENT						
Tons Mined			252,000	374,000	374,000	
Value of production			1,570,000	2,330,000	2,330,000	
Cost - Capital	2,000,000	1,400,000	600,000			
Operating ($ 3.16/T)			795,000	1,180,000	1,180,000	
GROSS PROFIT (LOSS)		(1,400,000)	175,000	1,150,000	1,150,000	765,000

For a one million ton orebody this rate would give a mine life of 2.67 years.

To ensure an average tonnage of 100 tons per hour over a 24 hour period the mine and mill equipment must be capable of operating at a rate of 120 tons per hour assuming 85% availability or utilization of equipment. In addition, peaks of 150 tons per hour must be possible.

3.13 MINE DESIGN

Conversations with persons familiar with the property and a review of the C.J.M. drill logs indicate that there would be little waste stripping as normally encountered in surface mining. There will however be surface preparation to remove all overburden, organic material and weathered ore. In addition, there would be some waste removal associated with road building, mining of footwall ore and removal of ore contaminated with timber from underground workings.

Some waste removal may also be necessary if barren or very low grade zones are encountered within the confines of the orebody but, since no estimate of tonnage can be made at this time, it is assumed that all material will be mined as ore. In operation, waste material within the orebody might reduce the total quantity of ore available but would probably also increase the grade and value of the remaining ore.

Since the surface slope of the orebody and environs is less than 30 degrees and the footwall slope only exceeds this at the extreme upper portion of the deposit, difficulties with slope stability should not be encountered. For this reason also, waste removal for roads and catchment benches should be minimal.

Because of the limited depth and gentle slope of the deposit the mine plan should be quite simple and require a minimum of heavy equipment. An operation

using a rotary drill and front-end loader with small trucks should be more than adequate to provide the tonnage and flexibility necessary. Additionally, smaller equipment such as a dozer, small drills, powder truck and pickups etc. would be required along with a shop to service and maintain this equipment.

Depending upon the final pit design and haul distances it is quite possible that a system using front-end loaders only might be possible. Such a system could considerably simplify maintenence and operating procedures.

3.14 MILL DESIGN AND PRODUCTION

Without extensive observation and analysis of tests or pilot milling of an asbestos ore it is impossible to design a milling circuit with a high degree of certainty of success. However, if it is assumed that the Caley ore is similar in hardness, breaking nature and fibre quality to the Clinton Creek ore, then the mill circuit shown on Figure 3 should be more than adequate to produce a final ore concentrate of about 35% fibre.

The circuit shown is conventional and resembles both the Clinton Creek and Cassiar rejection and rock-line circuits. Basically, the circuit is one of primary and secondary crushing to reduce the ore to a manageable size followed by stage crushing and screening with rejection of tailings at selected sizes. A dryer circuit is included on the assumption that the ore would be too wet to mill for at least a portion of the six month operating season. However, by very careful attention to pit drainage and mining schedule it may be possible to eliminate the dryer circuit although tailings losses would be expected to rise during wet periods.

The gyratory screens and fiberizers following the dryer circuit would normally be referred to as a " rock-line ". Here, free fibre and some rock is lifted from the screens as soon as liberated. All lifted fibre and rock is recombined with the final screen throughs product to make a suitable concentrate.

Lacking detailed laboratory and mill test data flowsheet calculations are somewhat academic but Figure 4 shows a series of calculations designed to indicate the type of results that might be expected from the flowsheet shown. Results can be varied at any point in the flowsheet by altering the crusher settings, fiberizers and screen meshes but with careful operation and attention to the choice of variables the end result shown should be attainable.

The calculations on Figure 4 show the following;

CONCENTRATE GRADE	36.8%
CONCENTRATE GROSS VALUE	$ 69.25
TOTAL FIBRE RECOVERY	78.6 %
GROSS RECOVERABLE VALUE OF ORE IN PLACE	$ 9.79
RECOVERABLE FIBRE IN ORE	5.080 %
CONCENTRATION RATIO	7.25
PERCENT OF ORIGINAL ORE VALUE RECOVERED 9.79/12.05	81.20%

Mill location would probably be as close as possible to the mining operation in order to minimize haulage distances but limited by requirements of blasting safety. By utilizing a sidehill location, gravity flow of products would predominate although a number of conveyors would still be required. Provided a stable slope of about 30 degrees or more is available, the mill building should not exceed two stories in height at any point

although the distance from truck dump to concentrate bin may be considerable. Mill foundations must be completely sound but the mill building need be only lightly constructed.

