

ASSESSMENT REPORT
GEOLOGICAL AND GEOCHEMICAL SURVEY
NIE GROUP
ATLIN MINING DIVISION
TATSAMENIE LAKE AREA, B. C.
N.T.S. 104K/Tulsequah Sheet

58°21'N

132°18'W

**GEOLOGICAL BRANCH
ASSESSMENT REPORT**

11,965

OWNER: CHEVRON CANADA LIMITED
OPERATOR: CHEVRON CANADA RESOURCES LIMITED

Authors: Derek Brown
Mike Gray
Godfrey Walton

October 1983

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LOCATION AND ACCESS

The NIE #3 to #7 claims are situated at approximately 132°18'W and 58°21'N, on the east shore of Tatsamenie Lake, 155 km southeast of Atlin, B. C. A helicopter provided access to the property from a base camp at Bearskin Lake, B. C., 15 km to the south (Figure 1).

CLAIMS

The NIE #3 to #7 claims were staked during September 1981.

<u>Claim</u>	<u>Record No.</u>	<u>Record Date</u>	<u>No. of Units</u>
NIE #3	1541	September 18, 1981	20
NIE #4	1542	"	20
NIE #5	1543	"	15
NIE #6	1544	"	10
NIE #7	1545	"	20

These claims cover previously unstaked ground

REGIONAL GEOLOGY

The NIE #3 to #7 claims are situated on the east shore of Tatsamenie Lake. The rocks in the area consist mostly of Pre-Upper Triassic clastic sediments and intercalated volcanic rocks and Lower or Middle Triassic(?) foliated intermediate intrusive rocks. To the north of the claims lies a large body of Cretaceous to Tertiary quartz monzonite. Gneissic rocks of unknown age and Jurassic Takwahoni Formation sediments are exposed to the northwest. South of the claim group Permian(?) ultramafic rocks are exposed along the contact between Pre-Upper Triassic clastic sediments and Lower to Middle

