



DU PONT OF CANADA EXPLORATION LIMITED

GEOLOGICAL AND GEOCHEMICAL REPORT

ON THE EVEN-ODD CLAIMS

WHITEHORSE MINING DIVISION

(YUKON TERRITORY)

LAT. 60°12'N, LONG. 135°00'W

NTS: 105-D/3E

OWNER OF CLAIMS: DU PONT OF CANADA EXPLORATION LIMITED

OPERATOR: DU PONT OF CANADA EXPLORATION LIMITED

Submitted by: H.J. Copland,  
J.T. Neelands  
Date : 1982 May

091047



This report has been examined by  
 the Geological Evaluation  
 under Section 53 (4) Yukon  
 Mining Act and is allowed to  
 represent work in the amount  
 of \$ 3,600 —

*P. Walker*

for Regional Manager, Exploration  
 Geological Services for  
 of Yukon Territory.

OWNER OF CLAIMS: DU FORT DE CANADA EXPLORATION LIMITED  
 DU FORT DE CANADA EXPLORATION LIMITED

Submitted by: P. Walker  
 Date: 1982

001017

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## INTRODUCTION

During 1981 May, reconnaissance stream sediment sampling was carried out in the Carcross area of southern Yukon. The sampling was undertaken as part of a large regional programme known as Kultha Project. The areal extent of this project is shown on Dwg. KU.81-1, 1a and 2.

As the result of an anomalous gold sample in a creek draining into the Wheaton River, the drainage area of this creek was staked as the EVEN and ODD properties.

## LOCATION AND ACCESS

The EVEN/ODD claims are located within the Whitehorse Mining Division, NTS 105-D-3E (Lat. 60°12'N, Long. 135°00'W). The properties are located on the southern half of Dickson Hill, south of Mt. Stevens. The nearest population centre, Carcross, lies 16 kilometres to the east. The claims are accessible by helicopter from Carcross.

## TOPOGRAPHY AND VEGETATION

The claims lie on the southern slopes of Dickson Hill. Elevation rises from a maximum of 1620 metres at the summit of the hill to 1010 metres in the valley to the south. The upper elevations are covered by grasses and scattered low evergreen shrubs. In the valley, spruce and alder dominate. Numerous intermittent streams flow off Dickson Hill in all directions and eventually connect to the Wheaton River which flows into the northern end of Bennett Lake.

## PROPERTY DEFINITION

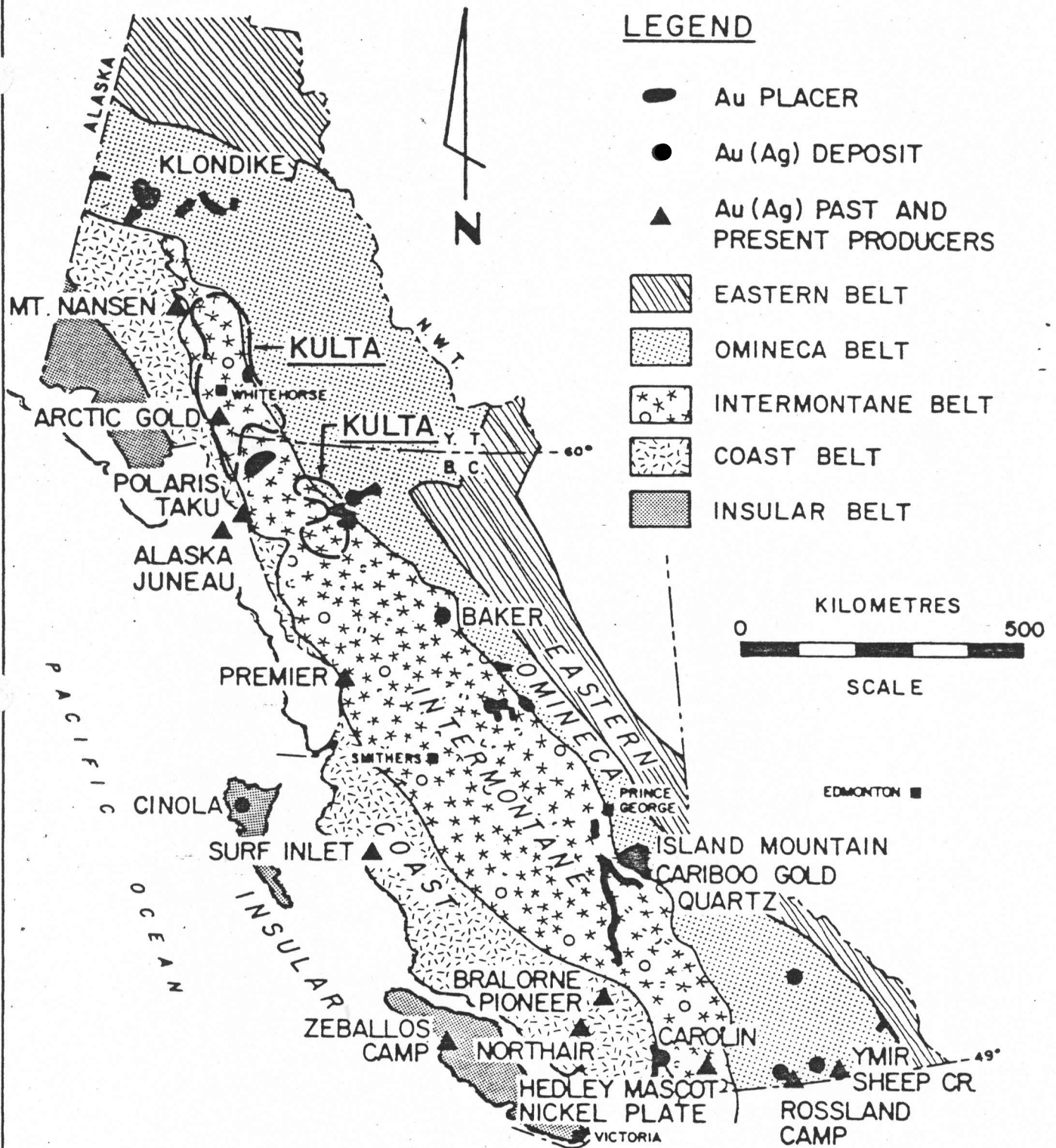
The EVEN property consists of 16 claim units and ODD consists of 20 claim units. See Dwg. No. KU.81-253 for claim location.

EVEN: YA60894 to YA60909

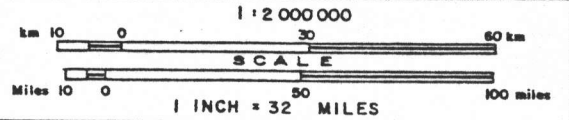
ODD : YA60964 to YA60983

## PREVIOUS WORK

No previous work is recorded concerning the property. The property was staked in 1981 June on the basis of an auriferous stream sediment anomaly. Numerous gold showings are located to the north of the claims around Mt. Stevens and Folle Mountain, where small workings have been in operation in the past.

