

MAP No.

ASSESSMENT REPORT
PROSPECTUS
CONFIDENTIAL
OPEN FILE



DOCUMENT NO.: 091957
MINING DISTRICT: WHITEHORSE
TYPE OF WORK: GEOCHEMICAL, GEOLOGICAL

115 I 12

REPORT FILED UNDER: Noranda Exploration Co. Ltd.

DATE PERFORMED: September 1986 DATE FILED: October 7, 1987

LOCATION	LAT.	62°39'N	AREA: Hayes and Selkirk Creeks
	LONG.	137°52'W	

CLAIM NAME & NO.
HAY 1-20 YA95601-620

VALUE \$ 4,000.00	
WORK DONE BY:	H. Copland
WORK DONE FOR:	Noranda Exploration Co. Ltd.

REMARKS: #73 SELKIRK

GEOCHEMICAL REPORT

on the

HAY 1-20 CLAIMS

Whitehorse Mining District

N.T.S. 1151/12

Latitude 62°39'N

Longitude 137°52'W

Author: H. Cooland
Owner: Noranda Exploration Company, Limited
(No Personal Liability)
Date: August, 1987



091957

This report has been examined by
the Geological Evaluation Unit
under the (S) Yukon Quartz
Mineral Act, 1962, as
required by work in the amount
of \$ 4000.00.

D. A. Emery

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

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SUMMARY

The HAY 1-20 claims are located within the Dawson Range, 100 km. northwest of Carmacks, Y.T.. The property is an old copper-molybdenum prospect underlain by Yukon Group schists intruded by Cretaceous quartz monzonite-granodiorite. Soil sampling has outlined anomalous values of lead, zinc, silver, and arsenic related to the intrusive. Further soil sampling to determine the gold potential of the property is recommended.

CHAPTER ONE: INTRODUCTION

1-1: INTRODUCTORY STATEMENT

The HAY 1-20 claims lie approximately 100 kilometres northwest of Carmacks, Y.T.. The claims were staked in 1986 to cover an auriferous stream sediment anomaly obtained by the GSC. During 1986 a brief program of soil sampling was carried out.

1-2: LOCATION & ACCESS (See Fig. 1)

The property (NTS 115I/12, Lat. $62^{\circ} 39' N$, Long. $137^{\circ} 52' W$) lies 100 kilometres northwest of Carmacks Y.T., near the confluence of Hayes & Selkirk Creeks. Access is via helicopter from Carmacks. An old cat trail runs northward up Hayes Creek, and westbound from Selkirk Creek. An old airstrip on Hudson Bay Exploration's SAM claims is found 2 km. west of the HAY claims.

1-3: TOPOGRAPHY & VEGETATION

The property lies on the eastern boundaries of the Dawson Range. The area is characterized by low rolling unglaciated mountains (maximum elevation 1350 metres) with deeply incised creek valleys. Elevation on the property varies from a high of 1130 metres in the southwest to a low of 760 metres in the north.

The entire property is treed with a mix of black spruce and poplar. North facing slopes tend to be underlain by permafrost with a thick layer

of moss and stunted spruce. Water is scarce on the claims, a small pond near the southern boundary provides a questionable source of drinking water. Hayes Creek remains the only reliable water source.

1-4: CLAIM DEFINITION (See Fig. 2)

