

ASSESSMENT REPORT  
ON  
GEOLOGICAL, MINERALOGICAL AND METALLURGICAL WORK  
ON THE DOTT GROUP (42 UNITS)  
CONSISTING OF THE FOLLOWING CLAIMS:

LOG NO:	SEP 13 1993 RD.
ACTION:	
FILE NO:	

**RECEIVED**  
SEP - 1 1993  
Gold Commission Office  
VANCOUVER, B.C.

- DOT - 1 219926 (5) 6 UNITS
- DOT - 2 219927 (5) 18 UNITS
- DOT - 3 219928 (5) 18 UNITS

LOCATED 15 KM S.E. OF KAMLOOPS  
(7 KM NORTH OF SHUMWAY LAKE), B.C.

KAMLOOPS MINING DIVISION

FILMED

LATITUDE 50° 35' N  
LONGITUDE 120° 14' W

NTS 92 I / 8E

FIELD PROJECT PERIOD MAY 5/93  
PROF. EFFORT SUPPORTING REPORT TO AUGUST 6/93

On Behalf of

KLONDIKE INDUSTRIES LTD.

1425 Marine Drive  
West Vancouver, BC  
V7T 1B9

**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

Report by

22,988

W.D. GROVES, Ph.D., P.Eng. (Geological-Chemical Engineering)

Including Work by

Christian Soux (Mineralogist)  
L. Blackman, B.Sc., (Metallurgist, Assayer, State of Washington)

Report Date: AUGUST 5, 1993

W.D.G.

## TABLE OF CONTENTS

	Page
<b>1. INTRODUCTION</b>	
A. PROPERTY, LOCATION, ACCESS, PHYSIOGRAPHY	1
B. STATUS OF PROPERTY	1
C. HISTORY, PREVIOUS WORK IN AREA	2
D. REFERENCES	3
E. SUMMARY OF WORK DONE	3
<b>2. TECHNICAL DATA AND INTERPRETATION</b>	
A. REGIONAL GEOLOGY, LITHOLOGY AND METALLURGY OF RIFTLINE AREA	4
1. Bluff Zone	4
2. Black Horse Zone	8
3. Bluff-top Zone	8
4. Knob Zone	8
5. Lake Zone	9
6. Discovery Zone	9
7. Footwall Zone	9
8. More Distant Locations	10
9. Discussion	11
B. BULK SAMPLE	12
1. Collection	12
2. Metallurgical Workup (L. Blackman)	12
3. Mineralogical Workup (C. Soux)	12
4. Discussions of Results of Study	12
C. COMMENTS AND CONCLUSIONS	13
Author's Comments	13
<b>APPENDICES</b>	
1 WORK COST STATEMENT	
2 CERTIFICATES: W.D. Groves, L. Blackman, Quanta Trace	
3 ASSAY CERTIFICATE [1988]	
4 MINERALOGICAL NOTES, C. SOUX	

## ILLUSTRATIONS

- Fig. 1 Area Map (Road Map) showing claims
- Fig. 2 Regional Geology  
showing claim block
- Fig. 3 Claim Map 92 I / 9E  
showing DOTT Group Scale 1:50,000
- Fig. 4 DOTT Group showing bulk sample traverse 1:5,000 (pocket)
- Fig. 5 Sketch map of Showings of Interest, in the rift line area around  
Shumway Lake

*ush*

## 1. INTRODUCTION

### A. PROPERTY, LOCATION, ACCESS, PHYSIOGRAPHY

The DOTT Group is a 42-unit (elongate N-S) block of the DOT-1, DOT-2, DOT-3 claims (S-contiguous order) covering a gentle N-S hogback in high open rangeland over a 3 x 3½ km area east of the highway 5A about 7 km north of Shumway Lake.

Shumway Lake is the ½ km x 6 km (N-S elongate) shallow lake in the headwall of a now dry but potholed drainage leading southward into the main Nicola Valley.

Shumway Lake is about 15 km S. of Kamloops along Highway 5A. The highway follows the west shore of Shumway Lake, and the above described valley, to Nicola Lake, then Merritt, providing main access to the property area.

Access to the claim group is by gravel ranch roads east off Highway 5A.

Physiography is gentle upland rolling rangeland, with a few small copses of cottonwood trees. Outcrop is occasional talus and rounded outcrop, low wooded ridges. Climate is moderately dry Interior Upland Savannah.

### B. STATUS OF PROPERTY

The DOTT Group is held as a grouped modified grid consisting of 3 contiguous modified grid claims on claim sheet NTS 92 I / 8E.

<u>Claim</u>	<u>Rec. No.</u>	<u>Expiry Date</u>	<u>Units</u>
DOT - 1	219926 (5)	May 6, 1993	6
DOT - 2	219927 (5)	May 6, 1993	18
<u>DOT - 3</u>	219928 (5)	May 6, 1993	<u>18</u>
DOTT GROUP		May 6, 1993	42

The claims are in the first year of existence. Staker was Marvin Boe, who staked for Mr. Harold Jones, President of Klondike Industries Ltd. Claims are in good standing as of this date.

Claims disposition is shown on Figs 3. & 4.

WJH

### C. HISTORY, PREVIOUS WORK IN AREA

Some of the ground in this area was previously staked as the Black Horse claims by V. Meyer ca. 1990.

Interest in the general area followed the discovery of a multi-station low (20 ppb) but pervasive soil gold anomaly by A. Babiy in 1987 alongside Highway 5A (west side), near the head of Shumway Lake. The first indications of a bedrock gold source in the area were found by Naxos Resources Ltd. in 1988, when a drill hole in the Discovery Zone (see Fig. 5) on the west edge of the ridge top 2 km south of the north end of Shumway Lake was found to contain gold values. Two small bulk samples taken from drill core from the "discovery hole" showed .059 and a .06 oz/t Au heads value (and float cons over 1 oz/t Au) from a dark coloured gabbroic intrusive sheet of a sheet vent complex around the east side of Shumway Lake [Assays: Quanta Trace, 1988] This aroused an area interest in the basal Nicola sheet-vent system in the basic intrusive and flow, rocks outcropping in a general N/50°W altitude along Shumway Lake and to the north for several kilometres.

In the more general area, the Stump Lake Mine (northerly trending gold-sulphides fault veins in basal Nicola group on Stump Lake, 10 km to the south); Afton Copper - disseminated copper (gold) open-pit in a stock cutting Nicola 10 km to the NW, and older small showings like the Iron Horse (copper magnetite skarn), and a small unnamed NE/steep gold-bearing fault-vein showing, cutting the sheet vent structure on the upper Bluff Zone (Fig. 5) NW of Walker Lake, are examples of area mineralization.

Studies of the gold-bearing units of the sheet-vent system began in 1988. A brief partial account of activities since 1988 ensues. Figure 5 shows locations where the sheet vent structures have been sampled and studied so far.

As previously mentioned, the first indications that a source of gold might lie in the vicinity of Shumway Lake was a several-station 15-20 ppb-level gold soil anomaly in a road-edge survey conducted by Mr. Andrew Babiy of Kamloops in 1987. The soil is partly local glacial outwash fines from a brief melt water event running SW into the head of Shumway Valley from the Walker L Junction - in other words, across the crosscut through the formation at Walker Lake.

Several short percussion holes in early 1988 along the west side of Shumway Lake shore failed to show a gold source. Then, a 1988 65 metre vertical diamond drill hole drilled just west of the ridge top on the east side of the lake, about 2 km south of the lake head, revealed a dark gabbroic intrusive unit, containing 5 - 10 cm spaced fracture mineralization (1 mm fractures) exhibiting quartz-carbonate and what looked like fine pale chalcopyrite. R. Robson's float concentrate made of two 1 kg samples of this core, (the .059 to .06 oz/t Au 50-foot intersection) with float 'discovery hole' concentrates up to 1 oz/t Au (and visible gold in the con) was the first gold seen from "in-place".

