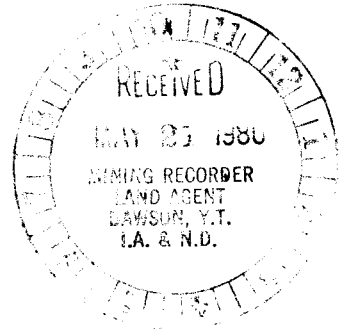


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BIRCH 1, 2, 3 #50-53

120056



GEOLOGICAL REPORT

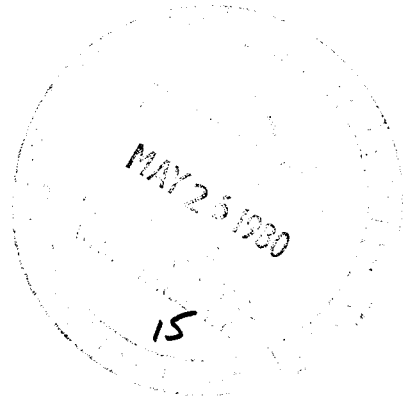
On The

CLEAR CREEK CLAIMS

DAWSON AREA, Y. T.

OF

Birch Industries Inc.



BY: E. P. Sheppard, P.Eng.
Consulting Geologist

Vancouver, B.C.
October 14, 1978

115-P-13

Clear Creek Claims

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APPENDIX

DESCRIPTION OF SAMPLES #5-#10
(To accompany Fig. 1)

LIST OF REFERENCES

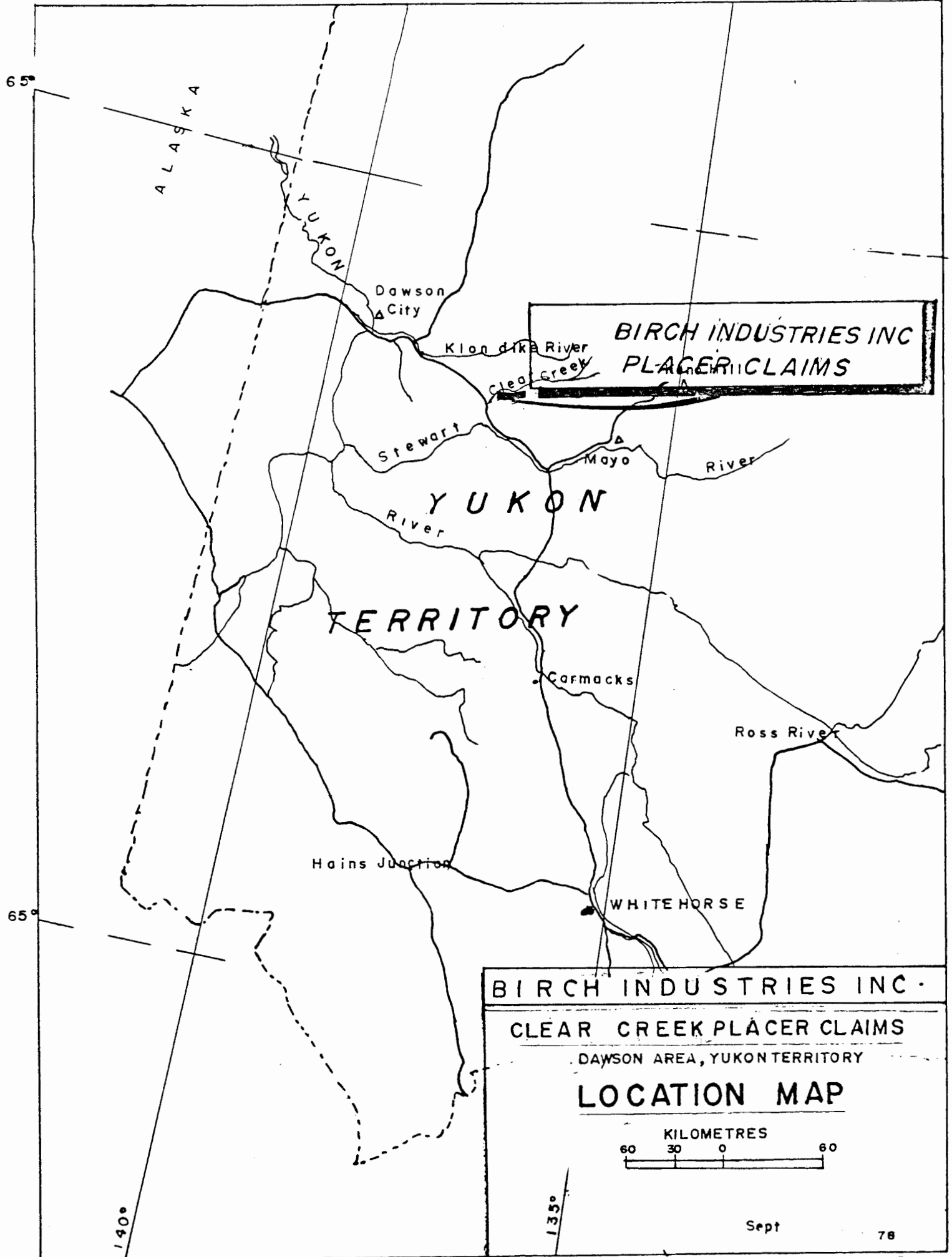
CERTIFICATES OF ASSAYS (2)

MAPS

Location Map
Lease location map
Stripped Area & Assay Plan Scale: 1 cm = 50 metres

GRAPH: Bench 1 - Sample Grade & Reserves

ILLUSTRATIONS



ALASKA

65°

YUKON

Dawson City

Klondike River

Clear Creek

**BIRCH INDUSTRIES INC
CLEAR CREEK PLACER CLAIMS**

Stewart

Mayo

River

YUKON

River

TERRITORY

Carmacks

Ross River

Hains Junction

WHITE HORSE

65°

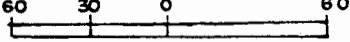
BIRCH INDUSTRIES INC -

CLEAR CREEK PLACER CLAIMS

DAWSON AREA, YUKON TERRITORY

LOCATION MAP

KILOMETRES



140°

135°

Sept

78

GEOLOGICAL REPORT

CLEAR CREEK CLAIMS Dawson Area, Y.T.

INTRODUCTION

The following report was prepared at the request of the President and Directors of Birch Industries Inc. Data for the report were obtained by the writer during a visit to the area in early September 1978, examining old records and observing operations along Clear Creek and adjacent properties. Government reports were also studied. The publications of Yukon Consolidated Gold Corp. Ltd, Dawson, were of particular interest.