The total installed horsepower in the mill is estimated to be 1500 HP including all lighting and miscellaneous items.

4.10 CAPITAL AND PRE-PRODUCTION COSTS

The capital costs given in the following sections are, in the case of major items, based on quotations from selected suppliers. For smaller items, construction costs and installation costs the figures are based on recent experience. All costs are FOB mine and include appropriate taxes.

Costs associated with stripping and pit road building are included as a capital pre-production cost for the most part even though some of these costs may, and probably would, be expensed over the operating life of the mine.

The present road connecting the property with the sixty-mile road would not be suitable for concentrate haulage due to excessive grades therefore a considerable expenditure would be required to improve the present road or to construct a new one. A new road would probably connect with the Clinton Creek road at a point south-west of Cassiar Dome, a distance of about nine miles. It is expected that almost all of the cost would be available from government sources.

In most cases two costs are given, new and used. Where construction costs are listed as used, the cost is considered to be the absolute minimum possible without increasing operating and maintenence costs to an appreciable

extent. Capital costs of equipment include a limited inventory of spare parts sufficient for startup requirements. Construction costs are based on a summer construction schedule.

4.11 MINE, ROAD AND SITE PREPARATION

Included here are the estimated costs of mine stripping sufficient for initial mining, pit and camp road improvement and the owner share of access road construction. Also included is a small sum for preparation of millsite and townsite foundations as well as an estimated fee for location and preliminary engineering of the access road.

MINE PREPARATION 50,000 tons @ $ 0.70	35,000
PIT AND CAMP ROADS	15,000
ACCESS ROAD 9 miles @ $ 20,000	180,000
MILL AND TOWNSITE PREPARATION	10,000
ENGINEERING SERVICES	15,000
TOTAL	$ 255,000

Costs beyond the first or preparation year are considered to be operating or maintenence costs and are included in the costs per ton of ore mined.

4.12 MINE EQUIPMENT

The following is considered to be the minimum requirement for mine equipment although the equipment detailed is probably oversized for the operation considered. Some capital cost saving may be possible if smaller equipment is chosen but care must be exercised that reliability and flexibility are not sacrificed. For this type of operation it is essential that the breakdown of a particular unit of equipment does not result in a complete stoppage of production.

	EQUIPMENT UNIT	COST New	Used
1	Rotary drill (B.E. 30R with tools etc.)	130,000	70,000
2	Haulage Trucks (30 - 40 ton)	200,000	120,000
1	Loader (7½ yd)	135,000	70,000
1	Dozer (D8 c/w blade & ripper)	115,000	60,000
	Compressor, drills etc.	20,000	15,000
	Pickups & Truck	18,000	9,000
	TOTAL	$ 618,000	$ 344,000

In addition to the "new cost", the above would for the most part be available on a lease-purchase basis which would reduce the initial capital requirements but would not make a significant difference to the overall economic analysis.

Additional equipment such as dozers and graders etc., that may be required from time to time are assumed to be available on a local rental basis and these costs are incorporated into operating costs.

Alternatively, if a loader only haulage operation is possible the haulage units would be eliminated, an extra loader added and the total cost would then be;

	New	Used
TOTAL	$ 553,000	$ 294,000

4.13 MILL EQUIPMENT

Costs shown are for new equipment or for used reconditioned equipment. Costs include assembly and erection on site. Care must be exercised in the interpretation of these costs as certain equipment such as fiberizers and

gyratory screens common to the asbestos industry are seldom available in good used condition. On the other hand, bargains are often available in used crushing equipment.

The figures given for the mill building are the estimated costs for either an adequate but well constructed building using conventional materials or a more lightly constructed building using local squared timbers etc. In either case, foundations are a major cost.

