

PROPERTY EXAMINATION & EVALUATION  
REPORT  
PLACER LEASES TO PROSPECT  
CLAIM SHEETS 115-0-7, 115-0-10  
for KELMOUNT EXPLORATIONS LTD. (NPL)  
by G.G. CARLSON, P.ENG.  
R.G. HILKER LTD.  
AUGUST 10, 1973

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YUKON TERRITORY, CANADA

"LAND OF THE MIDNIGHT SUN"

PROPERTY EXAMINATION & EVALUATION  
REPORT

on the

PLACER LEASES TO PROSPECT  
#3084 and #3104

63°30' Latitude 63°20'  
138°55' Longitude 138°45'

DAWSON MINING DIVISION, Y.T.  
SHEETS 115-0-7, 115-0-10

for

KELMOUNT EXPLORATIONS LTD. (NPL)  
VANCOUVER, B.C.

by

G.G. CARLSON, P.ENG.  
R.G. HILKER LTD.  
WHITEHORSE, YUKON TERRITORY

AUGUST 10, 1973

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## INTRODUCTION

### GENERAL

During the past year considerable interest has been revived in the Klondike, Yukon Territory placer gold field due to the increase in the price of gold. Several of the creeks in the Dawson area are being re-prospected for the purpose of renewing gold placer mining operations. A few of the mining operations are small and considered to be "sniping" cleanups on the sides of creeks where dredging operations have been carried out in the past. On Hunker Creek, on bench claims of the White Channel gravels, a large scale hydraulic monitoring operation started in June for recovery of gold at \$1.00/cubic yard in an estimated ten million cubic yard reserve. Several sluicing operations are being worked by independent miners by removing muck and pushing gravels by crawler type tractor into metal sluice boxes. The sluicing operations are located on Bonanza, Eldorado, Hunker, Dominion, Sulphur, Quartz, and Eureka Creeks, and the gulches, tributaries and pups that drain into these creeks.

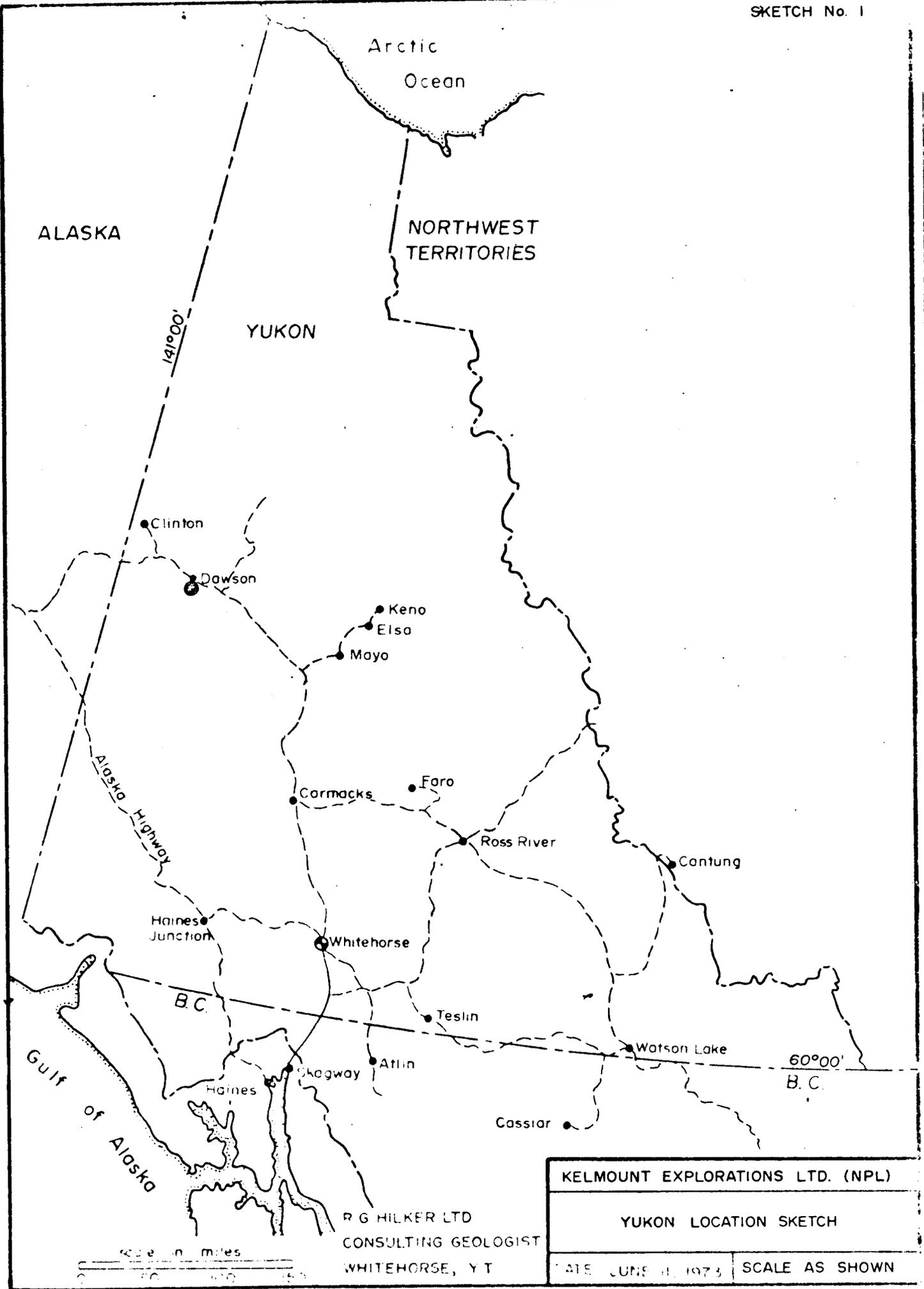
Placer mining ground can be staked in the Yukon by two methods: the first is by staking a placer creek claim 500 feet in length down the centre base line of a creek and a throw 1000 feet to either side; or secondly, by staking a Yukon Placer Creek Mining Lease that is a minimum of one mile and maximum of five miles in length along the centre base line, with a throw of 1000 feet to either side. Placer bench claims can also be staked on the sides of creeks.

Mr. Victor Neal Beaumont and Mr. Roy Shatzko, both of Vancouver, B.C., visited the Dawson area on May 31 and June 1, 1973 to explore

the potential of acquiring placer mining property in the Klondike gold field area. On May 31st a four mile Yukon Placer Mining Lease To Prospect was staked on the upper part of Black Hills Creek in the name of Roy Shatzko. The lease was recorded in the Dawson Mining Recorder's office on June 12, 1973 upon payment of a \$200.00 recording fee. Mr. Beaumont later authorized the staking of an additional five mile lease on the lower part of Black Hills Creek. On June 13th, 1973 a five mile Yukon Placer Mining Lease named Roxy I was staked in the name of George E. Howell and recorded at the Dawson Mining Recorder's office on June 25th, 1973 on payment of a \$250.00 recording fee.

Mr. V.N. Beaumont authorized the geological consulting firm of R.G. Hilker Limited of Whitehorse, Y.T. to prepare an engineering evaluation report on the four mile R. Shatzko and the five mile G.E. Howell placer leases located on Black Hills Creek. The evaluation report was to be prepared in the company name of Kelmount Explorations Ltd. (NPL) with an office located at 400-890 W. Pender Street, Vancouver 1, B.C.

R.G. Hilker, P.Eng. assisted in the staking and recording of the R. Shatzko and G.E. Howell Yukon Placer Leases on May 31st, 1973 and June 13th, 1973 and has been on the placer property on these dates. G.G. Carlson, P.Eng. visited the R. Shatzko and the Roxy I placer leases on July 24th, 1973 for the purpose of preparing an evaluation report on the property for Kelmount Explorations Ltd. (NPL).



ALASKA

NORTHWEST TERRITORIES

YUKON

Arctic Ocean

Clinton

Dawson

Keno

Elsa

Mayo

Carmacks

Faro

Ross River

Contung

Haines Junction

Whitehorse

Teslin

Watson Lake

B.C.

60°00'  
B.C.

Gulf of Alaska

Cassiar

Scale in miles

0 100 200

KELMOUNT EXPLORATIONS LTD. (NPL)

YUKON LOCATION SKETCH

DATE JUNE 11, 1973

SCALE AS SHOWN

R G HILKER LTD  
CONSULTING GEOLOGIST  
WHITEHORSE, Y T

## DISCOVERY OF THE KLONDIKE GOLD DEPOSITS

"In the summer of 1882 twelve miners crossed Dyea pass and spent the winter at Fort Reliance. One of these miners was Joe Ladue who later became identified with the development of the territory and who subsequently occupied the trading post at Ogilvie. In 1886 about 100 miners were rocking bars along the Stewart river, the average per man for the season, according to Mr. Ogilvie being about \$100 per day. In the autumn of 1886 coarse gold was discovered in the Fortymile river, and as soon as the news of the discovery reached the Stewart the usual stampede occurred. In this year the number of miners in the Yukon basin may be stated at 250, there being 200 on the Fortymile and about 50 on the Stewart.

