

7727 95th Street
Grande Prairie
Alberta T8v 4V3
Phone: 539 4606

800283
93A/14

January 28, 1980

Mr. W.G. Hainsworth
G. M. Resources Limited
Suite 310 - 800 6th Avenue S.W.
Calgary
Alberta T2P 3G3

Dear Mr. Hainsworth,

Subject: Woodward Group Placer Leases - #172, #2114, #2115, #2392

Enclosed please find a preliminary report on Placer Lease #172 written by Mr. M.C. Robinson, Ph.D., P.Eng. in August '79.

Acting upon the recommendations of the report, the following work has been completed:-

As per the map on page 9, three placer leases have been staked. They are leases 2114, 2115 and 2392.

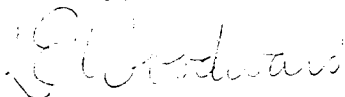
The four leases were grouped and three holes were drilled in December '79 using a cable tool rig. Enclosed please find a preliminary plan of the Hydraulic Pit. B-1 B-2 and B-3 denote the holes drilled in December '79. The holes marked 'X' were drilled in 1938 by the British Corporation mentioned in the Report. The British Corp. also drilled other holes not shown on this plan.

A report detailing the lithology and assays of the holes drilled in Dec.'79 should be ready within the next month. We would be willing to show this report to anyone genuinely interested in acquiring an interest in the property.

Should you require any further information please contact me at the above address.

Thank you in advance for your time spent in looking over this report.

Sincerely,


D.E. Woodward

PRELIMINARY REPORT

WOODWARD GROUP PLACER LEASE NO. 172

LIKELY AREA, BRITISH COLUMBIA

by

M. C. Robinson, Ph.D., P. Eng.

White Rock, B. C.

August, 1979

PRELIMINARY REPORT
WOODWARD GROUP PLACER LEASE NO. 172
LIKELY AREA, BRITISH COLUMBIA

CONTENTS

<u>Item</u>	<u>Page</u>
<u>SUMMARY</u>	(i)
<u>INTRODUCTION</u>	
General statement	1
Location and access	1
Geography and climate	4
Previous technical work	4
Present report	5
Illustrations	6
<u>PROPERTY AND TITLE</u>	
Placer Lease No. 172	7
Suggested acquisitions	8
<u>HISTORY</u>	
Keithley creek	10
Woodward properties	11
<u>PRODUCTION</u>	
Keithley creek and tributaries	21
Woodward ground	23
<u>GENERAL GEOLOGY</u>	
Introductory statement	24
Bedrock	24
Older gold bearing channels	25
General statement	25
Keithley channel	26
Lower Snowshoe channel	30
Alluvial and related deposits	32
<u>NATURE AND DISTRIBUTION OF PLACER GOLD</u>	36
<u>PROPOSED PROGRAM AND ESTIMATED COSTS</u>	
Introductory statement	39
Mapping program	40
Drilling program	41
Estimated field costs	43
<u>CERTIFICATE</u>	45

PRELIMINARY REPORT

WOODWARD GROUP PLACER LEASE NO. 172

LIKELY AREA, BRITISH COLUMBIA

ILLUSTRATIONS

<u>Figure No.</u>	<u>Title</u>	<u>Page</u>
1	Location plan, Woodward Placer Lease	3
2	Sketch Plan, Proposed Staking and Acquisitions	9
3	Sketch Plan, Salient Features, Woodward Placer Lease	15
4	Preliminary Sketch Plan, Old Gold Bearing Keithley and Snowshoe Channels, Woodward Lease Area	18
5	Sketch Plan, Woodward Hydraulic Pit	27
6	Sketch Plan, Woodward Hydraulic Pit and Projected Placer Gold Channels	28
7	Sketch Plan, Proposed Program, Woodward Placer Lease	31

PRELIMINARY REPORT

WOODWARD GROUP PLACER LEASE NO. 172

LIKELY AREA, BRITISH COLUMBIA

SUMMARY

The Woodward family group based in Kamloops, B. C. owns Placer Lease No. 172 located at the forks of Keithley and Snowshoe creeks some 47 miles to the north-northeast of Williams Lake in the Quesnel Mining Division. Access from Williams Lake is provided by a combination of paved, gravel and bush roads with aggregate length of approximately 80 miles.

The present Woodward lease was staked in 1974 but the history of Woodward family placer mining activity along Keithley creek dates from 1929. During the period of early activity from 1929 through 1937, the Woodwards and associates acquired leases covering elevated buried old placer gold channel potential which was in part indicated through earlier underground work. Employing hydraulic mining methods, the early workers were successful in making two placer gold discoveries, neither of which has been extensively exploited, largely because of the serious caving of a working hydraulic face, apparently in 1937. Subsequently in 1938, the then existing Woodward property was drilled by British interests with encouraging results. No significant exploratory or development work has been conducted since that time.

The current younger Woodward generation re-acquisition and interest in the Keithley creek ground is founded upon the earlier family history, experience and results.

Preliminary examination of the property and its environs has suggested the approximate locations of the placer gold channels discovered during the early work. A program involving the detailed mapping and drilling of those channels has been recommended for the purposes of establishing values and reserves.

PRELIMINARY REPORT

WOODWARD GROUP PLACER LEASE NO. 172

LIKELY AREA, BRITISH COLUMBIA

INTRODUCTION

General statement

The following report describes in general terms the location, geological setting, history and placer gold exploration potential of Lease No. 172 owned by Mr. D. E. Woodward and associates of Kamloops and Vancouver, B. C. and located in the Likely area to the northeast of Williams Lake in the Quesnel-Cariboo Mining District. The lease has been held by members of the Woodward family during many of the years since 1929 and it is now proposed that the overall potential of the lease and immediately adjoining ground be evaluated and that, if warranted, the property be brought into production of placer gold.

The following report has been prepared at the request of the present Woodward group and is based primarily upon the writer's examination of the subject property during the period July 20-22nd, 1979.

Location and access

Placer Lease No. 172 is located to the immediate north

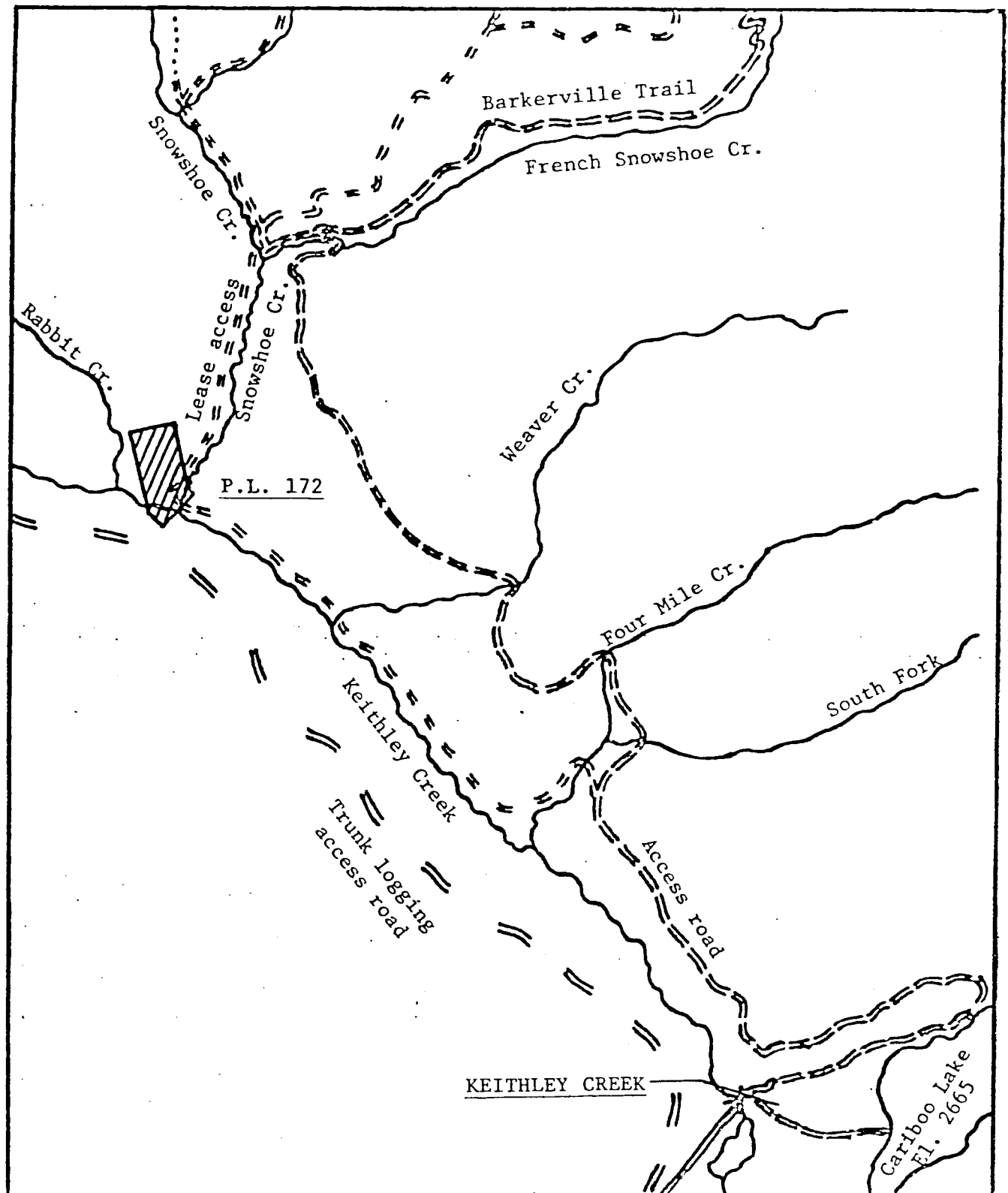
and northwest of the confluence of Keithley and Snowshoe creeks, Cariboo Mining Division, British Columbia (figure 1). That junction lies approximately 47 miles to the north-northeast of Williams Lake, the nearest commercial centre of importance.

