

F. C. BUCKLAND, PH.D.

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MEMBER - CONSULTING BRANCH
ASSOCIATION OF PROFESSIONAL ENGINEERS
OF B.C. (GEOLOGICAL)

MEMBER - ASSOCIATION OF PROFESSIONAL
ENGINEERS OF ONTARIO (MINING)

MEMBER - CANADIAN INSTITUTE OF
MINING AND METALLURGY

27th April, 1960.

Mr. C. E. McLeod,
Yukon Consolidated Gold Corporation Ltd.,
355 Burrard Street,
Vancouver, B.C.

Dear Charlie:

I return herewith your report on the Lone Star
and Mitchell Groups by Robert F. Playter.

Many thanks for allowing me to peruse this.

Yours truly,



F. C. Buckland.

FCB/mp

LONE STAR MINE

Near Dawson, Yukon Territory

LOCATION

The Lone Star Mine is situated approximately thirteen airline miles southeast of Dawson, Yukon Territory, near the head of Victoria Gulch, on the divide separating Bonanza and Eldorado Creeks. Its position is shown on the accompanying small scale map (No. 1). The elevation of the portal of the main adit is 3250 feet above sea level.

The property can be reached from Dawson by the main road that follows Bonanza Creek to the foot of Victoria Gulch. From there an extremely steep "switch-back" road, which climbs some 1500 feet in slightly more than two and one half miles, leads to the mine. The distance from Dawson by road is 23 miles.

PROPERTY

The Lone Star group of claims, as shown on the accompanying plan (No. 2), consists of 38 claims, 9 held by the Consolidated Lone Star, Ltd., 24 by Yukon Consolidated Gold Corporation, and 5 by other parties. The 9 claims of the Consolidated Lone Star, Ltd., of which 5 are crown granted, are under option to Yukon Consolidated Gold Corporation. The principal workings are on the Lone Star and New Bonanza claims.

HISTORY

The original Lone Star claims were staked in 1899, but little was done with them until 1909, when a company was organized

to develop the mine. A small stamp mill was erected and operated in 1912, 1913 and 1914. The records show a yield, by amalgamation, of \$24,977 from 8435 tons milled. With gold at \$20.67 per ounce, this works out to an average of 0.143 ounces per ton, which equals \$5.00 per ton with gold at \$35. per ounce. In addition, it is reported that one shipment of 1680 lbs. of concentrates, presumably accumulated throughout the life of the operation, was made to the Selby smelter and yielded a net smelter return of \$2,079.

The property was idle from the cessation of operations in 1914 until the winter of 1946-47, when the Yukon Consolidated Gold Corporation did some 200 feet of crosscutting, cut eight long trenches and drilled six churn drill holes to test possible extensions on the surface and at depth. This work was done to carry out the recommendations of Mr. J. H. Farrell, who examined the property in 1935.

GEOLOGY

The Lone Star property lies within the wide belt of schistose rocks known as the Klondike series, which extends across the entire central portion of the Klondike district. The principal rocks are light colored schists consisting of chlorite, sericite and quartz with minor amounts of feldspar. They are believed to have been of igneous origin and of Paleozoic age. The Klondike series has been intersected by stocks, dikes and sills of Tertiary age.

Although badly distorted, the prevailing strike of the

schistosity in the Lone Star area is about $N30^{\circ} W$. The dip is about 40° to 60° southwest. Many small faults exist, the two principal systems striking about northwest-southeast and north-south. All on which the displacement could be observed had "normal" directions of movement. Observed offsets were all small, from a few inches to two feet. None of the faults in the mine workings is of importance.

Throughout the schist area quartz is abundant. Many large outcrops of white quartz are found, and they have been carefully prospected in search of gold. They are of pegmatitic origin and are barren of gold. Much of the quartz found in the creek gravels and the "white channels" came from them.

In addition to the large pegmatite veins, countless seams, veinlets and lenses of quartz are found within the schist, parallel to the foliation. Often narrow seams of pyrite are found along the margins of the quartz and in the chlorite and sericite. The pyrite occurs as small cubes and I believe it to be of secondary origin, formed from the decomposition of the ferro-magnesian minerals of which the schist was originally composed. These quartz veinlets, and the associated pyrite, are practically barren of gold as is shown by sampling.

A third and younger group of quartz veins exists and I believe that nearly all the gold in the Lone Star area, and probably the entire Klondike District, can be attributed to them. They vary in width from a fraction of an inch to two feet, and intersect the schistosity almost at right angles.

Their prevailing strike is about N20-30° W, and the dip is northeast at angles of 25° - 35°. They are lenticular and do not persist far either in strike or dip, but they are not crumpled and distorted like the quartz veinlets which parallel the foliation of the schist.

In the oxidized zone they show little patches of iron oxides from which pyrite (and perhaps other sulphide minerals) has been leached. Visible gold is sometimes found in these patches of iron oxides. In the sulphide zone similar patches or "rosettes" of pyrite and galena are found. The gold is apparently associated with these small clusters of sulphides and is not uniformly disseminated throughout the quartz itself. I think this is indicated by the sampling done by Farrell, White and myself. Erratically high and low assays were obtained by each of us. If a sulphide cluster is cut in taking a sample, the assay is apt to be high; if not it is low.

DEVELOPMENT and SAMPLING

The ore mined during the operating period was taken from an open cut about 350 feet long, with average width of about 25 feet, and depth of about 20 feet. It was started primarily to test the value of the schist as a whole. The significance of the younger quartz veins was not then known, so no particular attention was paid them. An adit was driven and the ore from the open cut was extracted on that level. All the underground workings are shown on the accompanying assay plan, (No. 3).

The underground work exposed several younger quartz veins. Their presence, and the recognition of their importance,

apparently led Farrell to believe that a stockwork of them might exist and that large quantities of ore of moderate grade might be developed. He recommended that work be done to test this possibility.

Accordingly the Yukon Consolidated Gold Corporation reopened the adit and drove a crosscut 196 feet long across the mineralized zone under the open cut. Careful sampling by MacLeod White yielded most discouraging results, as shown on the accompanying assay plan. The sampling done by White was well and carefully done. The channels cut in the crosscut and elsewhere throughout the mine are still clearly visible. Their uniform width and depth are evidence that the work was done with extreme care. I felt it unnecessary to resample the entire mine and consequently took only enough samples to serve as a check.

In the long crosscut I took one five-foot sample on each wall for each 25 feet. I did not take them at exact 25 foot intervals, but resampled sections that showed any value. In his sampling of the small, younger quartz veins White, in most cases, sampled along the veins, assigning the proper width to the results. In check sampling the same veins I sampled across them at intervals, and included some of the schist from both walls.

The results of White's complete sampling and of my check sampling are shown on the accompanying assay plan, No. 3. I consider the checks quite satisfactory.

SURFACE TRENCHING

Eight trenches across the mineralized zone were put in by Yukon Consolidated Gold Corporation. They were dug by

"bull dozer" to whatever depth was required to fully expose the bedrock formations, in places nearly five feet. The width of the trenches is over six feet - at least double the width of the usual trench dug by hand. Excellent bedrock exposures were thereby obtained. The trenches were sampled for their entire length, and across the schistosity, while the bedrock was clean and newly exposed. Except where subsequently filled in by rain and weather, the sample cuts are still visible. The assay results are shown on the assay plan prepared by Yukon Consolidated Gold Corporation, No. 4.

Examination of the trenches with the sampling results in hand shows just what would be expected. Wherever an assay of more than a few cents was obtained, a quartz vein of the younger type is present. I did not resample the trenches in their entirety but did check sample most of the sections that showed values of more than \$1.00, which, without exception, were sections in which at least some younger quartz was visible.

The significant feature of the results shown by the trenching is the wide spacing of the younger quartz veins, in a section approximately horizontal. Whereas Farrell undoubtedly hoped that such veinlets might be spaced at intervals of three or four feet, or even less, they are actually forty feet or more apart, and the intervening material is nearly barren of gold.

