

**094276**

**NORANDA INC.**

**REPORT ON 2001 DIAMOND DRILLING  
CAM CLAIMS 1-48  
GRANT # YC02682 – YC02729  
CAMERON PROPERTY  
YUKON**



**Mayo Mining District  
N.T.S. 106-D-2 SE & 106-D-3 SW  
Latitude: 64°08'N Longitude: 135°00'W**

**Work Period August 11 – 20, 2001**

**Report by:  
AL SMITH  
SR. PROJECT GEOLOGIST**

**Work completed by:  
DAVID KING  
PROJECT GEOLOGIST**

**PROJECT NO. 2520  
THUNDER BAY, ONTARIO  
JANUARY 2002.**

This report has been examined by  
the Geological Evaluation Unit  
under Section 53 (4) Yukon Quartz  
Mining Act and is allowed as  
representation work in the amount  
of \$ 24,000.

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

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YUKON ENERGY, MINES  
& RESOURCES LIBRARY  
P.O. BOX 2703  
WHITEHORSE, YUKON Y1A 2C6

## SUMMARY

A short 3 hole (296.6m) diamond drill program was completed on the Cameron property during August 11-20, 2001. The purpose of the drill program was to test the continuity of Cameron showing, a Zn-Pb-Ag sulphide zone interpreted to be a carbonate replacement zone in brecciated limestone.

Diamond drill hole CA01-01 targeted the mineralized breccia at the -40m vertical level, mid-way between and below previous drill holes 74-4 and 74-5 (20.4% Zn, 36.25 g/t Ag over 13.4m and 26.5% Zn, 286.6 g/t Ag over 6.1m, respectively). No significant mineralisation or limestone breccia was intersected in the hole.

Hole CA01-02A was collared 150m southwest of CA01-01, and 45m southwest of hole 74-3, along the mineralized trend, at the -75m vertical level. The hole was stopped at 58.5m due to loss of water return and intensely fractured core, and re-collared at a steeper angle from the same set-up, as CA01-02.

An interval of graphitic phyllite between 64.8 – 69.4m hosted minor galena - sphalerite veinlets between 1-5mm in thickness, in addition to ankerite - siderite veinlets. Anomalous Pb, Zn and Ag values were returned. The mineralized Cameron zone fault breccia was intersected between 74.7 – 77.9 m down hole. This interval comprised limestone and shale fragments in a siderite/ankerite matrix. Minor stringer to disseminated sphalerite was present locally within the breccia, with the highest Zn concentration occurring in a 40cm interval from 75.1-75.5m (approx. 7-10% sphalerite). A 0.8m interval of this breccia returned 3.0% Zn with anomalous Pb and Ag.

The results of drill hole CA01-02 (narrowing of Zn mineralization with increasing depth) limit the potential for economic mineralisation in the southwest direction. This hole confirms a southeast dip of between 60° - 70° for the mineralized structure that persists throughout the length of the mineralized zone. The lack of mineralization in drill hole CA01-01 and in previous hole 74-6 (drilled vertically) essentially cuts off the zone strike in the northeast direction. Hole CA01-01 was drilled down-dip, however, appears to have undercut the shallow mineralization outlined in previous drill holes 74-4 and 74-5.

Based on the results of the drill program, no further work is recommended for this property at this time.

## 1.0 INTRODUCTION

A three-hole (296.6m) diamond drilling program was completed on the Cameron Property between August 11-20<sup>th</sup>, 2001. The purpose of the program was to test the depth and strike extent of a breccia-hosted Ag – Pb – Zn showing. Mineralization comprises coarse black sphalerite, ankerite-siderite and quartz, with lesser galena and minor chalcopyrite.

Trenching and shallow drilling by Bullion Mountain Mining Ltd. in 1973-74 outlined the zone of sulphide and carbonate replacement in brecciated limestone. Their best drill intersection returned assays up to 20.4% Zn, 0.57% Pb and 36.25 g/T Ag / 13.4m (DDH 74-4).

Previous historic (1974) drill holes were completed over shallow intervals, intersecting above approximately the -50m vertical depth. The depth extent of mineralization was not tested and the true extent of the mineralization remained unknown.

## 2.0 LOCATION AND ACCESS

The Cameron Property is located at latitude 64° 08' N and longitude 135° 00' W on NTS Map Sheets 106-D-2 SE and 106-D-3 SW, approximately 65km northeast of Mayo, YT (Figure 1). The property lies approximately 30km north of the past-producing United Keno Hill Mine and 2 km south of the McQuesten Lake Road / trail which extends northward from Elsa.

Mobilization of drill equipment and supplies was completed by truck to a staging area on the McQuesten Road and then by helicopter to the property.

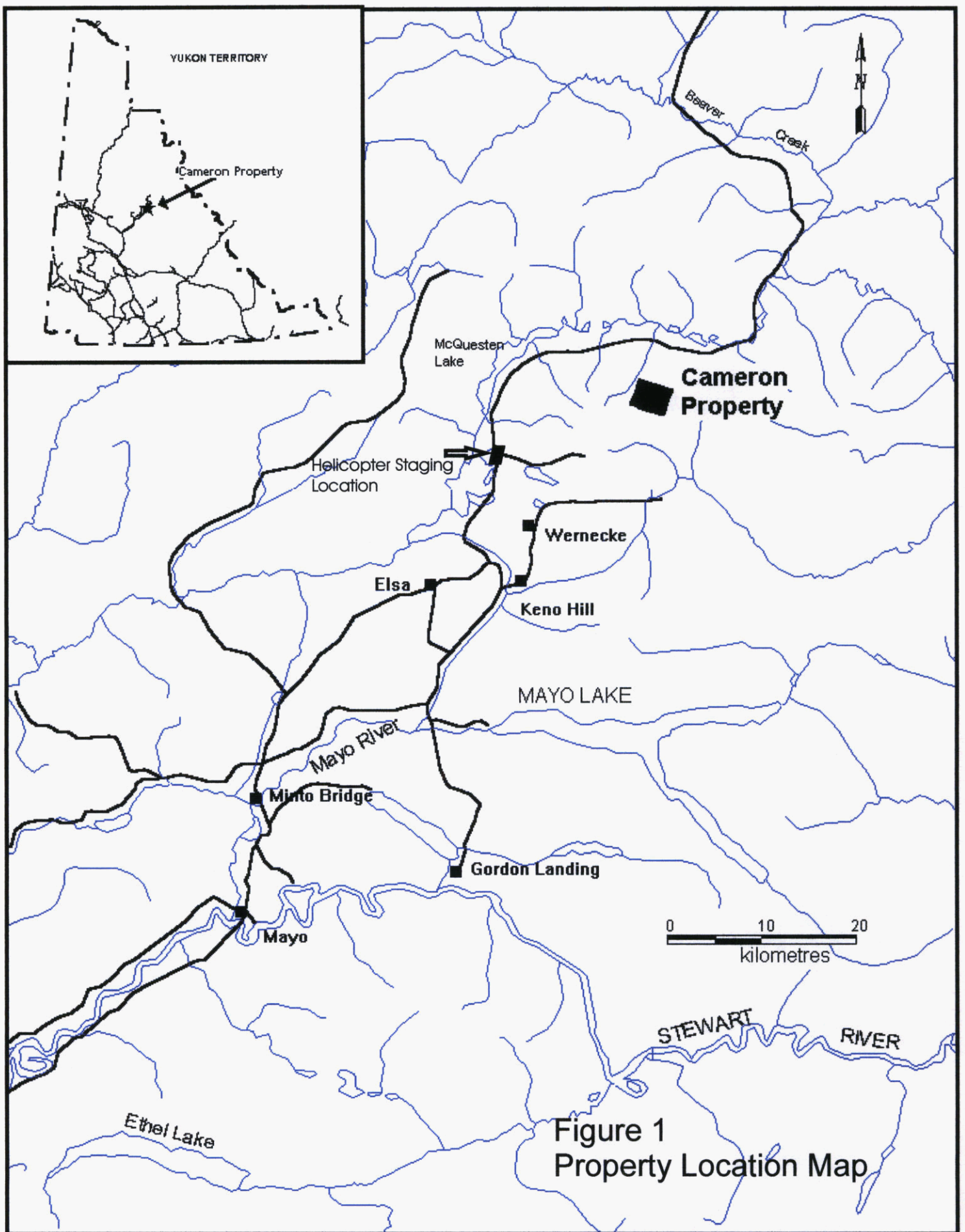
## 3.0 PROPERTY DESCRIPTION

The Cameron Lake property comprises claims CAM 1-48 which were staked by Tanana Exploration Inc. in February, 2001. Ownership was subsequently transferred to Noranda Inc. under the terms of an Option Agreement. The claims are currently 100% owned by Noranda Inc.

A summary of the claim holdings is given in Table 1 and a claim sketch is provided in Figure 2.

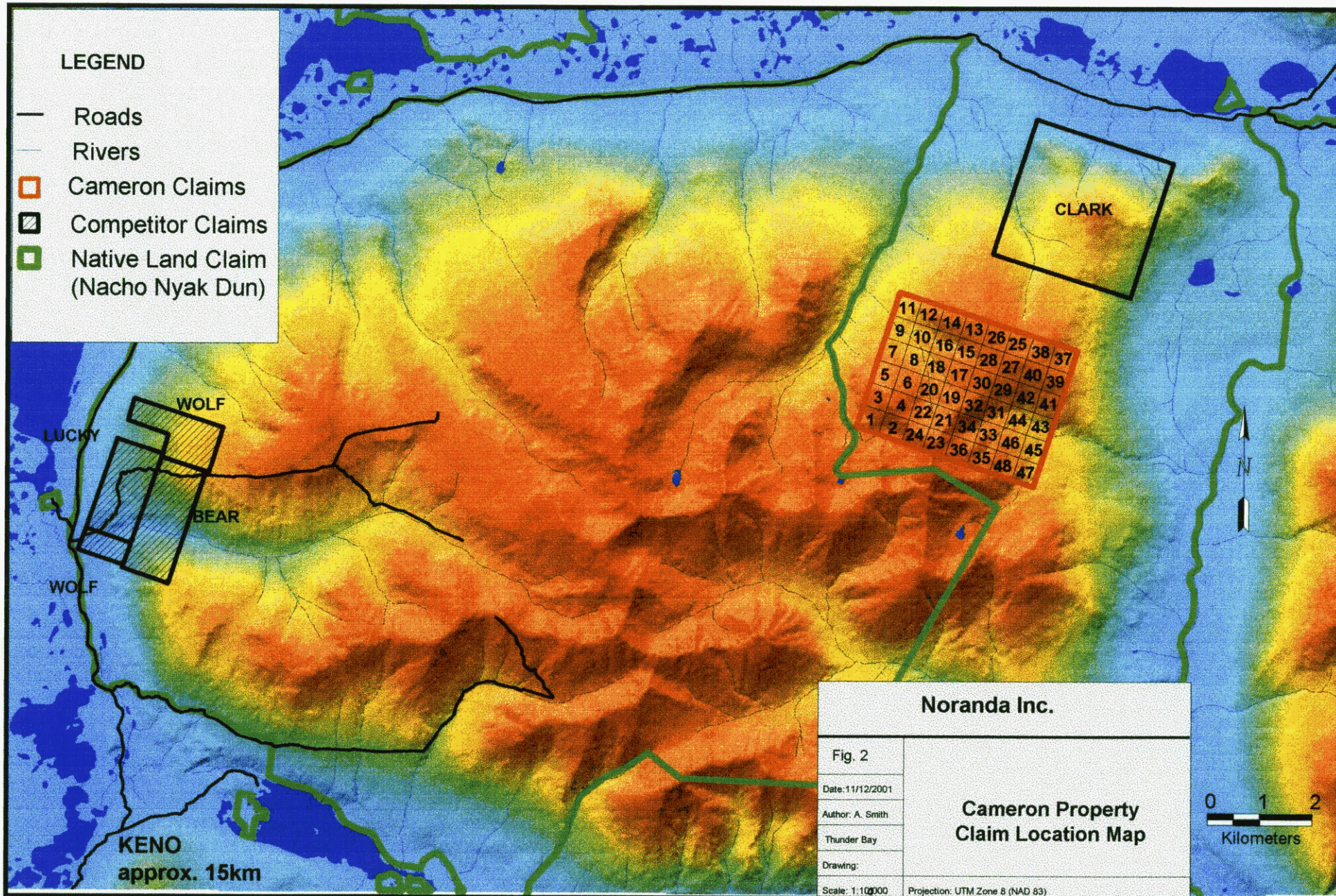
Table 1: Claim Holdings

CLAIM NUMBER	GRANT #	EXPIRY DATE	OWNER
Cam 1-48	YC02682 – YC02729	2002/02/07	Noranda Inc.



**LEGEND**

- Roads
- Rivers
- Cameron Claims
- ▨ Competitor Claims
- ◻ Native Land Claim (Nacho Nyak Dun)



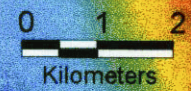
Noranda Inc.