	EQUIPMENT UNIT	COST New	COST Used
1	Grizzly & Panfeeder	15,000	8,000
1	Jaw Crusher (24 x 36)	50,000	30,000
4	Shaker Screens	68,000	30,000
1	Cone Crusher (4½')	70,000	45,000
1	Impact Crusher	50,000	30,000
1	Dryer	70,000	40,000
12	Gyratory Screens	85,000	50,000
3	Fiberizers	45,000	30,000
	Fans	12,000	9,000
	Collectors	30,000	30,000
	Conveyors	60,000	45,000
	Chutes & Ducting	50,000	36,000
	Concentrate Bin	20,000	15,000
	Miscellaneous	50,000	25,000
		675,000	423,000
	Electrical Controls	60,000	45,000
	Mill Building	200,000	150,000
	Engineering Services	40,000	40,000
		975,000	658,000
	Contingency 10%	98,000	67,000
	TOTAL	$ 1,073,000	$ 725,000

The above estimates do not include provision for dust control other than conventional collectors with fans discharging to atmosphere.

The two costs shown can be considered as high and low estimates for construction of the mill. With equipment known to be available at the present time, actual costs should end up about midway between the two extremes.

If the dryer circuit were not required, the total cost would be reduced to;

	New	Used
TOTAL	$ 988,000	$ 675,000

4.14 SERVICES AND BUILDINGS

These costs include all buildings and services required for an efficient mining operation. Camp facilities are considered sufficient for normal employee comfort and recreation but are very definitely minimal.

ITEM	New	Used
MINE SHOPS - including powder magazine, maintenence equipment, lunch room etc.	50,000	35,000
MILL SHOPS - including tools and maintenance equipment.	40,000	25,000
POWER HOUSE - maximum demand for mill, town & mine assumed to be 1500 Kw.		
4 x 500 Kw diesel generators	200,000	140,000
Control panels	30,000	25,000
Building etc.	50,000	35,000
Power distribution lines	15,000	10,000
	295,000	210,000
WATER SUPPLY - Small dam or well system with pumps, reservoir and distribution lines	25,000	15,000
ADMINISTRATION OFFICE - trailer and equipment	30,000	12,000
KITCHEN, MESSHALL, BUNKHOUSE Suitable for 50 men including catering staff.	120,000	60,000

MISCELLANEOUS - Storage sheds, communications etc. etc.	25,000	10,000
	585,000	367,000
ENGINEERING SERVICES	10,000	10,000
CONTINGENCY 10%	60,000	38,000
TOTAL	$ 655,000	$ 415,000

For the above costs it is assumed that the buildings presently on the property can be utilized for storage, shops, recreation etc and that all buildings will be of light, non-permanent construction. At present, major items such as generator sets and trailers are available in good used condition.

4.15 TOTAL CAPITAL COSTS

ITEM	New	Used
MINE PREPARATION	255,000	255,000
MINE EQUIPMENT	618,000	344,000
MILL EQUIPMENT	1,073,000	725,000
SERVICES & BUILDINGS	655,000	415,000
TOTAL	$ 2,601,000	$ 1,739,000

If, as previously mentioned, the dryer circuit could be dispensed with and a "loader only" mining system is possible the total costs would be;

	New	Used
TOTAL	$ 2,451,000	$ 1,639,000

5.10 OPERATING AND OTHER COSTS

Operating costs include all items that are either time or tonnage dependent. These include labor, supervision, maintenence, fuels, power, administration, insurance etc. Costs are estimated from recent Clinton Creek and Cassiar cost figures adjusted to the smaller less burdened operation. In some cases the cost reduction is substantial, in others the reduction is offset by the higher wages and overtime necessary to attract men to isolated, non-permanent employment. In still other cases, costs are estimated to be higher than in other mines.

Maintenence costs are estimated lower than in other more mature mines because of the large amount of new or well reconditioned used equipment involved. Provided care is taken in the selection of equipment and in the layout of mill circuits, maintenance costs should be minimal.

5.11 MINING COSTS

All operating, maintenence and service costs are included in the following. Costs of ownership are not included . Although mining costs are listed in only four catagories other costs such as ripping of ore, secondary blasting, bench cleanup, short term stockpiling etc. are included in the catagories shown.

Drilling & Blasting	$ 0.23 per ton mined
Loading Ore	$ 0.20 " " "
Hauling Ore	$ 0.15 " " "
Roads	$ 0.07 " " "
TOTAL	$ 0.65 per ton mined

There is a possibility that using loaders for both loading and hauling ore could result in cost savings but pending further studies it is assumed that

costs for either type of operation would be very similar.

