

COMINCO LTD.

EXPLORATION  
NTS: 92I/10E

WESTERN DISTRICT  
April 10, 1978

ASSESSMENT REPORT

GEOLOGICAL, ROCK GEOCHEMICAL & GROUND MAGNETIC WORK ON THE CHUM PROPERTY  
(CLAIMS 1-9)

CHUWHELS MOUNTAIN AREA, KAMLOOPS, M.D.

LATITUDE: 50°31'N

LONGITUDE: 120°31'W

REPORT BY:

M.J. OSATENKO

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
6711
NO. _____

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### ATTACHMENTS

1. Plate 1 - Location of the Chum property (1:50,000).
2. Plate 2 - Compilation of geology, rock and soil geochemistry and IP (1:10,000).
3. Plate 3 - Ground magnetic map (1:10,000).

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SUMMARY

The Chum property is located 18 km southwest of Kamloops, B.C. It was staked in April 1977 to protect a large, previously unrecognized alkaline stock showing a pyrite zone with minor copper mineralization in an area of extensive overburden.

Mapping and ground magnetics on a 71 km grid defined a 12 square km stock of pyroxenite, gabbro, diorite, monzonite and monzonite-diorite breccia that cuts Nicola basalt flow and tuffaceous rocks. The pyritic zone contains minor copper mineralization and occurs in the northern part of the property and continues southward into a large covered area that is underlain by the alkaline complex. Previous work by Canadian Johns Manville and Texal Development defined three targets (1 IP and 2 copper soil anomalies).

It is recommended to define the limits of the pyrite zone on the West grid by IP and to define the westernmost Canadian Johns Manville IP anomaly on the East grid.

INTRODUCTION

The Chum property was staked in April 1977 to protect a large, previously unrecognized alkaline stock showing a pyrite zone with minor copper mineralization in an area of extensive overburden.

Mapping and ground magnetics were done by M.J. Osatenko assisted by B.G. Ames between August 12 and September 10, 1977. Data are presented at a scale of 1:10,000 with mapping control from a surveyed grid (71 km), 1:15,800 air photographs and a 1:10,000 blow-up of a 1:50,000 topographical map. Ground magnetics and geology were done over 65 line km of grid.

LOCATION AND ACCESS

The property is located immediately north of Walloper Lake, approximately 18 km southwest of Kamloops, B.C. and 15 km south of the Afton alkaline porphyry copper deposit (plate 1). Access to the property is provided by two roads, one off the Lac Le Jeune highway, 500 m north of Stake Lake and the other 500 m north of the west end of Walloper Lake (plate 2).

TOPOGRAPHY AND VEGETATION

The property occurs at an elevation of from 1400 to 1750 m on the south-east side of Chuwhels Mountain. It is covered by moderately dense pine, fir and spruce forests with large stands of poplar occurring mainly in a pronounced northeasterly to northerly trending valley in the central part of the claim group. Lodgepole Lake and numerous swampy areas in this valley provide good sources for water.

PROPERTY AND OWNERSHIP

The Chum property (Kamloops Mining Division) is 100% owned by Cominco and consists of the following claims (104 units).

<u>CLAIM</u>	<u>RECORD NUMBER</u>	<u>NUMBER OF UNITS</u>	<u>DATE RECORDED</u>
Chum 1	771	20	April 25, 1977
Chum 2	772	12	April 25, 1977
Chum 3	773	8	April 25, 1977
Chum 4	774	20	April 25, 1977
Chum 5	775	12	April 25, 1977
Chum 6	776	8	April 25, 1977
Chum 7	777	8	April 25, 1977
Chum 8	778	12	April 25, 1977
Chum 9	779	4	April 25, 1977

PREVIOUS WORK

The area of the Chum property has been held by various mining companies and prospectors from the middle sixties to early in 1977 but assessment work is only available for areas in the extreme eastern and western parts of the claim group. In 1970 Canadian Johns Manville staked the Pine and Fir groups (159 claims) on the eastside of what is now the Chum property and between 1970 and 1971 did IP, soil geochemistry (Cu, Mo, U, Pb, Zn and Ag), ground magnetics and drilled four diamond drill holes (assessment reports 3892 and 3893). Their results were discouraging and the property was allowed to lapse. An examination of their assessment data shows a strong untested and unexplained IP response (10-36 m. sec.) in the eastern part of our property that warrants further IP work to define its western limit (plate 2). Two outcrops within 100 m of this anomaly do not contain any sulfides and are not altered or fractured. A drill hole by Canadian Johns Manville 300 m to the east on another IP response found only pyrite with traces of chalcopyrite. Work in 1972 on the west side of the property by Texal Development consisted of a soil geochemical survey for copper (assessment report 4059). This work showed two areas of anomalous soils (2 to 10 x background - considered 30 ppm) that are plotted in plate 2. No outcrops exist in these two areas but subcrop is believed to be fairly shallow.

