SLATE CREEK TRENCHING & SAMPLING EXPLORATION PROGRAM 1993

Report Submitted To The
Yukon Mining Incentives Program
Application #93-127
NTS 115I03
10 August 1993

EXECUTIVE SUMMARY

A trenching and sampling program was conducted along Slate Creek on the east face of Mount Nansen to delineate gold bearing placer gravel for the purpose of mining. Placer gold is present in economically extractable quantities within a red colored gravel. The *pay channel* is 20' - 40' wide subparallel to the present creek and centerline of the claims.

The gold bearing gravel has distinct vertical limits. It underlies a cover layer of black muck and vegetation that is up to 8' thick. It conformably overlays a glacial lake bed of lacustrine clay on the downstream portion of the claims and unconformably overlays frozen bedrock on the upstream portion of the creek.

Gold grade is horizontally gradational from higher grades in the valley center to subeconomic grades in excess of 20' from the center of the *pay channel* . Mining width is therefore very sensitive to gold price and to mining costs.

Further trenching and sampling is recommended to delineate the lateral margins of economically mineable gravel upstream of the 1993 trenching with the aim of providing a calculable reserve based upon a mining plan for a minimum of 45 days production.

The exploration and delineation program should attempt to locate the upstream extent of the lacustrine clays as the bedrock surface may provide natural riffles. Mining upstream of this point is hypothesized to promise the best gold recoveries and grade.

ACKNOWLEDGEMENTS

The assistance provided to this program and other mining projects throughout the Yukon Territory by the Yukon Territorial Government, Economic Development, Energy and Mines Branch is gratefully acknowledged. Their support provides a positive climate for investment in Yukon by Yukoners.

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List of Figures and Tables

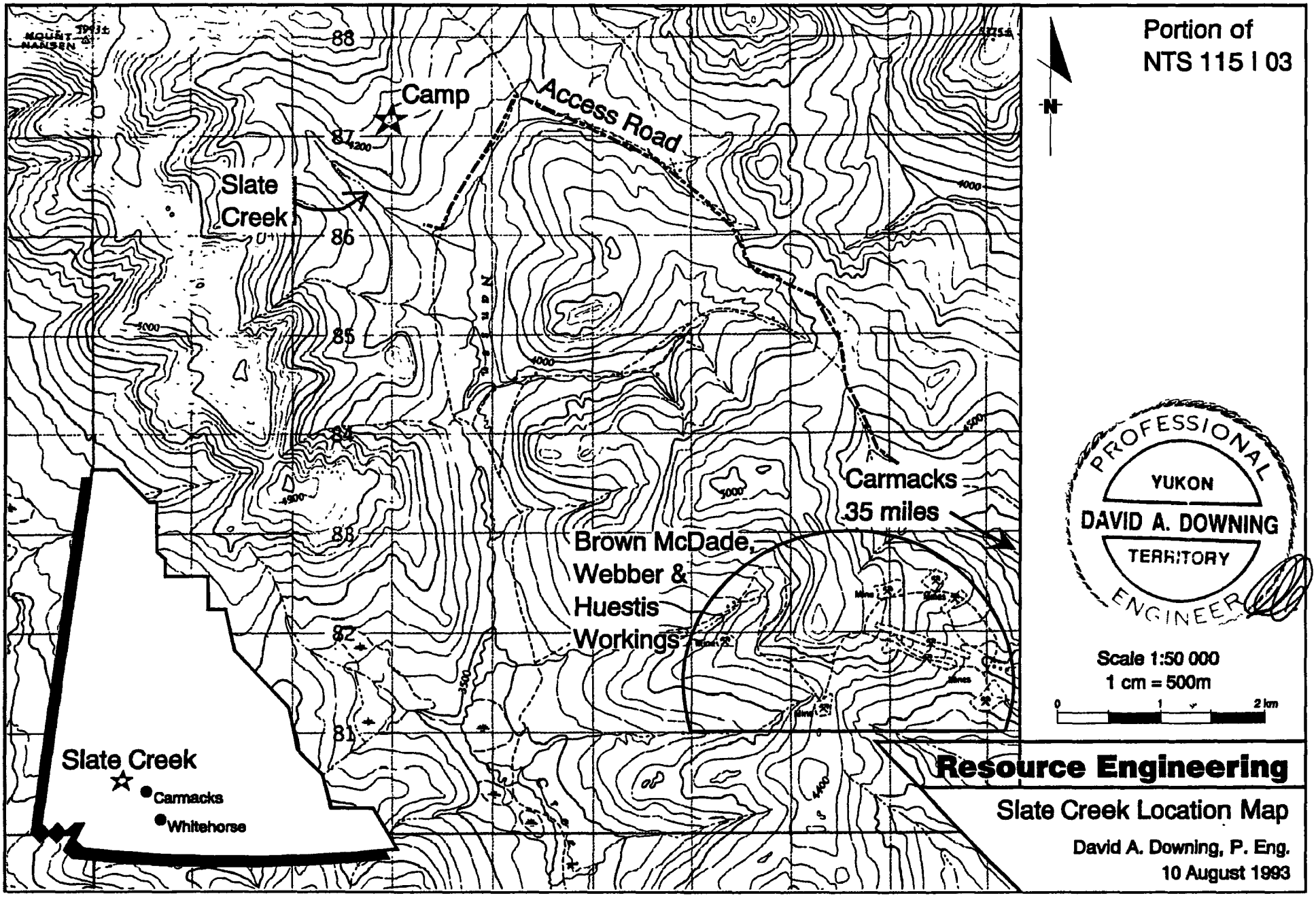
1.0 INTRODUCTION

A trenching and sampling program was carried out on Slate Creek to determine placer gold distribution in the creek valley. A 1990 exploration program had identified the upper end of claim Harley #12 and the lower end of claim Harley #13, as the most prospective area for mining on the basis of gold grade and ease of setting up a mining operation.

The 1993 program focused on defining the pay zone both horizontally and vertically within the identified area. The information gathered is to be used for finalizing a mining plan.

The program as described in this report, was funded in part by Yukon Economic Development, Energy and Mines Branch via the Yukon Mining Incentives Program (YMIP). This report was prepared and submitted to the Energy and Mines Branch in partial fulfillment of the requirements of the YMIP program.

This report was prepared by David A. Downing, P. Eng. of Resource Engineering, Whitehorse, Yukon, for Phillip Veenhof of I Can Dig It Contracting and Exploration Limited of Whitehorse, Yukon. The author did not visit the exploration site at any time during the 1993 program or provide supervision in any form. The report was prepared strictly from field notes and sampling records provided by Mr. Veenhof. Personal knowledge of the Mount Nansen area and the use of standard geologic reference material was employed to interpret and enhance the field data.


Portion of
NTS 115 I 03
N
Camp
Access Road
Slate
Creek
88
87
86
85
84
83
82
81
Carmacks
35 miles
Brown McDade,
Webber &
Huestis
Workings
PROFESSIONAL
YUKON
DAVID A. DOWNING
TERRITORY
ENGINEER
Scale 1:50 000
1 cm = 500m
0
1
2 km
Slate Creek
Carmacks
Whitehorse
Resource Engineering
Slate Creek Location Map
David A. Downing, P. Eng.
10 August 1993

2.0 History

The mining history of the Mount Nansen area began with a visit by J.B. Tyrrell of the Geological survey of Canada in 1898. A subsequent visit by D.D. Cairnes was made in 1914. A comprehensive geology map was not available until H.S. Bostock's Memoir (1936) based upon field work from 1931-33. D.J. Tempelman-Kluit updated Bostock's mapping with field work carried out mainly between 1978 and 1980. The 1:250,000 scale regional map has been further detailed by G.G. Carlson's, Indian and Northern Affairs Open File 1987-2, with mapping at a scale of 1:30,000 and extensive descriptive text.