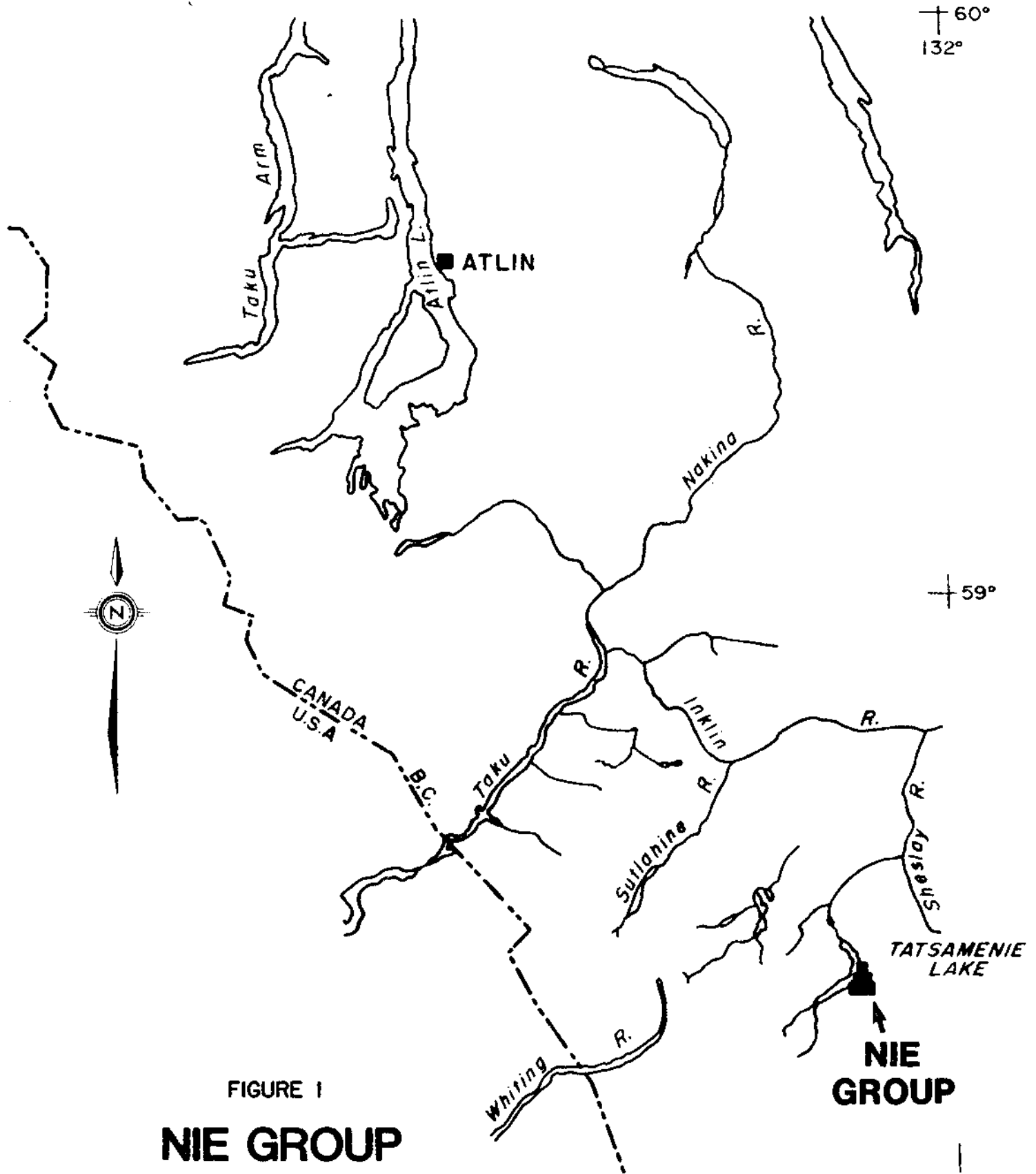


FIGURE 1
NIE GROUP
LOCATION MAP
 M523

0 30
 Km

Triassic(?) intermediate intrusive rocks. To the east lies more of the Lower to Middle Triassic(?) intrusive rock and gneissic rocks of unknown age. Southwest and east of the claim group occur two large areas of hydrothermal alteration containing copper and antimony showings (Souther, 1971).

GEOLOGICAL SURVEY OF CLAIMS

The NIE Group consists of predominantly Pre-Upper Triassic sediments inter-layered with volcanic rocks. These sedimentary and volcanic rocks include phyllite, shaly sediments, dolomite, limestone, greenstone, tuff and foliated augite porphyry. These rocks are well exposed in the southern part of the group (NIE #3 and #4). In most other areas on the claims outcrops are obscured by dense forest.

A number of intrusions cut the Pre-Middle Triassic rocks, these include a hornblende diorite stock (southeast corner of the claims), a syenite(?) plug, and diorite plugs and dykes.

On the east side of the NIE Group a fault has brought crustal rocks to the surface. This slice of ultramafics trends roughly north-south. In the southeast corner of NIE #4 are Tertiary basalt flows.

Permian Ultramafic Rocks (Unit 1)

The ultramafic rocks occur as a fault bounded slice that trends north-south. At the south end of the claims coarse grained, dark green-grey pyroxenites are exposed. The remainder of this unit is fine grained black to grey serpentinite. The weathered surface of the altered serpentinite is

reddish-orange to brown. Quartz-iron carbonate altered serpentinite occurs in small zones up to 5 to 10 meters wide.

Pre-Upper Triassic Rocks

The Pre-Upper Triassic rocks consist of a number of lithologies as described below. A stratigraphic section is difficult to establish because the rocks are highly deformed and sheared.

Thick, massive greenstone is common. Chlorite alteration varies from moderate to strong. No structures such as layering or mineral foliation is evident. The rock is nondescript and green.

Tuffaceous rocks are light to dark brown weathering. Some are very fine grained to aphanitic and siliceous. Lithic tuff fragments are clay altered and can exhibit a faint flow(?) texture.

Foliated augite porphyry is dark green with a phyllitic sheen. Augite phenocrysts are dark green, up to 0.5 cm long and comprise up to 35% of the rock. Chlorite flakes warp around the augite "augens". This is the most common lithology found on the claims.

Fine-grained, light brown to greenish phyllites occur in the central part of the group. Phyllites are predominantly a felsic calc-phyllite (Souther, 1971). These rocks contain zones of quartz-iron carbonate alteration.

Shaly, carbon-rich sediments are thinly bedded(?). They are very fine grained, dark grey to black argillaceous sediments. They are folded, sheared and

probably fault bounded. Quartz veins are commonly associated with these sediments.

Limestone and dolomite are fine to medium grained, buff and white weathering. They occur as fault slices and layers within the greenstone section. Layering is highly distorted and sheared. The limestone contains nodules(?) and thin (25 cm) lenses of dark grey chert.

Lower or Middle Triassic Foliated Hornblende Diorite

The Triassic diorite intrudes Pre-Upper Triassic sediments and volcanics as a stock, 1 km by 2 km long. It is a medium grained, relatively unaltered, mottled black and white coloured hornblende diorite. Intensity of foliation and grain size appears to increase from the center of the intrusion to the perimeter.

Post Middle Jurassic Quartz Monzonite and Hornblende Diorite

Most of the Post Middle Jurassic intrusions are located in the northern area of the claim group (NIE #7, #6, #5). The quartz monzonite is medium to coarse grained, pink-grey, and usually occurs as small plugs, forming topographical knobs. The hornblende diorite occurs as small plugs, dykes and as clusters or small swarms of dykes. The hornblende diorite is medium grained, dark grey, locally gabbroic, also forming small knobs.

Late Jurassic-Cretaceous Syenite(?)

The syenite plug(?) is found in the south-central part of the claims. The syenite(?) is a reddish-pink, medium to coarse grained, very distinct pink weathering intrusion. The plug appears to be the source of a number of dykes that trend east and southward. The dykes vary in thickness from 1 - 2 cm wide to substantial 3 m wide dykes. The dykes are locally 95% potassium feldspar, and contain up to 1% disseminated pyrite.