GEOLOGY

The geology on the property is shown on plate 2. Outcrop is much less

than 1 percent and occurs only in two areas, one 700 m south of Lodgepole Lake and the other 1700 m to the northwest.

The rock types mapped include augite basalt, basaltic tuff and impure quartzite (unit 1) of the Upper Triassic Nicola group and a group of ultrabasic to alkaline rocks. The Nicola flow rocks are porphyritic and fine to medium grained with conspicuous augite phenocrysts. Minor bedded basaltic tuff outcrops in the southern part of the East grid and consists of biotite, chlorite and fragments of feldspar. These rocks trend north-easterly and dip moderately to the west. The intrusive rocks are fine to medium grained (often porphyritic) and comprise pyroxenite and gabbro (unit 2), diorite (unit 3), monzonite (unit 4) and monzonite-diorite breccia (unit 5). These latter rocks show sub-rounded monzonite and diorite fragments (less than 1 to 25 cm, average 4 cm) in a fine to medium grained dioritic matrix, often accompanied by pyrite, biotite, chlorite and/or sericite. Epidote is the only other obvious alteration type and is best developed in the vicinity of line 16 S/15E, principally along fractures.

### STRUCTURE

An evaluation of the regional structures on the property is hampered by lack of outcrops, however, air photo lineaments show northerly and north-westerly trends (plate 2).

### ROCK GEOCHEMISTRY AND MINERALIZATION

Eighteen rock chip samples of the various intrusive rock types and a few Nicola basalts were collected and analyzed for copper and zinc (aqua regia extraction followed by atomic absorption analysis). The results are plotted in plate 2 with greater than 100 ppm considered anomalous for both copper and zinc. Copper values are up to 224 ppm in a pyritic zone between 4S and 6N and 1E to 6.5W. This area projects into a large covered area to the south, covered by glacial deposits of till and gravel. Zn in rocks shows no anomalies. The best copper mineralization occurs in chloritized basalt boulders, about 500 m north of 6N/8W, that contain 600 ppm copper. Malachite was the only copper mineral observed.

### GEOPHYSICS

A ground magnetic survey was conducted over both the West and East grids to better define the airborne magnetic anomaly and, hence, the favourable alkaline plutonic rocks. Readings were made with an MP-2 magnetometer on lines 200 m apart at 50 and 100 m stations. The baseline was read first with subsequent readings tied into the baseline to ensure comparable results over the whole grid. Values obtained are reproducible to  $\pm 3\%$  at one standard deviation. Plate 3 is a plot of all magnetic readings obtained (170 on the East grid and 1083 on the West grid) with readings contoured at 400, 1200 and 2000 gammas. The main magnetic anomaly on the West grid is somewhat ellipsoidal being about 4 km in an E-W direction and 3 km in a N-S direction. The pyroxenite-gabbro unit gives the strongest magnetic response with some rocks of the alkaline complex, i.e. diorite in the northern part of the grid giving only weak to background (less than 400 gammas) magnetic readings. For purposes of interpretation the 400 gamma contour is considered the approximate edge of the alkaline complex. Immediately adjacent to the main magnetic anomaly are found zones of depressed magnetic values (less than 200 gammas).

4.

These may be related to altered zones or just to areas of exceptionally thick overburden. Magnetic anomalies on the East grid are weak and small with the southernmost one surrounded by 4 distinct IP responses, one of which has been drilled by Canadian Johns Manville (plate 2).

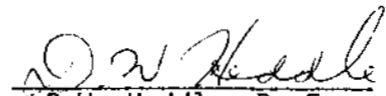
#### CONCLUSIONS

1. The Chum property covers a 12 square km area of favourable alkaline, intrusive rocks.
2. A pyritic zone with minor copper mineralization occurs in the northern part of the property in association with highly fractured diorite and monzonite-diorite breccia and projects southward into a large covered area that is underlain by the alkaline complex.
3. An IP response located by Canadian Johns Manville in 1971 is untested and unexplained as are the two soil copper anomalies reported by Texal Development in 1972.