The first prospecting discoveries of significance in the area were during the depression years. Several vein and shear zones were staked and trenched by hand. Following the Second World War the discovery of the Brown McDade property using panning methods lead to the rapid development of the area. An airstrip was built and a road was constructed from Carmacks.

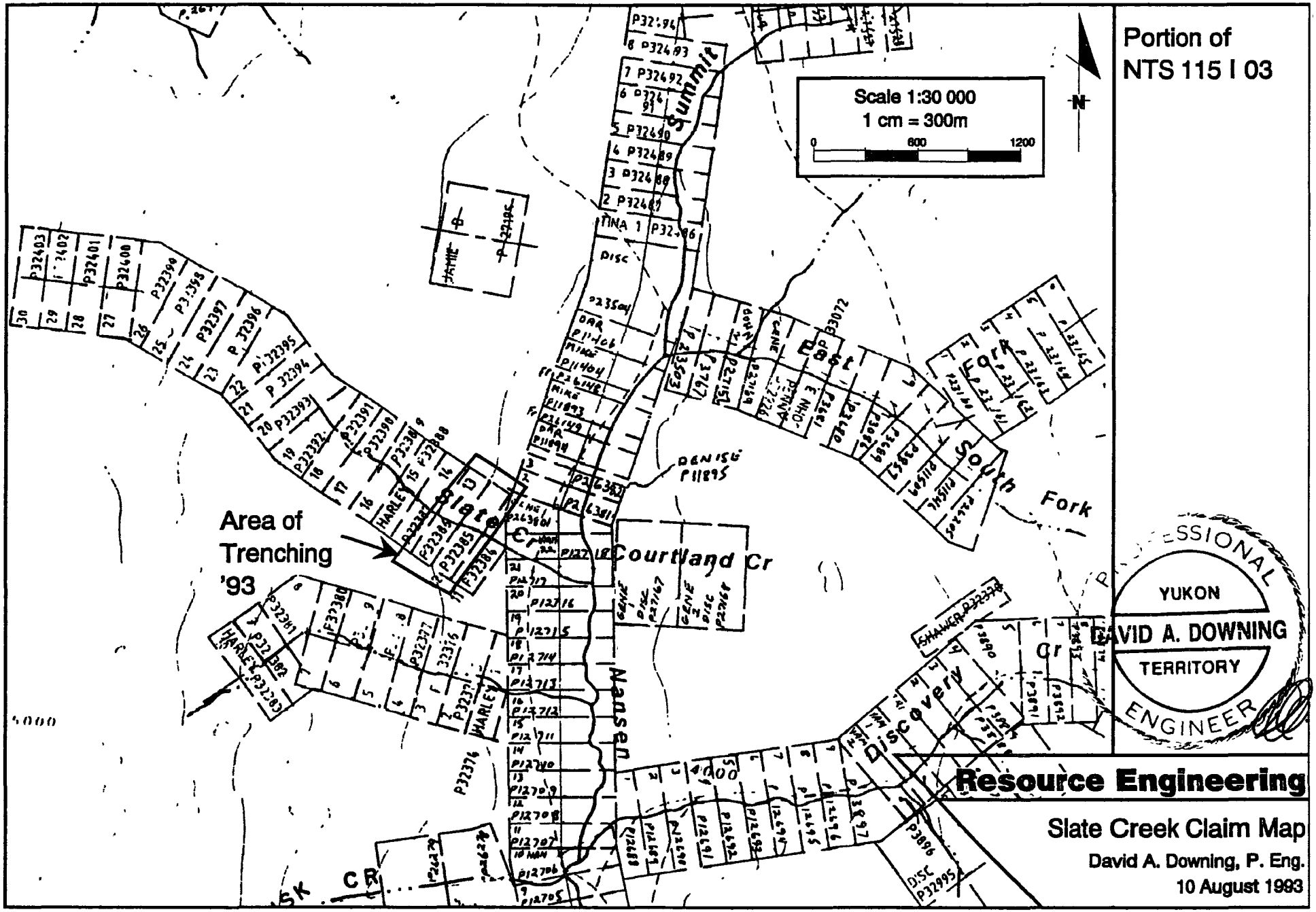
The Mount Nansen Mine, which includes the Webber and Heustis veins, operated for 8 months starting in 1968. Milling was suspended due to poor recoveries resulting from the lack of a cyanide circuit.

Recent activity in the area includes advanced exploration at Mount Nansen, Goulter and the Brown-McDade properties. Several new discoveries around the margins of the area have yet to be properly evaluated. Placer activity has increased over the last two years and is spilling to the west and north into the headwaters of the Klaza and Nisling Rivers.

In spite of the long hardrock and placer mining history on Mount Nansen and Victoria Mountain there is no past work, prior to 1990, documented on Slate Creek. Generally most of the exploration has been concentrated between Nansen and Victoria Creeks to the immediate east of Slate Creek.

3.0 Location, Access & Claim Status

Slate Creek is approximately 50 km west northwest of Carmacks. Access is by the seasonal 60 km long Nansen road shown on page 2. Travel time to the Mount Nansen mine site is 1.5 hours. From that point a number of winter, 4X4 roads access most of the area. The trail to Slate Creek is the right fork of the road 1.5 km beyond the mine site. It follows the ridge top with a right turn down into Courtland Creek. The claim map on the following page shows the area of the 1993 trenching.


Portion of
NTS 115 I 03
Scale 1:30 000
1 cm = 300m
0
600
1200
N
Area of
Trenching
'93
Summit
Courtland Cr
Hansen
Discovery
South Fork
YUKON
DAVID A. DOWNING
TERRITORY
ENGINEER
Resource Engineering
Slate Creek Claim Map
David A. Downing, P. Eng.
10 August 1993