This work was quickly followed up in 1990 by Naxos, by a 5-hole 65 metre vertical 12 cm rotary hole program on a 50-m N-S spaced traverse 75 m west of the discovery hole, to see if mineralization was disseminated and pervasive. Analysis of float concentrates from the cuttings from the 5 rotary holes shows it was not uniformly distributed, but somewhat layer-specific and disseminated rather than being more than locally fracture-hosted. This discovery prompted enlargement of the area of interest to the whole rift-vent system as exposed around the head of Shumway Lake.

Flotation concentrates were made by L. Blackman from two bulk samples cobbled for Naxos Resources Ltd. from surface talus and outcrop over a 1 km x 2 km (NS) area on the east side of the North end of Shumway Lake. Later this same area was covered by a summer 1990 20-hole drill program by Naxos, two 'N' and 'S' samples were separated. In Blackman's float concentrate, the 'N' sample contained somewhat more sulphides. This helped show that while local values vary, the whole rift-vent unit carries a few % of disseminated sulphides of often minute size, throughout. The 40/1 concentration ratio suggests the figure for extremely finely disseminated sulphides, is in the order of 2% or more, allowing for some inerts in the con from slimes. Those are totally un-obvious in hand specimens, being largely in exsolution blebs in the mafics.

A more detailed account of geological and mineralogical observations about the various locations now studied in the area is given under *Technical Data and Interpretation* section under *Summary of Geology and Mineralization*.

#### D. REFERENCES

1. Rice -
2. Halcopec - mesozoic riftline axis (Naxos Corp. files)
3. WDG - prev. Assessment Work Report (Naxos files)
4. Mindep - Afton, Stump Lake
5. Sci. Am. (Core-Mantle interface) 1993
6. Verbal - A. Babiy, V. Meyer, T. Tough, L. Goldsmith, B. Cannon (S.E.M. Lab Seattle), access to assay sheets Naxos Resources files, Klondike Industries Ltd.

#### E. SUMMARY OF WORK DONE

The 1993 work done on the DOTT Group ground program consisted of a 500 pound, bulk sample cobbled from a traverse over outcrop in the area on the claim group (see Fig. 4) in May 1993 by the author (see Appendix I for work costs). A 40/1 float con was made from 500 pound bulk sample rock by Mr. L. Blackman at his metallurgical lab at Nighthawk, Wash. (15 km west of Oroville, Wash.) In addition, a sample of this rock was pulverized in a pestle and mortar. 50 grams of heavies panned by W.D.G. from 1 kg of Blackman's float con, containing heavy bright goldey-coloured telluride? (calaverite?) and darker sulphide, were panned by W.D.G. from 1.2 km of the float con (the con weighed 20 kg. in all). A gold alloy button was also made

from 50 gms of the 'supercon' panned from another 1 kg of this float concentrate by L. Blackman, with W.D.G. in attendance. (Sample "S": .1986 gms, 39 wt % Au)

Samples of rock, pestle-and-mortar fines, whole float concentrate, 'supercon' and the button, were taken to Vancouver to C. Soux, Mineralogist, for epoxy-setting, and were then also mineralogically analyzed under the UBC S.E.M. (Scanning Electric Microscope) by Soux and UBC Geology Dept. technicians. Soux Report (Appendix IV) describes these findings.

Work program total expenditures were \$6,850, of which \$4,200 goes for 1 year on the 42 unit claim block. (Appendix 1)

## 2. TECHNICAL DATA AND INTERPRETATION

### A. REGIONAL GEOLOGY, AND LITHOLOGY AND METALLURGY OF RIFTLINE AREA

A surprising variety of facies appear in the sheet vent intrusive/extrusive system in the Shumway Lake area, varying from sheet to sheet (generally N/50 W oriented). Figure 5 sketch map of area names some type locations where observations have been made (sic.)

The following gives a zone-by-zone sketch of area variations, in parameters of interest.

#### 1) Bluff Zone

In the Bluff Zone, the coarsest gabbroic-textured sheet has a massive central 30 m of up to 1/2 cm grain size.

Rock is a dark greyish green, about 60 - 70% dark feldspar and 30 - 40% coarse mafics. Rock is very competent, with a high ring on the hammer, and has rough conchoidal fracture. Visible gold of a coppery colour is seen in table concentrations and float concentrates from this unit, through very difficult to see disseminated in the dark rock fabric.

Westward, units become generally finer grained, grading into a fine greyish black argillitic-textured hornfels with cleavage parallel to beds.

Bulk sample traverses across both these units yielded a calculated heads of .5 oz/t (T. Tough) and .3 oz/t (L. Goldsmith), calculated from material balance on a Nesmont Labs Falcon low-G centrifugal concentrator gravity concentrate (~40/1 con ~ 20 oz/t showing V.G), and tails (.01 oz/t range).

The author has also chip-sampled the 1 m<sup>3</sup> blocks of talus from the coarsest member of the Bluff Zone and obtained a V.G-bearing table con from a bulk

sample run at KRAL in Kamloops. Gold was identified by Derek Blundell, KRAL assayer when it caught on a 30-mesh screen. (Sample S2, 1.6618 gms, 87 wt % Au, red-gold in colour, from this material)

A 30 kg bulk sample of chips of the coarsest gabbroic member of the Bluff Zone (WDG cobbled the sample from several dozen 1m<sup>3</sup> sized talus blocks) was also taken in 1992 to Mr. Blackman's test lab by the author. Mr. Blackman hand-crushed a kg sub-sample of these chips very gently in pestle and mortar - to avoid any possible crushing-equipment contamination, panned the 200-mesh fraction for heavy fraction, then segregated the 200-mesh sized coppery-gold coloured cubes under the microscope (bearing a micron-sized cubic-cubic cleavage on its surfaces, the way galena sometimes shows this type of cleavage). He recovered about 200 - 300 milligrams of the red alloy in total, and fired it for gold content. Button was from the 1 kg sample in the 100-milligram (small fish-egg) size range, with the faceted, coppery-gold characteristic of a rhodian gold alloy bead. Hand-sorting of the particles from the 1 kg pestle & mortar sample took two days. Object of this painstaking microscope hand-sorting was to exclude other 'metallics' - lead-grey grains (PGE-lead alloy) and hatchet-shaped silvery-white grains (also high in PGE) and light sulphides, which could dilute the gold alloy.

It was while the bluff zone ground was held by Mr. Vern Meyer in 1991, that two bulk sample traverses (Tough & Goldsmith) were made, one by Engineer Tom Tough, yielding about a 50 kg sample which comminution to 20-minus and low-g centrifugation by a Falcon separator at Nesmont test lab (which made about 40/1 mechanical concentrate) showed visible gold from which assayer Fred Burgess calculated 1/3 to 1/2 oz/t heads grades by material balance, against .01 oz/t Au grade tails. Thus, grade of the Falcon concentrate assayed in the order of 20 oz/t Au, and reported visible gold. Tough's bulk sample of the bluff angled NW up the face, then back NE along the top of the bluff; total sample traverse was about 250 m long and cut about 100 m of section across the bluff face.

This effort by Tough followed geologist Locke Goldsmith's similar, earlier 1991 bulk sample traverse just to the east of Tough's, angling north from bottom to top of the bluff. A 50-kg size sample had yielded a similar Falcon-concentrated sample at Nesmont. However, after publication of these results by Meyer, it was then rumoured around the VSE that since the raw heads standard fire assay (in the .01 oz/t Au range) was far lower than the 1/3 - 1/2 oz/t result calculated from balancing Falcon con and Falcon tails, that unless Nesmont re-balanced this 'balance', the samples were being contaminated.

