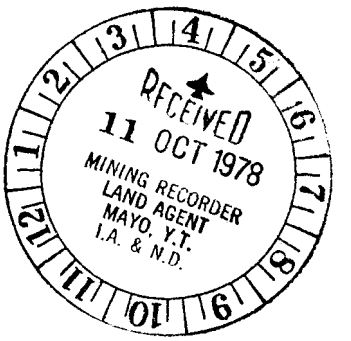
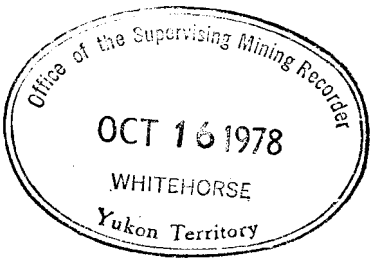
COMINCO LTD.

EXPLORATION
N.T.S. 105/O-1

WESTERN DISTRICT
14 SEPTEMBER 1978





GEOLOGICAL AND GEOCHEMICAL

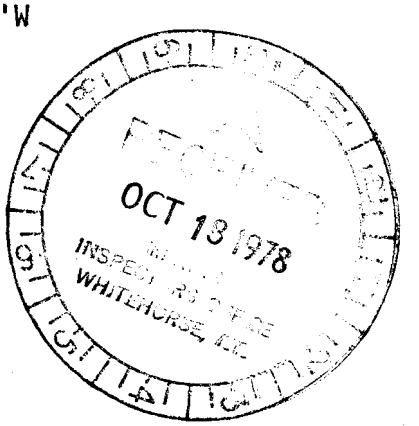
ASSESSMENT REPORT ON THE

NIDD 191 TO 195, 202 TO 211, 214, 216 TO 237

347 TO 349, 353 TO 371 CLAIMS

MACMILLAN PASS AREA, YUKON TERRITORY

Latitude: 63°11'N, Longitude: 130°21'W



June 1, 1978 to August 5, 1978

G. Della Valle
Geologist

090381

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LIST OF ATTACHMENTS

COMINCO LTD.

EXPLORATION
N.T.S. 105/0-1

WESTERN DISTRICT
14 SEPTEMBER 1978

GEOLOGICAL AND GEOCHEMICAL ASSESSMENT REPORT ON THE NIDD CLAIMS

I LIST OF CLAIMS

CLAIM NAME	TAG NUMBER	DATE RECORDED
NIDD 191	YA 7383	October 20/76
NIDD 192	YA 7384	October 20/76
NIDD 193	YA 7385	October 20/76
NIDD 194	YA 7386	October 20/76
NIDD 195	YA 7387	October 20/76
NIDD 202	YA 7392	October 20/76
NIDD 203	YA 7393	October 20/76
NIDD 204	YA 7394	October 20/76
NIDD 205	YA 9395	October 20/76
NIDD 206	YA 7396	October 20/76
NIDD 207	YA 7397	October 20/76
NIDD 208	YA 7398	October 20/76
NIDD 209	YA 7399	October 20/76
NIDD 210	YA 7400	October 20/76
NIDD 211	YA 7401	October 20/76
NIDD 214	YA 7404	October 20/76
NIDD 216	YA 7406	October 20/76
NIDD 217	YA 7407	October 20/76
NIDD 218	YA 7408	October 20/76
NIDD 219	YA 7409	October 20/76
NIDD 220	YA 7410	October 20/76
NIDD 221	YA 7411	October 20/76
NIDD 222	YA 7412	October 20/76
NIDD 223	YA 7413	October 20/76
NIDD 224	YA 7414	October 20/76
NIDD 225	YA 7415	October 20/76
NIDD 226	YA 7416	October 20/76
NIDD 228	YA 7417	October 20/76
NIDD 229	YA 7418	October 20/76
NIDD 230	YA 7419	October 20/76
NIDD 231	YA 7420	October 20/76
NIDD 232	YA 7421	October 20/76
NIDD 233	YA 7422	October 20/76
NIDD 234	YA 7423	October 20/76
NIDD 235	YA 7424	October 20/76
NIDD 236	YA 7425	October 20/76
NIDD 237	YA 7426	October 20/76
NIDD 347	YA 7427	October 20/76
NIDD 348	YA 16356	September 12/77
NIDD 349	YA 16357	September 12/77
NIDD 353	YA 16358	September 12/77
NIDD 354	YA 16359	September 12/77
NIDD 355	YA 16360	September 12/77
NIDD 356	YA 16361	September 12/77
NIDD 357	YA 16366	September 12/77
NIDD 358	YA 16367	September 12/77
NIDD 359	YA 16368	September 12/77
NIDD 360	YA 16369	September 12/77
NIDD 361	YA 16370	September 12/77
NIDD 262	YA 16371	September 12/77
NIDD 363	YA 16372	September 12/77
NIDD 364	YA 16373	September 12/77
NIDD 365	YA 16374	September 12/77
NIDD 366	YA 16375	September 12/77
NIDD 367	YA 16377	September 12/77
NIDD 368	YA 16378	September 12/77