PROPERTY

The property consists of a Placer Lease, granted under the Yukon Placer Mining Act, covering approximately 8 km of Clear Creek in the Yukon Territory. 310 meters to both the left and right of the baseline established by the Mining Recorder define the width of the lease. The base may be converted to 155 meters long by 620 meters wide placer claims after the first, second or third year of the lease, providing that adequate assessment work has been carried out to renew the lease each year. The lease must be converted to claims before full scale mining is undertaken. When converted to claims the property will contain in excess of 50 claims.

OWNERSHIP

The property is held by Birch Industries Inc. under an option agreement.

LOCATION & ACCESS

The Clear Creek property is located approximately 88 km east-southeast of Dawson City, Y.T. The creek starts on the slopes south of the Klondike-Stewart River divide near the headwaters of the South Klondike River. Clear Creek flows from east to west in the area of the lease but turns south as it enters the Tintina Trench. The Stewart-Dawson Highway passes 9.6-12.8 km west of the lease.

Direct access to the lower end of the property is provided by a road which branches from the highway near Barlow Lake. The major part of the access road was constructed by a dredging company to service the mining operation on the left fork of Clear Creek. The remainder of the road was built for mineral exploration on a group of claims staked under the Quartz Mining Act.

TOPOGRAPHY

Clear Creek is a tributary of Stewart River. The gradient of the Creek adjacent to the lease is approximately 24.4 meters per kilometer. Flow is swift and fluctuates rapidly. Water is abundant for mining purposes but must be carefully controlled to minimize flood hazard.

The topography north of the Creek exhibits more relief than the area to the south which is a relatively flat bench approximately 100 meters above creek bottom. The valley and channels of the creek are constricted in several places by granitic bedrock outcrops. The north bank of the creek is often characterized by steep exposures of bedrock. Gravel deposits such as fans and bars make up the south bank of Clear Creek. In some stretches gravel occupies the entire broad valley floor. The gravels and much of the bedrock are overlain by fine soils (loess) and vegetation consisting of black spruce, mosses and shrubs typical of a boreal forest assemblage. Deciduous vegetation is common near the creek and on dry hillsides.

Permafrost exists in most areas where a thick vegetation mat has accumulated. When the insulation layer is removed the gravels will normally thaw to bedrock in one summer season from solar radiation. Quicker thawing is achieved by the use of water.

The summers are short and warm. Rains are infrequent but often violent and thunder storms are common. The winters are long and cold. Mining is carried out from early May until late September. The first snows usually occur in October.

HISTORY

The mining history of Clear Creek appears to be poorly documented, probably because the region is removed from the logistic center of Dawson City and events were not recorded in newspapers of the area nor in numerous historical publications. The most reliable information can be obtained from the Yukon Consolidated Gold Corp. reports covering a period from 1935 to 1965.

The chief event was the dredging of the left fork and upper main Clear Creek during the 1950's and 1960. 16 to 19 km of creek bed were mined. Operations were suspended in 1960. The dredge was left intact at the forks of Clear Creek and has since been vandalized beyond repair. Mining concessions lapsed and smaller operations using bulldozers and other earth-moving equipment mined up and downstream and to the sides of the dredged spoil heaps.

The quality and size of the gold recovered is typical of the Klondike region. A considerable amount of coarse gold from other properties has been observed by the writer.

*GEOLOGY

"The bedrock types which underlie Clear Creek are metamorphic rocks of the Yukon group and granitic intrusions of Mesozoic Age. The Yukon group metamorphic rocks are usually considered to be the original source of the placer gold. Rocks of this unit are generally schist and gneisses as well as phyllites, marbles and quartzites in lesser abundance. All the rocks are products of the same regional metamorphic events which acted upon Pre-Cambrian or lower Paleozoic sedimentary and igneous rocks. Quartz veining is ubiquitous in the metamorphic rocks.

The igneous rocks which occur along Clear Creek in the region of the placer lease are dominantly coarse grained intrusions of granitic to granodioritic composition. Some syenites and true pegmatites may also be present. Coarse 2 cm to 10 cm feldspar phenocrysts are common to the degree of being characteristic.

The gravels of the area have been classified by H. S. Bostock into three convenient units. The oldest stream deposits and alluvium form one divisible unit. These deposits are pre-glacial and are usually exposed only in higher areas such as benches and slopes. Another unit of surficial deposits consists of glacial and periglacial sediments as well as materials of uncertain age. The third unit is made up of the youngest gravels which are normally products of recent stream action.

For the purposes of placer mining the recent and pre-glacial gravels are of interest; particularly recent gravels derived from pre-glacial gravels. Bostock points out in the descriptive notes of Map 1143A that White Channel gravels nearly identical to those of the Klondike creeks occur along Clear Creek and form a part of the pre-glacial gravel unit. Recent gravels as well as some older gravels are known to contain gold upstream of the Clear Creek lease. Gold has been produced in the Stewart River and its tributaries since 1885.

To quote H. S. Bostock from the notes of Map 1143A serves the purpose of pointing out the mineral potential of the Clear Creek area and the importance of careful prospecting. He writes, "The part north of Bear Creek, McQuesten River and Tintina Trench contains most of the lode and placer mineral discoveries in the map area, including those carrying gold, silver, lead, zinc, antimony, tungsten, tin, copper, barite and monozite. The discoveries generally lie near a small granitic stock (14). In this section, glaciation and tilting of the surface have led to many intricate changes in drainage. In some creeks the placer concentrations in their earlier channels have been washed away, redistributed, or buried by new streams so that careful study of these changes is warranted in placer prospecting."

*Excerpts from Report by Eric H. Johnson.

WORK PROGRAM

The work program laid out in April and June, 1978, by Geologist Eric H. Johnson, had been completed when the writer visited the property in September.

A large area on the north side of Clear Creek at the south end of the Company's lease, now designated as Bench 1, was bulldozed. The trees, moss and peat mat were removed exposing the black muck to the elements. Late in September the area was widened and the black muck stripped down to the thin layer of sand and silt which usually covers the gravel. By the spring of 1979 these stripped areas will have thawed and drained sufficiently to allow the bulldozer to expose the gravels and mining can begin.

Ten pits were dug at designated points (Fig. 1) and sampling was carried out. Samples taken from pits 1 to 4 were $\frac{1}{2}$ m³, the remainder were 1 m³.

It was found that two samples from 30 cm above bedrock and into bedrock were appreciably higher than two of the first group of 4 which did not reach bedrock. (Fig. 2, S-2, 3). This indicates that concentrations of gold are just above and into the crevices and fractures of the bedrock. Sample 1 was not used in the calculations as it is considered to be an outwash of Henry Creek and consisted of a few thin flakes of gold.

The area prepared for working in 1979 (500 x 275 x 1.9m³ = 261,250 m³) is to be mined at the rate of 1000 m³/day for a period of 140 days. At 90% recovery of the gravels and a 126 day operation, the amount mined equals 126,000 m³ which, at \$5.90/m³, gives a yield of \$731,600 the first season. At the above rate Bench 1 will last approximately two seasons. This operation would be considered a test for the equipment used and should indicate the feasibility of a larger operation. A continuation of the stripping would be carried out in conjunction with the mining.