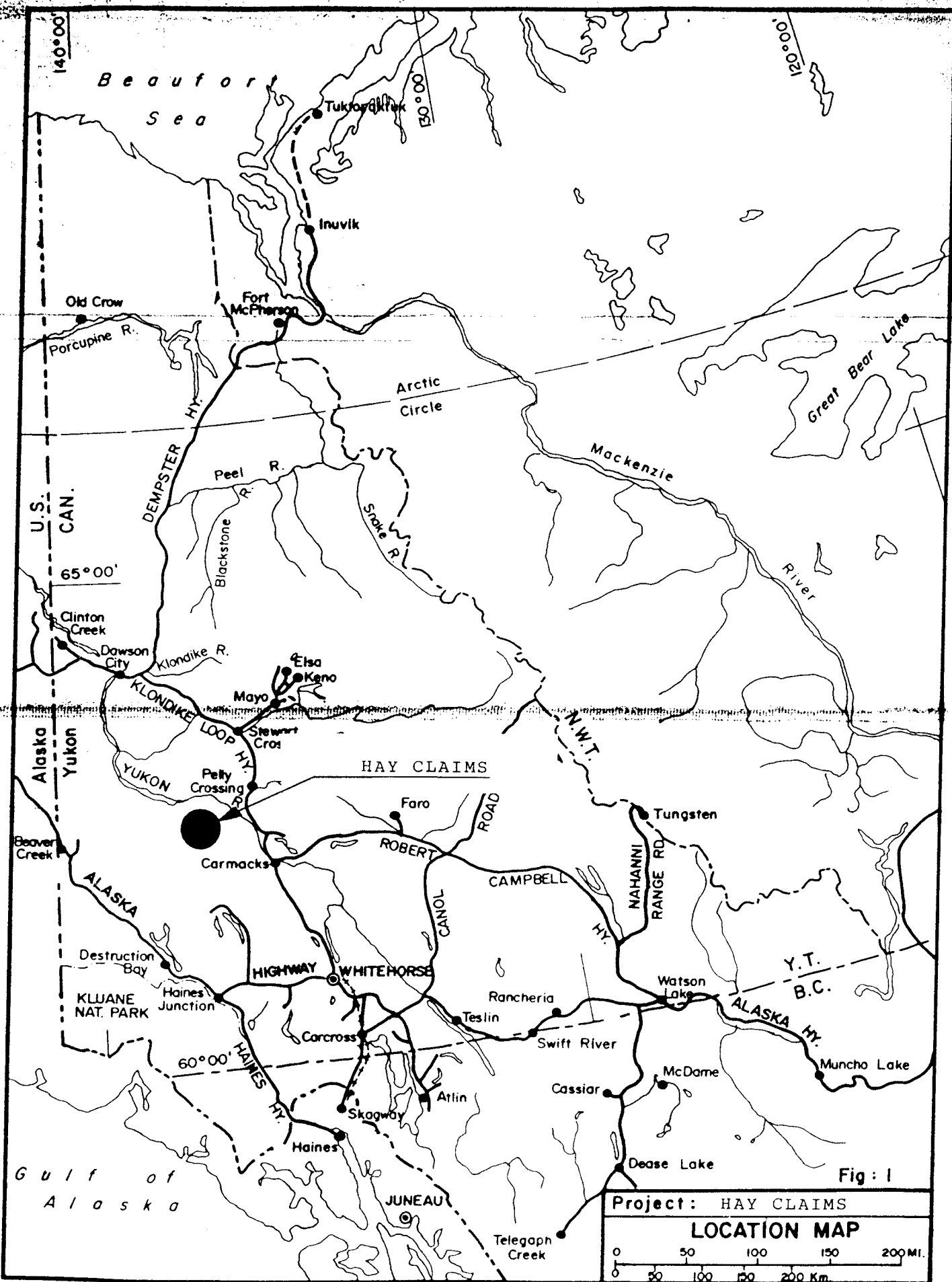
The HAY 1-20 claims (YA95601-95620) were staked on August 6, 1986 and recorded on August 7, 1986. Upon acceptance of this report the claims will be in good standing until August 7, 1989.

1-5: HISTORY

The claims were originally staked in 1969 as the HAYES claims and optioned by Delta International Minerals Ltd. as a Cu-Mo prospect. Delta performed an extensive soil sampling and mapping program. In 1975 the area was restaked as the AS claims by the D.C. Syndicate (Dome & Cominco) who performed geochemical, geological & trenching programs. J. Lerner staked the area as the H claims in 1979 and performed some further trenching.

1-6: 1986 WORK PROGRAM

A two man, three day (Sept. 17-20) flycamp was conducted on the claims in September by H. Copland & C. Hart. At this time reconnaissance soil lines, stream silt sampling, trench resampling, and basic geological mapping were undertaken. A total of 110 soil samples, 2 silts, and 4 rocks were collected.