CLAIM NAME	TAG NUMBER	DATE RECORDED
NIDD 369	YA 16379	September 22/77
NIDD 370	YA 16380	September 22/77
NIDD 371	YA 16381	September 22/77

II PERSONNEL EMPLOYED

The basic camp consisted of a two-man party: G. Della Valle, geologist, and I. Nicholson, field assistant. A.B. Mawer, senior geologist, supervised the project.

Personnel employed by Cominco Ltd. during the course of this study:

G. Della Valle:	June 1 - August 5, 1978	409 Granville St.
I. Nicholson :	June 1 - August 5, 1978	409 Granville St.
A.B. Mawer :	June 28 - July 1 and August 2-5, 1978	409 Granville St.

III INTRODUCTION

This Nidd claim group, consisting of 261 mineral claims, was staked over the period from September 1976 to August 1977 to cover a sequence of upper Ordovician to Mississippian sedimentary rocks, which hosts, to the east of the claim group, the Jason and Tom deposits, in the MacMillan Pass area.

The 1978 program was a follow-up of the 1977 program consisting of geological mapping and geochemical sampling. The work was focused into the eastern part of the Nidd claim and consisted of detailed mapping and prospecting, rock and soil geochemical sampling.

IV LOCATION AND ACCESS

The Nidd claim group is located in the Selwyn Mountains, Yukon Territory, some five kilometers west of the MacMillan Pass airstrip. It extends over about 20 kilometers in an east-west valley connecting to the west to the Hess River valley.

The property lies in the Mayo Mining District with coordinates: 63°11'N and 130°21'W, on N.T.S. sheet 105/O-1 and adjoins the Jason group on ~~the~~ its west side.

The claim group is accessible by helicopter from MacMillan Pass. MacMillan Pass itself is connected to Ross River some 170 kilometers to the southwest, by the Canol Road, and is also accessible by plane.

V GEOLOGY

A. Regional Geology

The MacMillan Pass area lies along the northeastern margin of the Selwyn Basin and is underlain by a sequence of Cambrian to Mississippian clastic rocks. This series was deposited in a shelf environment and grades to the east into carbonate rocks corresponding to a platform environment and the southwest into cherts of a deeper basin or distal environment.

Three transgressive cycles resulted in the deposition of three major formations: the Road River formation of Cambrian to lower Devonian age, the Canol formation of middle-upper Devonian age and the Imperial formation of Devonian to Mississippian age. These rocks are intruded by several granitic stocks of Cretaceous age, commonly surrounded by their metamorphic rocks aureole (rhyolite dykes are also common). The Road River formation consists

essentially of black carbonaceous shales and siltstones, with cherty and calcareous horizons. Intensive deformation resulted in tight isoclinal folding, particularly well marked in this formation. The Canol formation consists of a succession of turbidite rocks which range in grain size from a shale to a pebble conglomerate. Fine laminated rocks are also characteristic of turbidite deposition which occured during crustal instability. The Imperial formation consists of greywacke, grey sandstone and quartzite. All three formations have been deformed in large open to isoclinal folds of generally east-west trending direction.

B. Local Geology - Reference Plate 3

The geology in the eastern part of the Nidd claim groups is not very well exposed as all the valley bottom is covered by a dense vegetation. Geological mapping is thus restricted to the stream cuts, and to the ridges of the surrounding mountains.

The sequence of rocks mapped belong to the Road River formation, Canol formation and Imperial formation. From the base upwards, the following units were recognized:

Road River Formation

Units

Unit 1: This unit is upper Ordovician to lower Silurian and consists of fine bedded silvery black shale, interbedded with medium bedded silty dolostone and dolomitic mudstone. White weathering colour results from gypsium and phosphatic surface deposit.