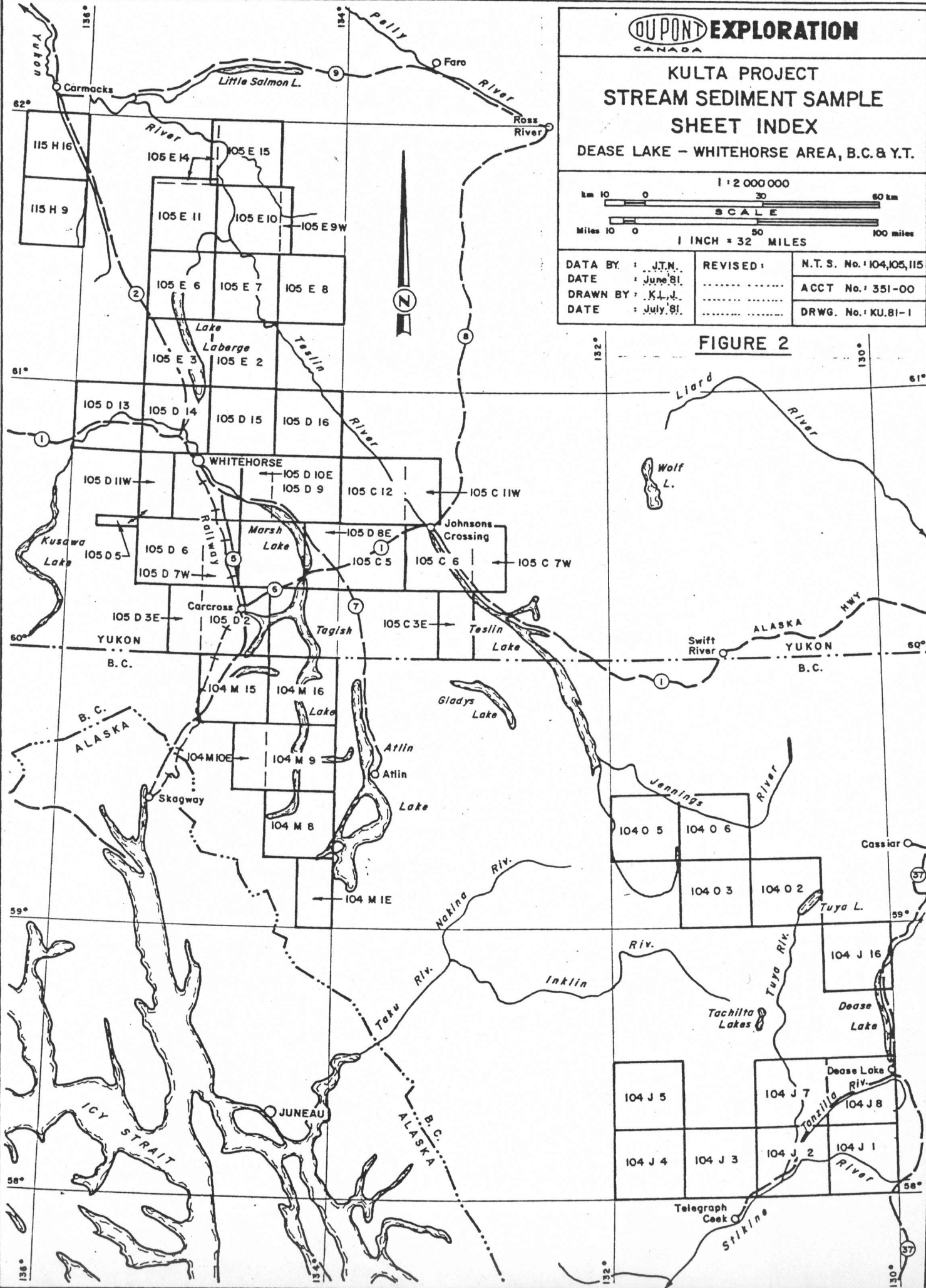


**KULTA PROJECT  
STREAM SEDIMENT SAMPLE  
SHEET INDEX**  
DEASE LAKE - WHITEHORSE AREA, B.C. & Y.T.

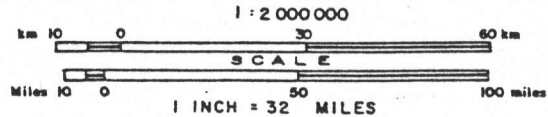


DATA BY: J.T.N.	REVISED:	N.T.S. No.: 104,105,115
DATE: June 81		ACCT No.: 351-00
DRAWN BY: K.L.J.		DRWG. No.: KU.81-1
DATE: July 81		

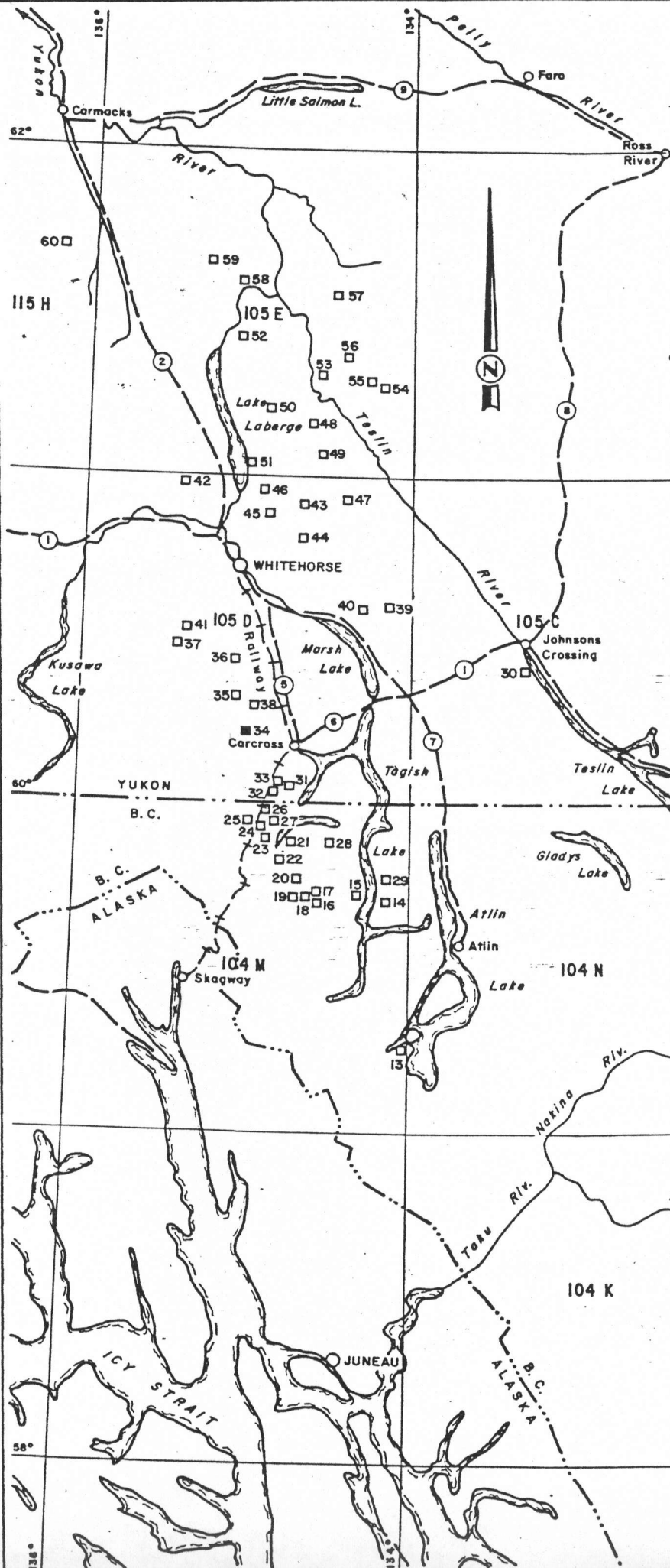
**FIGURE 2**



**KULTA PROJECT  
CLAIM LOCATION MAP  
DEASE LAKE - WHITEHORSE AREA, B.C. & Y.T.**

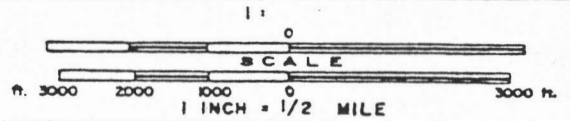


DATA BY : .....	REVISED : .....	N. T. S. No. : 104,105,115
DATE : .....	8/10/23	ACCT No. : 351-00
DRAWN BY : K.L.J.	.....	DRWG. No. : KU.81-2
DATE : July 81	.....	

