REPORT ON THE
GLADSTONE CREEK
PLACER GOLD PROPERTY
KLUANE LAKE AREA
SOUTHWESTERN YUKON

FOR

CATEAR RESOURCES LTD
BOX 10339 - 1000 PACIFIC CENTER
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BY

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GEOLOGIST

VANCOUVER, B.C. FEBRUARY 15, 1984
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SUMMARY

The Gladstone Creek placer gold mining property of Catear Resources Ltd. is comprised of the Tank #1 - #20 and Tut #1 - #52 placer claims. The stream has supported many small mining operations and in the period 1952 through 1955 produced 5770 ounces of gold from a dragline-floating sluice box operation. Creek mining is hampered by large boulders but bank deposits are readily accessible to hydraulic mining methods.

An evaluation program to determine the distribution of placer gold values and measure the volumes of gravels is recommended. Thorough testing will require at least a two-year program but the first season's work will enable informed judgements to be made concerning the potential of the claims. A budget of $72,000 should be provided to fund work in 1984, with provision for an additional expenditure of $191,000 in 1985.
INTRODUCTION

This report on the Gladstone Creek placer gold property was prepared at the request of Mr. E.R. Kruchkowski, president of Catear Resources Ltd. Data came from sources listed in the References section, from information supplied by the former owner and by several placer operators currently mining in the Kluane District, Yukon, and from personal observations. Two blueline prints of surface plans prepared by a former operator, "Todilto", were available to the writer but because their methods of sampling and processing test gravels are unrecorded, very little useable data were obtained from that source.

During the period January 17 to 22, 1983, the writer supervised a program of bulldozer work that stripped overburden from parts of Tut #15, #16, and #17 claims in preparation for future mining operations. Despite light snow cover he was able to observe characteristics of bank deposits, trace the channel excavated by a former dredging-type mining operation, and examine deep gravel deposits located at the confluence of Gladstone and Cyr Creeks.

Gladstone Creek, located at the east end of Kluane Lake, approximately 180 km (114 miles) west of Whitehorse, Yukon, has been a minor producer of placer gold for many decades. Systematic sampling and processing of its gold-bearing gravels may lead to the development of one or more medium-sized placer mines. This report discusses the current status of the Gladstone Creek placer claims, and the mining history of the district. A preliminary
FIGURE 2. LOCATION MAP - GLADSTONE CREEK PLACER GOLD MINING AREA YUKON

(from "Yukon Placer Mining" Indian and Northern Affairs Canada, 1981)
work program to evaluate parts of the claims is recommended. Successful completion of this program should enable realistic decisions regarding further testing of, or production from, the property. Complete testing of the property will require a multi-year effort, preferably pursued as part of an active mining operation.

PROPERTY LOCATION AND CLAIMS

The Gladstone Creek placer property is comprised of 72 claims. The Tut and Tank claims (Table 1) are located at 61°18' north latitude and 138°34' west longitude and appear on Yukon claim sheet 115-G-7. (Figures 1, 2 & 3). They are 180 km (114 miles) west of Whitehorse and 64 km (40 miles) northwest Haines Junction. As illustrated in Figure 3, which is copied from the official claim sheet, the Tank #1 - #20 claims cover the lower most 3 km portion of Cyr Creek, a left limit tributary of Gladstone Creek, and the Tut #1 - #52 claims extend easterly from the confluence of Gladstone Creek with Kluane Lake for approximately 8 km. The elevation of Kluane Lake is 780 m (2570 ft.) and the highest creek elevation within the claim blocks is 900 m (2950 ft.) on Cyr Creek.

The Gladstone Creek property was staked in 1978 as placer leases by John M. Graham, and in 1981 the leases were staked into placer claims. The writer has examined several of the claim posts and has walked along the claim location line for more than three kilometres. The claims appear to have been staked in compliance with the provisions of the Yukon Placer Mining Act and
Regulations.

The valley is forested with black spruce and various willows, poplar and cottonwood species. Elsewhere trees are stunted and sparsely distributed. Upper slopes are bare.