Fig. 2

Date: 11/12/2001  
 Author: A. Smith  
 Thunder Bay  
 Drawing:

**Cameron Property Claim Location Map**

Scale: 1:100000 Projection: UTM Zone 8 (NAD 83)



KENO  
 approx. 15km

#### 4.0 PREVIOUS WORK

The following outlines the history of the Cameron Property in central Yukon as accurately as possible given the lack of information in the public domain. The information is gleaned from assessment files directly related to the property, reports of work completed on nearby adjoining ground that make references to the Cameron, a George Cross newsletter from 1974, and GSC Memoir papers.

- 1918-1920: Original discovery of Ag-Pb-Zn mineralization on the property, 13m of adit and crosscut completed, small dump of galena-rich material left near adit entrance.
- 1921: GSC field visit indicates the adit had already caved-in. The mineralized discovery outcrop was 50ft (~15m) wide and 440ft (134m) long. Scattered patches of mineralization indicated the zone continued along strike. Galena-rich material assayed 76 oz/ t Ag and 56.8% Pb. The samples were apparently not analyzed for zinc. The GSC records indicate the showing has much lower Ag:Pb ratio than typical 3-4oz/t Ag:1% Pb associated with Keno Hill silver veins.
- 1947: Property remained dormant until re-discovery by J.B. Gordon.
- 1948: Gordon transfers claims to Hoyle Mining Company Ltd. Yukon Minfile suggests a second adit may have been driven during this year and also subsequently caved-in but this is the only reference to it and the issue remains unclear.
- 1949-52: Government records show Hoyle makes cash-in-lieu payments to retain property.
- 1952-1956: Hoyle transfers claims to Beaver River Silver-Lead Mines Ltd in 1952 and again cash-in-lieu payments hold the property until 1956.
- 1956: Certificate of Improvement issued to Beaver River (rumoured to be for winter road building) and 21-year mining lease is granted later in the year. Property remains dormant.
- 1959: Beaver River transfers property to Ventures Ltd. Property remains dormant.
- 1962: Falconbridge Nickel Mines Ltd absorbs Ventures Ltd through share swap deal. Property remains in Ventures' name and dormant until 1974.
- 1964-1973: GSC completes stream silt-sampling program in 1964 and adjoining Clark Property mineralization discovered in 1967 through follow-up to silt anomalies. Bullion Mountain Mining Ltd. optioned Clark Property from prospector in 1970 and began to drill off small 0.3Mt Ag-Pb-Zn resource. Scurry Rainbow Oil Ltd joint-ventured with Bullion Mountain Mining Inc. in 1973-74 and completed more underground drilling and crosscutting on the Clark. Bullion Mountain Mining Inc.'s 1971 report describes the Clark mineralization as limestone breccia replacement off a series of Keno-type vein fillings (feeder?). 1972 GSC Memoir 364 states both adits on Cameron Property are caved in and samples from dump material assayed 40.5oz/t Ag, 40.9% Pb and 10.75% Zn, again getting a 1:1 ratio for Ag:Pb. GSC Memoir also reports that the fault along which the Cameron Showing is localized has been traced for 950 ft. (290 m) in a series of trenches.
- Note: A 1975 report by Bullion Mountain Mining Inc. indicates that Scurry Rainbow was rumoured to have drilled on the Cameron but there is no mention of this in Scurry's 1973 report of work completed on the Clark deposit.
- 1974: Falconbridge options out Cameron Property to Bullion Mountain Mining Inc.. Bullion drills 7 holes, 6 of which are on the original showing. Bullion's report on the drilling (1975) recommends 5000 feet of additional drilling warranted.

- 1977: Second 21-year mining lease obtained for the Cameron Property. There is no further work recorded in the public domain.
- 1987-88: Archer, Cathro & Associates complete work on nearby Clark deposit on behalf of NDU Resources (an Archer, Cathro group company) during summer of 1987. Their 1988 report concludes that the Clark deposit represents carbonate replacement mineralization consisting of a discordant feeder zone and at least one conformable manto horizon. The report recommends optioning the Cameron Property from Falconbridge due to the similar style of mineralization.
- 1998-Present: No further work is completed and the 21-year mine lease expires. Government fails to recognize the ground is open and recorded information is kept confidential until Steve Traynor and partner Wade Carroll demonstrate that they should have access to the files. Noranda contacted mid-January, 2001. Falconbridge's Winnipeg office contacted regarding possible files not in public domain but there appears to be none.

## 5.0 GEOLOGY

The general geology for the Cameron Property area has been reported by Green (1972), Gallant (1973) and Eaton (1988), to which the reader is hereby referred. A brief summary taken largely from the above sources follows below. Figure 3 provides a plan map of the local geology of the Cameron Showing area.

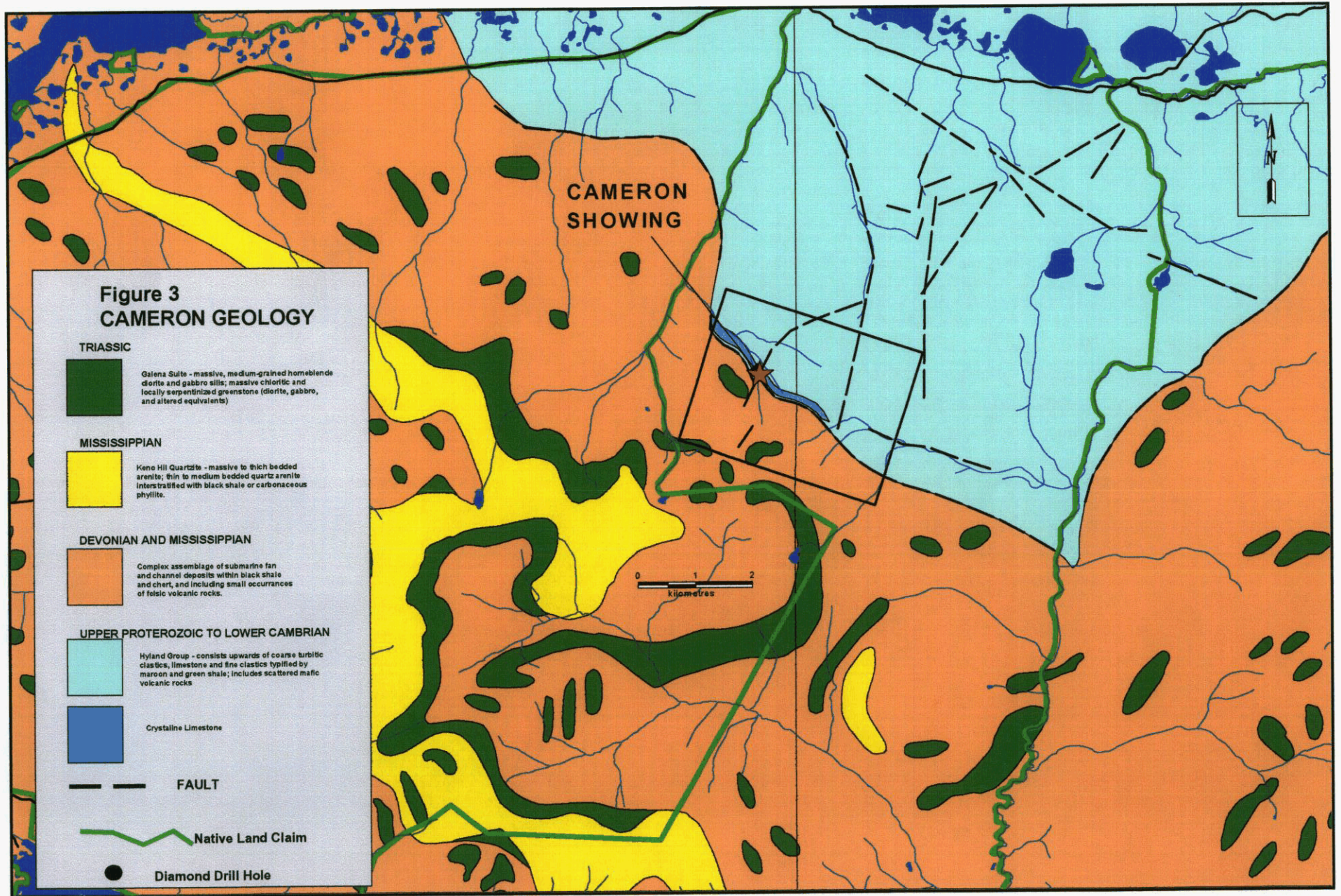
The Cameron Property, situated in one of several thrust panels south of the regional scale Dawson Fault, is underlain by quartzite, chloritic to graphitic phyllite, chert and limestone of the Cambrian-aged Hyland Group. These lithologies strike northwest - southeast and dip moderately to steeply south. It has been suggested that the units have been folded into a series of west trending, south-dipping anticlines and synclines.

The stratigraphy has been roughly subdivided into limestone and limestone breccia units (typical host to the mineralization) and alternating quartzite and phyllite units. Detailed descriptions of these units (where intersected by the current drill holes) are presented in the drill logs in Appendix II. A description of the Cameron occurrence mineralization is presented below.

### Cameron Showing

The Cameron showing occurs along a strong fault trending 027° that displaces the east side of a limestone unit approximately 120m to the north. The limestone unit has a thickness of approximately 250m. Mineralization has been exposed by historic trenching over a strike length of approximately 290 – 300m, with a siderite – rich fragmental unit exposed along strike another 50m to the northeast.

The base-metal mineralization appears as carbonate replacement in brecciated limestone, possibly indicating ground preparation in a reactive host. The mineralization comprises siderite (now altered to limonite), hydrous manganese oxides, galena, sphalerite, chalcopyrite and quartz crystals.



Previous drill testing (holes 74-1, 2, 4, 5, and 6, Bullion Mountain Mining Ltd.) was completed along a 200m-strike length of the Cameron Showing. The base-metal bearing mineralization was tested to a vertical depth of approximately 33-34m given the -45 degree dip of the holes. Following the drilling, the showing remained open along strike and at depth. Results of this previous drilling are summarized in the following table:

**Table 2: 1974 Drill Hole Summary – Bullion Mt Mining Ltd.**

Hole	Dip (deg)	From (m)	To (m)	Width (m)	Zn (%)	Pb (%)	Ag (g/T)
74-1	-45	32.6	39.6	7.0	7.20	0.23	38.3
74-2	-45	31.7	45.7	<b>14.0</b>	<b>8.40</b>	0.09	9.9
74-3	-45	37.5	48.8	11.3	4.60	3.50	119.7
74-4	-45	20.1	33.5	<b>13.4</b>	<b>20.40</b>	0.57	36.25
74-5	-45	14.9	21.0	<b>6.1</b>	<b>26.50</b>	5.78	286.6
74-6	-90	29.3	30.2	0.91	7.68	0.08	4.1

## 6.0 DRILL PROGRAM

### 6.1 Logistics

A short diamond drill program (3 holes, 296.6m) was completed on the Cameron property between August 11-20, 2001. Dates over which the drilling was completed are given in Table 3, along with set-up statistics for each drill hole. Diamond drilling was completed by Advanced Drilling Ltd. of Surrey, B.C. (see Appendix 1) with a Hydracore 28 core drill yielding BTW-size core (42.0 mm diameter). Two-man crews comprising a foreman and a helper operated the drill on two 12-hour shifts. The drill and supplies were transported to the helicopter staging point (located near McQuesten Lake on the McQuesten Lake Road) via truck. Equipment was then mobilized to the drill site by Bell 206 helicopter.

A Noranda Inc. geologist completed drill supervision, core logging and core sampling. Core logging and sampling were completed on site at the property, and samples were shipped to ALS Chemex Labs (Vancouver, B.C.) for assay. The drill core was stored on the property at an old campsite located near the northernmost trench (see Plate 1).

Accommodations for the contract drill crew and one geologist were obtained in the town of Mayo, with the crews travelling out to the drill for each shift.

ALS Chemex Labs of Thunder Bay completed multi-element analysis of 15 sulphide-bearing samples. Analyses were completed by multi-element ICP (ICP – AES Package ICP 41) with the elements analysed and detection limits provided in Appendix III. Assay analysis (AAS) was completed for those elements yielding results greater than the detection limit. Assay certificates are given in Appendix III, with a summary of significant intersections given in Table 4.

**Table 3: 2001 Drill Hole Statistics**

HOLE NO.	EASTING	NORTHING	ELEVATION	AZIMUTH	DIP	DEPTH	STARTED	FINISHED	TARGET
CA0101	499403.3	7107075	1308	117	-45	113.1	12/08/01	16/08/01	Target is the Cameron Zone at -35m vertical
CA0102	499425	7106890	1320	297	-62	125	18/08/01	20/08/01	Re-collar of CA-01-02A, Cameron Zone @ -75m
CA0102A	499425	7106890	1320	297	-50	58.5	17/08/01	18/08/01	Cameron Zone 150m SW of CA-01-01 at -75m level

## 6.2 Drill Hole Results

Brief descriptions of the stratigraphy and significant mineralized zones in each of the drill holes are given below. More complete lithology descriptions can be found in the drill logs provided in Appendix II.