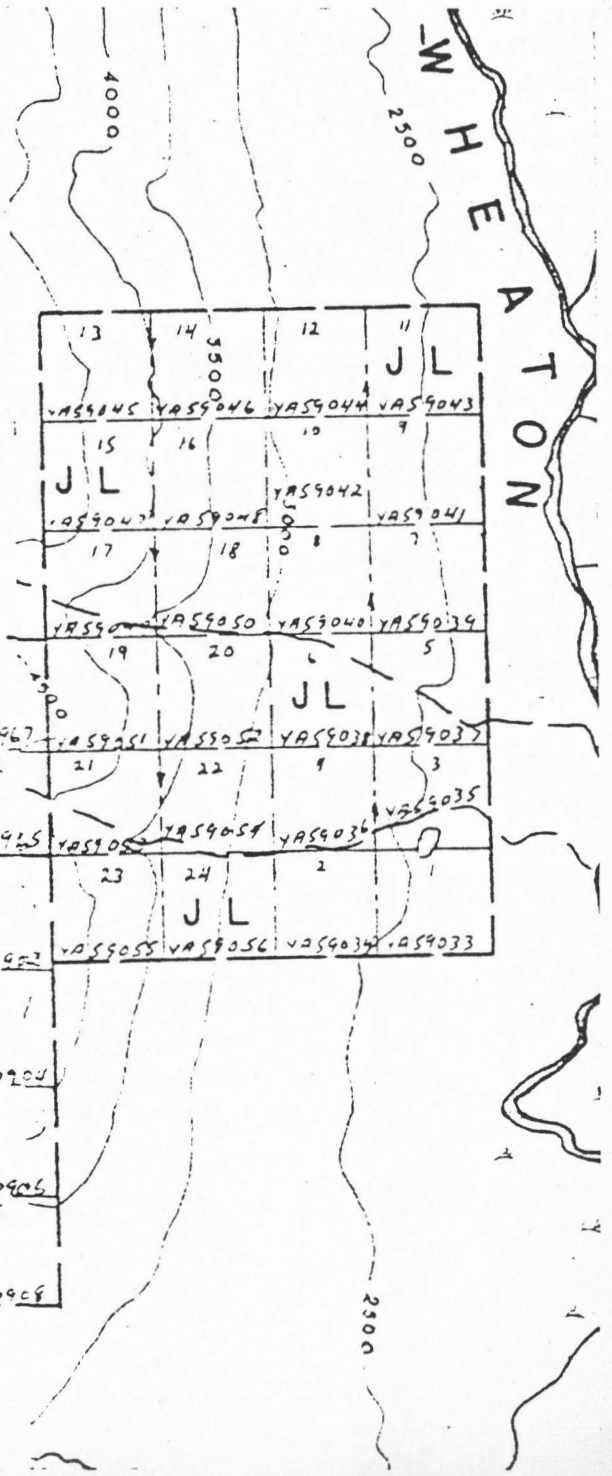
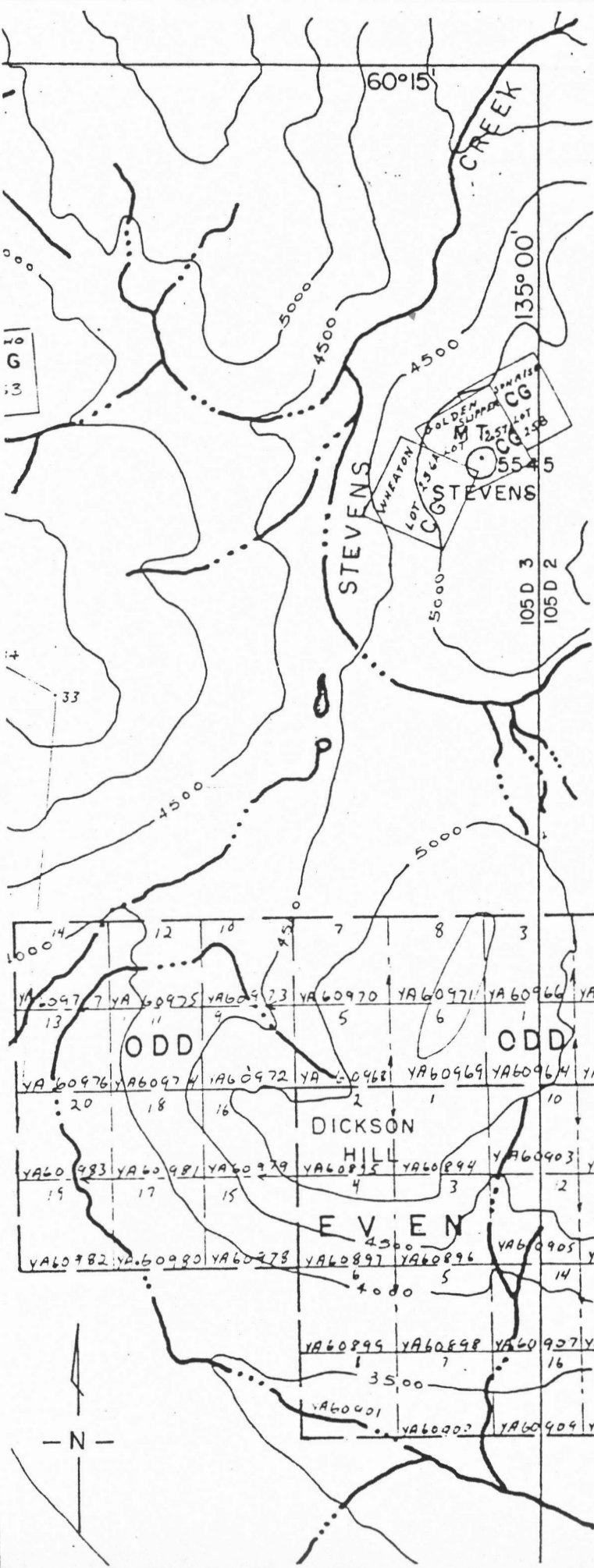


No.	CLAIM NAME	N.T.S.	No.	CLAIM NAME	N.T.S.
1	RAND	104 I 4, J 1	32	DUNK	105 D 2W
2	LATE	104 J 1E	33	UNDAL	105 D 2W
3	LAME	104 J 1E	34	EVEN- ODD	105 D 2, 3
4	FLOOD	104 J 2W	35	OLLIE	105 D 6E
5	TAIL	104 J 1, 2	36	EVIEW	105 D 6E
6	ALOON	104 J 3W	37	DAYIR	105 D 6W
7	HALT	104 J 4E	38	ILLIA	105 D 7W
8	EGLEN	104 J 5E	39	ICHIE	105 D 9E
9	YAT	104 J 7W	40	INTO	105 D 9W
10	ANTZ	104 J 8W	41	BEXI	105 D 11W
11	LURE	104 J 16E	42	FLAT	105 D 14W
12	ANKI	104 J 16E	43	UNCER	105 D 15E
13	NARRS	104 M 8E	44	SLEWE	105 D 15E
14	HAKER	104 M 9E	45	ERGE	105 D 15W
15	AKUM	104 M 9W	46	LABE	105 D 15W
16	RACE	104 M 10E	47	UTSHIG	105 D 16W
17	CREED	104 M 10E	48	CROST	105 E 2E
18	CRINE	104 M 10E	49	SLINE	105 E 2E
19	KEAP	104 M 10E	50	AURIER	105 E 2W
20	SELLY-SKEL	104 M 15E	51	AKEL	105 E 3E
21	TAKE	104 M 15E, W	52	OVOAS	105 E 6E
22	TUTS	104 M 15W	53	ENOF	105 E 7E
23	SHUI	104 M 15W	54	MAYBE	105 E 8E
24	GAUG	104 M 15W	55	MARBEE	105 E 8E, W
25	ANGE-BE	104 M 15W	56	GERM	105 E 8W
26	PENG	104 M 15W	57	SBS	105 E 10E
27	TSHIK	104 M 15W	58	HOOT	105 E 11E
28	ANNIG	104 M 16W	59	RANKL	105 E 11W
29	UNDAS	104 M 16E	60	KIRK	115 H 9E
30	SAYEH	105 C 6W			
31	ATHES	105 D 2E, W			

**KULTA PROJECT  
EVEN-ODD CLAIMS  
CLAIM MAP  
CARCROSS AREA, YUKON TERRITORY**



DATA BY: J.T.N.	REVISED:	M.T.S. No. 105 D 2,3
DATE:		ACCT No. 351-25
DRAWN BY: C.L.S.		DRWG. No. KU-81-253
DATE: 82.05.		



13	14	12	11							
YAS9045	YAS9046	YAS9044	YAS9043							
15	16	10	9							
JL	JL	YAS9042	YAS9041							
17	18	8	7							
YAS9040	YAS9050	YAS9040	YAS9039							
14	12	10	9							
YAB0977	YAB0975	YAB0973	YAB0970	YAB0971	YAB0966	YAB0967	YAS9051	YAS9050	YAS9038	YAS9037
13	11	9	5	6	1	2	21	22	9	3
YAB0976	YAB0974	YAB0972	YAB0968	YAB0969	YAB0964	YAB0965	YAS9050	YAS9059	YAS9036	YAS9035
20	18	16	2	10	9	23	24	2	1	
DICKSON HILL										
15	17	15	4	3	2	11				
YAB0983	YAB0981	YAB0979	YAB0935	YAB0994	YAB0903	YAB0902	YAS9055	YAS9056	YAS9034	YAS9033
EVEN										
19	17	15	4	3	2	11				
YAB0982	YAB0990	YAB0978	YAB0897	YAB0896	YAB0905	YAB0904				
EVEN										
16	14	13								
YAB0899	YAB0898	YAB0907	YAB0906							
16	15									
YAB0901	YAB0902	YAB0909	YAB0908							

PERSONNEL

Property work was performed by the following people on the dates indicated:

1981 August 10: H. Copland (Senior Geological Assistant)  
 L. Cunningham (Junior Geological Ass't)  
 A. MacArthur " " "  
 A. Deak " " "

1981 August 22: P. Webb (Junior Geological Assistant)  
 A. Deak " " "

1981 Sept. 28: J.T. Neelands (Geologist)  
 J. Dupas (Junior Geological Assistant)  
 L. Harland (Junior Geological Assistant)

GEOLOGYRegional Geology

The property lies within the Intermontane Belt of the western Cordillera. The belt consisting mainly of sedimentary and volcanic rocks stretches from the Yukon to southern British Columbia. The belt averages 150 kilometres in width and trends northwest-southeast. Bordering the belt to the west are the granitic rocks of the Coast Mountain Intrusions, which stretch along the entire B.C. coast into Alaska.