Manpower for operation and maintenance of the mine is estimated at fifteen men including one foreman.

5.12 MILLING COSTS

The following costs include labor, supervision, fuel, power, expendable materials, maintenance and shops operation etc. Costs have been split into three catagories for convenience but in effect there is no clear distinction between the groupings.

Crushing & Rock Reject	$ 0.25 per ton mined
Drying Circuit	$ 0.30 " " "
Milling - Rock Line	$ 1.00 " " "

If a dryer circuit is found to be not required, the above costs can be reduced by twenty cents per ton for a total of $ 1.35 per ton mined.

Estimated manpower requirements for the mill operation are;

Crusher & Mill Operators	6
Helpers & Laborers	7
General Foreman	1
Maintenence	3
TOTAL	17

5.13 ADMINISTRATION AND SERVICES

These costs are for labor, taxes (local), insurance, contracted services, camp operation, general administration, employment costs, heating, warehousing, handling, engineering, geology etc.

General Administration	$ 0.20 per ton mined
Camp Operation & Catering	$ 0.30 " " "
TOTAL	$ 0.50 per ton mined

Total manpower requirements are estimated to be;

Mine Crew	15
Mill Crew	17
Surface	2
Powerhouse	4
Administration	3
Operating	41
Catering & Camp	9
TOTAL	50

5.14 CONCENTRATE HAULAGE

Provided a new haulage road is constructed, the distance from the property to the Clinton Creek mill would be approximately 34 miles. Assuming that a contract hauling rate of $ 0.14 per ton mile can be negotiated with local contractors the shipping cost per ton mined would be;

34 x $ 0.14 x 1/7.25 $ 0.66 per ton mined

The above contract rate is thought to be attainable as current contracts in Northern B. C. and Yukon are estimated to be at or below this figure.

5.15 TOTAL OPERATING COSTS

Mining	$ 0.65
Milling	$ 1.55
Admin.& Serv.	$ 0.50
Con. Haulage	$ 0.66
TOTAL	$ 3.36

If the dryer circuit is not considered necessary, the total operating costs would be reduced to $ 3.16 per ton mined.

6.10 SALES VALUE OF CONCENTRATE OR ORE

To this stage the fibre prices used in determining the ore value have been the sale price of fibre grades F.O.B. Vancouver, B. C., and do not reflect the cost of processing a concentrate to a finished fibre nor the freight costs of shipping a finished fibre to Vancouver, B. C.
It is therefore necessary to recalculate an ore value based upon an estimated value of the concentrate to the Clinton Creek operation.

The freight cost from Clinton Creek to Vancouver is estimated to be $ 45.00 per ton of fibre therefore the value of Caley ore F.O.B. Clinton Creek is estimated to be;

AK	263.00 - 45.00	$ 218.00 x 1.015	$ 2.22
AX	208.00 - 45.00	$ 163.00 x 2.145	$ 3.50
AY	147.00 - 45.00	$ 102.00 x 1.290	$ 1.31
AZ	120.00 - 45.00	$ 75.00 x 0.630	$ 0.47
		TOTAL	$ 7.50

The Clinton Creek costs for cleaning, bagging and handling fibre are estimated to be $ 25.00 per ton of fibre produced therefore the cost per ton of ore in place at the Caley Property would be;

5.08 % x $ 25.00 $ 1.27 per ton

If no allowance for profit is made to Clinton Creek the NET RECOVERABLE VALUE OF ORE IN PLACE is $ 7.50 - $ 1.27 $ 6.23

No allowance has been made for a Clinton Creek profit since it is felt that the original Cassiar test results were conservative and assumed a high tailings loss therefore the the ore value assumed for this analysis should be more than adequate to provide a fair profit to Cassiar.

7.10 ECONOMIC ANALYSIS

The simple method of applying the total costs to the total ore value as shown below indicates that there is an excess of value over costs.

TOTAL ORE VALUE	$ 6,230,000
TOTAL COST	
Capital (new)	$ 2,601,000
Operating	$ 3,360,000
EXCESS	$ 269,000

The above excess is small but since the maximum capital cost was used it does indicate that there may be a reasonable profit available if capital costs can be reduced.