CHURN DRILLING

Six churn drill holes were drilled to test the mineralized zone at depth. They were drilled in a grid pattern, three holes at 200 foot intervals along each of two lines 400 feet apart. The holes are shown on the accompanying plan, No. 4.

This type of drilling might be criticized by lode miners as being an improper application of placer mining exploration practice. However, I believe that in this deposit those holes are as satisfactory as any that could be drilled. If a diamond drill were used, the angle of inclination at which to drill would be a debatable point, and a compromise would have to be accepted. If holes were directed so as to intersect the younger quartz veins at approximate right angles, they would almost parallel the foliation of the schist. I believe that vertical holes would be about the most satisfactory compromise in order to obtain reasonably good angles of intersection with both the younger quartz veins and the schist. The holes drilled were vertical.

If a diamond drill were used full core recovery would undoubtedly be unobtainable, particularly for the first 100 feet of depth. The soft chlorite and sericite laminae of the schist would be ground away and I fear that little but the quartz laminae, and not all of that, would be recovered. Core samples would therefore be most unreliable for assay purposes, and sludge samples would have to be used. If the sludge has to be used, the churn drill samples are the better because they are larger.

I therefore believe that the churn drill samples used were as good as could be obtained for this deposit. Had they yielded encouraging results I would suggest more holes at closer intervals. Since the results were so uniformly discouraging, and checked so closely the results obtained underground and in the surface trenching, I feel further drilling is not warranted.

The drill holes clearly demonstrated that the younger quartz veins are spaced as widely vertically as they are horizontally.

MILL TESTS

The principal cause of the long controversy over the merits of the Lone Star property was the recovery by the mill of nearly \$3.00 per ton when sampling done by the operators and by examining engineers indicated that recovery should be less than \$1.00 per ton. It has been confidently believed by some, and hoped by others, that if a mill were built and placed in operation, recoveries of \$6.00 or \$7.00 per ton, with the price of gold at \$35.00 per ounce, would be obtained in spite of the low values indicated by all the sampling done throughout the history of the mine.

To test this controversial subject Mr. White made mill tests on the material obtained from the six churn drill holes. Attached hereto is a copy of his letter of July 28, 1947 describing the tests and tabulating the results. When the extremely low tenor of the material is considered, I believe the checks he obtained against assays are amazingly close. His results are certainly sufficiently conclusive to prove the fallacy of the belief that mill recoveries might be as much as three times the expectancy, based upon careful sampling.

I have been asked how the recoveries of the Lone Star operations might be explained. I cannot of course account for the discrepancy, but two possible explanations occur to mind; (1) residual surface enrichment, and (2) insufficient samples.

In Tertiary times the rainfall in the Klondike area was greater than it is now and hence the rate of erosion at that time was much faster. In periods of relatively rapid erosion, gold particles, or "nuggets", released by the disintegration of gold-bearing quartz veins, worked their way down the hillsides to the creeks at a fairly rapid pace. In a period of slow erosion and light rainfall, such as the present, such particles would hold back and many would sink into the moss and soil perhaps very close to the spot at which they were released. Such procedure would result in a residual enrichment of the soil just above bedrock. That such a condition does exist is attested by the statements of prospectors that "a few colors" can be obtained by panning the surface "almost anywhere". It therefore seems reasonable to presume that at least some of the gold, and possibly a rather large proportion of it, recovered from the Lone Star open cut was residual placer gold, and was not primary gold recovered from the quartz or schist.

Support to the above belief is given in the published production figures. The operations in 1912 are reported to have yielded \$3.79 per ton, whereas the average of the entire production was \$2.96 per ton. This indicates that the ore milled in 1913 and 1914, more than two-thirds of the total, averaged about \$2.60 per ton. As the open cut got deeper, the recovery diminished. The absence of residual gold in the deeper part of the pit may be the explanation.

In referring to (2), insufficient sampling, I do not wish to criticize the work done by others. However, I have known

several instances in which the claim was made that recovery materially exceeded sampling results. In each case this was proved fallacious when enough samples to be truly representative were carefully taken and their results were properly weighted. Since the importance of the younger quartz veins was not known at the time of the Lone Star operations, it was impossible to properly weight any high assays that may have been obtained. Perhaps erratic high assays were cut too severely. In any case, I believe that enough samples, properly taken and properly weighted, would have given results much closer to the actual mill results.

SOURCE OF PLACER GOLD

Eldorado and Upper Bonanza creeks, shown on the accompanying location plan (No. 1), were the two richest creeks for placer gold in the whole Klondike area. Together they are credited with having yielded more than \$65,000,000 (approximately 3,250,000 ounces). The distribution of that gold is such that it must have been shed by veins situated on the divide separating the two creeks. This has led to the belief that important gold-bearing veins, capable of supporting large scale lode mining operations, must exist within that area, within which the Lone Star is situated. I question this belief.

Throughout the area concerned the Klondike series of rocks acted incompetently during the period of deformation that preceded or accompanied the igneous activity with which the gold-bearing solutions were associated. The rocks were plastic enough that they yielded to stresses by folding and flowing, instead of by breaking to create long, continuous fractures that could serve

as channels for the circulation, or loci of deposition, of mineralizing solutions. Consequently a large number of small veins were formed intermittently throughout long distances, both laterally and vertically, instead of a few large, persistent veins which could have made orebodies of major importance.

I do not know the accepted figure for the amount of erosion of the area in Tertiary and Quaternary time, but I believe it is several thousand feet. Since a block of ground a mile square and 1000 feet deep approximates 2,000,000,000 tons, it is obvious that the tonnage removed from just the ridge separating Upper Bonanza and Eldorado Creeks was enormous. A quantity of only 650,000,000 tons averaging only ten cents a ton could account for the \$65,000,000 of placer gold credited to those two streams.

It therefore seems reasonable to presume that all the gold in the Klondike could have come from the erosion and disintegration of countless small gold-quartz veinlets similar to those that can be seen at the Lone Star. Nor is it necessary to assume the existence of large veins to account for the placer gold that has been found.

CONCLUSION

I believe, like Farrell, that practically all the gold in the Lone Star area occurs in the small, flat, younger quartz veins. The hope of a mine depends on finding a sufficiently large volume of rock in which those veins are so closely spaced that they will "carry" the intervening barren material and make the whole mass ore. If we assume that those veins average six inches in width

and one ounce per ton in value, they would have to be spaced at two and one-half foot intervals throughout the entire volume of rock, to make an average grade of 0.2 oz. per ton or \$7.00. Even if they were twice the width, or twice the value, they would have to be spaced at five foot intervals to make the average grade of the mass \$7.00 per ton.

The work done by Yukon Consolidated Gold Corporation was well done and is ample to conclusively establish the fact that throughout the most likely area on the Lone Star group of claims, the spacing of the auriferous veins is not $2\frac{1}{2}$ feet or even 5 feet, but is more than 40 feet, both laterally and vertically. There is no evidence to indicate that further work might disclose an area sufficiently large to support a large scale mining operation, in which the spacing of the veins would be close enough to make the entire mass ore.

I cannot say that no large veins will be found. However, although prospecting is difficult because of the dense covering of moss, that ridge between Eldorado and Upper Bonanza Creeks has been prospected diligently by many prospectors for a period now approaching 50 years. Only small veins similar to those on the Lone Star have been found. Prospectors have therefore tended to verify the conclusion that could be drawn from merely a study of the geological conditions - that only small, lenticular veins can exist in such incompetent schists as those of the Klondike series. Therefore I cannot believe that expenditure in search of larger veins is warranted.

I recommend that the option on the claims of

Consolidated Lone Star, Ltd. be abandoned and that the claims staked by Yukon Consolidated Gold Corporation be allowed to lapse by failure to perform the assessment work required to hold them.

(Sgd) Robt. F. Playter

RFP/K
8/14/47

COPY

THE YUKON CONSOLIDATED GOLD CORPORATION, LIMITED

DAWSON, Y.T.
Canada

28th July 1947.