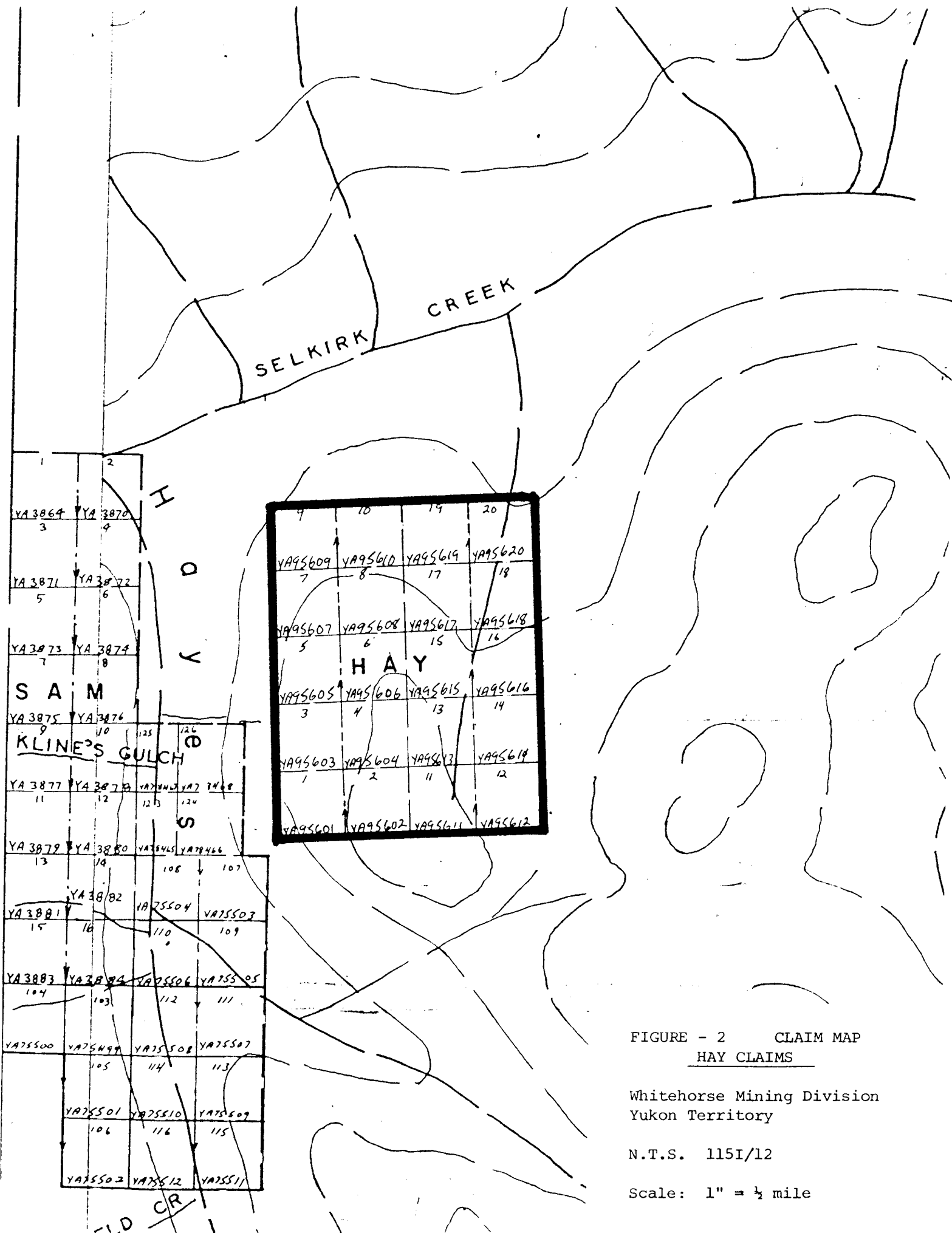


FIGURE - 2 CLAIM MAP
HAY CLAIMS

Whitehorse Mining Division
Yukon Territory

N.T.S. 115I/12

Scale: 1" = 1/2 mile

CHAPTER TWO: GEOLOGY

2-1: REGIONAL GEOLOGY

The claims lie within the Yukon Crystalline Terrain. This area is underlain by a Paleozoic sequence of schists, marble, quartzite and amphibolite. Yukon Group biotite schists are the predominate unit in the claim area. These have been intruded by at least three different events, the oldest being Upper Triassic quartz monzonite (Klotassin Suite), followed by the more extensive Cretaceous quartz monzonite and granodioritic suite. The youngest intrusive units are Tertiary basalts and andesites of the Carmacks Group.

A major northwest trending structure the Big Creek Fault occurs approximately 6 km. south of the claims.