In 1894 Robert Henderson, of Nova Scotia, and a small party arrived in the territory. They prospected along the bars of the upper Yukon and rocked out \$54.00 in fine gold at the mouth of the Pelly. When they reached the trading post at Ogilvie, Joe Ladue contributed the latest information respecting the strikes or discoveries which had been made. As a result of the information furnished by Ladue and after a short stay at Ogilvie, Henderson started for Indian river. He prospected along this stream to the mouth of what is now known as Quartz creek, up which he proceeded to the divide on Hunker. No large prospects were found, and Henderson returned to Ogilvie for provisions. During the following year Henderson prospected on various creeks in the Watershed of Indian river. After cleaning up about \$600.00 for the season on Quartz creek he crossed the divide to Gold Bottom where he found a two cent prospect. During the summer of 1896 Henderson made a trip to Ladue's post at Ogilvie for supplies. The water in Indian river was low and he knew that it would be almost impossible to proceed up that stream. He came to the conclusion that Gold Bottom flowed into a tributary of the Yukon some distance below Ogilvie so he proceeded down the Yukon to its confluence with the Tron Deg, which is the Indian name for the Klondike, where he found George W. Carmack and two Indians named "Skookum Jim" and "Tagish Charlie," who were fishing for salmon. In accordance with the usual custom Henderson announced the discovery he had made, and invited Carmack to stake on Gold Bottom. A short time afterwards Carmack and the two Indians proceeded to Gold Bottom and staked claims near to where Henderson and his party were working. Henderson states that he advised Carmack and the Indians to cross the divide and prospect in the gravels of what is now known as Bonanza creek. He asked Carmack to advise him, by sending back an Indian, if good prospects were discovered.

As a result of this trip rich prospects were discovered on Discovery Claim, which Carmack staked as well as No. 1 below. "Tagish Charlie" staked No. 2 below and "Skookum Jim," the other Indian, No. 1 above. Carmack and the Indians at once proceeded to Fortymile and filed their applications with the recorder for the district. Up to this time the majority of the miners in the territory had been working on Fortymile, but as soon as the discovery on

Bonanza became known all the miners in the Fortymile district stampeded to the new strike and in a short time Bonanza creek was staked from end to end. Meantime, Henderson and his party were working on Gold Bottom, and did not hear of the new strike until all the creek had been staked. Extensive prospecting at once commenced at Bonanza, and in a few months was revealed the remarkable wealth contained in the gravels of Bonanza and Eldorado creeks.

As soon as the news of the rich strike reached the outside world, thousands of gold seekers immediately started for the Klondike. Probably never before in the history of gold mining camps has there been such a rush of people from almost every country in the world and of almost every vocation in life, as was seen in that irresistible stream of fortune-seekers, who climbed the Chilkoot pass and pressed on to lake Lindeman, where the most primitive boats and other flimsy craft were hastily constructed for the journey of 500 miles down the Yukon river to Dawson."

## BLACK HILLS CREEK

Named after the Black Hills of South Dakota, the creek was discovered and worked in 1898 and again in 1906. In 1920 a stampede started by Carpenter and Marsh resulted in the staking of 80 claims above and 40 claims below the discovery bench workings on Dome Creek.

In 1936 the creek was again the center of interest when, after the previous two years of prospecting and land acquisition, the Yukon Consolidated Gold Company drilled 327 test holes. Their reason for abandoning the property thereafter is said to be marginal ground combined with high operating costs in this remote area.

In 1937 Mr. Carpenter and associates continued preparing on the creek for the following year in which he alone, recovered 23 ounces and during which there was a mild revival in interest with claims being restaked. In 1939 they worked ground producing as much as \$5/12 cubic feet. That same year Canadian Placers sunk 27 shafts on ground 5 above and 17 below discovery, continuing the operation in 1941.

J. Lacross and F. Whitehead, two goldminers from Alaska, worked on the creek in 1956 with a dragline, a drill and a hydraulic operation.

The best ground, from the 1936 Black Hills Creek description, is on the 1920 "discovery" bench measuring 2500 feet by 300 feet. Here the gravels are 10 - 20 feet thick, and this was the location of the largest working. Downstream, for more than 8 miles, scattered creek and bench workings of no economic importance indicated the presence of extensive submerged gravels. Upstream the bench continues

for over a mile. Virgin ground continued to Ten Above; and from there to Forty Above it was said that the ground paid well in places.

Present operators have staked leases over the length of the creek. Black Creek Mining has the central portion and has done assessment work; Kelmount Explorations Ltd. (NPL) hold the upper and lower portions of the creek and are considering commencing test work on their holdings.

YUKON PLACER MINING ACT

An Act respecting placer mining in the Yukon Territory is consolidated in the Yukon Placer Mining Act R.S.C. 1952, C.300 as amended by 1966-67, cc. 25, 96, s. 64 and the recent Yukon Placer Mining Act R.S., cY-3 amended by R.S., c. 49 (1st Supp.).

It is noted in the recent Yukon Placer Mining Act R.S., c. 49 that:

"All persons making use of this consolidation are reminded that it has no parliamentary sanction; that the amendments have been embodied only for convenience of referee, and that the original Act and amendments thereto should be consulted for all purposes of interpreting and applying the law."

The Yukon Placer Mining Act contains the regulations that placer claims may be acquired and kept in good standing by the lessees. The Yukon Territory is divided into four mining recorder's districts and the Black Hills Creek area is located in the Dawson Mining District. Claim maps for the Dawson area are available from the local mining recorder's office.

## STAKING PLACER CLAIMS

"All claims must be as nearly as possible rectangular in form, and marked by two legal posts firmly fixed in the ground. The line between the posts must be well cut out, so that one post may, if the surface of the ground will permit, be seen from the other. One of the flatted sides of each post must face the claim and on each post must be written on the side facing the claim a legible notice stating the name or number of the claim, or both if possible, its length in feet, the date when staked, and the full Christian and surname of the locator. The posts, which are numbered 1 and 2 respectively, must not be moved except No. 2, which may be moved by a Dominion land surveyor if the distance between the posts exceeds the length prescribed by the Act, but not otherwise.

(a) Creek Claims. - On creek claims the posts must be fixed in the ground on the base line at each end of the claim. Creek claims must not exceed 500 feet in length measured along the base line established or to be established by government survey. The rear boundaries of the claim shall be parallel to the base line, and shall be defined by measuring one thousand feet on each side of such base line. If the base line has not been established, the claim may be staked along the general direction of the valley of the creek, but when the base line is established, the boundaries thereby defined shall be conformed to.

(b) Other Claims. - A claim situated elsewhere than on a creek must not exceed five hundred feet in length parallel to the base line of the creek toward which it fronts, by one thousand feet. A claim fronting on a creek or river must be staked as nearly as possible parallel to the general direction of the valley of the creek or river, and shall conform to the boundaries which the base line, when established, shall define.

(c) Discovery Claims. - Any person locating the first claim on any creek, hill, bench, bar or plain, or locating a claim on any creek, hill, bench, bar or plain upon which there is no recorded claim, is entitled to a claim fifteen hundred feet in length. If, however, there are two locators, they shall be entitled to two claims, each of twelve hundred and fifty feet in length, but if there is a party consisting of more than two locators, they shall be entitled to two claims each of one thousand feet in length, and for each member of the party beyond two, a claim of the ordinary size only."

Each placer claim located in the Yukon Territory requires \$200.00 assessment work for each year to renew the grant for an additional year. A renewal fee of \$10.00 is payable for each year the grant of a claim is applied for.

In the Yukon Territory, "Placer Leases To Prospect" Section 92

Yukon Placer Mining Act, can be staked in a similar way as Placer Claims are located. However, the Placer Leases can cover a minimum length of one mile and a maximum length of five miles down the centre line of a creek. Assessment work of \$1,000.00 per mile of Placer Lease is required for a yearly renewal of the grant to prospect. The Prospecting Leases can be only held for a maximum of three years, at the end of which time period the lease can be staked into placer claim or abandoned by the lessee in whose name the Placer Lease grant has been recorded. Only a single Placer Lease To Prospect can be held by an individual person while the grant to prospect is in good standing.

LOCATION AND ACCESS

The Kalmount Explorations Ltd. (NPL) Placer Leases are located on the upper and right hand fork of Black Hills Creek (Roy Shatzko Lease) and on the lower part of Black Hills Creek (Roxy I Lease). The upper lease is 40 miles southeast of Dawson and is four miles long. The Roxy I lease is 52 miles southeast of Dawson and is five miles long (Sketch #2).

Access to the area is difficult at present because there is no road from Granville to Black Hills Creek. However, a truck road into Eureka Creek was made by placer operators during 1972 and a rough tractor trail from Eureka to Black Hills Creek was constructed late last fall. The tractor trail crosses the Indian River south of Granville and follows mainly high ground to the head of Eureka Creek. The main problem with the use of a crawler type of tractor for access to Black Hills Creek is the required constant supply of fuel oil for the machine. A fuel oil supply can be carried on a steel sleigh in 45 gallon drums or by mounting a 500 gallon tank on a sleigh and pulling the rig with the tractor.

Access during staking and property examination was by a Trans North Turbo Air Jet Ranger helicopter stationed in Dawson.

The road from Dawson, up Hunker and Dominion Creeks to Granville is passable in a four wheel drive and/or partly by pickup truck. Access from Granville to Black Hills Creek would require a minimum sized tractor in the range of a D-7E Caterpillar Tractor, or larger, that is equipped with a ripper.

The old Dawson - Whitehorse road passes along Black Hills

Creek but is no longer recognizable. On the upper part of Black Hills Creek the east side of the creek is best for a tractor road while the west side of the creek has dryer ground for road building purposes on the lower Roxy I lease.