Unit 2: This unit is lower to upper Silurian and has a characteristic dark blue to brown weathering colour. It consists of black silvery weathering micaceous shale with graptolite fossils, dark pyritic and siliceous mudstone and cherty siltstone. Several orange-brown dolomitic limestones in the order of one meter thick are intercalated in this unit, and are commonly brecciated with calcite quartz veins and geodes.

Unit 3: This unit is upper Silurian to lower Devonian and consists of fine to medium bedded black cherty mudstone, black carbonaceous mudstone locally very graphitic, and silvery weathering black shale with graptolite fossils. Pyritic nodules and euhedral pyrite are very common. Intercalated brown dolomitic limestone is also present. To the top of this unit, a medium bedded dark grey crinoid limestone occurs to the north of the property.

Canol Formation

This formation is middle to upper Devonian.

Unit 4: This unit consists of fine laminated grey white siltstone and black mudstone, with lenses of siltstone or chert conglomerate and chloritic siliceous siltstone. Disseminated pyrite occurs throughout this unit and gives a brown weathering alteration surface.

Unit 5: This unit consists of a dark green to black pebble conglomerate formed of black, brown or grey subrounded chert clasts with occasional angular shale clasts in a cherty matrix, locally hematitic. In the lower part of the unit, a chert granule and a grit horizon are fairly consistent, in contact with Unit 4

Unit 6: This units is very similar to Unit 4 and is formed of alternate millimetric laminaes of dark grey to black mudstone and grey white siltstone. Euhedral pyrite concentrate on certain bedding planes.

Unit 7: This unit consists of very finely bedded black to grey white silvery weathering shale and medium bedded carbonaceous mudstone. No baritic horizons or lenses were found in this unit in the limit of the working area.

Unit 8: Black carbonaceous siltstone in part pyritic.

Imperial Formation - Unit 9

This formation is Devonian to Mississippian in age. Only the lower part of the Imperial formation was observed on the claim area. It consists of medium to thick bedded greywacke, sandstone and quartzite and appears to be conformably overlying the Canol formation.

Intrusives - Rhyolite dykes. - Unit 10

C. Structural Geology

The general structural style visible in the area involving the Canol formation and Imperial formations on the mountain slopes consist of a succession of large scale upright to overturned open fold with east-west trending axial traces and steeply dipping axial planes.

In the Road River formation, outcropping in the stream cuts in the valley bottom, small scale folding is very intensive and consists of tight isoclinal folds trending also east-west and with nearly vertical axial planes.

An important fault is assumed on the south side of the main creek indicated by discordant contact between Unit 1 with Unit 6 and Unit 7. Small scale fault and shear zones are common in the Road River formation.

VI MINERALIZATION

In the tributary creek running from the north slope of the main valley, two occurrences of mineralization were located in Unit 4 and one in the overlying grit horizon at the base of Unit 5 (see map #3).

In Unit 4, the two occurrences are very similar, located 300 meters apart, along the creek, without any outcrop in the intermediate zone. The mineralization consists of veinlets of sphalerite and pyrite, one to two millimeters thick over a few centimeters long, in the chloritic siliceous siltstone lenses in the black mudstone. Chip sampling over eight meters indicates: 0.4 oz/t Ag, 0.02% Pb, 0.33% Zn.

In the grit horizon, a poorly outcropping zone, about 30 meters wide along the stream bank, shows a black to orange brown weathering colour, due to manganese and iron surface oxidation. The rock itself is highly altered and contains abundant manganiferous siderite with veins and disseminations of galena, sphalerite and minor chalcopyrite. A grab sample of rubble consisting of corase vein material assays 1.48 oz/t Ag, 9.00% Pb, 0.28% Zn. Chip sampling on outcrop over ten meters shows average grades of 0.04 oz/t Ag, 0.02% Pb, 0.06% Zn.

In Unit 1, on the south side of the main creek, local hydrozincite and smithsonite were found in black shale in a shear zone. Chip sampling over twenty centimeters indicates: 0.17 oz/t Ag, 0.03% Pb and 7.70% Zn.

VII GEOCHEMISTRY

A. Introduction

Two hundred and seventy-nine soil samples were taken on two grids. One grid is located in the south side of the main valley and the other grid on the north side. On the northern grid, eleven cross cut lines were turned off at right angles from the 1977 base line at two hundred meter intervals. A total of eight kilometers of lines were prepared. On the southern grid,

the continuation of the base line was marked by flagging for 1.6 kilometers on a bearing of 125° east and nine perpendicular lines, two hundred meters apart, were also flagged.