In response to this (and without company authorization) Nesmont 'triplicated' the first tests and found heads, con and tails, all in the .01 oz/t range, 're-balancing' the balance, whereupon the rumours then abated. It is difficult to



see how the Falcon concentrator would fail to concentrate on the 'repeat' runs, especially in the face of other independent determinations of gold in the Bluff Zone. Nesmont Burgess' assaying is absolutely above reproach - but some kind of inadvertent sample mixup (tails for cons) might have occurred.

In the face of his own previous evidence, Engineer Tough then declared the property sub-economic. The rumour was then circulated that the initial positive results were due to "nugget effect". By this time, thin-section studies had been made by Vancouver Petrographic (who found small elongate rod-shaped gold alloy particles "nuggets" in the slides), confirmed by Cominco optical mineralogist Nicols by S.E.M. as high-gold alloy.

Using the particle size identified by Nicols as an estimate of average "nugget" size, the author computed the probability that of the several thousand 'nuggets' represented by the Falcon con, that in each 4 spoonfuls (containing on the average one quarter of one nugget), the nugget was always placed in the f i r s t pot and never in the (triplicated 3) following ones. The probability of the nugget-effect explanation for this was something less than  $10^{-20}$ , a number commensurate with current theological estimates of the Second Coming of Christ at a particular moment. Nesmont and the Exchange, evidently satisfied with this level of probability, then passed on the \$8,500 charge for the unauthorized triplicate tests on to Naxos Ltd., an ASE company, when they later had a gold-brick from a Northern BC gold placer property processed at Nesmont.

Next, sub-sample of the Locke Goldsmith bulk sample traverse was sent to Casmyn Labs in Ontario, where a fine grind cold cyanide leach test was done on it. The cyanide solution carried about .130 oz/t gold (heads equiv.) at 36 hours, and about .075 oz/t gold at 72 hours. [These results were from Casmyn's A.A.] When the solutions were (eventually) analyzed by Barringer Lab, Toronto, the gold had precipitated completely out of solution. Interestingly, the decrease in pregs gold content of the Casmyn tests was not reflected in increased **detectable** gold values in the tails (under standard fire assay) illustrating a large interference in the standard-assay measure for this ore. Destruction of cyanide by traces of rhodium in the pulp (since confirmed by the characteristic light coppery-gold colour of gold beads made from the float concentrates with **no** copper signal, characteristic of gold-rich rhodium-gold alloys) and precipitation of an aqua-regia insoluble jarosite, may account for this 'disappearance'. Rhodium is the most active nitrogen-catalyst in the Periodic Table. Next, a 25 kg fine grind pulp leach test at Kamloops Research pulp was pre-leached with HCl (30% loss of pulp weight) compatible with solution of Fe, Mg, Ca, Na, K, Al, oxide content, then with cyanide over a long contact time (neither HCl or eventual cyanide solution showed gold on KRAL's A.A.). Careful tabling of the cyanide tails yielded a few grams of a fine 'black', which gave a positive gold assay (K R AL assay). Again, the presence of gold in the

zone was indicated, as well as its tendency not to remain in cyanide solutions.

Another split of the Locke Goldsmith bulk sample was sent by Mr. Meyer to Falconbridge's Lakefield Research lab in Ontario. Results from this split were reported as negligible.

Mr. Lawrence Blackman operates a small metallurgical lab near Oroville, Washington State [see Certificate L. Blackman, Appendix 2]. Blackman did a fine-grind bulk flotation on a 20 kg bulk sample from the bluff zone. From 50 grams of 'super-concentrate' made from 1 kg of the float concentrate, Blackman made a 150 mg gold button showing facets and the slightly coppery colour of rhodian gold. The supercon contained what looked like calaverite, about as heavy in the pan as galena, very bright, pale 'goldey', elongate to wedgy fragments. This 'supercon' was pulverized, ignited with an equal amount of commercial prill ammonium nitrate fertilizer (to remove metalloids including Te as oxide gases), and fired hot with 15 g of bituminous coal, 10 g of  $\text{CaF}_2$  (to remove Ir as  $\text{IrF}_6$ ), in the manner of a South African style PGE fire assay, and the lead button cupelled with 1 gram of 3-nines purity Johnson Matthey silver (at 1 ppt, max. gold contamination 1 mg) and parted in 1/8 nitric acid; and the dark brown "gold" ( $\text{Au}_2\text{O}_3$ ) residue mixed with NaCN (to prevent volatilization of the fine gold calcine) and cupelled wrapped in lead foil, resulting in the bright gold bead similar to sample S2 seen by Soux.

A similar bead sent to Cannon Microprobe (a Seattle area S.E.M. lab used to referee the Stillwater PGE results of Bondar Clegg and Chemex) indicated a high % of gold content.

Cannon Microprobe was also given samples of Blackman's bulk float concentrate and identified some high gold particles, as well as "lead" - probably dull lead coloured PGE - lead alloys, and "copper" - probably including the coppery rhodian gold, and a number of other base minerals, including a bismuth telluride.

A sample of the Nesmont Falcon cons was then sent to Canmet by Meyer. This time the precious metal content was deemed contaminated by electronics scrap (i.e. tiny precious-metal wires). The author then relayed Nicol's photomicrograph sketch of one such 'wire' in the rock fabric to Canmet (a gold alloy wire set in a secondary lead mineral, in the rock fabric). There was no reply from Canmet, in spite of the fact that their findings destroyed Meyer's company.

In mid-1993, Cannon attended the Geoscience Conference in Vancouver, and evidently discussed the project with someone, and returned with stories about 'lead falling out of W.D.G.'s hair, brass filings (previously identified otherwise) etc., and announced he could "no longer find any gold-bearing particles" (in the face of previously identified gold-bearing microphotographs of SEM-scan

composite concentrate particles in a first report). The coppery gold particles had all been discarded by Cannon as "copper".

All in all, a most extraordinary performance.

Klondike, now the operator of the Bluff Zone area claim block, decided in view of this performance, to construct a small finegrind test mill and run truckload-sized samples, make a float concentrate and process it to gold at Blackman's lab and let results refereed by various professional observers, be the final arbitrator. Equipment is now being installed to do this, in the hope of settling the controversy. In summary, it is worth pointing out that nine of the eleven labs (Cominco, Vancouver Petrographic, Canmet, Cannon, KRAL, Nesmont, Quanta Trace, Casmyn, L. Blackman, Lakefield, Barringer), who have handled the Shumway Lake rift zone rock at least initially obtained positive, often visual, confirmation of gold values - until running into intense official opposition after first publication of results, and this from samples from 3 different samplers, P.Engs. Tough, W.D.G., Goldsmith.

2) **Black Horse Zone** (now partly covered by DOTT Group)

The (now defunct) Black Horse claims lie N along strike from the Bluff Zone along the ridge crest (N of Walker Lake). In 1991, Mr. Vern Meyer and the author clobbered a sooty black zone, again very hard, conchoidal fracture, jet black in colour, very high ring on hammer. This sheet is fine-grained, almost glassy, and exhibits 1/10 - 1/2 mm tin-white, metallic-looking spherules. The shape is reminiscent of Fe-Pt alloy spherules - possible, in view of PGE signature in the unit (see Quanta Trace 1988 rock analysis, discovery zone) and deep-seated origin of rift rocks. Microscopic examination (Bluff zone) shows black to dark brown amorphous disseminated 'iron' oxides throughout, responsible for the sooty colour. On most of the same area, rocks are more 'normal' fine to medium grained, medium greeny grey to grey intrusive textured, high ring on hammer. The latter were bulk-sampled in the 1993 work.

3) **Bluff-top Zone**

This is really an extension of the Bluff Zone, except surface is slightly more mature. Even so, weathering of rift rocks extends in only a mm. Texture is varied, but contains massive... 2 mm grain size gabbroic texture. Rock is approximately dioritic (considerable proportion of dark feldspar). Occasional tiny pale chalcopyrite crystals can be seen on freshly broken surface. Some hairline quartz carbonate fractures contain pyrrhotite, chalcopyrite and possible calaverite. Because of paucity of fractures, fracture mineralization is a very small fraction of total mineralization.