2-2: PROPERTY GEOLOGY

The property is underlain predominately by Yukon Group quartz-mica schists and chlorite schists. A band of northwest trending limestone in the centre of the claim group has been reported. The metasediments are intruded by a Cretaceous (?) quartz-feldspar porphyritic monzonite stock which is typically gossanous on the weathered surface. A younger Tertiary argillically altered quartz-feldspar porphyry occurs to the west of the claims towards Hayes Creek.

TABLE 1TABLE OF FORMATIONSQUATERNARYSelkirk Group:

- basalt, andesite

TERTIARYCarmacks Group:

- andesite, basalt, conglomerate, sandstone.

Mount Nansen Group:

- acid-intermediate tuff, breccia

JURASSIC & CRETACEOUSDezadeash Group:

- argillite, greywacke, volcanic rocks

TANTALUS FM:

- conglomerate, siltstone, arkose, coal

JURASSICLaberde Group:

- greywacke, arkose, conglomerate

UPPER TRIASSICLewes River Group:

- limestone

MESOZOIC (undivided)

- quartz monzonite, granodiorite, foliated granodiorite

PALEOZOIC (undivided)Pelly Gneiss:

- foliated to gneissic granodiorite

CARBONIFEROUS & PERMIANBio Salmon Metamorphic Complex:

- schist, gneiss
-

HADRYNIAN & CAMBRIAN

- schist, gneiss, quartzite

CHAPTER THREE: GEOCHEMISTRY

3-1: PROCEDURE

Reconnaissance soil lines were selected to cover strong Pb - Ag - As anomalies uncovered by Delta International Minerals. A 1400 metre long baseline was laid out near the southern boundary of the claims. Three 700 metre long lines, 450 metres apart were sampled on 50 metre intervals. Five reconnaissance lines with both 50 & 100 metre sampling intervals were put in north of the grid. In addition three old trenches were soil samples on 10 metre intervals. Soils were taken from B-horizon material where possible. Thick vegetation cover underlain by permafrost severely hampered sampling in some areas.

Two silts one as a recheck of GSC sampling, and the other further upstream were collected on the main northerly trending stream of the property. Four rock samples from two trenches were also collected. All samples were sent to Noranda's Vancouver laboratory for preparation and analysis. Analysis for Cu, Pb, Zn, Ag, Au, and As was conducted according to standard geochemical procedures.

3-2: RESULTS (See Appendix 2)

With respect to Gold, results were disappointing. Only sooty low anomalous gold was encountered in soils. The highest being 120 pob occurring at the north end of Trench #1. Moderately anomalous arsenic (200-2100 ppm) and silver (2.0-14.0 ppm) are related to the zone underlain by the intrusion.

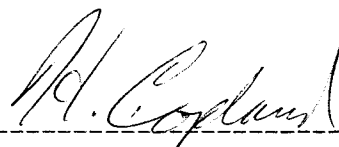
Copper in soils was surprisingly low, all below 100 ppm, except for 330 ppm which came from the same location as the high gold. Lead (100-540 ppm) and zinc (150-480 ppm) followed trends obtained by Delta International and appear related to the intrusive rocks.

Silt samples could not reproduce those obtained by the GSC, nor were they anomalous in any elements. One rock sample R72728 from trench #2 a silicified, pyritiferous quartz monzonite ran 1000 ppm As, and 40 ppb Au.

CHAPTER FOUR: CONCLUSIONS & RECOMMENDATIONS

The HAY claims, an old copper-molybdenum prospect has been rexamined for its gold potential. Results to date have been disappointing. Anomalous values of arsenic, lead and zinc in souls overlying the intrusive rocks have been outlined. It is recommended that further soil sampling be conducted towards the southwest corner of the claims where an altered Tertiary quartz-feldspar porphyry is alleged to cropout.

Respectfully submitted

A handwritten signature in cursive script, appearing to read "H. Copland", is written over a horizontal dashed line.

Hugh Copland

Project Geologist

REFERENCES

D.I.A.N.D.

1981: Yukon Geology & Exploration, 1979-80, DIAND Geology Section Publication, 364 pp.

Dodson, E.D.

1970: Reprot on the Hayes Creek Property of Delta International Minerals Ltd. (NPL); Assessment Report No. 060207

Gutrath, G.

