BRITISH COLUMBIA

PROSPECTORS ASSISTANCE PROGRAM

MINISTRY OF ENERGY AND MINES

GEOLOGICAL SURVEY BRANCH

PROGRAM YEAR:	1994/95
REPORT #:	PAP 94-6
NAME:	BARBARA WELSH

TECHNICAL REPORT
for the
PROSPECTOR'S ASSISTANCE PROGRAM

QUARTZ CREEK PROJECT

by Barbara Welsh, P.Eng
October 31, 1994

TABLE OF CONTENTS

1 INTRODUCTION 1

2. SUMMARY OF PROSPECTING ACTIVITY 3

3. SIGNIFICANT RESULTS
   a) Placer 4
   b) Mineral 8
   c) Industrial Minerals 11

4. PROPOSAL FOR FUTURE WORK 12

5. BIBLIOGRAPHY 13

APPENDICES

a) REPORT A (Summary of Prospecting Activity
   REPORT B (Technical Report)
   Placer Titles Map, Mineral Titles Map
b) Notice of Work, Work Approval, Work Recorded
c) Analyses -- Pan Concentrates - ICP
   -- Rock Samples - ICP
   -- Gem Test (Refractive Index)
   -- Rock Sample -- Whole Rock XRF

LIST OF FIGURES / PHOTOS

1a. Quartz Creek Valley 2
1b. Dauntless Mountain 2
2a. Gold Production from the Pirate Pit (6 m^3 5
2b. Typical "Pay Dirt" (Pirate Pit) 5
3. Diatreme outcrop 9
4a. Diatreme rock -- Lapilli Tuff 10
4b. Decorative stone, from east ridge 10

1. INTRODUCTION

Quartz Creek is 9 km. east of the Beaver River and flows NNW into the Columbia River approximately 40 km. NW of Golden at Beavermouth. The area prospected is bounded to the north by the Trans-Canada Highway, to the south by Dauntless Mountain, to the east by the watershed occupied by Oldman Creek, and to the west by Glacier National Park. The area of the claims is centred in the vicinity of the confluence of the SE fork of Quartz Creek (known locally as Porcupine Creek) and the SW fork of Quartz Creek, NTS 082N/6W, Golden Mining Division at Latitude 51°-24'-40" north and Longitude 117°-19'-40" west.

Access is via the Quartz Creek Forestry Access Road (which is presently in excellent condition), off the Trans-Canada Highway 40 km. NW of Golden. A camp was established at the south end of Placer Claim "R. Buck I", 10 km. south of the highway on a former log landing beside the Forest Access Road.

The topography of the claims is rugged, with relief from 1500-2440 metres AMSL. The terrain consists of glacial ridges, well-forested valleys and ridge base slopes. The forested areas have been extensively logged. The principal rock type found in the valley bottom are Precambrian slates and phyllites of the Horsethief Creek Group, which in many places have disintegrated to be barely distinguishable as rock, and form a graphitic, dark-grey clay.

The first published account of this area is given by G.M. Dawson, who states that gold was discovered in 1884 on Quartz Creek. Most of the work done on Quartz Creek was by a syndicate, led by C.P. Price, during the 1920's-40's. Little Placer mining has been carried out since that time, and not much mineral exploration work has been done in the area since 1984, from which work Assessment Report 12,761 was derived.

1a. Quartz Creek Valley, looking north toward Kinbasket L.

1b. Dauntless Mountain, looking south from camp.

2. SUMMARY OF PROSPECTING ACTIVITY

Prospecting work was carried out by William and Barbara Welsh from June 28 - September 28 1994. Conventional prospecting was carried out over a broad area, covering much of the ground leading up to the boundary of Glacier National Park and including the drainage channels of Quartz and Porcupine Creeks, Quartz Lake, and the main valley of Quartz Creek to the highway. That work included sampling of rock types encountered, hand panning, and a general assessment of the suitability of the slates as dimension stone.

Two new mineral claims were staked: "Grizzly I" and "Grizzly II" consisting of 22 units between them. One additional Mineral claim, "Lamprophyre" (20 units) and one Placer claim, "R.Buck II", will be staked as well. As a result of assessing this year's results and the results of geophysics work done in 1984 (Assessment report 12761), it is anticipated that additional Mineral and Placer claims will be staked in this area in the future.

Ten test pits were dug, ranging in size from 0.1 to 6 m^3, and the material was sluiced in order to recover the gold. Tailings were panned in order to check gold recovery, but no gold was ever found in the tailings. Pan concentrates from each test pit were kept, and later analyzed for both metals and gemstone content. Both +20 mesh and -20 mesh components were kept and studied separately. 30-element ICP analyses were done on 3 pan concentrates and 5 rock samples. Whole rock XRF was done on a sample of material from the diatreme found on the west ridge above Porcupine Creek. Other diatremes were found to the Northwest, associated with a pair of mafic dykes, and with the Prairie Hills Thrust Fault.

3. SIGNIFICANT RESULTS

a) PLACER

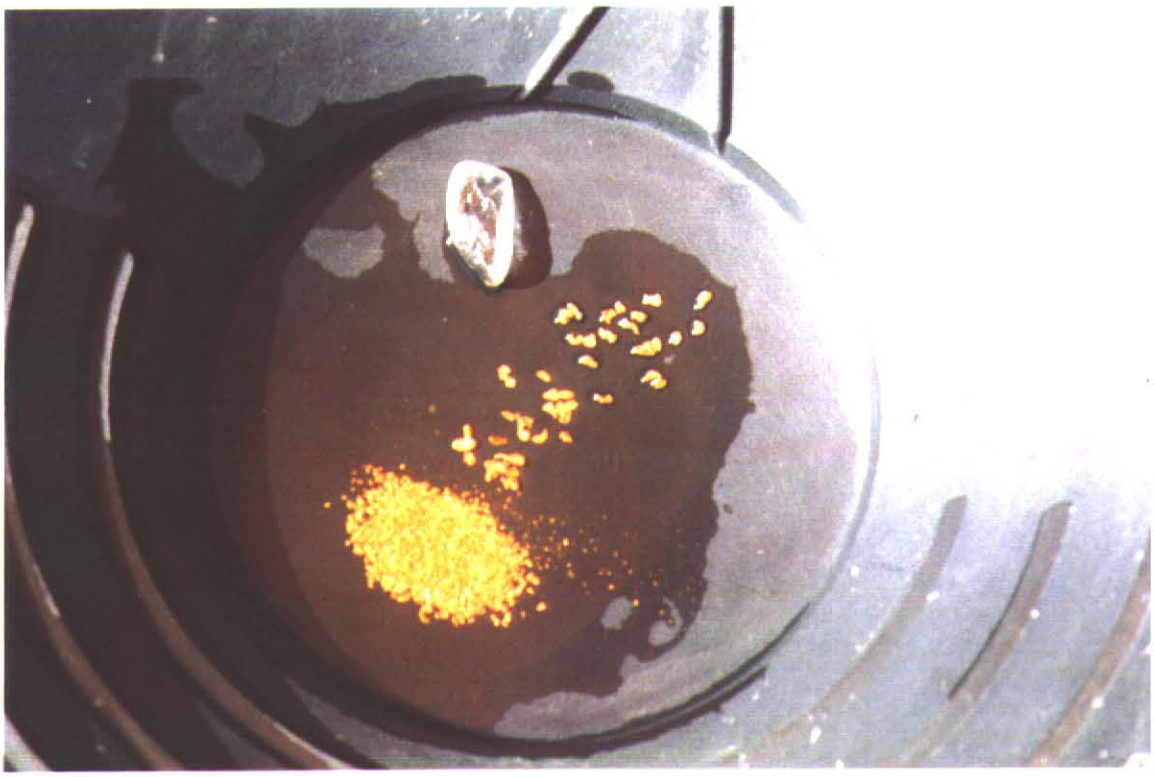
Results of hand panning reconnaissance surveys provided some insights to the nature of the material being examined, but proved to be inconclusive and sometimes misleading, as to the actual gold content. This is because in general, the samples taken for panning were too small to be representative of the materials tested. Hand sluicing, in which quantities of up to 6 m^3, or at the very least, 1/10th m^3, provided the most satisfactory results. Results from ten different test pits are shown below:

AREA	LOCATION	QUANTITY TESTED		Au CONTENT		g/m^3	$/$m^3$
		Buckets	m^3	grains	grams		
1 *	Glory Hole	80	5.8	230.35	14.69	2.5	$43.02
2	Wingdam	2	0.1	-	-	-	-
3	Upstream 2 km	3	0.2	-	-	-	-
4	Confluence	1	0.1	-	-	-	-
5	Pirate Pit	83	6.0	153.25	10.22	1.7	$28.92
6	St.Andrews	9	0.6	-	-	-	-
7	LuckyBuck	50	3.6	81.60	5.44	1.5	$25.66
8	Ed #2	40	2.9	94.95	6.33	2.2	$37.01
9	Val	10	0.7	12.00	0.80	1.1	$19.41
10	Dick's Camp	1	0.1	0.04	0.03	0.03	$ 5.10
		279	**20.1**		**37.51**	**1.8**	**$31.70**