4) **Knob Zone**

This is a low knob of outcrop just NE of the Lake Zone. Texture is dioritic to basaltic, med.-dark green grey, hard to break, high ring on hammer. Small horizons locally carry appreciable pale yellow chalcopyrite, and/or amydule-filling pale greenish olivine or apatite. In Rice's regional study, this was called an olivine basalt, though phosphate signature suggests the other possibility.

5) **Lake Zone**

Series of sheets lying about N/50W form a dip slope and talus slide on the NE corner of Shumway Lake shore (angle of slope is 25°, so slowly cross cuts section). Rock texture ranges to sooty black, very competent with a glassy to rough conchoidal break, notwithstanding coarse black mafic phenocrysts, hexagonal-platey (lamprophyric texture). Much amorphous-black mafic oxide staining gives rock its sooty colour. Some finely disseminated pyrrhotite looking to bronzy-tarnishing sulphides show in occasional narrow zones. Sheet edges show grain size gradation down to argillitic or hornfelsic.

6) **Discovery Zone**

This is situated about 2 km south and 1 km east of the Lake Zone, high on the west edge of the 400 m high rounded ridge rising from the E shoreline of Shumway Lake. First short vertical diamond hole was drilled here in 1988, cutting a N/50W sheet of dark grey gabbroic texture, with a 1 mm fracture system showing hairline quartz-calcite and chalcopyrite. Float concentrate showing tiny flat reddish gold particles also present. Float concentrate study (Float: R. Robson, Chapko Lab, Quanta Trace assays) showed over 1 oz/t Au in cons and material balanced heads .059 and .060 in 2 1-kg tests on the core.

The 5-rotary hole (5 holes, 50 m vertical, 50 m N-S spacing) 1988 study showed gold values in float concentrates from 20-pound chip samples over the whole hole depths. Southern most hole cut a zone showing tin-white sulphides. A 10-ton truckload of rock was blasted from ridgeline pits ½ km north of this and showed fine specks of chalcopyrite and mid-grey green colour gabbroic texture. Rock texture - dark gabbroic, grading down into sediments:

A 1000' diamond hole drilled just E of the Discovery Hole cut only a footwall volcano-sedimentary formation of green to grey tuffaceous to black limey argillites.

7) **The Footwall Zone**

This zone, (cf. core from the 1000' vertical hole drilled just E of the discovery zone mentioned above) is a definite volcano-sedimentary sequence of fine dark-grey, green (tuffaceous) and dark calcareous argillite, showing pale whitish marcasite in quartz-calcite fractures.

The twenty 50-m vertical diamond drill holes (fall 1988), in a widely spaced pattern just W and straddling the northing of the Discovery Zone, revealed generally light or coloured dioritic to argillitic textured rocks, showing minor sulphides in fractures, but carrying around 2% sulphides extremely finely disseminated in the ground mass. Float concentrates from individual holes showed some gold values in float concentrates on very fine grinding.

Overall, it would appear that the west few hundred feet and the eastern few tens of feet of the sheet vent system carry the dark to sooty black gabbroic sheets and the central part of the system (such as the 1988 20-drill hole area, above the lakeshore but below the hilltop on the E flank of Shumway Lake) look less promising - more cleaved with the hexagonal-platey mafics merging into biotite, considerable very fine pink garnet in the rock fabric. It is believed that the native-metal, particularly, and probable calaverite component of the 'sulphides' correlates with certain of the more gabbroic units, whereas the superfine sulphides (2% or so of the rock according to 40/1 float concentrates), which are also gold-bearing (sub-micron sized inclusive in sulphides) is distributed throughout the system.

This micron to sub-micron sized gold from the highly dispersed disseminated sulphides probably contributed to the gold soil anomaly found by Andy Babiy.

#### 8) More Distant Locations

- a. Samples of a coarse (5 mm phenocrysts) of a lamprophyric-looking facies of the Nicola rocks from a few miles south of Shumway Lake were shown to the author on one occasion. In these, hex-platey mafics bordered on K-mica, and very fine pink garnet was evident in the ground mass. It is not known what values, if any, were carried by this material. Rock was a dark greyish tan, with darker brown mafics.
- b. A traverse E - W, a few miles north again of the Black Horse area, along the ridge crest, starting to slope off into the Thompson drainage, revealed rocks which looked like a higher level cross section over the actual rift zone. Sheets were by this time obviously extrusive, generally quite variable in composition from sheet to sheet, some quartz-dioritic, intercalated with the argillites.
- c. Across 5A highroad just N and W of the head of Shumway Lake (road cuts on the long 12% hill on 5A climbing N the Shumway Lake valley headwall) there a major fault zone is in evidence, with much crushing, affecting black argillites, and containing a spectacular 10-m thick horizon of coarse green crystal tuff, with thin coaley beds above it. The green crystal tuff unit, intercalated with narrow coal seams containing abundant plant (fern, sequoia?) fossils also appears in a road cut on the Coqhihala Highway (5)

between Merritt and the Coldwater River crossing.

So - this green tuff plus coal containing continental volcano-sedimentary sequence is much younger than the lower (Mesozoic) presumed Nicola volcanics of the Shumway sheet-vent rocks just to the east. The major fault crossed by 5A just N of Shumway - thus must have a Up-Eastside movement component.

- d. The mesozoic rift unit is intruded by numerous small rhyolitic stocks south along 5A south of Shumway Lake.
- e. A few miles south again along 5A, a welded rhyolite agglomerate cone remnant marks the rift (the S side of the cone has collapsed). Since continental margin rifts are often marked by large-scale transform fault displacements, it is not known what happens N across the Thompson Valley (except the unit is 'gone'), and similarly south of Stump Lake, where the northerly quartz-sulphide veins mined were in Nicola rocks. Large displacements of sea bottom riftline transform faults may explain why only the segment around Shumway Lake is in evidence.

## 9. Discussion

It would appear that the most basic part of the sheet-vent system is in the few miles of strike length centered on the Bluff Zone. The volume of this zone of interest is in the many hundreds of millions of tons, or at least no down-dip limitations of the sheet vent system seem to be imposed by the current extent of field work observations.

One is tempted to speculate that the roots of the Mesozoic continental margin rift may have obducted core-mantle interface accumulation material (containing wüstite (FeO), plus tellurides and carbides) which convection upward then reconverted back into carbonates and higher oxides and a variable amount of upper crustal origin feldspar introduced by mixing with shallower rocks on its way up. The high PGE/Au ratio in the 1988 rock analyses by Quanta Trace Labs (6/1 by Aqua regia - ICP/MS) (4/1 by fire assay) and presence of elements like Sn, W, V, Rare-earths, etc. as well as p.p.m. levels of Pb, Cu, Ni, Co, etc., and evidence that native Au-Rh alloy etc. metallics are often wire-like (secondary) forms, often growing in oxidized lead, etc. minerals (PbCO<sub>3</sub>, PbSO<sub>4</sub> etc) suggests conversion of primary altaite-type minerals enroute back up towards the surface, whereas the calaverite-type telluride minerals and some primary precious-metal alloys (i.e. the cubic rhodian-gold) (which are extremely stable) remained largely intact.

Afton-type stocks in the area could represent a geologically later selective hydrothermal extraction of the part of this assemblage most soluble in a wet,

chloride-containing melt, which would selectively extract Cu and Au from the background material and lead to a chlorite-epidote-magnetite copper (gold) sulphides content in stock margins and copper sulphide (gold) halo deposition replacing peripheral mafics, as observed in the Afton area.

## B. BULK SAMPLE

### 1. Collection

W.D.G. walked a serendipitous traverse (approx. path Fig. 4) and cobbled 500 pounds of outcrop and talus of the Nicola rocks into 50-pound rice sacks. These were carried to collection points on the west edge of the area, thence via 5A to Blackman's lab at Nighthawk Washington State.