A possible route from the existing Eureka Creek truck road to Black Hills Creek is by way of Steele Creek. The old abandoned Whitehorse to Dawson road passes along Black Hills Creek and Steele Creek but has been completely obliterated by new tree growth.

YUKON PLACER LEASES

The following Yukon Placer Leases (see Sketches #3 and #4), located on claim sheet number 115-0-7 Black Hills Creek, have been filed in the Dawson, Y.T. Mining Recorder's office (Copies of the applications for the Roy Shatzko and Roxy I leases are in the appendix of this report.):

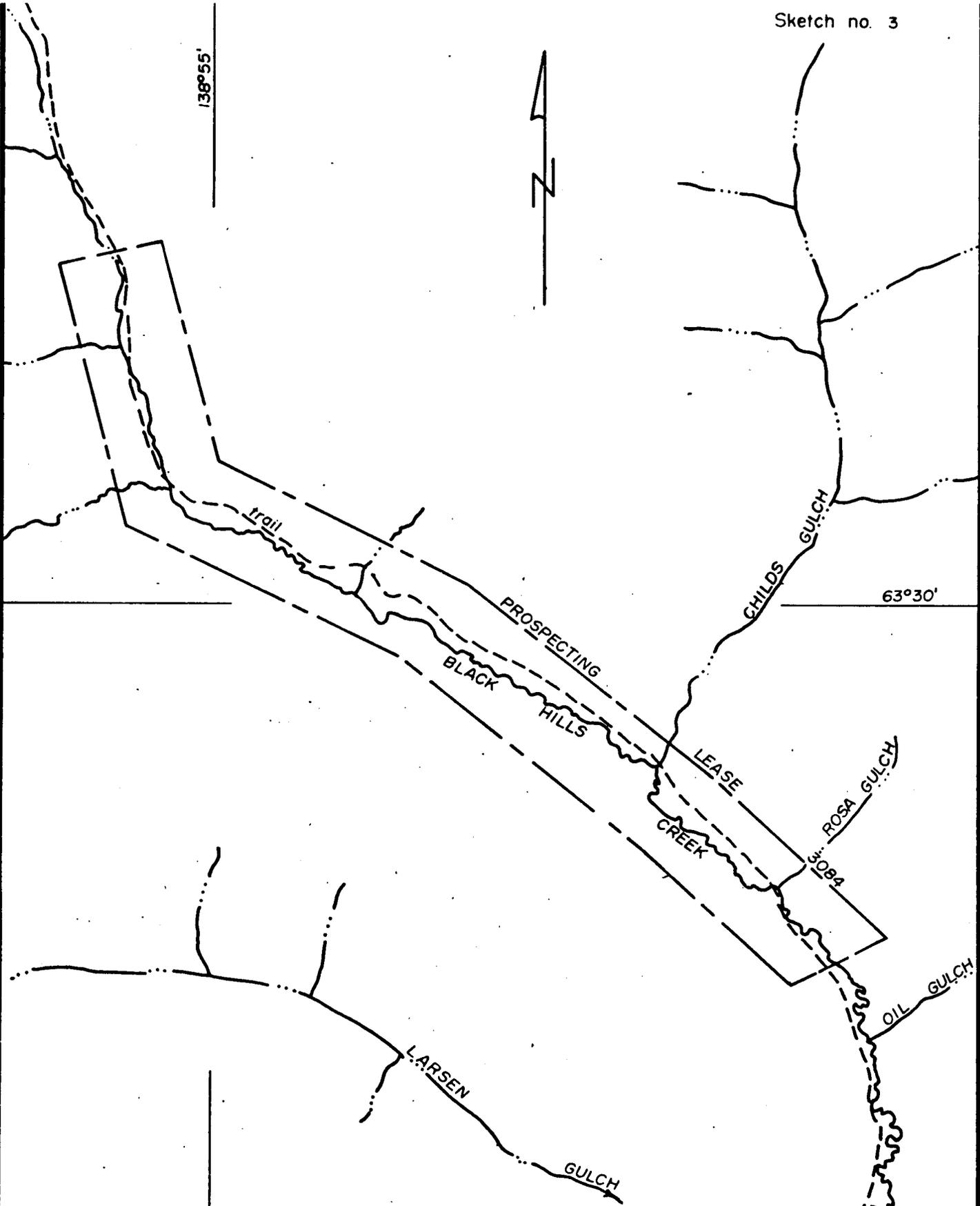
<u>Name of Lease</u>	<u>Staking Date</u>	<u>Recording Date</u>	<u>Grant Number</u>
Roy Shatzko	May 31, 1973	June 12, 1973	3084
Roxy I George E. Howell	June 13, 1973	June 25, 1973	not granted to date assigned #3104

The Roxy I lease is to be transferred to E. Colin Riley and a copy of the "Assignment Of Prospecting Lease" is contained in the appendix of the report. The lease cannot be transferred until the grant lease number has been assigned. There is a normal six to eight weeks time lapse between the recording date of the Application For A Lease To Prospect - Schedule G form and the assignment of a grant number. No problem is anticipated for the assignment of the grant for the Roxy I lease.

Mining of placer gold is permitted on a Yukon Placer Lease To Prospect for the period of the three years duration of the lease. The royalty on all gold shipped from the Yukon is levied and collected on a rate of 2½ per cent of its value, and is gold dust as mined, or in the form of bars.

The surface rights of a placer claim are not granted to any person other than the owner of the claim until the owner is given an opportunity to acquire such rights.

138°55'



63°30'

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CONSULTING GEOLOGIST  
WHITEHORSE, Y.T.

NTS SHEETS 115-0-7, 10

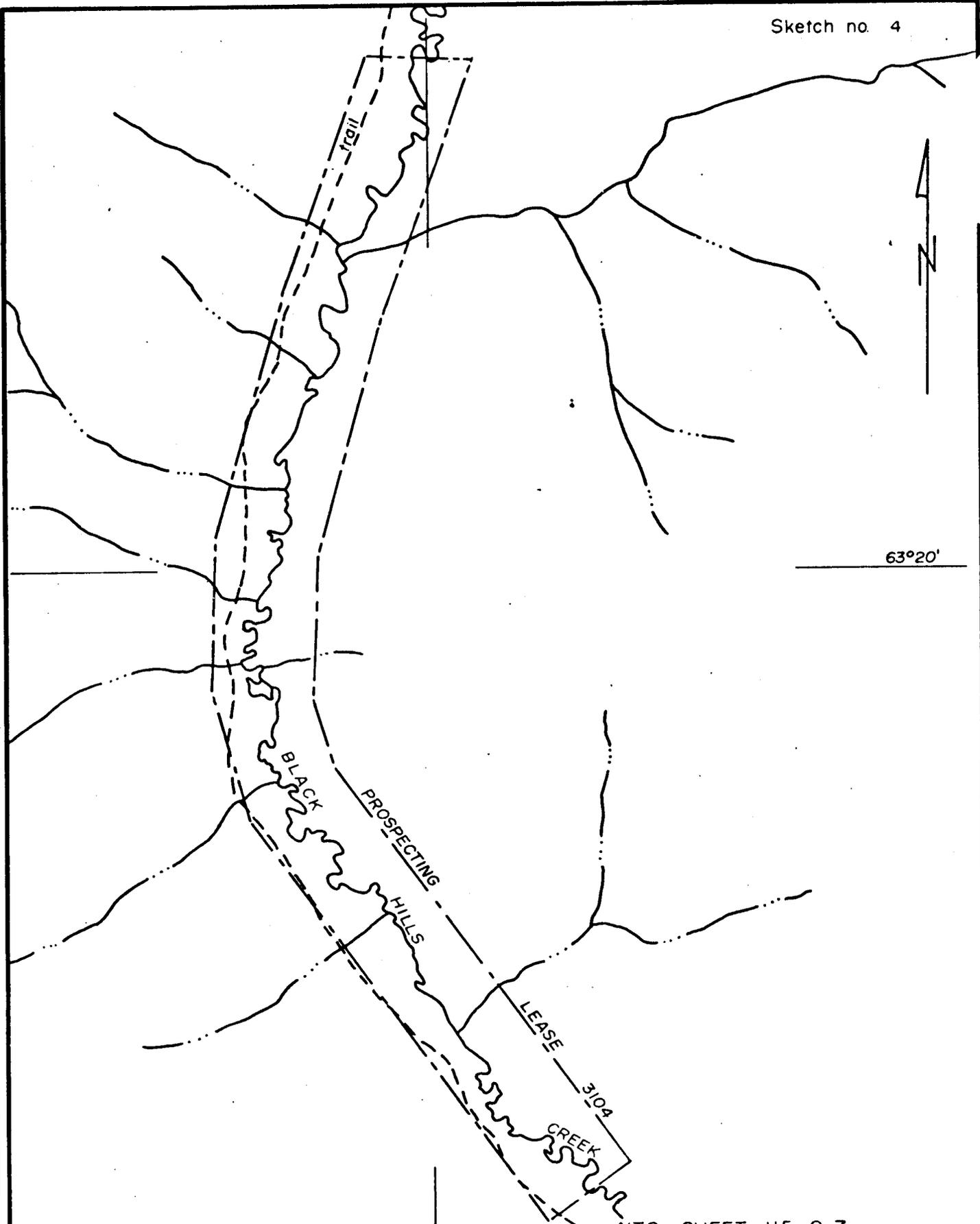
KELMOUNT EXPLORATIONS LTD. (NPL)