All the samples were taken at a fifty meter intervals and analysed by Cominco laboratories for lead, zinc, silver, barium and mercury. The soil samples were oven dried and sieved to minus 80 mesh before being digested in 20% hot nitric acid. Analysis for Pb, Zn and Ag was by atomic absorption, and lead and silver values were background corrected. Analysis for Ba was by Xray fluorescence and analysis for Hg was by flameless absorption using nitric hydrochlorite acid attack. Analysis was supervised by F.C. Kiss, senior chemist for Cominco Exploration.

B. Interpretation

Threshold was determined using A.J. Sinclair method "Application of probability graph in Mineral Exploration." Possibly anomalous and anomalous values were determined as shown in the following diagram.

	Possibly Anomalous	Anomalous
Pb	50 - 80 ppm	> 80 ppm
Zn	750 - 1000 ppm	> 1000 ppm
Ag		> 1.5 ppm
Ba		> 0.36%
Hg		> 200 ppm

In the south eastern grid, only three isolated samples have anomalous values in lead and two samples are anomalous in silver. This suggests very erratic disseminated mineralization.

In the north-western grid, a definite east-west trend is well defined by lead possibly anomalous values extending over fourteen hundred meters. This zone contains four lead anomalous areas with the largest zone, two hundred meters by two hundred meters with very high values up to 549 ppm lead. In the eastern part of this trend, a four hundred meter zinc anomaly contains also high values up to 3.45% Zn. A four hundred meter by three hundred meter mercury anomaly overlaps the lead-zinc anomalies and extends another two hundred meters eastward. Several one or two point mercury anomalies are widespread throughout the anomalous trend, and consistantly accompanies the lead anomaly. Two isolated silver anomalous values can also be related to lead anomalous values. No barium anomaly was delineated, however, the highest barium values also fall in the general anomalous trend.

This geochemical anomalous area roughly 1400 meters long by an average of 250 meters wide and is interpreted to be related to a possible underlying mineralized zone.

VIII CONCLUSIONS AND RECOMMENDATIONS

The geological mapping on the eastern portion of the Nidd claims indicates that the stratigraphy of the Tom and Jason deposits in the MacMillan Pass area is represented on the eastern part of the Nidd claim group. And that a 1400 meter by 250 meter geochemical anomaly overlies the favourable stratigraphy.

The coincidence of all these indications of mineralization indicate that further investigation is warranted.

IV REFERENCES

1976: Blusson S.L: Selwyn Basin, Yukon and District of Mackenzie. G.S.C. Paper 761A pp. 131-132.

1976: John S. Brock: Selwyn - Mackenzie Zinc-Lead Province Yukon and Northwest Territories. Western Miner March 1976 pp. 9-14.

1977: D.T. Tempelman Kluit: Stratigraphy and Structural Relation Between the Selwyn Basin, Pelly Cassiar Platform and Yukon Crystalline Terrane in the Pelly Mountains, Yukon. G.S.C. Paper, 771A, pp. 223-227.

1976: R.C. Carne: Geology of the Tom and Jason Zinc-Lead-Barite Deposit, MacMillan Pass, Yukon Territory. Department of Indian and Northern Affairs 1976.

1976: A.J. Sinclar: "Application of Probability Graph in Mineral Exploration." Special volume no. 4. The Association of Exploration Geochemists.