W. H. S. McFarland, Esq.,
General Manager,
The Yukon Consolidated Gold Corp. Ltd.,
Dawson, Y.T.

Re: LONE STAR DRILL HOLE SAMPLE TESTS.

Dear Mr. McFarland:

The attached tabulation shows the results of testing done on the Lone Star drill samples.

The cuttings from the drill hole were run over a splitter, giving us a one-eighth sample. This sample was taken to Bear Creek, dried and split to give us an envelope of pulp which was sent to Eldridge in Vancouver for assay.

The rejects, representing from 350 to 650 pounds for each drill hole, were run by Mr. Henderson through his pilot mill to recover the free gold. The gold recovered is shown in the tabulation. Also, the complete cuttings from the drill hole were saved and have been run separately through the pilot mill. The last column in the final tabulation is the weighted average of these two results.

The sulphide concentrates obtained from the mill run have not been assayed so that the results given would be slightly low, but the amount of sulphides involved is so small that it would make very little difference in the final result.

The object of the test was to ascertain if taking a small sample for assay from a larger bulk would be reasonably accurate. The results show some peculiarities but indicate that with the proper number of samples taken, the results should closely represent the gold contained in any section.

It is peculiar that the gold recovered from the rejects of the sample is higher than the original assay results, and the gold recovered from the total cuttings is lower, but the weighted average of these two is very close to the original.

Yours very truly,

(Sgd) MacLeod White

Resident Manager.

MacLW:KA
encl.

LONE STAR TESTS - DRILL HOLES

DRILL HOLE SAMPLE NUMBER	ORIGINAL WEIGHT SAMPLE LBS.	HENDERSON WEIGHT SAMPLE LBS.	Au Ag BUTTON MG.	FINE Au MG.	OUNCES PER TON	VALUE AT \$35.00	ASSAY (ELDRIDGE) Au. MG.
1.	601	517	892.34	433.26	.0536	\$ 1.87	.017
2.	390	334	243.28	170.70	.0327	1.14	.017
3. 1-15	150	126	78.40	61.78	.0314	1.09	.001
16-36	222	180	235.60	168.00	.0597	2.09	.035
37-55	214	187	8.66	6.62	.0023	.08	Tr.
56-72	189	165	4.20	3.80	.0014	.05	.014
4. 1-22	247	206	31.10	21.44	.0067	.23	.007
23-44	240	204	7.70	6.04	.0019	.07	Tr.
45-67	200	172	149.06	110.60	.0412	1.44	.002
5. 1-19	187	159	33.84	26.14	.0105	.36	.012
20-38	265	230	45.48	33.16	.0092	.32	Tr.
6. 1-19	172	146	269.84	207.40	.0909	3.18	.002
20-38	237	205	42.22	32.44	.0101	.35	.008

Barrel
Samples

1.	4253	1824.50	1153.38	.0173	.60	.017
2.	3320	181.14	110.44	.0021	.07	.017
3.	3570	475.76	341.72	.0061	.21	.013
4.	3131	140.40	124.30	.0025	.08	.003
5.	4248	103.52	85.84	.0013	.05	.006
6.	3194	159.32	137.40	.0027	.09	.005

HOLE	ORIGINAL SAMPLE AVERAGE Oz./T.	GOLD RECOVERED FROM SAMPLE Oz./T.	GOLD RECOVERED FROM CUTTINGS Oz./T.	WEIGHTED AVERAGE Oz./T.
1.	.017	.0536	.0173	.0212
2.	.017	.0327	.0021	.0221
3.	.013	.0237	.0061	.0088
4.	.003	.0129	.0025	.0041
5.	.006	.0099	.0013	.0020
6.	.005	.0505	.0027	.0076

/A.
July 28, 1947.

THE MITCHELL GROUP

Near Dawson, Yukon Territory

LOCATION

The location of the Mitchell group of claims is shown on the accompanying small-scale location map, No. 1. It is on the crest of the divide separating Hunker and Goldbottom creeks and only about a mile north of the Dome, the highest point in the Klondike district. The Mitchell claims are at an elevation of about 4,000 feet.

The property is reached by the main road from Dawson up Hunker Creek to the top of the divide. The distance from Dawson is about 31 miles, by road.

PROPERTY

The property consists of a group of nine claims, arranged as shown on the accompanying plan, No. 5. The entire group is under option to the Yukon Consolidated Gold Corporation.

GEOLOGY

The Mitchell claims lie in the Klondike series of schists which in general are similar to the schists as described in the Lone Star report. The principal difference is that along the principal vein of the Mitchell group the rock is more nearly a straight chlorite schist. Comparatively little sericite and quartz are present.

QUARTZ VEINS

As is generally true throughout the Klondike district, several outcrops of barren pegmatitic quartz occur in the Mitchell area.

In addition to the barren pegmatite, a few narrow, younger auriferous veins do occur. They have been traced along the surface by a series of trenches, as shown on the accompanying plan, No. 6. They are similar to the auriferous younger quartz veins found on the Lone Star property, except that the principal one here dips more steeply, about 60° - 70° . A shaft was sunk on this vein to a depth of 80 feet. On the surface the vein was more than a foot wide, but at the bottom of the shaft it had pinched to a width of about one-quarter inch.

This vein is characterized by small patches or "rosettes" of iron oxides in the oxidized zone and sulphides, in the sulphide zone, with which quite coarse gold is found. Pyrite and galena are the two principal sulphide minerals.

The owners of the property have for exhibition quite a collection of specimens showing coarse visible gold. Careful examination with a hand lense showed that all the visible gold occurs in small patches of sulphides, or residual oxides. While sampling the narrow vein exposed in the trench marked O.C.5 on Map No. 6 I found an unusually coarse little gold particle in a small iron oxide patch. It was excluded from the sample, which still assayed 0.25 oz., \$8.75.

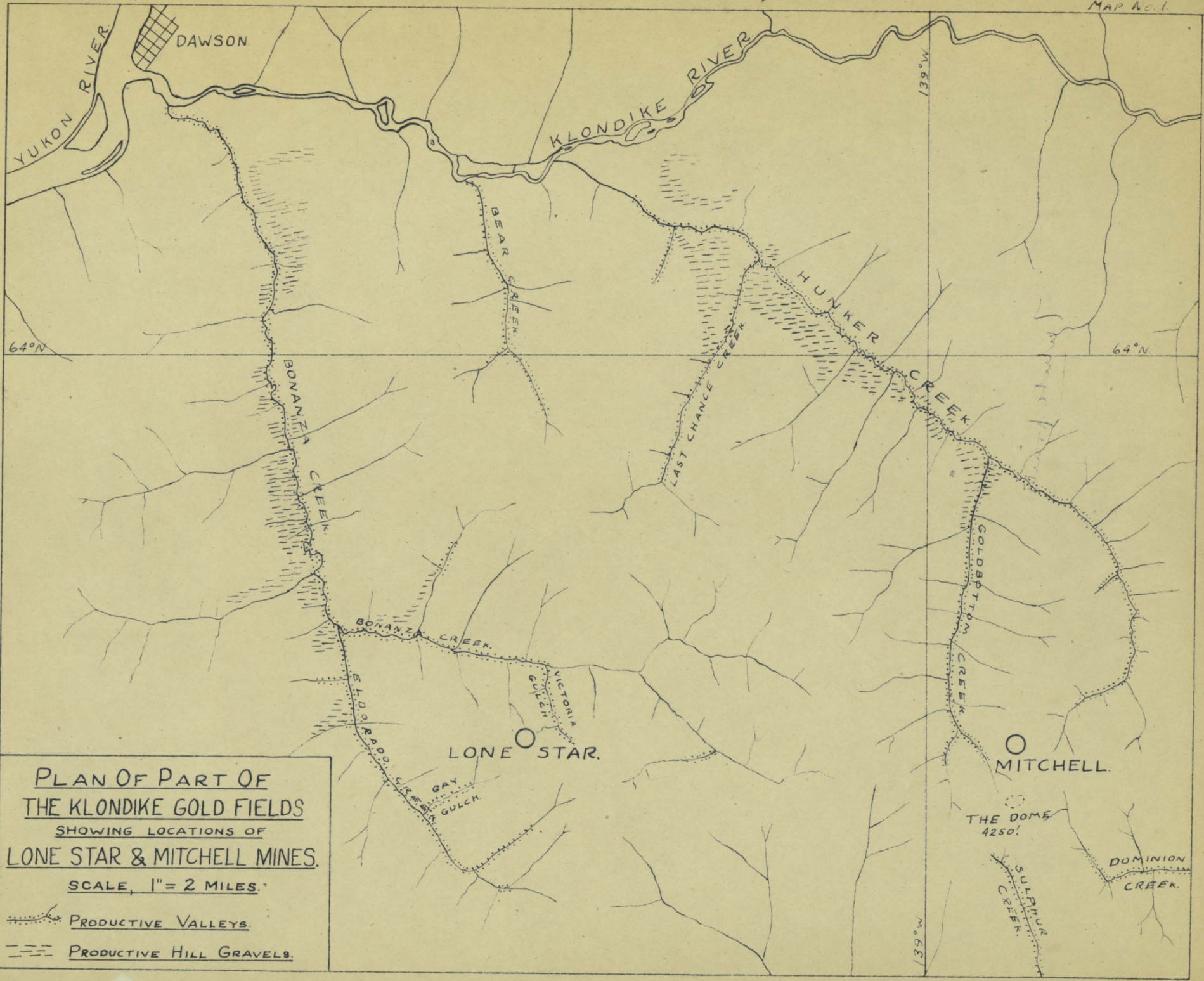
I believe that careful microscopic study would reveal that practically all of the gold is in fairly coarse particles associated with the small clusters of sulphides and that very little is distributed through the quartz itself.