The property can be reached from Williams Lake by various combinations of paved, gravel and bush roads, the most used route being as follows:

<u>From</u>	<u>To</u>	<u>Type</u>	<u>Distance Miles</u>
Williams Lake	150 Mile House	Paved	6.0
150 Mile House	Likely	Gravel - 2 lane	48.0
Likely	Keithley Creek	" " "	16.0
Keithley Creek	French Snowshoe Creek junction	Bush - 1 lane(1)	8.0
French Snowshoe Creek junction	Snowshoe forks		0.4
Forks	Snowshoe forks - S. end P.L. 172(2)		1.2
		Total miles	<u>79.6</u>

- (1) bush road to Barkerville (4 wheel drive)
- (2) 4-wheel drive road impassable at time of examination because the bridge across Snowshoe Creek was in very poor condition.

It is considered probable that, in the event of contemplated production, much improved and shorter access to the property can be gained by way of a short section of new road constructed to the south end of Placer Lease No. 172 from a trunk logging road of excellent grade which presently follows the west side of Keithley creek.



WOODWARD PLACER LEASE NO. 172		
Figure 1		
Location plan		
WOODWARD PLACER LEASE		
Date	Scale	Dr. by
Aug./79	1:50,000	M.C.R.

Geography and climate

The area of the subject lease is located in the transition zone between the Interior Plateau and the Omineca mountains. Relief within the general Keithley creek area ranges from 2,665 feet on Cariboo lake to 6,245 feet at Yanks Peak 3-3/4 miles to the northeast of the Woodward lease, an elevation span of 3,580 feet. Local relief over the area of Lease No. 172 amounts to only a few hundred feet. For the most part, topography in the area is gentle to moderate and it presents no significant problems in road construction or other operations. However, in local sections and particularly towards their mouths, streams and their tributaries may flow through relatively steep-walled valleys and, in some cases, through rock canyons developed as the result of rejuvenation and subsequent down-cutting during post-glacial time.

The climate of the area is typical of the interior plateau with warm, dry summers and cold winters. Temperatures as a rule permit a five to six month placer operating season but that can be cut short because of insufficient water for sluicing.

Previous technical work

The regional geologic setting of the subject property has been mapped and described by officers of the Geological Survey of Canada. Engineers of the British Columbia Department of Mines have discussed past operations on the

present Woodward lease in Annual Reports of the Minister of Mines. Those for the years 1931 and 1933 are particularly useful. In addition, Bulletin No. 28 of the Department sets forth recorded production figures for Keithley and other creeks and their tributaries.

Mr. John Woodward carried out a survey of the present lease and his resultant plan has been used in the preparation of some of the illustrations which accompany this report.

To the writer's knowledge, no previous technical report relating specifically to the exploration and development of the present lease and adjoining ground has been prepared in the past. However, Mr. D. R. Cochrane, P. Eng. issued on July 18, 1978 a report covering Placer Lease No. 29 which adjoins the Woodward ground on the southeast. The report is general, contains little by way of interpretation and recommends a program which the present writer fails to understand.

Present report

This report is based upon a field examination of the subject lease during the period July 20-22, 1979, upon historical information supplied verbally by Messrs. Frank and Dave Woodward and Bill Millin, and upon published reports of the Geological Survey of Canada and the Minister of Mines of British Columbia.

The purpose of the writer's examination was to determine

whether or not the Woodward lease was suitable for the immediate on-property application of new and specialized placer gold concentrating equipment developed by Western Placer Reserves Inc. of Langley, B. C. It was found that the purpose could not be fulfilled because of the need for upgrading the local access route, because required site preparation would involve time delays and because the prior stripping and placement of substantial volumes of overburden was indicated. However, those reasons in no way detracted from the potential of the property discussed herein.

On August 7, 1979, Messrs. Dave Woodward and Eric de Witt requested the preparation of this preliminary review of the lease for the purpose of establishing an exploratory and development program for the property, if warranted.

Illustrations

The illustrations contained herein are not based upon surveys conducted by the writer and, for the most part, should be considered as approximate only.

The location and outline of Placer Lease No. 172 as shown in figures 3 and 4 are considered to be accurate and were taken from a survey plat prepared and kindly provided by Mr. John Woodward.

The locations of other leases, roads, streams, etc. were taken from maps prepared and published by the provincial and

federal governments and they contain local inaccuracies and errors. Where an alternate choice was presented, the federal maps were accepted as the more reliable.

Figure 5 is a preliminary sketch only of roads, former workings, etc. on the lower or southern end of Placer Lease No. 172 and it is incomplete. The suggested locations of the Keithley and Snowdrift channels are tentative and approximate only but there is reason for placing them in the positions shown. It is recommended herein that a more accurate and far more detailed plan be prepared in order to properly interpret the locations of the placer gold bearing channels and therefore to effectively guide proposed exploratory and development drilling.

PROPERTY AND TITLE

Placer lease No. 172

The subject lease, No. 172, was staked on August 20, 1974 by Mr. David E. Woodward, then of Vancouver, B. C. The lease was applied for on August 29, 1974 but was not issued until April 29, 1976 because of an intervening moratorium covering the staking of placer mining leases in British Columbia. On May 19, 1977, Mr. David Woodward applied for and was granted an extension of the lease until April 29, 1981.

Mr. F. E. L. Woodward of Kamloops has stated that the following family members presently hold interests in the lease:

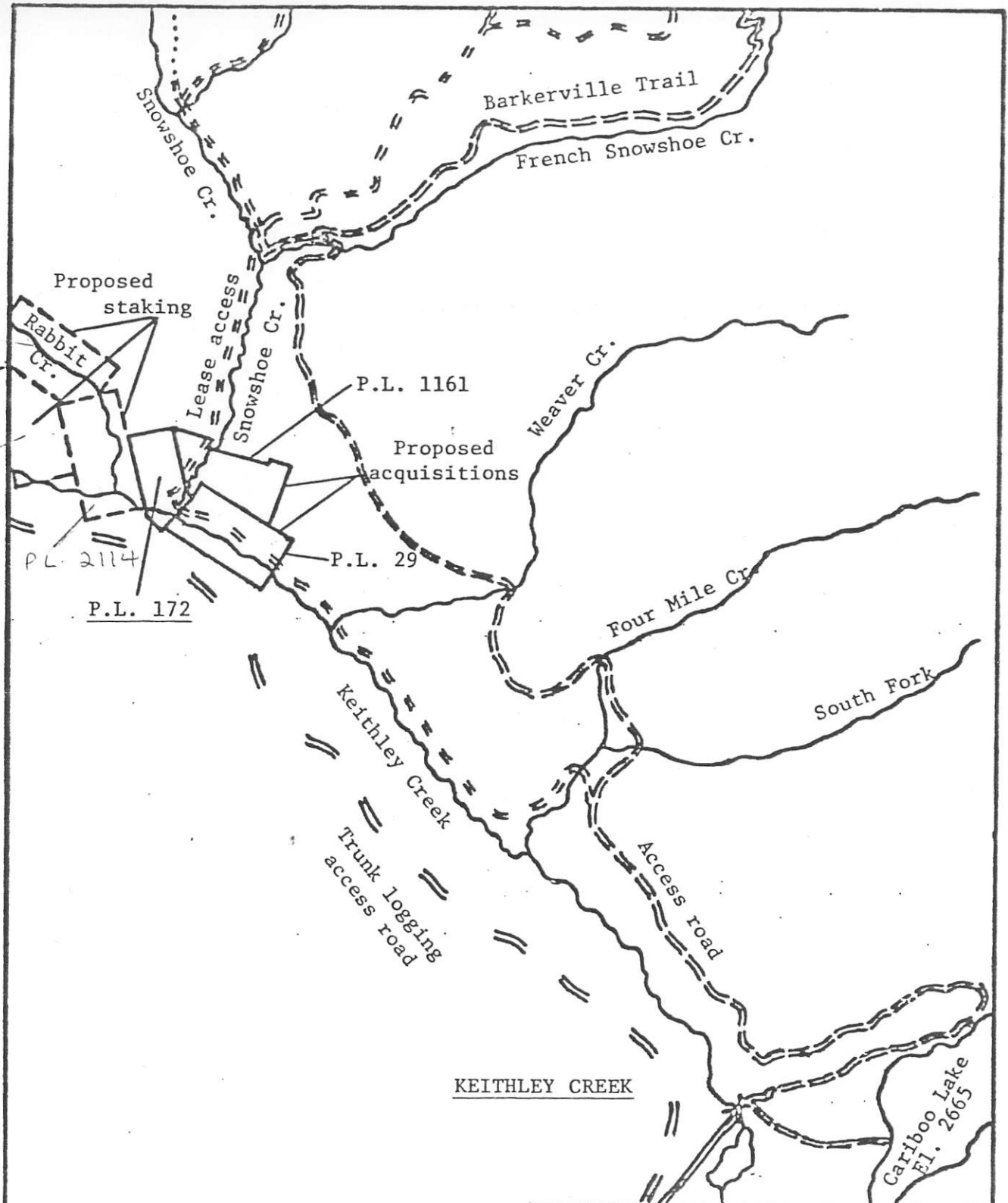
Mr. Frank E. L. Woodward, Kamloops
Mr. John S. Woodward, Little Fort
Mr. David E. Woodward, Kamloops
Mr. Michael J. Woodward, Kamloops
Mr. William E. Millin, Vancouver

Suggested acquisitions

The configuration of the possible Keithley and lower Snowshoe placer gold bearing channels on and in the vicinity of the Woodward lease indicates that, if possible, the following additional adjoining property acquisitions should be made prior to the commencement of any work on the subject lease (figure 2):

1) the staking of apparently open ground to the west along a channel projected into Rabbit creek. Two leases to the west roughly paralleling Lease No. 172 and a third to the northwest and following Rabbit creek are suggested (figure 2).