1970: Geological & Geochemical Report on the Hayes Claim Group of Delta International Minerals Ltd.; Assessment Report No. 060206.

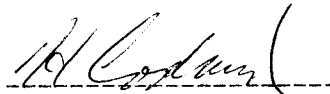
Tempelman-Kluit, D.J.

1974: Geology of Carmacks Area, Y.T.; GSC Open File No. 200.

STATEMENT OF QUALIFICATIONS

I, Hugh Copland of the City of Whitehorse, Yukon, do hereby certify that:

1. I have been an employee of Noranda Exploration Company Limited (NPL) in Whitehorse since May, 1985.
2. I am a graduate of the University of British Columbia with a B.Sc. in Geology and of McMaster University, Hamilton, Ontario with a B.Eng..
3. I am a member of the Yukon Professional Geoscientist Society, and the Geological Association of Canada.
4. I supervised work on the HAY Claims during September 1986.



Hugh Copland
Geologist

STATEMENT OF COSTS

PROJECT: HAY 1-20 Claims

Labour:

8 mandays @ \$100/day	800.00
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Food & Accomodation:

8 mandays @ \$25/day	200.00
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Transportation:

Helicopter (Carmacks-property) 2.5hrs @ \$620/hr.	1550.00
Truck, Fuel & Oil (Whitehorse-Carmacks)	50.00
Rental (Truck)	150.00

Analysis:

112 silt & soil samples (Cu, Pb, Zn, Ag, Au, As) including preparation & shipment: \$10/sample	1120.00
4 rock samples (Cu, Pb, Zn, Ag, Au, As) including preparation & analysis \$12/sample	48.00

Report Preparation:

Author 1 day @ \$100/day	100.00
Typing 4 hrs. @ \$12/hr.	48.00
Drafting 1 day @ \$150/day	150.00

TOTAL	<u>\$4216.00</u>
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APPENDIX 1ROCK SAMPLE DESCRIPTIONS

NORANDA EXPLORATION COMPANY, LIMITED

N.T.S. 115I/12

PROPERTY HAY CLAIMS

DATE Sept. 86

SAMPLE REPORT

[illegible]

APPENDIX 2SOIL SAMPLE GEOCHEMICAL RESULTS

NORANDA VANCOUVER LABORATORY

PROPERTY/LOCATION: HAY 1

CODE :8609-123

Project No. :394

Sheet:1 of 3

Date rec'd:SEP.23

Material :SOIL & SILT

Geol.:C.H.

Date compl:SEP.29

Remarks :

Values in PPM, except where noted.

S.T. No.	SAMPLE No.							PPB
		Cu	Zn	Pb	Ag	As	Au	
2	9550E-51300N SOIL	24	110	42	1.4	430		10
3	51400	36	44	40	1.4	250		10
4	51500	14	44	20	0.8	140		10
5	51550	20	100	34	1.2	120		10
6	51600	22	110	34	1.0	110		10
7	51650	34	120	36	2.2	220		10
8	51700	32	78	12	0.6	52		10
9	51750	22	74	12	0.6	38		10
10	51800	22	62	10	0.6	32		10
11	51850	20	70	10	0.8	24		10
12	51900	20	70	12	0.6	28		10
13	51950	16	38	12	0.8	6		10
14	9550E-52000N	16	70	12	0.6	26		10
15	9960E-50508N	82	180	98	2.2	390		20
16	50525	30	130	140	1.2	720		30
17	50575	330	210	540	14.0	1600		120
18	50600	18	150	24	1.2	86		10
19	9960E-50625N	70	130	110	1.4	2100		100
20	9750E-50900N	20	260	48	1.0	48		10
21	50950	10	70	50	0.6	200		10
22	51000	36	140	36	2.8	170		10
23	51050	24	72	12	0.4	40		10
24	51100	30	100	20	0.4	90		10
25	51150	28	86	20	0.6	56		10
26	51200	20	80	16	0.6	44		10
27	9750E-51250N	32	120	20	0.8	150		10
28	9712E-51300N	30	82	16	0.8	42		10
29	10000E-50000N	30	58	14	0.6	10		10
30	50050	12	44	10	0.4	50		10
31	50100	12	80	20	0.4	82		10
32	50150	32	80	18	0.6	54		10
33	50200	10	44	6	0.2	8		10
34	50250	32	120	18	1.0	80		10
35	50300	14	140	60	0.8	120		10
36	50350	20	70	26	1.2	170		10
37	50400	24	78	28	1.4	220		10
38	50450	22	140	74	1.2	250		10
39	50500	14	120	74	1.0	170		10
40	50550	20	210	46	3.4	96		10
41	50600	62	250	78	2.0	560		10
42	50650	50	100	18	0.6	600		10
43	50700	36	480	520	1.6	1300		10
44	50750	20	54	22	1.0	160		10
45	10000E-50800N	52	30	14	1.2	70		10
46	10226E-50400N	10	84	10	0.2	150		10
47	50425	12	200	120	0.6	670		10
48	10226E-50525N	10	92	30	1.4	160		20
49	10096E-50450N	12	70	20	0.2	70		10