Diamond drill hole CA01-01 targeted the Cameron Showing mineralized breccia at the -40m vertical level, mid-way between and below previous holes 74-4 and 74-5 (20.4% Zn, 36.25 g/t Ag over 13.4m and 26.5% Zn, 286.6 g/t Ag over 6.1m, respectively). The hole collared in quartzite / phyllite with fine shaly laminations to a down-hole depth of 61.2m. Small decimetric breccia zones characterized by strong quartz veining occur beginning at 33.1m down hole and end at 36.7m down hole. Alternating chert and phyllite units persist between 61.2m and 79.5m down hole, with locally up to 3% disseminated pyrrhotite. Between 79.5 to 101.7m, green medium-grained chlorite-rich phyllite dominates with lesser biotite ( $\pm$  pyrite, pyrrhotite) bearing phyllite. A unit of medium-grained quartzite was encountered between 101.7 – 111.3m down hole, with the hole terminating in biotite-rich phyllite. No significant base metal-bearing mineralisation or limestone breccia was intersected in the hole.

Drill hole CA01-02A was collared 150m southwest of CA01-01, and 45m southwest of hole 74-3, along the mineralized trend. The hole was targeted to intersect the mineralized zone at the -75m vertical level. This hole collared in a strongly-fractured graphitic phyllite unit containing 2-3% stringer pyrite along the foliation, which continued to 36.3m down hole. Following this, massive to brecciated limestone units were encountered alternating with graphitic phyllite intervals. Strong to intense carbonate alteration persisted with depth as veinlets along foliation. The intensely fractured core resulted in poor core recovery and finally a loss of water return, and the hole was subsequently stopped at 58.5m. Disseminated and stringer pyrite and trace sphalerite were encountered in the graphitic phyllite unit intersected at the bottom of the hole. This hole was re-collared at a steeper angle from the same set-up, and designated as CA01-02.

Drill hole CA01-02 encountered the same alternating graphitic phyllite and limestone units as CA01-02A to a depth of 74.7m, with limestone units dominating the sequence. Locally decimetric-scale brecciated intervals with quartz-carbonate veining were noted in the limestone. The graphitic phyllite intervals typically contained 3-5% foliation-parallel to cross-cutting pyrite stringers. An interval of graphitic phyllite between 64.8 – 69.4m was observed to contain rare galena – sphalerite veinlets between 1-5mm in thickness, in addition to containing ankerite - siderite veinlets. Anomalous Pb, Zn and Ag assay values were returned from core samples within this interval (see Table 4).

The mineralized fault breccia (Cameron horizon) was intersected between 74.7 – 77.9 m down hole. This unit comprised limestone and shale fragments in a siderite/ankerite matrix. Breccia fragments of silicified limestone were angular and typically <1 – 3cm in size. Minor sphalerite is associated locally

within the breccia, the best of which is a 40cm interval from 75.1-75.5m with approx. 7-10% sphalerite. A 0.8m interval of this breccia returned 3.0% Zn (see Table 4). Minor siderite veining extends 1-2 meters into the wall rock on either side of the structure.

**Table 4: 2001 Drill Hole Results**

Hole No.	From (m)	To (m)	Width (m)	Zn (%)	Pb (%)	Ag (g/T)
CA-01-02	64.0	68.4	4.4	0.4	0.18	4.61
CA-01-02	74.7	75.5	0.8	3.0	0.19	21.4

### 6.3 Drill Site / Property Reclamation

All equipment used, and waste generated in the current drill program was removed from the site following the completion of the third drill hole. In addition, Noranda, in conjunction with the Mining Inspectors Office, removed and disposed of all empty fuel drums that were abandoned on the property by previous operations. Remaining waste on the property (including 3 partially-filled fuel drums) predated Noranda's operations. The drill core from the Noranda program was stored on the property at an old campsite located near the northernmost trench.

## 7.0 CONCLUSIONS AND RECOMMENDATIONS

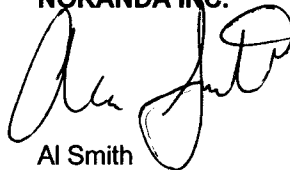
With the level of drill testing to date, the Cameron Showing shows little potential for economically significant Zn concentrations. Results of drill hole CA01-02 confirmed the narrowing of Zn mineralization with increasing depth, thus limiting the potential for economic mineralisation in the southwest direction. This hole confirmed the suspected southeast dip of between 60° - 70° for the mineralized structure that persists throughout the length of the mineralized zone.

The lack of mineralization in drill hole CA01-01 and in previous hole 74-6 (drilled vertically) essentially cuts off the zone strike in the northeast direction. Hole CA01-01 was drilled down-dip, however, appears to have undercut the shallow mineralization outlined in previous drill holes 74-4 and 74-5.

Based on the disappointing results of the drill program, no further work is recommended for this property.

Respectfully submitted,

**NORANDA INC.**



Al Smith  
Senior Project Geologist  
Western Canada Region

Thunder Bay, Ontario  
January, 2002.

## REFERENCES

- Boyle, R.W. 1965: Geology, Geochemistry and Origin of the Lead-Zinc-Silver Deposits of the Keno Hill – Galena Area, Yukon Territory. Geological Survey of Canada Bulletin 111.
- Eaton, W.D. 1988: Report on Soil Geochemical Surveys and Diamond Drilling. Unpublished Assessment Report for NDU Resources Ltd. by Archer, Cathro and Associates Inc., 17pg.
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- Green, L.H. 1971: Geology of the Mayo Lake, Scougale Creek, and McQuesten Lake Map areas, Yukon Territory. Geological Survey of Canada Memoir 357.
- Green, L.H. 1971: Geology of Nash Creek, Larsen Creek, and Dawson Map areas, Yukon Territory. Geological Survey of Canada Memoir 364
- Trenholme, L.S. 1975: Report on Mining Properties, Keno Hill Area, Yukon Territory. Unpublished Assessment Report for Bullion Mountain Mining Ltd. by M.M. Menzies Consultants Ltd., 16pg.

**Appendix I**  
**Acknowledgements**

**APPENDIX I**  
**ACKNOWLEDGEMENTS**

The following is a list of **Noranda personnel** who worked on or supervised work carried out on the Cameron Property:

<b>NAME</b>	<b>POSITION</b>	<b>ADDRESS</b>
Clint Barr	Project Geologist	874 Tungsten St., Thunder Bay, ON
Dave King	Project Geologist	874 Tungsten St., Thunder Bay, ON
Al Smith	Sr. Project Geologist	874 Tungsten St., Thunder Bay, ON

The following is a list of **Contractors** who provided services on the Cameron property:

<b>CONTRACTOR</b>	<b>ADDRESS</b>	<b>WORK TYPE</b>
Advanced Drilling Ltd.	19469 – 92 <sup>nd</sup> Avenue Surrey, B.C.	Diamond Drilling
ALS Chemex Labs	212 Brooksbank Avenue North Vancouver, B.C.	Drill Core Analyses
Tanana Exploration Inc.	Box 4375, Str. Main Whitehorse, Yukon	Claim Staking, Optioner
Trans North Helicopters	20 Norseman Road Whitehorse, Yukon	Drill Moves, Transportation

**Appendix II**  
**Diamond Drill Logs**



LOGBOOK

LOGBOOK

**Hole-ID:** CA0101      **Length:** 113.1      **Units:** Meters

**Started:** 12/08/01      **Proj. #:** 2520      **Project:** Cameron      **Core Location:** Cameron Property

**Finished:** 16/08/01      **Claim #:** CAM 18      **Logged By:** Dave King      **Case Pld:** Yes

**Drill Type:** Hydrocore 28      **Core Size:** BTW      **Contractor:** Advanced Drilling      **Case Dep:** 3m

**Co-ordinates - GEMCOM**      **Co-ordinates - Grid**      **Co-ordinates - UTM**      **Co-ordinates - Lat/Long**

**Easting:** 499403.3      **Easting:**      **Easting:** 499403.3      **Latitude:** 64.090285

**Northing:** 7107075      **Northing:**      **Northing:** 7107075      **Longitude:** -135.01239

**Elevation:** 1308      **Elevation:** 1308      **UTM Declin:**      **Mag Declin:** 29

**Plot\_Sys:** UTM Nad 83      **Grid Declin:**      **UTM Zone:** 8      **NTS:** 106D02/03

**Target:** Target is the cameron zone at -35m vertical

**Geophysics:** No

**Remarks:** DDH undercuts target at -40m vertical, fails to intersect any mineralization.

Distance	Dip	Mag Azm	True N Azm	Type	Comments
0.00	-45.00	0.00	117.00	NULL	NULL
112.00	-45.00	0.00	0.00	NULL	NULL

From	To	Code	Rock Name	Description	From	To	#	Cu%	Pb%	Zn%	Ag(g)	Mo%
0.00	2.60	OB	Overburden	Overburden								
2.60	33.10	PHYL	Phyllitic Quartzite	Meter scale intervals of massive muscovite rich quartzite interbedded with decimeter scale intervals of laminated, black to grey shale. Laminated shale intervals are fine-grained, with mm-scale laminations, commonly containing pyrite rich layers. Quartz veining and silica flooding is common. Veins at various angle to c.a., but usually along bedding/foliation plane. Decimeter scale brecciated intervals associated with quartz veining, more common below 25m. 24-44.5m Zone of fairly intense quartz veining with local brecciated intervals up to 30cm. 10% Q.V's overall. 33.1-33.45 Breccia interval 36.55-36.7m Breccia - looks dolomitic? Reacts to acid when powdered.								
33.10	33.45	BX	Breccia									
33.45	36.55	PHYL	Phyllite	as above								

CA0101

[REDACTED]

[REDACTED]

From	To	Code	Rock Name	Description	From	To	#	Cu%	Pb%	Zn%	Ag(g)	Mo%
36.55	36.70	BX	Breccia									
36.70	61.20	PHYL	Phyllite	as above								
61.20	63.20	CH	Chert	Finely laminated, cherty interval. MM-scale intervals of chert interbedded with thin shale layers. Local disseminated pyrrhotite.								
63.20	65.30	PHYL	Phyllite	Grey coloured, medium-grained phyllitic interval. Locally up to 3% disseminated pyrrhotite. Gradational from and into cherty zones.								
65.30	66.30	CH	Chert	Finely laminated chert and shale as above.								
66.30	69.15	PHYL	Phyllite	Phyllite as above. Fairly siliceous with several Quartz veins and silica flooding. Weak chlorite, +/- biotite alteration. Also rare pink garnet.								
69.15	69.80	CH	Chert	Chert as above. White to pale grey coloured.								
69.80	70.65	PHYL	Phyllite	Grey coloured, fine- to medium-grained phyllitic metasediment. Biotite rich, with 2-3% disseminated pyrrhotite. Local cherty intervals within. Gradational from previous unit.								
70.65	79.50	CH	Chert	Cherty interval, with local zones of chlorite rich lphyllite. Cherty intervals are laminated on a mm-scale with dark black graphitic shale. Locally highly folded.								
79.50	80.90	CPHYL	Chloritic Phyllite	Green coloured, medium grained chlorite rich phyllite, to phyllitic quartzite.								
80.90	93.70	PHYL	Phyllite	Biotite rich phyllite as above units. Medium grained with local thin graphitic shale intervals. These commonly contain 2-3% disseminated pyrrhotite and pyrite.								
93.70	101.70	CPHYL	Chloritic Phyllite	Chlorite +/- biotite rich medium grained phyllite.								
101.70	111.30	Qtz	Quartzite	Medium grained quartzite with weak sericite-muscovite. Composed of 30-50%, 1-2mm quartz granules in a fine quartz-muscovite matrix.								
111.30	113.10	PHYL	Phyllite	Biotite rich phyllite. Fine- to medium-grained, dark grey coloured, with local shaly laminations. Locally up to 5% pyrite in shale.								



**Hole-ID:** CA0102A      **Length:** 58.5      **Units:** Meters

**Started:** 17/08/01      **Proj. #:** 2520      **Project:** Cameron      **Core Location:** Cameron Property

**Finished:** 18/08/01      **Claim #:** CAM 18      **Logged By:** D. King      **Case Pld:** Yes

**Drill Type:** Hydrocore 28      **Core Size:** BTW      **Contractor:** Advanced Drilling      **Case Dep:** 6m

**Co-ordinates - GEMCOM**      **Co-ordinates - Grid**      **Co-ordinates - UTM**      **Co-ordinates - Lat/Long**

**Easting:** 499425      **Easting:**      **Easting:** 499425      **Latitude:** 64.0886249      **Collar Survey:** No

**Northing:** 7106890      **Northing:**      **Northing:** 7106890      **Longitude:** -135.0117831      **Mag Declin:** 29

**Elevation:** 1320      **Elevation:**      **Elevation:** 1320      **NTS:** 106D02/03

**Plot\_Sys:** UTM Nad 83      **Grid Declin:**      **UTM Declin:** 29      **UTM Zone:** 8

**Target:** Cameron Zone 150m SW of CA-01-01 at -75m level      **Geophysics:** No      **Remarks:** Hole lost at 58.5 m due to loss of water and squeezing rods.