CONCLUSIONS

As in the case of the Lone Star, I believe that the auriferous younger quartz veins of the Mitchell group of claims are too widely spaced to "carry" the intervening material and make any appreciable tonnage of ore. I understand Yukon Consolidated Gold Corporation is committed, under the terms of the option, to do the assessment work on the claims for the coming year. I recommend that the option be abandoned on completion of the minimum amount of work and expenditure required.

(Sgd) Robt. F. Playter

RFP/K
8/14/47





**PLAN OF PART OF
THE KLONDIKE GOLD FIELDS**
SHOWING LOCATIONS OF
LONE STAR & MITCHELL MINES.
SCALE, 1" = 2 MILES.
----- PRODUCTIVE VALLEYS.
----- PRODUCTIVE HILL GRAVELS.


LEGEND

Scale - 1 1/2 Mile - Contour Interval 100 Feet

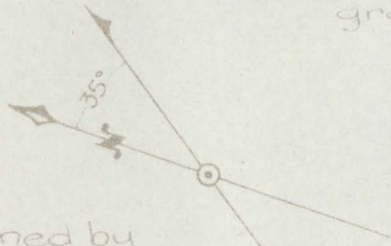
Claims owned by Consolidated Lone Star Ltd. shown in Red.

Dredged Areas shown 

Creeks shown 

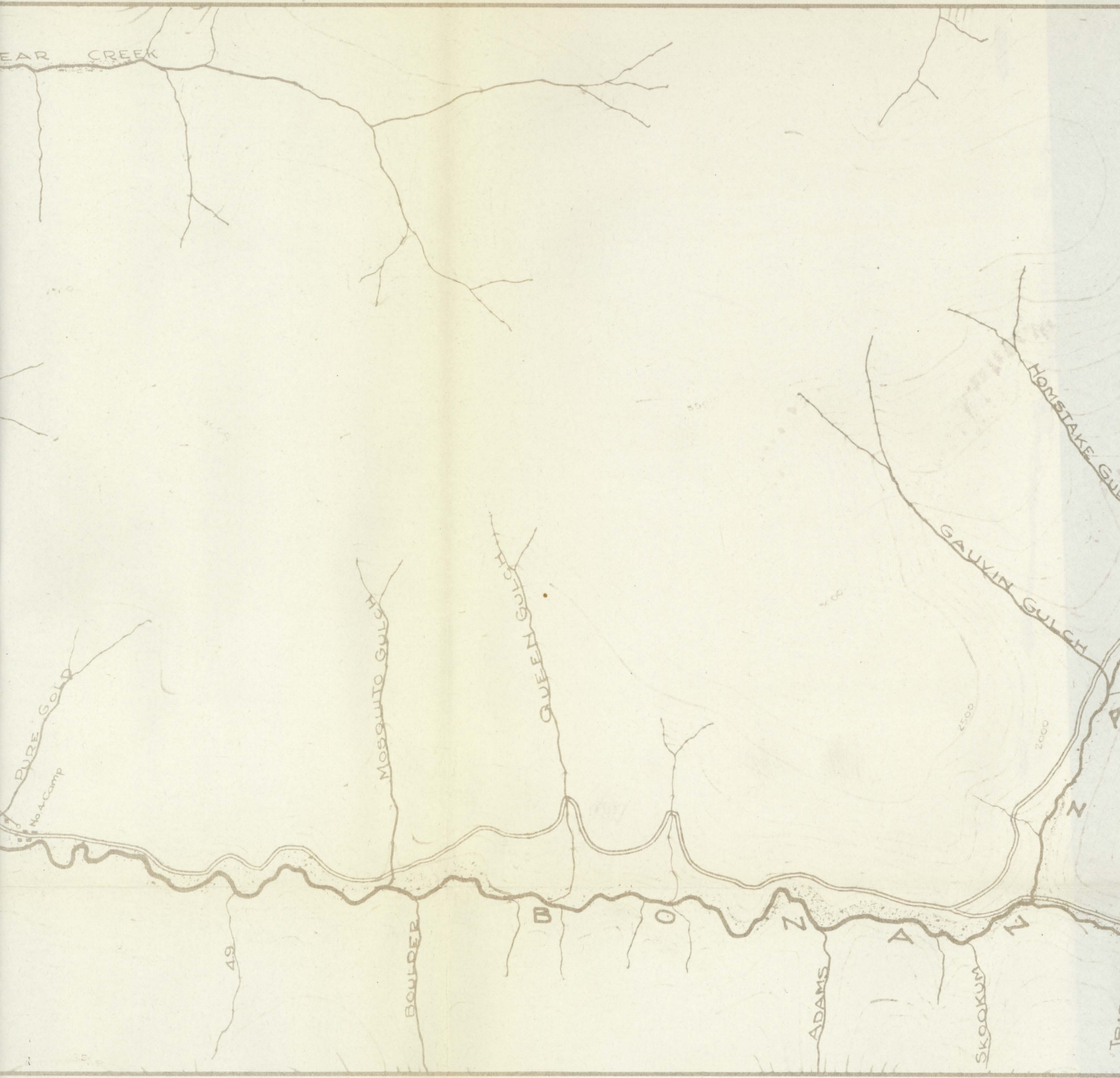
Roads shown 

Claims adversely owned shown in green



Claims owned by Yukon Consolidated Gold Corp. shown in orange.