Physiographically, the region is part of the Yukon Plateau. This area is characterized by glaciated mountain peaks generally under 2000 metres in elevation and long narrow lake-filled valleys. To the west, the rugged extensively glaciated peaks of the Coast Mountains dominate.

The Tagish-Bennett Lake areas are dominated by rocks of the Intermontane Belt with small plutons (2-8 km in size) of Late Cretaceous Coast Intrusions scattered throughout. The main front of the Coast Mountains occurs seven kilometres west of the area. The rocks of the Intermontane Belt comprise Palaeozoic metamorphic rocks (schists and gneiss), Pennsylvanian (?) and Permian volcanic and meta-volcanic rocks (Taku Group), Lower and Middle Jurassic sediments (Laberge Group), and Upper Cretaceous volcanic rocks (Hutshi Group). See Table of Formations (Table 1) and Dwg. No. KU.81-2b (Kulta Project Regional Geology).

The rocks generally occur in northwest trending belts as part of a large regional synclinorium (Wheeler 1961, p. 103). All Pre-Cretaceous rocks show this trend. Locally tight folding has been observed, possibly due to intrusive placement.

TABLE I

Table of Formations

Miocene to Pleistocene (TQW)

Wrangell-Garibaldi: Basic to intermediate volcanics.

Upper Cretaceous-Oligocene (KTo)

Ootsa Lake - Kamloops (Hutshi Group): Intermediate to acidic volcanic flows, tuff; non-marine.

Late Cretaceous and Early Tertiary

Nisling Range Alaskite, Nanika (KTq): Granite, quartz monzonite lesser granodiorite.

Babine (KTg): Granodiorite, quartz diorite, quartz monzonite, lesser quartz monzonite, diorite, monzonite.

Lower and Middle Jurassic (JL)

Laberge-Quesnel (Stuhini Fm): Greywacke, argillite, conglomerate; marine.

Late Triassic - Early Jurassic

Hogem Granodiorite (EJg): Quartz diorite, granodiorite, lesser diorite, quartz monzonite.

Iron Mask (Ejd): Diorite, monzonite, syenite, quartz, diorite, minor pyroxenite, granodiorite.

Upper Triassic - Lower Jurassic (TJT)

Takla-Nicola: Augite porphyry, basaltic volcanics; siltstone, shale, limestone, conglomerate.

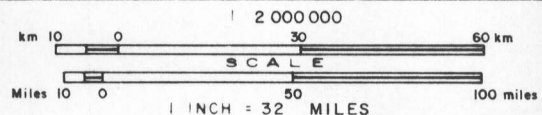
Mississippian - Triassic (MTC)

Cache Creek - Anvil Range: Chert, argillite, carbonate, basalt, associated diabase, gabbro, alpine ultramafic; marine.

Proterozoic - Palaeozoic

Central Gneiss - Skagit: Granitoid Gneiss, migmatite schist, amphibolite, plutonic rocks.

**KULTA PROJECT  
REGIONAL GEOLOGY  
DEASE LAKE - WHITEHORSE AREA, B.C. & Y.T.**



DATA BY	J. T. N.	REVISED	NTS No: 104,105,115
DATE			ACCT No: 351-00
DRAWN BY	K.L.J.		DRWG No: KU.81-2B
DATE	MAY '82		



No.	CLAIM NAME	N.T.S.	No.	CLAIM NAME	N.T.S.
1	RAND	104 I 4, J I	32	DUNK	105 D 2W
2	LATE	104 J IE	33	UNDAL	105 D 2W
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4	FLOOD	104 J 2W	35	OLLIE	105 D 6E
5	TAIL	104 J 1,2	36	EVIEW	105 D 6E
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10	ANTZ	104 J 8W	41	BEXI	105 D 11W
11	LURE	104 J 16E	42	FLAT	105 D 14W
12	ANKI	104 J 16E	43	UNCER	105 D 15E
13	NARRS	104 M 8E	44	SLEWE	105 D 15E
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20	SELLY-SKEL	104 M 15E	51	AKEL	105 E 3E
21	TAKE	104 M 15E,W	52	OVOAS	105 E 6E
22	TUTS	104 M 15W	53	ENOF	105 E 7E
23	SHUI	104 M 15W	54	MAYBE	105 E 8E
24	GAUG	104 M 15W	55	MARBEE	105 E 8E,W
25	ANGE-BE	104 M 15W	56	GERM	105 E 8W
26	PENG	104 M 15W	57	SBS	105 E 10E
27	TSHIK	104 M 15W	58	HOOT	105 E 11E
28	ANNIG	104 M 16W	59	RANKL	105 E 11W
29	UNDAS	104 M 16E	60	KIRK	115 H 9E
30	SAYEH	105 C 6W			
31	ATHES	105 D 2E,W			

**LEGEND**

UPPER CRETACEOUS - OLIGOCENE

**KT<sub>o</sub>** Carmacks, Mt Nansen, Endako: Intermediate to acidic volcanic flows, tuff: non marine.

LOWER AND MIDDLE JURASSIC

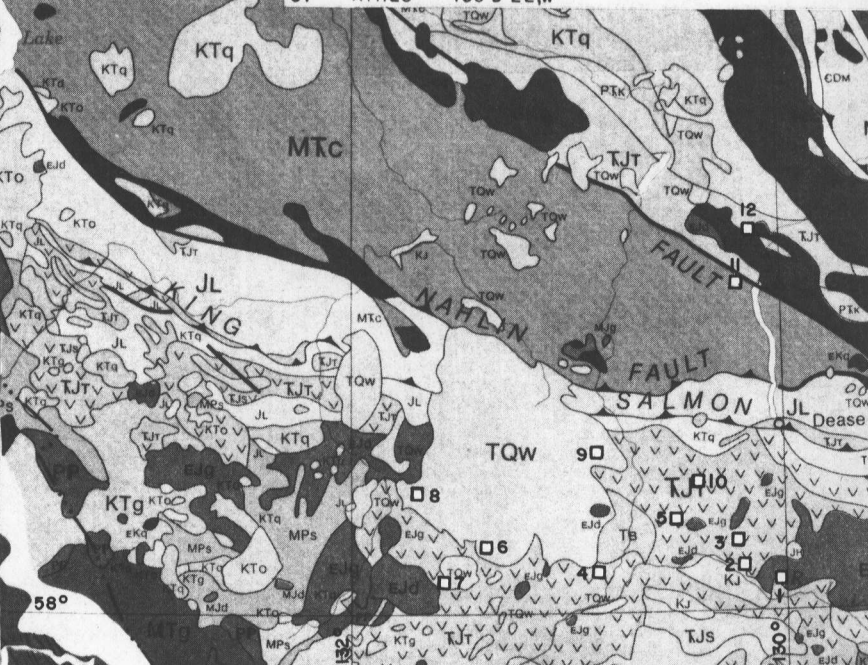
**TJt** Nicola and Lewes: Volcanic and sedimentary rocks.

LATE CRETACEOUS AND EARLY TERTIARY

**KT<sub>q</sub>, KT<sub>g</sub>** Granitic rocks

LATE PALEOZOIC - TRIASSIC

Alpine - type ultramafics



Economic mineralization has been exploited in the area from various sources. The Engineer Mine (Au,Ag) is hosted by quartz-calcite veins occurring in shales and greywackes of the Laberge Group. Venus Mine (Au,Ag) is hosted by a quartz vein cutting through Hutshi Group andesites. Numerous other showings similar to the Venus Mine occur in the Tagish Lake region.

### Local Geology

The property is primarily underlain by volcanic rocks of the Upper Triassic Lewes River Group. In particular, basalts, dacites; feldspar porphyry dacites and volcanic breccias and conglomerates of that group. Outcrop is sparse on the properties, being exposed only in creekbeds and the higher slopes. Glacial and alluvial deposits obscure the bedrock in the valleys.

Basalts are exposed in the ODD claim in elongate pods along the creek. The dacite-volcanic breccia contact is exposed in the creek bed draining south out of the EVEN claim.

The following is a brief description of the main lithologic units observed thus far on the properties:

a. Dacite - Map Unit 2b

This rock is dark green and aphanitic weathering to a light green to brown. Minor subrounded quartz phenocrysts approximately 5 mm in size comprise less than 1% of the rock. Locally this unit is porphyritic. Phenocrysts of feldspar (K-feldspar?) which make up to 25% of the rock are anhedral, up to 1 cm in size. Minor disseminated pyrite is common in the rocks observed.

b. Basalt - Map Unit 2D

This unit is dark green to black and approaches greenstone in appearance.

c. Volcanic Breccia/Conglomerate

This unit contains zones of predominantly angular to predominantly rounded fragments. Lithology is similar in both. The unit weathers dark grey or maroon. Felsic clasts primarily quartz and volcanic rock stand out on weathered surfaces. The clasts are angular to rounded, up to 2 cm in size.