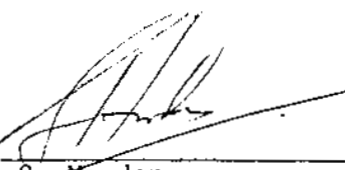
Report by:

  
M.J. Osatenko  
Project Geologist

Endorsed by:

  
D.W. Heddle, P. Eng.  
Assistant Manager

Approved for  
Release by:

  
G. Harden  
Manager, West. Dist.  
Exploration

APPENDIX "A"STATEMENT OF EXPENDITURES FOR GEOLOGICAL, ROCK GEOCHEMICAL AND GROUND  
MAGNETIC SURVEYS ON THE CHUM MINERAL CLAIMSGEOLOGYSalaries

M.J. Osatenko	August 12 - September 10, 1977 (14 days at \$155/day)	\$ 2,170.
Report writing and drafting	3 days at \$155/day	465.
B.G. Ames	August 12 - September 10, 1977 (22 days at \$70/day)	1,540.
C. Cheal	August 26 - August 28, 1977 (3 days at \$70/day)	210.

Domicile

Accommodation	(39 man days @ \$30/day, August 12 - September 10, 1977)	1,170.
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TRANSPORTATION

Truck for 1 month plus gas	(August 12 - September 10, 1977)	815.
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LINE CUTTING

51.4 km at \$106/km	5,661.
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RENTAL

Magnetometer (August 12 - September 10, 1977)	232.
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ASSAYS

18 rocks at \$4.25/sample (Cu, Zn)	77.
	<u>\$12,340.</u>

*M. Osatenko*

M.J. Osatenko  
Project Geologist

A P P E N D I X "B"

IN THE MATTER OF THE  
B.C. MINERAL ACT

AND

IN THE MATTER OF A GEOLOGICAL, ROCK GEOCHEMICAL AND GROUND MAGNETIC  
PROGRAM CARRIED OUT ON THE CHUM 1-9 MINERAL CLAIMS

Located in the Kamloops Mining Division

of the Province of British Columbia

More Particularly N.T.S. 921/10E

A F F I D A V I T

I, MYRON J. OSATENKO OF THE CITY OF VANCOUVER IN THE PROVINCE OF  
BRITISH COLUMBIA, MAKE OATH AND SAY:

1. THAT I AM EMPLOYED AS A PROJECT GEOLOGIST BY COMINCO LTD.,  
AND AS SUCH HAVE A PERSONAL KNOWLEDGE OF THE FACTS TO WHICH  
I HEREINAFTER DEPOSE;
2. THAT ANNEXED HERETO AND MARKED AS "EXHIBIT A" TO THIS MY  
AFFIDAVIT IS A TRUE COPY OF EXPENDITURES OF A GEOLOGICAL,  
ROCK GEOCHEMICAL AND GROUND MAGNETIC PROGRAM CARRIED OUT ON  
THE CHUM 1-9 MINERAL CLAIMS;
3. THAT THE SAID EXPENDITURES WERE INCURRED BETWEEN THE TWELFTH  
DAY OF AUGUST 1977 AND THE 10th DAY OF SEPTEMBER 1977 FOR THE  
PURPOSE OF MINERAL EXPLORATION ON THE ABOVE NOTED CLAIMS.

  
MYRON J. OSATENKO



A P P E N D I X "C"COMINCO LTD.EXPLORATIONWESTERN DISTRICTSTATEMENT OF QUALIFICATIONS

I, MYRON J. OSATENKO, OF THE CITY OF VANCOUVER, BRITISH COLUMBIA,  
HEREBY CERTIFY:

1. THAT I AM A GEOLOGIST, RESIDING AT 6437 - 116th STREET DELTA,  
BRITISH COLUMBIA WITH A BUSINESS ADDRESS AT 700-409 GRANVILLE  
STREET, VANCOUVER, BRITISH COLUMBIA.
2. THAT I GRADUATED WITH B.SC. AND M.SC. DEGREES IN GEOLOGY FROM  
THE UNIVERSITY OF BRITISH COLUMBIA IN 1965 and 1967 RESPECTIVELY.
3. THAT I HAVE PRACTISED GEOLOGY WITH COMINCO LTD. FROM 1967 TO  
PRESENT.