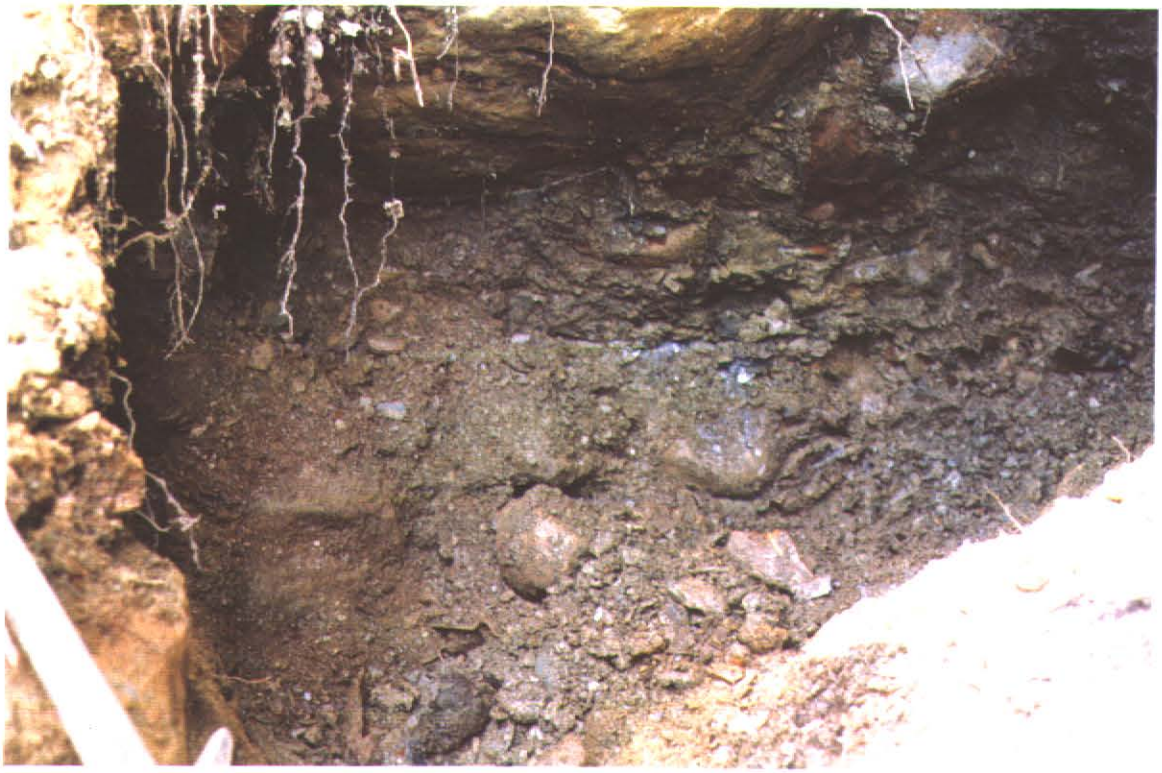
* **NOTE**: One particularly rich pod yielded over 8 g. gold from less than 1 m^3.

On average, 17 m^3 of material must be mined to obtain one troy ounce (pardon the mixture of units). Gold nuggets (+20 mesh) comprise approximately 25% by weight of the total gold recovered. They have very irregular shapes, are not flattened and commonly contain particles of bluish-white quartz. Many of the nuggets are "boot-shaped" (like a map of Italy), which resembles the jointing pattern found in the white quartz veins in the Horsethief Creek phyllite. Like the nuggets, the flake gold (-20 mesh size) is quite equidimensional, and not flattened.

A few of the nuggets are "needle-like", rather than "boot-shaped"; that is, they are quite small in cross-section, but up to 5 mm in length.



2a. Gold Production from the Pirate Pit (6 m^3)



2b. Typical "Pay Dirt" (Pirate Pit)

The gold from Quartz Creek is very pure (960 fine), and with their elaborate shapes the nuggets are very pleasing in appearance, making them well suited for adorning jewellery, rather than converting them to bullion. This results in a considerable mark-up in value from spot market prices for gold.

Pan concentrates are rich in pyrite, hematite, and magnetite, as well as pyrope garnets and to a lesser extent, scheelite and arsenopyrite. 30-element I.C.P. analyses were done on two concentrates, PP-1 (from the Pirate Pit) and LB-1 (from LuckyBuck) and showed concentrations of Ag, As, Co, Cu, Fe, Ni, Pb, and W. A fire assay on PP-1 showed 188 g/t Au. In other words, the concentrates are rich in heavy metals, and sluicing is effective in separating the light from the heavy fraction. The high gold content, even after all visible gold was removed, indicates a significant amount of either microscopic, or sulphide-locked gold. Therefore, the black sands themselves are a valuable commodity. Gemstones are rare and small (< 1 mm), and consist mainly of pink corundum. The presence of black sand in the pay streak is notable because it is virtually absent elsewhere in the area. The other important distinguishing element in the gold-rich material is a sensitive clay, which has a tendency to liquify when subject to excess water. When moderately dry it forms a hard-pan material that binds the cobbles and gravel, and makes for difficult digging.

There is a strong correlation of the location of the gold-rich material with the trace of the Quartz Creek Thrust Fault, as shown on the map. One possibility is that this thrust fault may have served as a natural drainage channel during deglaciation in the aftermath of the Fraser glaciation. In Assessment Report 12761, in which geochemical and geophysical (magnetometer and VLF-EM) surveys were carried out over this area, a good correlation is found between the Quartz Creek Thrust Fault and the geophysical anomalies, especially the VLF crossovers. The author of that report attributed the anomalies to the presence of a conductive clay zone, which may be a manifestation of the thrust fault. The slight magnetic anomaly probably reflects the black sand which was concentrated along with the gold by glaciofluvial action.

Another possibility that would explain the geophysical anomalies is that the thrust fault is mineralized, and the host phyllite was subject to severe hydrothermal alteration to the point that clay was the end result, with the gold left behind intact and largely unabraded in an unconsolidated deposit. Either way, the results of the geophysical survey can be used as a valuable prospecting tool, even though at the time of the survey, no significance was placed on the anomalies because placer gold was not the intended exploration target.

Evans (1927) describes two separate mining areas in this valley: one consists of the "bench claims", located 215 metres above Porcupine Creek, and the other lies alongside Quartz Creek

below the junction of Quartz and Porcupine Creeks. Hydraulic mining was carried out on the bench claims, and remnants of this operation remain today. In fact, both these areas lie close to the trace of the Quartz Creek Thrust Fault. An exception to this association of economic gold values with the thrust fault is a high-grade stretch of Porcupine Creek downstream from the bridge at the 10 km point along the road. This section also shows up as a distinct VLF anomaly, and happened to contain the richest concentration of gold found. The fact that it lies directly in the path of a landslide, which is apparent from a scar on the hillside, leads one to believe that the original paleochannel has been disrupted in places by landslides. The sensitive clay would make it quite conducive to block sliding which would leave the paystreak relatively intact, though short-lived. The cobbly, poorly-sorted hardpan that typifies the gold-rich material grades into a dark grey clay, and then into flat-lying, disintegrated phyllite. Flat-lying phyllite also occurs beneath the paystreak that was found alongside the road (Luckybuck). This is in sharp contrast to the bench claims, where the phyllite is nearly vertical, likely as a result of the thrust fault.

As to the original source of the placer gold, it is likely that the gold has not travelled a great distance since the gold particles are rough and irregular and contain substantial amounts of quartz. However, if the placer deposit is glaciofluvial in origin as stated by Evans (1927), the original lode gold deposit may no longer exist. A lot of the cobbles found in the paystreak during sluicing do not reflect the surrounding geology. As well, the quartz particles contained in the gold nuggets are not white like the local quartz veins, but are clear. Also, the minor volcanics and very small quartz veins present in the area could not account for the amount of gold observed.

To the south of this area, and forming the boundary to Glacier National Park, is Dauntless Mountain which is unglaciated, and the valley in which Quartz and Porcupine Creeks lie is like a box canyon. Fulton and Achard (1985) describe ice movement in the Columbia Valley during Fraser glaciation:

> " ... with initial lowering of snowline, the alpine glaciers would have expanded into ice caps, and engulfed the cores of mountain ranges. Eventually ice tongues would have coalesced to engulf the entire area, at which stage glacier flow would have become integrated into several ice streams moving southward along the trunk valleys.... There are no lateral or end moraines, headless outwash trains, or other evidence that valleys tributary to the Columbia were occupied by upvalley retreating ice tongues during glacial recession. This suggests that snowline rose above the elevation of major accumulation areas during early deglaciation so that the ice stagnated instead of retreating back to the mountain source areas."

In this way, exotic material may have been brought into the valley from the north by the glacier moving south, then stranded, and the gold became concentrated by glaciofluvial action while the valley bottom was still occupied by glacial ice, resulting in the bench 215 metres above the present creek elevation.

b) MINERAL

The Grizzly claims were initially staked around an outcrop of heavy sulphide mineralization in alkaline untramafic volcanics, located near "Wolverine Creek" (sample WOLV-1 on map). The samples ran high in phosphorous, iron, magnesium, and Ni-Co-Cr. It was subsequently determined that the structure was linear, roughly north-south and steeply-dipping. WOLV-2 was a rock sample taken to the south along this structure, and yielded similar results.

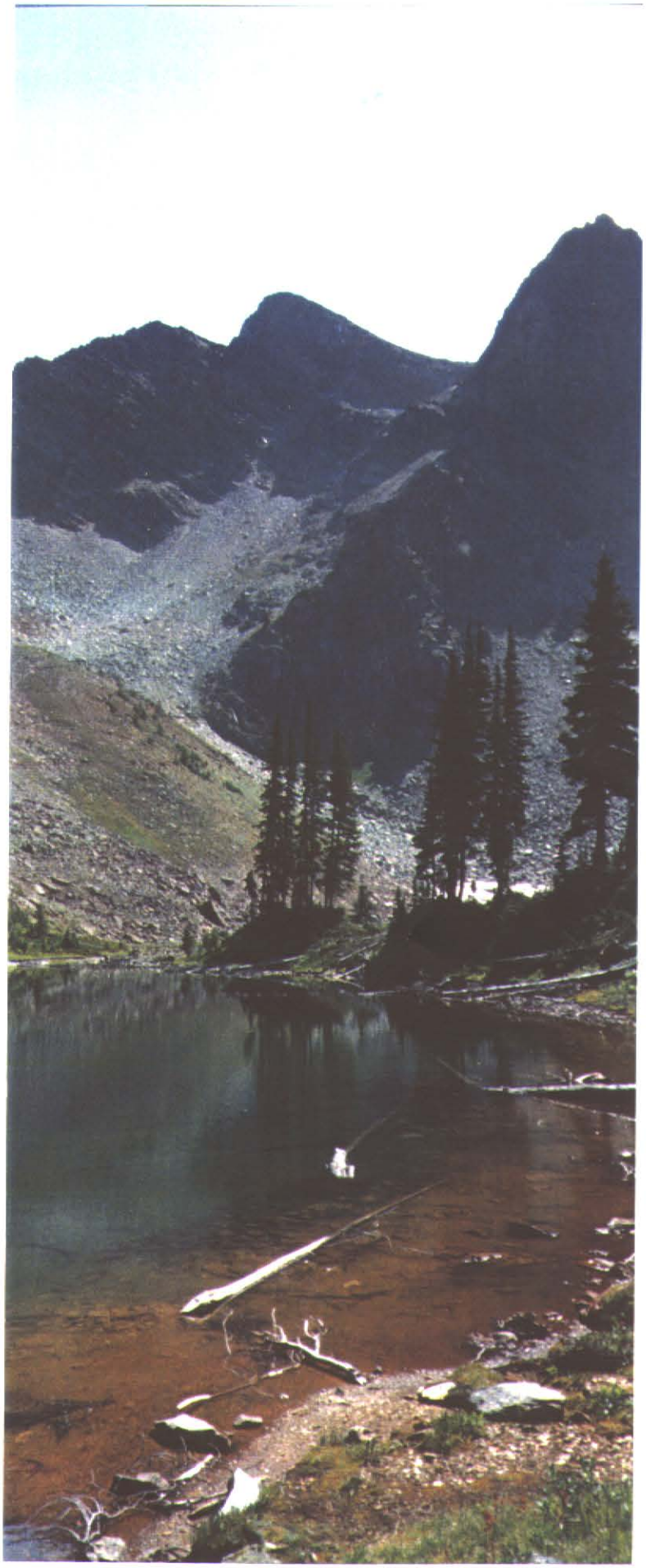
Later, two diatremes were located at the head of Wolverine Creek, and these were also included in the Grizzly II claim. They are shown in Photo 3 on page 9. The rocks hosting the diatremes and mafic volcanics trend northwest, and in following this trend, another diatreme was found, as well as mafic dykes. These will staked as the "Lamprophyre" claim. Rocks of the diatremes are typified by Photo 4a. on page 10. The volcanics are felt to be associated with the uncomformable contact of the Hamill Gp. with the Donald Fm., and to represent a brief extensional event that post-dates the enclosing strata (Kubli (1990)).