Distance	Dip	Mag Azm	True N Azm	Type	Comments
0.00	-50.00				
58.50	-50.00				

From	To	Code	Rock Name	Description	From	To	#	Cu%	Pb%	Zn%	Ag(g)	Mo%
0.00	5.50	OB	Overburden	Overburden								
5.50	36.30	GPHYL	Graphitic Phyllite	Consists of muscovite-sericite rich intervals, interbedded with dark black graphitic shale rich intervals. Well developed foliation, most commonly 40 degrees to c.a. Graphite rich intervals are laminated on a mm scale. Other intervals are dominated by quartz-muscovite schist. Unit is intensely fractured and core recovery is very poor, (0-90%). Locally contains 5-7% disseminated to stringer pyrite along foliation, 2-3% overall. <1% pyrrhotite locally. Quartz-carbonate veins are not uncommon.								
36.30	39.70	Lst	Limestone	Massive to brecciated limestone. Grey coloured, with numerous white calcite veins along the foliation. Local angular limestone fragments within calcite matrix. Fragments up to several centimeters.								
39.70	41.50	GPHYL	Graphitic Phyllite	Muscovite-quartz rich phyllite as above, with 50% graphitic shale. Well foliated 30-40 degrees to c.a. Intensely broken core.								

CA0102A



<i>From</i>	<i>To</i>	<i>Code</i>	<i>Rock Name</i>	<i>Description</i>	<i>From</i>	<i>To</i>	<i>#</i>	<i>Cu%</i>	<i>Pb%</i>	<i>Zn%</i>	<i>Ag(g)</i>	<i>Mo%</i>
41.50	43.90	Lst	Limestone	Brecciated limestone with calcite veining as above.								
43.90	47.00	GPHYL	Graphitic Phyllite	Phyllite as above, well foliated, locally graphitic. Intense carbonate alteration throughout as veinlets along foliation. Foliation 45 degrees to c.a. Locally contains up to 5% disseminated to stringer pyrite.								
47.00	53.05	Lst	Limestone	Massive to brecciated limestone as above. Locally interbedded with thin phyllite layers. Local disseminated pyrite up to 2%. Intense carbonate veining commonly along foliation, but also within breccia matrix. Pyrite is more common within phyllite layers.								
53.05	55.60	GPHYL	Graphitic Phyllite	Graphitic phyllite, trace pyrite.								
55.60	56.20	Lst	Limestone	Limestone as above.								
56.20	58.50	GPHYL	Graphitic Phyllite	Graphitic phyllite with 5% disseminated to stringer pyrite. Trace sphalerite at 56.3m within calcite vein.								



NORANDA

Hole-ID: CA0102

Length: 125

Units: Meters

Started 18/08/01

Proj. #: 2520

Project: Cameron

Core Location: Cameron Property

Finished: 20/08/01

Claim #: CAM 18

Logged By: Dave King

Case Pld: Yes

Drill Type: Hydrocore 28

Core Size: BTW

Contractor: Advanced Drilling

Case Dep: 13.7m

Co-ordinates - GEMCOM

Co-ordinates - Grid

Co-ordinates - UTM

Co-ordinates - Lat/Long

Easting: 499425

Easting:

Easting: 499425

Latitude: 64.0886249

Collar Survey: No

Northing: 7106890

Northing:

Northing: 7106890

Longitude: -135.0117931

Mag Declin: 29

Elevation: 1320

Elevation:

Elevation: 1320

NTS: 106D02/03

Plot\_Sys: UTM Nad 83

Grfd Declin:

UTM Declin: 29

UTM Zone: 8

Target: Re-collar of CA-01-02A, Cameron Zone @ -75m

Geophysics: No

Remarks: Cameron Zone intersected at -60m vertical.

Distance	Dip	Mag Azm	True N Azm	Type	Comments
0.00	-62.00				
125.00	-62.00				

From	To	Code	Rock Name	Description	From	To	#	Cu%	Pb%	Zn%	Ag(g)	Mo%
0.00	10.70	OB	Overburden	Overburden								
10.70	27.90	GPHYL	Graphitic Phyllite	Black to grey coloured, well laminated graphitic phyllite. Well foliated averaging 45 degrees to c.a., but local folding is obvious. Consists of mm-scale laminations of dark black graphitic shale and muscovite rich laminae, and quartz +/- carbonate rich laminae. Contains 3-5% pyrite commonly as stringers along foliation. Locally up to 10% over decimeter scale intervals. Quartz veins common along foliation.								
27.90	29.70	Lst	Limestone	Massive, dark grey coloured limestone. Quartz-carbonate veins throughout. Bedding/foliation is not well defined as in the phyllite.								
29.70	34.35	GPHYL	Graphitic Phyllite	Graphitic phyllite as above. Well laminated and locally carbonate rich. Contains 5% stringer to disseminated pyrite. Quartz-carbonate veins are common. Average foliation is 31 degrees to c.a. Phyllite dominated interval with minor limestone layers.								
34.35	35.50	Lst	Limestone	Limestone dominated interval. More massive with local zones of graphitic phyllite. Brecciated with quartz-carbonate veins.								

## CA0102

From	To	Code	Rock Name	Description	From	To	#	Cu%	Pb%	Zn%	Ag(g)	Mo%
35.50	37.70	GPHYL	Graphitic Phyllite	Graphitic phyllite dominated interval, well laminated with 3-5% pyrite.								
37.70	38.75	Lst	Limestone	Massive dark grey, brecciated limestone.								
38.75	39.70	GPHYL	Graphitic Phyllite	Graphitic phyllite as above. Average foliation is 51 degrees to c.a.								
39.70	58.65	Lst	Limestone	Massive, limestone dominated interval. Locally brecciated with numerous (15%) quartz-carbonate veins forming the breccia matrix. Calcite veins commonly cross-cut the weak foliation. Contains short shale rich intervals. These are well laminated and usually contain 5% stringer pyrite. 58.6m thin, 2mm siderite vein with trace spalerite and galena.								
58.65	61.70	GPHYL	Graphitic Phyllite	Graphitic shale dominated interval with moderate carbonate alteration as thin laminations. Well laminated/foliated on a mm scale. Dominant foliation is 50 degrees to c.a. Contains 3-7% pyrite usually as stringers along foliation but also cross-cutting stringers at 55 degrees to c.a. opposite foliation.								
61.70	64.80	Lst	Limestone	Limestone dominated interval with local black shale. Locally brecciated with numerous calcite veins. 63.9-64.8m Several ankerite/siderite? Veins up to 7cm thick, may have trace sphalerite +/- galena associated. Zones of black shale contain 5-7% pyrite stringers	64.00	65.50		0.128	0.25	4.00		
64.80	69.40	GPHYL	Graphitic Phyllite	Black graphitic phyllite dominated interval. Well foliated 65 degrees to c.a. Contains 3-5% pyrite. Several ankerite/siderite veins up to 66.35m. These may have minor sphalerite and galena associated. 65.3m 1mm spalerite, galena veinlet at 35 degrees to c.a. opposite foliation. 66.1m 10cm with ankerite/siderite vein with a 5mm wide sphalerite stringer at 30 degrees to c.a.	65.50	66.35		0.116	0.84	5.20		
					66.35	67.40		0.269	0.46	5.20		
					67.40	68.40		0.185	0.20	4.40		
					68.40	69.40		0.017	0.04	2.20		
69.40	72.85	Lst	Limestone	Limestone dominated interval. Usually brecciated with numerous calcite veins +/- minor ankerite/siderite. Contains minor well laminated shale/siltstone with 5% pyrite. Core is highly fractured.	69.40	70.40		0.006	0.02	1.20		
					70.40	71.40		0.018	0.04	1.80		
					71.40	72.40		0.001	0.05	1.20		
					72.40	74.70		0.011	0.12	1.60		
72.85	74.70	GPHYL	Graphitic Phyllite	Intensely fractured black shale with numerous calcite-ankerite/siderite veinlets. Poor recovery (50%). Contains 2-3% disseminated pyrite.								
74.70	77.90	FLT	Mineralized Fault Breccia	Intensely brecciated limestone and siltstone. Breccia fragments are angular, <1-3cm in size with ankerite/siderite matrix. 74.7-75.5m Intense breccia with 75% ankerite/siderite and silicified? limestone clasts. Contains 10% sphalerite veins with minor galena. 5-10% disseminated to stringer pyrite. Core is highly fractured, 75% recovery. 75.5-75.9m siltstone/shale interval with trace disseminated pyrite. Foliation 50-55 degrees to c.a. 75.9-77.9m Fault breccia with silicified? limestone clasts and black shale, with 50% ankerite/siderite veining. Veins up to 40cm thick. Rare trace sphalerite.	74.70	75.50		0.193	3.00	21.40		
					75.50	75.90		0.010	0.05	1.20		
					75.90	77.00		0.008	0.04	4.00		
					77.00	77.90		0.003	0.03	2.00		
77.90	82.25	GPHYL	Graphitic Phyllite	Graphitic siltstone to shale dominated interval with local thin limestone layers. Well foliated 50 degrees to c.a. Contains 5-10% disseminated to stringer pyrite, commonly along foliation but may be at high angle opposite direction. Contains several thin ankerite/siderite veins at 60 degrees to c.a opposite bedding. Rare trace sphalerite within veins.	77.90	79.00		0.007	0.03	1.20		
					79.00	80.00		0.007	0.03	1.20		
82.25	86.40	Lst	Limestone	Limestone dominated interval, locally brecciated with calcite veins. Decimeter scale shaley intervals, moderately carbonate altered. Contains 3-5% stringer pyrite.								

CA0102

From	To	Code	Rock Name	Description	From	To	#	Cu%	Pb%	Zn%	Ag(g)	Mo%
86.40	90.40	PHYL	Phyllite	Well foliated shale/siltstone dominated interval. Pervasive weak calcite alteration throughout at thin veinlets along foliation. Muscovite rich along foliation planes - phyllitic texture. Contains 3-5% disseminated pyrrhotite with lesser pyrite. Siltstone dominated rather than black shale.								
90.40	91.65	Lst	Limestone	Limestone dominated interval. Brecciated with 50% calcite veins.								
91.65	95.50	PHYL	Phyllite	Siltstone-shale dominated interval. Moderate carbonate alteration. Contains up to 7% stringer pyrrhotite and 1-2% pyrite. Local intervals of graphitic black shale.								
95.50	96.85	Lst	Limestone	Massive dark grey limestone with 20% calcite veins.								
96.85	99.40	PHYL	Phyllite	Siltstone/shale as above with 5% disseminated to stringer pyrrhotite. Moderate carbonate alteration.								
99.40	109.30	Lst	Limestone	Limestone dominated interval. Massive to brecciated. Contains decimeter scale intervals of shale/siltstone with 3-5% pyrrhotite and pyrite. Rare po, py within limestone.								
109.30	125.00	Qtz	Phyllitic Quartzite	Grades from siltstone into very siliceous, locally cherty metasediment. Local intervals of weak chlorite, biotite, garnet alteration. By 113m it is very siliceous quartzite. Fine-grained pale grey to white coloured. Contains local disseminated pyrrhotite up to 5% over decimeter scale intervals.								

644310	CA-01-02	64.0 - 65.5	4	0.39	24	<10	30	0.5	<2	6.4	10	13	43	45	7.77	<10	3
644311	CA-01-02	65.5 - 66.35	5.2	0.37	16	<10	10	0.5	8	2.8	45	12	24	121	>15.00	<10	7
644312	CA-01-02	66.35 - 67.4	5.2	0.41	24	<10	30	<0.5	2	4.07	19.5	20	40	100	4.26	<10	2
644313	CA-01-02	67.4 - 68.4	4.4	0.31	62	<10	10	<0.5	<2	10.1	7.5	21	48	71	5.5	<10	4
644314	CA-01-02	STANDARD	15.2	0.57	14	<10	<10	1.5	18	0.45	68.5	11	11	123	13.4	<10	7
644315	CA-01-02	68.4 - 69.4	2.2	0.58	8	<10	30	0.5	<2	4.34	<0.5	23	38	85	4.9	<10	1
644316	CA-01-02	69.4 - 70.4	1.2	0.17	<2	<10	<10	<0.5	<2	>15.00	<0.5	9	11	31	1.44	<10	1
644317	CA-01-02	70.4 - 71.4	1.8	0.23	10	<10	<10	<0.5	<2	>15.00	0.5	10	19	59	2.21	<10	2
644318	CA-01-02	71.4 - 72.4	1.2	0.29	12	<10	10	<0.5	<2	>15.00	0.5	13	10	32	2.51	<10	1
644319	CA-01-02	72.4 - 74.7	1.6	0.17	12	<10	10	<0.5	<2	>15.00	3.5	19	10	38	2.8	<10	3
644320	CA-01-02	74.7 - 75.5	21.4	0.31	58	<10	<10	1	46	1.9	122.5	61	5	973	>15.00	<10	10
644321	CA-01-02	75.5 - 75.9	1.2	0.5	8	<10	20	0.5	4	4.01	3	5	29	12	5.33	<10	3
644322	CA-01-02	75.9 - 77.0	4	0.13	2	<10	<10	0.5	16	1.81	10	4	23	54	>15.00	<10	9
644323	CA-01-02	77.0 - 77.9	2	0.19	2	<10	<10	0.5	8	1.25	5	7	66	36	11.25	<10	5
644324	CA-01-02	77.9 - 79.0	1.2	0.58	36	<10	40	0.5	<2	1.62	1.5	24	34	110	4.88	<10	<1
644325	CA-01-02	79.0 - 80.0	1.2	0.41	40	<10	30	0.5	<2	1.51	1.5	24	28	96	4.93	<10	<1
644326	CA-01-02	BLANK	0.2	0.83	<2	<10	120	<0.5	2	0.61	<0.5	6	98	25	1.26	<10	<1