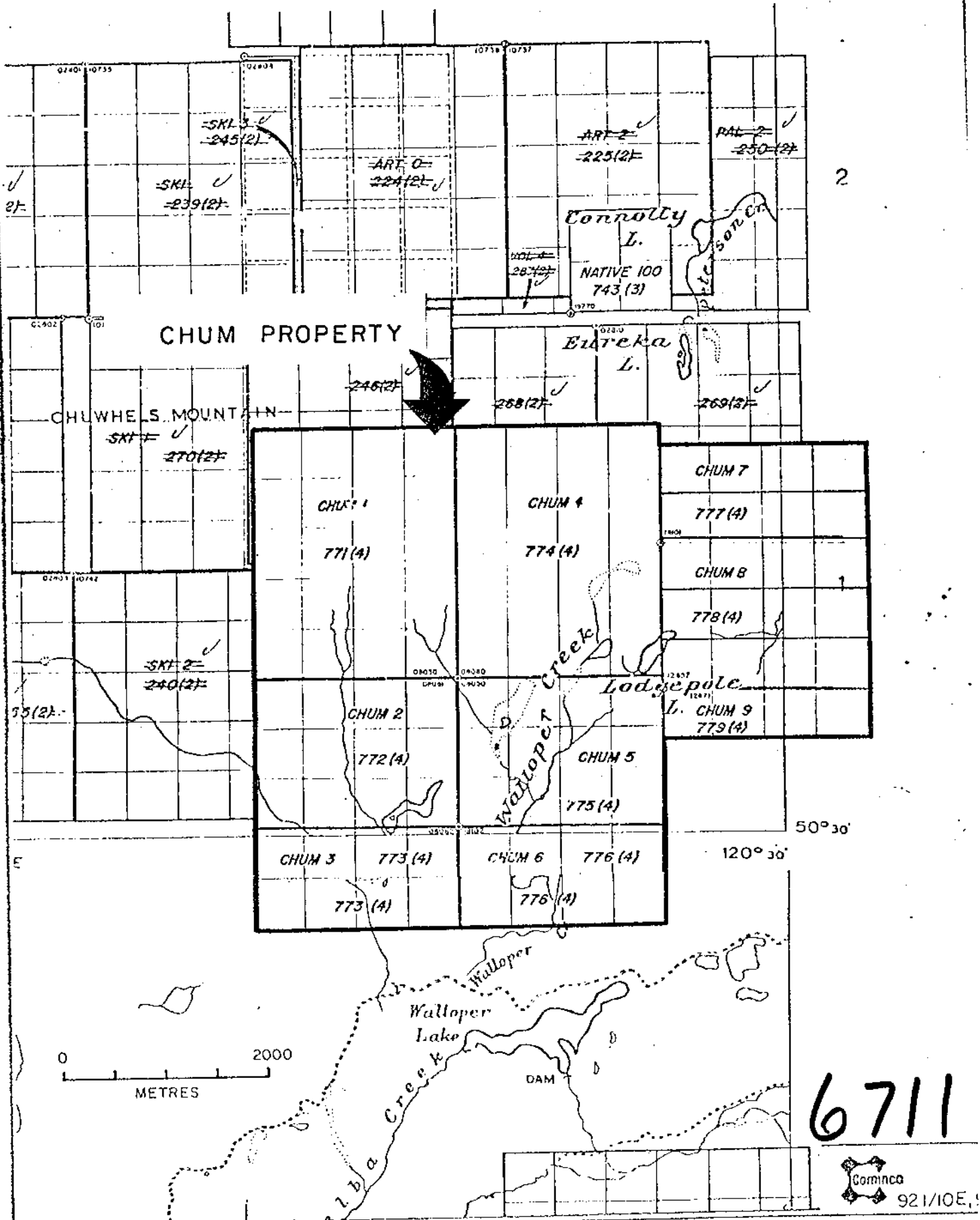
DATED THIS 13th Day of April 1978 at Vancouver, British Columbia

SIGNED

  
Myron J. Osatenko, M.Sc.

A P P E N D I X "D"ROCK GEOCHEMICAL DATA

<u>SAMPLE NUMBER</u>	<u>Cu</u>	<u>ppm</u>	<u>Zn</u>
CR-77-1	14		27
CR-77-2	8		27
CR-77-3	39		73
CR-77-4	90		68
CR-77-6	87		48
CR-77-8	6		32
CR-77-11	6		27
CR-77-21	280		--
CR-77-29	55		33
CR-77-36	210		38
CR-77-38	202		28
CR-77-39	62		40
CR-77-41	224		49
CR-77-43	105		33
CR-77-44	83		40
CR-77-45	84		63
CR-77-46	100		53
CR-77-47	72		55