### Structure

No bedding was observed in the volcanic rocks examined. GSC Map 1093 (1976) indicates that bedding in the rocks to the north of the property strike northwesterly and dip steeply to the east. Foliation in the rocks follow regional trends striking north westerly and dipping to the east.

### Mineralization

Aside from minor disseminated pyrite in the dacites, no significant mineralization was observed. Small barren quartz veins 1 to 4 cm thick are present in the breccia.

### GEOCHEMISTRY

#### Procedure

A total of 169 soil, 4 rock and 9 stream sediment samples were collected during 1981. Soil sampling was carried out at 100 metre intervals. The samples were collected from below the organic layer with a mattock and placed in a Kraft paper envelope. A sample number was marked on the bag and on flagging tape which was secured at the sample site.

Stream sediment samples were collected at 200 metre intervals with the use of an aluminum scoop. They were sieved to -14 and -10 mesh in the field and placed in a plastic bag with a sample tag. The sample site was marked with flagging tape bearing the sample number.

Rock samples were collected at random throughout the claim group and placed in plastic bags along with a sample tag. The sample site was also marked with a length of flagging tape.

All samples were shipped to Min-En Laboratories Ltd., North Vancouver for preparation and analysis. All samples were analyzed for Mo, Cu, Pb, Zn, Ag, Hg, As, Mn, Au and Sb. In addition, the stream sediment samples were sieved to -20 mesh and a heavy mineral separation and analysis was performed for Au, Ag and Cu. Refer to Appendix A for details and analytical procedures.

#### Results

A statistical analysis of the results obtained from regional stream sediment samples was performed to determine background and anomalous values for the various elements. Details of this analysis appears in a report by Neelands (1982) titled "Geochemical Report - Kulta Regional Stream Sediment Sampling

Programme in the Dease Lake and Tagish Lake Areas". Table II reproduced from that report reveals median background values obtained for the elements studied. Table III shows the results of a report titled "Kultha Follow-Up" (Neelands 1982). The two studies show a good correlation between the stream sediment (heavy mineral) samples. The anomalous values given in Table III will be applied to the results of this property.

The results of geochemical sampling on EVEN and ODD are tabled on Dwg. No. KU.81-187. These results have also been tabulated as to frequency distribution of elements (see Table IV) and stream sediments and heavy minerals (Table V).

The original stream sediment sample (6642D) on EVEN ran 60 ppb Au in the fine heavy mineral fraction. Sampling of a stream running west off ODD produced anomalous Au values in every sample. The highest value was 1100 ppb Au in the coarse heavy mineral fraction (Sample 9916A).

Comparison of Tables III and IV for soils indicates an anomalous trend in several of the samples for Mo, Cu, Pb, Zn, Ag, Mn and Au. A region of high Cu and Zn values occurs in the northwest corner of EVEN and continues into the adjoining region of ODD. This trend also runs through the central portion of EVEN where Pb appears to increase and Cu decreases with Zn remaining the same. The highest Au values, 400 ppb and 275 ppb (samples E16 and E26 respectively) occur at the head of a creek just west of the anomalous creek. For the most part gold values tend to be background or below.

Only one rock sample was anomalous with respect to gold. This was sample 8443D, a volcanic breccia at 100 ppb. A summary of the rock types and any anomalous values is given in Table VI. Detailed geochemistry of the rocks is tabled on Dwg. KU.81-186.

#### CONCLUSIONS AND RECOMMENDATIONS

Follow-up sampling failed to reveal the source of the auriferous stream sediment anomaly. High values in stream sediments on ODD and a zone of a Cu-Pb-Zn anomaly in the soils cross the centre of the properties justify further sampling in an attempt to isolate the source of the anomalies.

HJC/krl

TABLE II

Kulta Regional Stream Sediment Sampling Programme

Background and Anomalous Values

<u>Element</u>	<u>No. of Samples</u>	<u>Mean ppm</u>	<u>Median Background ppm</u>	<u>Standard Deviation</u>	<u>95% Threshold ppm</u>
Mo	625	1.8	1.0	1.39	4.0
Cu(C1)CHm	598	44.5	38.0	27.39	150.0
Cu(C2)F	621	35.9	32.0	21.15	80.0
Pb	622	16.3	15.0	7.08	30.0
Zn	598	67.0	65.0	23.77	150.0
Ag(S1)CHm	623	1.04	1.0	0.50	2.5
Ag(S2)F	628	0.71	1.0	0.32	1.6
Mn	602	589.6	570.0	232.6	1200.0
Au(G1)CHm	588	8.21	5.0	5.22	25.0
Au(G2)F	579	6.2	5.0	4.66	15.0
%HM			6.0%		

TABLE III

Kulta Follow-Up

Background and Anomalous Values

Element	Medium					
	Heavy Mineral (227 samples)		SiH (43 Samples)		Soil (461 samples)	
	Median	Anomalous	Median	Anomalous	Median	Anomalous
MoF	1.0	3.0	1.0	2.0	4.0	15.0
CuF	30.0	90.0	70.0	160.0	40.0	250.0
CuFHM						
CuHM	50.0	180.0				
PbF	20.0	60.0	20.0	30.0	20.0	50.0
ZnF	60.0	160.0	80.0	100.0	90.0	200.0
AgF	0.8	1.5	0.9	1.2	0.8	1.7
AgFHM						
AgCHM	0.8	2.6				
HgF	25.0	50.0	40.0	80.0	35.0	160.0
AsF	10.0	50.0	15.0	45.0	15.0	120.0
MnF	500.0	1000.0	800.0	2000.0	700.0	2000.0
AuF	5.0	30.0	5.0	15.0	5.0	20.0
AuFHM						
AuCHM	5.0	50.0				
SbF	15.0	40.0	25.0	40.0	20.0	40.0
HM%						





TABLE VI

Description of Rock Samples

<u>Sample #</u>	<u>Rock Type</u>	<u>Anomalous Values</u>
8443D	Volcanic breccia	Au (100 ppb)
8444D	Massive Dacite	Cu(220 ppm), Ag(2.3 ppm)
8445D	Quartz veins in dacite	None
8446D	Porphyritic dacite	None

COST STATEMENTWages

	<u>Cost</u>
1 Sr. Geol. Assistant, 1 manday(s) (1981 Aug. 10)	\$ 59.29
1 Geologist, 0.5 manday (1981 Sept. 28)	75.00
6 Jr. Geol. Assistants, 6 manday(s) (1981 Aug.10&22, Sept. 28)	<u>321.71</u>
	\$ 456.00

Room & Board

<u>Location</u>	<u>Daily Rate</u>	<u>Date</u>	<u>No. of Days</u>	
McCroxy Ranch Yukon	\$25.00	1981 Aug. 10	6	\$ 150.00
Whitehorse	50.00	1981 Sept. 28	1.5	<u>75.00</u>
				\$ 225.00

Transportation

a. Truck Rental (Avis-Whitehorse, YT): 2 day(s) @ \$35.85/day	\$ 71.70
b. Helicopter in support of field work @ \$432.50/hr including fuel (Flying by Viking Helicopter Ltd. of Prince George)	
Dates (1981): Aug. 10,22 & Sept. 25      No. of hrs: 4.3	<u>1,895.75</u>
	\$1,967.45

Analytical Services

<u>Type of Sample</u>	<u>No. of</u>	<u>Fraction Analyzed</u>	<u>Elements Analyzed</u>											<u>Unit Price</u>			
			F	FHM	CHM	Mo	Cu	Pb	Zn	Ni	Ag	Hg	As			Mn	Au
Heavy Mineral	8	X			X	X	X			X	X				X	\$17.75	\$ 142.00
	8		X			X				X					X	7.90	63.20
	8			X		X				X					X	7.90	63.20
Soil	48	X			X	X	X	X		X	X	X	X	X	X	22.75	1,092.00
	25	X			X	X	X	X	X	X	X	X	X	X	X	23.65	591.25
Rock	4	X			X	X	X	X	X	X	X			X	X	22.75	91.00
Preparation - Rock																	9.00
- Heavy Mineral																	160.00
- Soil/Silt																	65.25

Mo(\$0.90), Cu(\$0.90), Pb(\$0.90), Zn(\$0.90), Ni(0.90), Ag(\$0.90/  
\$2.00), Hg(\$4.50), As(\$3.00), Mn(\$0.90), Au(\$5.00), Sb(\$3.75)

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\$2,276.90

Report PreparationCost

Drafting: 1 day @ \$100/day	\$ 100.00
Typing: 1 day @ \$95.00	95.00
Map preparation 8 maps at 16¢/square foot	<u>11.52</u>
	\$ 206.52
<u>GRAND TOTAL:</u>	<u>\$5,131.87</u>

REFERENCES

- Christie, R. L.; "Geology: Bennett (104M)", G.S.C. Preliminary Series Map No. 19-1957, 1957.
- Neelands, J. T.; "Geochemical Report - Kulta Regional Stream Sediment Sampling Programme in the Dease Lake and Tagish Lake Areas", B.C. Assessment Report, 1982.
- Neelands, J. T.; "Kulta Follow-Up (104-J, 104-M)" Geological and Geochemical Report, B.C. Assessment Report, 1982.
- Wheeler, J. O.; "Whitehorse Map-Area, Yukon Territory (105-0)", G.S.C. Memoir 312, 1961.