Report by: G. Della Valle
G. Della Valle,
Geologist

Approved by: A.B. Mawer
A.B. Mawer,
Senior Geologist

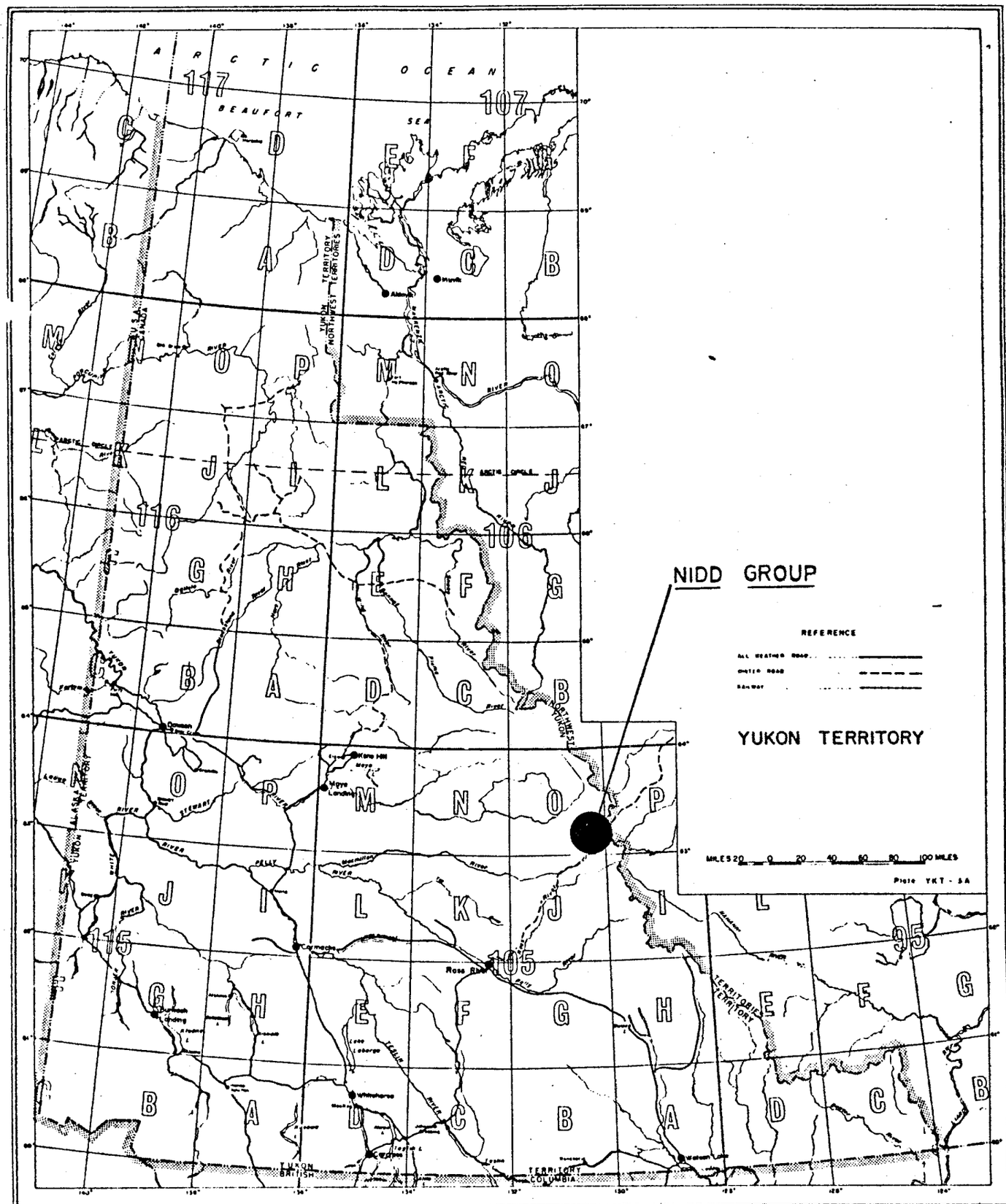
Approved for
Release by: D.W. Kindle for G. Harden
G. Harden,
Manager, Exploration
Western District

GDV:gk

Attachments:

Affidavit
Statement of Expenditures
Statement of Qualifications

Plate 1	Location Map	Scale 1"=80 miles
Plate 2	Location Map	Scale 1"= 8 miles
Plate 3	Geology Map	Scale 1:10,000
Plate 4	Lead Geochemistry	Scale 1:10,000
Plate 5	Zinc Geochemistry	Scale 1:10,000
Plate 6	Silver Geochemistry	Scale 1:10,000
Plate 7	Barium Geochemistry	Scale 1:10,000
Plate 8	Mercury Geochemistry	Scale 1:10,000
Plate 9	Claim Maps	Scale 1:10,000



Drawn by: G DV		Traced by:	
Revised by	Date	Revised by	Date

NIDD GROUP

LOCATION MAP

Scale: 1" = 80 miles | Date: Sep 1978 | Plate: 1

Drawn by: G.DV		Traced by:	
Revised by	Date	Revised by	Date

LOCATION MAP

NIDD and KOBUK CLAIMS (shows Tom & Jason deposits)