Two types of volcanic breccia were found: one is distinctly an agglomerate, weathering to a rusty brown, and contains subangular fragments which are mostly quartzite in a light green, somewhat porphyritic matrix. The matrix is somewhat altered to chlorite and carbonate. The other type of breccia is a dark green weathering, porphyritic tuff-breccia containing fewer fragments and having a matrix that is more strongly recrystallized and richer in pyroxenes, magnetite, and micas. The mafic dykes appear to be lamprophyre and in places contain up to 25% iron sulphides.

Until additional lab work is done on the diatreme material, there is no evidence that they are capable of hosting diamonds. However, there are several parallels to the "Jack" and "Mark" claims which are located to the northeast (MINFILE 082N 88 and 89, respectively):

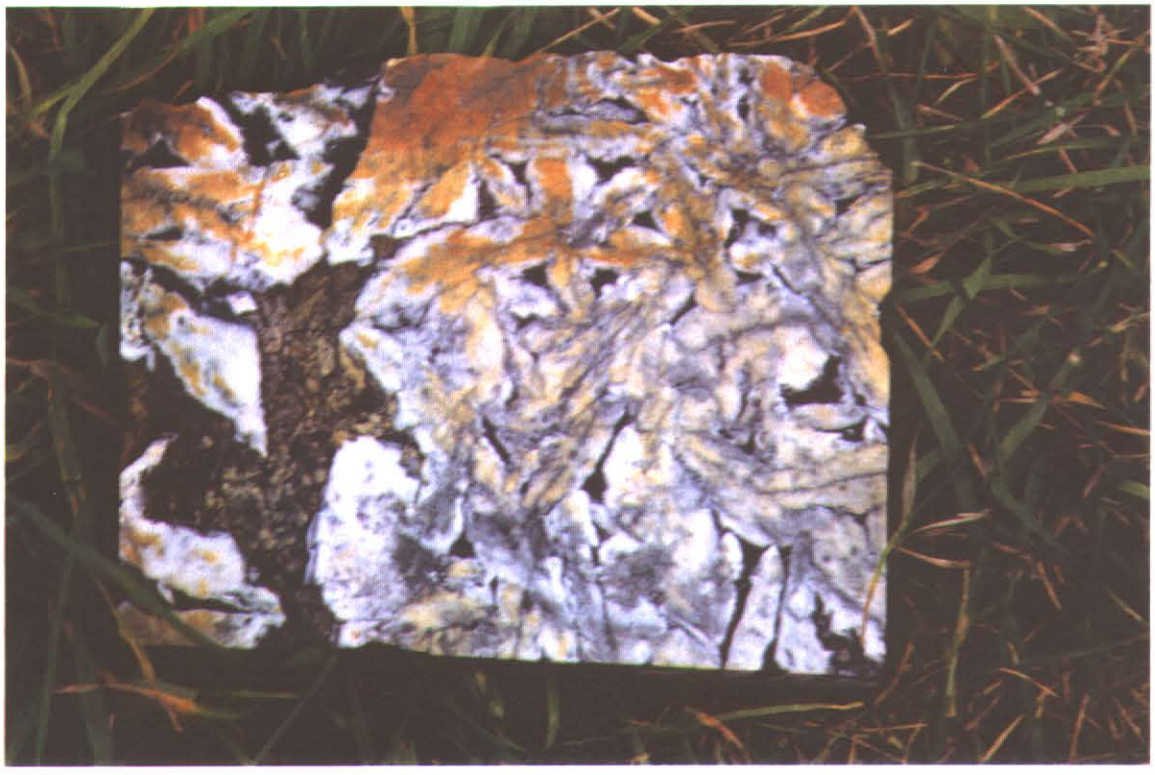
- similar lithology
- diatremes locally disrupt bedding, and outcrop is of limited extent
- diatremes are hosted within a Cambrian miogeoclinal succession, and post-date the surrounding strata

Microdiamonds and other indicator minerals were reported to have been recovered from the Jack and Mark diatremes.



3. Diatreme Outcrop (note disruption of bedding in surrounding sediments)

4a. Diatreme rock -- Lapilli tuff



4b. Decorative stone, from ridge east of Porcupine Creek

c) INDUSTRIAL MINERALS

The pan concentrates were insufficiently rich in abrasive minerals (garnet, corundum, etc.), and too rich in pyrite to make it useful as a grinding media.

With regard to dimension stone, a substantial deposit of slate was found on the east ridge above Placer claim "R. Buck I". This rock has excellent properties for dimension stone, such as well-developed cleavage and consistency of structure, and would make an attractive exterior rock. It is also within a reasonable distance for road access, although no road exists at the present time. Another rock which makes excellent dimension stone is the green slate of the Lower Donald Fm. However, access to these rocks is very difficult.

An attractive decorative stone, shown in Photo 4b. on page 10, is located on the east ridge toward Quartz Lake. This rock has been cut into slabs and made into clocks, pen stands, and bookends. (It could be classified as a "bookendite".)

There are extensive deposits of peat moss in the area, but none are thick enough to be worth exploiting.

4. PROPOSAL FOR FUTURE WORK

Based on the 1994 field season, the following topics merit additional attention:

- confirm the association of the Quartz Creek Thrust Fault with the gold-rich zones, further downstream and up;
- confirm the association of the geophysical anomalies with the gold-rich zones;
- additional geological mappping along the NW trend of the Hamill/Donald contact in the Prairie Hills (a new logging road is being built to access Heather Mountain in 1995);
- locate additional diatremes on the east ridge, and determine if they are in fact capable of hosting economic diamond deposits;
- determine the significance of the "Snowflake Marble" unit, located on the east ridge;
- determine if the "limestone marble" unit mapped by Wheeler in 1962 is in fact a carbonatite.

In that the volcanics that were encountered in this area were quite unexpected, and that the diatremes outcrop over a very small area, there is a need for additional detailed geological mapping of this area. As well, the source of the placer gold merits further attention.

Bulk sampling tests of the Placer claim "R.Buck I" (and possibly "R.Buck II" as well) are planned for the 1995 field season, consisting of four pits of 25 m^3 each.

5. BIBLIOGRAPHY

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APPENDIX A

REPORT A: Summary of Prospecting Activity
REPORT B: Technical Report
Placer Titles Map
Mineral Titles Map

BRITISH COLUMBIA
PROSPECTORS ASSISTANCE PROGRAM
PROSPECTING REPORT FORM (continued)

B. TECHNICAL REPORT

- One technical report to be completed for each project area
- Refer to Program Requirements/Regulations, section 15, 16 and 17
- If work was performed on claims a copy of the applicable assessment report may be submitted in lieu of the supporting data (see section 16) required with this TECHNICAL REPORT

Name BARBARA WELSH Reference Number 94-95-P15

LOCATION/COMMODITIES

Project Area (as listed in Part A.) QUARTZ CREEK Minfile No. if applicable 082N 018

Location of Project Area NTS 082N/06W Lat 51°-25'-00" Long 117°-19'-30"

Description of Location and Access QUARTZ CREEK IS 9 km EAST OF, AND PARALLELS THE BEAVER RIVER. ACCESS IS VIA THE QUARTZ CREEK FOREST ACCESS RD., OFF THE TRANS-CANADA HWY. 40 km WEST OF GOLDEN. A CAMP WAS ESTABLISHED 10 km SOUTH OF THE HIGHWAY.

Main Commodities Searched For PLACER Au, DIAMONDS (ASSOC. WITH DIATREMES)

Known Mineral Occurrences in Project Area PLACER Au

WORK PERFORMED

1. Conventional Prospecting (area)		1350 ha.
2. Geological Mapping (hectares/scale)		" "
3. Geochemical (type and no. of samples)		
4. Geophysical (type and line km)		
5. Physical Work (type and amount)	10 TEST PITS	20.1 m^3
6. Drilling (no. holes, size, depth in m, total m)		
7. Other (specify)	GOLD RECOVERY BY SLUICING	20.1 m^3

SIGNIFICANT RESULTS (if any)