4.0 GEOLOGY

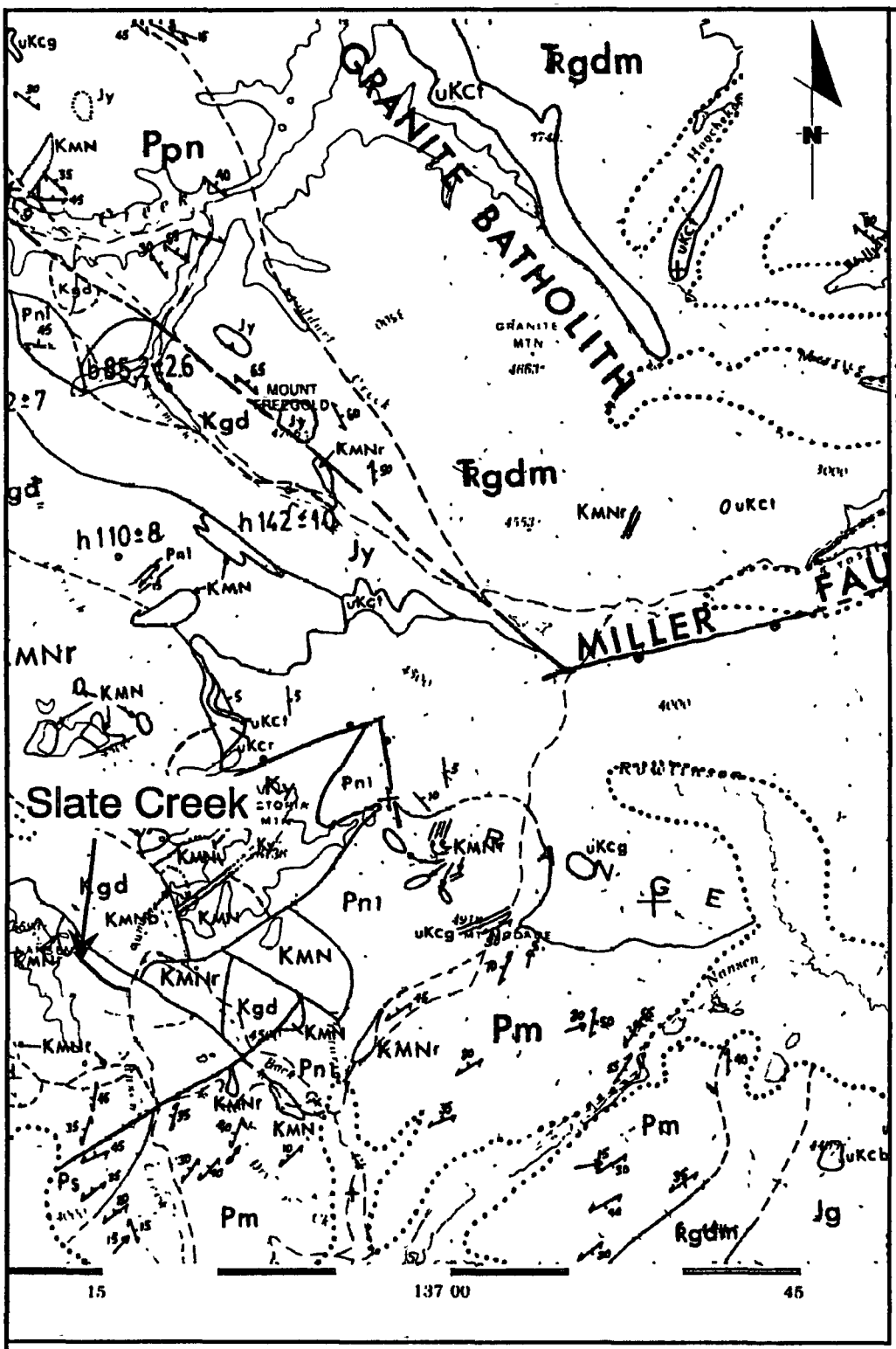
The oldest rocks in the Mount Nansen area and southwest into the headwaters of the Nisling River, belong to a Devono-Mississippian metamorphic assemblage consisting of heterogeneous quartzite and orthogneiss. The quartzite unit is commonly micaceous, and includes interlayered metapelite, metacarbonate, and amphibolite interpreted as metamorphosed mafic igneous rock. The orthogneiss is dominated by leucocratic, medium to coarse grained metaplutonic rock, and mesocratic to melanocratic, fine to medium grained metaplutonic and probably metavolcanic rock. Fabrics in the metamorphic assemblage indicate two pre-Early Jurassic tectonic events, the youngest of which involved top-to-the-north shearing. Regional amphibolite grade metamorphism led to development of migmatite in the metapelite and orthogneiss, and recrystallized hornblende in the orthogneiss.

The metamorphic rocks are crosscut by post-tectonic intrusions including: quartzo-feldspathic pegmatite, spinel peridotite, and alkalic syenite of Early Jurassic Minto Plutonic Suite; and quartz monzonite of middle Cretaceous Dawson Range Batholith. These metamorphic and plutonic rocks are nonconformably overlain by a thick (about 700 m) succession of mafic lava flows, and tuffs of Upper Cretaceous Carmacks Group. Monzo-syenite plutons and a rhyolite plug are regarded as cogenetic, epizonal equivalents of Carmacks Group. Major faults, including the Big Creek Fault, Wolverine Creek Lineament, and probably Hoochekoo Fault, were active during Carmacks Group volcanism. Porphyry, vein and skarn mineralization are associated with each of the post-tectonic magmatic events.

Several major faults are recognized in the prospecting area. In addition, there are a number of related smaller faults. The faults are defined on the basis of: truncation of aeromagnetic domains; topography (major faults occupy major valleys); juxtaposition of different structural levels of the basement metamorphic assemblage; brittle shearing of granitic rocks of Dawson Range Batholith; the attitude of volcanic Flows of Carmacks Group; and by the juxtaposition of different rock types in Carmacks Group. The major lineaments occupies creek drainages and form distinct linear features evident on air photos as well as satellite images.

The geology of the Mount Nansen and Upper Nisling River areas is illustrated on the following page.

Glacial lake deposits and minor boulder clay have been reported from some of the valleys, in particular lower Victoria and Nansen Creeks (Bostock, 1936). Fine, unsorted sand mantles many of the hills in the vicinity of MOunt Nansen and Victoria Mountain, probably representing loess deposits form the glacial epoch. Similar deposits, which show little or no internal stratification, apron these hills as colluvial windblown fans (Carlson, 1987).



Portion of NTS 115 I

Geology by
D. Tempelman-Kluit
1984
GSC Open File
1101

Symbols
- Outcrop limit
- Assumed fault
- Normal fault
- Lateral fault
- Thrust or steep reverse fault
- Anticline
- Syncline
- Bedding
- Foliation
- Rodding
- Joints

PROFESSIONAL ENGINEER
YUKON TERRITORY
DAVID A. DOWNING

Legend

uKc	Carmacks Basalt
Kmn	Mount Nansen Volcanics
Kgd	Casino Granodiorite
Jg	Carmacks Leucogranite
Jy	Big Creek Syenite
Pm	Pelly Gneiss
Ppn	Selwyn Gneiss

See Appendix A for complete geological legend

Scale 1:250 000
1 cm = 2500m
0 5 10 km

Resource Engineering

Slate Creek Geology Map

David A. Downing, P. Eng.
10 August 1993

5.0 TRENCHING PROGRAM

The trenching program had four major objectives. The objectives are required to arrive at an operational mining plan. The objectives were:

1. Determine the horizons to be mined to maximize gold recovery.

2. Determine the horizontal extent of a practical mining cut.

3. Confirm lateral and horizontal continuity of the identified pay gravel.

4. Adjust the mining plant to effectively separate the course boulders and fine clay without excessive gold loss.

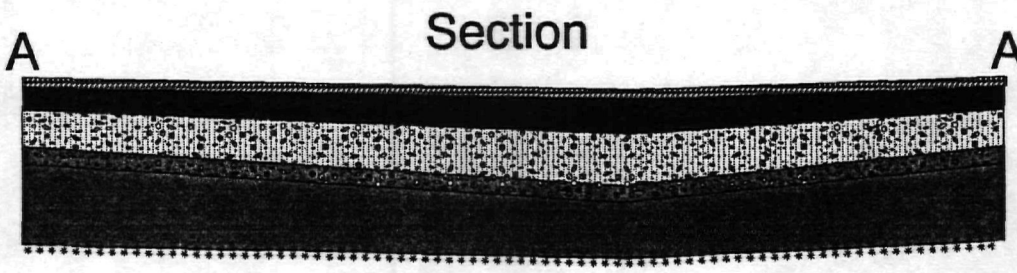
A plan of the trenching with cross sections is provided on the next page. The compiled results of the trenching are included as three pages following this section.