### 2. Metallurgical Workup - L. Blackman

Samples were sledge-hammered to 2-inch minus (rock was too hard and tough for the coarse crusher) then hammer-milled, then ground to 200-minus in a hydraulically driven spiral-classifier sized 1 m x 1 m ball mill, and the fine pulp subjected to froth flotation, using a methyl-ethyl xanthate collector (Dow Xanthate Z-11) (at Ph 6.5) to activate, in particular calaverite. Frother was Dowfroth 250, with added pine oil. Float con was then filtered, dried and put in a plastic drum with a screw-top lid.

Float ratio was 40/1. Conditions were set for a fairly clear bulk float of all floatable sulphides.

Three 1.2 kg samples of the bulk float con - fine, fairly heavy, and of light grey colour - were carefully panned by W.D. Groves, resulting in 850 grams of 'tails con - saved' by panning into a larger tub - and about 50 grams of a 'supercon' of heavy particles, including about 1/4 of bright goldey-surfaced flakes and bladed shapes of what appeared to be calaverite. A gold-alloy button was made from one 'supercon' by Mr. Blackman under WDG's supervision. (Sample S, Raudsepp, .1986 gms, 39% wt Au, silvery coloured)

### 3. Mineralogical Workup - C. Soux

From the second sample, a sub-sample of 'raw' float cons, a 40-gram 'supercon' sample and a sample of pulverized head ore (made in a pestle and mortar), plus the above gold-alloy bead were taken to Mr. C. Soux, Mineralogist, for mineralogical workup. His results are presented in Appendix IV.

The supercon sample showed no primary precious-metal minerals. The button showed 39% Au on the UBC S.E.M. Mineralogy of the 'supercons' is given (see Appendix IV Soux).

#### 4. Discussion and Results of Study

Study confirms other observations elsewhere on the riftline structure that rocks are auriferous to an extent that suggests actively pursuing area potential for delineation of an open-pit type large-scale deposit. No red-gold native metal alloy was seen in this particular sample (contrast to the Bluff Zone, for example). Since only 198.6 mg of dore was recovered from 60 gms of supercon (about .4% PM-PGE, of which .16% Au), separate PM-PGE minerals would be unlikely in this particular zone, and indeed Soux couldn't find any.

### C. COMMENTS AND CONCLUSIONS

#### Author's Comments

The author feels that the data now being published (Scientific American) on core-mantle interface accumulations and their interaction with upper mantle-crust convection (as at continental margin rifts), as well as the plate-tectonics geometry of such phenomena, will help elucidate deposits like Shumway Lake. The multi-hundred-million ton potential of this rift zone, the increasingly obvious existence of economically interesting gold with open pit potential, proximity to existing mining settlements (Kamloops, Merritt) and idled facilities (Afton, for example) suggests it could make a useful contribution to the local B.C. economy. In view of this, the active opposition (interference with lab results, salting rumours etc.) encountered at every stage so far seems remarkably counterproductive, the more so **in view** of the current state of the B.C. economy.

The author suggests more recourse to the current school book and less preoccupation with the (historic) rule book on gold geology would help rectify the situation. In particular, the mantric about "if it doesn't (heads, standard) fire assay, it isn't there" might have worked for gold-quartz (ah, those were the days) but, in the face of gold buttons made from V.G. alloy bearing float concentrates, S.E.M. microscope studies showing in-place-Au-alloy wires in rock fabric, etc. and high gold content in buttons made by the South African PGE assaying method (Sample S2) - this statement constitutes an insistence [for undeclared reasons] on sanctifying a certain archaic measuring stick ("standard fire") over accepting **the product itself** (i.e. gold) as the arbiter or measure of the **effectiveness** of a given measuring stick, to wit, the process used to extract gold best from a given ore.

The process of making a concentrate (by good scientific methods), then treating the concentrate the way a refinery does, then putting the resulting gold buttons out for purity analysis, not only **demonstrates** the product, but also demonstrates a **flowsheet for extracting it**. The author actually knows of **no** major metal refinery working a complex gold ore which simply mixes the raw ore with lead oxide, flour and sand, melting it (as per Standard Fire) and hoping to pour gold bricks at a profit (or at all).



Why should 'Standard Fire' be the criterion for the gold content of the complex PGE-PM bearing rocks of Shumway Lake, **instead** of simply demonstrating the product by making it?

A method of extracting gold values from the Shumway rocks is as follows: pulverized float concentrate is first roasted with  $\text{NH}_4 \text{NO}_3$  (to remove metalloids, including Te), then pre-leached with very dilute acid (to remove base metals), the calcine residue then treated by a fire assay technique, largely drawing from current South African platinum-assaying practice:

Per assay ton of sample (29.2 grams), the following additions are made to the standard flux: 15 - 20 grams of bituminous coal (to **fully** reduce the whole PGE-PM family into the lead), and  $\text{CaF}_2$  (fluorite) added at about 10 gm/AT (to remove Ir (iridium) as  $\text{IrF}_6$  (Iridium hexafluoride)). Firing goes to  $1500^\circ\text{C}$  instead of  $1100^\circ\text{C}$  finishing temperature (necessitating a direct-fired furnace). At least 1 gram of pure silver is added in cupellation (to protect against cupellation losses) and subsequent careful parting of the silver alloy bead in dilute  $\text{HNO}_3$  to segregate Au from Ag and PGE, then final cupellation of this parted Au ppt in NaCN and lead foil to a bright bead, **does recover the gold**.

'Standard' flour-lead assay of raw float concentrate probably also loses almost all of the gold from the assay, mostly by absorption of gold-tellurate and PGE-plumbates into the cupel in the final stages of cupellation. 'Standard' raw-heads assay has **all** the above problems, **compounded** and **amplified** by other metals Sn, V, P, base metals Cu, Ni, Co, Se, etc) **and** a 40/1 dilution (the inerts got rid of by flotation), including having to fight a high-viscosity (feldspar rich) melt. Results are in the .01 oz/t Au recovery range.

Engineering constitutes the application of Science. Administration constitutes the application of regulations. With a certain amount of interfacing the two universes can be highly productive in terms of results. Shumway Lake is an interesting case of the application of science, notwithstanding evidences of considerable administrative gamesmanship.

Respectfully submitted,



W.D. Groves, Ph.D., P.Eng.

## APPENDICES

**APPENDIX 1**  
**WORK COST STATEMENT**

## WORK COST STATEMENT

DOTT GROUP (DOT 1, DOT2, DOT3) - 42 UNITS\$ 4,200

<b>Geology</b>	W.D. Groves field survey, bulk sample collections, transport - 2 days		1,000
	Lawrence Blackman 500 pound sample - 50 lb float con. crush, hammermill, fire grid, flats, dry float con. 4 days, @ \$500/day (mill)		2,000
<b>Metallurgy</b>	Lawrence Blackman		
	Lawrence Blackman Extraction of gold from 1 kg samples (3) of pan float con. to 50 g supercon 950 g tails con. (can treat both fractions)		
	Firing $\text{NH}_2\text{NO}_3$	2 hrs	
	Leach calcine 5% $\text{H}_2\text{SO}_4$ / filter / dry	½ day	
	Fire residue 1500°C, high C, $\text{CaF}_2$ flux	½ day	
	Cupel with silver	2 hrs	
	Part 1/8 $\text{HNO}_3$	½ day	
	Cupel Au ppt NaCN, Pb foil to bright beads @ \$500/day	½ day 2½ days	1,250
<b>Mineralogy</b>	Christian Soux		
	Mount samples heavy float 'supercon' whole float, mortar & pestled pulverized heads in epoxy ½ day @ \$500	250	
	S.E.M. identification of minerals		
	UBC S.E.M., C.S. supervision	500 750 <u>250</u>	
	Soux mineralogical total		1,000
<b>Report</b>	(W.D. Groves & Ralph McGreevy) McGreevy 1/500 scale AutoCad map ½ day @ \$400		200
	W.D.Groves: Assessment work report writing, compilation, drafts, 2 days @ \$500		1,000
	Word Processing (Accutype)		400

wsg.