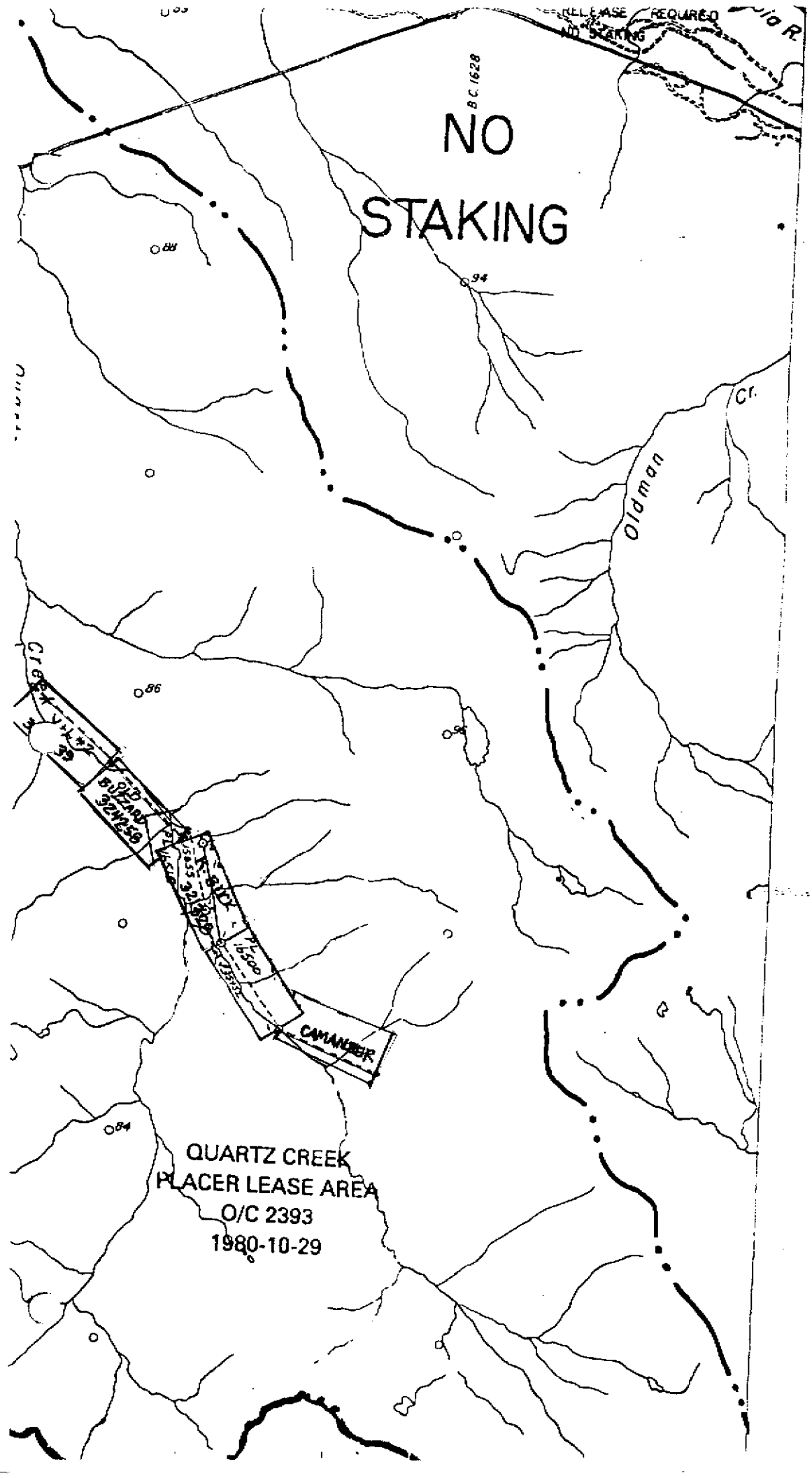
Commodities Au Claim Name R. BUCK I

Location (show on map) Lat 51°-24'-40" Long 117°-20'-00" Elevation 1628 m

Best assay/sample type 2.5 g/m^3 Au, OR APPROX. $43/$m^3$

Description of mineralization, host rocks, anomalies PLACER GOLD IS RELATIVELY COARSE AND CONSISTENT OVER AREAS TESTED; VLF-EM ANOMALIES CORRESPOND WELL TO LOCATION OF ECONOMIC PLACER DEPOSITS; POTENTIALLY DIAMONDIFEROUS PIPES WERE LOCATED AT UNCONFORMABLE CONTACT OF CAMBRIAN HAMILL GROUP WITH CAMBRIAN DONALD Fm.

Supporting data must be submitted with this TECHNICAL REPORT.



PROVINCE OF
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ENERGY, MINES &
PETROLEUM RESOURCES

PLACER TITLES REFERENCE

MAP 082NC6W

U.T.M. ZONE 11

LAST MAP UPDATE: 1983

ORIGINAL PRODUCED AT

METRES
500 0 500 1000 1500

ADMINISTRATIVE AREAS

MINING DIVISIONS: GOLDEN
REVELSTOKE

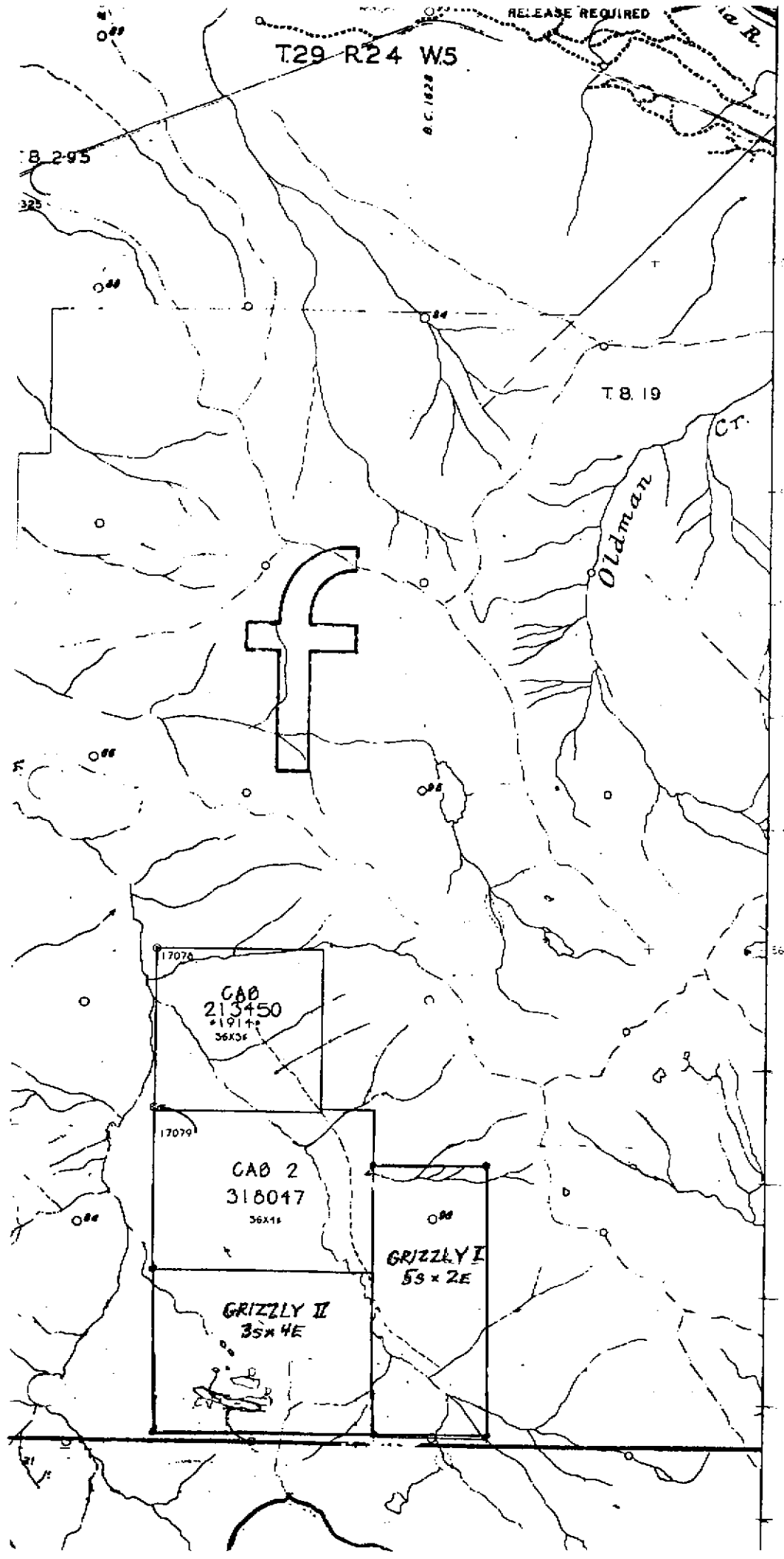
LAND DISTRICTS:

ALIENATIONS

NO STAKING AREAS

NO STAKING RESERVES
PARKS
ECOLOGICAL RESERVES
RECREATION AREAS
INDIAN RESERVES
POST CLAIM AREAS
RECREATION AREAS

CONDITIONAL AREAS



PROVINCE OF
BRITISH COLUMBIA

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ENERGY, MINES AND
PETROLEUM RESOURCE

MINERAL TITLES REFEREN.

MAP 082N06W

U.T.M. ZONE 11

LAST MAP UPDATE: 1994 FEB 17

ORIGINAL PRODUCED AT 1:3,630

METRES
500 0 500 1000 1500 20

ADMINISTRATIVE AREAS

MINING DIVISIONS: GOLDEN,
REVELSTOKE

LAND DISTRICTS:

ALIENATIONS

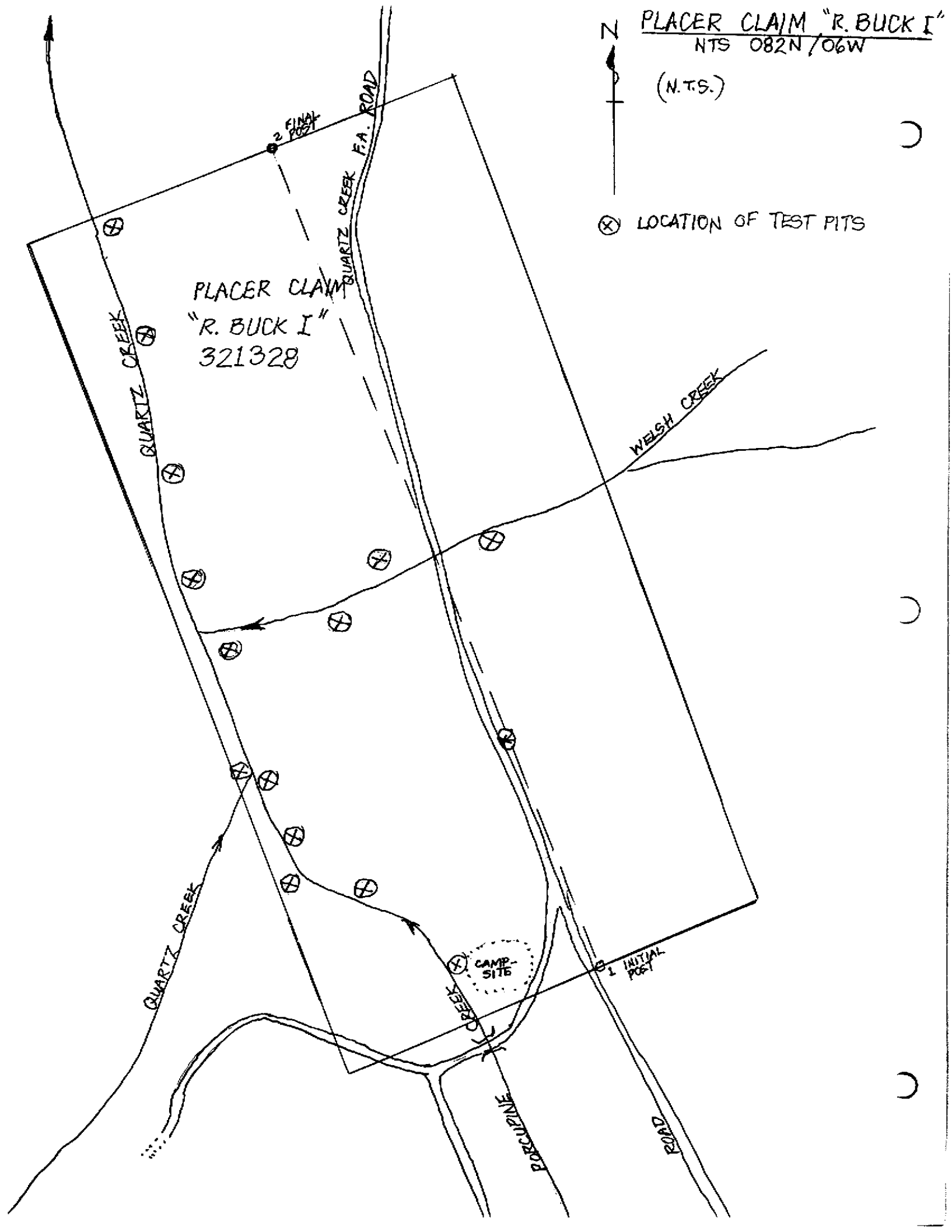
NO STAKING AREAS

NO STAKING RESERVES
PARKS
ECOLOGICAL RESERVES
RECREATION AREAS
INDIAN RESERVES

CONDITIONAL AREAS

APPENDIX B

Notice of Work Application
1994 Work Approval
Work Recorded (to 1997)


PLACER CLAIM "R. BUCK I"
NTS 082N/06W
N
(N.T.S.)
⊗ LOCATION OF TEST PITS
PLACER CLAIM
"R. BUCK I"
321328
2 FINAL POST
QUARTZ CREEK F.A. ROAD
QUARTZ CREEK
WELSH CREEK
QUARTZ CREEK
CAMP-SITE
1 INITIAL POST
CREEK
PORCUPINE
ROAD

APPENDIX C

Analyses -- Pan concentrates - ICP
Rock Samples - ICP
Gem Test (Refractive Index)
Rock Sample - Whole Rock XRF

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CERTIFICATE OF ASSAY ETK 94-853

B. WELSH
R.R.#1, 619 N. FORK RD.
LUMBY, B.C.
V0E 2G0

25-Oct-94

4 CORE samples received October 14, 1994

ET #.	Tag #		Au (g/t)	Au (oz/t)
1	PP-1	PAN CONCENTRATE	188.80	5.506

ECO-TECH LABORATORIES LTD.
Frank J. Pezzotti, A.Sc.T,
B.C. Certified Assayer

XLS/Kmisc6

PP-1 PAN CONCENTRATE PIRATE PIT (5)

LB-1 " " " LUCKY BUCK (7)

WV-1 ROCK SAMPLE WOLV-[2]

25-Oct-94

ECO-TECH LABORATORIES LTD.
10041 East Trans Canada Highway
KAMLOOPS, B.C.
V2C 2J3

Phone: 604-573-5700
Fax : 604-573-4557

B. WELSH ETK 94-853
R.R.#1, 619 N. FORK RD.
LUMBY, B.C.
V0E 2G0

4 ROCK samples received October 14, 1994

Values reported in ppm unless otherwise indicated

Et #.	Tag #	Ag	Al %	As	Ba	Bi	Ca %	Cd	Co	Cr	Cu	Fe %	La	Mg %	Mn	Mo	Na %	Ni	P	Pb	Sb	Sn	Sr	Tl %	U	V	W	Y	Zn
1	PP-1	2.6	0.30	50	80	55	0.33	2	150	63	58	> 15	40	0.18	237	<1	<.01	257	30	146	<5	<20	17	<.01	30	42	300	<1	41
2	LB-1	6.6	0.27	2325	65	15	1.55	4	197	54	202	> 15	<10	0.74	291	<1	<.01	308	70	310	<5	<20	33	<.01	40	11	90	<1	56
3	WV-1	<.2	2.73	15	40	20	1.43	1	52	466	12	14.90	<10	4.09	22	<1	<.01	314	6110	2	15	<20	22	<.01	20	126	<10	<1	18
QC DATA:																													
Repeat:																													
1	PP-1	2.4	0.31	55	80	50	0.37	2	153	66	59	> 15	40	0.19	244	<1	<.01	260	30	148	<5	<20	17	<.01	20	42	300	<1	42
Standard 1991		1.2	1.83	70	155	<5	1.90	<1	19	67	84	3.87	<10	0.85	690	<1	<.01	24	710	18	15	<20	57	0.07	<10	78	<10	4	69

XLS/Kmisc#6
df/864

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ENVIRONMENTAL TESTING
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10041 E. Trans Canada Hwy., R.R. #2, Kamloops, B.C. V2C 2J3 Phone (604) 573-5700
Telex: 048-8393

December 8, 1986

CERTIFICATE OF ANALYSIS ETK 86-237A

CLIENT: Mr. Don Campbell
Site 5, Vernon Avenue
R. R. #1
PEACHLAND, B. C.
V0H 1X0

PAN CONCENTRATE - 10
(10) DICK'S CAMP
(PC-1 ON MAP)

SAMPLE IDENTIFICATION: 1 pulp sample sent out for 30 element ICP Analysis

DESCRIPTION: ET# - 237-7 (Black Sand)

Element	Result	Element	Result
Mo	3	Sb	101
Cu	174	Bi	5
Pb	1,209	V	20
Zn	164	Ca (%)	.87
Ag	1.5	P (%)	.012
Ni	246	La	3
Co	135	Cr	28
Mn	534	Mg (%)	1.33
Fe (%)	22.23	Ba	6
As	35,653*	Ti (%)	.01
U	5	B	11
Au	3	Al (%)	.19
Th	6	Na (%)	.01
Sr	31	K (%)	.04
Cd	1	W	.639

Notes: All results expressed in ppm unless otherwise indicated.
* suggest regular assay be performed

ECO-TECH LABORATORIES LTD.
Thomas J. Fletcher, B.Sc.
Chief Assayer

12-Jul-94

ECO-TECH LABORATORIES LTD.
10041 East Trans Canada Highway
KAMLOOPS, B.C.
V2C 2J3

Phone: 604-573-5700
Fax : 604-573-4557

ROCK SAMPLE [1] WOLV-1

RICHARD ANDERSON ETK 94-392
15-5484-25TH AVE
VERNON, B.C
V1T 7A8

1 rock sample received July 1,1994
QC01 WLV

Values in ppm unless otherwise reported

Et #.	Tag #	Ag	Al %	As	Ba	Bi	Ca %	Cd	Co	Cr	Cu	Fe %	K %	La	Mg %	Mn	Mo	Na %	Ni	P	Pb	Sb	Sn	Sr	Tl %	U	V	W	Y	Zn
1	QC01WLV	<.2	5.42	120	<5	<5	1.43	<1	56	910	13	14.80	<.01	<10	<.01	<1	5	0.06	365	7340	10	<5	<20	19	<.01	30	207	<10	<1	20
QC/DATA:																														
Repeat #:		<.2	5.47	125	<5	5	1.42	<1	57	915	17	14.90	<.01	<10	4.10	<1	4	0.06	367	7310	8	<5	<20	19	<.01	30	207	<10	<1	20
Standard 1991		1.2	1.82	75	155	<5	1.78	<1	17	63	80	3.80	0.34	<10	0.98	675	<1	0.01	24	700	18	<5	<20	58	0.12	<10	78	<10	6	80

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XLS/Kmisc

ECO-TECH LABORATORIES LTD.
10041 EAST TRANS CANADA HWY.
KAMLOOPS, B.C. V2C 2J3
PHONE - 604-573-5700
FAX - 604-573-4557

APRIL 22, 1992

DON CAMPBELL ETK 92-144
15 - 5484 25th. AVENUE
VERNON. B.C.
V1T 7A8

VALUES IN PPM UNLESS OTHERWISE REPORTED

ROCK SAMPLE (3) SNOWFLAKE

PROJECT NUMBER: NONE GIVEN SNOWFLAKE MARBLE KAMLOOPS
1 ROCK SAMPLE RECEIVED APRIL 14, 1992

ET#	DESCRIPTION	AG	AL(%)	AS	B	BA	BI	CA(%)	CD	CO	CR	CU	FE(%)	K(%)	LA	MG(%)	MN	MO	NA(%)	NI	P	PB	SB	SN	SR	TI(%)	U	V	W	Y	ZN
1 -	ROCK	<.2	.24	310	4	25	<5	3.82	<1	100	127	9	5.54	.01	<10	8.73	151	1	<.01	181	1980	<2	30	<20	44	<.01	<10	26	<10	<1	20
				2.5	76	15	0.1		0.1	200	200	90			77	7500	1300	0.4		1200		12	0.1	6			100	140	1		60

NOTE: < = LESS THAN

SC92/KAMMISC1

ECO-TECH LABORATORIES LTD.
CLINTON AYERS
LABORATORY MANAGER

ECO-TECH LABORATORIES LTD.

ASSAYING - ENVIRONMENTAL TESTING

10041 East Trans Canada Hwy., Kamloops, B.C. V2C 2J3 (604) 573-5700 Fax 573-4557

APRIL 22 , 1992

CERTIFICATE OF ANALYSIS ET 92-144

DON CAMPBELL
15 - 5484 25th. AVENUE
VERNON. B.C.
V1T 7A8

ROCK SAMPLE [3] SNOWFLAKE

SAMPLE IDENTIFICATION: 1 ROCK sample received APRIL 14 , 1992

SNOWFLAKE MARBLE
K.P. HYDPT.