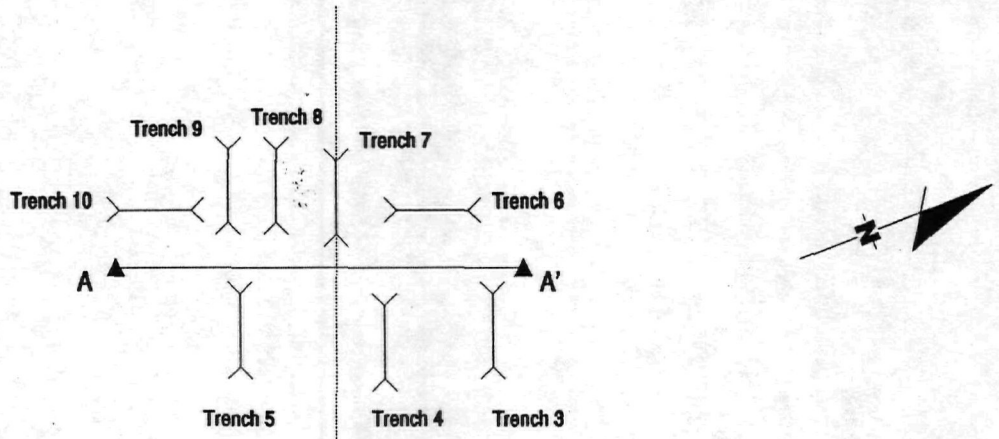
The trenching was completed using a Hitachi excavator to dig the trenches. Material to be tested was piled separately from that to be wasted. A front-end loader transported and fed testing material to the processing plant. Stripping of the trench sites, removal of oversize and clearing of the tailings area was completed with a D-7 Cat bulldozer. Mobilization was undertaken using two semi tractors with lowbed trailers and a 3 ton flatdeck.

Trenches 1&2 reached frozen ground without reaching bedrock. It is suspected that the frozen level is the top of the lacustrine clay. Trench #2 was felt to be put down to far to the right, based upon stream configuration. The "*pay streak*" on other Nansen and Victoria area creeks is 20' - 40' wide. There is sufficient room between the trench, which is in marginal side pay, and the main creek for a mineable pay streak to exist.

Trenches 3,4 &5 were utilized to test the clay for fine gold. It would appear that the clay does not carry gold as it does in the Atlin district. By decreasing the volume of clay run through the plant the length of unscreened trommel can be decreased.

Trench 5 specifically tested the upper layer of clay which is full of boulders and cobbles. This 6' layer is very difficult to dig and did not return sufficient gold to justify mining. It appeared however, that the first

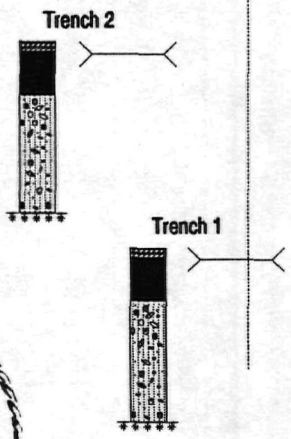




Harley #13 (P32386)

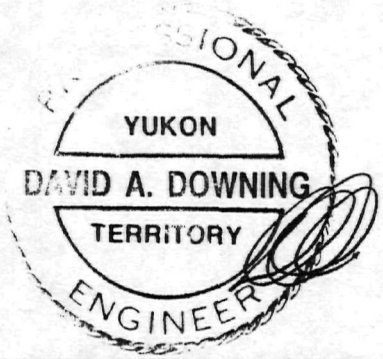
Harley #13 (P32386)

Claim line



Legend

- A0 & A1
- Black Muck
- Gravel
- Clay & Boulders
- Clay
- Frozen Bedrock



Scale 1:12 000
1" = 100'

0 100 200 ft.

Resource Engineering

Slate Creek Trench Map

David A. Downing, P. Eng.

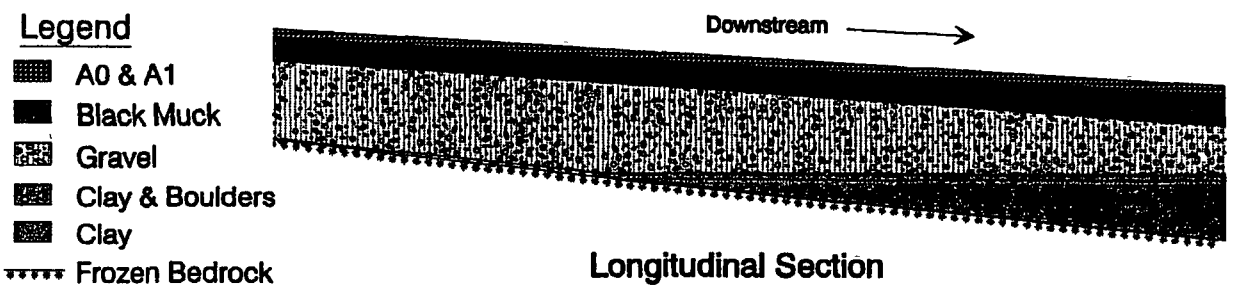
10 August 1993

foot of this clay contained enough gold to include it in production. In practical terms the top of this layer would be taken to insure that the complete gravel layer was captured.

Trenches 6 - 10 were put in as a fence across the valley to test the lateral extent of the pay gravel. The trenches recovered only the gravel under the black muck and the top foot of bouldery clay. Trenches 7&8 are definitely in mineable gravel. The grade does not have an abrupt lateral cutoff but is gradational. Mining width is therefore very sensitive to gold price and other mining costs such as fuel price and material transport distance.

Through a combination of this years results, the initial trenching in 1990, and communication with other area operators, it is possible to hypothesis the following depositional model. A glacial lake was formed in the Nansen and Victoria Creek valleys during the last glaciation. Melt water from the east from the ice front in the Yukon and Nordenskold valleys was trapped by Nansen and Victoria Mountains to the north and west. The Nisling River served as the spillway for this relatively short lived lake. In the post lake period the current drainage mantled the old lake bed with gold bearing fluvial gravel. This coarser material has been capped with, and continues to be capped with, organic deposits formed from the wet swampy terrain in the valleys.

The upstream limit of the clay is located somewhere between claims Harley #13 and Harley #19. The schematic diagram below illustrated the anticipated longitudinal cross-section. The best mining area would be immediately upstream of the edge of the lacustrine clay. At that point the bedrock surface, serving as natural riffles would give the best pay. The thickness of pay at this point would be greater than further upstream and the lateral width of the pay channel would be greatest.