<b>Totals:</b>	W.D.Groves Field	1,000	
	Report	1,000	
	Report auxiliaries: Word Processing	400	
	AutoCad	<u>200</u>	2,600
<b>Metallurgy</b>	L.B.	2,000	
		<u>1,250</u>	3,250
<b>Mineralogy</b>	C. Soux	500	
	UBC CEM	<u>500</u>	<u>1,000</u>
			\$ 6,850
	To cover Assessment Cost		<u>4,200</u>
	To P.A.C.		<u>(\$ 2,650)</u>

*wjg.*

**APPENDIX 2**

**CERTIFICATES**

**W. D. Groves  
L. Blackman  
Quanta Trace**

CERTIFICATE 2 (B)

CERTIFICATE - MR. LAWRENCE BLACKMAN, METALLURGIST

Graduate Berkely 1959 - Honours - Chemistry & Physics (Electronics)

E.O. Lawrence Production Lab (at Berkeley) (Physics projects), AEC (Harford) target-metal Chemist, 1960 - 61

Asorco (East Helena smelter) trouble-shooting client mining projects (1965 - 70). While these also graduated Colorado School of Mines 4-year ore dressing course

Then Assayer, Hecla Mining (Republic Work - Republic Gold Mine), took Assay Course and became Licensed Washington State Assayer (also bonded by Hecla). He then became Hecla Republic mine assayer. Consulted Homeslike Mining Ltd., metallurgist on in-situ copper-gold leach project Shorta Calona (still in full production), using new non-toxic leach chemistry.

Subsequently custom flowsheet design, custom assaying etc. Operator Nighthawk Metallurgical Lab.

*Lawrence Blackman*

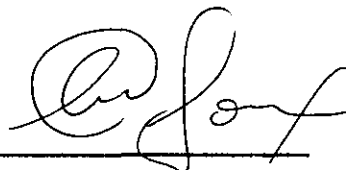
*wbl*

## CERTIFICATE

I, Cristian L. Soux, of the City of Vancouver, in the Province of British Columbia, do hereby certify that:

1. I am a consulting mineralogist with the firm of Orex Laboratories Ltd. located at 6331 - Beresford Street, Burnaby, British Columbia, V5E 1B3.
2. I am a graduate of the University of British Columbia and hold a Bachelor of Science degree.
3. Since graduation I have been involved in numerous exploration programmes in Canada, the U.S.A., Bolivia, Malaysia, Indonesia, Thailand and Ethiopia. During the period 1979-1984 I worked as a consultant and technical advisor in Applied Mineralogy with the United Nations.
4. I hold no direct, nor indirect interest in properties or in any other securities of Klondike Industries Ltd., nor in any associated companies.
5. This report may be utilized by Klondike Industries Ltd. for inclusion in a Prospectus or Statement of Material Facts.

Respectfully submitted at Burnaby, B.C.



Cristian L. Soux. B.Sc.



**APPENDIX 3**  
**ASSAY CERTIFICATE [1988]**

**APPENDIX 4**

**MINERALOGICAL NOTES**

**C. Soux**

**MINERALOGICAL AND ELEMENTAL  
ANALYSES OF SAMPLES**

**FOR**

**KLONDIKE INDUSTRIES LTD.**

*BY*

*C.L SOUX, B.Sc.*

*August 1993*



**OREX Laboratories**

**APPLIED MINERALOGY**

6331 Beresford St., Burnaby, B.C., Canada V5E 1B3

TEL: (604) 451-7577 FAX: (604) 451-7588

---

*W.P.G.*

**MINERALOGICAL AND ELEMENTAL ANALYSES OF SAMPLES  
FOR KLONDIKE INDUSTRIES.**

---

**OBJECTIVES:**

- Four fire assay "buttons" and a flotation concentrate were delivered to Orex Laboratories by Dr. Bill Groves. The work required is as follows:
  1. to weigh and analyze the four "buttons" for gold content.
  2. to establish the presence of Au-Tellurides in the flotation concentrate.

**PROCEDURE:**

- The four "buttons" were analyzed using a CAMECA Microprobe at the of the University of British Columbia's Department of Geological Sciences.
- The float concentrate was mounted and polished (briquettes) and the mineral species present were identified and quantified using a Zeiss reflected light polarizing Microscope.

**RESULTS:**

- The weights of the four "buttons" are:

SAMPLE #	PRODUCT	WEIGHT (gm)
F	button	0.3322
F2	button	0.0442
S	button	0.1986
S2	button	1.6618

*ANOTHER PROPERTY WDG.*

*SHUMWAY LAKE.*

*1 WDG.*

- The elemental content of the four buttons appears in the Appendix.
- The floatation concentrate contains the following minerals.

<b>MINERAL</b>	<b>%</b>
PYRITE	90
PYRRHOTITE	1
CHALOPYRITE	<1
GALENA	<<1
SPHALERITE	<1
ANATASE	<<1
GOETHITE	<1
GANGE	8
<b>TOTAL</b>	<b>100</b>

Au-Tellurides were not observed during the mineralogical analyses. Subsequent analysis using the microprobe confirmed the absence of Au-Tellurides.

# ***ELECTRON PROBE MICROANALYSES of Gold-Silver-Copper Alloys***

---

***OREX LABORATORIES  
6331 Beresford St.  
Burnaby, B. C.***

***Attention: Christian Soux***

---

---

***Mati Raudsepp, Ph.D.  
August 25, 1993.***

*wgh*

APPENDIX  
(MINERALOGY)

## EXPERIMENTAL DETAILS

Quantitative garnet analyses were done on a fully-automated CAMECA SX-50 microprobe, operating in the wavelength-dispersive (WDS) mode with the following operating conditions: excitation voltage, 20 kV; beam current, 30 nA; peak count time, 20 s for Au, Ag and Cu, 30 s for Hg, background count time one-half peak count time; beam diameter, 5  $\mu\text{m}$ . The following X-ray lines, standards and crystals were used: Au  $M\alpha$ , gold metal, PET; Ag  $L\alpha$ , silver metal, PET; Cu  $K\alpha$ , copper metal, LIF; Hg  $M\beta$ , HgTe, PET. Data reduction was done with the 'PAP'  $\phi(\rho Z)$  method. Prior to quantitative analysis, each sample was scanned in the wavelength dispersive mode to check for other elements. No other elements were detected (greater than about 0.1 weight percent).

## RESULTS

Three points were randomly selected from each sample in the 'button' mount.' Analyses are given in Table 1 and sample locations and labels are given in Figure 1. The surface of sample S5 is rough and not completely polished, which accounts for the low analytical totals.

The sample of ore was checked optically, with backscattered electron imaging, and by energy-dispersive spectrometry. No minerals were found with detectable amounts of gold.