EAR CREEK

PURE GOLD

No. 4 Camp

MOSQUITO GULCH

BOULDER

QUEEN GULCH

ADAMS

SKOOKUM

GAUVIN GULCH

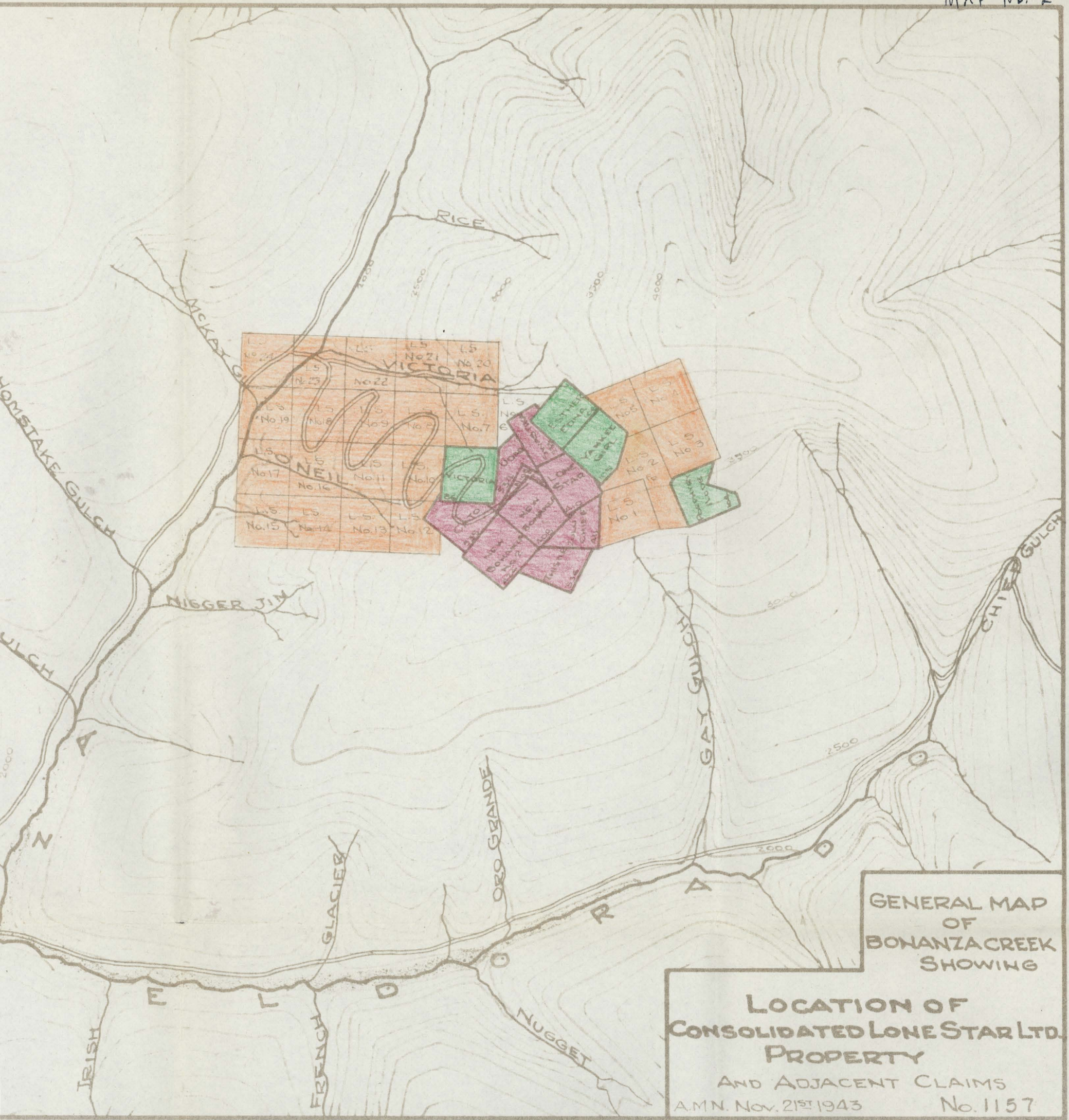
HOMSTAKE GULCH

400

500

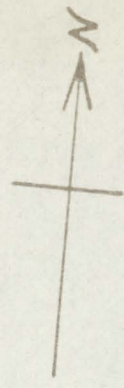
1500

2000



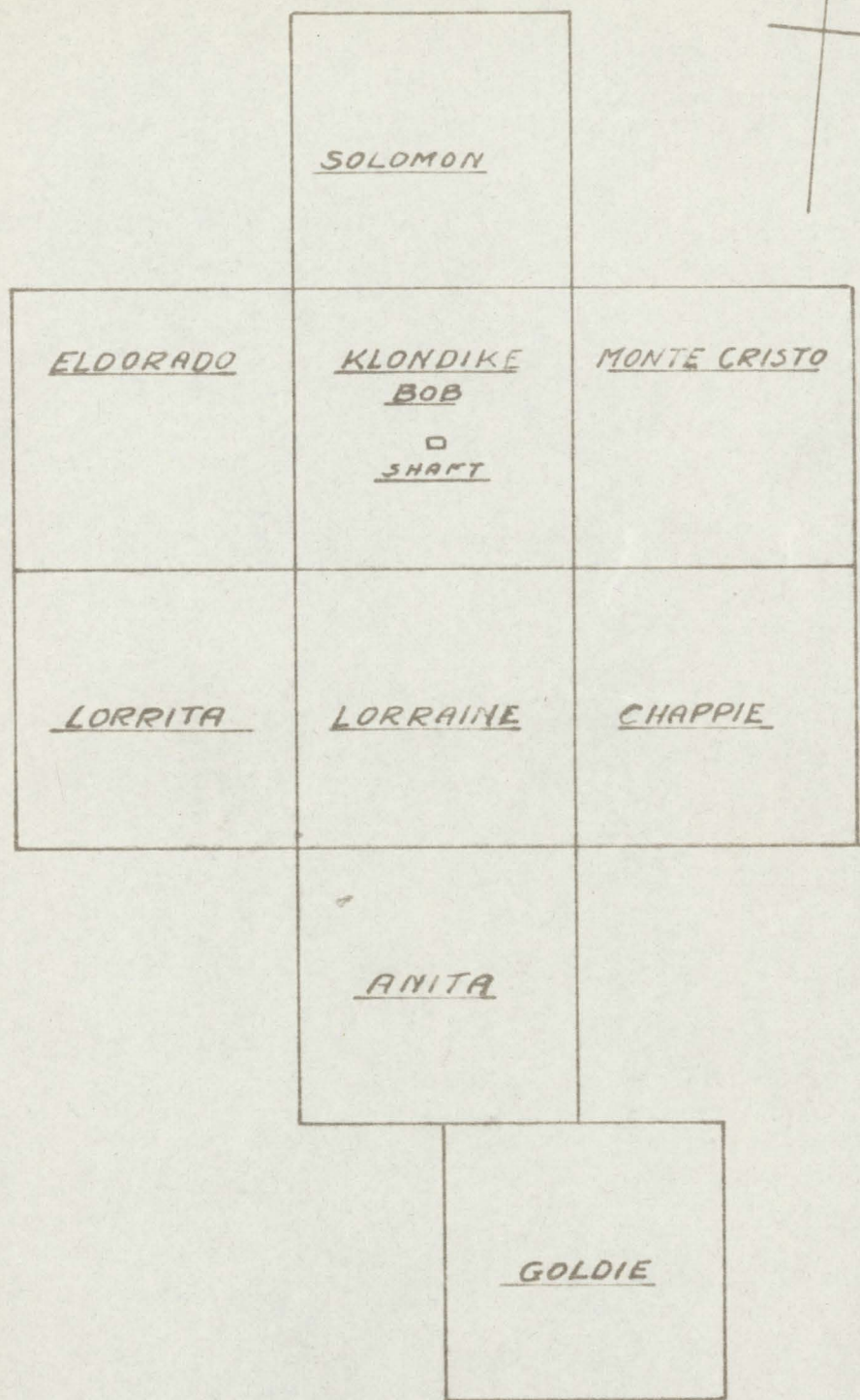
GENERAL MAP
OF
BONANZA CREEK
SHOWING

**LOCATION OF
CONSOLIDATED LONE STAR LTD.
PROPERTY**
AND ADJACENT CLAIMS
A.M.N. Nov. 21st 1943 No. 1157



LEFT FORK GOLD BOTTOM CREEK

RIGHT FORK HUNKER CREEK

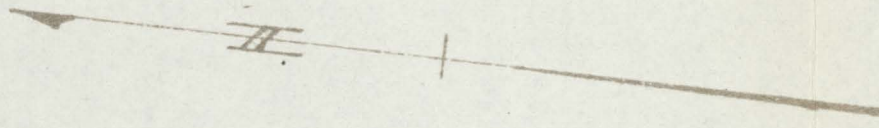


KING SOLOMON
DOME

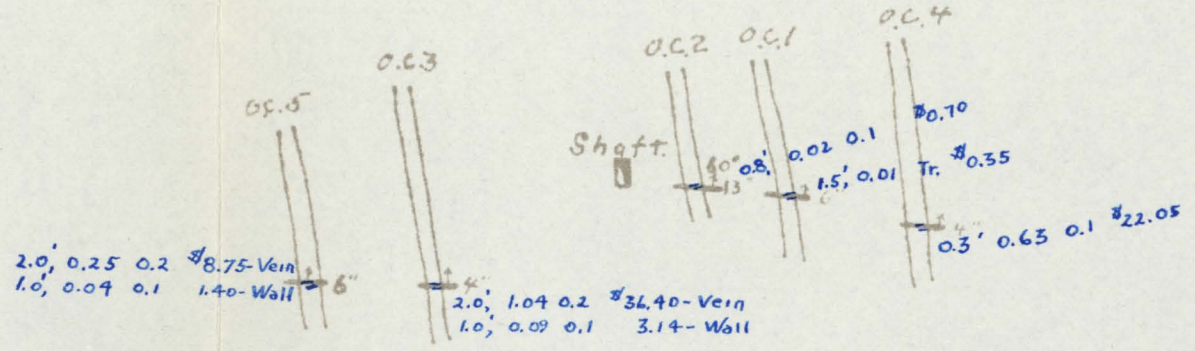
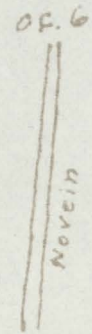
SKETCH SHOWING MITCHELL GROUP

SOLOMON M.C.

KLONDIKE BOB M.C.



Sub Level 25' below Shaft Collar
South Face, 1.8', 0.08 0.1 \$2.80
North Face, 2.3', 0.22 0.4 7.70



LORRAINE M.C.

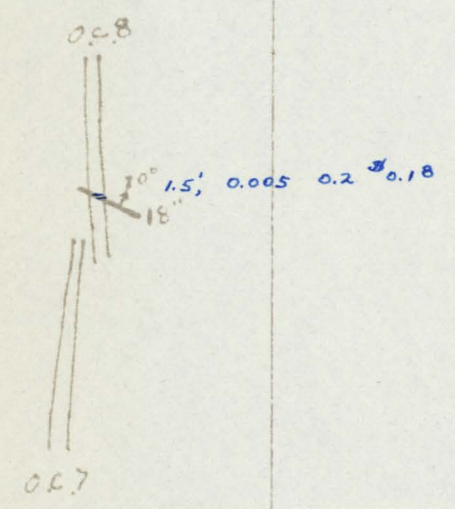
M.C.

4

0.70

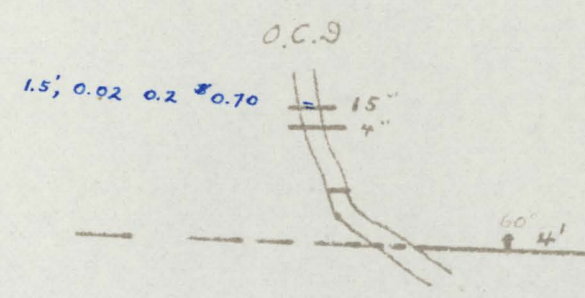
0.35

0.3' 0.63 0.1 22.05



Outcrop

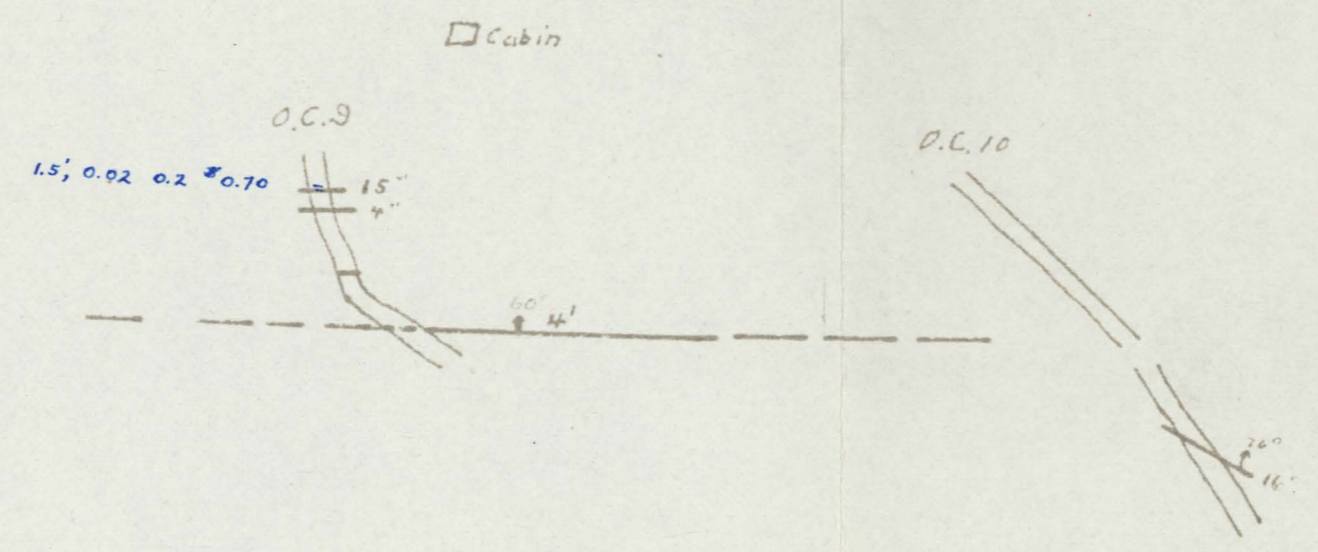
Cabin



PLAN OF OPEN CUTS ON

LORRAINE M.C.

ANITA M.C.



PLAN OF OPEN CUTS ON MITCHELL GROUP

SCALE 1" = 100'

SURFACE EXPLORATION

FOR THE

KLONDIKE MOTHERLODE

Surface Exploration For The Klondike Motherlode

Report by GORDON R. HILCHEY, P.Eng.

There are reasons to believe that there are major lode gold deposits in the Klondike Area which have not been discovered as yet but which can be found with a relatively small exploration program.

- (1) The enormous placer production.
- (2) The extra-ordinary richness of the placers.
- (3) The small local areas which must be the source of the gold.
- (4) The difficulties of lode prospecting by hand-methods which can be overcome with machinery.

Location