2) option agreements covering placer leases 1161 and 29 to the east and southeast. The former is tentatively considered to be the more important on the basis of the writer's brief July, 1979 examination. The writer suggests that, if possible, net operating profits agreements carrying specified end prices and no initial or other cash commitments be negotiated. Annual validation of the optioned leases should be anticipated but only at locations selected by the optionee and therefore possibly through the grouping of all wholly owned and optioned leases in the immediate area.



PL 2392

PL 2115

PL 2114

P.L. 172

P.L. 1161

P.L. 29

KEITHLEY CREEK

WOODWARD PLACER LEASE NO. 172		
Figure 2 Sketch Plan PROPOSED STAKING and ACQUISITIONS		
Date	Scale	Dr. by
Aug./79	1:50,000	M.C.R.

HISTORY

Keithley creek

The placer gold deposits in and along Keithley creek and its tributaries were discovered in 1860, shortly after the initial discovery in 1859 of placer gold along the Quesnel and Horsefly rivers, which led in the following year to the Cariboo gold rush. Initial production, obtained largely through the application by individuals and small groups of hand methods to shallow gravels, was flush and, in 1863, production from the combined Quesnel and Cariboo regions is said to have reached its historic maximum, although detailed and worthwhile records were not kept at the time. In fact, no records of production were kept prior to 1874 and those which were maintained during later years are of questionable value, largely because of non-reporting.

Following upon the early years of easy and flush shallow production, more complex and costly methods of exploration and development were applied to deeper and/or elevated buried channel deposits, to elevated benches, etc. through more sophisticated organizational structures. The methods involved included the sinking of shafts and drifting therefrom, the construction of bench and bedrock adit levels, the application to elevated deposits of hydraulic mining methods and, more recently, the use of mechanical excavating equipment.

Placer mining activity along Keithley creek and its tributaries as indicated by reported production figures generally decreased from the early flush years to 1900 after which year it has been largely intermittent and sporadic. A period of notable exception is recorded for the interval 1921-25 when production increased dramatically and to levels above some pre-1874 figures, indicating that not all substantial economic deposits were discovered and largely worked out to that time. A modest increase in production took place during the period 1931-40 when early Woodward operations were in progress.

The discovery of elevated and buried old channel segments by the Woodward group in 1931 along lower Snowshoe and again in 1934 on the present lease indicates that the Keithley creek valley has not yet been fully explored. Furthermore, neither Woodward discovery has been developed or exploited to any significant degree.

The recent increase in the price of gold has led to renewed interest in the Keithley creek and adjoining placer deposits and, as indicated by this report, specifically in the present Woodward ground.

Woodward properties

Woodward family involvement with the placer gold deposits along and adjoining Keithley creek has taken place during two separate and distinct time periods: an early period from 1929 through 1942 and a current period from 1974 to the present.

To a large extent, the current family interest stems from internal knowledge of the grandfather's early work and results coupled with substantial recent increases in the price of gold.

So far as can be determined, the Woodward family was initially attracted to the Keithley creek valley by suggestions by a Mr. John Adams, then an experienced Klondike and Keithley operator, that the placer gold deposits of the area had by no means been worked out, despite the initial discovery of gold along the creek as early as 1860. Specifically, they focussed upon present stream sections where it was apparent that the older placer gold bearing channels were not coincident with the present channels but, rather, were in somewhat elevated positions along the valley walls. The early workers discovered two such channel sections which were productive of placer gold but which have not yet been exploited.

The summary history of the early Woodward family activity along Keithley creek dates from 1929 and is fairly well documented, thanks largely to the memory of Mr. Frank E. L. Woodward, son of the initiator of the original Woodward activity, Mr. Ernest F. Woodward [REDACTED]. In addition, Annual Reports of the Minister of Mines of British Columbia contain pertinent historical information.

The initial activity involved the staking of an unknown number of leases at various intervals along and adjoining

Keithley creek and including:

- 1) a section between Snowshoe and Rabbit creeks,
- 2) a section extending upward along Snowshoe creek from Keithley creek, and
- 3) a section along Keithley creek near the mouth of Weaver creek.

A part of the first section is now covered by Placer Lease No. 172 and it is that section upon which the last of the original Woodward operations were conducted during the approximate period 1934 through 1936 or 1937.

Mr. F. E. L. Woodward has kindly provided from memory the following historical highlights relating to the Woodward lease area since 1929:

1929: Mr. E. F. Woodward acting upon information which had been provided to him staked the subject lease area, apparently in association with a Mr. George Phillips and two Woodward ranch hands, Wade and H. P. Halen. Relatively little work was done during the season but some gold was recovered.

1930: a cabin was constructed on the property, pipe for water supply lines, a 4-inch monitor and other equipment and supplies were transported to the property and assembled. Relatively little actual mining was done.

1931-33: the initial hydraulic work was conducted along lower Snowshoe in the vicinity of a location suggested by Mr.

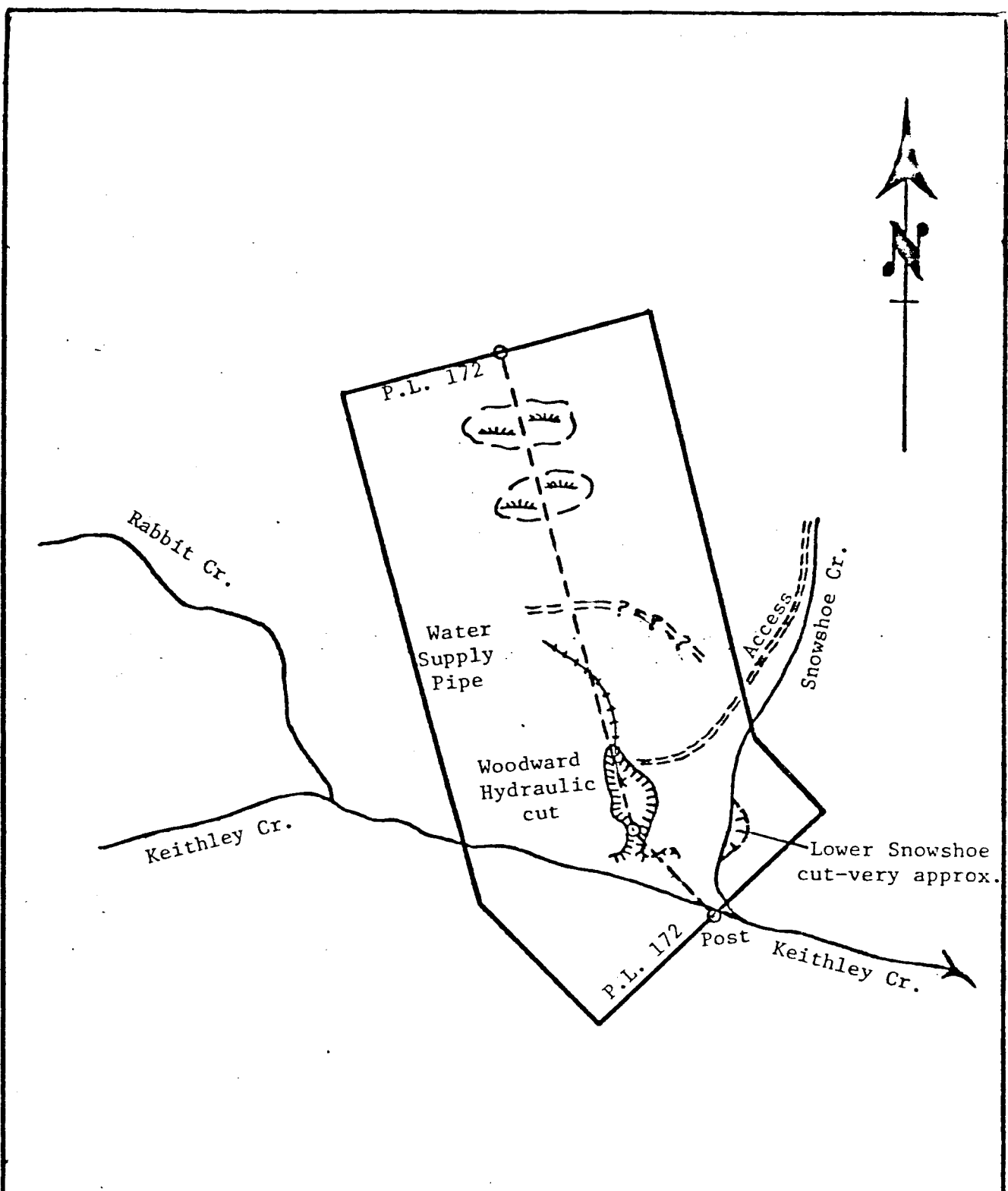
John Adams (figure 3) . Placer gold in unknown amounts was recovered.