Tertiary Level Mountain Group - Basalt Flow

Flows are on the ridge top in the south-east corner of NIE #4. The flows cap the Lower-Middle Jurassic foliated hornblende diorite stock, ultramafics and the augite porphyry. The basalt is medium to dark grey, vesicular, and unaltered.

MINERALIZATION AND ALTERATION

Mineralization and alteration are generally confined to the north area of the NIE claims. Minor quartz-Fe-carbonate ultramafic rocks are exposed to the south. In the north of the NIE claims well fractured, rusty diorites show varying degrees of Fe-carbonate alteration and minor clay alteration and sericitization. Narrow, brecciated quartz and carbonate veins containing pyrite up to 2% are associated with the alteration in the diorite. Near the lake shore on the northern part of the claims is an altered diorite with a 25 m by 40 m zone of intense silicification and brecciation. Fragments in the breccia are altered diorite. A few hundred meters south of the altered diorite are small pod-like outcrops of quartz-Fe-carbonate altered ultramafic. Fuchsite disseminations and possibly small chromite crystals are with the altered ultramafics.

GEOCHEMICAL SURVEY OF CLAIMS

Approximately 385 soil samples and 55 rock samples were collected on NIE #3 to #7 during the 1983 field season. Almost all of the soils collected were from a large grid covering NIE #4 and NIE #5. The grid was put in to extend coverage east of the 1982 NIE #3 grid. The lines were spaced 300 m apart along a 5.1 km long baseline, with 100 m spacings between sample sites.

Soil samples were placed in kraft wet strength soil bags, air dried and shipped to Chemex Labs, North Vancouver, B. C. The samples were further dried and then sieved, with the -80 mesh portion being retained for analysis. Rock samples were crushed and then pulverized in a ring grinder to -100 mesh. For Au determination, a fire assay - atomic absorption technique is used with the fire assay bead being dissolved in HCl and HNO₃ then analyzed by conventional atomic absorption techniques. For Ag, a mixture of HClO₄ and HNO₃ is used to digest the sample, which is followed by atomic absorption spectrophotometry. The As analyses are done by standard colorometric techniques following an HClO₄ plus HNO₃ digestion. Antimony analyses are done by digesting the sample in HCl, then adding potassium iodide, extracting with TOPO - MIBK and then analyzing by atomic absorption spectrophotometry.

Rock samples were collected on prospecting and mapping traverses, mainly south of the NIE #5 and NIE #7 claim line. Only one rock is highly anomalous in gold. This is from float in a creek, possibly from a vein. Arsenic and antimony anomalies from rocks in the central part of the claims are

associated with fault bounded shaly, carbon-rich sediments. Geochemical results and locations are illustrated on Figures 3 to 7.

CONCLUSIONS

Fifty-five man-days were spent geochemically sampling, mapping, and prospecting the NIE #3 to #7 claims. The geology consists of a package of sediments and interlayered volcanic rocks, cut by three distinct intrusive events. To the east a major fault zone has exposed an ultramafic body trending north-south. The ultramafic rocks separate Pre-Upper Triassic rocks to the west from intermediate intrusive rocks of Post Middle Jurassic(?) age to the east. Alteration and mineralization is generally confined to the northern part of the claims (NIE #7).

The geochemical results indicate no strong gold or silver anomalies in the soils, but does indicate weak anomalies from rock samples.

RECOMMENDATIONS

The fault zones delineated by 1983 mapping should be prospected and rock sampled in detail. A detailed soil grid could be established on the NIE #3 claim to cover As and Sb rock sample anomalies.

REFERENCE

Souther, J.C. (1971). Geology and mineral deposits of Tulsequah
map-area, British Columbia. Geological Survey of Canada
Memoir 362, 84 p.

1983 EXPLORATION PROGRAM
NIE #3-7 CLAIMS
TATSAMENIE LAKE AREA, B.C.
COST STATEMENT

PERIOD: June 26 to July 26, 1983

LABOUR:

<u>Name</u>	<u>Position</u>	<u>Field Days</u>	<u>Office Days</u>
D. Brown	Geologist	2	-
M. Gray	Assistant Geologist	17	3
W. Hewgill	Sampler	7	-
J. Armstrong	"	7	-
D. Hodge	"	7	-
F. Wohlgemuth	"	5	-
D. Day	"	1	-
P. Frank	"	1	-
J. Frank	"	1	-
M. Woods	"	4	-
G. Wober	"	<u>3</u>	-
	Total Man Days	55	3
Average cost per field man day	=	\$100./day	\$ 5,500.00
Average cost per office man day	=	\$150./day	450.00

ANALYSES:

Rock: 55 samples \$17.65 each	970.75
Soil: 385 samples \$16.15 each	6,217.75

CAMP COSTS:

Total man days 55 @\$60. per day	3,300.00
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HELICOPTER:

8.67 hrs. @\$500. per hr. including fuel	4,335.00
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DRAFTING:


4 man days @\$100. per day	<u>400.00</u>
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TOTAL	\$21,173.50
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STATEMENT OF QUALIFICATIONS

I, Godfrey Walton, have worked as a geologist in British Columbia, Yukon, Northwest Territories, Alberta and Ontario since 1973. A B.Sc. (Hons. Geology) was received in 1974 from the University of Alberta and followed by a M.Sc. degree in geology from Queen's University in 1978. I am currently employed as a geologist with Chevron Canada Resources Limited of Vancouver, B. C.