It must be pointed out that the lease contains numerous benches greater in extent than the #1. (See Fig. 1) In the pictures of Bench 1 a much larger unsampled bench is seen directly across Clear Creek. Many of the benches were panned early in the season and "counts" were seen in almost all pans tested. The potential gravel content of this lease appears to be in excess of 1 million m³.

OPERATION

The following table shows the estimated costs for mining 126,000 m³ of gravel in 140 days, employing 9 men on two 10-hour shifts per day:

<u>ESTIMATED OPERATING COSTS</u>		
	<u>Per Season</u>	<u>Per M³</u>
Labor Costs:		
*9 men @ \$150/day for 140 days	\$189,000	\$1.500
Labor turnover costs 1 man/month @ \$400	2,000	0.016
Operating Costs:		
Camp operation @ \$30/day/man for 140 d.	37,800	0.300
Fuel & parts, maintenance	42,000	0.333
Sampling & Assaying	8,000	0.063
Bench preparation & tailings disposal	15,000	0.119
Supervision & Engineering	10,000	0.079
Contingencies @ 10% of above	30,380	0.241
Administration (office overhead, land rental, legal, holiday pay, WCB etc. 12½%)	41,773	0.332
Depreciation (straight line over 5 yrs. on capital costs of \$470,000)	94,000	0.746
	<u>\$469,953</u>	<u>3.729</u>

*This rate includes overtime charges.

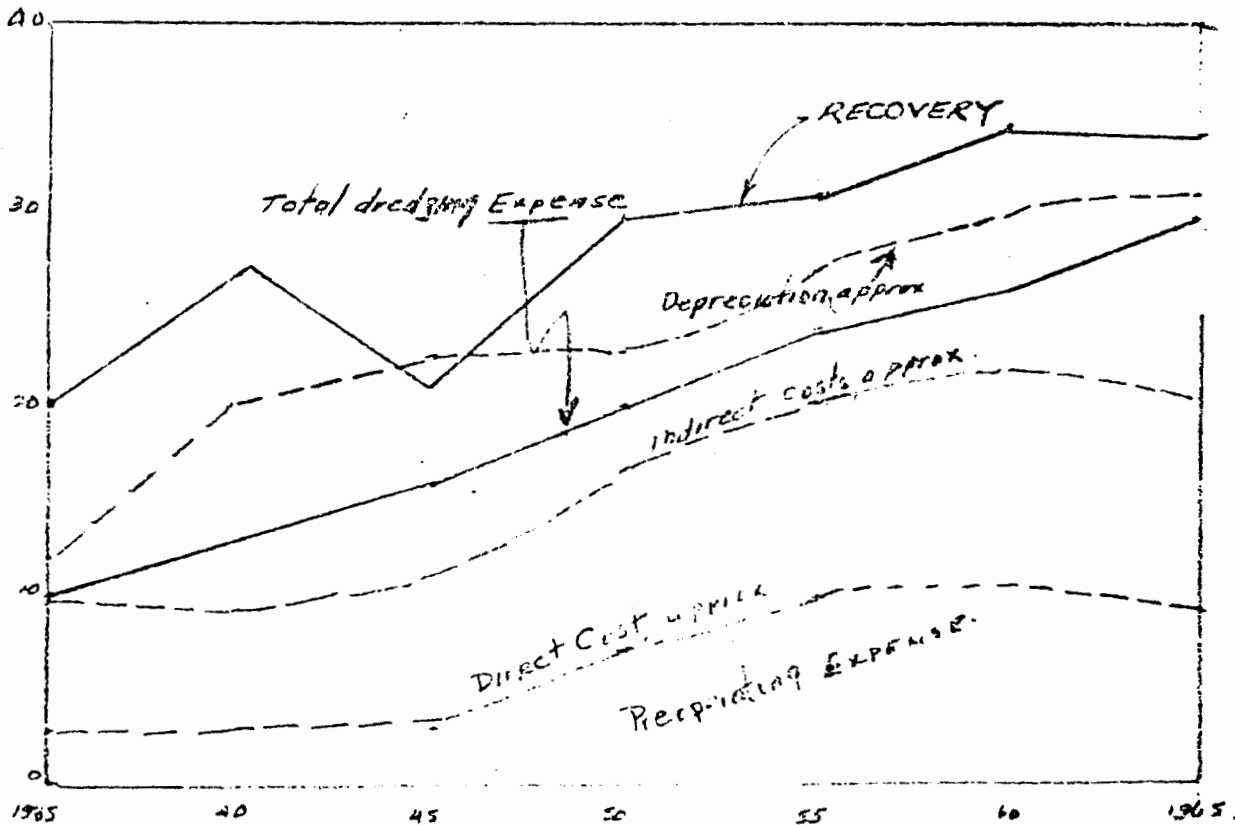
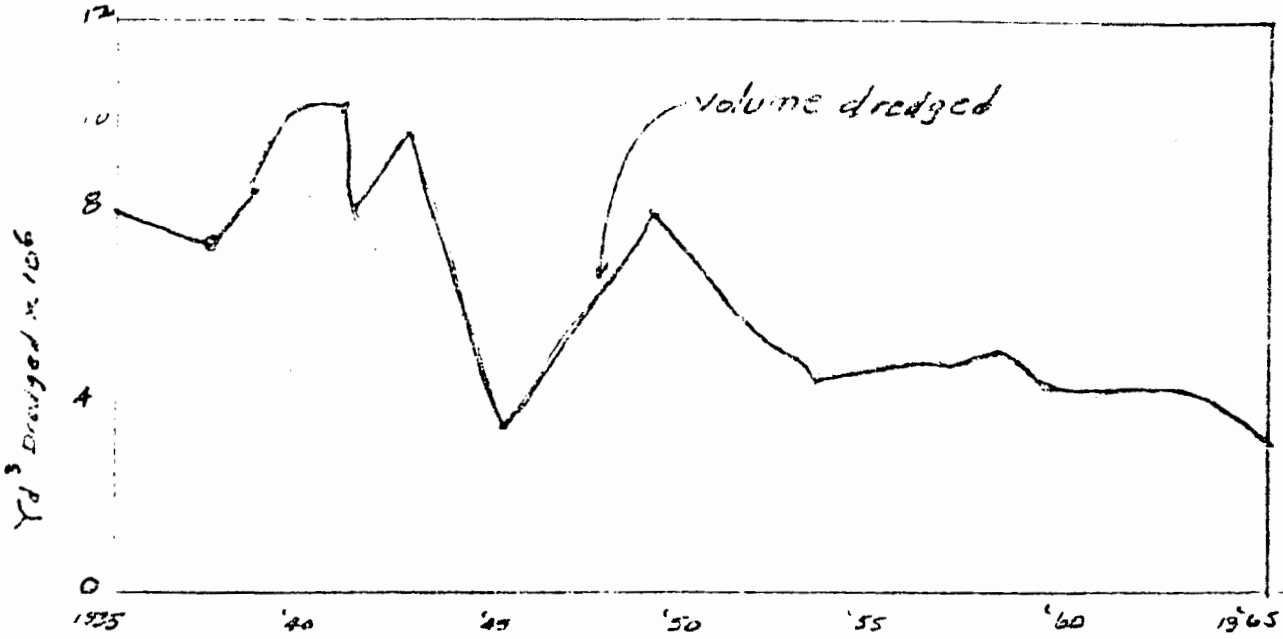
It is assumed that one DK8 crawler tractor and one rubber-tire 4 m³ bucket loader will provide sluice box feed at the rate of 1000 m³ of gravel per working day of 20 hours. A standby loader and additional sluice capacity will be necessary to ensure continuous production in the case of equipment breakdown.