Longitudinal Section

I CAN DIG IT Contracting & Exploration Limited
Trench Sampling Report
Slate Creek Project '93
NTS 115 I 03

Trench	Claim	Location (feet)		Dimmensions (')			Horizon	Volume (cu yds)	Gold (oz.) Recovered	Gold Grade ($/cu yd)	Comments
		Upstream	Offset	W	L	D					
1	12	200	0	16	30	1	A0 & A1	17.78	not tested		
				15	26	6	Black Muck	86.67	not tested		
				14	24	16	Red Gravel	199.11	0.51	1.02	
							Frozen Ground				
2	12	300	-50	16	30	1	A0 & A1	17.78	not tested		Pay to the left
				15	26	6	Black Muck	86.67	not tested		based on
				14	24	17	Red Gravel	211.56	0.51	0.96	stream
							Frozen				configuration
3	13	250	80	16	30	1	A0 & A1	17.78	not tested		No bedrock
				15	26	6	Black Muck	86.67	not tested		
				14	24	17	Brown Gravel	211.56	0.02	0.03	Brown not red
				13	22	9	Lacustrine Clay	95.33			gravel
4	13	250	40	16	30	1	A0 & A1	17.78	not tested		No bedrock
				15	26	6	Black Muck	86.67	not tested		
				14	24	14	Brown Gravel	174.22	0.04	0.06	Brown not red
				13	22	11	Lacustrine Clay	116.52			gravel

I CAN DIG IT Contracting & Exploration Limited
Trench Sampling Report
Slate Creek Project '93
NTS 115 I 03

Trench	Claim	Location (feet)		Dimmensions (')			Horizon	Volume (cu yds)	Gold (oz.) Recovered	Gold Grade ($/cu yd)	Comments
		Upstream	Offset	W	L	D					
5	13	250	-40	16	30	1	A0 & A1	17.78	not tested		Clay &
				15	26	6	Black Muck	86.67	not tested		boulders is
				14	24	7	Brown Gravel	87.11	not tested		very hard
				13	22	6	Clay & Boulders	63.56	0	0	digging. Clay
				13	22	10	Lacustrine Clay	105.93			is easy
							Frozen (Bedrock?)				digging.
6	13	300	20	18	30	1	A0 & A1	20	not tested		Clay
				17	26	3	Black Muck	49.11	not tested		semifrozen at
				16	24	4	Red Gravel	56.89	0.25	1.45	bottom.
				15	22	1	Clay & Boulders	12.22			
				13	22	7	Lacustrine Clay	74.15	not tested		
							Frozen Bedrock				
7	13	300	0	18	30	1	A0 & A1	20	not tested		One reasonable
				17	26	3	Black Muck	49.11	not tested		nugget
				16	24	6	Red Gravel	85.33	1.75	7.18	
				15	22	1	Clay & Boulders	12.22			
				13	22	9	Lacustrine Clay	95.33	not tested		
							Frozen (Bedrock?)				

I CAN DIG IT Contracting & Exploration Limited
Trench Sampling Report
Slate Creek Project '93
NTS 115 I 03

Trench	Claim	Location (feet)		Dimmensions (')			Horizon	Volume (cu yds)	Gold (oz.) Recovered	Gold Grade ($/cu yd)	Comments
		Upstream	Offset	W	L	D					
8	13	300	-20	18	30	1	A0 & A1	20	not tested		One reasonable
				17	26	3	Black Muck	49.11	not tested		nugget
				16	24	5	Red Gravel	71.11	1.05	5.04	
				15	22	1	Clay & Boulders	12.22			
				13	22	9	Lacustrine Clay	95.33	not tested		
							Frozen Bedrock				
9	13	300	-40	18	30	1	A0 & A1	20	not tested		Clay turns
				17	26	3	Black Muck	49.11	not tested		green at
				16	24	5	Red Gravel	71.11	0.65	3.12	bottom &
				15	22	1	Clay & Boulders	12.22			contains sharp
				13	22	8	Lacustrine Clay	84.74	not tested		rocks.
							Frozen Bedrock				
10	13	300	-60	18	30	1	A0 & A1	20	not tested		
				17	26	3	Black Muck	49.11	not tested		
				16	24	4	Red Gravel	56.89	0.35	2.03	
				15	22	1	Clay & Boulders	12.22			
				13	22	7	Lacustrine Clay	74.15	not tested		
							Frozen Bedrock				

6.0 Conclusions & Recommendations

A visually distinct gravel horizon contains placer gold.

The gold bearing gravel extends over a downstream length of at least 4 000'.

The lateral extent of gold bearing gravel that may be economically recovered using standard placer mining techniques is 20' - 40'.

Gold grade decreases gradationaly from channel center towards the valley sides, probably due to increasing dilution from sloughed bank material.

Due to the lateral gradation in gold grade, final mining width and pit configuration will be extremely sensitive to gold price and other mining cost parameters.

The best gold recovery and grade is predicted to occur immediately upstream of the limit of lacustrine clay where the bedrock forms natural riffles.

Further testing is required to delineate the pay channel upstream of the limit of lacustrine clay.

7.0 Statement of Costs

Living Expenses	2 314.18
Fuel	6 000.00
Semi-Trucks	5 102.38
3-Ton truck	2 000.00
Camp Rental	1 000.00
Pump & Trommel	6 000.00
D-7 Cat	8 800.00
Hitachi Hoe	22 500.00
Front End Loader	8 000.00
Onsite Maintenance & Repair	3 200.00
Report Writing & Drafting	2 140.00
Total	67 056.56

6.0 REFERENCES

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APPENDIX A

Geology Legend for Open File 1101
(NTS 115I03)

AUTOCHTHONOUS ROCKS
OMINECA CRYSTALLINE BELT

MID CRETACEOUS

Kqm — Moderately resistant, light grey weathering, biotite granite; medium- to coarse- grained equigranular; generally lacks xenoliths but locally includes large screens of metamorphic rocks. Laberge map area.

SILURIAN AND DEVONIAN
ASKIN GROUP
Hogg Formation

SD_H — Resistant, medium grey to buff weathering, medium to thick bedded dolomite, sandy dolomite and dolomitic sandstone; gradational to OD_N. Laberge map area.

ORDOVICIAN TO DEVONIAN
Nasina Formation

OD_N — Recessive, dark grey to black, "sooty" limey or dolomitic, thin bedded to platy graphitic siltstone and fine grained impure quartzite with interbedded graphitic silty shale; gradational to SD_H and to other units of the Askin Group. Laberge map area.

CAMBRIAN TO SILURIAN
KECHIKA GROUP

OS_K — Recessive grey chlorite-muscovite-quartz phyllite and calcareous phyllite with lenses of "greenstone". Laberge map area.

PROTEROZOIC AND LOWER CAMBRIAN
KETZA GROUP

lC_K — White weathering, resistant marble; recrystallized lime mudstone and bioclastic limestone. Laberge map area.

PlCs — Buff weathering muscovite-biotite schist; garnet-mica-quartz schist and micaceous quartzite with minor amphibolite; minor marble; stratigraphically equivalent to, and gradational with Pns and Pn. Laberge map area.

Pn — Buff weathering, black lichen-covered, resistant, muscovite-biotite granodiorite gneiss and augen gneiss, gradational to Pns and PlCs. Laberge map area.

Pns — Buff weathering, muscovite-biotite granodiorite gneiss with abundant interfoliated muscovite-biotite quartz schist; gradational to PlCs and Pn. Laberge map area.

ALLOCHTHONOUS ROCKS
TESLIN SUTURE ZONE AND YUKON CATACLASTIC TERRANE

PALEOZOIC OR MESOZOIC?
SIMPSON ALLOCHTHONOUS ASSEMBLAGE
?PERMIAN?
"SELWYN GNEISS"

P_{pn} Resistant, dark grey weathering, strongly foliated, medium grained, homogeneous hornblende-biotite- chlorite gneiss. Carmacks map area.

P_{pn1} Resistant, light grey weathering, strongly foliated medium grained, homogeneous biotite granite gneiss to biotite granodiorite gneiss; gradational to, and interfoliated with, P_{pn}. Carmacks map area.