0.22	<10	1.19	>10000	3	0.01	34	310	1285	1.01	14	3	107	<0.01	10	<10	5	<10	2510
0.24	<10	1.41	>10000	3	0.01	18	180	1155	1.49	12	3	56	<0.01	<10	<10	2	<10	8380
0.25	<10	1.67	3680	<1	0.01	53	530	2690	1.71	10	3	114	<0.01	<10	<10	7	<10	4570
0.2	<10	1.31	5240	2	<0.01	44	370	1850	2.9	12	3	241	<0.01	10	<10	5	<10	1955
0.19	<10	0.69	>10000	4	0.01	30	900	8790	1.83	<2	3	13	<0.01	<10	<10	22	10	29600
0.28	<10	0.97	2230	<1	0.01	53	410	168	3.1	4	3	127	<0.01	<10	<10	8	<10	364
0.09	<10	0.38	1260	<1	<0.01	23	200	62	0.57	2	3	939	<0.01	10	10	2	<10	172
0.15	<10	0.58	4080	3	<0.01	28	290	176	0.62	14	4	384	<0.01	10	<10	3	<10	408
0.18	<10	0.67	2080	<1	<0.01	34	300	14	1.49	12	4	683	<0.01	10	<10	3	<10	500
0.11	<10	1.07	2950	2	<0.01	34	290	108	0.86	6	3	699	<0.01	10	<10	1	<10	1205
0.03	<10	1.49	>10000	<1	<0.01	50	90	1935	2.28	32	1	50	<0.01	<10	<10	<1	50	30000
0.3	<10	0.94	8250	<1	<0.01	7	350	98	0.16	8	5	49	<0.01	<10	<10	6	<10	482
0.07	<10	1.04	>10000	<1	<0.01	1	100	78	0.05	2	1	32	<0.01	<10	<10	<1	<10	418
0.1	<10	0.81	>10000	1	<0.01	8	90	32	0.19	10	1	24	<0.01	<10	<10	1	<10	326
0.38	<10	0.6	2140	3	0.01	45	240	68	3.03	6	3	45	<0.01	<10	<10	6	<10	340
0.28	<10	0.57	2210	3	<0.01	45	240	66	3.06	8	3	41	<0.01	<10	<10	4	<10	270
0.48	30	0.14	315	1	0.14	12	620	12	0.04	4	4	21	0.14	<10	<10	37	<10	38

**Appendix III**  
**Analytical Certificates**



# ALS Chemex

Aurora Laboratory Services Ltd.  
 Analytical Chemists \* Geochemists \* Registered Assayers  
 5175 Timberlea Blvd., Mississauga  
 Ontario, Canada L4W 2S3  
 PHONE: 905-624-2806 FAX: 905-624-6163

To: NORANDA MINING AND EXPLORATION INC. **RECEIVED SEP 19 2001**

874 TUNGSTEN ST.  
 THUNDER BAY, ON  
 P7B 6J3

A0123488

Comments: ATTN: DAVE KING

**CERTIFICATE**

**A0123488**

(BUF) - NORANDA MINING AND EXPLORATION INC.

Project: 2520  
 P.O. #:

Samples submitted to our lab in Thunder Bay, ON.  
 This report was printed on 05-SEP-2001.

## SAMPLE PREPARATION

METHOD CODE	NUMBER SAMPLES	DESCRIPTION
205	16	Geochem ring to approx 150 mesh
214	1	Rcvd as pulp; mesh size checked
222	9	Drying charge (0-3 Kg)
226	16	0-3 Kg crush and split
3202	16	Rock - save entire reject
229	17	ICP - AQ Digestion charge

\* NOTE 1:

The 32 element ICP package is suitable for trace metals in soil and rock samples. Elements for which the nitric-aqua regia digestion is possibly incomplete are: Al, Ba, Be, Ca, Cr, Ga, K, La, Mg, Na, Sr, Ti, Tl, W.

## ANALYTICAL PROCEDURES

METHOD CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
Ag-ICP41	17	Ag ppm: 32 element, soil & rock	ICP-AES	0.2	100.0
Al-ICP41	17	Al %: 32 element, soil & rock	ICP-AES	0.01	15.00
As-ICP41	17	As ppm: 32 element, soil & rock	ICP-AES	2	10000
B-ICP41	17	B ppm: 32 element, rock & soil	ICP-AES	10	10000
Ba-ICP41	17	Ba ppm: 32 element, soil & rock	ICP-AES	10	10000
Be-ICP41	17	Be ppm: 32 element, soil & rock	ICP-AES	0.5	100.0
Bi-ICP41	17	Bi ppm: 32 element, soil & rock	ICP-AES	2	10000
Ca-ICP41	17	Ca %: 32 element, soil & rock	ICP-AES	0.01	15.00
Cd-ICP41	17	Cd ppm: 32 element, soil & rock	ICP-AES	0.5	500
Co-ICP41	17	Co ppm: 32 element, soil & rock	ICP-AES	1	10000
Cr-ICP41	17	Cr ppm: 32 element, soil & rock	ICP-AES	1	10000
Cu-ICP41	17	Cu ppm: 32 element, soil & rock	ICP-AES	1	10000
Fe-ICP41	17	Fe %: 32 element, soil & rock	ICP-AES	0.01	15.00
Ga-ICP41	17	Ga ppm: 32 element, soil & rock	ICP-AES	10	10000
Hg-ICP41	17	Hg ppm: 32 element, soil & rock	ICP-AES	1	10000
K-ICP41	17	K %: 32 element, soil & rock	ICP-AES	0.01	10.00
La-ICP41	17	La ppm: 32 element, soil & rock	ICP-AES	10	10000
Mg-ICP41	17	Mg %: 32 element, soil & rock	ICP-AES	0.01	15.00
Mn-ICP41	17	Mn ppm: 32 element, soil & rock	ICP-AES	5	10000
Mo-ICP41	17	Mo ppm: 32 element, soil & rock	ICP-AES	1	10000
Na-ICP41	17	Na %: 32 element, soil & rock	ICP-AES	0.01	10.00
Ni-ICP41	17	Ni ppm: 32 element, soil & rock	ICP-AES	1	10000
P-ICP41	17	P ppm: 32 element, soil & rock	ICP-AES	10	10000
Pb-ICP41	17	Pb ppm: 32 element, soil & rock	ICP-AES	2	10000
S-ICP41	17	S %: 32 element, rock & soil	ICP-AES	0.01	10.00
Sb-ICP41	17	Sb ppm: 32 element, soil & rock	ICP-AES	2	10000
Sc-ICP41	17	Sc ppm: 32 elements, soil & rock	ICP-AES	1	10000
Sr-ICP41	17	Sr ppm: 32 element, soil & rock	ICP-AES	1	10000
Ti-ICP41	17	Ti %: 32 element, soil & rock	ICP-AES	0.01	10.00
Tl-ICP41	17	Tl ppm: 32 element, soil & rock	ICP-AES	10	10000
U-ICP41	17	U ppm: 32 element, soil & rock	ICP-AES	10	10000
V-ICP41	17	V ppm: 32 element, soil & rock	ICP-AES	1	10000
W-ICP41	17	W ppm: 32 element, soil & rock	ICP-AES	10	10000
Zn-ICP41	17	Zn ppm: 32 element, soil & rock	ICP-AES	2	10000



# ALS Chemex

Aurora Laboratory Services Ltd.  
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To: NORANDA MINING AND EXPLORATION INC.

874 TUNGSTEN ST.  
 THUNDER BAY, ON  
 P7B 6J3

Project : 2520  
 Comments: ATTN: DAVE KING

Page Number :1-A  
 Total Pages :1  
 Certificate Date: 05-SEP-2001  
 Invoice No. : I0123488  
 P.O. Number :  
 Account : BUF

## CERTIFICATE OF ANALYSIS A0123488

SAMPLE	PREP CODE	Ag ppm	Al %	As ppm	B ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Ga ppm	Hg ppm	K %	La ppm	Mg %	Mn ppm
644310	205 222	4.0	0.39	24	< 10	30	0.5	< 2	6.40	10.0	13	43	45	7.77	< 10	3	0.22	< 10	1.19	>10000
644311	205 222	5.2	0.37	16	< 10	10	0.5	8	2.80	45.0	12	24	121	>15.00	< 10	7	0.24	< 10	1.41	>10000
644312	205 222	5.2	0.41	24	< 10	30	< 0.5	2	4.07	19.5	20	40	100	4.26	< 10	2	0.25	< 10	1.67	3660
644313	205 226	4.4	0.31	62	< 10	10	< 0.5	< 2	10.10	7.5	21	48	71	5.50	< 10	4	0.20	< 10	1.31	5240
644314	214 229	15.2	0.57	14	< 10	< 10	1.5	16	0.45	68.5	11	11	123	13.40	< 10	7	0.19	< 10	0.69	>10000
644315	205 222	2.2	0.58	8	< 10	30	0.5	< 2	4.34	< 0.5	23	38	85	4.90	< 10	1	0.28	< 10	0.97	2230
644316	205 226	1.2	0.17	< 2	< 10	< 10	< 0.5	< 2	>15.00	< 0.5	9	11	31	1.44	< 10	1	0.09	< 10	0.36	1260
644317	205 222	1.8	0.23	10	< 10	< 10	< 0.5	< 2	>15.00	0.5	10	19	59	2.21	< 10	2	0.15	< 10	0.56	4080
644318	205 222	1.2	0.29	12	< 10	10	< 0.5	< 2	>15.00	0.5	13	10	32	2.51	< 10	1	0.18	< 10	0.67	2080
644319	205 222	1.6	0.17	12	< 10	10	< 0.5	< 2	>15.00	3.5	19	10	38	2.80	< 10	3	0.11	< 10	1.07	2950
644320	205 222	21.4	0.31	58	< 10	< 10	1.0	46	1.90	122.5	61	5	973	>15.00	< 10	10	0.03	< 10	1.49	>10000
644321	205 222	1.2	0.50	8	< 10	20	0.5	4	4.01	3.0	5	29	12	5.33	< 10	3	0.30	< 10	0.94	8250
644322	205 226	4.0	0.13	2	< 10	< 10	0.5	16	1.81	10.0	4	23	54	>15.00	< 10	9	0.07	< 10	1.04	>10000
644323	205 226	2.0	0.19	2	< 10	< 10	0.5	8	1.25	5.0	7	66	36	11.25	< 10	5	0.10	< 10	0.81	>10000
644324	205 226	1.2	0.58	36	< 10	40	0.5	< 2	1.62	1.5	24	34	110	4.86	< 10	< 1	0.38	< 10	0.60	2140
644325	205 226	1.2	0.41	40	< 10	30	0.5	< 2	1.51	1.5	24	28	96	4.93	< 10	< 1	0.28	< 10	0.57	2210
644326	205 226	0.2	0.83	< 2	< 10	120	< 0.5	2	0.61	< 0.5	6	98	25	1.26	< 10	< 1	0.48	30	0.14	315

CERTIFICATION



# ALS Chemex

Aurora Laboratory Services Ltd.  
 Analytical Chemists \* Geochemists \* Registered Assayers  
 5175 Timberlea Blvd., Mississauga  
 Ontario, Canada L4W 2S3  
 PHONE: 905-624-2806 FAX: 905-624-6163

To: NORANDA MINING AND EXPLORATION INC.