QUALIFICATIONS

I, Hugh J. Copland Jr., do hereby certify that:

1. I am a geologist residing at 5250 Ash Street, Vancouver, British Columbia and employed by Du Pont of Canada Exploration Limited.
2. I am a recent graduate of the University of British Columbia with a B.Sc. (Honours) degree in Geology and McMaster University with a B.Eng. (Mechanical).
3. I have practised my profession in geology for the past two summers in British Columbia and the Yukon.
4. In August and September 1981, I participated in the field programme described in this report on behalf of Du Pont of Canada Exploration Limited.



H. J. Copland  
1982 May 14

QUALIFICATIONS

I, John Thomas Neelands, do hereby certify that:

1. I am a geologist residing at 118-B W. 14th Ave, Vancouver, British Columbia and employed by Du Pont of Canada Exploration Limited.
2. I am a graduate of Carleton University (1971) in Ottawa, Canada, and hold a B.Sc., degree in Geology.
3. I am a member of the Geological Association of Canada and of the Association of Exploration Geochemists.
4. I have been practising my profession for the past ten years and have been active in the mining industry for the past sixteen years.
5. Between 1981 May and 1981 October, I supervised and participated in the field programme described in this report on behalf of Du Pont of Canada Exploration Limited.

J.T. Neelands  
1982 May

APPENDIX I

Laboratory Procedure

APPENDIX I*MIN-EN Laboratories Ltd.**Specialists in Mineral Environments*

Corner 15th Street and Bewicke

705 WEST 15th STREET

NORTH VANCOUVER, B.C.

CANADA

ANALYTICAL PROCEDURE REPORTS FOR ASSESSMENT WORKPROCEDURE FOR GOLD GEOCHEMICAL ANALYSIS.

Geochemical samples for Gold processed by Min-En Laboratories Ltd., at 705 W. 15th St., North Vancouver Laboratory employing the following procedures.

After drying the samples at 95°C soil and stream sediment samples are screened by 80 mesh sieve to obtain the minus 80 mesh fraction for analysis. The rock samples are crushed and pulverized by ceramic plated pulverizer.

A suitable sample weight 5.0 or 10.0 grams are pre-treated with  $\text{HNO}_3$  and  $\text{HClO}_4$  mixture.

After pretreatments the samples are digested with Aqua Regia solution, and after digestion the samples are taken up with 25% HCl to suitable volume.

At this stage of the procedure copper, silver and zinc can be analysed from suitable aliquote by Atomic Absorption Spectrophotometric procedure.

Further oxidation and treatment of at least 75% of the original sample solutions are made suitable for extraction of gold with Methyl Iso-Butyl Ketone.

With a set of suitable standard solution gold is analysed by Atomic Absorption instruments. The obtained detection limit is 5. ppb.

*MIN-EN Laboratories Ltd.**Specialists in Mineral Environments*

Corner 15th Street and Bewicke  
 705 WEST 15th STREET  
 NORTH VANCOUVER, B.C.  
 CANADA

ANALYTICAL PROCEDURE REPORTS FOR ASSESSMENT WORKPROCEDURES FOR Mo, Cu, Cd, Pb, Mn, Ni, Ag, Zn, As, F

Samples are processed by Min-En Laboratories Ltd., at 705 W. 15th St., North Vancouver Laboratory employing the following procedures.

After drying the samples at 95°C soil and stream sediment samples are screened by 80 mesh sieve to obtain the minus 80 mesh fraction for analysis. The rock samples are crushed by a jaw crusher and pulverized by ceramic plated pulverizer.

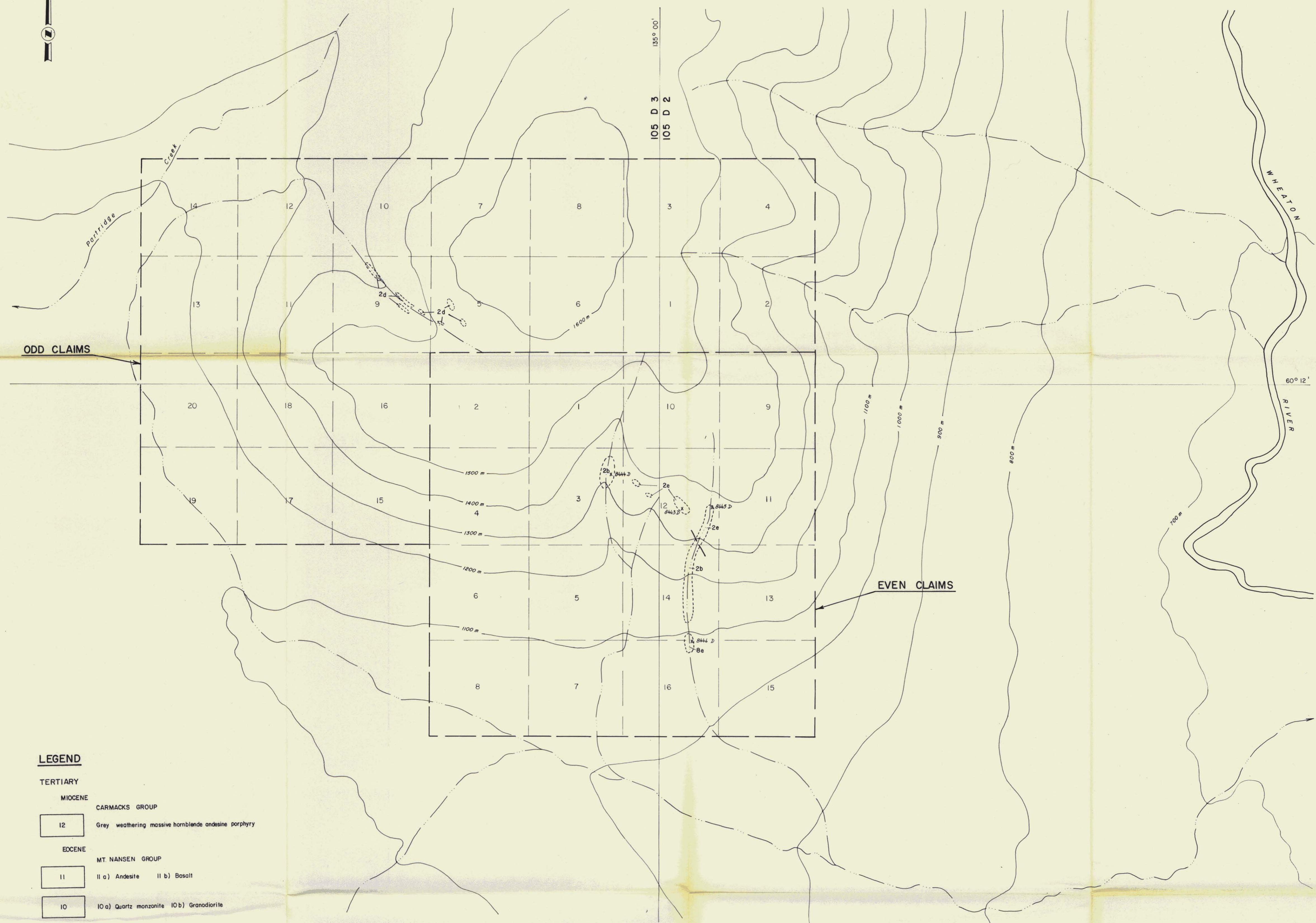
1.0 gram of the samples are digested for 6 hours with  $\text{HNO}_3$  and  $\text{HClO}_4$  mixture.

After cooling samples are diluted to standard volume. The solutions are analyzed by Atomic Absorption Spectrophotometers.

Copper, Lead, Zinc, Silver, Cadmium, Cobalt, Nickel and Manganese are analysed using the  $\text{CH}_2\text{H}_2$ -Air flame combination but the Molybdenum determination is carried out by  $\text{C}_2\text{H}_2$ - $\text{N}_2\text{O}$  gas mixture directly or indirectly (depending on the sensitivity and detection limit required) on these sample solutions.