1934-36: hydraulic operations were moved to Keithley creek on the lower end of the present lease and immediately below the old hydraulic cut. Work then proceeded upward and northerly into the cut.

1937: during the season of 1937, an overhang above the east face of the Woodward hydraulic cut caved as the result of undercutting with the monitor. As a consequence, debris covered the eastern working face down to sluice trench level. The pit has remained in that condition to the present time.

1938: following the above cave and apparently during the field season of 1938, a British firm drilled the Woodward property and reported excellent results. Mr. Frank Woodward has heard that "sufficient placer gold was recovered during drilling to pay the drillers". That hardly seems credible but the implication carried by the statement is worthy of note.

Mr. Woodward is not certain as to the location of the above drilling but believes that it was carried out in the gently rolling area to the immediate east of the eastern and then caved face of the Woodward hydraulic cut on present Lease No. 172. For reasons to be mentioned, such a general location appears plausible and is in accord with the writer's preliminary interpretation of the location of the objective old Keithley channel described herein.



WOODWARD PLACER LEASE NO. 172

Figure 3
Sketch Plan
Salient Features
Woodward Placer Lease

Note: based upon survey and plan prepared by John Woodward.

Date	Scale	Dr. by
Aug./79	1"-660'	M.C.R.

Following upon its drilling program, the British concern involved is said to have offered Messrs. Woodward, Phillips and Corporan, then joint owners of the Woodward property, the sum of \$120,000.00 to purchase the property outright. The offer was considered to be too low and was not accepted.

1939-42: the property was inactive during these early World War II years.

In 1942, the lease(s) of the then existing Woodward property lapsed because of reported inattention on the part of Mr. Corporan during Mr. Woodward's illness.

1942-74: the area now covered by Placer Lease No. 172 was intermittently staked and allowed to lapse by a series of different owners during this period. No significant work was done during the intervals of tenure although one owner is said to have constructed a wingdam and undertaken limited excavation. Certainly, no attempt was made to examine the apparent primary objective on the ground.

1974-76: the present Woodward lease was staked on August 24, 1974 but was not issued until April 29, 1976 because of a temporary moratorium on the location and issuing of placer mining leases.

1976: road improvements were undertaken using a D-4 cat and they validated leases until April 29, 1982.

Engineering summaries contained within Annual Reports of

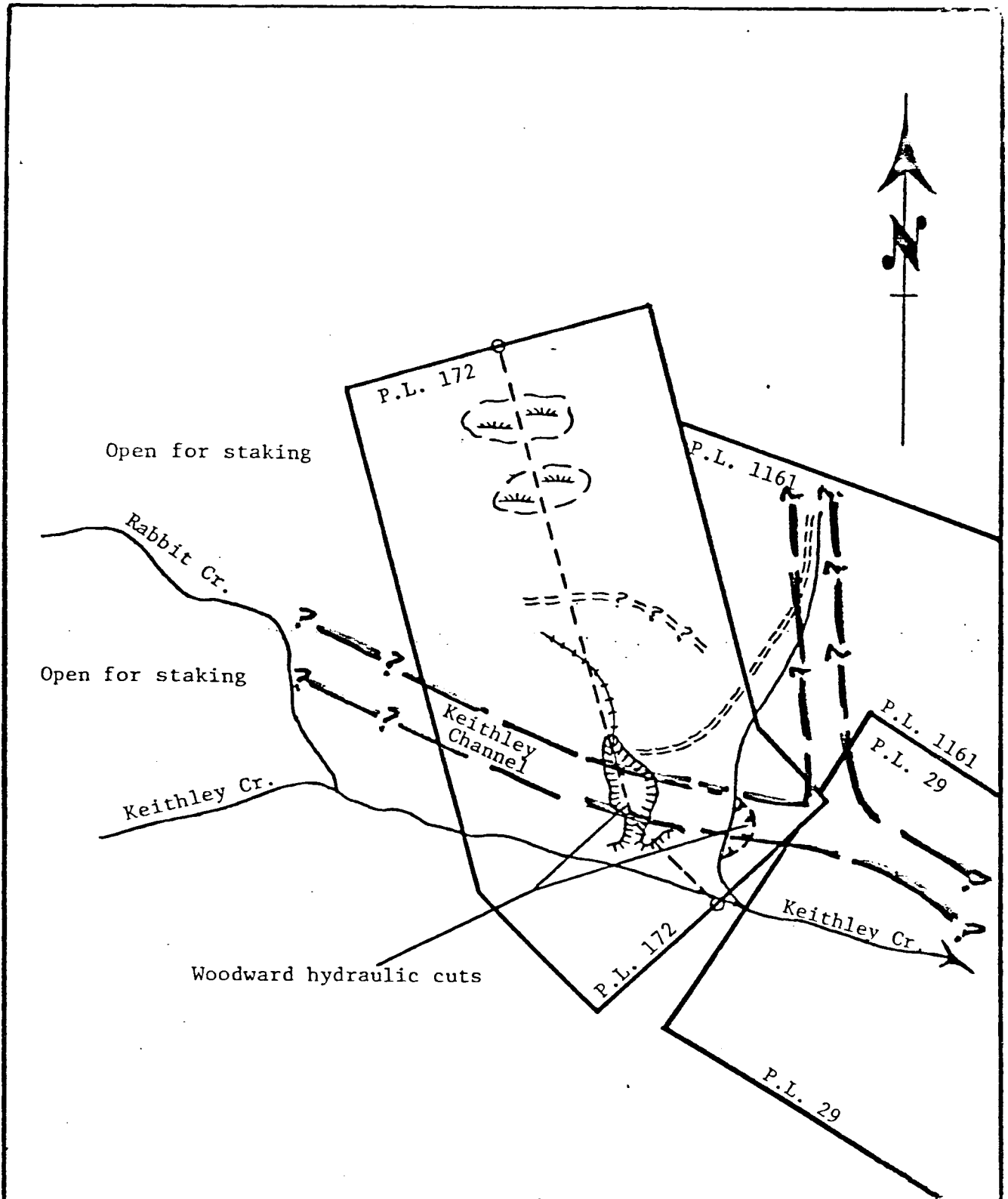
the Minister of Mines for British Columbia, particularly for the years 1931 and 1933, provide the following pertinent information concerning the activity of the early Woodward group, the program of which was apparently managed by Mr. Hans P. Halen:

1) in 1931, the group is reported to have held four bench leases, at least one of which was located along lower Snowshoe creek.

2) a pre-1931 long bedrock tunnel driven by a Mr. J. Adams along with certain topographic features suggested to the Woodward group that a buried placer gold bearing channel lay in the left or east bank of lower Snowshoe creek.

3) accordingly, Halen and associates, taking water from Snowshoe creek at a point below French Snowshoe, opened up a hydraulic pit along the east bank of Snowshoe at a point about 900 feet above its junction with Keithley creek. (This pit or cut was not examined by the writer but should be mapped in detail during the proposed program.)

4) work in the cut is stated to have disclosed a high channel in the east bank of Snowshoe about 65 feet above present stream level. At the time, the operators considered that this might be the right or west rim of an old channel extend along the general course of the Snowshoe valley. The present writer suggests that it may be an eastward extension of an old Keithley channel across and above the present lower Snowshoe creek and that the old Snowshoe channel may be located still further to the east (figure 4).



Notes: survey of P.L. 172 by John Woodward.
 : positions shown for placer leases are approximate only.

WOODWARD PLACER LEASE NO. 172		
Figure 4 Preliminary Sketch Plan Old Gold Bearing KEITHLEY AND SNOWSHOE CHANNELS Woodward Lease Area		
Date	Scale	Dr. by
Aug./79	1"-660'	M.C.R.

5) sufficient gold was recovered during the 1931 work "to justify detailed investigation".

6) the 1933 report states that: "hydraulicking was continued" along lower Snowshoe "with distinctly favourable results" and the operators anticipated "that the total clean-up of gold during 1933 would amount to about 200 oz.".

7) the 1933 report continued to suggest that the pre-Glacial channel of Snowshoe lay east of the above cut and that it "emerges in Keithley creek valley at the rich spot in the latter below the mouth of Snowshoe creek".

8) the 1933 report goes on to state that the Woodward group held additional placer ground along Keithley creek between Snowshoe and Rabbit creeks and, in 1933, contemplated "an hydraulic installation at a point below the mouth of Rabbit creek, where several tunnels were formerly run into the left (north) bank of Keithley creek in search of the old channel---". This concept led to the construction of the Woodward pit on present Placer Lease No. 172, apparently commencing in 1934.

9) the 1933 report also notes that the Woodward group in that year held a lease near the mouth of Weaver creek and covering another buried channel possibility.