874 TUNGSTEN ST.  
 THUNDER BAY, ON  
 P7B 6J3

Project : 2520  
 Comments: ATTN: DAVE KING

Page Number : 1-B  
 Total Pages : 1  
 Certificate Date: 05-SEP-2001  
 Invoice No. : I0123488  
 P.O. Number :  
 Account : BUF

## CERTIFICATE OF ANALYSIS

A0123488

SAMPLE	PREP CODE		Mo	Na	Ni	P	Pb	S	Sb	Sc	Sr	Ti	Tl	U	V	W	Zn
			ppm	%	ppm	ppm	ppm	%	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
644310	205	222	3	0.01	34	310	1285	1.01	14	3	107	< 0.01	10	< 10	5	< 10	2510
644311	205	222	3	0.01	18	180	1155	1.49	12	3	56	< 0.01	< 10	< 10	2	< 10	8380
644312	205	222	< 1	0.01	53	530	2690	1.71	10	3	114	< 0.01	< 10	< 10	7	< 10	4570
644313	205	226	2	< 0.01	44	370	1850	2.90	12	3	241	< 0.01	10	< 10	5	< 10	1955
644314	214	229	4	0.01	30	900	8790	1.83	< 2	3	13	< 0.01	< 10	< 10	22	10	>10000
644315	205	222	< 1	0.01	53	410	168	3.10	4	3	127	< 0.01	< 10	< 10	8	< 10	364
644316	205	226	< 1	< 0.01	23	200	62	0.57	2	3	939	< 0.01	10	10	2	< 10	172
644317	205	222	3	< 0.01	28	290	176	0.62	14	4	384	< 0.01	10	< 10	3	< 10	408
644318	205	222	< 1	< 0.01	34	300	14	1.49	12	4	683	< 0.01	10	< 10	3	< 10	500
644319	205	222	2	< 0.01	34	290	108	0.86	6	3	699	< 0.01	10	< 10	1	< 10	1205
644320	205	222	< 1	< 0.01	50	90	1935	2.28	32	1	50	< 0.01	< 10	< 10	< 1	50	>10000
644321	205	222	< 1	< 0.01	7	350	98	0.16	8	5	49	< 0.01	< 10	< 10	6	< 10	482
644322	205	226	< 1	< 0.01	1	100	78	0.05	2	1	32	< 0.01	< 10	< 10	< 1	< 10	418
644323	205	226	1	< 0.01	6	90	32	0.19	10	1	24	< 0.01	< 10	< 10	1	< 10	326
644324	205	226	3	0.01	45	240	68	3.03	6	3	45	< 0.01	< 10	< 10	6	< 10	340
644325	205	226	3	< 0.01	45	240	66	3.06	8	3	41	< 0.01	< 10	< 10	4	< 10	270
644326	205	226	1	0.14	12	620	12	0.04	4	4	21	0.14	< 10	< 10	37	< 10	38

CERTIFICATION: \_\_\_\_\_



# ALS Chemex

Aurora Laboratory Services Ltd.  
 Analytical Chemists \* Geochemists \* Registered Assayers  
 5175 Timberlea Blvd., Mississauga  
 Ontario, Canada L4W 2S3  
 PHONE: 905-624-2806 FAX: 905-624-6163

To: NORANDA MINING AND EXPLORATION INC.

874 TUNGSTEN ST.  
 THUNDER BAY, ON  
 P7B 6J3

RECEIVED SEP 18 2001

A0124028

Comments: ATTN: DAVE KING

CERTIFICATE

A0124028

(BUF) - NORANDA MINING AND EXPLORATION INC.

Project: 2520  
 P.O. #:

Samples submitted to our lab in Thunder Bay, ON.  
 This report was printed on 07-SEP-2001.

### SAMPLE PREPARATION

METHOD CODE	NUMBER SAMPLES	DESCRIPTION
212	10	Overlimit pulp, to be found

### ANALYTICAL PROCEDURES

METHOD CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
Ca-AA62	4	CaO %: HClO4-HNO3-HF digestion	AAS	0.01	50.0
Fe-AA62	3	Fe %: HClO4-HNO3-HF digestion	AAS	0.01	50.0
Mn-AA62	6	MnO %: HClO4-HNO3-HF digestion	AAS	0.01	50.0
Zn-AA46	2	Zn %: Conc. Nitric-HCl dig'n	AAS	0.01	50.0



# ALS Chemex

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 5175 Timberlea Blvd., Mississauga  
 Ontario, Canada L4W 2S3  
 PHONE: 905-624-2806 FAX: 905-624-6163

To: NORANDA MINING AND EXPLORATION INC.

874 TUNGSTEN ST.  
 THUNDER BAY, ON  
 P7B 6J3

Project : 2520  
 Comments: ATTN: DAVE KING

Page Number :1  
 Total Pages :1  
 Certificate Date: 07-SEP-2001  
 Invoice No. : I0124028  
 P.O. Number :  
 Account : BUF

## CERTIFICATE OF ANALYSIS

### A0124028

SAMPLE	PREP CODE	CaO %	Fe % tot.dig	MnO %	Zn %						
644310	212 --	-----	-----	1.54	-----						
644311	212 --	-----	20.2	3.35	-----						
644314	212 --	-----	-----	3.46	2.96						
644316	212 --	42.0	-----	-----	-----						
644317	212 --	33.0	-----	-----	-----						
644318	212 --	34.1	-----	-----	-----						
644319	212 --	37.1	-----	-----	-----						
644320	212 --	-----	32.3	5.66	3.00						
644322	212 --	-----	26.0	5.73	-----						
644323	212 --	-----	-----	3.02	-----						

CERTIFICATION: \_\_\_\_\_





## Geochemical Procedure - ME-ICP41 Trace Level Methods Using Conventional ICP-AES Analysis

**Sample Decomposition:** Nitric Aqua Regia Digestion

**Analytical Method:** Inductively Coupled Plasma - Atomic Emission Spectroscopy (ICP - AES)

A prepared sample (0.50 grams) is digested with aqua regia for at least one hour in a hot water bath. After cooling, the resulting solution is diluted to 12.5 ml with demineralized water, mixed and analyzed by inductively coupled plasma-atomic emission spectrometry. The analytical results are corrected for inter-element spectral interferences.

<u>Chemex Code</u>	<u>Element</u>	<u>Symbol</u>	<u>Detection Limit</u>	<u>Upper Limit</u>
229	ICP-AQ Digestion	n/a	n/a	n/a
2119	* Aluminum	Al	0.01%	15 %
2141	Antimony	Sb	2 ppm	1 %
2120	Arsenic	As	2 ppm	1 %
2121	* Barium	Ba	10 ppm	1 %
2122	* Beryllium	Be	0.5 ppm	0.01 %
2123	Bismuth	Bi	2 ppm	1 %
557	Boron	B	10 ppm	10,000 ppm
2125	Cadmium	Cd	0.5 ppm	0.05 %
2124	* Calcium	Ca	0.01%	15 %
2127	* Chromium	Cr	1 ppm	1 %
2126	Cobalt	Co	1 ppm	1 %
2128	Copper	Cu	1 ppm	1 %
2130	* Gallium	Ga	10 ppm	1 %
2150	Iron	Fe	0.01%	15 %
2151	* Lanthanum	La	10 ppm	1 %
2140	Lead	Pb	2 ppm	1 %
2134	* Magnesium	Mg	0.01%	15 %
2135	Manganese	Mn	5 ppm	1 %
2131	Mercury	Hg	1 ppm	1 %
2136	Molybdenum	Mo	1 ppm	1 %
2138	Nickel	Ni	1 ppm	1 %
2139	Phosphorus	P	10 ppm	1 %
2132	* Potassium	K	0.01%	10 %



Geochemical Procedure - ME-ICP41 (con't)

<u>Chemex Code</u>	<u>Element</u>	<u>Symbol</u>	<u>Detection Limit</u>	<u>Upper Limit</u>
2142	• Scandium	Sc	1 ppm	1 %
2118	Silver	Ag	0.2 ppm	0.01 %
2137	* Sodium	Na	0.01%	10 %
2143	* Strontium	Sr	1 ppm	1 %
551	Sulfur	S	0.01 %	10 %
2145	* Thallium	Tl	10 ppm	1 %
2144	* Titanium	Ti	0.01%	10 %
2148	* Tungsten	W	10 ppm	1 %
2146	Uranium	U	10 ppm	1 %
2147	Vanadium	V	1 ppm	1 %
2149	Zinc	Zn	2 ppm	1 %

\*Elements for which the digestion is possibly incomplete.



**Assay Procedure - HNO<sub>3</sub>-HClO<sub>4</sub>-HF-HCl digestion for Aluminum, Aluminum Oxide, Calcium Oxide, Iron, Lithium, Magnesium Oxide, Manganese Oxide, Potassium Oxide, Sodium Oxide, Strontium, and Vanadium**

**Sample Decomposition:** HNO<sub>3</sub>-HClO<sub>4</sub>-HF-HCl digestion  
**Analytical Method:** Atomic Absorption Spectroscopy (AAS)

A prepared sample (0.2 to 2.0g) is digested with nitric, perchloric, and hydrofluoric acids, and then evaporated to dryness. Hydrochloric acid is added for further digestion, and the sample is again taken to dryness. The residue is dissolved in hydrochloric acid and transferred to a volumetric flask (100 or 250 ml). An ionization suppressant is added. The resulting solution is diluted to volume with demineralized water, mixed and then analyzed by atomic absorption spectrometry against matrix-matched standards.

<u>Chemex Code</u>	<u>Element</u>	<u>Symbol</u>	<u>Detection Limit</u>	<u>Upper Limit</u>
38	Aluminum	Al	0.01 %	20 %
366	Aluminum Oxide	Al <sub>2</sub> O <sub>3</sub>	0.01 %	100 %
433	Aluminum Oxide	Al <sub>2</sub> O <sub>3</sub>	0.01 %	100 %
355	Calcium Oxide	CaO	0.01 %	100 %
327	Iron	Fe	0.01 %	100 %
356	Lithium	Li	0.01 %	100 %
357	Magnesium Oxide	MgO	0.01 %	100 %
328	Manganese Oxide	MnO	0.01 %	100 %
358	Potassium Oxide	K <sub>2</sub> O	0.01 %	100 %
360	Sodium Oxide	Na <sub>2</sub> O	0.01 %	100 %
362	Strontium	Sr	0.01 %	100 %
363	Vanadium	V	0.01 %	100 %

Note: Oxide value is total elemental reported as Oxide



**Assay Procedure - ME-AA46**  
**Evaluation of Ores and High Grade Materials by Aqua Regia digestion**

**Sample Decomposition:** Nitric - Aqua Regia Digestion  
**Analytical Method:** Atomic Absorption Spectroscopy (AAS)

A prepared sample (0.2 to 2.0g) is digested with concentrated nitric acid for one half hour. After cooling, hydrochloric acid is added to produce aqua regia and the mixture is then digested for an additional hour and a half. An ionization suppressant is added if molybdenum is to be measured. The resulting solution is diluted to volume (100 or 250 ml) with demineralized water, mixed and then analyzed by atomic absorption spectrometry against matrix-matched standards.

**International Units:**

ALS Chemex <u>Code</u>	<u>Element</u>	<u>Symbol</u>	Detection <u>Limit</u>	Upper <u>Limit</u>
331	Arsenic	As	0.01 %	30 %
349	Bismuth	Bi	0.001 %	30 %
320	Cadmium	Cd	0.001 %	10 %
301	Copper	Cu	0.01 %	30 %
3501	Copper	Cu	0.001 %	100 %
3508	Copper	Cu	10 ppm	1,000,000 ppm
326	Iron	Fe	0.01 %	30 %
312	Lead	Pb	0.01 %	30 %
306	Molybdenum	Mo	0.001 %	10 %
307	Molybdenum as MoS <sub>2</sub>	MoS <sub>2</sub>	0.001 %	100 %
386	Silver	Ag	0.3 g/t	1500 g/t
956	Silver (Rush charge)	Ag	0.3 g/t	1500 g/t
365	Selenium	Se	0.01 %	30 %
316	Zinc	Zn	0.01 %	30 %
8089	Manganese	Mn	0.01 %	30 %

**American/English Units:**

ALS Chemex <u>Code</u>	<u>Element</u>	<u>Symbol</u>	Detection <u>Limit</u>	Upper <u>Limit</u>
385	Silver	Ag	0.01 oz/ton	50 oz/ton
980	Silver (Rush charge)	Ag	0.01 oz/ton	50 oz/ton



**Assay Procedure - ME-AA62**  
**Evaluation of Ores and High Grade Materials**

**Sample Decomposition:** HNO<sub>3</sub>-HClO<sub>4</sub>-HF-HCl digestion  
**Analytical Method:** Atomic Absorption Spectroscopy (AAS)

A prepared sample (0.2 to 2.0g) is digested with nitric, perchloric, and hydrofluoric acids, and then evaporated to dryness. Hydrochloric acid is added for further digestion, and the sample is again taken to dryness. The residue is dissolved in nitric and hydrochloric acids and transferred to a volumetric flask (100 or 250 ml). The resulting solution is diluted to volume with demineralized water, mixed and then analyzed by atomic absorption spectrometry against matrix-matched standards.