I am a member of the Canadian Institute of Mining and Metallurgy, Exploration Geochemists and Mineralogical Association of Canada.



GODFREY WALTON

STATEMENT OF QUALIFICATIONS

I, Derek Brown, graduated in May, 1981 with a B.Sc. (Hons. Geology) from Carleton University, Ontario. I have worked as a geologist since graduation and am presently employed on a temporary basis by Chevron Canada Resources Limited of Vancouver, B. C.

Derek Brown

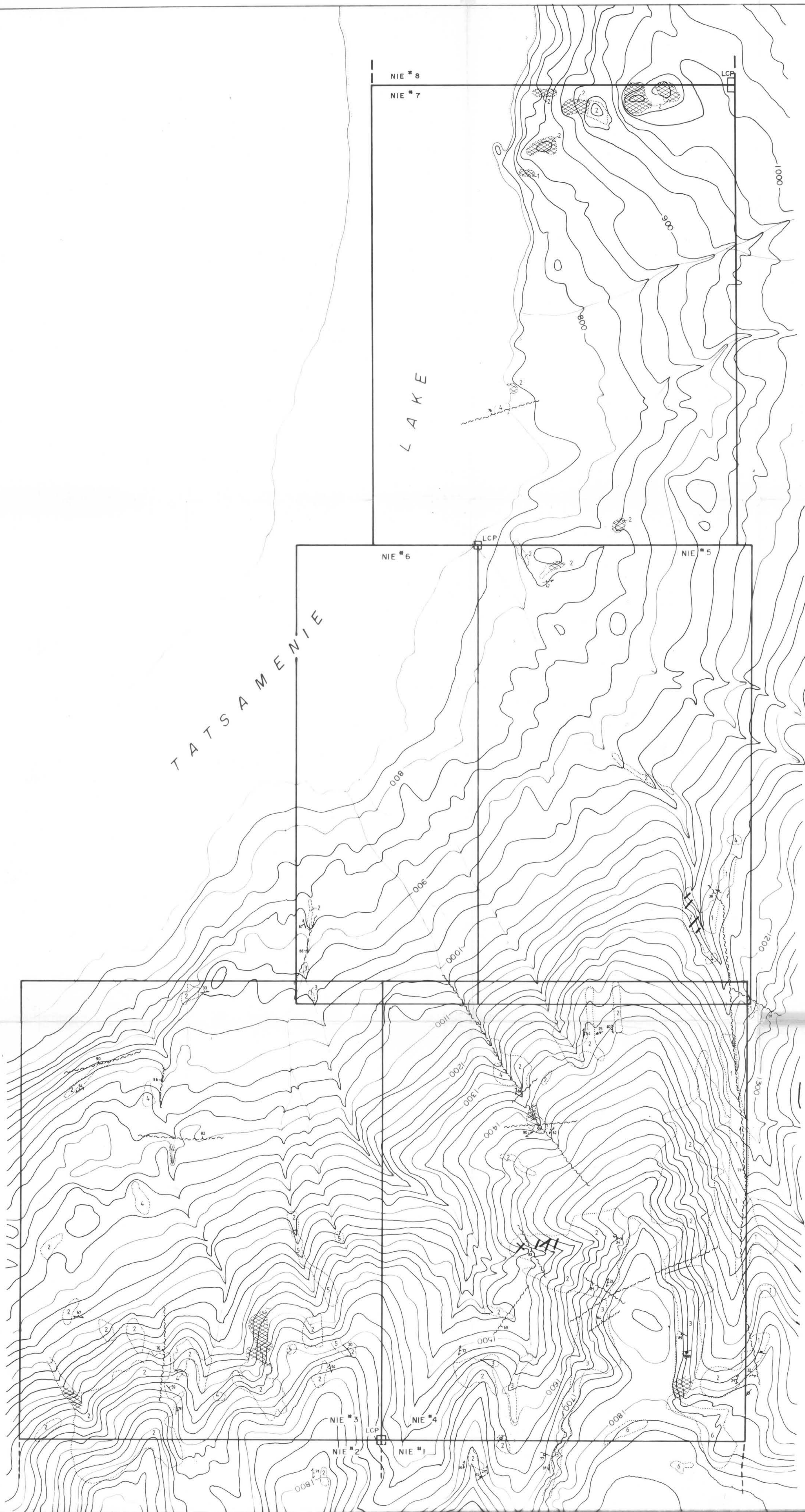
DEREK BROWN

STATEMENT OF QUALIFICATIONS

I, Michael Gray, have completed 3rd year geology at the University of British Columbia. I have worked as geologist's field assistant in B. C. for the past three summers and am employed on a temporary basis with Chevron Canada Resources Limited, Vancouver, B. C.

A handwritten signature in cursive script that reads "Michael Gray". The signature is written in dark ink and is positioned above the printed name.