In summary, the early Woodward group history along Keithley creek and particularly the present Placer Lease No. 172 appears on fairly firm grounds to have been as follows:

- 1) 1929: initial Woodward placer mining property acquisitions, probably of several leases in the lower Snowdrift-Rabbit creeks area and along Keithley creek near the mouth of Weaver creek.
- 2) 1930: construction of camp; move in of hydraulic and other supplies and equipment; set up and commence operating on the east bank of lower Snowdrift, only a short distance up from Keithley creek.
- 3) 1931: continue lower Snowdrift operation through season with the discovery of an elevated but buried bedrock channel, probably the Keithley channel.
- 4) 1932: continued lower Snowdrift operations.
and
1933:
- 5) 1934: moved to a point along the north bank of Keithley creek below the hydraulic pit on the present Placer Lease No. 172 and commenced working northward towards suspected old buried channel.
- 6) 1935: continued 1935 program, probably broke over south rim into the present hydraulic pit and commenced development therein.
- 7) 1936: continued development of and production from Woodward hydraulic pit.
- 8) 1937: continued as in 1936 to the time of collapse

of the eastern hydraulic face; probably rehabilitated somewhat and commenced but later abandoned restoration attempts.

- 9) 1938: British corporation drilling in the lower part of the present Woodward lease and to the east of the caved hydraulic pit.

PRODUCTION

Keithley creek and tributaries

Placer gold was discovered on Keithley creek and its tributaries, including Snowshoe creek, in 1860, the year of the first discovery in the Cariboo camp. Large amounts of gold were recovered during the early and flush years before production figures were first recorded in 1874. Records are available from 1874 but are of dubious value and they certainly represent minimum figures because of early non-recording, non-reporting, the use of gold rather than currency to purchase materials, supplies and services, etc.

Bulletin No. 28 of the B. C. Department of Mines provides the following summary recorded production in crude ounces for Keithley creek and its tributaries from 1874 through 1945, since which year production has been minimal.

<u>Period</u>	<u>Keithley Creek</u>	<u>Snowshoe Creek</u>	<u>Little Snowshoe Creek</u>	<u>French Snowshoe Creek</u>	<u>Weaver Creek</u>	<u>Four Mile Creek</u>
1874-75	2,466	721				
1876-80	7,105	3,787		46		
1881-85	6,345	4,322				
1886-90	2,521	2,041		252		
1891-95	2,983					
1895-1900	1,383	1,959		112		
1901-05	329	559	393			
1906-10	1,745		100			
1911-15	274		658			
1916-20	351					
1921-25	8,340				107	19
1926-30	112	109			146	250
1931-35	437	387			23	271
1936-40	732	55				172
1941-45	272				69	6
Crude ounces-total	35,395	13,946	1,151	410	345	718
Fineness - av.	897	888	888	834	892	886
Fine ounces-gold	31,749	12,379	1,022	342	308	636
Gold @ \$280.00 (US)	\$8,889,720.00	\$3,466,120.00	\$286,160.00	\$95,760.00	\$86,240.00	\$178,080.00

Summary: Keithley creek and tributaries

Total crude ounces - placer gold
Total fine ounces - gold
Total ounces silver in crude gold - approx.
Total value - fine gold at \$280.00 (US)

51,959 troy
46,436 "
5,523 troy
\$13,002,080.00 (US)

Woodward ground

As is normally the case, production records have not been kept for the ground covered by the subject lease and its immediate area.

Records published by the British Columbia Department of Mines indicate only that production during the season of 1933 from the lower Snowshoe pit was expected to amount to about 200 ounces.

Mr. Frank Woodward recalls from conversations with his father, a partner in the original Woodward lease(s), that:

1) during the set-up year of 1929, little operating was done and only a small amount of gold was recovered.

2) during the seasons of 1930 through 1934, some gold was recovered from a two man operation but the amounts are unknown. Work conducted during those seasons was largely in the lower Snowshoe area.

3) during the seasons of 1935 and 1936 when three men were employed on the property, approximately \$10,000.00 in placer gold were recovered each season from what is obviously a relatively low volume of gravel. Under current metal prices that reported value per season amounts to roughly \$100,000.00. This later production was from the Woodward pit on present Lease No. 172.

GENERAL GEOLOGY

Introductory statement

The local bedrock and surficial geology of the Woodward lease area is not well documented and therefore a program involving the detailed mapping of both is recommended herein. That information which is currently available through the writer's examination and sketchy published and unpublished reports is summarized below.

Bedrock

Bedrock beneath and in the region surrounding the subject lease is made up of sedimentary and metasedimentary rocks of the Cariboo Series of probable Cambrian age. Where observed in outcrop along property access routes, lower Snowshoe creek and in the vicinity of the Woodward pit on the subject lease, the rocks are predominantly dark grey to black, mostly rusty weathering, poorly bedded, partly blocky, fractured argillaceous rocks which display poorly to well developed slaty cleavage. Locally, as at the southeast corner of the Woodward pit, interbedded members of argillaceous quartzite and quartzite are present. Elsewhere, some interbeds and members of dark argillaceous limestone and of lighter limestone are contained within the section.

Deformation of bedrock appears to have been severe with

the resultant development of tight folds and secondary folds, schistose zones, slaty cleavage which is partly crinkled, fault and gouge zones and fractures. In general, the rock has the appearance of a bedrock well suited to the entrapment of placer gold.

The bedrock surface has been channeled and probably benched through stream action during various periods and was modified to some extent through glaciation, the local effects of which are not yet clearly understood. However, it does appear that, in the local area, the present Keithley and lower Snowshoe creeks do not occupy pre-glacial or inter-glacial channels in which placer gold was deposited. The present stream channels have been incised more deeply into bedrock than the prior and now elevated old placer gold channels which they appear to truncate in places as along lower Snowshoe creek.

OLDER GOLD BEARING CHANNELS

General statement

The writer's preliminary examination of the Woodward lease has led to the tentative but fairly firm conclusion that low risk exploratory potential is contained within a buried placer gold bearing channel which is believed to traverse the southern part of the lease to the north of and above present Keithley creek.

Regional experience in the Cariboo district and local

experience along Keithley creek have shown that former stream channels and benches in or upon which gold was deposited during pre-glacial and/or inter-glacial times were buried and preserved in part at least beneath late glacial and post-glacial sediments. Such appears to be the case on and adjoining the present Woodward leases along both Keithley and lower Snowshoe creeks.

Keithley channel

The buried placer gold bearing old Keithley channel is for a number of reasons considered to trend westerly to north-westerly through the Woodward hydraulic pit at a point some 400 feet to the north of and 50 to 60 feet above Keithley creek in the south central part of Placer Lease No. 172 (figures 4, 5 and 6). The reasons for so defining the local position of the Keithley channel, although tentative and subject to change through detailed mapping and drilling are as follows:

- 1) the configuration of the bedrock surface on the southeast side of the Woodward hydraulic pit coupled with the presence of a topographic depression in which there is no outcrop to the immediate north and east of the pit suggests the existence of an old channel passing in an easterly direction through the eastern extremity of the hydraulic pit.

- 2) the fact that work during the latest seasons of the early Woodward period was conducted at the above eastern pit location which must therefore contain the best available values.