**International Units:**

ALS Chemex <u>Code</u>	<u>Element</u>	<u>Symbol</u>	Detection <u>Limit</u>	Upper <u>Limit</u>
323	Cobalt	Co	0.001 %	30 %
3310	Copper	Cu	0.01 %	30 %
3503	Copper	Cu	0.001 %	30 %
327	Iron	Fe	0.01 %	30 %
3312	Lead	Pb	0.01 %	30 %
3505	Lead	Pb	0.001 %	30 %
3328	Manganese	Mn	0.01 %	50 %
3506	Molybdenum	Mo	0.001 %	10 %
321	Nickel	Ni	0.01 %	30 %
3321	Nickel	Ni	0.001 %	30 %
3386	Silver	Ag	1 g/t	1,000 g/t
3316	Zinc	Zn	0.01 %	30 %
3504	Zinc	Zn	0.001 %	30 %

**American/English Units:**

ALS Chemex <u>Code</u>	<u>Element</u>	<u>Symbol</u>	Detection <u>Limit</u>	Upper <u>Limit</u>
3385	Silver	Ag	0.03 oz/ton	30 oz/ton

**Appendix IV**  
**Statement of Costs**


Noranda Inc  
18-Jan-02

**Statement of Expenditures - Total Project  
Cameron Property**  
For the year ending December 31, 2001

OPTION PAYMENTS	10,000
GOVERNMENT PAYMENTS	1,420
CLAIM STAKING	6,000
GEOLOGY	5,105
ROCK GEOCHEM	257
DIAMOND DRILLING	107,081
<b>TOTAL PROJECT</b>	<b>129,863</b>

=====

Certified Correct:


  
Laina Maclean  
Manager, Expl. Mgmt Accting

Noranda Inc  
18-Jan-02

**Statement of Expenditures - Allowable Assessment Costs**  
**Cameron Property**  
For the year ending December 31, 2001

GEOLOGY	5,105
ROCK GEOCHEM	257
DIAMOND DRILLING	107,081
<b>TOTAL PROJECT</b>	<b>112,443</b>
	=====

Certified Correct:

  
Laina Maclean  
Manager, Expl. Mgmt Accting

Noranda Inc  
18-Jan-02

**Statement of Expenditures - Allowable Assessment Costs  
(includes Subcosts)  
Cameron Property  
For the year ending December 31, 2001**

<b>GEOLOGY</b>	
geology- permanent payroll	2652
geology- contract payroll	313
geology- supplies	185
geology- miscellaneous	680
geology- transportation	425
geology- 50% meals, ent.	172
geology- contractors	400
geology- courier, express	278
	<hr/>
<b>TOTAL GEOLOGY</b>	<b>5105</b>
<b>GEOCHEM</b>	
rock geochem- assays	257
	<hr/>
<b>TOTAL GEOCHEM</b>	<b>257</b>
<b>DRILLING</b>	
diamond drilling- perm prll	7870
diamond drilling-contr prll	3125
diamond drilling-supplies	2104
diamond drilling- misc.	3266
diamond drilling-equip.rep/ren	2275
diamond drilling- lodging	3912
diamond drilling- transport.	2938
diamond drilling-helicopters	41430
diamond drilling-50% meals,ent	107
diamond drilling-100% meal/gro	2828
diamond drilling-contractors	985
drill contract - mob/demob	7500
drill contract - hours	9408
drill contract - consumables	1351
drill contract - coring	17637
diamond drilling-courier,exprs	345
	<hr/>
<b>TOTAL DRILLING</b>	<b>107081</b>
<b>TOTAL PROJECT</b>	<b>112443</b>
	<hr/> <hr/>

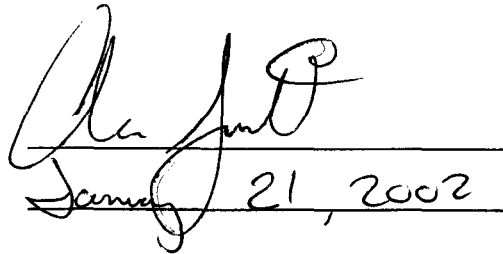
**Appendix V**  
**Statement of Qualifications**

**STATEMENT OF QUALIFICATIONS**

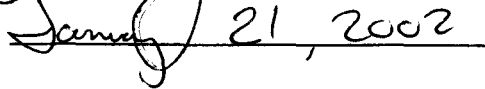
I, Al Smith, hereby certify that:

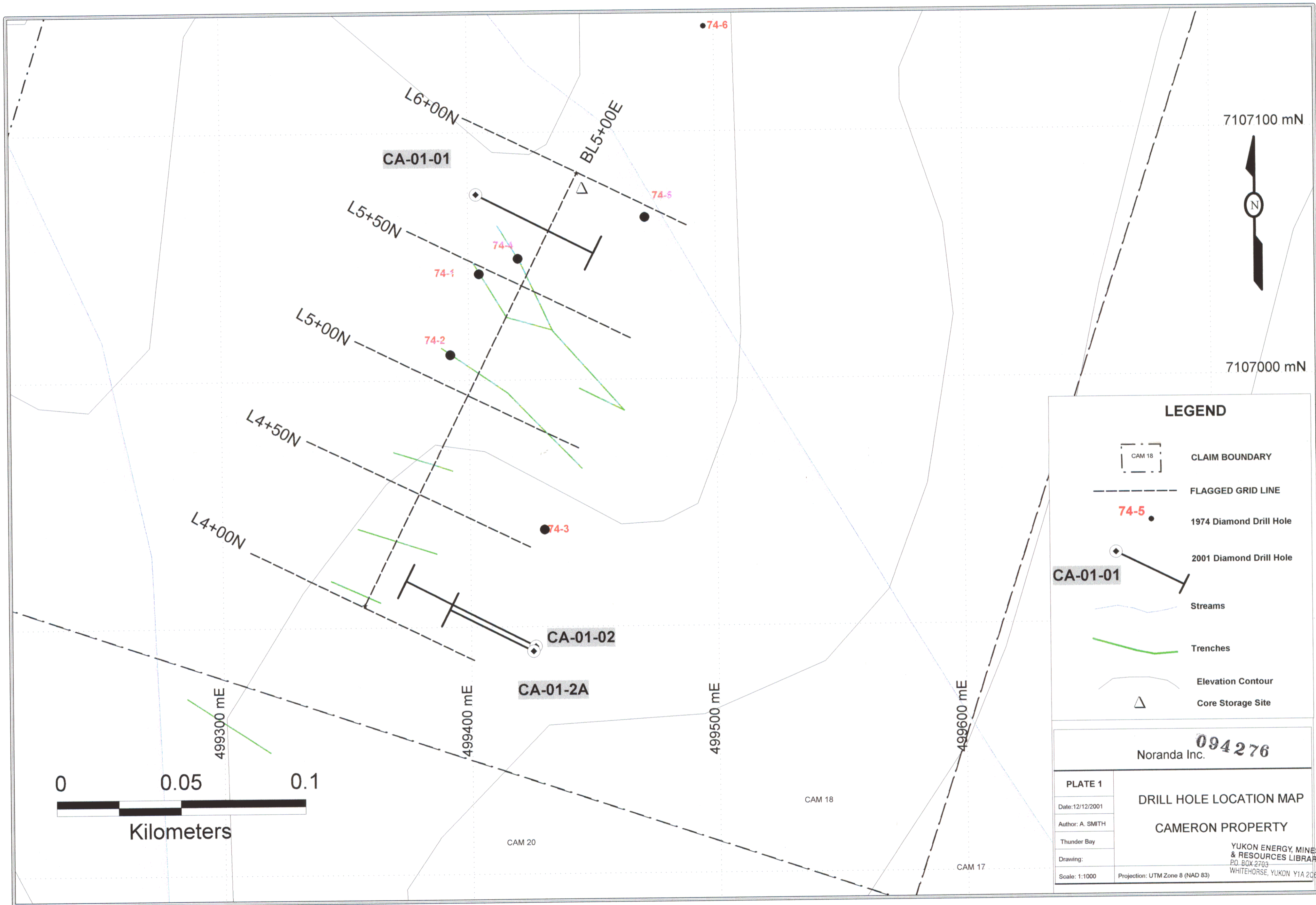
1. I am a practicing geologist with Noranda Inc. in Thunder Bay, Ontario and reside at 251 London Drive, Thunder Bay, Ontario.
2. I am a graduate of University of Western Ontario with the degree of M.Sc. in Geology.
3. I am a Canadian Citizen.
4. I have practiced my profession since graduation in 1987.
5. I do not have, nor do I expect to receive, directly or indirectly, any interest in the properties of Noranda Inc.

Signature:

A handwritten signature in cursive script, appearing to read "Al Smith", written over a horizontal line.

Date:

A handwritten date "January 21, 2002" written in cursive script over a horizontal line.



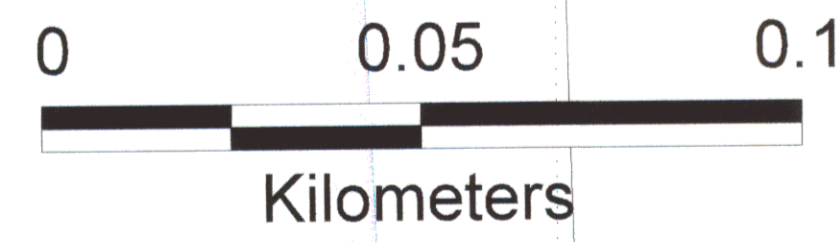
**LEGEND**

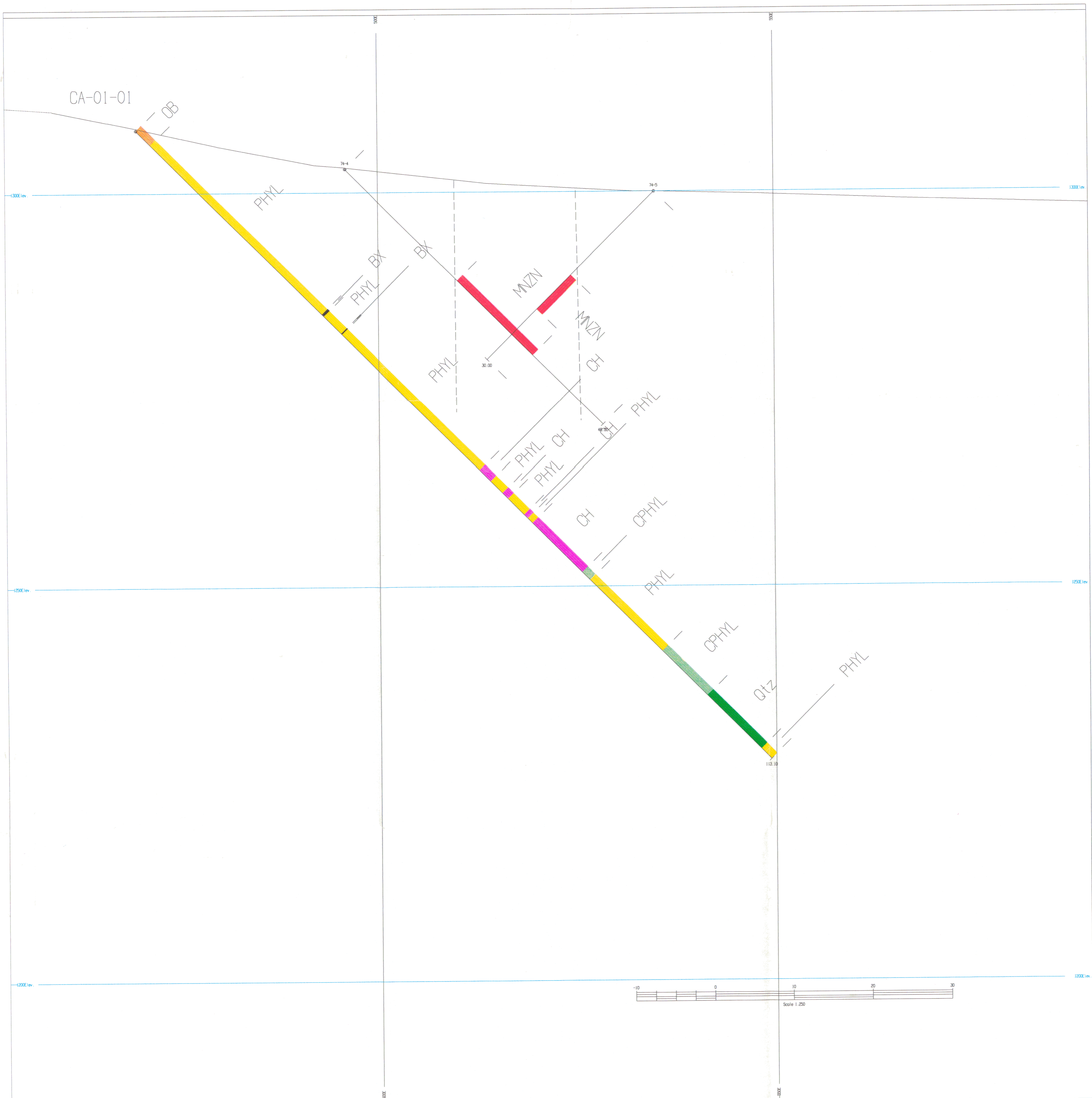
- CLAIM BOUNDARY
- FLAGGED GRID LINE
- 1974 Diamond Drill Hole
- 2001 Diamond Drill Hole
- Core Storage Site
- Streams
- Trenches
- Elevation Contour
- Core Storage Site

Noranda Inc. **094276**

<b>PLATE 1</b>	<b>DRILL HOLE LOCATION MAP</b> <b>CAMERON PROPERTY</b>
Date: 12/12/2001	
Author: A. SMITH	
Thunder Bay	
Drawing:	
Scale: 1:1000	Projection: UTM Zone 8 (NAD 83)