Figure 5 following shows several simple cash-flow analyses for different levels of capital costs. These calculations show that dependent upon the extent to which used equipment can be employed, there could be anywhere from a small loss of $ 16,000 to a substantial profit of $ 1,122,000. The largest profit occurs when all equipment is used and when the dryer circuit is eliminated and the loader-only mining method used.

For these calculations it has been assumed that there would be no salvage value to the mine or mill equipment at the end of operations. This of course would not occurr and in fact about 35% of the value of major equipment and machinery, and 20% of other units should be recoverable.

To arrive at the present values shown, a value of money of 6% has been assumed. This is low by present standards and is used more as an indication than as a true value.

The schedule assumed for the analyses of Figure 5 assumes that during year 1 the mine would be prepared and most of the mill constructed. During

year 2 the mill would be completed and production started. Purchase of much of the mine equipment would not be made until the early part of year 2 to coincide with the ability of the mill to begin production.

8.10 CONCLUSIONS

Provided that capital costs can be kept to a minimum, there is a very high likelihood that the mining of the Caley asbestos deposit can be a profitable venture.

Considerable work and analysis remains to be done to determine the most economic mining system and mill flowsheet but even with the assumed worst conditions and all equipment purchased new, the economic analysis shows a break-even proposition without credit for equipment salvage.

Calculations show that after reducing the estimated value of ore in the ground by the Clinton Creek costs of freight and fibre cleaning, the gross recoverable value of ore in the ground is $ 6.23 per ton. Capital costs are estimated between $ 2,601,000 and $ 1,639,000 depending upon whether new or used equipment is purchased and upon whether a dryer circuit is required, and on the mining method. Operating costs are estimated to be $ 3.36 per ton of ore mined if a dryer is installed and $ 3.16 if not.

The assumptions on which the quantity, grade and value of the ore have been made must be checked by further field work and laboratory tests. But, on the basis of the available information there is good reason to believe that a concentrate of about 35 % fibre can be produced which can be marketed at a profit to the Cassiar, Clinton Creek operation.

9.10 RECOMMENDATIONS

In view of the likelihood that the Caley Property can be profitably placed in production, the following recommendations are made;

1) With Cassiar, review all test and geological data to check on the assumptions made to arrive at figures used in this analysis.
2) With Cassiar, determine the ability of Clinton Creek to accept concentrates on a seasonal basis and determine an equitable value based upon fibre content.
3) Determine the extent to which Government assistance may be available for road construction.
4) With Cassiar, review the cost figures used in this analysis in light of current northern experience and expectations.

Provided the above investigations confirm the basic assumptions made or arrived at for this study, recalculate the economic analysis in light of the advice received. If the revised evaluation shows an acceptable profit can be expected, it will be necessary to initiate an extensive programme of sampling and test milling in order to increase the reliability of the grade and value figures used in a final economic analysis. Such a programme would involve test pits and surface cuts for bulk sampling as well as further diamond drilling.

APPENDIX I

REPORTS AND DRAWINGS CONSULTED

On file with Alrae Engineering Ltd., Vancouver, B.C.

REPORTS

1) Cassiar Asbestos Corporation Ltd.,
" Final Report on the Caley Project", Oct 15, 1959, W. N. Plumb.

2) Canadian Johns-Manville Co.Ltd.,
" Caley Property", Nov. 1964, R. H. Janes.

MAPS & DRAWINGS

C.A.C. - Caley Surface Plan, April 20, 1959, 1" 100'
- Caley Surface Plan and Lower Adit, 1" 40'
- Caley Surface Plan and Upper Adit, 1" 40'
- Caley Section, N 55 W - No. 1 West Drift, 1" 40'
- Caley Assay Plan, No. 2 West Drift, 1" 40'
- Caley Claim Map, 1" 40'