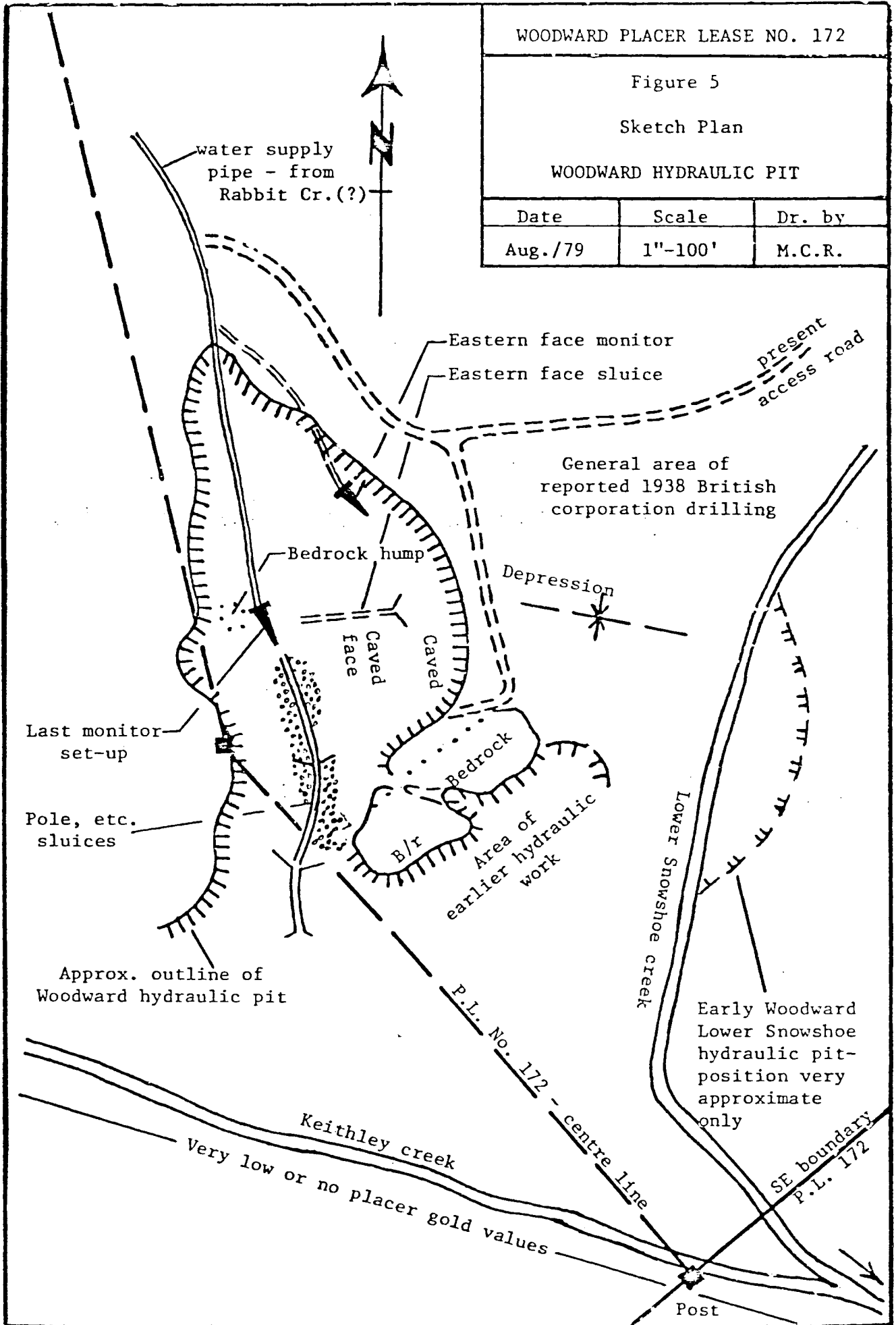
WOODWARD PLACER LEASE NO. 172

Figure 5

Sketch Plan

WOODWARD HYDRAULIC PIT

Date	Scale	Dr. by
Aug./79	1"-100'	M.C.R.

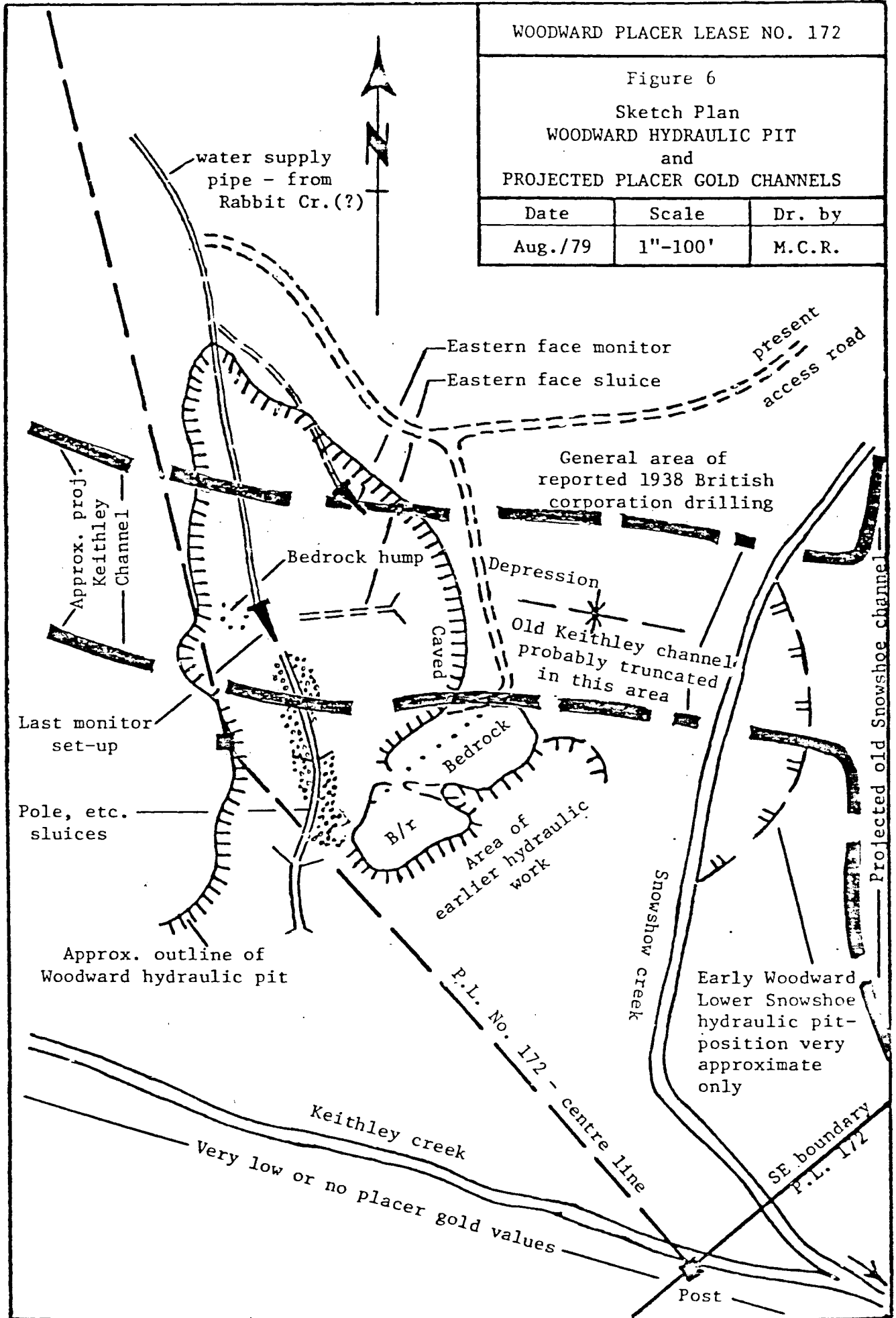


WOODWARD PLACER LEASE NO. 172

Figure 6

Sketch Plan
WOODWARD HYDRAULIC PIT
and
PROJECTED PLACER GOLD CHANNELS

Date	Scale	Dr. by
Aug./79	1"-100'	M.C.R.



General area of reported 1938 British corporation drilling

Old Keithley channel probably truncated in this area

Early Woodward Lower Snowshoe hydraulic pit - position very approximate only

Very low or no placer gold values

3) the fact that the reported 1938 British corporation drilling is said to have been conducted in an area to the immediate east of the Woodward hydraulic pit with favourable results indicates continuity of buried channel values in that direction.

4) the fact that very low or no values in placer gold were recovered along the present Keithley creek where it traverses the Woodward lease and adjoining ground but were found along the present channel both above and below that barren or relatively barren section. This implies that, in the critical section involved, the present channel does not follow the former older and gold bearing channel.

5) the fact that topographic and other local evidence, including the entry of Rabbit creek through a rocky canyon into the present Keithley creek, indicates progressive movement through time of the Keithley channel towards the south.

The projected course of the old and gold bearing Keithley channel has not been defined but is shown in sketch fashion in figures 4 and 6. In order that the position of the channel be established and the placer gold values contained therein be established, it is recommended herein that:

1) the Woodward group obtain additional adjoining ground through which the old Keithley channel is likely to pass.

2) the Keithley-lower Snowshoe-Rabbit creeks area be mapped in detail in order to delineate the outcrops of bedrock,

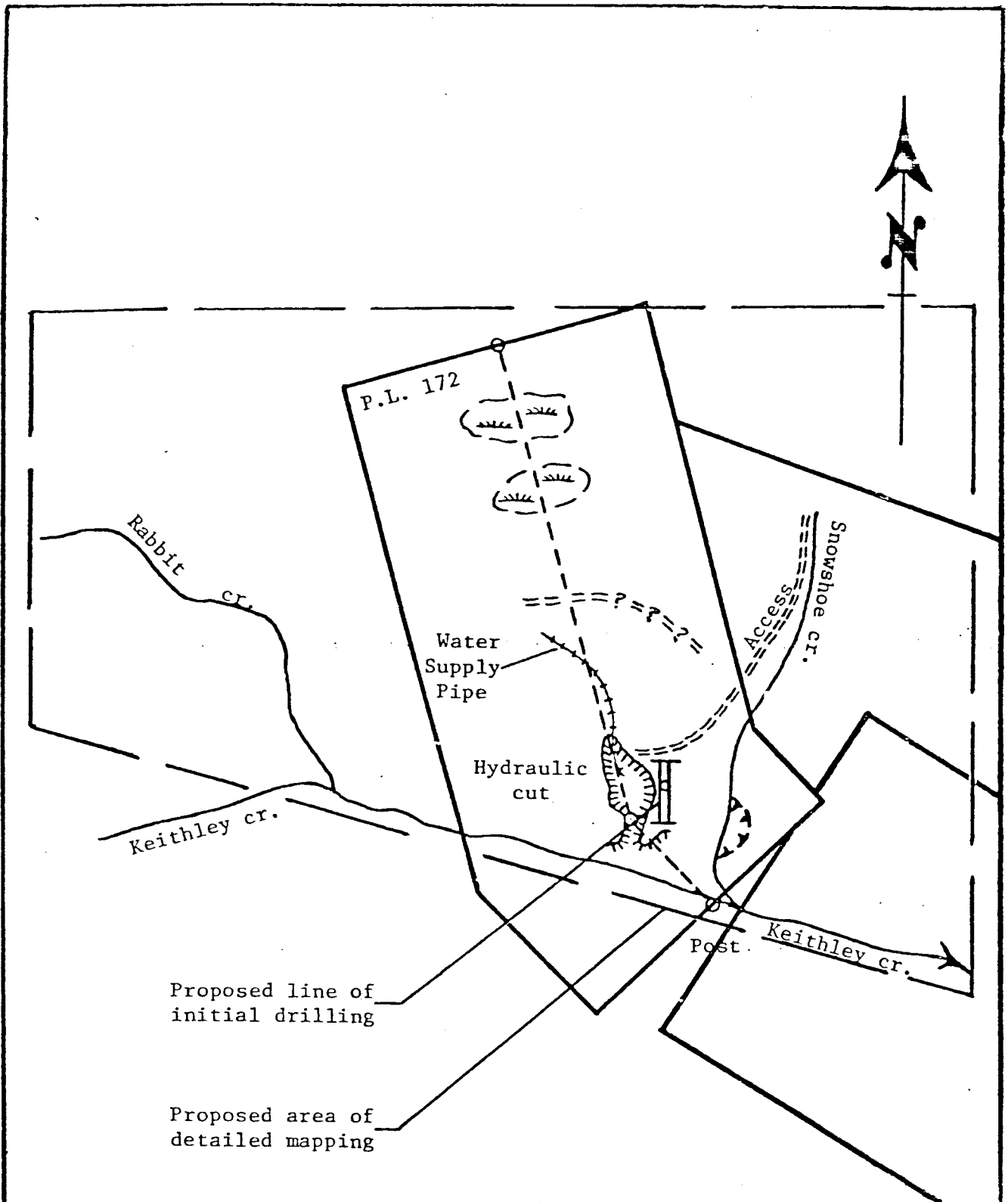
surficial geology, etc. having a bearing upon the location of the old channel.