For Arsenic analysis a suitable aliquote is taken from the above 1 gram sample solution and the test is carried out by Gutzeit method using  $\text{AgCS}_2\text{N}(\text{C}_2\text{H}_5)_2$  as a reagent. The detection limit obtained is 1.2 ppm.

Fluorine analysis is carried out on a 200 milligram sample. After fusion and suitable dilutions the fluoride ion concentration in rocks or soil samples are measured quantitatively by using fluorine specific ion electrode. Detection limit of this test is 10 ppm F.



**LEGEND**

**TERTIARY**

**MIOCENE**

**CARMACKS GROUP**

12 Grey weathering massive hornblende andesine porphyry

**EOCENE**

**MT NANSEN GROUP**

11 11 a) Andesite 11 b) Basalt

10 10 a) Quartz monzonite 10 b) Granodiorite

**CRETACEOUS**

**COAST INTRUSIONS**

9 9 a) Quartz monzonite 9 b) Granodiorite  
9 c) Felsic dyke 9 d) Mafic dyke

**HUTSHI GROUP**

8 8 a) Rhyolite 8 b) Dacite 8 c) Andesite  
8 d) Basalt 8 e) Tuff 8 f) Volcanic conglomerate

7 7 a) Peridotite 7 b) Serpentinite

**UPPER JURASSIC and/or LOWER CRETACEOUS**

**TANTALUS FORMATION**

6 6 a) Shale 6 b) Schist 6 c) Quartz sericite schist

**UPPER TRIASSIC and LOWER JURASSIC**

**LABERGE GROUP**

5 5 a) Siltstone 5 b) Limestone 5 c) Shale  
5 d) Quartzite 5 e) Conglomerate 5 f) Hornfels

4 4 a) Dacite 4 b) Andesite 4 c) Basalt  
4 d) Volcaniclastics (conglomerate, breccia) 4 e) Tuff

**LEWES RIVER GROUP**

3 3 a) Limestone 3 b) Argillite 3 c) Siltstone  
3 d) Arkose 3 e) Greywacke 3 f) Quartzite

2 2 a) Rhyolite 2 b) Dacite 2 c) Andesite  
2 d) Basalt 2 e) Volcanic breccia, conglomerate

**CARBONIFEROUS and/or PERMIAN**

**ANVIL ALLOCHTHONOUS ASSEMBLAGE**

1 1 a) Gneiss 1 b) Schist 1 c) Quartzite  
1 d) Phyllite 1 e) Breccia

**SYMBOLS**

OUTCROP

CONTACT

844 D ROCK SAMPLE LOCATION and NUMBER

CLAIM LINE

**ROCK GEOCHEMICAL RESULTS**

Sample	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ni ppm	Ag ppm	Hg ppb	As ppm	Au ppb	Sb ppm
8443 D	2	5	19	31	4	0.8	10	<1	100	12
8444 D	1	220	23	96	14	2.3	5	8	5	68
8445 D	1	13	9	11	3	0.5	5	<1	5	2
8446 D	1	29	63	157	10	0.7	25	<1	10	10