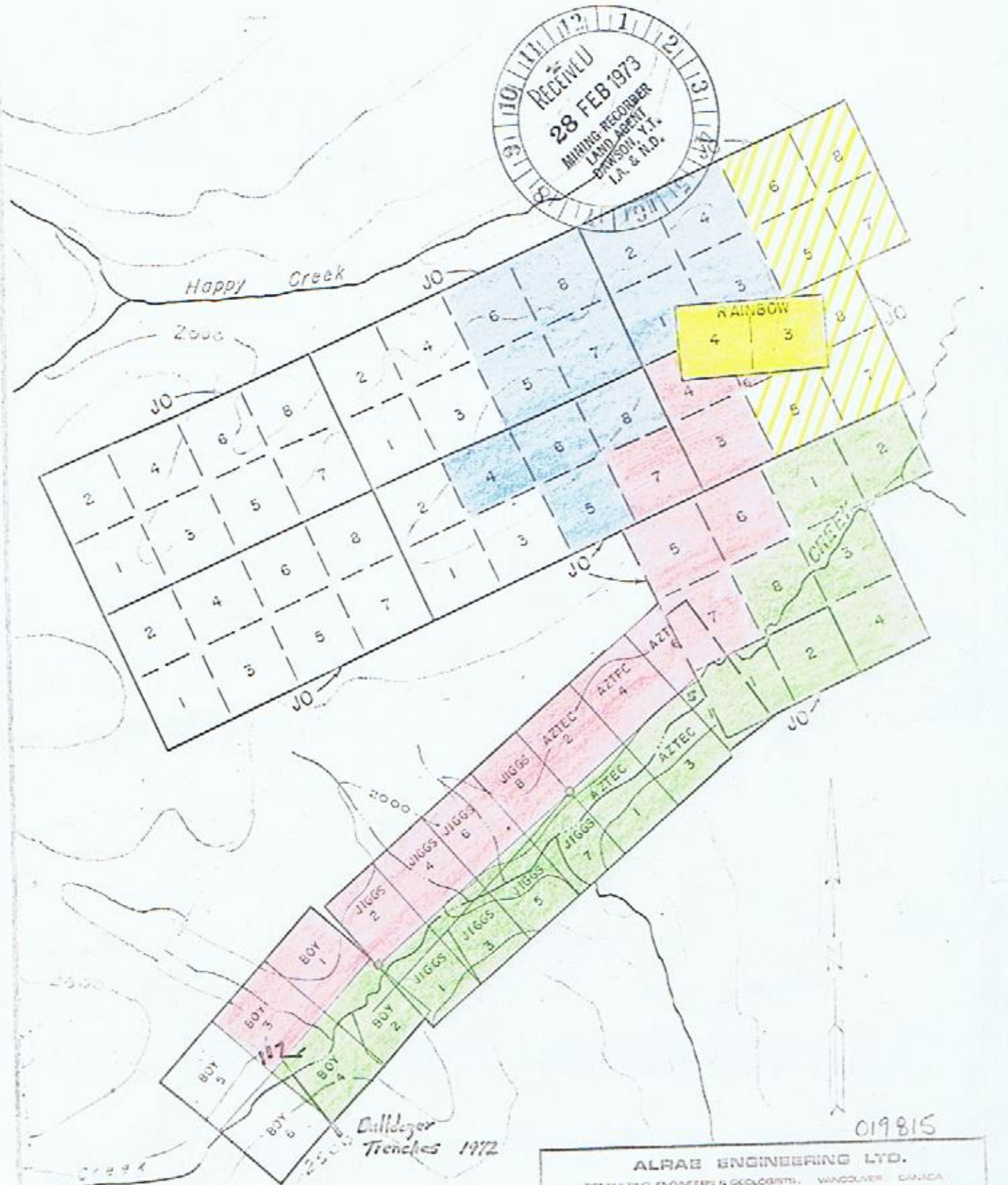
C.J.M. - Geology and Magnetic Intensity, 1964. 6 drawings.
- Drill Core Logs, 1964. 12 Holes.

SPHERE - Surface Plan, Feb. 1967. 1" 100'

APPENDIX II

No. 2 WEST DRIFT TEST MILL DATA

FOOTAGE	A	AK	AS	AX	Tot.	VALUE
11' - 36'	0.02	2.43	2.86	---	5.31 %	$ 10.61
36' - 102'	Too Low Grade					
102' - 157'	0.002	1.28	---	3.99	5.27 %	$ 8.48
157' - 185'	0.005	0.80	---	5.10	5.90 %	$ 11.00
185' - 235'	---	0.85	---	2.52	3.37 %	$ 6.43
235' - 290'	---	0.46	1.89	---	2.35 %	$ 4.43