3) a churn drilling exploratory and development program be conducted in order to define the location of the channel and to determine the values therein, commencing with the initial holes off the east side of the Woodward hydraulic pit (figure 7).

Lower Snowshoe channel

For reasons of topography and results obtained during past placer mining work, the old and gold bearing lower Snowshoe channel is believed to have followed a course to the east of the present creek, roughly as shown in figures 4 and 6. The pertinent data leading to this suggestion are as follows:

- 1) topographic features suggestive of the above.
- 2) the fact of the gap in placer gold values along Keithley creek as previously mentioned.
- 3) the fact that the upper part of Placer Lease No. 29 which lies along Keithley creek and adjoins the subject Woodward lease on the southeast was not worked by past operators. This suggests to the writer that the ground was uneconomic. However, Mr. D. R. Cochrane in a June 28, 1978 report notes also that this area was not worked but interprets it as being "virgin ground".
- 4) the fact that a lower Snowshoe pit constructed by



Proposed line of initial drilling

Proposed area of detailed mapping

WOODWARD PLACER LEASE No. 172		
Figure 7		
Sketch Plan		
PROPOSED PROGRAM		
WOODWARD PLACER LEASE		
Date	Scale	Dr. by
Aug./79	1"-660'	M.C.R.

Note: based upon survey and plan prepared by John Woodward

the Woodward group prior to and during 1933 appears to lie along the projected Keithley channel some 65 feet above the present stream. The pit was not visited by the writer but is described by engineers of the British Columbia Department of Mines as containing significant values in placer gold.

5) the fact that the provincial engineers who visited the operating lower Snowshoe pit in 1933 suggest that the pre-Glacial channel of Snowshoe "lies in-stream next to the Snowshoe hydraulic pit and emerges in Keithley creek at the rich spot in the latter below the mouth of Snowshoe". No detail is provided but is expected to be obtained during the course of the proposed mapping and drilling program.

It is to be noted here that, if the above general concept of approximate channel positions is correct, the present lower Snowshoe creek cuts through and forms a gap in the old Keithley channel.

Alluvial and related deposits

Deposits above bedrock in the area of the Woodward lease include:

(1) interbedded and poorly to well layered pre-glacial and/or inter-glacial clayey gravels and boulder gravels, clays, silty clays and boulder clays, fine deltaic or lake silts and sandy silts, etc. It is the argillaceous and/or boulder gravels of this section which, when located in bedrock channels or above false clay bedrock, contain known values in

placer gold.

(2) present stream gravels, boulder gravels, silty and sandy gravels, sands, silts, etc. which are largely re-worked pre-glacial or inter-glacial alluvium and which contain varying concentrations of re-worked placer gold and associated heavy minerals, especially at and below the points of intersection with older auriferous channels.

(3) blocky and angular talus below steep outcrops of bedrock.

(4) thin and poorly developed soil cover which supports the growth of pine, spruce, poplar and grasses and small plants and, in swampy and low areas, close-spaced willows.

The lithologic section formerly exposed along the walls of the Woodward pit could not be mapped because of the caving and of surficial clay wash previously mentioned. However, a very approximate and generalized reconstruction of the section based upon observations at the top of the cut, upon old photos and upon statements of Mr. Frank Woodward is as follows:

<u>Depth from surface-ft.</u>	<u>Lithology</u>
0-10	Reddish-brown, very fine apparently lacustrine or lake silt.
10-25	Light to medium grey clay and silty clay - sticky gumbo when wet and hard when dry.
25-28	Light grey to greyish white siltstone and silty sand (?) - glacial lake deposit (?)

<u>Depth from surface-ft.</u>	<u>Lithology</u>
28-40	Mixed fluvio-glacial clayey gravels, boulder gravels and clay.
40-47 (?)	Auriferous clayey and boulder gravel.
47-50 (?)	Blue clay false bedrock described by Mr. Frank Woodward.
50-75	Mixed fluvio-glacial, poorly sorted, silty and clayey sands, gravels and boulder gravels, the lowermost of which contain significant values and all of which may contain some values in fine gold.
75 (?)	Bedrock, probably broken and with values in placer gold.

The above sediments appear in the old photographs to be fairly well layered along horizontal planes. Torrential and stream cross-bedding seen at other localities in the area were not observed and cannot be identified in the photos.

Judging from the boulder piles in the pit area and from photographs, boulders greater than six inches do not constitute more than five to ten per cent of the pit sediment and they should present no significant problem in operating. The largest boulders observed are on the order of 24 inches in maximum dimension and roughly 70 per cent are 10 inches or less. An occasional angular block of bedrock, probably stripped during mining, exceeds that dimension:

The coarse or boulder fraction contains sub-angular to sub-round particles with the occasional angular bedrock fragment. The constituents tend to be slabby in form, reflecting their sedimentary origin. A variety of rock types is represented.

Dark argillite and argillaceous quartzite, some thinly bedded, some contorted and/or slaty and some iron-stained predominate. Milky and grey, translucent vein quartz, some containing pyrite, are present. Other rock types represented include lighter colored quartzite, dark argillaceous limestone and intrusive materials.

The clays and silty clays which are present in seams a few feet or more in thickness are said by Mr. Frank Woodward to have caused operating problems, notably during sluicing because they tend to peel off in large, sticky slabs and because clay galls, etc. are suspected to have carried values in gold through the sluices.

The present stream beds are composed of fairly well washed alluvium which, in several locations at least, is suspected to be only a few to ten feet in total thickness above bedrock. The materials are generally similar to those of the pre-glacial or inter-glacial deposits from which they were derived through down-cutting. One estimate of the particle size distribution along Keithley creek at the south end of the Woodward lease is as follows:

<u>Particle size</u>	<u>Estimated per cent of whole</u>
Plus 12-inch	10
6-inch to 12-inch	20
1/2-inch to 6-inch	50
Minus 1/2-inch (fines)	<u>20</u>
Total	100

NATURE AND DISTRIBUTION OF PLACER GOLD

Comparatively little specific information is available to the writer concerning the nature and distribution of placer gold in the area of the subject lease and particularly in the Woodward hydraulic cut which is believed to explore the old Keithley channel and which is reported to have been the source of best operating returns.

Mr. Frank Woodward advised from memory that two principal gold bearing intervals of unknown thickness were present in the hydraulic cut, one at and above bedrock and the second roughly 30 feet higher and situated above a false bedrock layer of blue clay. Photos taken of old hydraulic operations, probably in 1935 or 1936, would appear to substantiate Mr. Woodward's statement. In addition to the two principal zones, there may have been lesser values between those productive horizons.

The above zones could not be examined during the writer's visit to the property because of the caving of the eastern hydraulic face previously mentioned and because the western face has also sloughed and is covered with clay wash.

Mr. Woodward recalls that the sluice employed in the above work was approximately 60 feet long and that the bulk of the recovered gold was from the uppermost one-third of the box. He remembers vividly some difficulty in handling clay in lumps to large "blocks", some of which were more than five

feet in maximum dimension. He also notes that his father, the original 1929 staker, was concerned about possible losses in gold through clay galls, ^{blister} lumps, etc., a common event in heavy clay areas.

A few pans of fines taken from below the last line position of the sluices provided a few fine colors in gold along with minor magnetite and a few cubes and grains of pyrite. These were not considered to be significant or representative of anything, particularly because the last material washed was likely to have been caved material run through in an attempt to clean up the cut.

Mr. Woodward has indicated that, to his knowledge, the gold recovered during the early operations was fine with maximum particle size being on the order of that of grains of rice and with the bulk of the recovered material being much finer. Consequently, the clay content of the gravels and flanking sediments may well have resulted in production losses. Possible clay problems should be watched carefully during drilling and in the design of any future recovery plants.

As noted, some of the boulders contained within the productive gravels are made up of milky and translucent vein quartz, some of which contain cubes and masses of pyrite. Some such material is said to contain visible gold but none was seen by the writer. In any event, the source veins are likely to have also been the origin of the placer gold in the area.