The gold content from sampling was recovered by sluicing and has been used to calculate the average content per m³ of the deposit. It is assumed that recovery of gold in the sluice box will average 96% and operating time for the season will average 90%. Thus, during one season's operation 126,000 m³ will be treated in 140 days. Gold recovery, at a recovery rate of 96%, is expected to be 115,844.4 grams (3724.7 oz).

Income for the season, based on a gold price of Can. \$200 per oz., would be \$744,940. Total operating costs are calculated to be \$469,953, giving an operating profit of \$274,987.

Cash flow for the season would be profit plus depreciation, or \$368,987. Every Can. \$10 increase or decrease in the price of gold per oz. will influence the cash flow by \$37,247. Any improvement in the exchange rate on U.S. funds will decrease cash flow. Every 1.0% decrease in gold recovery will influence the cash flow by some \$7500.

UNIT COSTS & RECOVERIES
Yukon Consolidated Gold Corp., Ltd.
Dawson City, Y.T.



Total Volume Stripped.	54000000 Cyt.
" " Treated	102000000 "
" " Dredged	191000000 "
" RECOVERY	\$ (can) 53,000,000
AVERAGE RECOVERY	27.3 "
OPERATING COST	18.30 "

Fig 4

The economics of gold placer dredging has been well documented by Yukon Consolidated Gold Corp., Ltd. which operated dredging operations from 1935 to 1966. A graphical representation of their unit recovery and major elements of cost is shown in the attached graph.

Average recovery varied widely from year to year, from 14.2 to 44.1g/cu yard, depending on the tenor of ground being mined by most of the dredges. This is a variable that cannot be controlled because topography, drainage and amount of overburden to be removed govern the plan of dredging that is laid out years ahead for each dredge.

Average recovery and total costs for a period of 28 years were 27.3g and 18.8g (Can.)/cu yard, respectively, leaving 8.5g/cu yard, or a total of \$15,000,000 for payment of certain other expenses and taxes; disbursement to shareholders amounting to several million dollars, and profit. Cost of stripping and thawing frozen ground to prepare for dredging amounted to 31% of the total dredging costs, with only 52% of dredged ground being frozen. The graph clearly shows the rising trend of costs from 1940 onwards. Operations ceased when the total dredging expenses and recovery curves met or closely approached each other.

Present day costs are going to be higher, but proportionally, and the curves still hold for the method used nowadays. The %-cost of thawing permafrost remains the same; costs of operating earth-moving equipment, sluicing, and wages of personnel are higher. However, to offset this situation the price of gold is more than six times that of 1966. Apart from dredging operations the present day costs are similar to those described in the graph.

E. P. Sheppard

E. P. Sheppard, P.Eng.
Consulting Geologist



October 14, 1978

C E R T I F I C A T E

I, E. PERCY SHEPPARD, of the City of Vancouver, in the Province of British Columbia, hereby certify THAT:

I am a Consulting Geologist, at #1606-M, 1600 Beach Avenue, Vancouver, B.C., V6G 1Y7;

I am a graduate of Dalhousie University, with a B.Sc. in Geology, and have been active in mining exploration and geophysics for over thirty years;

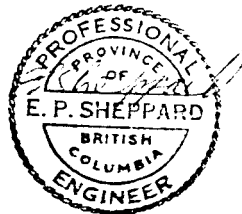
The accompanying report is compiled from data collected by the writer during a visit to the property on September 5-8, 1978, examining old records and pertinent Government reports, and observing operations in the area;

I have no direct or indirect interest in the property covered by this report, nor in the securities of Birch Industries Inc., and do not expect to receive any such interest as a result of writing this report;

I am a member of the Professional Engineers Association of British Columbia, the American Institute of Mining Engineers, and a Fellow in the Geological Association of Canada.

DATED AT VANCOUVER, B.C., this 14th DAY OF OCTOBER, 1978.

E. P. Sheppard.
E. P. Sheppard, P.Eng.



d

LIST OF REFERENCES

"SURFACE MINING" - AIME, Seeley W. Mudd Series, 1968

"REPORT ON CLEAR CREEK PLACER LEASE #4034"- Eric H.
Johnson, Geologist, 1978

GSC Map 1143A - MCQUESTEN, Yukon Territory

Publications of Yukon Consolidated Gold Corp. Ltd.,
Dawson City, Y.T.

GENERAL TESTING LABORATORIES

DIVISION SUPERINTENDENCE COMPANY (CANADA) LTD

1001 EAST PENDER ST. VANCOUVER, B.C. CANADA V6A 1W2
 PHONE (604) 254-1647 TELEX 04-507514 CABLE SUPERVISE

TO:
 BIRCH INDUSTRY
 8849 Oak Street
 Vancouver, B.C.

 Attn: Mr. R. Watson

CERTIFICATE OF ASSAY

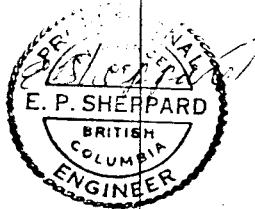
No.: 7809-1153 DATE: Sept. 13/78

We hereby certify that the following are the results of assays on:

Placer Concentrates

MARKED	Total							
	GOLD	SILVER	XXX	XXX	XXX	XXX	XXX	XXX
Placer Concentrates								
CC Sa #1	24.786							
Sa #2	98.061							
Sa #3	309.251							
Sa #4	365.1							

*no assay sheet.
 E.P.S.*



[Signature]
 L. MOIG

PROVINCIAL ASSAYER

NOT REJECTS RETAINED ONE MONTH. PULPS RETAINED THREE MONTHS. ON REQUEST
 UPLS AND REJECTS WILL BE STORED FOR A MAXIMUM OF ONE YEAR.