ET#	Description	AU (g/t)	AU (oz/t)
1-	ROCK	<.03	<.001

NOTE: < = LESS THAN

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CERTIFICATE OF ANALYSIS ETK 94-853

B. WELSH
R.R.#1, 619 N.FORK RD.
LUMBY, B.C.
V0E 2G0

ROCK SAMPLE
DIATREME [4]

2-Nov-94

4 ROCK samples received October 14, 1994

ET #.	Tag #	BaO	P205	SiO2	MnO	Fe203	MgO	Al203	CaO	TiO2	Na2O	K20	L.O.I.
4	DI-1	0.01	0.32	36.22	0.14	6.83	10.91	4.60	17.80	0.95	0.12	0.96	21.14

QC DATA:

STANDARDS

MRG 1	0.01	0.01	38.00	0.16	17.37	13.91	8.62	14.59	3.78	0.78	0.38	2.40
SY2	0.05	0.35	59.31	0.32	6.19	2.82	12.55	7.99	0.14	4.32	4.12	1.84

Note: Values expressed in percent

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df/wr877

XLS/Kmisc6

TABLE 4
CHEMICAL COMPOSITIONS OF ICE RIVER COMPLEX ROCKS

	Jacurpirangite			Mela-ijolite			Melanite Ijolite		Ijolite				Urtite		Carbonatite			Lamprophyre			
Major Element Content (wt. %)																					
SiO_2	34.2	37.9	33.6	41.6	42.0	40.0	35.9	39.0	40.2	43.7	43.9	40.3	43.5	44.2	1.2	7.7	1.6	40.6	38.2	38.9	37.3
TiO_2	5.62	5.64	7.14	2.21	3.22	2.42	4.40	2.04	3.48	1.20	2.44	3.58	0.19	0.14	0.02	0.09	0.05	2.29	4.1	4.5	4.3
Al_2O_3	5.6	8.7	9.9	11.6	12.4	12.5	19.1	20.2	19.8	25.8	19.3	21.3	26.2	26.1	0.3	2.6	0.4	13.4	15.6	16.3	16.4
Fe_2O_3	8.9	2.1	6.4	2.9	4.1	2.8	4.8	3.3	2.5	1.6	2.4	2.4	1.1	1.3	0.1	2.0	0.2	2.7	4.1	5.6	4.1
FeO	8.5	6.2	8.2	7.4	7.4	6.9	4.3	8.2	5.7	3.7	5.4	4.9	2.1	3.2	8.9	0.8	0.7	7.1	4.6	5.1	4.3
MnO	0.12	0.06	0.18	0.20	0.20	0.18	0.17	0.28	0.20	0.15	0.20	0.12	0.50	0.51	1.75	0.31	0.40	0.16	0.22	0.22	0.20
MgO	10.6	8.4	9.8	11.6	11.6	10.4	4.1	4.7	5.6	2.7	5.1	2.7	0.4	0.7	12.7	0.5	0.2	11.6	6.1	4.2	4.5
CaO	21.8	27.2	21.4	11.7	12.3	12.3	11.7	9.5	10.1	5.4	6.6	11.0	9.7	6.4	30.6	45.55	51.86	13.8	16.3	14.4	16.7
Na_2O	0.7	0.8	1.08	3.3	3.5	4.0	8.7	7.7	7.4	9.9	7.4	7.6	10.4	10.6	0.13	0.3	0.2	2.8	5.1	5.8	5.9
K_2O	0.3	0.12	0.10	3.3	2.6	4.6	3.6	3.7	3.5	4.5	5.4	3.9	4.9	4.6	0.11	1.9	0.05	2.1	2.3	2.3	2.3
H_2O	0.8	0.7	0.8	1.5	0.9	2.1	0.6	0.7	0.7	0.9	1.2	0.7	0.9	0.9	0.5	1.3	0.5	1.6	1.4	1.2	1.6
CO_2	nil	0.02	0.04	0.3	0.1	1.9	1.0	0.2	0.5	0.8	0.2	0.1	0.3	0.7	43.6	36.90	43.46	0.9	1.3	1.2	1.4
P_2O_5	2.54	1.06	1.94	0.33	0.62	0.56	1.12	0.51	1.24	0.09	0.36	0.67	0.05	0.11	0.01	0.05	0.01	0.74	0.96	0.91	0.47
Total	99.7	99.0	100.6	98.0	100.9	100.7	99.5	100.0	100.9	100.4	99.9	99.4	100.2	99.5	99.9	100.8	99.6	99.8	100.2	100.6	99.7
Trace Element Content (ppm)																					
Ni	110	nd	nd	110	90	190	<10	<10	nd	110	130	nd	<10	<10	nd	<10	nd	150	220	100	360
Cr	nd	nd	nd	230	670	550	nd	nd	10	150	160	<10	nd	nd	11	nd	13	560	440	600	280
Co	66	26	35	13	56	46	17	35	12	21	24	18	nd	nd	nd	nd	nd	45	nd	28	56
Sr	300	300	320	71	1100	840	1300	1300	850	1600	2700	840	620	1400	3600	2600	2500	960	920	1000	800
Ba	300	16	140	320	810	1300	320	400	470	910	1300	330	830	2000	1100	890	360	490	280	160	120
Zr	190	470	660	220	300	210	220	210	260	340	470	300	30	260	nd	340	nd	180	120	nd	80
Nb	62	370	240	150	230	170	250	540	350	210	220	270	nd	170	71	10	620	110	nd	50	100
Y	22	68	45	27	17	25	22	44	41	26	32	36	<20	<20	53	81	<20	22	33	11	44
La	81	450	86	50	98	110	68	580	430	50	140	96	nd	60	650	700	260	59	40	19	85
Ce	nd	650	nd	nd	nd	nd	nd	930	1000	nd	nd	nd	nd	nd	1000	880	<500	nd	22	6	58
Nd	nd	1100	830	nd	nd	nd	nd	730	730	nd	nd	nd	nd	nd	820	1600	nd	nd	nd	nd	6
Yb	4	5.1	4.7	<4	<4	<4	<40	<40	<4	<4	<4	<4	<40	<40	<4	<4	<4	<40	<40	<40	<40
Sc	52	26	39	nd	nd	nd	-	-	-	-	-	-	nd	nd	-	-	-	34	27	46	62

[1]Includes Cl - 1.1%; [2]includes Cl - 1.2%; [3]includes Cl - 2.08%, SO_3 - 1.48% (from Campbell (1961).

From Currie (1976a).

QUARTZ CREEK MAP AREA

NTS 082/6W

B. WELSH 1994

SCALE: 1:20,000

0 500 1000 1500 Metres

Table of Formations

(Geology after KUBLI (1990) and WHEELER (1962)

QUATERNARY

PLEISTOCENE and RECENT
Glacial till, Alluvium, Scree

LOWER CAMBRIAN

C_d DONALL FORMATION
- C_{du} UPPER - Quartzites and pelites
- C_{dm} MIDDLE - Limestone, sandy limestone, Archeocyathid lst.
- C_{dl} LOWER - Interbedded quartzites, siltstone, pelites & limestone

C_v FISH LAKE VOLCANICS

C_h HAMILL GROUP

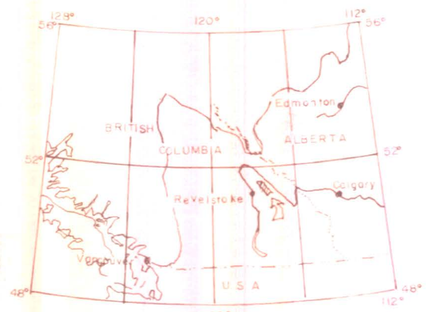
PRECAMBRIAN (Hadrynian)
Horsethief Creek Group

- P_{uc} Upper Clastic Division
- P_{cg} Carbonate Division
- P_{sl} Slate Division
- gt Transition zone
- P_{gu} Upper Grit Division
- P_{bb} Baird Brook Division
  - ll members PBb2:6
  - pg purple and green slates of member Pbb1
- P_{gl} Lower Grit Division

Post Lower Cambrian Rocks of Uncertain Age
- DT DIATREME
- D MAFIC DYKES

LOCATIONS OF TEST PITS
1. GLORY HOLE
2. WINSDAM
3. UPSTREAM 2 KM
4. CONFLUENCE
5. PIRATE PIT
6. ST. ANDREWS
7. LUCKYBUCK
8. ED #2
9. VAL
10. DICK'S CAMP

ROCK SAMPLES
1. WOLV-1
2. WOLV-2
3. SNOWFLAKE
4. DIATREME



94/95 P 15

PROGRAM PROPOSAL

for the
Prospector' Assistance Program

by Barbara Welsh
April 18, 1994

TABLE OF CONTENTS

1. INTRODUCTION 1

2. EXPLORATION TARGET
   a) Commodities 2
   b) Region of Interest 2

3. GEOLOGY OF THE QUARTZ CREEK AREA..... 4

4. PROGRAM PROPOSAL
   a) Previous Work 5
   b) Proposed 1994 Work Program 5
   c) Work Schedule 5
   d) Communications 7

5. BUDGET 8

6. BIBLIOGRAPHY 9

APPENDIX
   a) Curriculum Vitae

LIST OF FIGURES

1. Location Map 3
2. Sluicing Equipment 6

1. INTRODUCTION

Historically, placer miners have shown a great single-mindedness toward the pursuit of gold in placer deposits, and in many cases valuable minerals may have been discarded. Recent economic conditions are an incentive to re-evaluate placer gravels for their total mineral content, especially in cases where extraction of the gold is only marginally viable.

A December 1993 article in the Canadian Mining Journal describes a mineral sands deposit located at the mouth of the Natashquan River in Quebec, owned by Tiomin Resources. Tiomin is proposing to spend $70 million to float a modern dredge and processing plant in man-made ponds in order to produce magnetite, ilmanite, rutile, zircon, and garnet. (10% heavy mineral content in the sand.) Values per ton of sand are as follows:

Iron	$1.27
Titanium	$1.14
Zircon	$0.85
Garnet	$0.44
Net Revenue	$3.70
Costs	$1.00
Gross Profit	$2.70

In the proposed study area, gold values are estimated to be approximately triple this amount, but other valuable minerals are present as well. The purpose of this exploration program is to ascertain by quantitative and systematic sampling methods, the total value in addition to gold that the placer gravels contain.

Due to the globalization of markets, and the superior nature of ore deposits in South-Central America and the U.S.S.R., the value of pursuing traditional exploration targets, such as base and precious metals, is questionable. Also, as a result of the high value of the American dollar, the importation of industrial minerals has become prohibitively expensive. However, excellent opportunities for the extraction of industrial minerals exist in the province, and the time has come to take a new perspective.