YUKON ENERGY, MINES & RESOURCES LIBRARY  
P.O. BOX 2703  
WHITEHORSE, YUKON Y1A 2G6

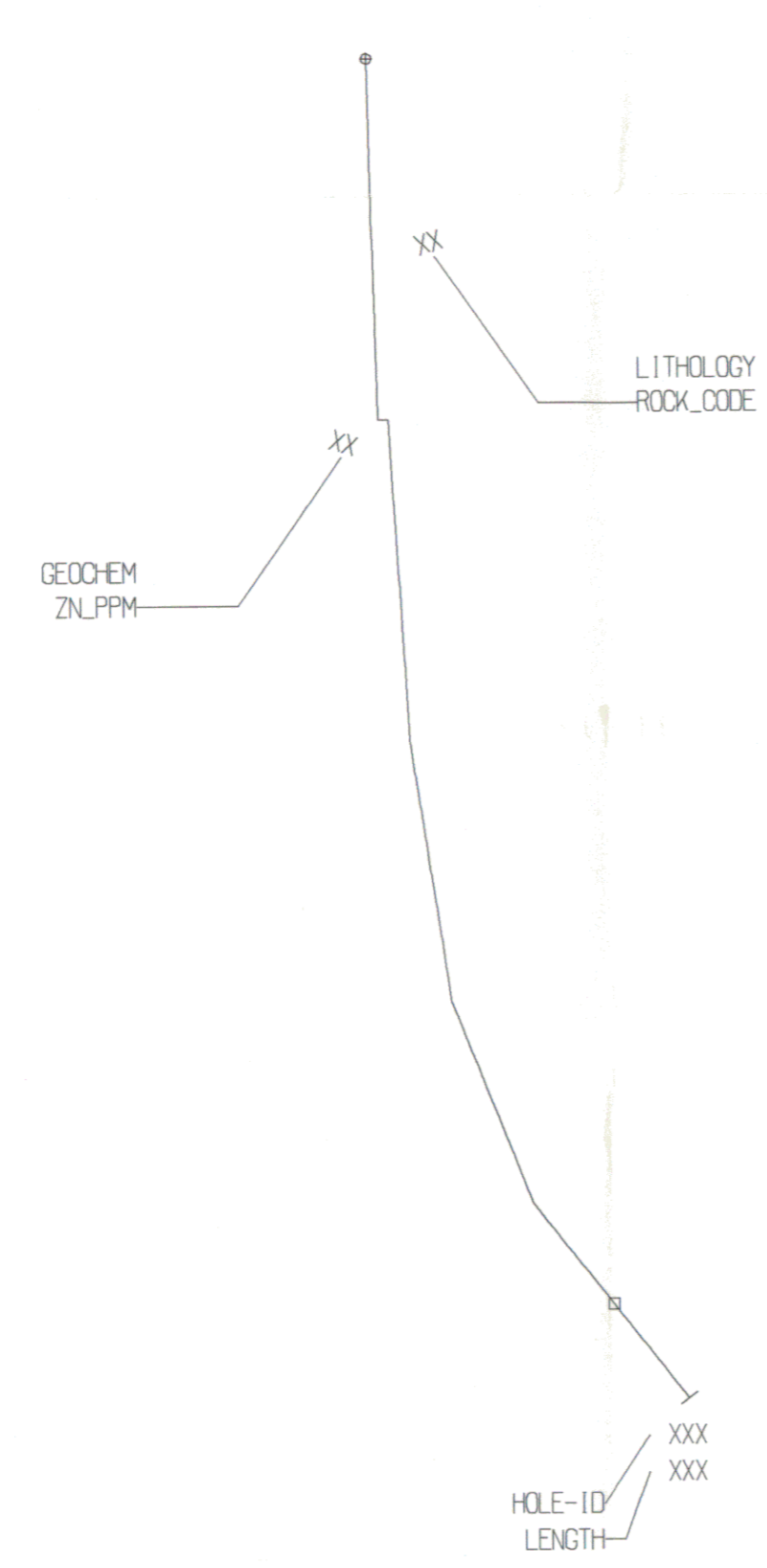




LEGEND

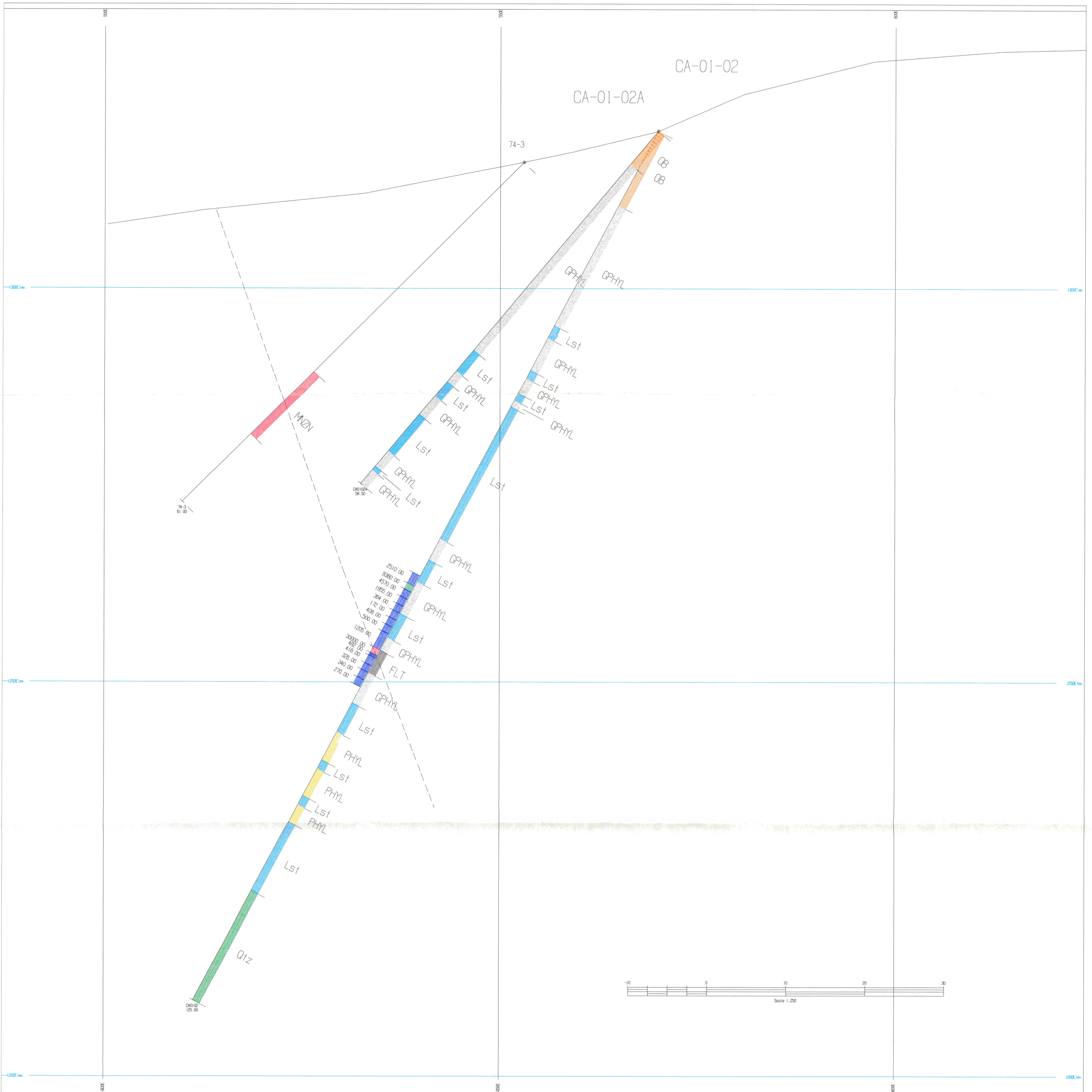
- LITHOLOGY : ROCK\_CODE (LEFT)
- MNZN - MINERALIZATION
  - PHYL - PHYLLITE
  - CH - CHERT
  - OB - OVERBURDEN
  - CPHYL - CHLORITIC PHYLLITE
  - BX - BRECCIA
  - Qtz - QUARTZITE
  - Lst - LIMESTONE
  - CPHYL - GRAPHITIC PHYLLITE
  - FLT - MINERALIZED
  - FAULT BRECCIA

- GEOCHEM : ZNUPPM (RIGHT)
- 0.0000 - 5000.0000
  - 5000.0000 - 10000.0000
  - 10000.0000 - 25000.0000
  - 25000.0000 - 1000000.0000



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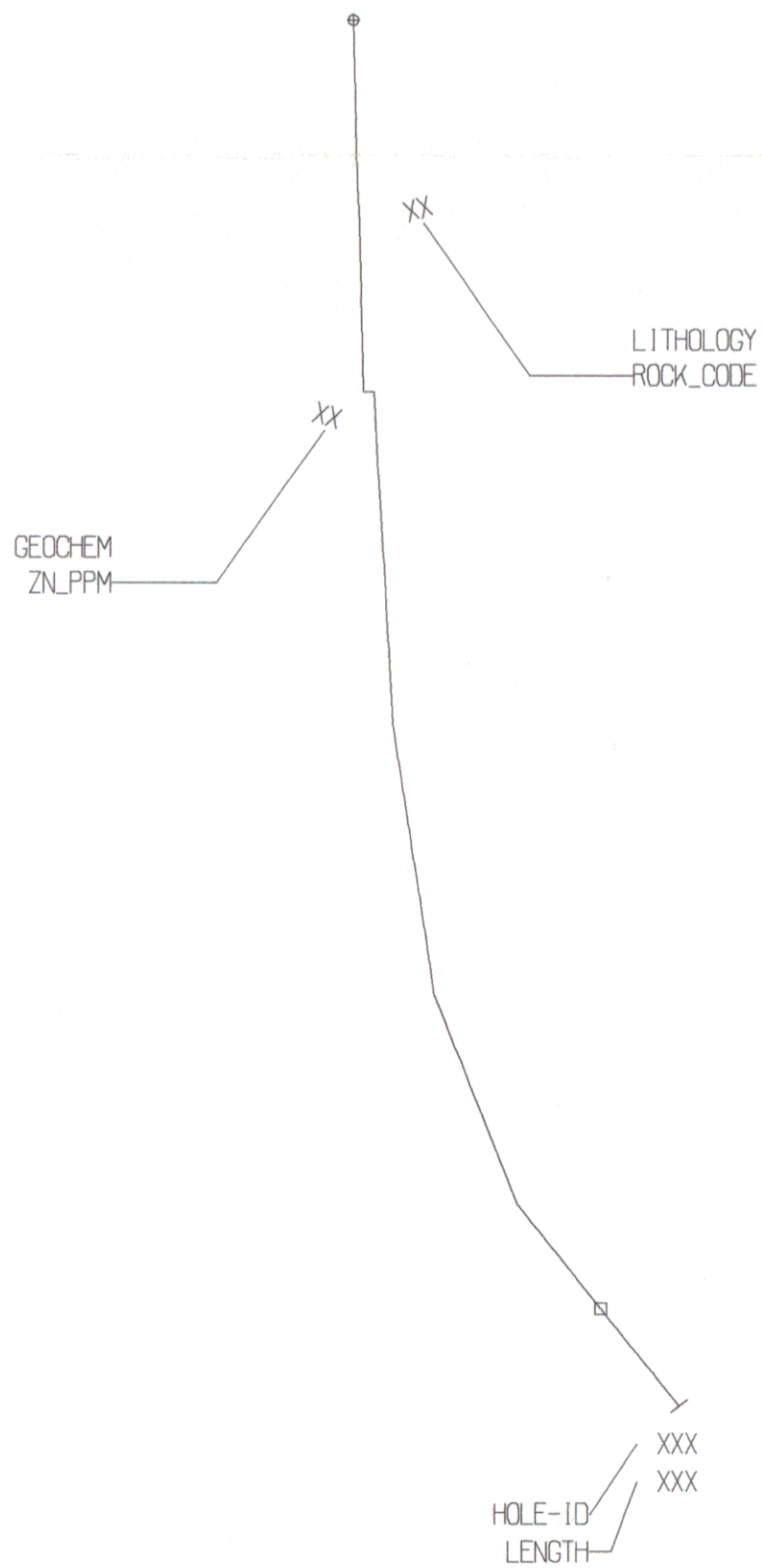
LEGEND

LITHOLOGY : ROCK\_CODE (LEFT)

- MNZN - MINERALIZATION
- PHYL - PHYLLITE
- CH - CHERT
- OB - OVERBURDEN
- GPHYL - CHLORITIC PHYLLITE
- BX - BRECCIA
- Qtz - QUARTZITE
- Lst - LIMESTONE
- GPHYL - GRAPHITIC PHYLLITE
- FLT - MINERALIZED FAULT BRECCIA

GEOCHEM : ZN\_PPM (RIGHT)

- 0.0000 - 5000.0000
- 5000.0000 - 10000.0000
- 10000.0000 - 25000.0000
- 25000.0000 - 1000000.0000



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094276

Noranda Inc.  
 Western Canada Region  
 874 Tupper Street  
 Thunder Bay, ON  
 P7B 6L6  
 UNITS: METRES DATE: 01/12/13 TIME: 15:47:37

PLATE: 3 CAMERON PROPERTY  
 VERTICAL SECTION 450N  
 DRILL HOLES CA-01-02, CA-01-02A  
 (LOOKING NNE)

Set from by: Geomac Software International