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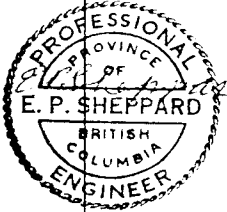
TO:
BIRCH INDUSTRIES
8849 Oak Street
Vancouver, B.C.

CERTIFICATE OF ASSAY

No.: 7809-2953 DATE: Oct. 3/73

We hereby certify that the following are the results of assays on: **Black Sand Concentrates**

MARKED	GOLD	XXXXX	XXX	XX	XX	XXX	XXX
	Au (mg)						
Black Sand Concentrates	Total gold in sample						
<u>Sample weight :</u>							
# 5 26.2 gm	1595						
# 6 19.8 gm	802						
# 7 29.5 gm	1030						
3 24.9 gm	1009						
# 9 26.9 gm	1693						
# 10 27.6 gm	1385						



REMARKS: Samples were totally fused and total gold were recovered.

N/ REJECTS RETAINED ONE MONTH, PULPS RETAINED THREE MONTHS. ON REQUEST PULPS AND REJECTS WILL BE STORED FOR A MAXIMUM OF ONE YEAR.

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L. WONG
PROVINCIAL ASSAYER

Analytical and Consulting Chemists, Bulk Cargo Specialists, Surveyors, Inspectors, Samplers, Weighers

MEMBER American Society For Testing Materials • The American Oil Chemists' Society • Canadian Testing Association
REFEREE AND OR OFFICIAL CHEMISTS FOR National Institute Of Oilseed Products • The American Oil Chemists' Society
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CLEAR CREEK CLAIMS

Dawson Area, Y.T.

SUMMARY

Birch Industries Inc. is the holder, by an Option Agreement, of a Placer Lease located on Clear Creek, Dawson City, Y.T. The lease covers 8 km of Clear Creek and its valley, approximately 88 km southeast of Dawson City.

The Stewart-Dawson Highway passes within 9.6-12.8 km of the lease. Access is by a road which branches off the highway near Barlow Lake. The valley and channels of the creek are constricted in several places by granitic outcrops, and the south part of the lease occupies a definite bend in the creek.

The Clear Creek placers have been worked for 55 years but the part covered by this lease has never been mined. Yukon Consolidated Gold Corp. dredged the left fork and upper main Clear Creek during 1950 and early 1960. 16 to 19 km of creek bed were mined. Operations were suspended in 1960.

During the past summer a section of Bench 1, 500x275x1.9m³, was stripped of trees and peat down into the black muck and left to thaw and drain. After the writer's visit this area was widened and stripped down to the silty and sandy layer which lies immediately above the gravels. With very little further work this bench can be mined during the 1979 season.

The operation is designed to treat 126,000 m³ in 140 working days. Gold recovery is expected to be 115,844.4 grams (3724.7 oz) at a recovery rate of 96%.

Income for the season, based on a gold price of Can. \$200 per oz., would be \$744,940. Total operating costs are calculated to be \$469,953, which will give an operating profit of \$274,987.

Cash flow for the season would be profit plus depreciation or \$368,987. Every Can. \$10 increase or decrease in the price of gold per ounce will influence the cash flow by \$37,247. Any improvement in exchange rates on U.S. funds will decrease the cash flow.

CONCLUSIONS

Sampling to date on the Birch Industries Inc. lease indicates the presence of gold-bearing gravels on Bench 1 sufficient to sustain a 1000m³ operation for a period of 140 days during the 1979 season.

.... cont.

Clear Creek Claims

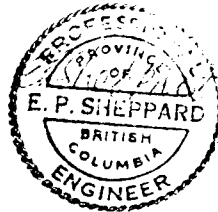
RECOMMENDATIONS

It is recommended that Birch Industries Inc. proceed with the proposed placer mining operation early in the 1979 season.

It is further recommended that sufficient funds be allocated to implement the operation.

E. P. Sheppard

E. P. Sheppard, P. Eng.
Consulting Geologist



Vancouver, B.C.
October 14, 1978

GEOLOGICAL REPORT
CLEAR CREEK PROPERTY
DAWSON MINING DISTRICT
Yukon Territory

FOR

CRESCENT MINES LTD.

By:
E. Percy Sheppard, P.Eng.
Consulting Geologist

January 28, 1980
Vancouver, B.C.

Clear Creek Property

C O N T E N T S

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Property Map

GEOLOGICAL REPORT
CLEAR CREEK PROPERTY
Dawson Mining District

CONCLUSIONS

Crescent Mines Ltd. holds 50% of the Clear Creek property under an Option to Purchase Agreement with Birch Industries Ltd. Birch Industries Ltd. has entered into an agreement with Clear Mines Ltd. to purchase the remaining 50% of the property, thereby making Crescent Mines Ltd. and Clear Mines Ltd. 50-50 partners in the joint venture to develop the property.

The property consists of one 8 km prospecting lease granted under the Yukon Placer Act, and is located 88 km east-southeast of Dawson City, Y.T. Access to the property is by an old road 7.5 km in length built by earlier mining companies.

Permafrost exists in most areas where a thick vegetation mat has accumulated. When this insulation layer is removed the gravels normally thaw to bedrock in one summer season from solar radiation.

Crescent Mines Ltd. carried out considerable strip-ping and trenching for the purpose of bulk sampling during the 1978-79 seasons. The fieldwork outlined a volume of 225,000 m³ with a grade of 1.095 grams per m³, or 0.035 oz./ m³. Using a basic price of \$200 per oz. the value is \$7.04 per m³ of Indicated Ore with a gross value of \$1,584,252.

Mining is planned at the rate of 1000 m³ per day for a period of 140 days. A 140-day season is estimated to give 90% of the total time, or 126 working days; thus, 126,000 m³ at \$7.04 per m³ yields \$887,040 for the first season.


cont...

Clear Creek Property

RECOMMENDATIONS

It is recommended that one of the Cost Estimate schedules included in this report be adopted for securing Capital and Operating costs.

It is further recommended that sufficient funds be allocated to implement this operation.


E. Percy Sheppard, P.Eng.



January 28, 1980
Vancouver, B.C.

GEOLOGICAL REPORT
CLEAR CREEK PROPERTY
Dawson Mining District
Yukon Territory

INTRODUCTION

The following report was prepared at the request of the President and Directors of Crescent Mines Ltd. Data for the report were obtained by the writer during a visit to the property on September 10-15, 1979, examining old records, observing operations along Clear Creek and adjacent properties, and studying pertinent Government reports. The publications of Yukon Consolidated Gold Corp. Ltd, Dawson, were of particular interest.

PROPERTY

The property consists of one 5-mile prospecting lease granted under the Yukon Placer Act. Before the property can be brought into production it must be converted to claims. Clear Creek will serve as the base line for the claims. Each claim lies along the creek for 150 metres and may be thrown left or right for 300 metres. When the lease is converted this spring, the property will consist of approximately 50 claims.