MICHAEL GRAY



LEGEND

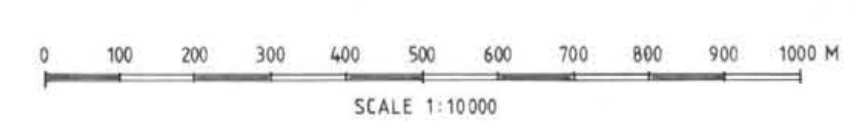
- TERTIARY**
- 6 UNIT 6 - LEVEL MOUNTAIN GROUP - BASALT FLOWS
- EARLY TERTIARY**
- QUARTZ / IRON CARBONATE ALTERATION
- CRETACEOUS-LATE JURASSIC**
- 5 UNIT 5 - SYENITE (?) STOCK, AND ASSOCIATED DYKES
- POST MIDDLE JURASSIC**
- 4 UNIT 4 - HORNBLENDE DIORITE, QUARTZ MONZONITE
- LOWER MIDDLE TRIASSIC**
- 3 UNIT 3 - FOLIATED HORNBLENDE DIORITE
- PRE-UPPER TRIASSIC**
- 2 UNIT 2 - STIKINE ASSEMBLAGE - (GREENSTONE, PHYLLITE, SILTSTONE, LIMESTONE, FOLIATED AUGITE PORPHYRY, LITHIC TUFFS)
- PERMIAN (?)**
- 1 UNIT 1 - PYROXENITE, SERPENTINITE

SYMBOLS

- GEOLOGICAL CONTACT (DEFINED, APPROXIMATE)
- LIMIT OF OUTEROP
- - - FAULT (DEFINED, APPROXIMATE)
- ~ ~ ~ BEDDING
- ~ ~ ~ FOLIATION
- ~ ~ ~ JOINT OR FRACTURE
- ~ ~ ~ DYKE OR VEIN
- ~ ~ ~ FAULT PLANE
- /// DYKE SWARM
- ☼ PORPHYRY

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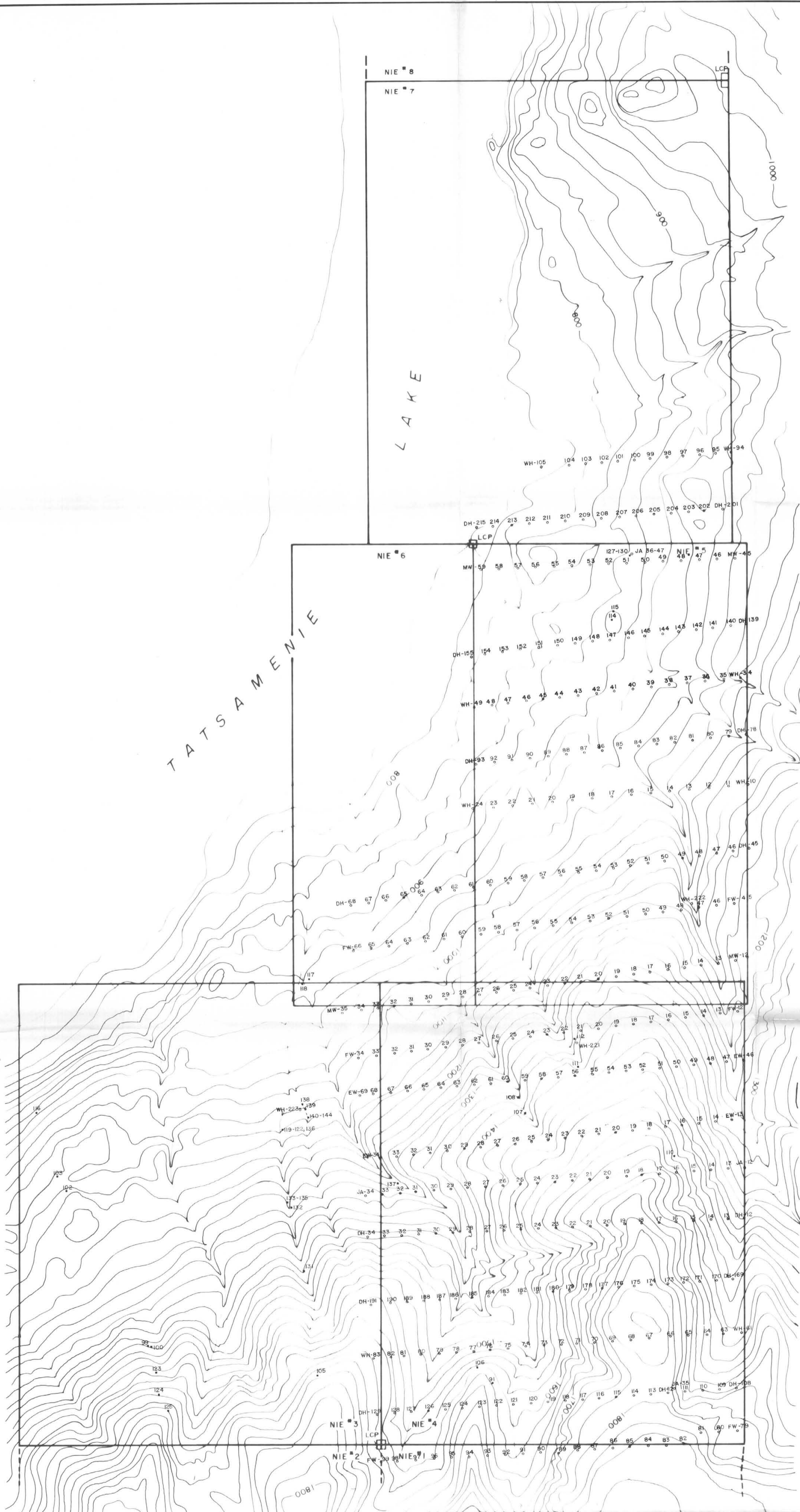
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Chevron Standard Limited Minerals Staff