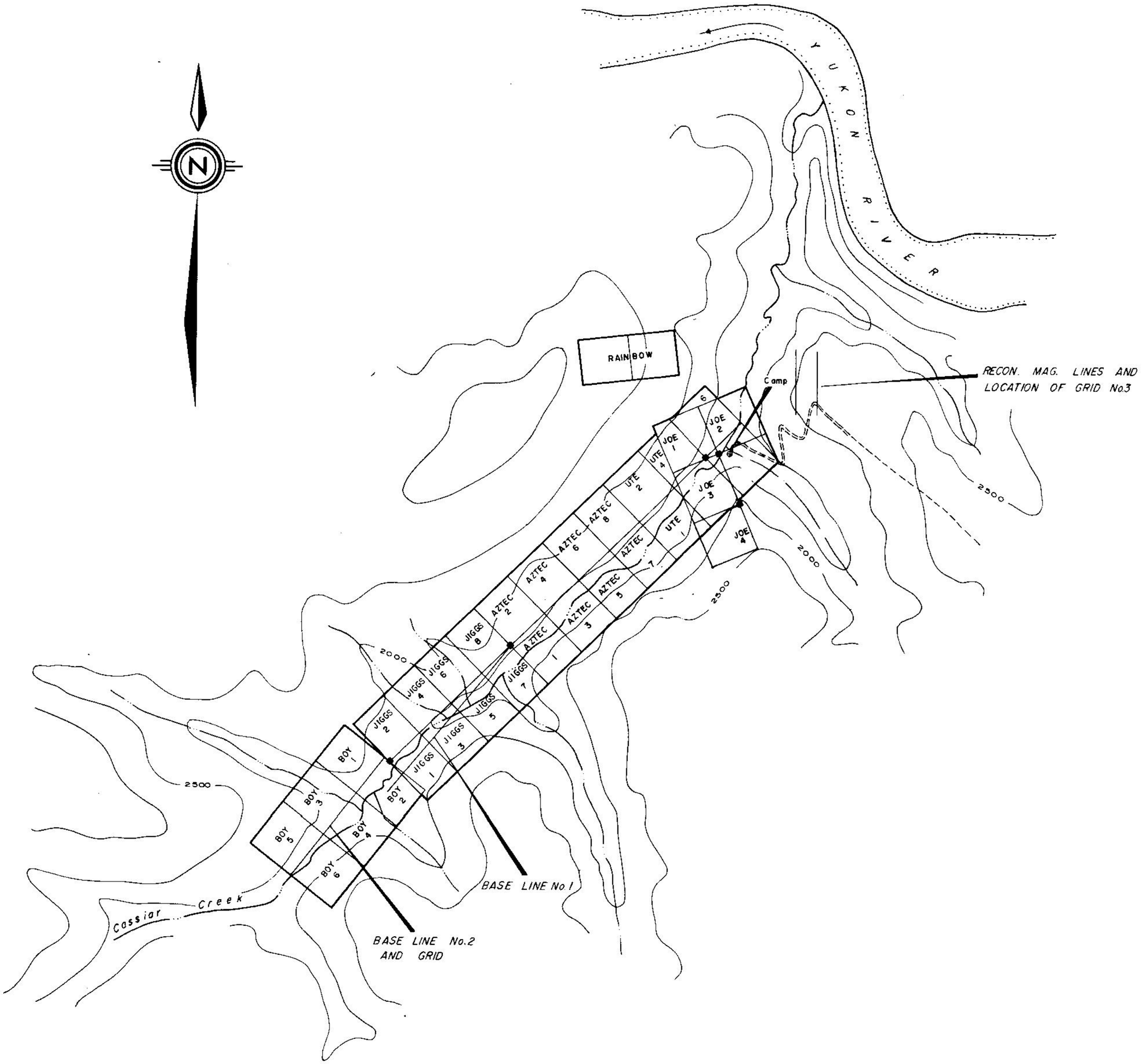
ALRAE ENGINEERING LTD.
CONSULTING ENGINEERS & GEOLOGISTS, VANCOUVER, CANADA

BRANTA EXPLORATIONS LTD.

LOCATION MAP
SHOWING
TRUE POSITION OF RESPECTIVE
CLAIM GROUPS & RECON. LINES

SCALE: 1" = 1/2 mile	DESIGNED:
DATE: Aug., 1972	DRAWN:
REVISED	CHECKED:
	MAP No.

Grouping 1973



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