The Klondike Placer Area lies in a belt 18 miles wide and extending south-east from Dawson City for 40 miles. The rich placer gold deposits of Bonanza Creek were discovered in August, 1896 and placer production from the area has been continuous since then.

Past Production

The total placer gold production of the Klondike Area has been estimated at about 10 million oz. of fine gold. Of this amount, about 6 million oz. (over \$200 million @ \$35.00 gold) came from Bonanza Creek and its tributary, Eldorado Creek. To date the lode production has been trivial although there is strong evidence for the existence of lodes.

Sources of the Placer Gold

Most of the placer gold must have been derived from two major local source areas -- a hill on the Bonanza-Eldorado divide and the Dome at the head of Hunker, Dominion, Sulphur and Quartz Creeks. There may have been two or three additional minor source areas.

The evidence for these local sources of the gold is:

- (1) The placer gold is generally coarser and rougher at the head of the creeks.
- (2) Only a few of the tributary streams near the headwaters of the producing creeks carry gold. These are usually short, steep, narrow gulches or "pups". The gold found in them is invariably rough, usually coarse, and often with attached quartz, all indicating a nearby source.
- (3) There are variations in the fineness of gold from one creek to the next, which indicates several different sources. For example: Eldorado Creek gold averages \$27.48 per crude oz. Bonanza Creek gold above Eldorado ran \$29.28 to \$29.91 but below Eldorado the value dropped to \$27.56 to \$28.00. Dominion Creek gold above Gold Run Creek averaged \$27.83 and below Gold Run Creek \$30.63. Gold Run Creek itself averaged \$30.63 or better.