2. EXPLORATION TARGET

a) Commodities

In order of priority, the commodities sought will be:

Gold
Gemstones
Industrial Minerals

The area is well known for placer gold, although recent landslides and past mining activity has sharply diminished the concentration of gold to be found in the gravels. Estimated gold content on the existing claims and leases is felt to be between 0.42-3.0 g/cu.m. gravel (or $CDN6.50-$47.00 per cu.m at current gold prices). (Personal communication, R. Anderson, 1993) The area over which these grades apply is not known.

Gemstones, which may include the minerals beryl (found in a hard-rock occurrence to the southeast -- MINFILE 082N079), corundum (found to the northwest -- MINFILE 082N088, 082N089, and 083C001), zircons (mentioned in a report by J. Pell, O.F. 1987-17, noting the occurrence of zircons to the northwest), peridot, lazulite, tourmaline and spinel. Microdiamonds have been reported in the region, but apparently were found to be non-economic. However, they do confirm the presence of high-pressure minerals.

The likeliest movement of glacial materials is from the permanent icefields to the southeast, but several stages of glaciation have occurred through this area.

Industrial minerals, of which several known occurrences have been found in the area, may include barite, olivine, garnet, talc, and other refractory minerals, and and as a result of widespread penetrative cleavage in the rocks of this area, there are many local occurrences of high quality dimension stone (mostly flagstone).

b) Region of Interest

The principal area of study is on a placer claim on Quartz Creek, held by the author, called R. Buck I (claim number 321328) located in NTS 082N/6W, Golden Mining Division. As well, permission has been granted by the lease holders (Mr. Richard Anderson of Cherryville, B.C. and Mr. Donald Campbell of Vernon, B.C.) to explore Placer Leases 16500, 16502, and 16517, (see Fig. 1, next page) and there are considerable areas both upstream and downstream of these claims/leases which are *not currently staked that can be investigated.*

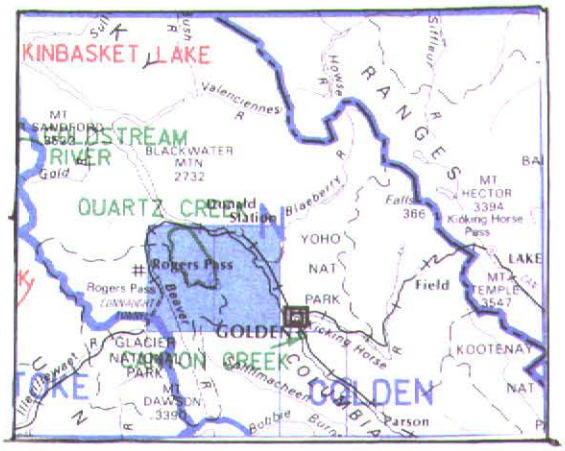
Access is via Highway #1 to a forestry access road located just to the east of Big Lake Resort, which follows Quartz Creek. The area can be reached by car or truck. The claims are located 10 km to the south of the Trans-Canada Highway along this road.

Fig 1. LOCATION MAP

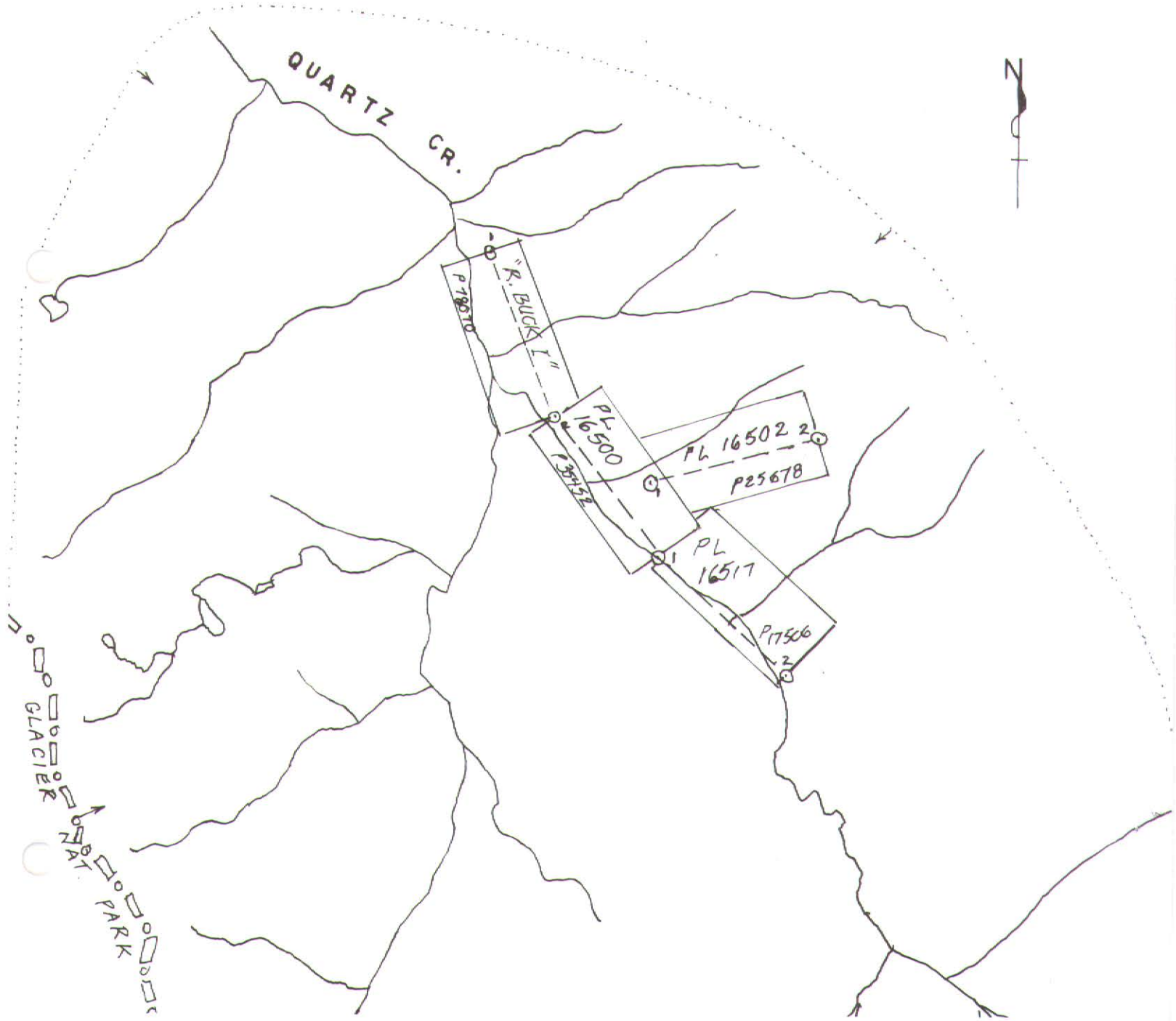
QUARTZ CREEK PLACER AREA

NTS 082N/6W

PROSPECTING AREA



NTS 082N



3. GEOLOGY OF THE QUARTZ CREEK AREA -- NTS 082N/6W

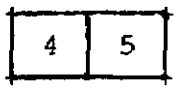
The Quartz Creek watershed is situated just west of the Rocky Mountain Trench in the Omineca Crystalline Belt, and forms part of the Purcell Anticlinorium. The Dogtooth Fault is immediately to the west. The dominant trend of the structures is northwest, but there are numerous splays, thrust faults, normal faults, and complex folds which have resulted in widespread, penetrative deformation.

There is a thick succession of Proterozoic Windermere rocks of the Horsethief Creek Group, consisting of pale grey, dark grey, green and maroon slate and phyllite, quartzite, feldspathic quartzite and grit, pebble conglomerate, and minor limestone and marble.

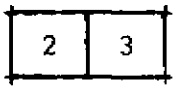
Also present are Paleozoic (Lower Cambrian) rocks of the Hamill Group, consisting of quartzite, limestone, phyllite, and argillite, and to a lesser extent rocks of the Donald Formation, consisting of interbedded rusty brown sandstone, grey slate, and limestone, locally oolitic and pisolitic.

TABLE OF FORMATIONS (after J.O. Wheeler, 1963)

LOWER CAMBRIAN

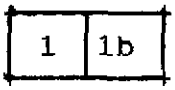


4. DONALD FORMATION: interbedded rusty brown sandstone, grey slate, and limestone, locally oolitic and pisolitic.
5. BADSHOT FORMATION:
   Upper part--dark grey, light grey, and buff limestone.
   Middle part--green limey slate, phyllite
   Lower part--grey and yellowish limestone



2. HAMILL GROUP:
   2a quartz-mica schist, mica schist
   2b amygdaloidal greenstone, greenst.breccia, tuff
   3 Upper formation: pink and brown quartzite, feldspathic grit, argillite
   Middle formation: interbedded grey, green, brown and purple slate and quartzite.
   Lower formation: alternating sericitic quartzite and slate and phyllite; maroon slate;
   3a quartz-mica schist, micaceous quartzite

WINDERMERE



1. HORSETHIEF CREEK GROUP
   1a grey, silvery-brown and golden brown quartz-mica schist, gneiss, pegmatite, and amphibolite (schists commonly contain garnet, staurolite, andalusite, and kyanite)
   1b limestone marble
   1c coarse breccia
   1d mainly slate (>1000 ft.),limestone, shale
   1e mainly grit and quartzite

4. PROGRAM PROPOSAL

a) Previous Work

In September 1993, the claim area was sampled for gold and other minerals. Gold values ranged from approximately $6.50 - $47.00 per cu.m. As well, zircons were noted in the concentrate. On checking concentrates of the other leaseholders in the area, similar results were obtained. Subsequently to these tests, a relatively small amount of slate was taken from the area and used to create a very attractive chimney.

b) Proposed 1994 Work Program

It is expected that the road will not be passable until the end of May, due to the large snow-pack, so it is planned to begin the work program June 1, and to finish by October 31, for a period of 22 weeks. The plan is to work at the site for 2 weeks at a time, then return to the office in Cherryville for 2-3 days to compile results, and then repeat the cycle.