LEASE TO PROSPECT 3084

LOCATION SKETCH

DATE: JULY 18, 1973

SCALE: 1" = 1/2 mile

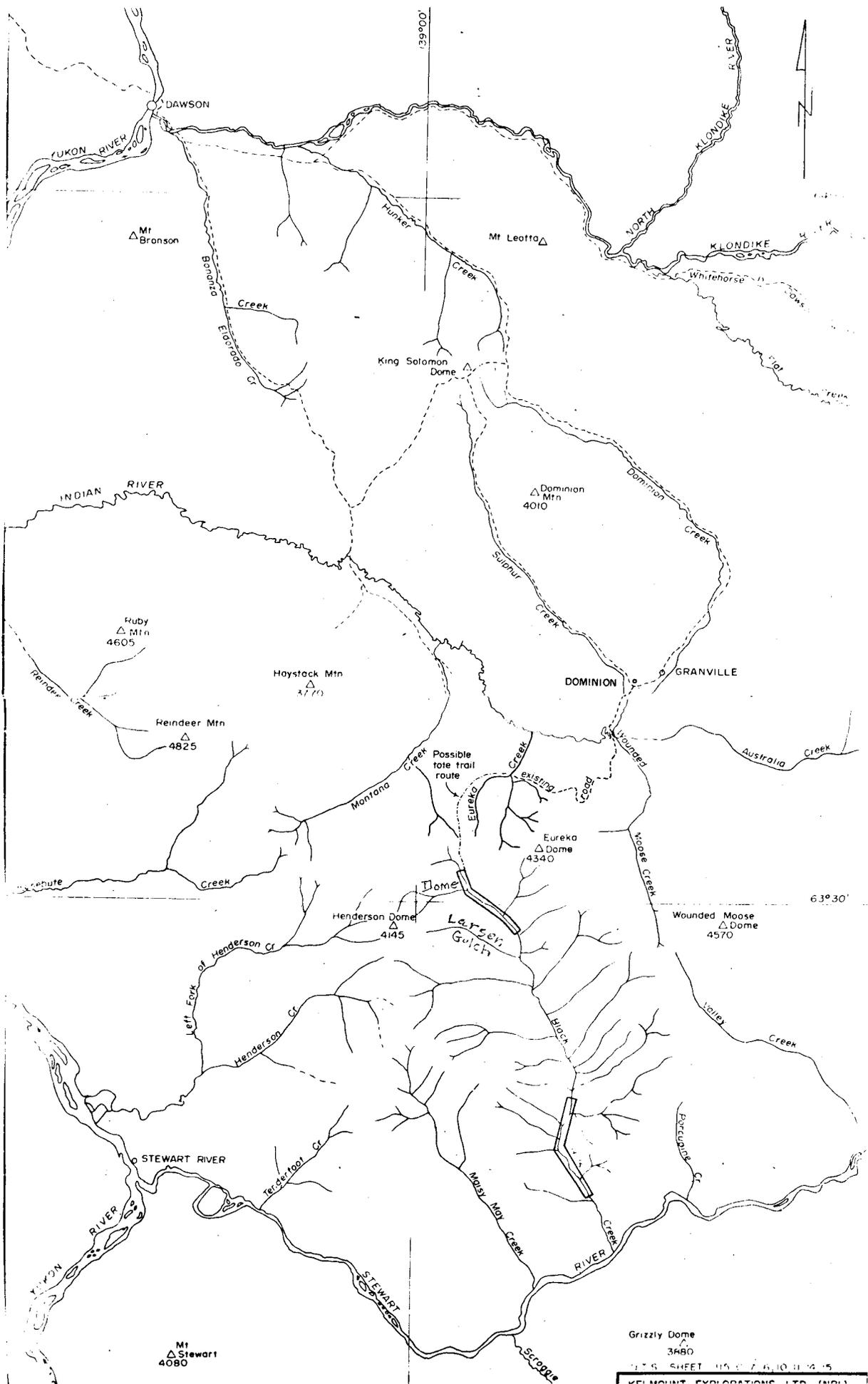


R G HILKER LTD.  
 CONSULTING GEOLOGIST  
 WHITEHORSE, Y.T.

138°45'

NTS SHEET 115-0-7

KELMOUNT EXPLORATIONS LTD. (NPL)	
LEASE TO PROSPECT 3104	
LOCATION SKETCH	
DATE: JULY 18, 1973	SCALE: 1" = 1/2 mile



GENERAL PLACER GEOLOGY

The Ogilvie map area that contains the Klondike gold field has not been glaciated. The ridge tops are rounded, are of similar elevation, and contain no plateaus. This area includes long ridges with steep sides and narrow v-shaped valleys. The Ogilvie area is described by H.S. Bostock as being a Tertiary accordant summit level. The accordant summit level is defined as a level surface indicating that the hill tops or mountain summits over a region have approximately the same elevation. In a region of high topographic relief this suggests that the summits are remnants of an erosional plain formed in a previous erosion cycle. Also, the area can be described as a summit concordance which is equal or nearly equal elevation of ridgetops or mountain summits over a region. The concordance is thought to indicate the existence of an ancient erosional plain of which only scattered patches are preserved. The Tertiary period spans between 65 million years (Paleocene) through to the Pliocene of 2-3 million years ago. The ancient Tertiary surface has since been cut to depths of 2000 feet by the main rivers. Outcrops are scarce in the area and are usually confined to ridge tops, stream cut banks, stream beds and south facing slopes. In places rock fragments in the soil suggest the type of the underlying rock.

The source of the gold bearing rocks or the occurrence in rock of the gold has yet to be determined in the Klondike field. It is important to understand the geological erosional process since early Tertiary time for the accumulation of the high density

gold in the creek gravels in parts of the Klondike gold field.

The oldest rocks in the area (Table of Formations) are Precambrian and Later in age and consist of the Yukon Group: limestone, gneiss, quartzite, schist and slate; and the Klondike Schist that contains sericite schist and minor chlorite schist. The aforementioned rocks are intruded by gneissic granite and ultra mafic intrusives in parts. Palaeozoic, Mesozoic and Cenozoic aged sedimentary intrusive and extrusive rock types occur throughout the Ogilvie map area (Geology Sketch - Sketch #5: After H.S. Bostock). Tertiary/Modern gravel stream deposits and Modern/Recent stream deposits are the source of the placer gold that are being mined at present.

The Klondike placer district was discovered 75 years ago, and is still an important source of gold. With the increase in the price of gold, production can be expected for several more years. The price of gold will need to be above the \$100/ounce mark to make placer mining in the area profitable due to the high costs of labour and machinery necessary for a placer operation.

TABLE OF FORMATIONS

After Geology by H.S. Bostock  
1935 - 1936 - 1937

CENOZOIC

- Modern/Recent
- 12 - Stream deposits
- Tertiary & Modern
- 11 - Stream deposits - in parts gold bearing
- Eocene or Later
- 10 - Granite and syenite porphyry
- Carmacks Group
- 9 - Andesite, basalt, dacite, trachyte, rhyolite, breccia, tuff, agglomerate
- Eocene
- 8 - Conglomerate, sandstone, shale, coal; tuff

MESOZOIC

- Jurassic or Later
- 7 - Granite and granodiorite

PALAEOZOIC

- Ordovician or Later
- 6 - Argillite, sandstone, conglomerate

PRECAMBRIAN AND LATER

- 5 - Gneissic granite
- Klondike Schist
- 4 - Sericite schist and minor chlorite schist
- 3 - Gabbro, pyroxenite, peridotite, serpentine
- Yukon Group
- 2 - Limestone
- 1 - Gneiss, quartzite, schist and slate (Nasina Group)

## STREAM DEPOSITS

The gold bearing stream deposits in the Klondike placer district are Tertiary/Modern and Modern/Recent in age. The following is a description of the gravels that occur on several of the major gold placer creeks in the Klondike District.

"LOW LEVEL GRAVELS.- 'The low level creek gravels are the most important gravels in the district. These gravels floor the bottoms of all valleys to a depth of from four to ten feet. They rest on bedrock usually consisting of decomposed and broken schists, and are overlaid by a sheet of black frozen muck ranging in thickness from two to thirty feet or more. They are local in origin and consist entirely of the schists and other rocks outcropping along the valleys. The schists pebbles are usually flat round-edged discs measuring one to two inches in thickness and two to six inches in length. They constitute the greater part of the deposit, but are associated with a varying proportion of rounded and sub-angular quartz pebbles and boulders, and, less frequently, with pebbles derived from the later eruptive rocks of the region. The pebbles are loosely stratified, are usually embedded in a matrix of coarse reddish sand and alternate in places with thin beds of sand and muck.'

(a) Creek. - 'The creek gravels frequently inclose leaves, roots and other vegetable remains, and also the bones of various extinct and still existing northern animals, such as the mammoth, the buffalo, the bear, the musk-ox and the mountain sheep and goat.'

(b) Gulch. - 'The gulch gravels occupy the upper portions of the main creek valleys and small tributary valleys. They differ from the creek gravels in being coarser and more angular. A considerable proportion of their material consists of almost unworn fragments of schist washed down from the adjacent slopes. They contain the same vegetable and animal remains as the creek gravels.'