CARBONIFEROUS AND/OR PERMIAN?
ANVIL ALLOCHTHONOUS ASSEMBLAGE

CP_{Av} Resistant, dark grey weathering, dark green, fine grained amphibolite and amphibolitic greenstone; minor sheared and altered gabbro; strong flaser fabric. Carmacks map area and Laberge map area.

CP_{Au} Resistant, dun brown weathering, partly or wholly serpentinized dunite, peridote and pyroxenite. Laberge map area.

CP_{Ag} Resistant, dark grey weathering, massive, melanocratic, dioritic to quartz dioritic augen amphibole gneiss; gradational to CP_{Av}. Laberge map area.

PALEOZOIC OR MESOZOIC
NISUTLIN ALLOCHTHONOUS ASSEMBLAGE

PM_N Light buff weathering, pale green, strongly foliated, flaggy, muscovite-quartz mylonite and blastomylonite, muscovite-quartz schist and muscovite quartzite; minor sheared quartz feldspar granule grit; includes chlorite schist and sheared volcaniclastic andesite; may include CP_{Av} undifferentiated. Laberge map area and Carmacks map area.

PM_{Nc} Resistant, light grey weathering flaser marble; age and relations unknown. Laberge map area and Carmacks map area.

JURASSIC OR OLDER
TATLMAIN BATHOLITH

TRJ_g Recessive weathering, homogeneous, coarse grained, equigranular to porphyritic, unfoliated, leucocratic biotite granite to granodiorite. Carmacks map area.

JURASSIC

TATCHUN AND LOKKEN BATHOLITHS

J_{gd} Recessive weathering, coarse grained, locally porphyritic, mesocratic, foliated biotite hornblende granodiorite to gneissic granodiorite; resembles TR_{gdm} of Minto and Granite Mountain Batholiths. Laberge map area and Carmacks map area.

UPPER TRIASSIC

MINTO PLUTON AND GRANITE MOUNTAIN BATHOLITH

TR_{gdm} Massive, medium- to coarse- grained, heterogeneous, equigranular, mesocratic, foliated biotite-hornblende granodiorite; locally strongly foliated (Tr_{gdm1}); locally contains biotite rich screens and gneiss schlieren and screens, probably P_{pn}; locally porphyritic with pink K-feldspar phenocrysts (TR_{gdm2}). Carmacks map area.

SEMENOF HILLS BLOCK

UPPER CRETACEOUS

Open Creek Volcanics

uK_O Reddish, white, green and bluish dacite flows and flow breccia; brown basalt flows on Solitary Mountain. Laberge map area.

PLIOCENE

Walsh Creek Formation

pT_W Resistant, thick bedded to massive, well-indurated conglomerate with minor interbedded sandstone. Laberge map area.
pT_{W1}- Recessive, white claystone to mudstone with interbedded gritty sandstone and minor coal.
pT_{Wv}- Resistant, white weathering, massive rhyolite.

MIDDLE TRIASSIC

Headless Plug

TRgd Massive, fresh , medium grained, equigranular, unsheared and unfoliated, hornblende-quartz diorite; few xenoliths and partly digested dark schlieren. Laberge map area.

LOWER AND MIDDLE PENNSYLVANIAN

Semenof Formation

P_S Resistant, massive, dark green, altered basalt, volcanic breccia, tuff and greenstone; includes minor undifferentiated P_B; includes undifferentiated P_{Bg}. Laberge map area.

Boswell Formation

P_{Bs} Recessive, dark weathering, slate, phyllite, greywacke, chert, chert conglomerate and breccia, volcanic breccia, greenstone and limestone. Laberge map area.

P_{Bc} White weathering, massive to thick bedded, resistant, grey, micritic limestone. Laberge map area.

P_{Bv} Resistant, massive, dark green, altered basalt, volcanic breccia and greenstone; distinguished from P_S by stratigraphic context. Laberge map area.

P_{Bg} Massive, dark weathering, coarse to medium grained, hornblendite-gabbro. Laberge map area.

WHITEHORSE TROUGH

UPPER JURASSIC AND/OR CRETACEOUS
Tantalus Formation

JK_T Thickbedded, resistant, chert-pebble conglomerate, minor interbedded gritty chert-grain sandstone: JK_{T1}- Massive to thickbedded, gritty sandstone with quartz, chert and feldspar grains: JK_{Tv}- Red weathering, dacite to andesite flows beneath Tantalus strata near Hootalinqua. Laberge map area and Carmacks map area.

MIDDLE JURASSIC (BAJOCIAN TO BATHONIAN)
Teslin Crossing Stock and Dykes

Jpp Medium to fine grained, equigranular, leucocratic monzonite, syenite and granite (Teslin Crossing Stock); dykes of dacite to andesite porphyry with euhedral andesine, hornblende and locally quartz in aphanitic greenish, or grey groundmass. Laberge map area.

LOWER AND MIDDLE JURASSIC
LABERGE GROUP

J_L Undifferentiated Laberge and Lewes River Group shale, greywacke and conglomerate between Open Creek and Teslin River; J_{Lcg}- conglomerate, like that of the Conglomerate Formation, but with some chert clasts; TR_H?- limestone, probably part of the Lewes River Group. Laberge map area.

TOARCIAN AND BAJOCIAN
Tanglefoot Formation

J_T Moderately resistant, pale yellow to buff weathering, thick to medium bedded gritty, coarse grained arkose and feldspathic sandstone; interbedded granite-pebble conglomerate; interbedded brown shale. Carmacks map area and Laberge map area.

SINEMURIAN TO TOARCIAN
Nordenskiold Dacite

J_N Resistant, reddish brown weathering, massive, medium blue grey, mauve, green or reddish dacite, dacite tuff and breccia with fresh plagioclase, hornblende and biotite; interbedded conglomerate. Laberge map area.

J_{N1} Resistant, reddish brown weathering, massive, khaki-green dacite tuff with fresh plagioclase, hornblende and biotite; grades locally to pale green, punky weathering, salt and pepper textured, massive sandstone, the weathered equivalent; interbedded conglomerate and shale. Laberge map area and Carmacks map area.

SINEMURIAN TO TOARCIAN
Conglomerate Formation

J_C Resistant, massive to very thick bedded, red brown weathering, well-indurated, matrix- and clast-supported, boulder, cobble and pebble conglomerate; clasts of andesite-basalt, subvolcanic dacite porphyry and granodiorite; minor interbedded greywacke and shale. Laberge map area and Carmacks map area.

HETTANGIAN TO PLIENSBACHIAN
Richthofen Formation

J_R Recessive, dark brown weathering, thin bedded, dark brown to greenish, silty shale; minor interbedded conglomerate; gradational to, and interbedded with, massive dacite (J_{N1}). Laberge map area and Carmacks map area.

UPPER TRIASSIC TO JURASSIC
LEWES RIVER GROUP
KARNIAN TO SINEMURIAN
Aksala Formation
Mandanna Member (Norian to Sinemurian)

TR_M Red weathering, moderately resistant, medium bedded, green and red greywacke and pebble conglomerate; red shale partings, minor interbedded red shale and siltstone. Laberge map area.

Casca Member (Carnian to Norian)

TR_C Recessive, brown and rusty weathering, brown shale and greenish, calcareous greywacke and sandstone; interbedded bioclastic limestone and argillaceous limestone; minor conglomerate and agglomerate. Laberge map area.