<table>
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<tr>
<th>TABLE 1</th>
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<tr>
<td>Tank #1 - 20 inclusive</td>
<td>P11946-P11965 incl.</td>
<td>February 5, 1985</td>
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<tr>
<td>Tut #1 - #52 inclusive</td>
<td>P11966-P12017 incl.</td>
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</table>

OWNERSHIP

The Tank and Tut claims were purchased from John M. Graham by Mr. E.R. Kruchkowski of Calgary by agreement dated September 20, 1981 and have been optioned by Catear Resources Ltd. from Mr. Kruchkowski.

ACCESS

The Gladstone Creek placer mining district may be reached, depending upon the season, by road and/or by boat. Road access is provided by a 52 km (32 mile) long unimproved tote road that begins at km 1695 (Mile 1053) of the Alaska Highway and follows the east side of Kluane Lake to a point opposite the settlement of Destruction Bay, then crosses a swampy upland and descends steeply into Gladstone Creek valley near the No. 1 post of Tut #9 claim. The route is suitable for tracked and four-wheel drive equipped vehicles except during the break-up season when it is completely impassable. A Land Use Permit and approval of the District Ranger, Yukon Forest Service, Haines Junction, are required prior to use of this road. At the request of the Yukon
Wildlife Service, the route may be closed in early spring to minimize disturbance of mountain sheep during lambing season.

Boat access is from Destruction Bay, a small community located on the Alaska Highway on the west side of Kluane Lake, about 9 km (6 miles) from the mouth of Gladstone Creek. Kluane Lake is subject to sudden severe wind storms and turbulent wave conditions that may interfere with boating. In winter, local trappers and prospectors frequently cross the lake using snow machines and pick-up trucks. If appropriate precautions were observed, experienced operators could probably move equipment across the ice in mid-winter.

CLIMATE

The climate of the Kluane Lake district is typically northern: winters are long and cold, with temperatures as low as \(-50^\circ\text{C}\) and moderate snowfall; summers are sunny and warm. Placer miners usually commence work in May or early June and continue until freeze-up in October.

PHYSIOGRAPHY

Gladstone Creek flows westerly through the southern end of the Ruby Range, a mountain ridge that parallels the northeast side of Kluane Lake (Figure 2). The range is developed on parts of the Kluane plateau, a dissected, partially glaciated surface that merges northward into the Klondike plateau. Valleys are
rather broad and have moderate to gentle gradients; mountain slopes rise smoothly but steeply to elevations in excess of 1800 metres (about 6000 feet). The area is close to the north side of Shakwak Valley and consequently was flooded by Pliostocene ice that flowed northerly out of the St. Elias and Kluane mountains, coalesced in the valley and over-road terrain to the north and east. With deglaciation, the area was scoured by meltwater streams and inundated by terminal moraines and fluvial-glacial outwash deposits. The east end of Kluane Lake has extensive deposits of clays and silts, some of which have been redistributed by wind action.

The estuary of Gladstone Creek is largely comprised of lake sediments, modified by the stream. The lower portion of the creek channel has thick deposits of coarse gravel interbedded with clay layers. The contrasting materials record the combined effect of fluctuating lake levels and periods of vigorous stream activity. The width of the valley varies from 200 m (650 ft.) to 450 m (1500 ft.) and adjacent steep clay and gravel banks rise about 70 m (200 ft.) Muller (Reference 1) recorded the following section of sediments near the mouth of Gladstone Creek:

- Sand 2'
- White volcanic ash 1''
- Sand 15'
- Boulder 'till' 25' (possibly lake deposit with ice-freighted boulders)
- Sand and varved silt, some pebbles 170'
- Boulder till, cobble size 80'
Gladstone Creek is a fast-flowing clear water stream. Except during spring freshet, it is confined to a well-defined channel with width of between 10 and 30 metres. Its gradient, at least in the lower part, is about 3%. At times of unusually rapid spring run-off, or when its main channel is blocked by winter ice ("glaciers"), it occupies secondary channels.

Cyr Creek, the lowermost significant left limit tributary of Gladstone Creek, has built up a broad steep fan near its junction with the latter stream. In addition, Cyr Creek has a steeper gradient than Gladstone. The result has been to restrict the flow of Gladstone Creek to the north side of the main valley. In winter Cyr Creek builds large ice deposits ("glaciers") in its lower course and across its fan and impedes the flow of Gladstone Creek.

The Gladstone Creek gold mining area is developed in an area of terraced stream channels that modify a mature upland surface. Low level terraces or benches vary in height from a few metres to about ten metres. Particularly downstream from the confluence of Cyr and Gladstone Creeks, placer mining operations have slightly altered the appearance of the valley bottom.