Scale: 1" = 8miles | Date: Sep 1978 | Plate 2

NIDD CLAIM

JASON CLAIM

LEGEND

Cretaceous	10		INTRUSIVES Quartz Monzonite, Granodiorite and related Rhyolitic dykes
Upper Devonian and Mississippian		IMPERIAL FORMATION	
	9		Graywackes, gritstone, sandstone
		CANOL FORMATION	
Middle Upper Devonian	8	UNIT 8	Black carbonaceous siltstone in part pyrite
	7	UNIT 7	Carbonaceous shale cherty siltstone
	6	UNIT 6	Finely laminated siltstone & mudstone
	5	UNIT 5	Chert pebble cong. to gritstone
	4	UNIT 4	Finely laminated siltstone & mudstone

ROAD RIVER FORMATION

Upper Silurian Lower Devonian	3	UNIT 3 Cherty or carbonaceous mudstone. Limestone
Lower Upper Silurian	2	UNIT 2 Brown mudstone & siltstone dolomitic limestone
Upper Ordovician Lower Silurian	1	UNIT 1 Black carbonaceous mudstone and siltstone

- Syncline
- Anticline
- Overturned syncline
- Fault definite
- " assumed
- Bedding strike and dip
- Mineralization
- Camp
- Claims in contention

METERS

0 50 100 200 300 400 500 750 1000

SCALE

1:10,000

N

NIDD CLAIM (East Portion)