Hancock Member (Carnian to Norian)

TR_H Resistant, white weathering, massive limestone and thick bedded limestone; minor thin bedded argillaceous limestone. Laberge map area and Carmacks map area.

CARNIAN (AND OLDER?)
Povoas Formation

TR_P Massive, resistant, dark weathering, dark green andestic basalt, volcanic breccia, tuff and agglomerate; minor augite porphyry and massive flow rocks. Laberge map area.
TR_{P_1}- massive, resistant, dark green, volcanic breccia, tuff, agglomerate and augite porphyry in Tatchun Belt; includes TR_{P_m}- chlorite-amphibole schist, the sheared and metamorphosed equivalents in Carmacks map area.
TR_{P_2}- massive, red weathering, dacitic volcanic breccia and tuff; includes minor limestone; resembles Nordenskiold Dacite. Carmacks map area and Laberge map area.

YUKON CRYSTALLINE TERRANE

PLEISTOCENE AND RECENT
Selkirk Volcanics

Q_S Resistant, brown weathering, columnar jointed, vesicular to massive basalt flows; minor pillow basalt; Q_{S_1}- basaltic tuff and breccia at Volcano Mountain and opposite the mouth of Wolverine Creek; Q_{S_a}-oldest to youngest-Q_{S_d} lava flows from Selkirk volcano. Carmacks map area.

UPPER CRETACEOUS
CARMACKS GROUP

uK_{Cb} Brown weathering, resistant, brown basalt flows. Carmacks map area.

uK_{Ct} On Prospector Mountain, green, recessive, medium bedded, sandy tuff with interbedded andesitic basalt flows in the top, minor red tuff; north of Big Creek, andesitic basalt flows with minor tuff; includes granite boulder conglomerate west of Minto. Carmacks map area.

uK_{Ct1} Moderately resistant, light weathering, thick bedded, immature volcanic sandstone and conglomerate; minor volcanic flows and dacitic ash flow tuff. Carmacks map area.

uK_{Cy} Resistant, homogeneous, massive, pale mauve, medium grained, equigranular, hornblende syenite to granite commonly with crowded porphyry texture; forms a laccolith on Prospector Mountain and a plug on Mount Pitts. Carmacks map area.

uK_{Cr} Pink to white flow banded rhyolite to dacite and felsic breccia, forms small plugs or domes near Braeburn; includes pink welded felsic tuff under uK_{Ca} north of Victoria Mountain. Carmacks map area.

uk_{Cg} Coarsely crystalline gabbro and diorite; forms a small plug in the Carmacks Group east of Victoria Mountain. Carmacks map area.

uk_{Ca} Lower part: thick, green, hornblende feldspar porphyry andesite flows with interbedded greywacke and breccia; Upper part: brownish purple, thick, vesicular, porphyritic augite andesite and trachyte, minor sandy airfall tuff. Laberge map area.

uK_{Ca1} Resistant, dark grey to black weathering, thick feldspar porphyry andesite flows. Laberge map area.

uK_{Cy1} Resistant, dark weathering, massive, homogeneous, coarse grained porphyritic hornblende syenite; a small plug. Laberge map area.

uK_{Cp} Resistant, homogeneous, fine grained, biotite hornblende granodiorite to quartz diorite; small plugs in the Laberge Group east of the Miners Range. Laberge map area.

MID-CRETACEOUS

MOUNT NANSEN GROUP

K_{MN} Resistant, dark weathering, dark green, massive andesitic plagioclase porphyry and andesite breccia: forms plugs, pipes and dykes. Carmacks map area.

K_{MNb} Resistant, dark weathering, massive, dark green andesite breccia of pipes and plugs; minor porphyry. Carmacks map area.

K_{MNr} Orange weathering, rhyolite to dacite quartz feldspar porphyry; forms innumerable dykes and small plugs; includes K_{gd}, J_y, P_n, K_{MN} undifferentiated. Carmacks map area.

K_{MN1} (Packers Mountain)- Recessive, rusty weathering, aphanitic, flow banded dacite and rhyolite; minor porphyritic dacite. Laberge map area.

K_{MN2} (Teslin Mountain)- Resistant, dark green, massive andesite, greenstone and volcanic breccia. Laberge map area.

K_{gdp} Homogeneous, massive, fine grained, pale mauve porphyritic hornblende biotite granodiorite to syenite; subvolcanic to Mount Nansen Group on Teslin Mountain; gradational to K_{gd}. Laberge map area.

CASINO GRANODIORITE

K_{gd} Resistant, massive, dark weathering, medium grained, equigranular, unfoliated, mesocratic biotite-hornblende granodiorite: plutonic phase of Mount Nansen Group. Carmacks map area.

COFFEE CREEK GRANITE

K_g Recessive, rusty weathering, strongly altered, decomposed, coarse grained, equigranular, unfoliated, porphyritic biotite leucogranite; coeval with K_{gd}. Carmacks map area.

K_y Resistant, massive, fine grained, mauve hornblende syenite, grades to granite or granodiorite; subvolcanic to Mount Nansen Group on Victoria Mountain. Carmacks map area.

JURASSIC

BIG CREEK SYENITE

J_y Resistant, dark weathering, massive, coarse- to very coarse- grained and porphyritic, mesocratic hornblende syenite; locally sheared, commonly fractured and saussuritized; locally has well developed layering of aligned pink K-feldspar tablets; contains screens of undifferentiated gneiss. Carmacks map area.

CARMACKS BATHOLITH

Jg — Recessive, light weathering, porphyritic (pink K-feldspars), coarse grained, unfoliated biotite leucogranite. Carmacks map area.

PALEOZOIC?-?DEVONIAN?
?PELLY GNEISS?

P_n — Moderately resistant, pale buff weathering, medium- to light- grey, muscovite biotite granite to granodiorite gneiss. Carmacks map area.

P_g — Moderately resistant, light weathering, foliated biotite leucogranite; gradational to P_n. Carmacks map area.

P_{n1} — Recessive weathering, mesocratic, biotite or hornblende granodiorite gneiss: the equivalent of P_n or P_{pn}. Carmacks map area.

P_s — Resistant, brownish grey weathering, coarsely schistose quartz mica schist and micaceous quartzite; minor amphibolite. Carmacks map area.

P_c — Resistant, white weathering, white sugary marble with a ductile flow fabric. Carmacks map area.

P_m — Resistant, black weathering amphibolite, amphibolitic gneiss and biotite-amphibole granodiorite gneiss; includes undifferentiated quartz-mica schist; may include minor serpentinite. Carmacks map area.

P_u — Dun brown weathering, green to black serpentinite, and serpentinized peridotite and pyroxenite. Carmacks map area.

SYMBOLS

Limit of outcrop.....
Geological boundary (defined, approximate, assumed).....

Fault, existence assumed (position approximate, assumed)...
Fault with normal movement (circle on downthrown side.....
Fault with lateral displacement (arrows indicate sense)....
Thrust or steep reverse fault (teeth down dip).....

Anticline or antiform.....
Syncline or synform.....