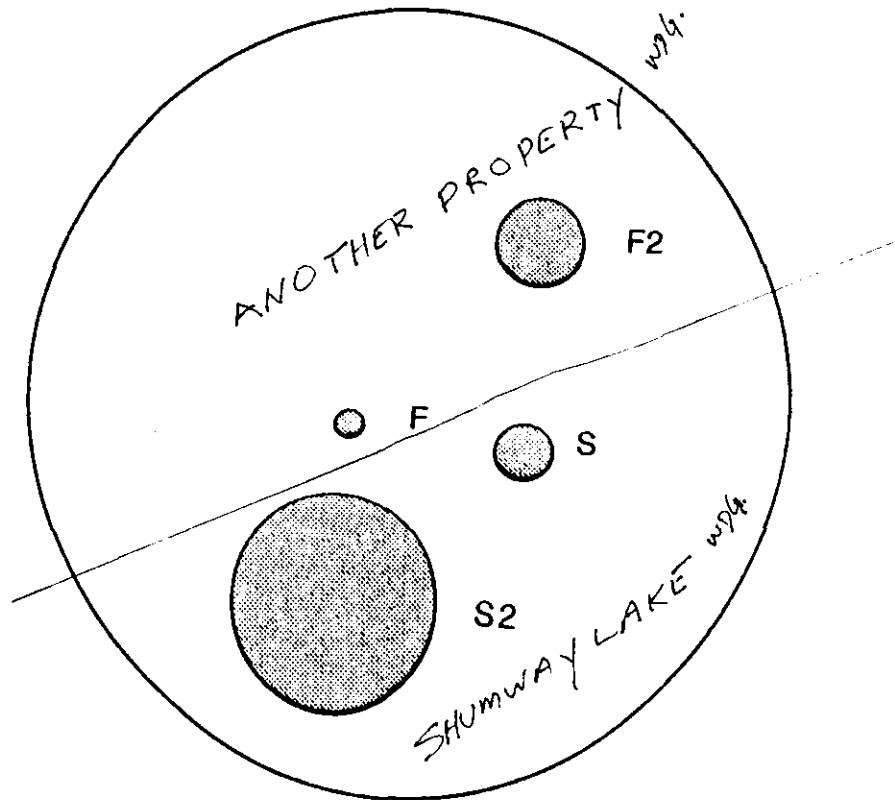


Figure 1: Alloy button sample schematic with labels.

wph



Table 1: Electron Probe microanalyses of gold-silver alloys.

	S2-1	S2-2	S2-3	S-1	S-2	S-3	F2-1	F2-2	F2-3	F-1	F-2	F-3
Au	87.00	86.90	86.97	39.45	37.88	39.68	0.19	0.28	0.24	72.94	73.98	74.44
Ag	9.34	9.50	9.32	59.56	61.21	59.06	99.63	99.58	99.20	25.29	24.60	24.73
Hg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cu	2.72	2.66	2.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	99.06	99.06	99.08	99.01	99.09	98.74	99.82	99.86	99.44	98.23	98.58	99.17

SHUMWAY LAKE  
WDG.

ANOTHER PROPERTY  
WDG.

WDG

## ILLUSTRATIONS





FIGS. 245.  
 2. REGIONAL GEOLOGY.  
 5. SAMPLE ZONES.

MAP 886A  
**NICOLA**  
 KAMLOOPS AND YALE DISTRICTS  
 BRITISH COLUMBIA

Scale, 25,140 or 1 Inch to 4 Miles  
 Miles 0 4 8

Approximate magnetic declination, 24°30' to 27° East.



PROVINCE OF  
BRITISH COLUMBIA

MINISTRY OF  
ENERGY, MINES AND  
PETROLEUM RESOURCES

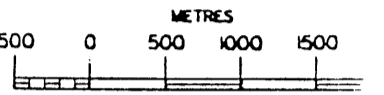
MINERAL TITLES REFERRED TO

MAP 092109E

U.T.M. ZONE 10

LAST MAP UPDATE: 1993 JAN

ORIGINAL PRODUCED AT 1:250,000



ADMINISTRATIVE AREAS

MINING DIVISIONS: KAMLOOPS

LAND DISTRICTS:

ALIENATIONS

NO STAKING AREAS

NO STAKING RESERVES

PARKS

ECOLOGICAL RESERVES

RECREATION AREAS

INDIAN RESERVES

CONDITIONAL AREAS

SUBJECT TO CONDITIONS REFERRED TO

SECTION 19 RECREATION AREA

POST CLAIM AREAS

AREAS SUBJECT TO URANIUM / THORIUM REGULATIONS

MINERAL TENURE

MINERAL CLAIM

MINERAL LEASE

INDUSTRIAL MINERAL CLAIM

CLAIM NAME

TITLE NUMBER

OLD TITLE NUMBER

TAG NUMBER

LEGAL POST

WITNESS POST

FORFEITED TENURE

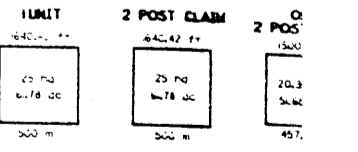
VERIFIED

SURVEYED

REVERTED C.O. MINERAL CLAIM

CROWN GRANTED

OPEN FOR STAKING

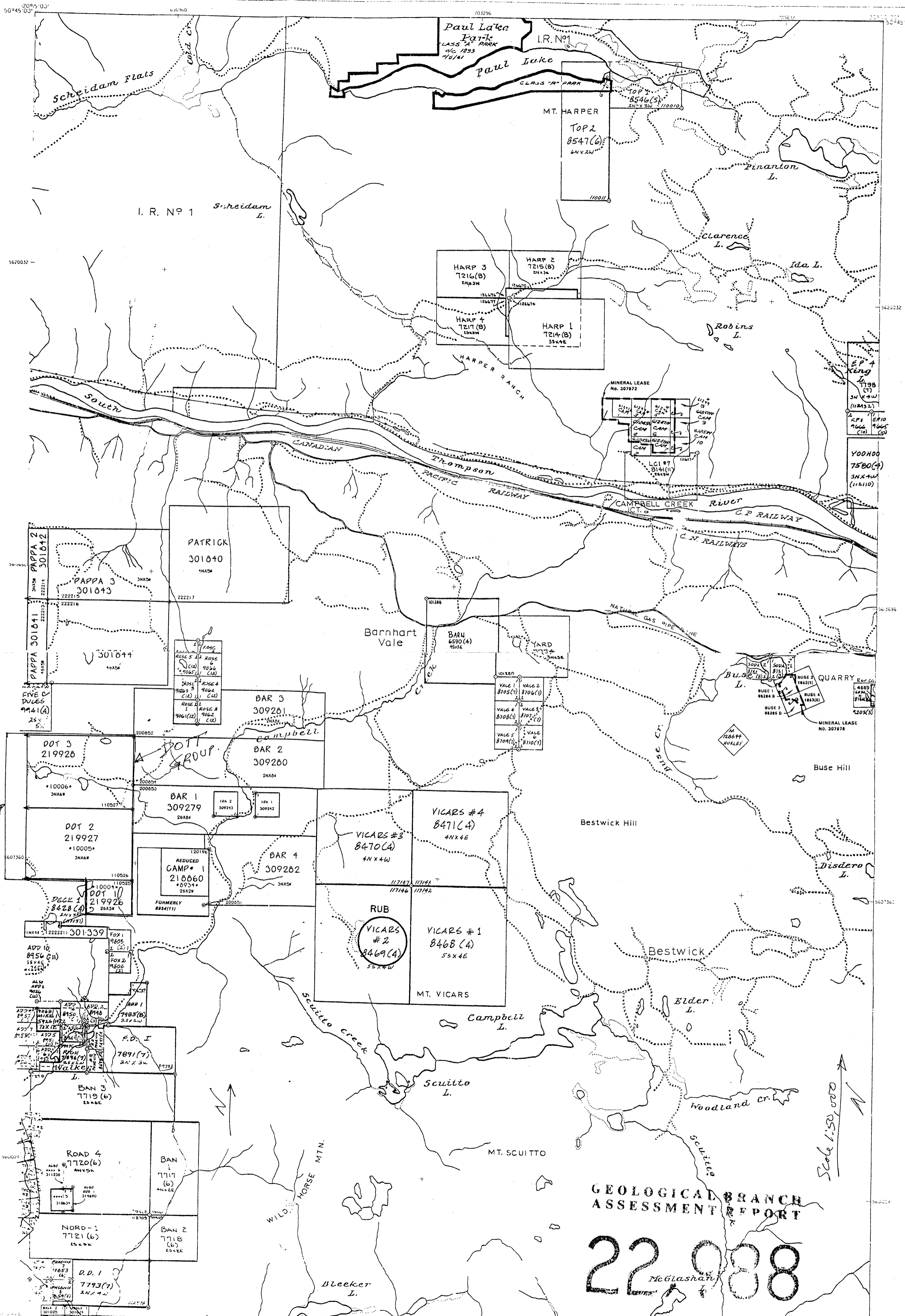


THIS MAP IS PREPARED ONLY AS A GUIDE TO THE LOCATION OF MINERAL TENURES AS SHOWN ON THE LOCATOR'S SKETCH FOR CURRENT OR MORE SPECIFIC INFORMATION, APPLICATION SHOULD BE MADE TO THE MINING DIVISION OFFICE