The terraced valley bottom deposits are surmounted by high banks composed of layered but poorly sorted coarse gravels and by bands of clay and silt-sized particles. The banks normally maintain vertical or nearly vertical slopes but when failure occurs, they slump to a gently sloping profile.
BEDROCK GEOLOGY

The Gladstone Creek area has not been geologically mapped at any but the broadest regional scale (Figure 4). Outcrops of bedrock are present in the valley of Gladstone Creek a short distance east of Cyr Creek, and on Cyr Creek about 300 metres (1000 ft.) upstream from Gladstone. Muller (Reference 1) mapped these rocks as quartz-sericite-chlorite schist of the Yukon Complex and in neighboring Aishihik Lake Map Area Tempelman-Kluit (Reference 2) called them hornfelsed schists, more particularly "...staurolite cordierite biotite hornfels and schist" and included them in the Yukon Metamorphic Group. He was unable to assign an age but suggested that Paleozoic age rocks had been modified by thermal and regional stresses imposed by the intrusion of Ruby Range granodiorites of Triassic age. The fact that placer gold has been found in many streams that pass through this formation (Figure 4) encourages speculation that it is the source of the gold and further speculation that the formation may be broadly similar to, though more strongly metamorphosed than, the Klondike schists that underlie the Dawson placer gold mining district.

East of the Tut claims the upper portions of Gladstone Creek are underlain by Ruby Range granodiorites characterized by medium grained crystalline textures and the presence of hornblende and biotite. These are, in turn, intruded by Nisling Range alaskite of early Tertiary age.
FIGURE 6.
BEDROCK GEOL OGY, UNCONSOLIDATED
DEPOSITS AND PLACER MINING
LOCATIONS
RUBY RANGE, SOUTHWEST TUKON
Parts of NTS 115 C and 115 M
Scale: 0 1 5 miles
0 5 10 km
Geology from maps prepared by
J.E. Muller, 1967 and
D. Tempelman-Kluit, 1974 -
Geological Survey of Canada
and from personal observations
placer mine sites
GEOL OGY
unconsolidated deposits,
silt, clay, till
Wishing Range elakite
Ruby Range batholith,
biotite hornblende
granodiorite
west of 135° longitude
Tukon Complex - quartz-
sericite-chlorite schist
(Muller, 1967)
east of 135° longitude
Tukon Metamorphic Group
cordierite-biotite
hornfels (Tempelman-Kluit
1974)
PLACER GEOLOGY

The entire area north and east of Kluane Lake is heavily drift covered. Where examined by the writer at the confluence of Gladstone and Cyr Creeks, gravel deposits are comprised of coarse unsorted mixtures of angular to sub-angular clasts of hornfelsed schist with interbedded thin lenses and layers of clay and silt. Largest rocks are about 20 cm diameter. In Gladstone Creek itself gold values are reported (personal communication, J.M. Graham) to be concentrated approximately 2 metres below surface where a clay layer acts as a false bedrock horizon. This gold-bearing zone is an important exploration target.

Although to the writer's knowledge there have been no detailed studies of the sources of gold found north of the Shakwak Valley, it appears that gold was liberated from the hornfelsed schist formation by normal erosional processes and incorporated during the Pleistocene and Recent glaciations in boulder till deposits. Dispersed gold was then concentrated from the tills into the channels of post-glacial streams. In the Gladstone Creek district this process was complicated by rebound that followed removal of ice cover and by fluctuations of lake levels that resulted from changes in the site and elevation of the outlet of Kluane Lake. Various lake levels are marked by layers of clay and silt that are present both in the high stream banks and at shallow depths below the present stream channel.

There appears to be no record of any gold being produced from streams that flow south from Ruby Range granodiorite terrain into Gladstone Creek whereas Swanson and Cyr Creeks, north-flowing tributary streams that pass through Yukon Metamorphic Group rocks,
have been placer mined (Figure 4). Similarly, a few miles to the east placer streams that enter Jarvis River from the north, particularly Fourth of July, McKinley, and Ruby Creeks, and Cultus Creek which enters Kluane Lake 9 km (12 miles) southeast of Gladstone Creek, all originate in rocks of the Yukon Metamorphic Group. Because Gladstone Creek has its headwaters in the central part of Ruby Range it carries a burden of sub-rounded cobbles and boulders of granodiorite as well as smaller particles of the same origin that form a veneer of dilutive materials that may obscure the gold content of underlying tills and till-derived deposits that are comprised of schist fragments.