Bedding orientation (inclined, vertical, horizontal)..... 30
Foliation orientation (inclined , vertical, horizontal).... 30
Rodding, crinkle or mineral lineation..... 30
Joints (incline, vertical)..... 70

Fossil locality (refers to unpublished fossil list)..... •72
Age determination sample locality..... •87 ±2.5
K/Ar date on biotite-b, hornblende-h and rock-w in Ma..... •W112
U/Pb date on zircon in Ma..... •zr192
Locality where limestone weathers bright red..... Ⓚ

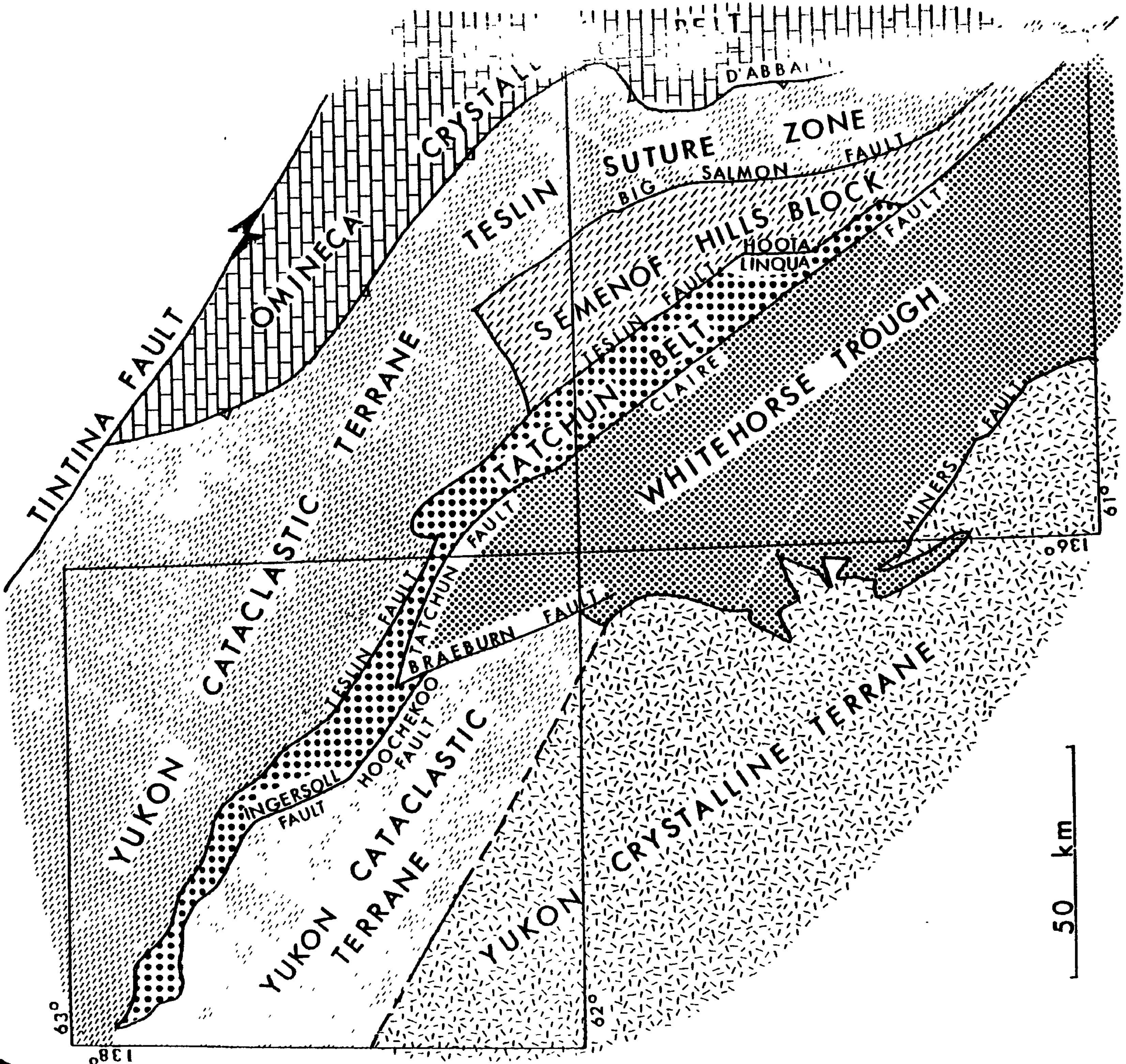
Geology from fieldwork during 1974, 1977, 1979 and 1982 and from earlier mapping of Bostock (1936) and Bostock and Lees (1938). This compilation supersedes earlier Open File maps 200 and 578 for Carmacks and Laberge map areas respectively. For mineral occurrence locations the reader is referred to the annual reports of DIAND's Geology Section, which detail this information with references to the most recent descriptions.

REFERENCES

Bostock, H.S. (1936): Carmacks District, Yukon; Geol. Surv. Can. Memoir 189 (includes Map 340 A)

Bostock, H.S. and Lees, E.J (1938): Laberge map area, Yukon; Geol. Surv. Can. Memoir 217 (includes Map 372 A)

Geology by D.Tempelman-Kluit, 1984.


TINTINA FAULT
OMINECA CRYSTAL
D'ABBA
TESLIN SUTURE ZONE
BIG SALMON FAULT
SEMENOF HILLS BLOCK
HOOTALINQUA FAULT
TESLIN FAULT
TATCHUN BELT
CLAIRE FAULT
WHITEHORSE TROUGH
MINERS FAULT
YUKON CATACLASTIC TERRANE
TATCHUN FAULT
BRAEBURN FAULT
TESLIN FAULT
HOOCHEKOO FAULT
INGERSOLL FAULT
YUKON CATACLASTIC TERRANE
YUKON CRYSTALLINE TERRANE
YUKON
50 km
63°
62°
61°
138°
136°

Appendix B

Statement of Qualifications
David A. Downing, P.Eng.

Statement of Qualifications

I, David A. Downing, of 14 Buttercup Place, in the City of Whitehorse, in the Yukon Territory, Canada, DO HEREBY CERTIFY:

1. THAT I am a Consulting Geological Engineer with Resource Engineering.

2. THAT I have an office located at 14 Buttercup Place, in the City of Whitehorse, in the Yukon Territory, Canada with postal address RR 1, Site 18, Compartment 23, Y1A 4Z6.

3. THAT I am a graduate of Queen's University (Kingston), located at Kingston, Ontario, Canada, where I obtained a Bachelor of Science (Eng.) in Geological Engineering (Exploration and Mineral Resource Evaluation) in 1978.

4. THAT I am a registered Professional Engineer (Geological) in the Association of Professional Engineers of Yukon Territory - #0873.

5. THAT I have practiced my profession as an engineer and geologist for the past sixteen years.

6. THAT I have personally prepared the report **SLATE CREEK TRENCHING & SAMPLING EXPLORATION PROGRAM 1993. Report Submitted To The Yukon Mining Incentives Program, Application #93-127, NTS 115I03, 10 August 1993.**, for I Can Dig It Contracting and Exploration Limited, from information reported to the writer by Phillip Veenhof of the company, and by researching geological literature and personal knowledge of the Mount Nansen area.

7. THAT I do not certify the placer gravel samples or sampling program reported by I Can Dig It Contracting and Exploration Limited, as I did not personally sample the trenches or supervise the sample processing.

8. THAT I have no direct, indirect or contingency interest in the Harley Claims 1 - 30, Grant Numbers PL32374 - PL32403, located on Slate Creek and Nansen Pup, or in any securities or common stock issued by I Can Dig It Contracting and Exploration Limited.

Dated this 12th day of August 1993, in the City of Whitehorse, Yukon Territory

David A. Downing, P. Eng.