These variations indicate several local sources for the gold ---- sources with varying amounts of silver resulting in different fineness of gold.

Lode Claims

The lode claims of the Lone Star group were staked many years ago at the head of Victoria gulch, a headwaters tributary of Bonanza Creek. Claims have also been staked on the ridge between Upper Hunker and Gold Bottom Creeks, on the ridge between Dominion Mountain and The Dome, and elsewhere in the area. On some of these claims, quartz carrying free gold has been found. These properties have been held by poorly financed local companies and exploration has been limited to shallow work on one or two veins. Most of the work has been done on the small Lone Star group.

The most significant published information obtained is quoted in the "Mining Industry of Yukon, 1935", (G.S.C., Memoir 193) and refers particularly to the Lone Star group, but probably applies elsewhere. Two sets of veins have been distinguished: large pegmatitic quartz veins which carry an insignificant amount of gold and later, narrower veins carrying small amounts of pyrite and galena with free gold and yielding high assays. Little work on the lode properties of the area has been done since that time. Indeed, (considering the greatness of the placer production), a relatively small amount of work has been done on lode properties of the Klondike compared with other camps.

Prospecting

The prospecting for lode deposits in the Klondike area is not easy. The area is one of mature topography and little rock exposure with a residual soil several feet in depth. On the lower slopes of the hills, vegetation consists largely of poplar, birch and spruce. On the higher parts of the hills, above timber-line, vegetation is commonly dwarf-birch up to 4 ft. high. The actual surface of the ground is usually completely covered with moss and tundra and permanently frozen from the grass roots down. All these conditions combine to make the prospecting of rock outcrops and the search for float by hand-methods a difficult and tedious process. This is probably the reason why important lode gold discoveries have not yet been made. Modern bull-dozers and transportation allow an easy attack to the prospecting problem which has not been attempted heretofore.

Recommendations

The following program is recommended for finding the mother-lode source of the Klondike Gold:

On the basis of placer production and the size of the potential source area, the Bonanza-Eldorado divide should be given first consideration. The following program is recommended:

- (1) Acquisition of the property by staking all open ground (about 100 claims) and optioning the Lone Star group.
- (2) Bulldozer trenching of the hillsides.
- (3) Sampling of the trenches. Recovery of free gold by rocking and examination of the quartz float for visible gold and other minerals.
- (4) Correlation of the results followed by more stripping to locate the lode source(s).

Cost estimate

A rough cost estimate of the above program is based on a five-month season, using one D-8 bulldozer on one shift.

Acquisition of the property, assuming that the Lone Star group can be optioned with no cash (or almost no cash) down	\$ 5,000.00
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Exploration:

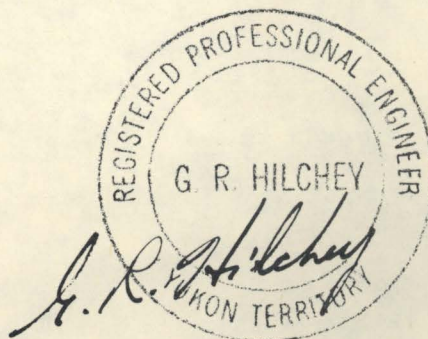
Bulldozer stripping	\$30,000.00	
Sampling, supervision, miscellaneous, supplies and equipment, transportation, etc. (camps would not be required)	<u>17,500.00</u>	<u>47,500.00</u>
Total -		<u><u>\$52,500.00</u></u>

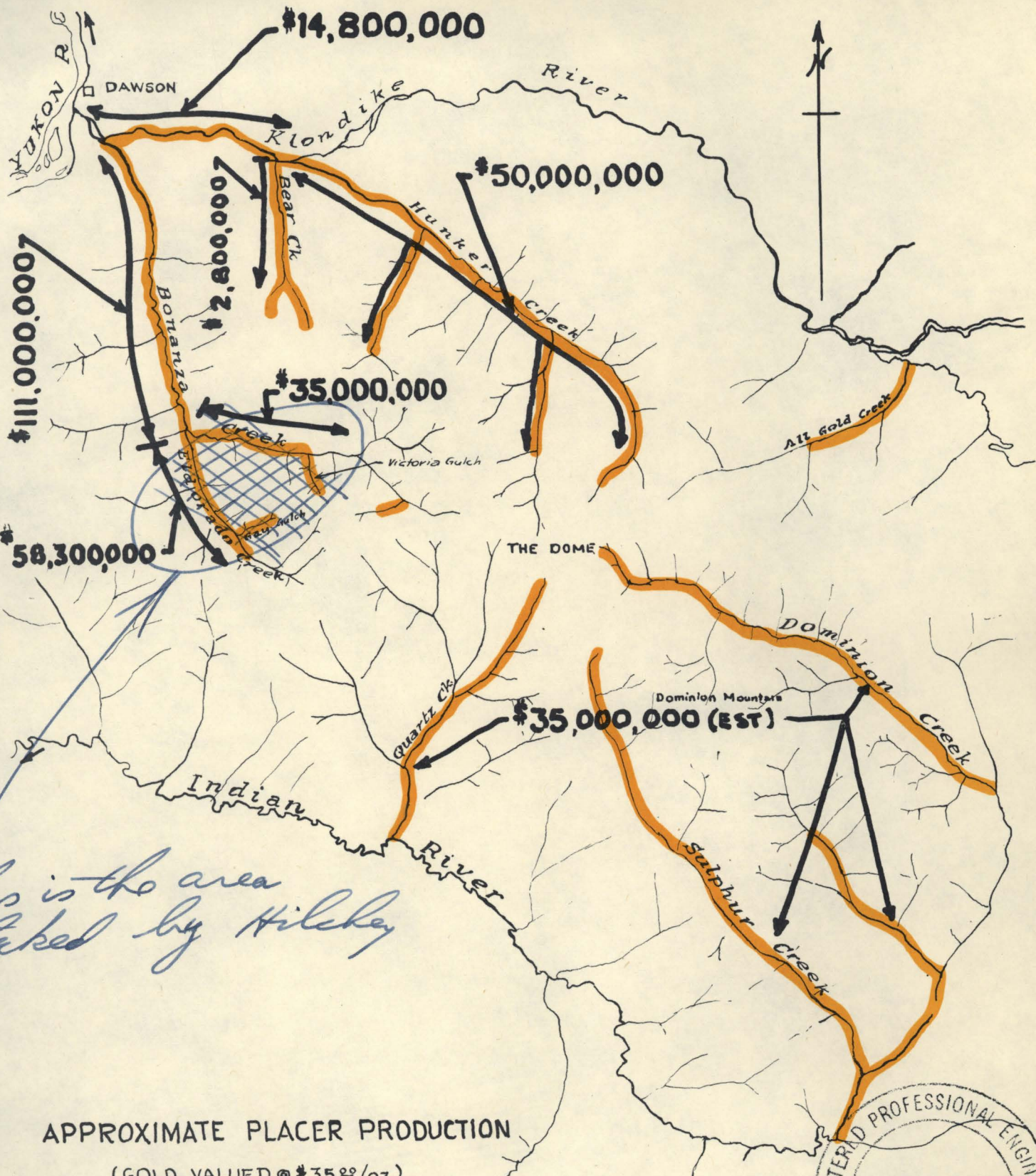
Conclusion

I have worked throughout the camp and I consider this a very promising exploration venture. The prize may be, indeed, fabulous and the cost of finding it very modest. I recommend proceeding immediately with the program outlined above.

Respectfully submitted,

Gordon R. Hilchey, P. Eng.