PREVIOUS PLACER MINING OPERATIONS

The first gold placer mining operations in the Ruby Range of the Kluane Lake area commenced in 1903 at Ruby Creek 38 km (24 miles) southeast of the Gladstone Creek placer area. Work there and on nearby Fourth of July Creek continued for a number of years and spread to Cultus Creek and to Gladstone Creek and its tributaries Swanson and Cyr Creeks.

Results of hand mining efforts are only partially recorded: for instance, Cairnes (Reference 3) estimated that between $2,000 and $3,000 dollars was recovered in 1914. In 1952, Kluane Dredging Company of Burwash Landing, Yukon, moved a floating separation plant and a dragline equipped with 2-1/2 cubic yard bucket into Gladstone Creek and in the period through 1955 recovered, according to Emergency Gold Mining Assistance records,
5770 ounces of gold, (quotation cited in Reference 1). Their separation plant used a ten foot square hopper which fed a grizzly screen and a four foot diameter trommel screen with overall length 33 feet and screen sizes 3/4, 5/8, 1/2 and 3/8 inches. Fines passed through sluice boxes equipped with riffles and coco matting and mercury was used to catch the finest gold (Reference 4). A narrow channel appears to have been excavated from the lake to an area 1.2 km downstream from the confluence of Gladstone and Cyr Creeks, a distance of about 4.7 km (3 miles).

Sometime following the Kluane Dredging Company work, an unrecorded group brought a sluice box and other equipment in to the Creek but there is no record of their work, if any. The box remains on the claims and may be rehabilitated for use in a test program. In 1979, "Todilto", an American group, optioned the placer leases from John Graham and carried out test work in that year and in 1980. With the exception of two blueline prints of surface plans and some drill logs, the results of their efforts are not available to the present owners. Although they identified some gold values in several parts of the property, they abandoned the project. Among useful bits of information that they recorded on the prints was that the gold has fineness of 767 and they identified two gold "zones": one, 700 m downstream from Cyr Creek, shows five feet with $10.32 per cubic yard in gold and silver (calculated at $375 US and $15 US per ounce respectively) and the other, 150 m from Cyr Creek, 5 feet with $6.41. One sample from the steep bluffs north of Cyr Creek is shown to have $10.53. Methods of gathering and processing the various samples are
unknown and no particular importance can be attached to them.

PLACER MINING POTENTIAL

Despite substantial amounts of placer mining activity in the Gladstone Creek area over an eighty-year period, there are no ore reserves. At current gold prices the potential to develop an economically viable, high-volume dredge, hydraulic or conventional sluice box placer mine, appears to be good. A large amount of testing work will precede any such mining operation, including not only determination of gold contents of various gravel deposits but also determination of the most suitable gold recovery methods. Although unmeasured, the volume of potentially mineable gravels is obviously huge and becomes even greater if gravels lying beneath the stream bed clay layer are included.

The difficulties to be encountered in processing the Gladstone Creek gravels will vary greatly: the many large sub-rounded granodioritic boulders in the stream bed will interfere with mining in that area whereas the high till banks should be easily hydrauliced into a sluice box. Characteristics of the clay layer will also be of interest, particularly if it proves to be frozen. The presence of bedrock outcroppings in Gladstone Creek a short distance upstream from Cyr Creek may be an indication that bedrock in the lower part of the creek is at shallow depth. If so, the ground immediately overlying bedrock which may be particularly productive of gold, may be readily processed. Bostock (Ref. 5) reported that "...small rich pockets have been found
in remnants of old bench channels at scattered localities for many miles along the creek valley above Cyr Creek" and the possibilities of finding more such remnants that have been in some manner protected from subsequent ice advances should be kept in mind.

PROGRAM TO EVALUATE GLADSTONE CREEK PROPERTY

It is highly unlikely that the placer mining potential of the Gladstone Creek property can be determined in the course of one season's work. The objective of the first work program must be to thoroughly test a substantial portion of the creek bed deposits and part of the high bank deposits near Cyr Creek. If possible, sufficient information should be obtained to permit some planning and designing of either a larger testing plant or a full-scale processing plant.