DL CH WR LP

T.T. No.	SAMPLE No.	Cu	Zn	Pb	Ag	As	PPB Au	8609-123 Pg. 2 of 3
50	50475	14	90	22	0.4	140	10	
51	50500	8	170	46	0.8	400	20	
52	10096E-50550N	52	170	34	2.6	1100	100	
53	10226E-50450N	18	150	56	3.0	530	20	
54	50475	10	110	18	0.4	150	10	
55	10226E-50500N	10	60	16	0.4	64	10	
56	10450E-49900N	8	70	12	0.4	8	10	
57	49950	8	84	18	0.6	16	10	
58	50000	10	64	10	0.4	18	10	
59	50050	18	72	16	0.6	20	10	
60	50100	8	56	8	0.4	26	10	
61	50150	16	60	22	0.6	32	10	
62	50200	38	80	18	0.6	60	10	
63	50250	16	90	22	0.8	280	10	
64	50300	12	250	92	1.0	150	10	
65	50350	16	80	24	0.8	76	10	
66	50400	18	54	10	0.8	50	10	
67	50450	18	44	12	2.4	24	10	
68	50500	28	180	230	5.0	260	10	
69	50550	34	260	270	5.2	580	10	
70	50600	62	280	130	2.6	990	10	
71	50650	20	130	70	1.0	440	10	
72	10450E-50700N	56	220	110	5.2	480	10	
73	10900E-49900N	18	60	34	0.8	20	10	
74	49950	22	52	26	1.0	14	10	
75	50000	10	50	8	0.4	1	10	
76	50050	48	92	68	0.8	140	10	
77	50100	80	94	78	1.0	110	10	
78	50150	24	52	10	0.6	12	10	
79	50200	30	32	4	0.4	68	10	
80	50250	20	80	30	1.0	180	10	
81	50300	10	50	18	0.4	34	10	
82	50350	22	70	22	0.8	70	10	
83	50400	22	76	18	0.6	32	10	
84	50450	28	86	16	0.6	28	10	
85	50500	28	84	16	0.6	26	10	
86	50550	28	90	8	0.4	6	10	
87	50600	14	78	10	0.2	8	10	
88	50650	42	70	10	0.6	16	10	
89	10900E-50700N	28	56	10	0.6	12	10	
90	50000N-10800E	10	58	14	0.4	14	10	
91	10700	8	36	12	0.4	4	10	
92	10600	18	58	10	0.2	10	10	
93	10550	10	42	4	0.2	2	10	
94	50000N-10500E	10	50	6	0.4	6	10	
95	R49 - 000	22	68	12	0.4	4	10	
96	100	22	70	16	0.4	28	10	
97	200	18	74	26	0.6	42	10	
98	300	20	70	16	0.6	80	10	
99	400	24	66	20	0.6	66	10	
0	CHECK NL-5	28	68	70	1.4	58	10	
1	500	40	82	18	0.6	54	10	
2	R49 - 600	8	50	14	0.4	14	10	
3	RL50 - 000	14	60	8	0.2	8	10	
4	70	30	58	6	0.4	10	10	
5	200	24	78	18	0.6	22	10	
6	300	22	66	14	0.6	24	10	