OWNERSHIP

50% of the property is presently held by Crescent Mines Ltd. under an Option to Purchase agreement with Birch Industries Ltd. Birch Industries Ltd. has entered into an agreement with Clear Mines Ltd. to purchase the remaining 50% of the property, thereby making Crescent Mines Ltd. and Clear Mines Ltd. 50-50 partners in the joint venture to develop the property.

LOCATION & ACCESS

The Clear Creek property is located approximately 88 km east-southeast of Dawson City, Y.T. Clear Creek begins on the slopes south of the Klondike-Stewart River divide near the headwaters of the South Klondike River and is a tributary of the Stewart River. It flows from east to west in the area of the claims but turns south as it enters the Tintina Trench.

Direct access to the lower end of the property is provided by a road which branches from the Dawson Highway near Barlow Lake. The major part of the access road was constructed by a dredging company to service the mining operation on the left fork of Clear Creek. The remainder of the road was built for mineral exploration on a group of claims staked under the Quartz Mining Act. The road distance from the highway to the property is approximately 7.5 kilometres.

TOPOGRAPHY

The gradient of the creek through the claims is approximately 24.4 metres per kilometre. The flow of Clear Creek is moderately swift and water is abundant for mining purposes.

The topography north of the creek exhibits more relief than the area to the south which is a relatively flat bench approximately 100 metres above creek bottom. The valley and channels of the creek are constricted in several places by bedrock outcrops. In some stretches gravel occupies the entire broad valley floor. The gravels and much of the bedrock are overlain by fine soils (loess) and vegetation consisting of black spruce, mosses and shrubs typical of a boreal forest assemblage. Deciduous vegetation is common near the creek and on dry hillsides not underlain by permafrost.

cont...

TOPOGRAPHY - cont.

Permafrost exists in most areas where a thick vegetation mat has accumulated. When the insulation layer is removed the gravels will normally thaw to bed-rock in one summer season from solar radiation. Quicker thawing is achieved by the use of water or intermittent stripping.

The summers are short and warm. Rains are infrequent but often violent and thunder storms are common. The winters are long and cold. Mining is carried out from early May until late September. The first snow usually occurs in October.

HISTORY

The mining history of Clear Creek appears to be poorly documented, probably because the region is removed from the logistic center of Dawson City and events were not recorded in newspapers of the era nor in numerous historical publications. The most reliable general information can be obtained from the Yukon Consolidated Gold Corp. reports covering a period from 1940 to 1955.

The chief event was the dredging of the left fork and upper main Clear Creek during the 1950's. 16 to 19 km of creek bed were mined by dredging and the operation ceased in 1955. The dredge was left intact at the north and south forks of Clear Creek. Mining concessions lapsed and smaller operations using bulldozers and loaders mined through some of the old tailings and in un-mined remnants left by the dredge.

The quality and size of the gold recovered is typical of the Klondike region. A considerable amount of coarse gold from other properties has been observed by the writer.

GEOLOGY

The bedrock types which underlie Clear Creek are metamorphic rocks of the Yukon group and granitic intrusions of Mesozoic Age. The Yukon group metamorphic rocks are usually considered to be the original source of the placer gold. Rocks of this unit are generally schist and gneisses as well as phyllites, marbles and quartzites in lesser abundance. All the rocks are products of the same regional metamorphic events which acted upon Pre-Cambrian or lower Paleozoic sedimentary and igneous rocks. Quartz veining is ubiquitous in the metamorphic rocks.

The igneous rocks which occur along Clear Creek in the region of the placer lease are dominantly coarse grained intrusions of granitic to granodioritic composition. Some syenites and true pegmatites may also be present. Coarse 2 cm to 10 cm feldspar phenocrysts are common in some of the granitic rocks.

The surficial geology of the bench prepared for mining by the Company may be described from the highest unit to bedrock as follows: The top 1.0 - 1.5 metres is composed of peat moss, black muck (humus) and fine, platy grained sand; the next 3 metres are gravels which rarely contain boulders in excess of 40 cm (the auriferous gravel).

PREVIOUS WORK

When Crescent Mines undertook the exploration of the lease a considerable amount of ground preparation in the form of stripping and trenching for the purpose of bulk sampling was carried out during the 1978-79 field seasons. This work outlined sufficient gold-bearing gravels to warrant initiating a profitable mining operation.

cont...

PREVIOUS WORK - cont.

The sample trenches, or pits, were dug for an average depth of 4 metres to either permafrost or bedrock. In most cases the cut was a full 4 metres. Control over the samples was kept by using a 1 m³ bucket. The resultant 1 m³ sample was sluiced for gold and the gold content and residue were collected, bagged and shipped to the lab for total gold analyses.

ORE RESERVE CALCULATIONS

Samples C-3 to J-3, taken in 1979 from the east part of the bench and S-2, S-3, S-5 to S-10, taken in 1978 from the west and east parts of the bench, were averaged and the result used as a grade of the bench prepared for mining.

Dimensions of the mining bench: 300 x 250 x 3 = 225,000 m³

Grade of the bench: 1.095 grams per m³, or 0.035 oz.

Using a basic price of \$200 per oz. the value is \$7.04 per m³ of Indicated Ore, or \$1,584,252.

The area prepared for mining in 1980 gives 225,000 m³ to be mined at the rate of 1000 m³ per day for a period of 140 days. A 140-day season is estimated to give 90% of the total time, or 126 working days; thus, 126,000 m³ at \$7.04 per m³ yields \$887,040 for the first season. At the above rate, this particular bench will last for approximately two seasons.

ESTIMATED CAPITAL & OPERATING COSTS - for going directly into mining the prepared area:

The following schedules are prepared to show the relative costs of purchasing or renting the necessary equipment.

"A" - PURCHASE ESTIMATE: Camp & Equipment, Set-up and Production Costs.

16 to 20 man Camp

F.O.B. Vancouver	\$ 87,000	
Moving cost to property	30,000	
Power plant & Electrical	40,000	
Water & Sewer material	5,000	
Camp oil tanks & hook-up	5,000	
Set up camp	15,000	
Bedding, dishes, camp supplies	<u>12,000</u>	
		194,000

Road improvement, Highway to Camp 15,000

EQUIPMENT TO PURCHASE

1 Used D-8 Cat	175,000	
1 New D-8 Cat.	265,000	
1 Used 980 Cat Loader	150,000	
1 Sluice Box	55,000	
1 Pump (6000 gal.P.M.)	20,000	
Pipe, Tanks, Tools etc.	50,000	
Move-in Cost	<u>40,000</u>	
		775,000

Set up pump, tanks & sluice box & prepare site for operation 25,000

Sub Total...\$1,009,000

Allow two month's operation on production before cash flow starts, @ \$271,000 x 2 = 542,000

Allow for unforeseen costs 100,000

\$1,651,000

Note:

Add 1½ months @ 271,000 plus 10% 447,000

Shut-down & winterizing camp & equipment 10,000

\$2,108,000

cont...