(c) River. - 'The only river gravels of the district proven, so far, to contain gold in paying quantities occur in the wide flats bordering the lower portions of the Klondike river below the mouth of Hunker valley. The river gravels consist of quartzite, slate, chert, granite and diabase pebbles largely derived from the western slopes of the Ogilvie range. They are harder and better rounded than the creek gravels, a necessary result of the greater distance travelled.'

TERRACE GRAVELS. - 'Rock terraces occur at various points cut into the steep slopes of the present valleys. They were produced during the deepening of the valleys, and are simply remnants of former valley bottoms. They are small, seldom exceeding a few yards in width and a few hundred yards in length, irregular in distribution, and occur at all elevations up to the bottoms of the old valleys.'

The terraces support beds of gravel, usually from six to fifteen feet in thickness, very similar to that in the creek bottoms, but showing somewhat more wear. The terrace gravels, like the creek gravels, are overlaid, as a rule, with muck, and at one point on Hunker creek were found buried beneath a hundred feet of this material.'

HIGH LEVEL GRAVELS. - 'They consist, principally, of ancient creek deposits, overlaid near the mouths of some of the valleys by gravels laid down by the Klondike river, when it ran at a much higher level than at present, and occupied a somewhat wider valley. These gravels occur at various points along the Klondike river. In the Klondike district they are found covering the small plateaus in which the ridges separating Bonanza and Hunker creeks from the Klondike river terminate. They rest in both places, on high level creek gravels at an elevation of about 450 feet above the present valley bottoms. They have a thickness of from 150 to 175 feet, and consist principally of well-rolled pebbles, of quartzite, slate, chert, granite, diabase and conglomerate embedded in a matrix of gray sand, and derived, like those in the present stream, from the western part of the Ogilvie range.'

(a) White Channel gravels. - 'The White Channel gravels differ somewhat from the ordinary type of stream deposit. They are very compact as a rule and in some of the hydraulic cuts stand up in almost vertical cliffs, even when the face is unfrozen. The white or light grey colouration, from which the deposit derives its name, is very conspicuous in most of the sections but is not universal, as red, yellow and dark grey beds frequently occur. The deposit is highly siliceous, the principal constituents consisting of rounded pebbles and rounded and sub-angular boulders of vein quartz. Flat schist pebbles and boulders, usually in a more or less advanced stage of decomposition, occur with the quartz, and also occasional pebbles derived from the various dikes and stocks outcropping along the valleys. No material foreign to the districts occurs in the deposit. The pebbles and boulders are usually small, seldom exceeding eighteen inches in diameter, and are embedded in a compact matrix consisting essentially of small sericite plates and fine angular quartz grains..' The uniformity of the deposit in composition and general character throughout sections a hundred feet or more in thickness is very striking. The bedding planes, as a rule, are inconspicuous, and there has been no sorting of the various constituents into separate beds. The deposits, unlike the creek and gulch gravels, appear to be destitute of vegetable and animal remains. The thickness of the White Channel gravels varies from a few feet to 150 feet, and the original width from a couple of hundred yards to over a mile.

(b) Yellow Gravels. - 'The white compact gravel deposit described above is overlaid in places by loosely stratified gravels known as the yellow gravels. The latter are of a rusty colour, are more distinctly stratified than the white gravels and consist mainly of flat schist pebbles lying loosely in a coarse sandy matrix.'

WHITE CHANNEL. - 'The White Channel bench or hill gravels are the oldest in the district, and, excepting the present creek gravels,

the most important from an economic standpoint. They were originally creek gravels, deposited in a similar manner to those occupying the low levels at present, and their elevated position is due to an uplift which affected the whole region bordering the Yukon from the Stewart river northwest to the Alaskan boundary and for a considerable distance beyond. This uplift, and a small depression which preceded it, produced many notable changes in the topography of the country. It is probably, although not conclusively proved, that during the White Channel period the lower portion of the Klondike valley, the portion into which the principal gold-bearing creeks discharge, was occupied by a small local stream and that the Klondike itself flowed either into the Stewart or into Twelvemile river. The White Channel deposits are remarkable in this respect that even when completely destroyed their former position is marked by a trail of gold. They are traceable in this manner from the present mouth of Hunker, Bear and Bonanza creeks far out into the present valley of the Klondike, showing that the old valley was small, smaller than that of Hunker creek and unlikely to have contained a large rapid river such as the Klondike. At the close of the White Channel period the district was depressed and it was during this depression that the Klondike is considered to have broken into its present valley. It brought down an immense quantity of material from its upper reaches, and rapidly built up a wide gravel bed fully 150 feet in depth. These gravels at the mouth of Hunker and Bonanza creeks rest on the White Channel deposits and at other points, where not destroyed, are distributed along the hillsides at the same level. The depression was followed by an uplift of approximately 700 feet, which gave new life to all the streams by increasing their grades, and they immediately commenced to deepen their channels. This process was continued not only through the old gravel deposits but down into the bedrock to a depth of from 150 to 300 feet. The new valleys are sunk as a rule, through the bottom of the old ones, but in a few places, as at the mouth of Bonanza creek, they deviate from them and have carved out independent courses. The difference in character between the old and new valleys is striking. The old ones represent the product of long continued stable conditions, and are characterized by wide flats and gently sloping sides, from which all traces of angularity have been smoothed away. The flats of the old Hunker creek valley have a width in places of over a mile. The new valleys, on the other hand, while opening out into occasional basins, are generally narrow, steep-sided and angular. This applies only to the creeks, all of which are small, as the Klondike river has cut a huge trench through the district since the uplift. Only a portion of the deposits of the old valleys was destroyed during the excavation of the recent valleys, as the latter are much narrower and do not follow exactly the same course. The undestroyed portions constitute the White Channel gravels of the miners."

### BLACK HILLS CREEK GRAVELS

The Kelmout Explorations Ltd. placer leases on Black Hills Creek can be expected to contain Low Level Gravels or gravels that floor on the bedrock of the valley. The Black Hills Creek valley is U-shaped and 1000 - 2000 feet wide at the bottom. Black Hills Creek is approximately 12 feet wide and 12 - 18" deep; a good flow of clear water was noted in the creek on July 24th. The following is the depth of Muck and gravels reported on Black Hills Creek:

Area	Depth of Muck in feet	Depth of Gravel in feet
Right Fork - Black Hills Creek	4 - 8	6 - 14
Childs Gulch	4 - 8	6 - 14
Sprague Creek	4 - 8	6 - 14

Mr. Harold J. Hyles, a prospector who started a placer operation in 1958 on the east side of Black Hills Creek between Rosa Gulch and Childs Gulch reports 8 - 10 feet of gravels.

Several old shafts have been hand dug and excavated by windlass and bucket along the length of the four mile Roy Shatzko lease on Black Hills Creek. Old placer workings were noted at the confluence of Childs Gulch and Black Hills Creek.

Gold assay values of dust from Black Hills Creek are reported to be \$15.50 - \$17.67. The value of fineness is based on 1,000 fine representing pure gold at \$20.67 per ounce in 1916. The fineness of the Black Hills Gold, as calculated by Shaw's Formula would be 750 - 858 fine. Therefore, at \$110.00/ounce of gold the present value of the Black Hills Gold would be \$82.50 - \$94.25 per ounce. Coarse gold is selling for \$140.00/ounce from jewellery purchasers

in the Dawson and Whitehorse areas.

The Roxy I lease was noted to have no old placer workings or test shafts along the five mile length. During the time of the property examination no sampling of the gravels was attempted. The old shafts were caved and no other means was available to penetrate a few feet of muck and to reach bedrock through a maximum of fourteen feet of creek gravels. Sampling of the placer leases for gold content per cubic yard will require mechanical means.

The gravels in the Klondike district are classified as follows:

		Gulch Gravels
Low Level Gravels	-----	Creek Gravels
		River Gravels
Gravels at intermediate levels	--	Terrace Gravels
High level bench gravels	-----	Klondike Gravels
		White Channel Gravels

The most economic method at present of placer mining the "paystreak" in the Low Level Gravels is by mechanical (tractor) means. The tractors are mobile, as are the necessary repair shops, sluice boxes, camp, etc. The equipment can be moved to other locations if necessary.

The cheapest dredges built in early 1900 cost about \$350,000.00. It was impossible to move these dredges off the creek where they were constructed. In 1966 the Yukon Consolidated Gold Company abandoned the company dredges on various creeks.

## FROZEN GROUND

"Throughout almost all the mining districts in the territory, with the exception of Kluane, the gravels are covered by a body of black frozen muck, which varied from 4 to 20 feet in thickness. The muck can be picked, but no impression can be made on the frozen gravels, which have to be thawed. 'The thickness of the frozen stratum varies considerably, and is less on the ridges than in the valleys, and on southern than on northern slopes. A shaft sunk on the ridge south of Eldorado creek reached unfrozen ground at a depth of 60 feet, while one in the valley of Eldorado creek, was stopped by running water at a depth of a little over 200 feet. Another shaft sunk through gravel, on the plateau between Bonanza creek and the Klondike river, passed through the frost line at a depth of 175 feet.' Near the head of Quartz creek a shaft tapped running water at a depth of about 216 feet. 'The summer heat has little effect on the frozen layer except in the few places where the surface is unprotected by moss. Exposed gravel beds in favourable positions thaw out to a depth of from six to ten feet, but where moss is present, frost is always encountered close to the surface.' The depth of gravel varies from three feet on some of the creeks to 30 and 40 feet on lower Dominion and from 80 to 100 feet on Quartz creek. The frozen muck which overlies the gravels forms an exceedingly firm roof and no timbering is required in the drifts. The shafts in which self-dumpers are operating, however, are usually timbered as well as the tunnels leading from the bottom of the shafts to the face of the drifts. Underneath the frozen muck large chambers can be excavated during the winter. 'In one case on Dominion creek a muck roof unsupported by pillars covered a vault said to measure 140 feet by 230 feet and remained unbroken until midsummer. Examples of muck roofs spanning vaults over 100 feet in width are quite common.'"