**DUPONT EXPLORATION**  
CANADA

**KULTA PROJECT  
EVEN-ODD CLAIMS  
GEOLOGY 091047**

CARCROSS AREA, YUKON TERRITORY

1:10 000

SCALE  
1 INCH = 833 FEET

MAPPED BY: J.T.N., M.C. REVISED: N.T.S. No. 105 D 2 & 03

DATE: 81 08 10/22 DRAWN BY: C.H.K. ACCT No. 351-25

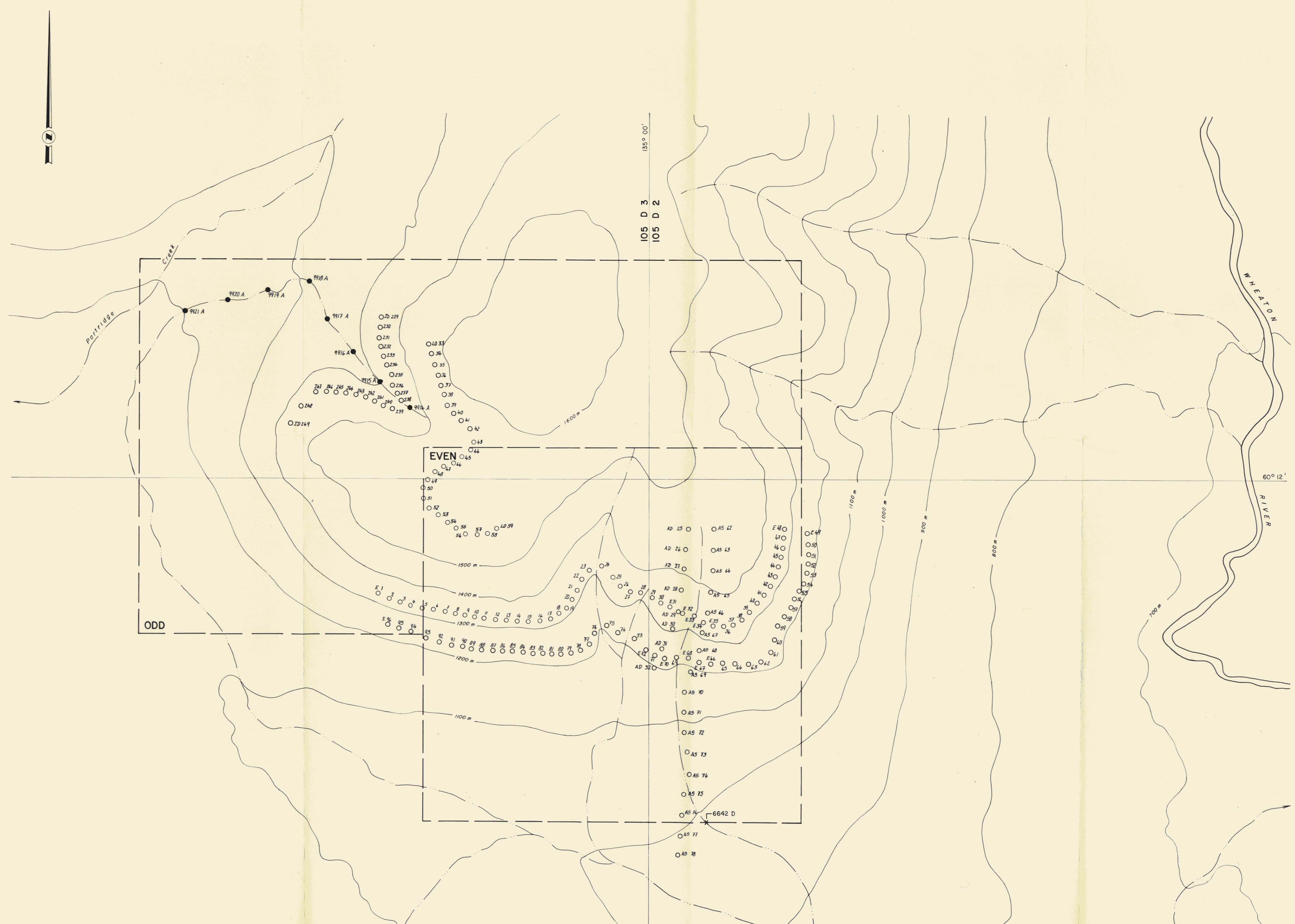
DATE: 82 04 29 DRWG. No. KU.81-186

1981 SAMPLE RESULTS

Sample	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Hg ppb	As ppm	Au ppb	Sb ppm
Soil	-80 F	-80 F	-80 F	-80 F	-80 F	-80 F	-80 F	-80 F
E 1	380	41	160	1.1	5	1	5	26
2	256	53	308	1.5	50	2	15	28
3	720	29	142	1.6	20	4	5	19
4	380	35	170	1.7	40	5	5	20
5	305	36	144	1.2	40	10	5	27
6	254	35	144	1.3	70	4	5	19
7	258	34	106	1.6	60	2	5	18
8	158	41	270	1.5	40	7	10	8
9	163*	35*	126*	1.3*	80*	6*	30*	14*
10	198	38	190	1.4	40	<1	5	20
11	274	68	570	1.7	70	9	5	18
12	67	36	144	1.0	5	5	5	10
13	238	42	119	2.0	80	9	10	20
14	178	57	210	1.4	40	5	35	12
15	144	48	120	1.4	5	9	5	8
16	125	43	150	1.1	30	6	400	20
17	82	52	244	0.9	10	6	10	6
18	66	39	138	1.2	40	4	5	10
19	39	28	150	1.0	80	4	5	14
20	198	35	113	1.6	130	28	15	22
21	41	68	234	0.9	50	13	5	14
22	33	43	130	0.9	40	<1	5	10
23	32	31	76	0.9	10	11	5	8
24	93	62	110	1.4	50	27	10	25
25	48	36	84	0.9	5	3	30	12
26	25	22	88	0.8	20	6	275	6
27	33	28	82	0.9	5	4	5	14
28	48	28	101	0.9	5	13	5	12
29	50	44	106	0.8	20	4	5	10
30	88	56	157	1.2	20	6	5	14
31	35	38	116	0.7	5	13	5	12
32	40	41	186	0.9	20	14	5	5
33	37	29	142	0.8	5	3	10	8
34	38	21	94	0.9	30	12	20	10
35	32	41	100	0.5	5	9	5	6
36	24	28	85	0.9	5	9	5	12
37	24	29	100	0.5	10	7	5	4
38	49	39	146	1.2	5	7	5	28
39	28	29	122	0.6	50	19	<5	14
40	51	37	105	1.2	5	6	5	10
41	27	32	82	0.9	40	13	10	8
42	30	27	96	1.0	60	6	5	14
43	34	29	148	0.7	80	7	10	18
44	46	25	118	0.6	5	10	5	5
45	36	20	88	0.7	80	5	5	22
46	37	34	93	1.2	70	6	5	26
47	91	47	98	1.4	40	9	10	20
49	20*	36*	92*	1.6*	30*	13*	5*	3*
50	80	42	91	1.3	80	8	5	12
51	40	26	100	1.0	40	8	10	15
52	45	29	80	1.0	80	9	5	24
53	67	39	125	1.2	80	7	5	12
54	64	53	154	1.2	30	4	15	18
55	68	47	96	1.1	40	5	25	15
56	46	35	123	1.1	30	11	50	12
57	60	60	226	0.8	50	3	5	8
E 58	47	41	168	0.8	60	11	5	4

\* -40 Mesh

Sample	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Hg ppb	As ppm	Au ppb	Sb ppm
Soil	-80 F	-80 F	-80 F	-80 F	-80 F	-80 F	-80 F	-80 F
E 59	51	49	95	0.8	80	10	5	4
60	58	119	204	1.3	80	12	5	16
61	60	77	196	0.9	40	33	5	4
62	87	67	192	1.0	30	16	15	8
63	85	120	305	1.2	20	9	10	16
64	105	128	250	1.6	80	20	5	22
65	126	126	238	1.2	20	6	5	2
66	81	76	187	1.1	20	<1	10	8
67	84	133	293	1.1	100	10	10	10
68	115	88	193	1.1	30	9	5	14
69	86	60	280	1.2	60	4	15	5
70	119	99	190	0.9	20	3	10	12
71	83	71	186	0.9	30	4	15	15
72	50	29	270	0.7	10	<1	5	4
73	100	48	156	1.1	50	<1	5	8
74	106	50	205	1.2	20	<1	10	12
75	76	51	130	0.8	10	<1	10	10
76	75	51	144	0.9	20	<1	10	14
77	47	43	84	0.9	40	<1	20	8
78	42	41	96	0.6	20	2	20	12
79	48	48	120	0.7	30	9	20	18
80	72	69	126	0.9	50	13	10	16
81	106	31	100	0.6	50	<1	20	15
82	72	55	228	1.1	30	11	5	6
83	79	65	280	1.9	40	2	10	14
84	72	77	258	1.3	30	7	5	10
85	144	200	352	1.6	10	22	5	14
86	539	375	1260	3.0	80	12	10	10
87	221	88	300	1.1	30	3	10	20
88	398	41	129	1.5	50	3	20	16
89	234	42	135	1.2	50	<1	10	22
90	233	51	130	1.2	50	4	5	20
91	157	34	158	1.0	5	10	10	22
93	254	38	93	1.6	40	4	15	30
94	185	40	138	1.2	10	9	20	34
95	190	48	98	1.5	5	15	5	24
E 96	229	42	102	1.4	5	13	5	30



Sample	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ni ppm	Ag ppm	Hg ppb	As ppm	Mn ppm	Au ppb	Sb ppm
Soil	-80 F	-80 F	-80 F	-80 F	-80 F	-80 F	-80 F	-80 F	-80 F	-80 F	-80 F
AD 25	2	55	58	348	20	1.6	15	26	1870	10	22
AD 26	1	38	57	113	14	1.4	40	9	840	5	35
AD 27	1	78	46	78	22	0.9	50	2	1220	15	18
AD 28	2	105	50	297	28	1.2	25	2	2700	10	30
AD 29	2	128	56	231	22	1.0	5	9	840	5	22
AD 30	2	157	60	233	22	1.4	30	31	1200	5	44
AD 31	1*	46*	17*	306*	10*	1.3*	50*	7*	760*	10*	22*
AD 32	1*	153*	59*	196*	18*	1.5*	40*	17*	980*	10*	26*
AS 62	1*	21*	39*	202*	12*	0.7*	90*	18*	1880*	10*	10*
AS 63	2	54	61	175	18	1.1	65	26	1130	15	8
AS 64	2	77	112	279	24	1.4	85	19	2100	10	20
AS 65	4	100	64	204	28	1.0	50	9	2380	10	24
AS 66	2	242	25	212	1.2	35	4	940	5	20	
AS 67	2	122	41	570	34	3.8	50	6	2400	10	6
AS 68	1	106	55	295	21	1.0	25	9	1590	10	20
AS 69	1*	30*	16*	267*	10*	0.5*	85*	19*	600*	5*	26*
AS 70	1*	1*	6*	530*	6*	0.4*	60*	18*	480*	5*	24*
AS 71	3	130	79	244	24	1.2	45	2	1310	10	32
AS 72	4	160	72	180	24	1.1	75	7	1100	5	30
AS 73	1*	78*	44*	155*	16*	1.0*	110*	14*	790*	30*	12*
AS 74	1*	26*	12*	75*	10*	1.0*	145*	<1*	300*	15*	3*
AS 75	1*	12*	10*	64*	14*	0.6*	70*	<1*	640*	15*	3*
AS 76	1	46	82	279	30	1.2	25	6	1380	10	28
AS 77	2	22	13	660	10	1.4	nes	<1	660	5	42
AS 78	2*	12*	12*	358*	8*	1.0*	120*	<1*	300*	10*	16*

\* -40 Mesh nes - not enough sample

Sample	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ni ppm	Ag ppm	Hg ppb	As ppm	Mn ppm	Au ppb	Sb ppm	H.M. wt. %	H.M. Z	Orig. wt. %				
Soil	-80 F	-80 F	-80 F	-80 F	-80 F	-80 F	-80 F	-80 F	-80 F	-80 F	-80 F	µm		µm				
6642 D	2	133	612	109	149	1.2	15	14	755	60	140							
-14 Sieve																		
9914 A	3	142	114	112	25	134	34	1.1	1.1	15	14	880	310	10	46	16.76/41.03	68.0/20.52	24.65/
9915AA	1	141	92	92	24	163	36	1.2	0.7	20	23	820	95	15	55	7.62/44.92	28.5/22.46	26.74/
9916 A	1	133	134	104	24	125	40	1.5	1.6	15	33	800	990	1100	55	13.12/44.21	43.0/22.11	30.51/
9917 A	2	136	138	106	27	132	43	1.9	1.0	10	10	760	55	30	45	7.77/39.02	33.5/19.51	23.19/
9918 A	2	123	131	102	22	114	34	1.7	0.9	5	9	650	580	10	42	10.86/30.04	50.5/15.02	21.50/
9919 A	2	110	121	94	19	98	36	1.7	0.7	5	18	560	195	10	40	9.48/32.84	32.0/16.42	29.63/
9920 A	2	110	162	106	23	119	42	2.1	1.0	50	14	700	250	5	28	5.96/22.84	46.0/11.42	12.96/
9921 A	6	118	157	112	25	124	43	2.0	1.1	25	14	720	70	40	36	5.77/32.27	29.5/16.14	19.56/

**LEGEND**

- 40 33 SILT OR SOIL SAMPLE LOCATION and NUMBER
- 9921 A SIEVED HEAVY MINERAL SAMPLE LOCATION and NUMBER
- X-6642 D ORIGINAL SIEVED HEAVY MINERAL SAMPLE LOCATION (1981) and NUMBER

**EXPLORATION**  
KULTA PROJECT  
EVEN-ODD CLAIMS 991047  
GEOCHEMISTRY  
Au, Ag, As, Cu, Hg, Mn, Mo, Ni, Pb, Sb, Zn & %HM  
CARROSS AREA, YUKON TERRITORY

MAPPED BY: J.T.R., M.J.C. REVISION: N.T.S. No. 105 D 2 & D 3  
DATE: 81 08 10/22 ACCT No. 351-25  
DRAWN BY: C.H.K. DATE: 82 04 28 DRWG No. KU-BI-187

SCALE: 1 INCH = 833 FEET