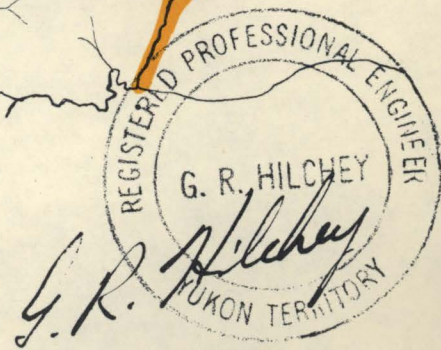




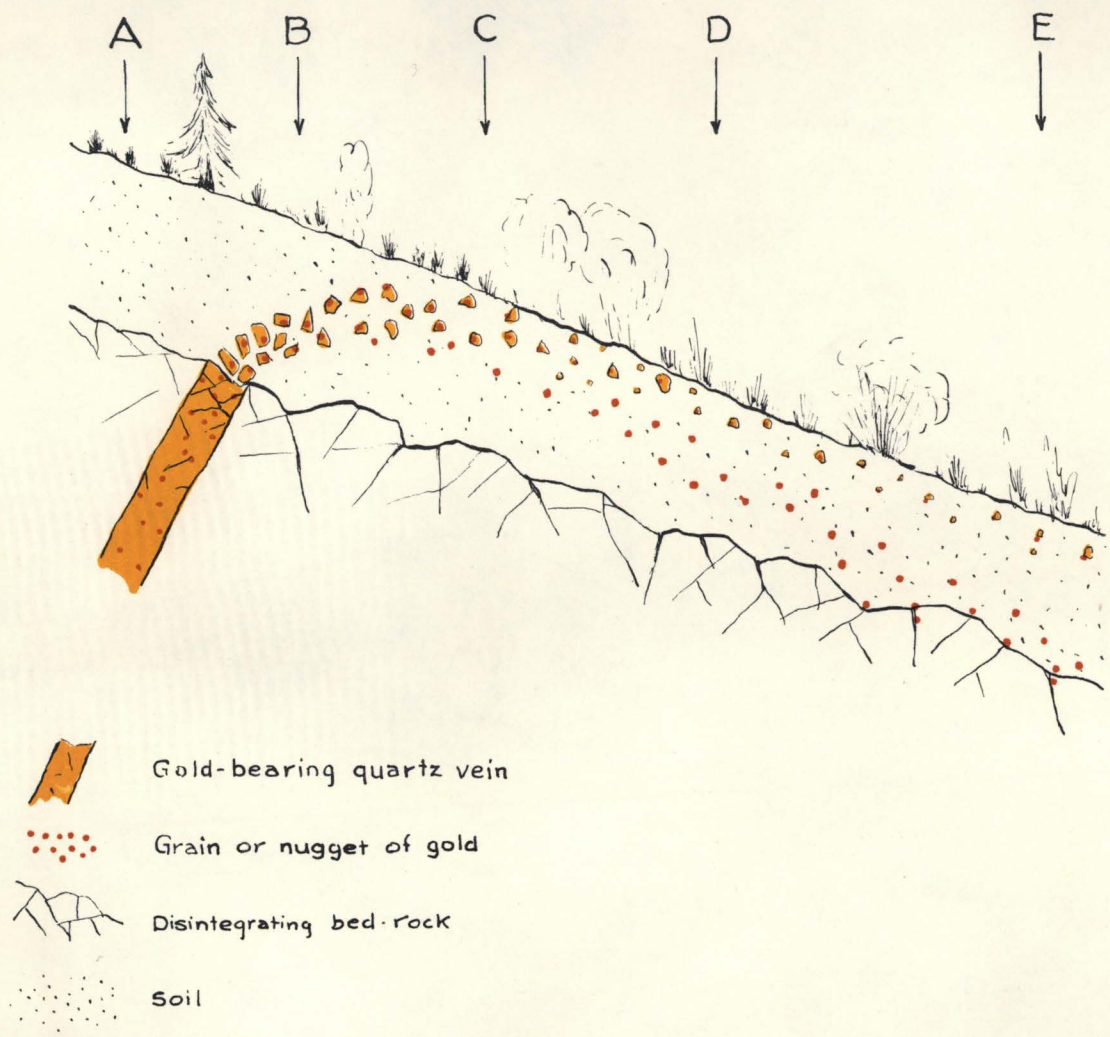
This is the area staked by Hilchey

APPROXIMATE PLACER PRODUCTION
 (GOLD VALUED @ \$35⁰⁰/oz)
 KLONDIKE AREA

Scale: 1 inch = 4 miles



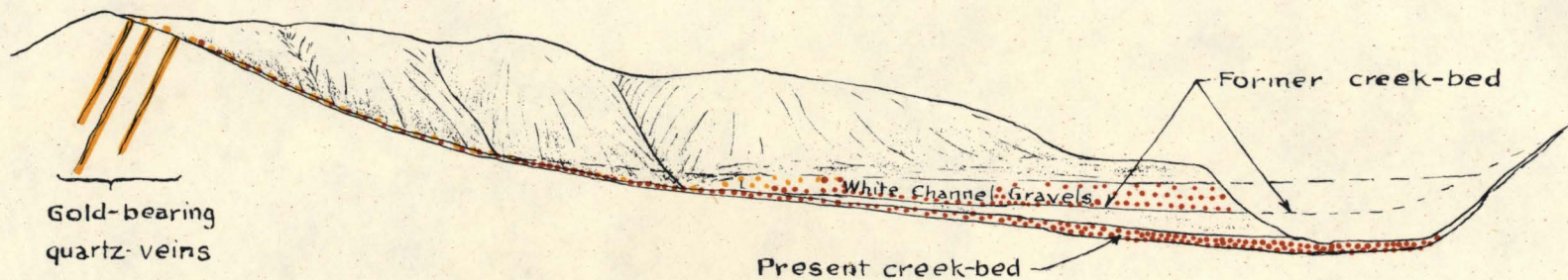
GRH. Jan '60



- E - Very little quartz float - Nuggets on or near bedrock.
- D - Small pieces of gold-bearing quartz near surface nuggets down to bedrock surface.
- C - Coarser pieces of gold-quartz - some nuggets - more nearer the surface.
- B - Abundant pieces of gold-bearing quartz.
- A - No gold or gold-bearing quartz.

DIAGRAM SHOWING THE
 DISINTEGRATION OF A GOLD-BEARING QUARTZ VEIN
 BY WEATHERING AND DOWN-HILL CREEP

G.R.H. - Jan. 1960





Gold-bearing
quartz veins

Former creek-bed

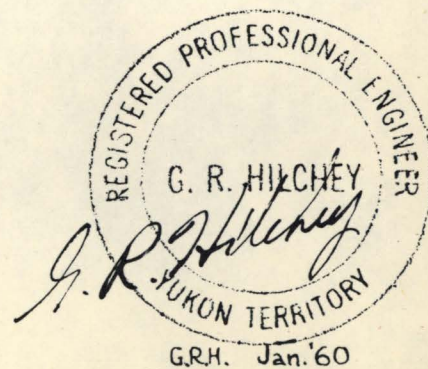
White Channel Gravels

Present creek-bed

 Gold-bearing quartz

 Gold dust and nuggets

SECTION OF CREEK
SHOWING FORMATION OF
HIGH LEVEL (WHITE CHANNEL) AND CREEK PLACERS

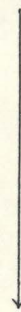


G.R.H. Jan. '60

BEAR CREEK



BONANZA
CREEK



HYDRAULIC MINING OPERATIONS
ON WHITE CHANNEL GRAVELS.

ELDORADO
CREEK



HUNKER
CREEK ←



→ DAWSON CITY

LOVETT HILL AND MOUTH OF BONANZA CREEK
View looking south across the valley of the Klondike river.

This photograph shows the general topography of the Klondike area. Practically all the valley bottom area shown in this picture has been dredged for gold.

ELDORADO
CREEK

Most of the gold in Bonanza
and Eldorado Creeks came off
of this hill. This is the area
recommended for exploration.

Approximate
base of
white
channel.

UPPER
BONANZA
CREEK



GRAND FORKS, BONANZA CREEK.

This photograph, looking south, shows the
topography and vegetation in the area, which
is the subject of this report.



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RG _____ MG ²⁸ _____ R- _____ SERIES/SÉRIE ^{III-43} _____
ACCESSION _____ VOL ⁴² _____ PAGE(S) ³⁶ _____
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FILE/DOSSIER Properties, Klondike Lode Gold Mines 1960-1961
DATE March 2014