The Klondike Placer District is within the discontinuous permafrost zone and the creek gravels are not frozen in all parts. Of the areas dredged in one season by the Yukon Consolidated Gold Company's eight dredging operations on Bonanza, Eldorado, and Hunker Creeks, 68.4% was frozen and required thawing by steam. The present method of thawing is by stripping the surface vegetation off the muck and exposing it to the sun. A second method of thawing is hydraulic monitoring the surface vegetation and muck by producing a "head" of water with a high pressure pump.

The writer was unable to determine if and where frozen gravel and muck conditions exist on the Black Hills Creek placer leases.

CLASSIFICATION OF THE METHODS OF THAWING

"The gold-bearing gravels in the Klondike are perpetually frozen and have to be thawed by one of the various methods employed in the district. Even if mechanical appliances were devised to excavate these gravels in a frozen condition, a process of thawing would be necessary before the gold could be recovered. The efficiency of any one method of thawing varies with the quantity of humidity in and the compactness of the gravels. Nearly all the gold-bearing streams of Post Tertiary age are frozen to bedrock and artificial thawing is absolutely necessary, while those of most recent age are only partially frozen and do not require artificial thawing."

- Natural thawing ..... Sun
- Artificial thawing ..... Rocks
- Artificial thawing ..... Wood Fires
- Artificial thawing ..... Steam Points
- Artificial thawing ..... Hot Water
- Artificial thawing ..... Hydraulic monitoring (pump)

## ECONOMIC GEOLOGY

### ORIGIN OF THE PLACER GOLD

"There is little doubt that the Klondike gold, or the greater part of it, at least, is detrital in origin, and has been largely derived from the auriferous quartz veins cutting the older schists and especially the igneous schists of the Klondike series. The veins are small and the number destroyed and concentrated as pebbles and boulders in the valley-bottoms is almost incalculable.

The derivation of the placer gold from quartz veins, as pointed out by Spurr in regard to the Fortymile district, is evident from the character of the grains. The greater part of the gold occurs in irregular flattened discs and bulbs very similar, when unworn, to those in the veins. Many of the grains and most of the nuggets inclose quartz, and a few are themselves inclosed in quartz. Pebbles and boulders speckled with gold are also occasionally found. A boulder from Bonanza creek, near Discovery, weighing sixty ounces, contained twenty ounces of gold. Additional evidence of the detrital origin of the gold is afforded by its worn character in the creeks, while the younger grains and nuggets found in the gulches are always rough and angular. The richest quartz, so far discovered, occurs near the head of Victoria gulch a tributary of Bonanza creek. The partially decomposed slide rock, which covers the surface of the hill side below the quartz outcroppings, contains colours of gold, and it is significant that Bonanza creek is rich below the mouth of Victoria gulch, and practically barren above. Victoria gulch is itself gold-bearing, and the gold obtained from near its head is sharply angular. It is not inferred from this that all the gold in Bonanza creek came from Victoria gulch, as none of the heavy gold has travelled far, and the valley was probably repeatedly enriched from veins along its course, and from the older gravels, but that some of it was so derived seems certain.

While the greater part of the placer gold has been derived from broken quartz veins, a small percentage may have been precipitated from water carrying gold in solution. A boulder was found on one of the workings on Miller creek, the upper surface of which was partially covered with thin specks and scales of crystalline gold. The crystals were arranged in a dendritic manner. Some of them were firmly attached to the rock, and others separated easily from it. The angles of the crystals were sharp and showed no wear of any kind, while the boulder itself, an autoclastic quartz-mica schist, was well-rounded. The gold evidently did not belong to the rock originally, and the only explanation of its occurrence under the peculiar conditions stated seems to be that it was taken up by some solvent and re-deposited on the surface of the boulder. A number of thin specimens of nearly unworn crystalline gold, often dendritic in structure, have been found on Eldorado and other Klondike creeks, and they may have originated in this manner. The bulky, octohedral crystals, (the common crystalline variety) were probably derived, like the nuggets, from veins. Several specimens of these, identical in character with those in the gravels have been obtained from the Victoria gulch quartz."

## BEDROCK

"The greater part of the gold both in the hill and creek gravels occurs on or near bedrock, either in the lower four to six feet of gravel or sunk for some distance in the bedrock itself. The distribution depends largely on the character of the bedrock. Soft schists such as those underlying the rich portion of upper Dominion creek prevent the gold from descending, and it accumulates in a thin layer at the base of the gravels. In many of the rich claims between the two discoveries on Dominion creek a thin stratum of gravel resting immediately on bedrock proved extraordinarily rich, while the bedrock and the upper gravels were comparatively lean. On Bonanza creek the bedrock as a rule is harder and more flaggy, and the action of frost has parted the layers and allowed a portion of the gold to descend along them. From three to five feet of bedrock are usually mined at a profit, and gold has been found in some quantity at a depth of twelve feet and probably descends still deeper. On a couple of claims on Hunker creek, below the mouth of Seventy Pup, practically all the gold occurred in a shattered porphyry bedrock, the overlying gravels proving almost barren. The bedrock underlying the hill of White Channel gravels is more decomposed than that in the creek bottoms, does not open out in the same way and retains most of the gold at or near the surface. In a few places gold has been found in paying quantities in the schist partings under the decomposed layer, but as a rule only the upper few inches are mined."

The foregoing points out the fact that the high density gold accumulates in the "natural riffle" on the bedrock surface. It is therefore important that a few inches of the decomposed or soft bedrock surface be mined in areas of the paystreak gravels. Gold also would be expected to accumulate in the gravels where natural bedrock crevices occur and the paystreak gravels have crossed these natural barriers.

GRADE OF GOLD

"Klondike gold varies greatly in grade, not only on different creeks but also along different portions of the same creek. The difference of grade is due to the gold being in all cases alloyed with silver in varying proportions. In the lowest grade gold the silver almost equals the gold in volume, the ratio being 1 to 1.4. In high grade gold the ratio is 1 to 5 and the general average is 1 to 2.3. In value the ratio of silver to gold is very small, the proportion calculated from a number of returns being approximately 1 to 150. While the grade of the placer gold is supposed to conform in a general way with that of the original vein gold, some changes are evidently produced by the leaching out of a portion of the silver contents. Evidence of loss of silver is afforded by the fact that fine gold which would necessarily be affected more by leaching than the accompanying coarse gold invariably carries a smaller percentage of silver. Nuggets also assay higher as a rule on the surface than in the centre. Five assays of selected nuggets made by Mr. Connor in the laboratory of the survey gave the following results:

	Centre of Nugget	Surface	
1. Silver	35.8	29.4	Trail hill, Bonanza creek
Gold	64.2	70.6	
2. Silver	39.9	33.5	Chechaco hill, Bonanza creek
Gold	60.1	66.5	
3. Silver	37.3	30.3	Bonanza creek No. 12 below
Gold	62.7	69.7	
4. Silver	46.1	41.0	Treasure hill, Last Chance creek
Gold	53.9	59.0	
5. Silver	33.0	33.5	Bonanza creek, No. 3 below
Gold	67.0	66.5	

## TRANSPORTATION OF GOLD

"The two main factors in the transportation of coarse gold by natural causes are grade and bedrock. With steep grades and smooth bedrock transportation is comparatively rapid, while little movement takes place when the grades are moderate and the valleys are floored with the tilted flaggy schists characteristic of the district. The Klondike slopes are everywhere mantled with a thick covering of broken and partially decomposed schist fragments easily moved when not frozen and ever tending downwards towards the creek and gulch levels. The downward movement is slow and intermittent at present on account of the perpetually frozen condition of the surface, except on sunny slopes. During the period of the White Channel gravels - the period of the great gold accumulations - climatic conditions were less severe and the movement must have been much more rapid. The slide material carries with it the gold and gold-bearing quartz released by the breaking up of the auriferous quartz veins, and when running water is reached the gold is sluiced out and remains behind, while the rock fragments are ground up and carried away."

To the present, the "mother lode" or source rock of the Klondike gold has not been located by the placer prospector nor the modern day geologist. It would be a tremendous challenge to a geologist and supporting company to discover the source of the gold in the Klondike district. No doubt, there are several sources that have contributed to the gold bearing gravels in several of the creeks. When the milky white quartz gravels of the White Channel are viewed, the source of the original quartzite is also a problem to dwell upon.

MINER'S UNITS

"The following table shows the standard weights and measures in placer mining in the Klondike:

Table of Miner's Units

*5½ pans make	.....	1 cubic ft.
15 pans make	.....	1 wheelbarrow
4 wheelbarrows make	.....	1 bucket
10 wheelbarrows make	.....	1 cubic yard
**1 pan of gravel weighs	.....	20 lbs.
1 cubic yard of gravel weighs	.....	3,000 lbs.