It is recommended that a three-man crew equipped with a backhoe or excavator, a small tractor, pumps and a washing plant, test the gravels as follows:

1. in Gladstone Creek channel, a short distance downstream from Cyr Creek,
2. in the canyon upstream from Cyr Creek,
3. at the top of the Cyr Creek "fan"
4. the high banks immediately north of the mouth of Cyr Creek.

Documentation of the source and volumes of gravels processed, including the volume of boulders set aside, and the
amounts of gold recovered, will be of utmost importance: for that reason one of the crew men should be a capable technician. The backhoe or excavator should be able to reach at least to the false bedrock clay layer, i.e. about 4 metres from surface, and ideally will be tracked rather than wheel-equipped. The small tractor will be required for preparation of sites, clearing tailings, building settling ponds and repairing roads. In some circumstances it may be needed to push a deep slot for bulk sampling purposes or for deeper than average tests. The sluice box presently on the property should be easily rehabilitated if a portable welding machine can be brought to the site. If the box is too badly damaged, a replacement can be fashioned on site or brought in from a shop in Whitehorse. A small mechanical panning device will be a valuable aid in processing bulky "clean ups", though final cleaning will be by hand using a standard gold pan. The layout of sampling grids will of necessity be determined in the field. In general, a statistically meaningful number of pits should be excavated in each selected area to permit approximate extrapolation of values to all of that particular area. A prediction of volume and value of the gravels will then be possible and barren areas can be eliminated from the mining plan. The number of test sites and hence the amount of data gathered becomes very large as the site spacing is reduced. For example, a standard Yukon placer claim with dimensions 2000 feet by 500 feet, if tested on a 100 by 50 foot grid, will have 105 test sites.

If a six-week field program is undertaken, as many as 500 to 700 sites will be sampled. In addition it should be pos-
sible to process a volume of several hundred cubic yards of high
bank materials in a hydraulic mining test of the area north of the
mouth of Cyr Creek. Reconnaissance of the entire claim block
should be carried out as time permits to determine volumes of
gravels present, possible depth to bedrock, presence of permafrost
conditions, availability of gravity fed water supplies for use in
hydraulic mining and likely sites in which to search for rich
pockets of gold bearing ground.
ESTIMATED COSTS OF RECOMMENDED PROGRAM

Phase 1, a six week program to partially evaluate the Gladstone Creek placer gold property, will require three men, a backhoe or excavator, a small tractor, pump and a sluice box. A small temporary camp or trailer will be needed for accommodation. Several areas in the bed of Gladstone Creek, one area at the top of the Cyr Creek fan and the high banks north of Cyr Creek will be tested.

PHASE 1

Pre-season costs - organization of equipment and personnel $3,000

Equipment rentals -
   - backhoe 6,000
   - tractor 10,000
   - pump and hoses 1,500
   - pick-up truck with winch 1,800 19,300

Wages - 3 men - 40 days @ $200/day each 24,000

Camp equipment and materials 1,500
Small tools, miscellaneous parts 500
Freighting charges 2,500
Groceries, camp costs @ $30/man/day 3,600
5000 litres diesel @ $0.60/litre 3,000
Sluice box repairs 2,000
Mechanical panner, gold balance, screens 1,500
Mobilization, incidental accommodation, fares 1,500

Sub-Total $62,400

Add 15% for contingencies 9,360

TOTAL COST OF PHASE 1 $71,760

Data obtained from Phase 1 work should be carefully evaluated prior to commencement of Phase II work.
ALTERNATIVE PHASE I

A three-week program to evaluate parts of the channel of Gladstone Creek and, possibly, the high gravel and clay deposits north of the confluence of Gladstone and Cyr Creeks, will require a budget of $40,000. A tractor would not be required and a rented sluice box would be used in lieu of repairs to the box already on site. If the Alternative Phase I program is carried out, then the remainder of Phase I as outlined in the previous section of this report, should be included in the Phase II program that is discussed in the following section. The cost of Phase II will then be increased by approximately $31,760 to $222,660.