SCHEDULE "A" - cont.

Monthly cost estimates for 2-shift, 30-day
per month production operation:

Insurance	\$ 2,000
Wages, Incl. fringe, fares, board loss, etc.	184,000
Supervision & Management	15,000
Fuel	45,000
Supplies, Repairs & Main- tenance	15,000
Travel, Accounting, Legal, etc.	<u>10,000</u>
	\$271,000

Note:
Cookhouse and camp supplies are costed
in Wages as "Board Loss"

SCHEDULE "B" - ESTIMATES:

Camp & Limited Equipment Purchase, Set-up
& Production Costs, RENTING 2 D-8 Cats and
980 Cat Loader.

16 to 20 man Camp

As per Schedule "A"	\$194,000
Road Improvements, Highway to Camp	15,000

EQUIPMENT TO PURCHASE

1 Sluice box	55,000	
1 Pump (6000 Gal. P.M.)	20,000	
Pipe, Tanks, Tools etc.	40,000	
2 Trucks (1 Fuel)	20,000	
Move-in Costs	<u>20,000</u>	
		155,000

Set up Pump, Tanks & Box for operation	25,000
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Allow two month's operation on production before cash flow starts, @ \$351,000 x 2 =	<u>702,000</u>
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Sub Total	\$1,091,000
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Allow for unforeseen costs	<u>100,000</u>
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Total . . .	\$1,191,000
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Note: To complete season, add 1½ months @ \$351,000 plus 10%	580,000
Shut-down costs & winterizing camp & equipment	<u>10,000</u>
	\$1,781,000

cont...

SCHEDULE "B" - cont.

Monthly cost estimates for 2-shift, 30-day per month production operation, using 2 D-8 Cats and 1-980 Cat Loader at RENTAL RATES:

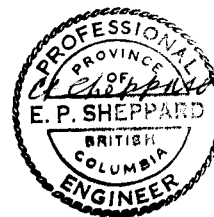
Rent - 2 D-8 Cats & 1-980 Loader	\$180,000
Insurance	1,000
Wages, Incl. Fringe, Fares & Board	120,000
Supervision & Management	15,000
Fuel	18,000
Supplies, Repairs & Maintenance	7,000
Travel, Accounting, Legal, etc.	<u>10,000</u>
	\$351,000

Note:
Cookhouse and camp supplies are costed in Wages as "Board Loss"

- - -

E. P. Sheppard
E. P. Sheppard, P.Eng.

January 28, 1980
Vancouver, B.C.



C E R T I F I C A T E

I, E. PERCY SHEPPARD, of the City of Vancouver, in the Province of British Columbia, hereby certify THAT:

I am a Consulting Geologist, at #1606-M, 1600 Beach Avenue, Vancouver, B.C., V6G 1Y7;

I am a graduate of Dalhousie University, with a B.Sc. in Geology, and have been active in mining exploration and geophysics for over thirty years;

The accompanying report is compiled from data collected by the writer during visits to the property in 1978 and September 10-15, 1979, examining old records, pertinent Government reports, and observing operations in the area; I have no direct or indirect interest in the property covered by this report, nor in the securities of Crescent Mines Ltd., Birch Industries, Ltd., or Clear Mines Ltd., and do not expect to receive any such interest as a result of writing this report;

I am a member of the Professional Engineers Association of British Columbia, the American Institute of Mining Engineers, and a Fellow in the Geological Association of Canada.

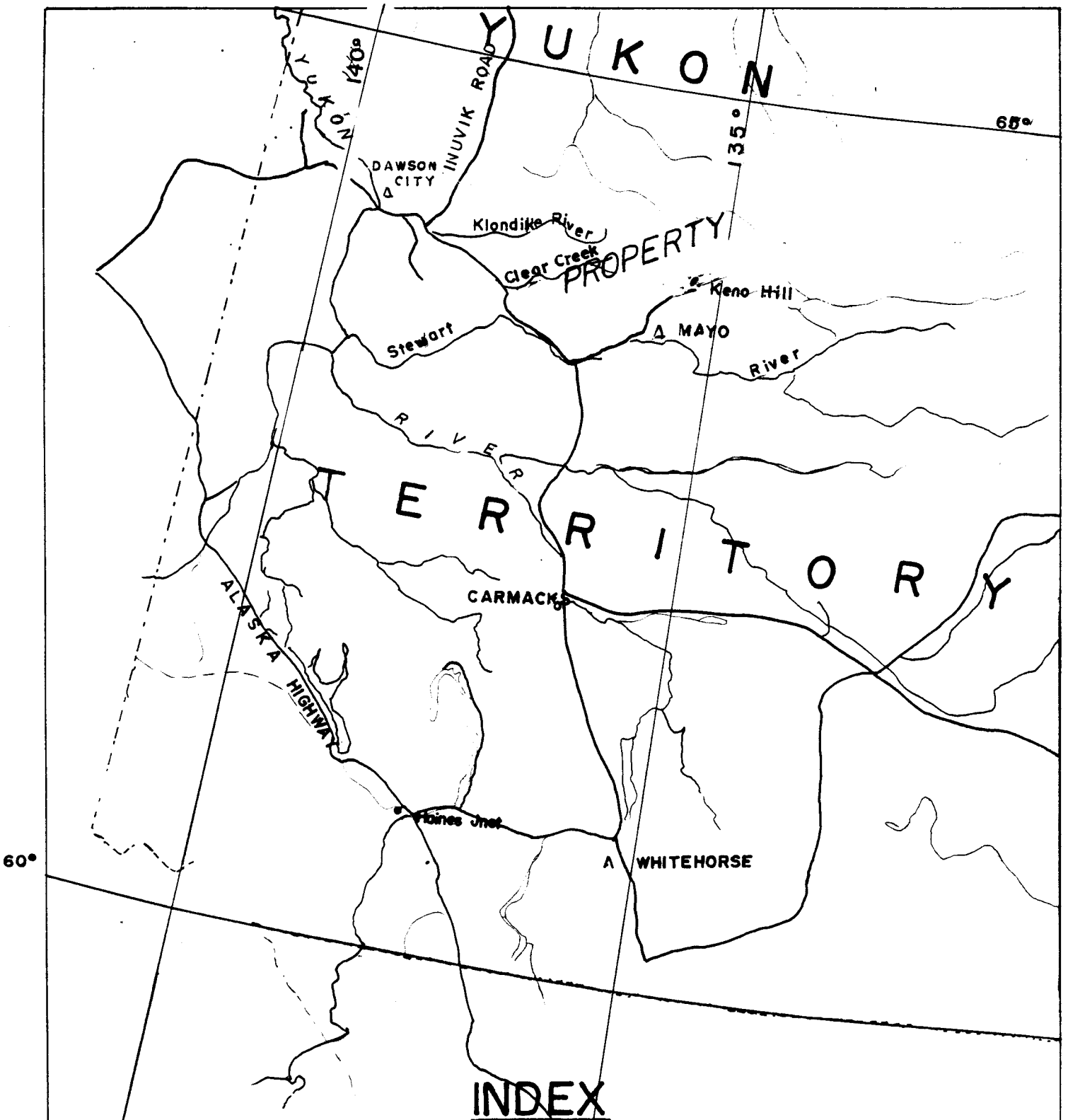
DATED AT VANCOUVER, B.C., this 28th day of January, 1980.