Mr. T.A. Rickard in his book "Through the Yukon and Alaska" gives the following alluvial measures as being in common use in Alaska:

1 pan holds	.....	25 lbs. of gravel
6 pans make	.....	1 cubic ft.
15 pans make	.....	1 wheelbarrow
10 wheelbarrows make	.....	1 cubic yard
135 pans make	.....	1 cubic yard
4 wheelbarrows make	.....	1 bucket

These do not agree exactly. A full pan will hold from 20 to 25 pounds, and it requires from 125 to 135 pans to make a cubic yard. A cubic yard is usually estimated to weigh 3,000 pounds or 1½ tons. If a pan holds 20 lbs. and 150 pans equal a yard, then a cubic yard weighs 3,000 pounds. A loaded wheelbarrow will hold 1/10th of a cubic yard; this is the ratio recognized at Fairbanks and at Nome."

\*\* These measures are not to be construed as absolutely accurate, but are used by miners in making substantial or working estimates.

\*\* Estimated weight average gravels."

VALUE OF PLACER MINING IN THE YUKON

"Placer mining in the Yukon commenced on the Lewis and Big Salmon rivers in 1881. Coarse gold was discovered on the Fortymile in 1886, and as a result the Stewart river was almost deserted the following year. The famous discovery on Bonanza creek, however, was made in 1896, and shortly afterwards ensued the great rush to the Klondike.

The following Table shows the value of the gold production in the Yukon since 1885, namely:

1885 - 1886	\$ 100,000.00
1887	70,000.00
1888	40,000.00
1889	175,000.00
1890	175,000.00
1891	40,000.00
1892	87,500.00
1893	176,000.00
1894	125,000.00
1895	250,000.00
1896	300,000.00
1897	2,500,000.00
1898	10,000,000.00
1899	16,000,000.00
1900	22,275,000.00
1901	17,368,000.00
1902	11,962,690.00
1903	10,625,422.00
1904	9,413,074.00
1905	7,162,438.00
1906	5,258,874.00
1907	2,896,173.00
1908	3,200,288.00
1909	3,260,263.75
1910	3,594,884.05
1911	4,125,570.60
1912	4,024,245.80
1913	5,018,411.85
1914	5,301,497.26
1915	4,649,634.40

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\$150,174,966.71"

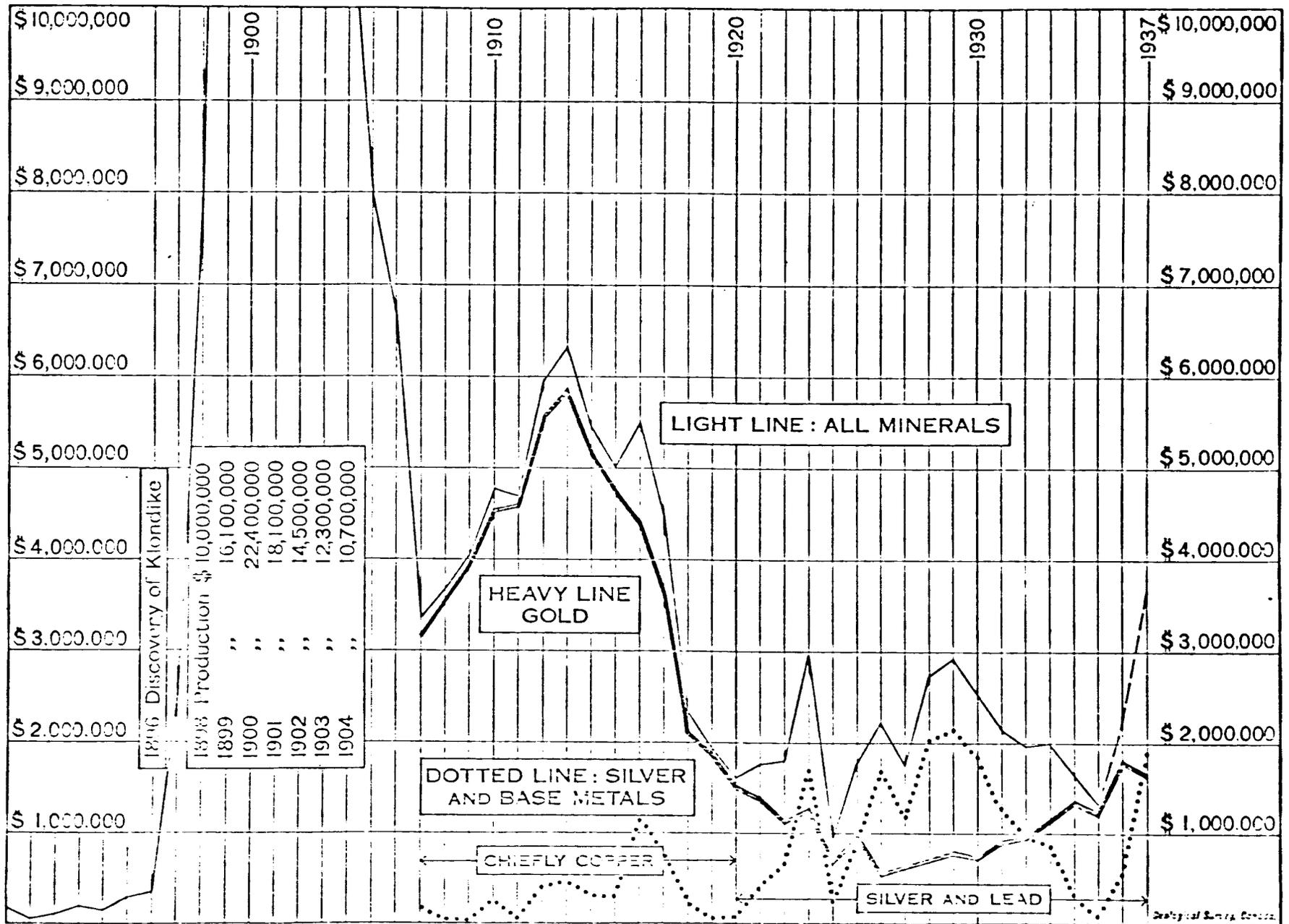
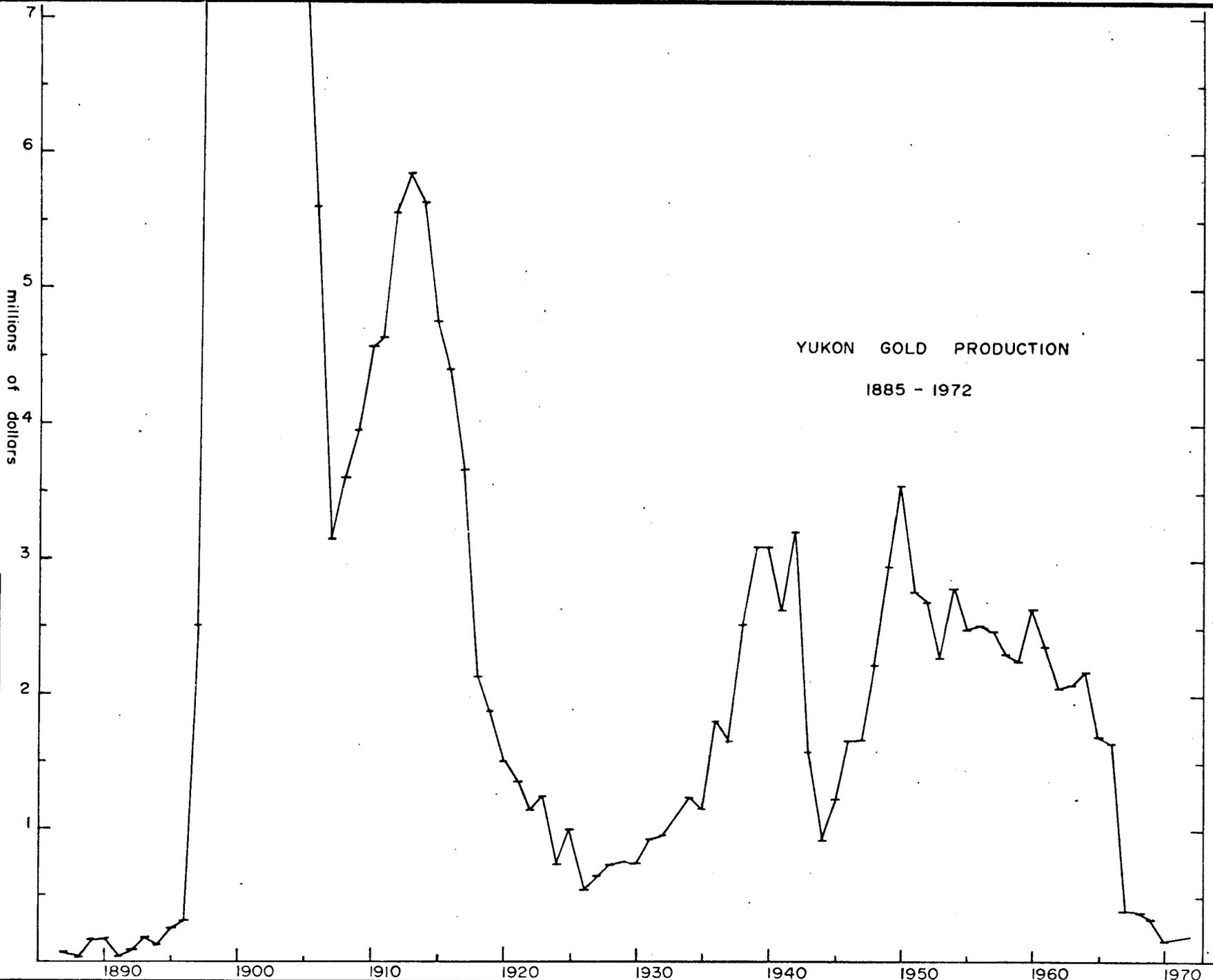


Figure 1. Value of the annual mineral production of the Yukon, 1898 to 1937, inclusive.