INDEX TO ADJOINING MAPS

092108	092109	092110
092107	092108	092109
092106	092107	092108

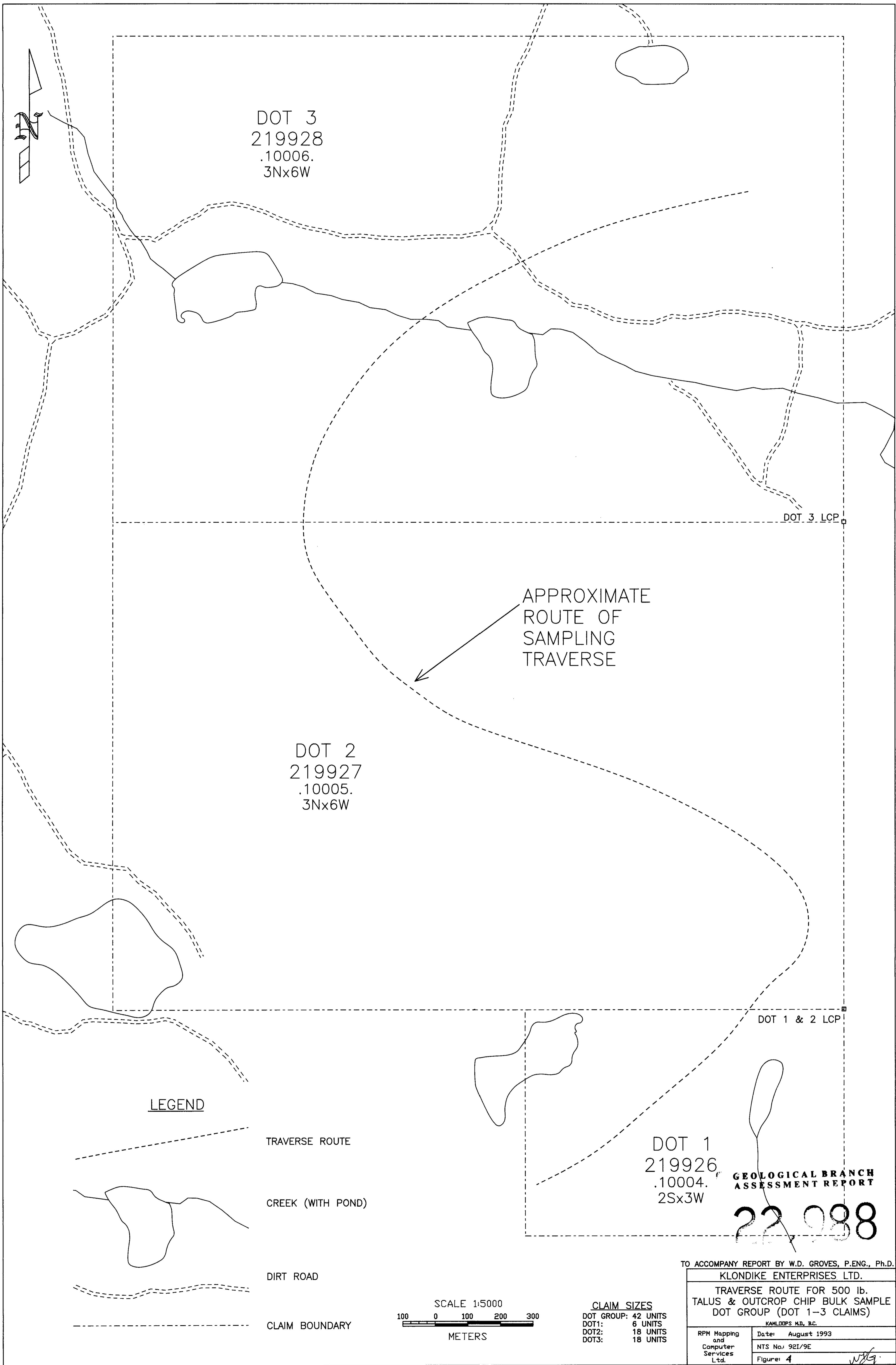
092109E



GEOLOGICAL BRANCH  
ASSESSMENT REPORT

22,988  
McGlashan

16



DOT 3  
219928  
.10006.  
3N x 6W

DOT 3 LCP

APPROXIMATE  
ROUTE OF  
SAMPLING  
TRAVERSE

DOT 2  
219927  
.10005.  
3N x 6W

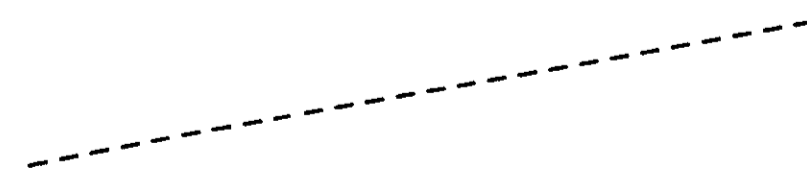
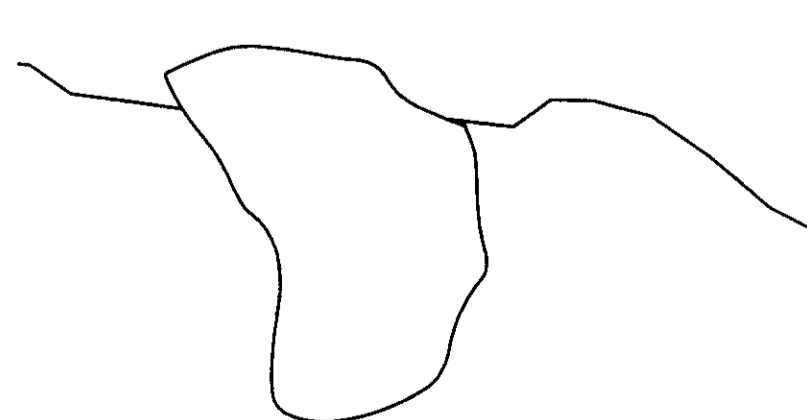

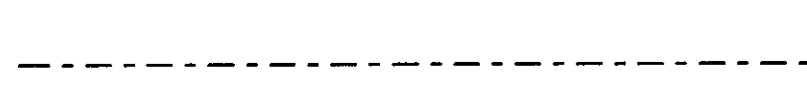
DOT 1 & 2 LCP

DOT 1  
21926  
.10004.  
2S x 3W

**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

**22,988**

LEGEND

-  TRAVERSE ROUTE
-  CREEK (WITH POND)
-  DIRT ROAD
-  CLAIM BOUNDARY

SCALE 1:5000  
100 0 100 200 300  
METERS

**CLAIM SIZES**  
DOT GROUP: 42 UNITS  
DOT1: 6 UNITS  
DOT2: 18 UNITS  
DOT3: 18 UNITS

TO ACCOMPANY REPORT BY W.D. GROVES, P.ENG., Ph.D.	
KLONDIKE ENTERPRISES LTD.	
TRAVERSE ROUTE FOR 500 lb. TALUS & OUTCROP CHIP BULK SAMPLE DOT GROUP (DOT 1-3 CLAIMS)	
KAMLOOPS B.C.	
RPM Mapping and Computer Services Ltd.	Date: August 1993
	NTS No: 921/9E
	Figure: 4 <i>W.D.G.</i>