Mr. D. R. Cochrane in a June 27, 1978 report on Placer Lease No. 29 to the immediate southeast of the subject property notes frequently the presence of gold in sulphides, principally pyrite and oxidized pyrite. One sample taken by him is reported to have calculated back to \$4.73 (US) per cubic yard with gold at \$176.30 (US) per fine ounce which amounts to approximately \$7.50 per cubic yard under present prices near \$280.00 (US) per fine ounce. Mr. Cochrane notes further that, according to an engineering statement in the Minister of Mines Report for 1902, a sample of sulphides obtained from a Snowshoe creek lease assayed 5.9 ounces per ton of sulphide or \$1,650.00 per ton under current prices. Obviously, the sulphides are sparsely distributed in the gravels but the presence of very significant gold in them is interesting. Whether or not they can be recovered economically is a matter of some doubt and will likely relate to the concentration process employed.

The fineness of Keithley creek and tributary crude placer gold as reported in Bulletin No. 28 of the B. C. Department of Mines is as follows:

<u>Creek</u>	<u>Number of Determinations</u>	<u>Fineness (1)</u> <u>Range</u>	<u>Average</u>
Keithley	26	887 -899	897
Keithley at Weaver	12	869.5-896.75	892
Keithley at Four Mile	17	872.5-895	886
Snowshoe	-	-	888 (2)
Little Snowshoe	16	880 -895	888
Weaver	-	-	892 (3)
Four Mile	-	-	886 (4)

Notes: (1) Fineness is parts of pure or fine gold per thousand parts of crude placer gold. Thus 880 fine crude placer gold is 88 per cent pure or fine gold.

- Notes: (2) Assumed to be the same as Little Snowshoe.
(3) " " " " " " Keithley at Weaver.
(4) " " " " " " " " Four Mile.

It is interesting to note that the above fineness figures are consistently higher than the averages for the Quesnel district (Av. 858) and are slightly higher than the Cariboo average (875.5).

In general, the range in fineness is fairly limited and constant for the Keithley creek drainage area, thus implying similar sources, probably a regional set of gold-quartz-sulphide veins emplaced during the same period of mineralization. Local departures, notably the lower figures for samples from Keithley creek at the mouths of Weaver and Four Mile creeks, probably represent slightly different character of the quartz vein mineralization in the drainage areas of the latter creeks.

PROPOSED PROGRAM AND ESTIMATED COSTS

Introductory statement

The program proposed for the Woodward Group Placer Lease No. 172 is directed entirely toward the defining through mapping and drilling of the location and configuration of buried placer gold channels on and immediately adjoining the property and the determination through drilling of gold values and potential reserves contained within those channels.

As a first measure and as previously indicated, the Group

should acquire additional ground through staking and, if possible, through agreement prior to the initiation of on-property work.

In order to minimize costs of the proposed program, it is suggested that the mapping and drilling phases be carried out concurrently so that the engineer involved can supervise and follow the results of drilling when necessary and can attend to the required mapping when not so engaged. In addition, such an arrangement should save on transportation and related costs.

Mapping program

A program of plane table mapping over an area straddling Keithley creek valley from lower Rabbit creek valley to lower Snowshoe creek valley is recommended (figure 7). The major objectives of the program are as follows:

(1) to map areas of bedrock exposure and to obtain the elevations thereof in order to assemble the data necessary to prepare the bedrock contour maps necessary to define the locations of buried channels and to control the drilling program.

(2) to map and obtain lithologic and pan sample data covering exposures of the alluvial, etc. section above bedrock in order to provide such information as:

- (a) character and continuity of lithic units
- (b) nature and distribution of gold values
- (c) character of material to be processed

- (e) character of material to be stripped
- (3) to obtain topographic data for purposes of:
- (a) estimating volumes to be stripped
 - (b) estimating volumes to be processed
 - (c) locating waste disposal, settling pond and other operating sites
 - (d) defining water supply line routes
 - (e) examining a possible new access route from the trunk logging road across Keithley creek valley
 - (f) preparing the plans required by governmental authorities (mines, forestry, environment, etc.)
- (4) locating drill sites and collar elevations, lease posts, old workings, present access routes, sample points, etc.

Drilling program

A closely controlled program of churn drilling to be carried out by an experienced competent operator and helper is recommended. The program cannot be accurately defined at present in the absence of the above mapping but the initial location and general parameters can be stated as follows:

- (1) the initial hole should be located at an accessible spot a few tens of feet to the east of the east face of the Woodward hydraulic pit. It is presumed that this hole will intersect the two zones described by Mr. Frank Woodward for the old pit operations and will penetrate a short distance into bedrock. In addition, the location is presumed to be within

the area of the 1938 British corporation drilling which led to the subsequent offer to purchase the property.

It is estimated on a very preliminary basis that the initial hole will be on the order of 75 feet deep to and into bedrock, discounting the possibility of boulder problems on the way down. In the event that an unusually large boulder prohibits further advance, the rig should be moved laterally a short distance and the hole re-drilled to solid bedrock.

Concurrent with the drill move-in and operation on the initial hole, the Woodward pit and bedrock and other exposures in its vicinity should be mapped in order to prepare a cross-section to which the data from the initial hole will be added on-site. That section along with a structure contour map on bedrock will serve to guide the on-going drilling program.

(2) subject to the results obtained during (1) above, it is presently anticipated that a north-south line of three to five holes should be completed off the east side of the old Woodward pit in order to define the configuration, limits and potential productive zones and values within the projected buried Keithley channel.

(3) given the results obtained through (1) and (2) above and the data supplied through additional mapping, the drill program should be extended on a hole-to-hole basis to cover the eastward extension of the channel and, later, to examine its character and continuity on the west towards

Rabbit creek.

Estimated field costs

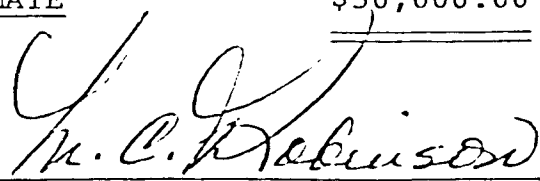
No firm contractual and related cost figures are available at the time of this writing so that the following figures must be considered as tentative estimates pending the receipt of firm quotes to be obtained by Mr. Dave Woodward.

A. Assumptions

- | | |
|--|---------------------------|
| 1) Move in | 1 day |
| 2) Move out | 1 day |
| 3) Drill program duration | 40 days |
| 4) Water lines | \$1,000.00 |
| 5) Access and site preparation | 2 days |
| 6) Drilling: | |
| a) operate | 10 hrs/day |
| b) travel | 2 hrs./day |
| c) driller & drill | \$30.00/hr., \$350.00/day |
| d) helper | \$10.00/hr., \$120.00/day |
| e) fuel, casing, rentals, supplies | \$5.00/ft. |
| f) board & room - 2 people at \$30.00/man day | \$60.00/day |
| g) travel - 100 mi/day @ 40¢/mi, (engineers to accompany drillers) | \$40.00/day |
| 7) Drilling rate - av. | 30 ft./day |
| 8) Average hole depth | 60 ft. |
| 9) Average hole time | 2 days |
| 10) Average cost/foot from 6) above | \$24.00 |
| 11) Total holes | 20 |

B. Estimates

	<u>Item</u>	<u>Estimated cost</u>	
1)	Access and site preparation	\$	1,500.00
2)	Water supply installation		1,000.00
3)	Move in and out		1,000.00
4)	Drilling - 20 holes, 1,200 ft. @ \$24.00		<u>28,800.00</u>
	Sub-total: operating	\$	<u>32,300.00</u>
	Contingency		2,700.00
	New sub-total: operating	\$	<u><u>35,000.00</u></u> \$35,000.00
5)	Supervision, mapping, etc.		
a)	Engineer - 7 days initial @ \$350.00 - 3 days final	\$	2,450.00 1,050.00
b)	Eng. assistant - 45 days @ \$150.00		6,750.00
c)	Air - 4 trips		400.00
d)	Board & room - 55 man days		1,650.00
e)	Assays		1,000.00
f)	Instrument, etc. rentals		500.00
g)	Supplies, etc.		500.00
h)	Miscellaneous		<u>500.00</u>
		\$	<u><u>14,800.00</u></u> <u>\$15,000.00</u>
	<u>TOTAL ESTIMATE</u>		<u><u>\$50,000.00</u></u>


M. C. Robinson

M. C. Robinson, Ph.D., P. Eng.

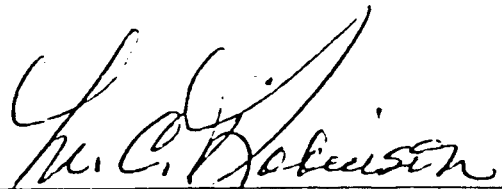
August 17, 1979

CERTIFICATE

I, Malcolm C. Robinson of the City of White Rock in the Province of British Columbia, hereby certify that:

- 1) I am a geological engineer with address at 1486 Everall Street, White Rock, British Columbia V4B 3S8.
- 2) I am a graduate of the University of British Columbia (B.A.Sc.-1948), Queen's University (M.Sc.-1949) and Princeton University (M.A., Ph.D.-1951).
- 3) I am a member of the Association of Professional Engineers of the Province of British Columbia.
- 4) I have no interest, direct or indirect in Placer Lease No. 172, Keithley creek area, nor do I expect to receive any such interest.

Dated at White Rock, British Columbia this 17th day of August, 1979.



M. C. Robinson, Ph.D., P. Eng.

X = holes drilled
in 1938

3 hole