YUKON GOLD PRODUCTION  
1885 - 1972



From a graph prepared by the  
G.S.C. Whitehorse, Y.T. 1973

RG HILKER LTD., CONSULTING GEOLOGIST, WHITEHORSE, Y.T.

KELMOUNT EXPLORATIONS LTD. (NPL)
YUKON GOLD PRODUCTION
1885 - 1972
DATE AUG 9, 1973
SCALE as shown

## PLACER MINING BY MECHANICAL MEANS

Several placer mining operations in the Klondike district use crawler tractors to scrape muck at surface and expose the frozen ground to the sun. Some operators also use water to speed up the thawing process in frozen areas. A method of "steam points" could be used to thaw frozen ground, similar to what was used by the dredge operators. When the frozen muck and/or gravels can be penetrated by use of natural and artificial thawing a crawler tractor with a "ripper" is used to blade gravel into metal sluice boxes.

In places where gravels are not frozen, a crawler type tractor and front end loader can be used for the sluicing operation. Where the gravels and muck are 15 - 20 feet thick above bedrock mechanical means are the most efficient way of reaching the paystreak on the bedrock surface. In the past tunnelling was done in the frozen gravels, but a reasonable thickness of frozen gravels are required to prevent caving of the underground workings.

The cost per hour to rent a crawler tractor of the D-7E Caterpillar size and larger varies between \$35 - \$45 per hour. Most placer operators purchase and own the heavy duty equipment necessary for mining.

CONCLUSIONS/RECOMMENDATIONS

The Kelmount Explorations placer leases on Black Hills Creek require a stage of test work to determine grade and areas of gold bearing gravels. The test work should consist of trenching by crawler type tractor to bedrock, if possible. The trenches could then be checked by panning the gravels from the top of the bed to the gravels just above bedrock. Each two foot section of gravels can be checked by panning several pans and carefully weighing any gold recovered. The time honoured scale of "Miner's Units" can be used to convert pans of gravel to cubic yards in proportion to the gold recovered from panning. In this manner a fairly reliable estimate would be made per cubic yard of gravels in the area of the trenching. It is pointed out that the writer has no knowledge at this time if the muck and gravels can be trenched to bedrock by mechanical means due to possible permafrost conditions. The Black Hills Creek is exposed to the southern sun and discontinuous areas of permafrost and/or patchy frozen conditions can be expected. Therefore, it may be possible to trench to bedrock in different areas.

A tote road should be constructed from the existing tractor-truck trail on Eureka Creek to the Kelmount placer leases on Black Hills Creek. There is available in the Yukon, from the Resources Branch of the Department of Indian Affairs and Northern Development, tote trail assistance for building roads to resources. The tote trail assistance is available up to about \$1,000.00 per mile on a 50% split basis between the applicant and the government. The assistance varies according to location and type of trail, and the forementioned

figure should only be considered a guide. There is a committee which awards the actual amount of assistance for a tote trail. Kelmount Explorations would qualify for tote trail assistance in the Yukon Territory for access to the Black Hills placer leases.

To keep the Roy Shatzko and Roxy I placer leases in good standing \$9,000.00 worth of assessment work will be required before June 1974. It is recommended that a minimum of two trenches  $\frac{100\text{ft} \times 15\text{ft} \times 18\text{ft}}{27 \text{ ft/yd}} =$  1000 cubic yards be dug on each mile of the Kelmount placer leases on Black Hills Creek. The permitted rate for trenching in unfrozen ground by mechanical means is 75 cents per cubic yard. The cost of constructing a road that crosses the actual placer leases can be used for assessment work purposes also.

Therefore, to fully evaluate the Kelmount Explorations placer leases the following programme is recommended to determine the presence and value of gold bearing gravels to bedrock surface.

1. Apply for Tote Trail Assistance from the Resources Branch, Department of Indian Affairs and Northern Development in Whitehorse.
2. Construct a tote trail, from the existing tractor trail on Eureka Creek to the Kelmount Explorations placer leases on Black Hills Creek. Estimate 100 tractor hours.
3. Establish a temporary camp on the upper end of Black Hills Creek and haul a fuel oil supply from Granville into the camp. Estimate 50 tractor hours.
4. Dig approximately 18 trenches of 1000 cubic yards on the 9 miles of placer leases on Black Hills Creek. Estimate 175

tractor hours. If frozen ground conditions are encountered, stripping of surface vegetation should be done to expose the muck to the sun for thawing. About 1 to 4 feet would thaw per summer by natural means. The vegetation along Black Hills Creek consists of moss, 10 - 12 foot willows, and stunted spruce to a maximum height of 20 feet.

5. Test the gravels in the trenches by panning each two foot section from the bottom of the surface muck to bedrock. An experienced gold panner, Mr. Harold J. Hyles, is available for the test panning. If gold is recovered from the panning test work, the exact weight would be determined. The value of gold per cubic yard could then be calculated using the number of pans and the weight of recovered gold. The recovered placer gold could then be assayed for true value and the fineness of the Black Hills Creek gold could be accurately determined.

6. Record all of the physical work by mechanical means for assessment work purposes on the placer leases.

The aforementioned programme would confirm or disprove areas of gold bearing gravels and bedrock values of gold on the Kelmount Explorations placer leases. If economic values of gold bearing gravels are proven, a second stage of placer mining would then be started.

It is noted by the writer that very little actual test work such as gold values are available for the preparation of this report. However, the data and method of gold placer mining are

established knowledge and placer mining is starting once again because of the higher price of gold. The approach to the exploration of the placer leases for the determination of grade and yardage is similar to the established practise of conducting geological, geochemical and geophysical surveys on mineral claims. Mineral claims may cover only a favorable rock type and be located in a district where a discovery has been made. Similarly, the placer leases on Black Hills Creek are located in the Klondike placer gold district which is the most famous in the world, having produced millions of dollars worth of gold.

ESTIMATED COST OF PROGRAMME

STAGE I - EXPLORATION

Mechanical

Tote Trail - access - 100 hours -----	\$4,000.00
Test Pit, Trenches - 175 hours -----	7,000.00
Camp Costs -----	1,000.00
Fuel Oil Supply - 50 hours -----	2,000.00
Transportation - supplies and vehicle -----	2,000.00
Test Work on Gravels -----	1,500.00
Supervision and Geological Consulting -----	2,500.00
Presentation of Data -----	<u>500.00</u>
Total -----	\$20,500.00

Note: If Tote Trail assistance is awarded approximately \$2,000.00 could be recovered.

STAGE II - DEVELOPMENT (Dependent upon results of Stage I)

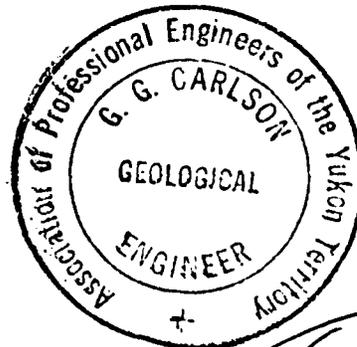
Feasibility study for placer mining -----	\$2,500.00
Test Drilling - 500 foot grid lines at 100 foot stations churn drill or Atlas Copco overburden drill -----	35,000.00
Camp Costs - cook, food, etc. -----	5,000.00
Permanent Camp -----	12,000.00
Road to Property -----	25,000.00
Stripping - 500 hours -----	20,000.00
Engineering, supervision, office, staff, etc. -----	<u>20,000.00</u>
Total -----	\$119,500.00

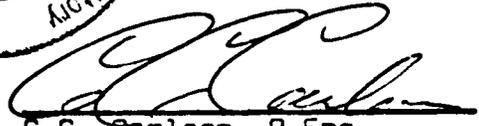
CERTIFICATION

I, GERALD G. CARLSON residing in the City of Whitehorse, in the Yukon Territory, DO HEREBY CERTIFY:

1. THAT I am a Geologist, employed by the Consulting Geological firm of R.G. Hilker Limited, with an office located at #8 Northern Metallic Building, and postal address P.O. Box 4008, in the City of Whitehorse, in the Yukon Territory.
2. THAT I am a graduate of the University of Toronto located in Toronto, Ontario, where I obtained a Bachelor of Applied Science degree in 1969.
3. THAT I am a registered member in good standing of The Association of Professional Engineers of the Yukon Territory and of the Geological Association of Canada.
4. THAT I have practised my profession as an engineer and geologist for the past 5 years.
5. THAT I have visited the Roy Shatzko and Roxy I Yukon Placer Leases To Prospect on July 24<sup>th</sup>, 1973.
6. THAT I have no direct or indirect interest in the property or securities of Kelmount Explorations Ltd. (NPL) of Vancouver, B.C., nor do I expect to receive any.

DATED this 10<sup>th</sup> day of August, A.D. 1973



  
G.G. Carlson, P.Eng.