GEOLOGY

Drawn by: G DV	Traced by:		
Revised by	Date	Revised by	Date

Scale: 1:10 000 Date: Sep 1978 Plate: 3

NGI - 119 - C

FORM 210-0650

NIDD CLAIM GROUP

JASON CLAIM GROUP

LEGEND

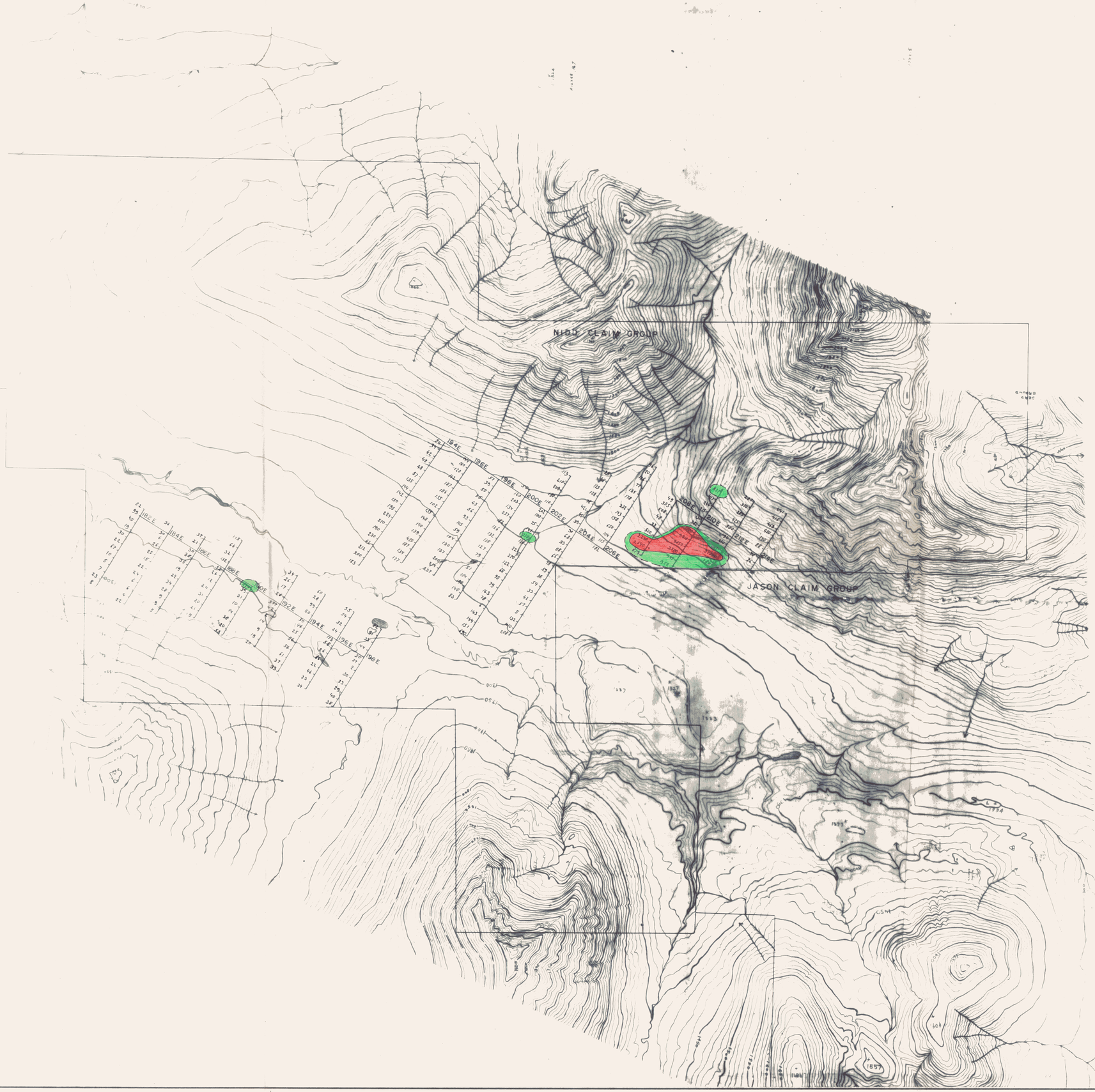
50 - 80 ppm Lead - Possibly anomalous

≥ 80 ppm Lead - Anomalous

NIDD CLAIMS				105 O/12
Drawn by: G DV		Traced by:		Lead Geochemistry
Revised by	Date	Revised by	Date	
				Scale: 1:10,000 Date: SEPT. 1978 Plate: 4

NCI - 118 - C.L.

FORM 210 0870



LEGEND

750 – 1000 ppm Zinc – Possibly anomalous

≥ 1000 ppm Zinc – Anomalous

NIDD CLAIMS				105 O/1 B 2
Drawn by: G DV		Traced by:		Zinc Geochemistry
Revised by	Date	Revised by	Date	
				Scale: 1:10,000 Date: SEPT. 1978 Plate: 5

NCI - 118 - C.L.