ALTERNATIVE PHASE I

Pre-season cost - planning, organization of equipment, permitting process

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Equipment rentals

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<td>FWD truck with winch</td>
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<tr>
<td>Mechanical panner, screens, balance</td>
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<td>Sluice box</td>
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Total rentals

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<td>All fuels and lubricants</td>
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<td>All highway freighting charges</td>
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Sub-total

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TOTAL COST OF ALTERNATIVE PHASE I

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Data obtained from Alternative Phase I work should be carefully evaluated before commencement of Phase II work.
PHASE II, to be completed during 1984 or, more likely during 1985, will be a continuation of the test pitting and sampling program of Phase I, with the objective of firmly outlining reserves of mineable material and carrying out sufficient experimental procedures to enable final design of full-scale production plant. The cost of evaluation of the results of Phase I work are included in the following estimate:

PHASE II

Evaluation of data obtained from Phase I program - outside consultants, batch testing of bulk samples 10,000
Continuation of Phase I type tests - allow four weeks at $9,000 per week 36,000
Bulk testing of reserves indicated by Phase I work - five tests of at least 1000 cubic yards each - allow one week per test - 5 weeks at 9,000 per week 45,000
Drill testing of areas of deep gravels or water saturated ground that is difficult to test using drilling equipment - allow $ 75,000 total cost 75,000

Sub-Total $166,000
Add 15% for contingencies 24,900

TOTAL COST OF PHASE II $190,900

Summary of Costs of Phase I and Phase II

Phase I - six week program of backhoe and tractor test pitting of creek bed and bulk testing of high bank gravels $71,760

Phase II - continuation of Phase I, evaluation of Phase I data, five bulk tests, a limited drilling program 190,900

TOTAL COST OF PHASES I AND II $262,660
REFERENCES

Referred to in text


5. BOSTOCK, H.S., 1952, Geology of Northwest Shakwak Valley, Yukon Territory, Geol. Surv. Canada, Memoir 267

GENERAL REFERENCES

6. BOSTOCK, H.S., 1948, Physiography of the Canadian Cordillera with Special Reference to the Area North of the Fifty-fifth Parallel, Geol. Surv. Canada, Memoir 247


CERTIFICATION

I, Erik A. Ostensoe, of Vancouver, British Columbia hereby certify that:

1. I am geologist with residence at 4306 West 3rd Avenue, Vancouver, British Columbia.

2. I graduated from the University of British Columbia in 1960 with a B.Sc. (Honours Geology) degree and I have worked as a mineral exploration geologist for twenty-four years.

3. I am a Fellow in good standing of the Geological Association of Canada and a Member of Canadian Institute of Mining and Metallurgy and the Association of Exploration Geochemists.

4. I carried out geological studies and supervised bulldozer work at the Gladstone Creek placer gold property in the period January 17 to 22, 1983 and in the accompanying report I have used information provided by a previous operator of the property.

5. I have no interest, direct or indirect, in the properties or securities of Catear Resources Ltd., nor do I expect to receive any such interest.

6. I consent to the use of the accompanying report in a prospectus or information circular issued by Catear Resources Ltd.

February 15, 1984
The Directors
Catear Resources Ltd.
304 - 255 17th Ave S.W.
Calgary, Alberta. T2S 2T8

Dear Sirs:

Re: My report - Gladstone Creek Placer Gold Property,
Kluane Lake Area, Yukon, dated February 15, 1984.

Mr. Edward R. Kruchkowski, President, Catear Resources Ltd., has asked me to determine if parts of Phase I of the work proposal presented in the above-cited report might reasonably be deferred. I believe that testing of gravels in the upper portion of the Cyr Creek fan could be deferred and included in Phase II work without affecting the validity of the remainder of Phase I work. Phase I would then involve testing parts of the Gladstone Creek channel and the gravel and clay banks located north of the confluence of Gladstone and Cyr Creeks. The cost of Phase I work would be reduced from an estimated $71,760 to an estimated $40,000.

The Cyr Creek fan represents an important volume of potentially valuable gravels and should be tested at an early stage of exploration of the Gladstone property. Phase II of the work proposal should therefore be expanded to include the work that is deferred from Phase I. I enclose herewith an "Alternative Phase I" proposal and budget that may be inserted as page 16 (a) of the subject report.

This letter will confirm my consent to this amendment of the subject report. All other parts of the report are reaffirmed.

Yours very truly,

Erik A. Ostensoe, geologist.

cc Phil Marshall, Bourne, Lyall & Co.
Encl. page 16 (a)