Initially a grid will be established, using the kilometer signposts and the Quartz Creek access road as a baseline. Over the areas of the staked placer claims, systematic sampling will take place, using a 0.75 cu.metre bin to accurately measure the sample size. Each test pit will be backfilled after testing, in order to comply with the respective work permits that have been issued for 1994, but the sample pits, with accompanying results will be plotted up on a forestry base map (1:15,000 scale). The diagram and photo (Fig. 2) on the next page illustrates the type of washing equipment to be used-- that is, a small trommel and a sluice. Hand panning will be used in areas outside the claims, about 9 km downstream to Highway #1, and about 10 km upstream on Porcupine Creek, as well as the 5 km to Quartz Lake.

The gold will be separated at the time of washing the sample and weighed, and the rest of the concentrate will be stored in labelled sample bags for followup microscope work that evening, for the purpose of determining the mineralogical content and relative proportions of various minerals for each sample. A lab will be available on site to assist in these determinations. Finally, concentrates and random soil samples will be sent to Chemex Labs for 32 element I.C.P., Neutron Activation (to determine the Halfnium content of the zircons), and whole rock X.R.F. of rock samples.

c) Work Schedule (June 1 - Oct.31)

		Completed by:
Establish mapping grid	2 weeks	June 14
Sampling and petrographic study	10 weeks	Sept 5
Hard rock geological mapping/sampling	5 weeks	Oct. 31
Office work during season	5 weeks	
	22 weeks	

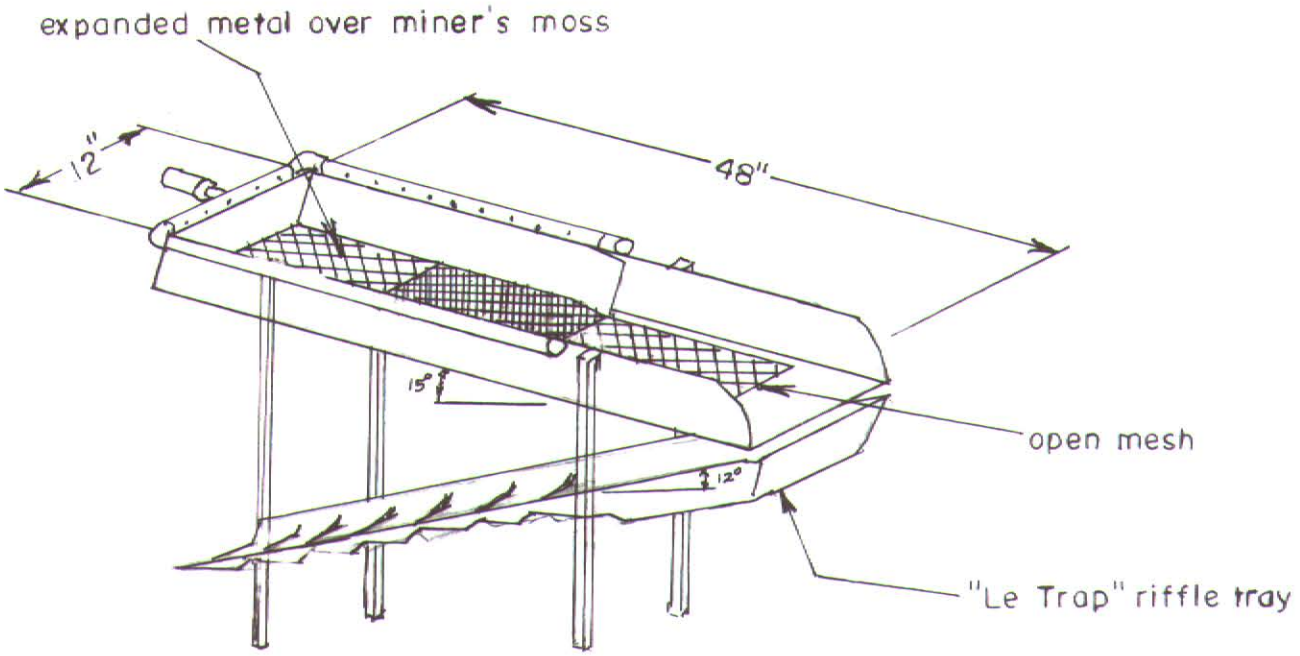


Fig. 1a. Sketch of sluice to be used in washing larger samples. The black plastic riffle tray on lower level helps to identify minerals during the washing process.

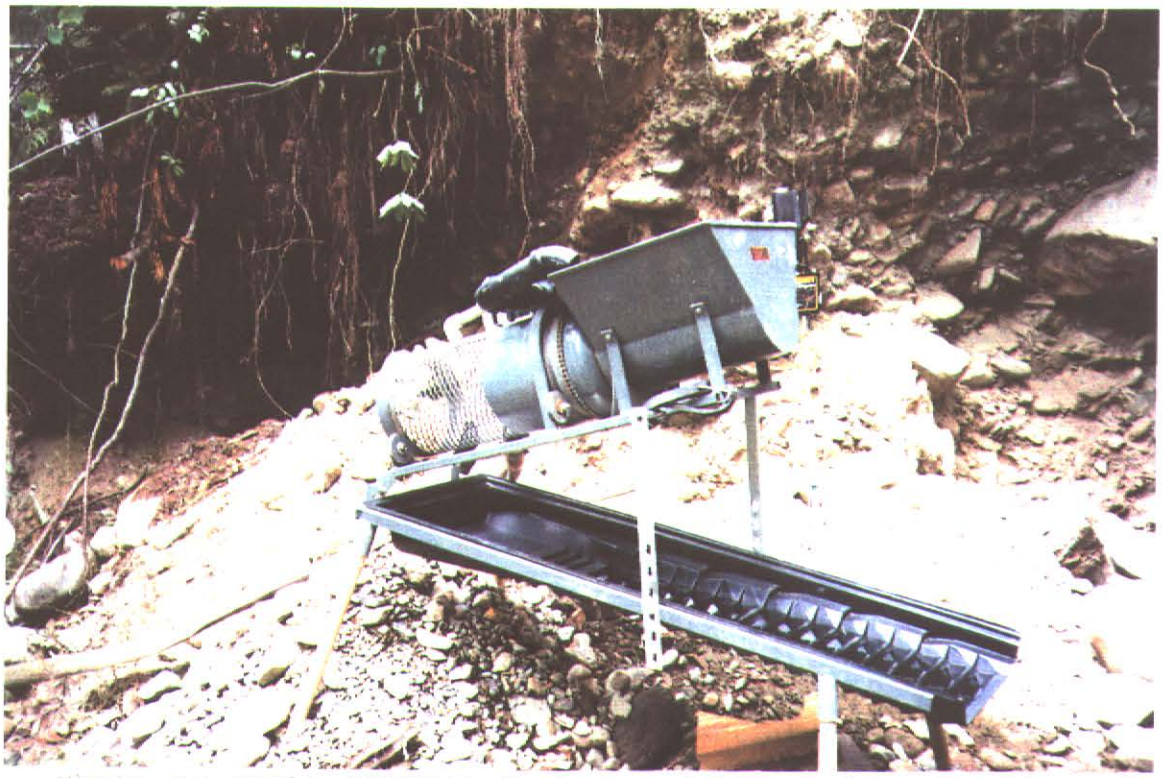


Fig. 1b. Photo of small trommel to be used for washing samples.

d) **Communications**

Cellular phone service is not yet available in the area, so our home phone number is (604) 547-6642 and the mailing address is:

619 N. Fork Rd., R.R. #1,
Lumby, B.C.,
V0E 2G0

The contact person in Vernon is Donald Campbell, at 549-1837. There is also a contact number in Golden, which is not available at this time, but can be provided at a later date. Failing that, just go to Quartz Creek hiking trail and fire three shots; we'll come down to meet you.

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APPENDIX

BARBARA WELSH
619 N. Fork Road, R.R. #1
Lumby, B.C. V0E 2G0
604-547-6642

EDUCATION & PROFESSIONAL AFFILIATION:

1983-1993: Registered with Professional Engineers of Ontario as a Professional Engineer.

1982-1983: Completed the requirements for a B.Eng. degree in Mining Engineering at University of Alberta, Edmonton.

1980-1982: Reginstered with the Association of Professional Engineers of Manitoba as an Engineer-in-Training.

1976-1980: Received an Honours B.Sc. in Geological Engineering from Queen's University at Kingston, Ont.

1971-1976: Honours Secondary School Diploma, from Port Arthur Collegiate Institute, Thunder Bay, Ont.

AWARDS:

Queen's University Anniversary Scholarship
Lakehead Board of Education Gold Medal
Port Arthur Collegiate Scholarship
Kiwanis Club Scholarship
Ontario Scholarship
Senior Athletic Letter
Junior Athlete of the Year

EMPLOYMENT:

1991-Present: **Self-employed,** placer gold mining and prospecting in Cherryville, B.C.

1984-1991: **Ground Control Engineer,** Dickenson Mines Ltd., Balmertown, Ont. Monitoring ground conditions underground and assessing rockburst potential, making recommendations on ground control measures, and assisting in mine planning.

1983-1984: **Mine Geologist,** Dickenson Mines Ltd., Balmertown, Ont. Underground grade control and mapping, core logging, ore reserve calculation, and rock mechanics.

1983-1983: **Teaching Assistant,** University of Alberta, Edmonton. Assisting in tutorials and marking papers in Rock Mechanics.

1981-1982: **Planning Engineer,** Sherritt Gordon Mines Ltd., Leaf Rapids,Man Responsible for planning and design of a group of stoping blocks, including trackless development layouts, drilling and blasting layouts, production scheduling, and backfilling.

1980-1981: **Rock Mechanics Engineer,** Sherritt Gordon Mines, Leaf Rapids, Man. Monitoring ground stability underground and in the open pit, and assisting in mine planning.

1979-1979: **Field Geologist,** Sherritt Gordon Mines, Lynn Lake, Man. Geological mapping of a gold property near Lynn Lake, and a base metals property near Leaf Rapids.

1978-1978: **Geotechnical Lab Technician,** Ministry of Transport, Thunder Bay. Quality control testing of asphalt.

1977-1977: **Field Geologist,** Ontario Geological Survey, Thunder Bay Geological mapping of various areas along the north shore of Lake Superior.

REFERENCES

1. Larry Connel, Royal Oak Mines Inc., 2nd Fl., 1425 W.Pender St., Vancouver, B.C., V6G 2S3 (604) 682-8320
2. Neil Church, Geological Survey Branch, 5th Fl., 1810 Blanshrd St., Victoria, B.C., (604) 952-0409