NIDD CLAIM GROUP

JASON CLAIM GROUP

N

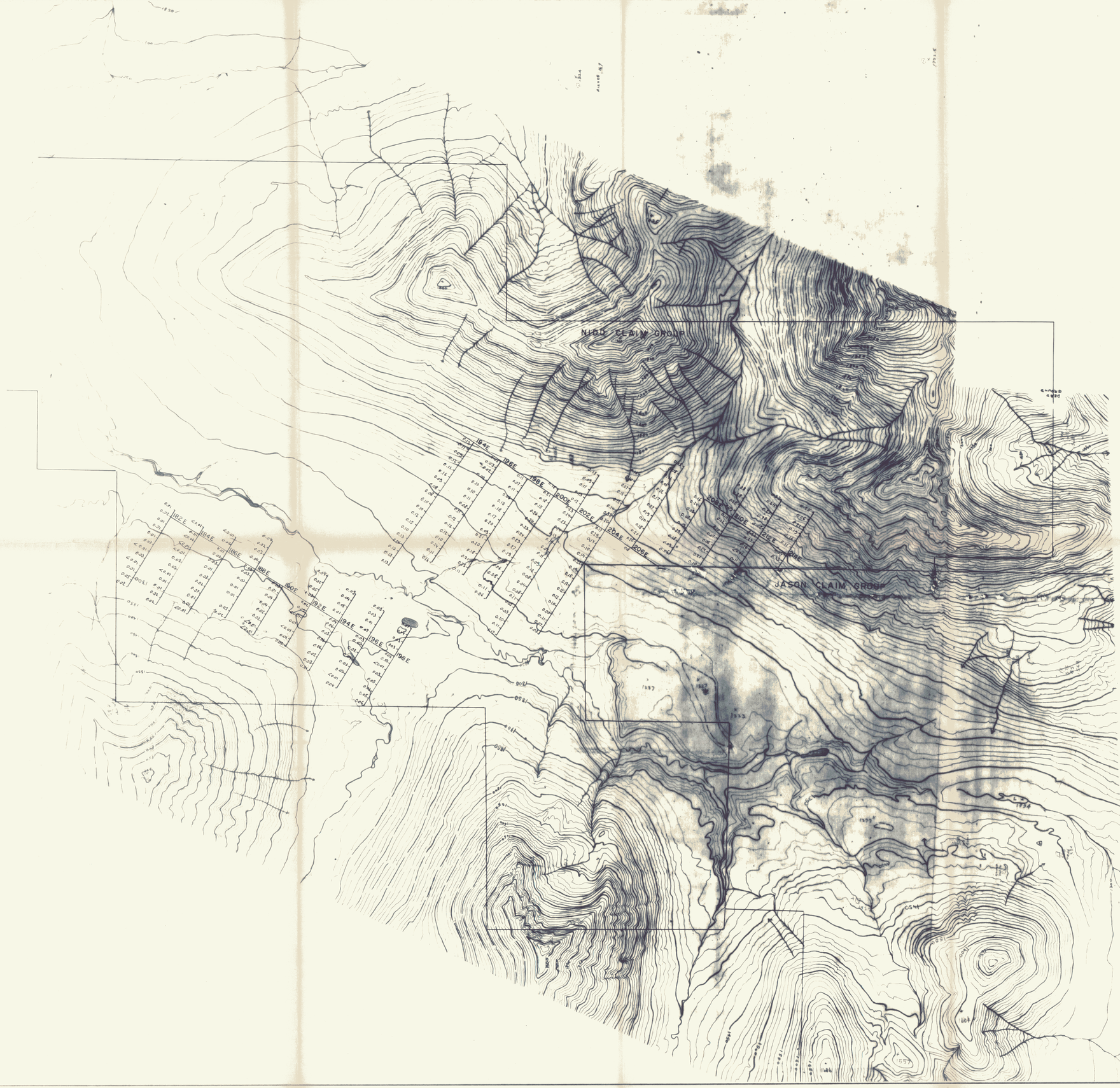
LEGEND

≥ 1.5 ppm Silver – Anomalous

NIDD CLAIMS (WEST SHEET)					105 O/1&2
Drawn by: G D V		Traced by:		Silver Geochemistry	
Revised by	Date	Revised by	Date		
				Scale: 1:10,000	Date: SEPT 1978	Plate: 6

NCI - 118 - C.L.

FORM 212 0670



N

SCALE

0 200 400 600 800 1000 METRES

LEGEND

≥.36% Barium - Anomalous

NIDD CLAIMS

105 O/8 2

Drawn by: G DV	Traced by:			
Revised by	Date	Revised by	Date	

Barium Geochemistry

Scale: 1:10,000 | Date: SEPT. 1978 | Plate: 7

FORM 210-0410

NIDD CLAIM GROUP

JASON CLAIM GROUP

182E 184E 186E 188E 190E 192E 194E 196E 198E 200E 202E 204E 206E 208E 210E 212E 214E

SCALE

0 200 400 600 800 1000 METRES

LEGEND

≥ 200 ppm Hg - Anomalous

NIDD CLAIMS		105O/8E2
Drawn by: G DV	Traced by:	Mercury Geochemistry
Revised by: Date	Revised by: Date	
Scale: 1:10,000	Date: SEPT. 78	Plate: 8

NCI - 118 - C.L.

FORM 210 9670

174 YA7368	183 YA7375	182 YA7374	199 YA7399	198 YA7388	212 YA7402
176 YA7370	185 YA7377	184 YA7376	201 YA7391	200 YA7390	213 YA7403
178 YA7372	187 YA7379	186 YA7378	203 YA7393	202 YA7392	215 YA7405
179 YA7371	189 YA7381	188 YA7380	205 YA7395	204 YA7394	217 YA7407
	191 YA7383	190 YA7382	207 YA7397	206 YA7396	219 YA7409
	193 YA7385	192 YA7384	209 YA7399	208 YA7398	349 YA16358
	195 YA7387	194 YA7386	211 YA7401	210 YA7400	356 YA16366
					357 YA16367
					366 YA16376
					367 YA16377

214 YA7404	221 YA7411	220 YA7410	227 YA7416	226 YA7419	233 YA7423	232 YA7422
216 YA7406	223 YA7413	222 YA7412	229 YA7418	228 YA7417	235 YA7425	234 YA7424
218 YA7408	225 YA7415	224 YA7414	231 YA7421	230 YA7420	237 YA7427	236 YA7426
347 YA16356	348 YA16357	353 YA16359	354 YA16360	355 YA16361		
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358 YA16378	361 YA16371	362 YA16372	365 YA16375			
368 YA16378	370 YA16380					
369 YA16379	371 YA16381					

JASON CLAIM GROUP

CLAIMS IN CONTENTION

SAID TO ADJOIN

SCALE

0 50 100 200 300 400 500 750 1000

METERS

NIDD CLAIMS (East Portion) NTS 105 O/1

Drawn by: D. M. C.	Traced by:
Revised by / Date	Revised by / Date

CLAIM MAP

Scale: 1:10,000 | Date: SEPT. 1978 | Plate: 9

NCI - 117 - C.L.

FORM 210 0660