NIE CLAIMS GEOLOGY

FIGURE No	2	PROJECT No	M 504
	DCT 1983		SCALE 1:10,000
	104K/9		G - 19



0 400m

LEGEND

- M63T1 - 1983 ROCK SAMPLE
- WH, MW, DH, EW, JA, FW - 1983 SOIL SAMPLE

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NIE CLAIMS ROCK & SOIL SAMPLE LOCATIONS	
FIGURE No. 3	PROJECT No. M 504
DATE OCT. 1983	SCALE 1:10,000
COMPILED BY	FILE No. S - 56



0 400m

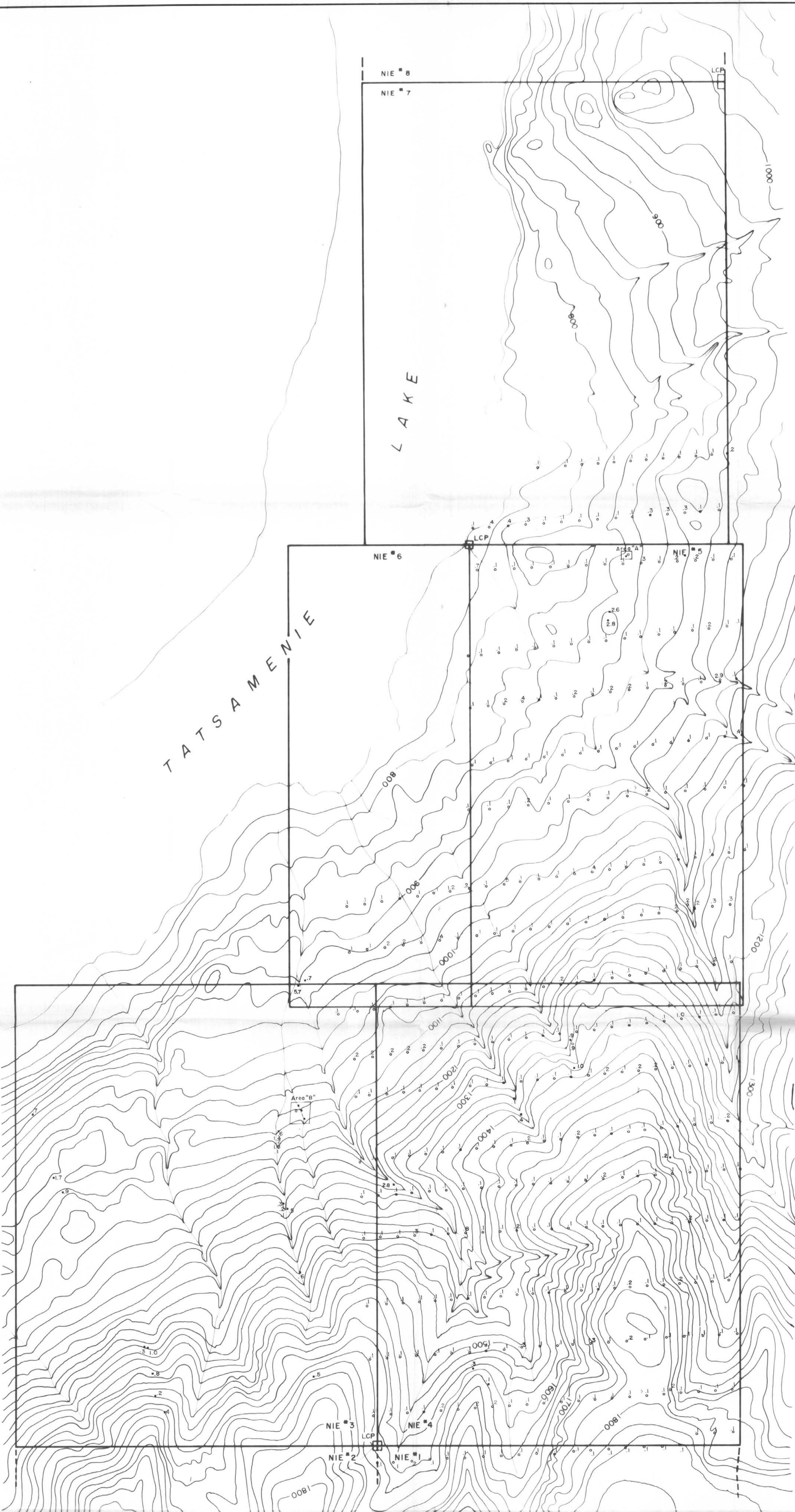


• SOIL
■ ROCK
◇ Au

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NIE CLAIMS GEOCHEMISTRY Au - ppb	
FIGURE No: 4	PROJECT No: M 504
DATE: OCT. 1983	SCALE: 1:10,000
COMPILED BY:	FILE No: C - 175