T.T. No.	SAMPLE No.	Cu	Zn	Pb	Ag	As	PPB Au	8609-123 Pg. 3 of 3
	400	40	90	14	0.6	120	10	
108	500	18	62	14	0.8	120	10	
109	RL50 - 600	28	170	90	1.6	340	20	
110	RL51 - 100	40	110	86	2.0	58	10	
111	200	68	200	170	3.6	210	40	
112	RL51 - 250	68	150	110	3.4	170	10	
113	RL53 - 060	22	140	70	1.4	360	10	
114	100	42	300	280	2.0	460	10	
115	170	24	310	450	2.2	780	20	
116	210	32	190	150	2.4	450	10	
117	285	26	130	46	8.8	310	10	
118	RL53 - 400	26	36	12	1.0	72	10	
119	72729	20	130	30	0.2	230	10	
120	72730	20	130	26	0.4	160	10	
121	72731 SOIL	16	140	26	0.2	150	20	
122	35976 SILT	8	68	8	0.2	12	10	
123	73732 SILT	16	76	16	0.2	40	10	

573732
16/76/16

GSC 1393 (Silt)
18/200/11
(2.9 Sb)

To Selkirk Creek

Noranda HAY 1-20 Claims

— 52 000N

— 52 000N

— 51 300N

— 51 300N

— 50 900N

— 50 900N

— 50 700N

— 50 400N

— 50 000N — BL

To Hayes Creek

GSC 1394 (Silt)
25/290/88
(170 Sb)

16/70/12
16/38/12
20/70/12
20/70/10
22/62/10
22/74/12
32/78/12
34/120/36
22/110/34
20/100/34
14/44/20
36/44/40
24/110/42
30/82/16

14/60/8
30/58/6
24/78/18
22/66/14
40/90/14
18/62/14
22/170/90
32/120/20
20/80/16
28/86/20
30/100/20
24/72/12
36/140/36
10/70/50
20/260/48

40/110/86
52/30/14
20/54/22
36/480/520
70/130/110
50/100/18
18/150/24
62/250/78
30/130/140
20/210/46
14/120/74
22/140/74
24/78/28
20/70/26
14/140/60
32/120/18
10/44/6
32/80/18
12/80/20
12/44/10
30/58/14

52/30/14
20/54/22
36/480/520
70/130/110
50/100/18
18/150/24
62/250/78
30/130/140
20/210/46
14/120/74
22/140/74
24/78/28
20/70/26
14/140/60
32/120/18
10/44/6
32/80/18
12/80/20
12/44/10
30/58/14

Tr 1b
Tr 1a
R72732
P72729-31
82/180/98

Tr 2
R72728
R72727
R72726
12/70/20

Tr 3
10/92/30
10/80/16
10/110/18
18/150/56
12/200/120
10/84/10

34/260/270
28/180/230
24/310/450
32/190/150
18/44/12
18/54/10
16/80/24
12/250/92
16/90/22
38/80/18
16/60/22
8/56/8
18/72/16

56/220/110
22/140/70
42/300/280
26/130/46
26/36/12
18/50/14
18/74/26
20/70/16
24/66/20
40/82/18

28/56/10
42/70/10
14/78/10
20/90/8
335976-8/68/8
28/84/16
28/86/16
22/76/18
22/70/22
10/50/18
20/80/30
30/32/4
24/52/10
80/94/78
48/92/68

10/64/10
8/84/18
8/70/12
10/50/6
10/42/4
10/58/10
8/34/12
10/58/14

10/50/8
22/52/26
18/60/34

10/50/8
22/52/26
18/60/34

10/50/8
22/52/26
18/60/34

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10/50/8
22/52/26
18/60/34

10/50/8
22/52/26
18/60/34

10/50/8
22/52/26
18/60/34

10/50/8
22/52/26
18/60/34

Soil —▲—
Rock —X—
Silt —●—
Cu / Zn / Pb
(in ppm)

0 50 100 200 400 metres



Fig. 3

REVISED		Hayes Creek (HAY Claims)	
		Soil/Silt Geochem Results (Cu / Zn / Pb)	
PROJ. No. 94		1290	
N.T.S. 1:5000		OCT 86	
DWG. No.		NORANDA EXPLORATION	
		Whitehorse	



Fig. : 4

REVISED		Hayes Creek (HAY Claims)	
		Soil/Silt Geochem Results	
		(Ag/As/Au)	
PROJ. No.	94	SURVEY BY	CH
NTS	1:5 112	DRAWN BY	AI
DWG. No.		DATE	OCT 86
		SCALE	1:5 000
		NORANDA EXPLORATION	
		OFFICE Whitehorse	

1289