E.P. Sheppard

E. Percy Sheppard, P.Eng.

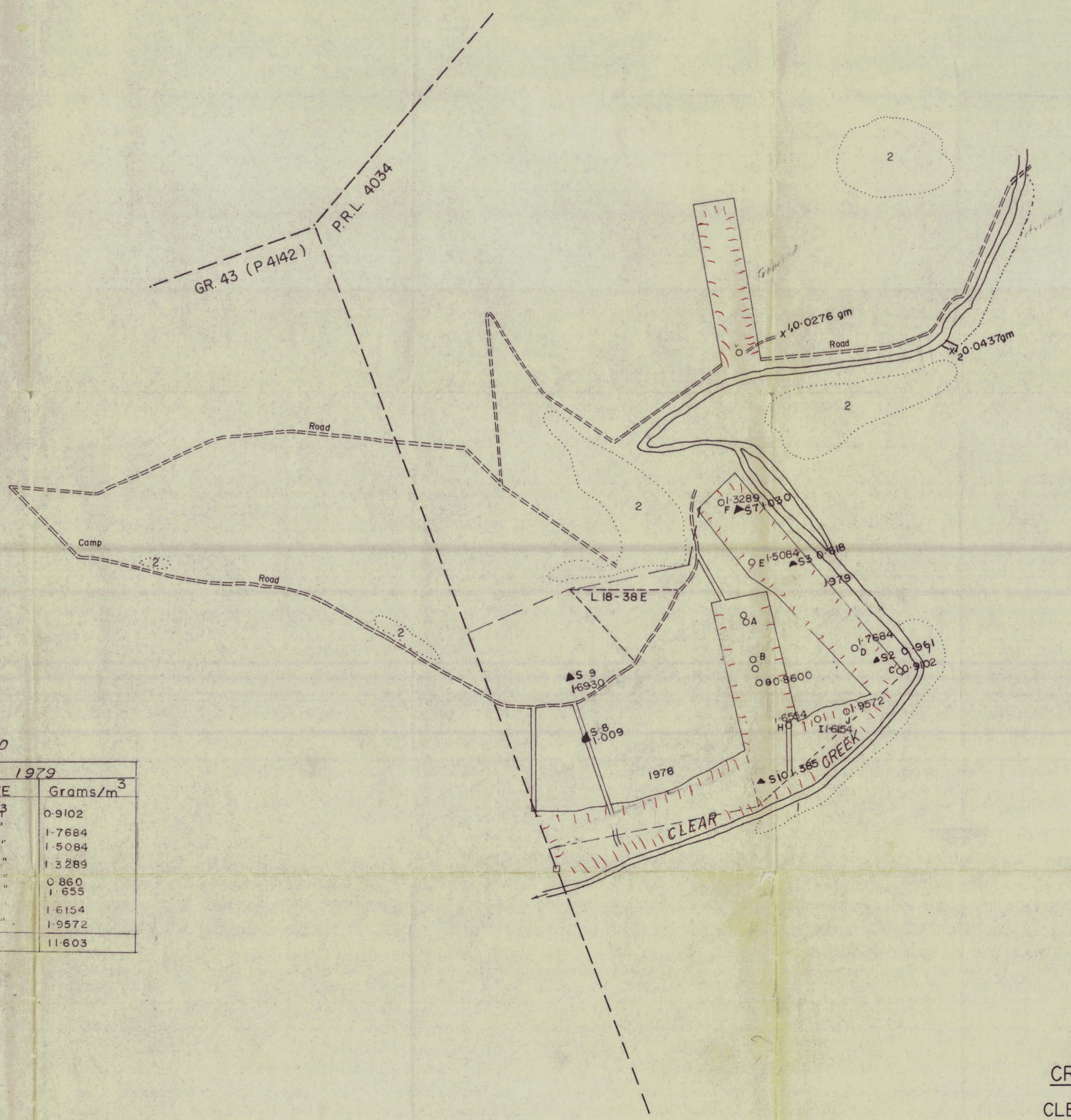
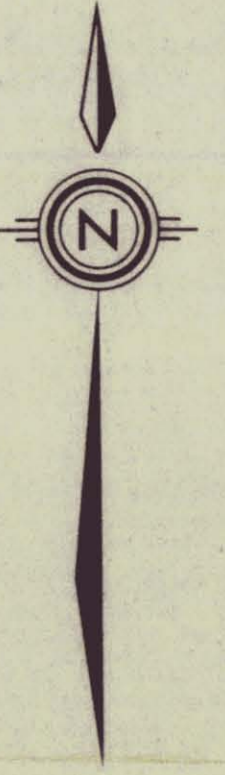


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CRESCENT MINES LTD
CLEAR CREEK PROPERTY
DAWSON AREA, YUKON TERRITORY

SCALE 1:2500
JANUARY, 1980



SAMPLE RECORD

1978			1979		
NO	SIZE	Grams/m ³	NO	SIZE	Grams/m ³
S 2	1/2 m ³	0.961	C 3	1 m ³	0.9102
S 3	1/2 "	0.618	D 3	1 "	1.7684
S 4	1/2 "	0.730	E 3	1 "	1.5084
S 5	1 m	1.595	F 3	1 "	1.3289
S 6	1 "	0.800	G 3	1 "	0.860
S 7	1 "	1.030	H 3	1 "	1.655
S 8	1 "	1.009	I 3	1 "	1.6154
S 9	1 "	1.693	J 3	1 "	1.9572
S 10	1 "	1.385	S		11.603
10		9.056			

- LEGEND
- 1 Quartz - mica schist often grains (chlorite) (1 mm quartz lamellae)
 - 2 Feldspar porphyritic granitic rock
 - x Pan sample
 - A 10 J O 1 cubic metre sample
 - S ▲ 3 1978 Samples
 - C 3 O 1979 " "

CRESCENT MINES LTD.
 CLEAR CREEK PROPERTY
 DAWSON MINING DISTRICT
 YUKON TERRITORY