0 400m

Area "A"
(Ag)

- .6
- .4
- .7
- .7
- .1
- .1
- .3
- .1
- .3
- .2
- .2
- .1
- .3
- .2
- .1
- .1

Area "B"
(Ag)

- .2
- .8
- .8
- .4
- .4
- 1.6
- 1.5
- 1.1

- SOIL
- ROCK
- .1 Ag

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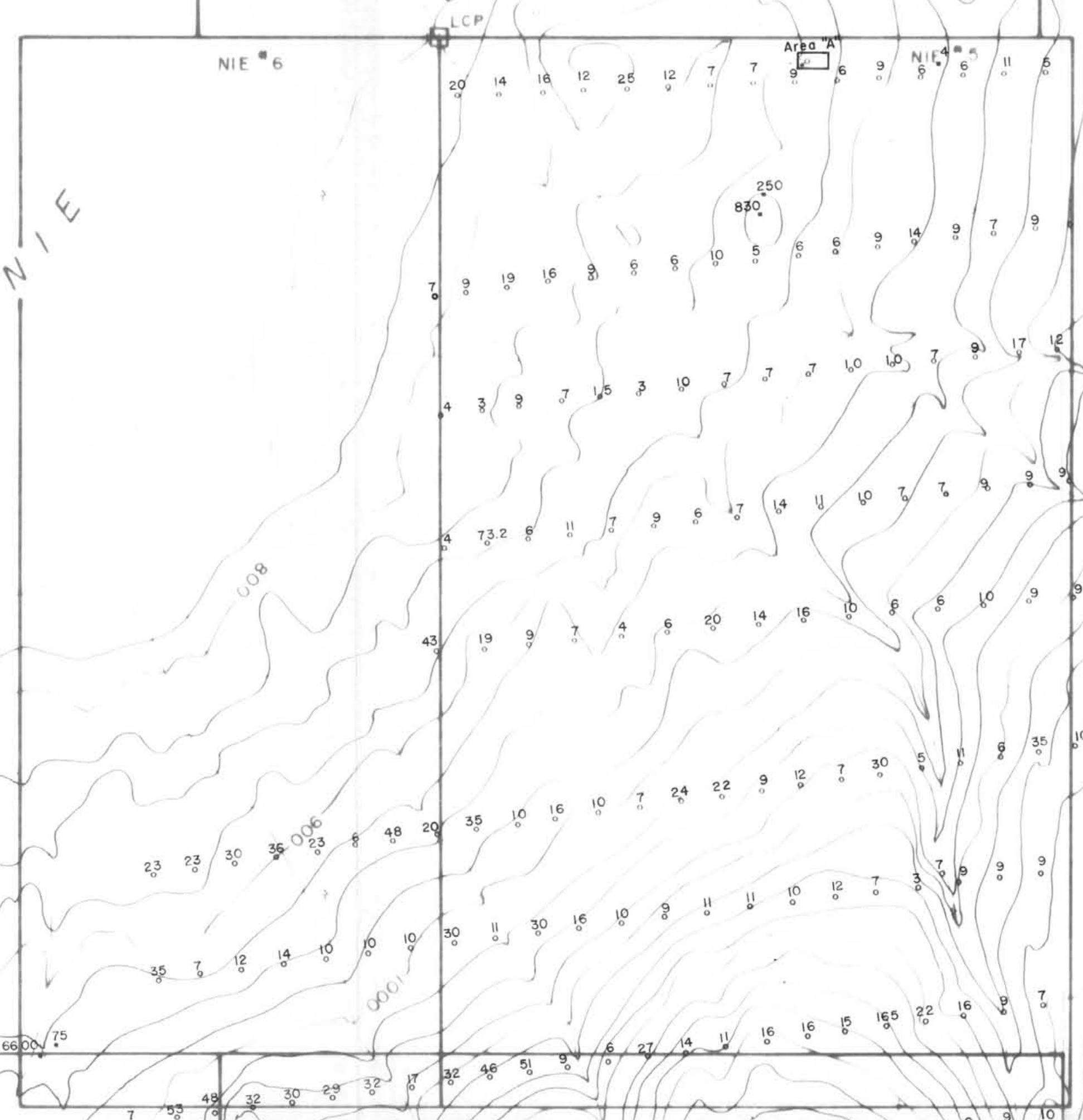
Chevron Standard Limited Minerals Staff	
NIE CLAIMS GEOCHEMISTRY Ag - ppm	
FIGURE No 5	PROJECT No M 504
DATE OCT. 1983	SCALE 1:10,000
COMPILED BY	FILE No C - 176

L A K E

T A T S A M E N I E



0 400m



Area "A"
(As)

■	145	○	12
■	12	○	97
■	645	○	180
■	260	○	79
		○	25
		○	17
		○	20
		○	14
		○	11
		○	12
		○	11
		○	10

Area "B"

■	565	○	250
■	22		
■	1050		
■	45		
■	200		
■	390		
■	2100		

- SOIL
- ROCK
- 500 Arsenic

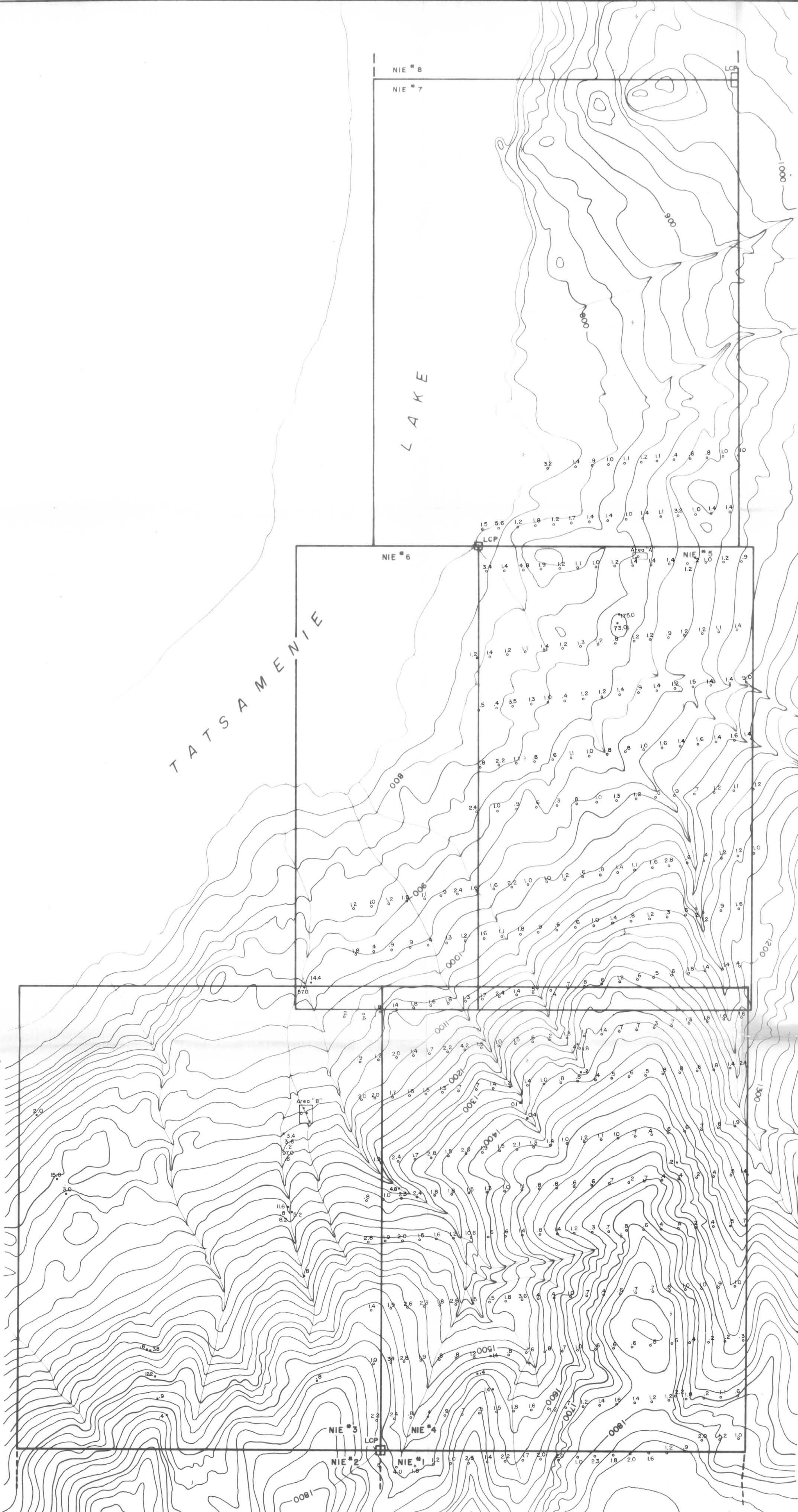
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Chevron Standard Limited
Minerals Staff

NIE CLAIMS
GEOCHEMISTRY
As - ppm

FIGURE No.	6	PROJECT No.	M 504
DATE	OCT. 1983	SCALE	1:10,000
COMPILED BY		FILE No.	C - 177



0 400m

Area "A" (Sb)

58.0	1.4
2.4	67.0
700.0	115.0
200.0	9.0
	7.0
	8.6
	1.8
	1.3
	1.4
	1.0
	1.1

Area "B"

3.8	8.0
1.9	
10.4	
2.4	
3.2	
11.8	
18.6	

- SOIL
- ROCK
- 15.6 Antimony

**GEOLOGICAL BRANCH
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NIE CLAIMS GEOCHEMISTRY	
Sb - ppm	
FIGURE No 7	PROJECT No M 504
DATE OCT.1983	SCALE 1:10,000
FILE No	C - 178