Drawn by:		Traced by:	
Revised by	Date	Revised by	Date

LOCATION MAP  
CHUM PROPERTY

Scale: 1:50,000      Date: MARCH, 1978      Plate: 1



To KAMLOOPS

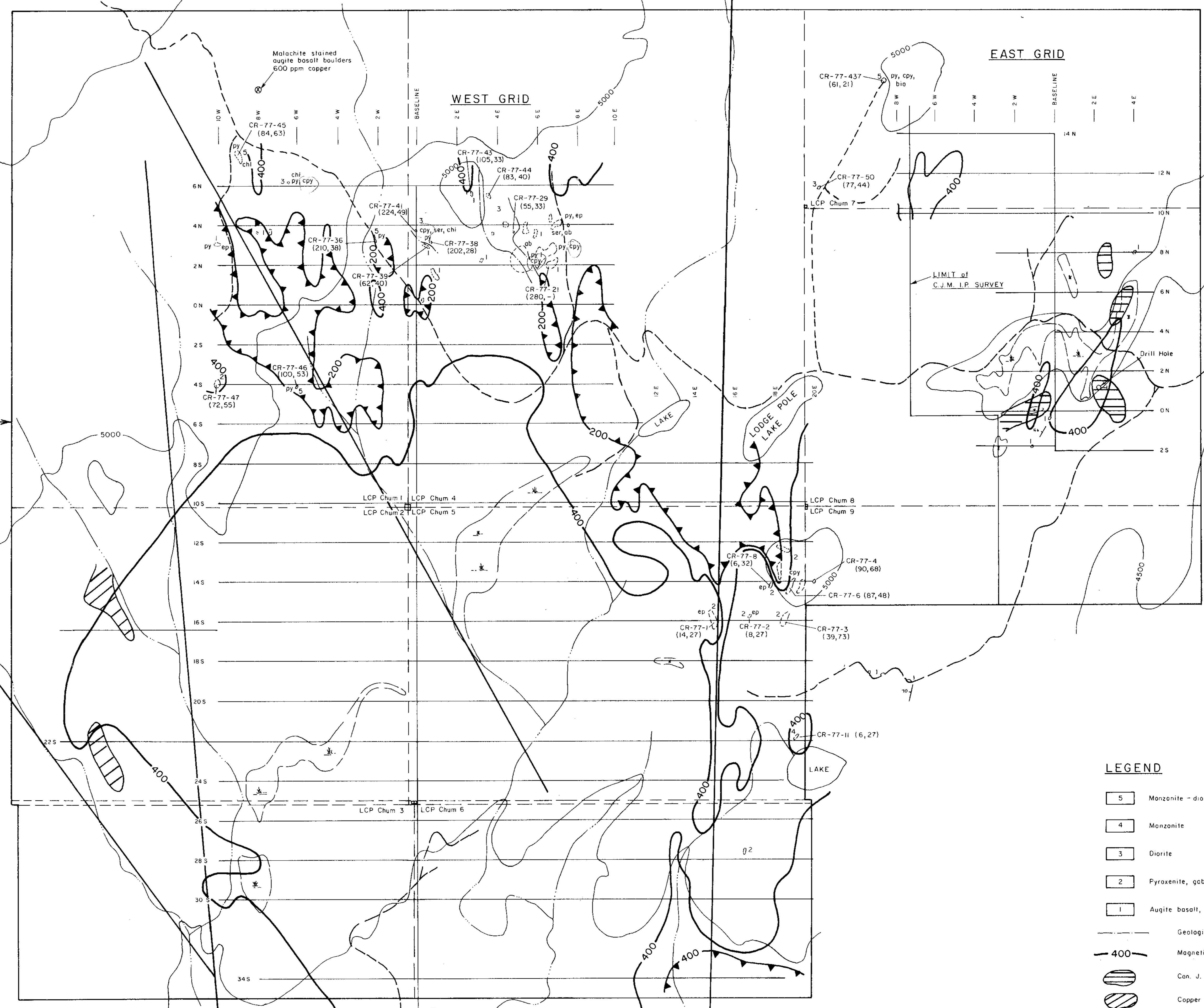
STAKE LAKE

EAST GRID

WEST GRID

PROPERTY BOUNDARY

N.B. Elevations in feet



LEGEND

- 5 Monzonite - diorite breccia
- 4 Monzonite
- 3 Diorite
- 2 Pyroxenite, gabbro
- 1 Augite basalt, basaltic tuff, impure quartzite
- Geological contact
- 400 Magnetic contour (limit of alkaline stock ?)
- Can. J. Manville I.P. anomaly (1971)
- Copper soil geochemical anomaly - 2-10x background (30 ppm) (Textal Development - 1972)
- Photo lineament
- Outcrop
- CR-77-11 (6,27) Sample number (Copper, zinc in rock, ppm)

ALTERATION

- bio biotite
- ep epidote
- ab albite
- ser sericite
- chl chlorite

SULFIDES

- py pyrite
- cpy chalcocopyrite

MINERAL RESOURCES BRANCH  
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**6711**  
NO.

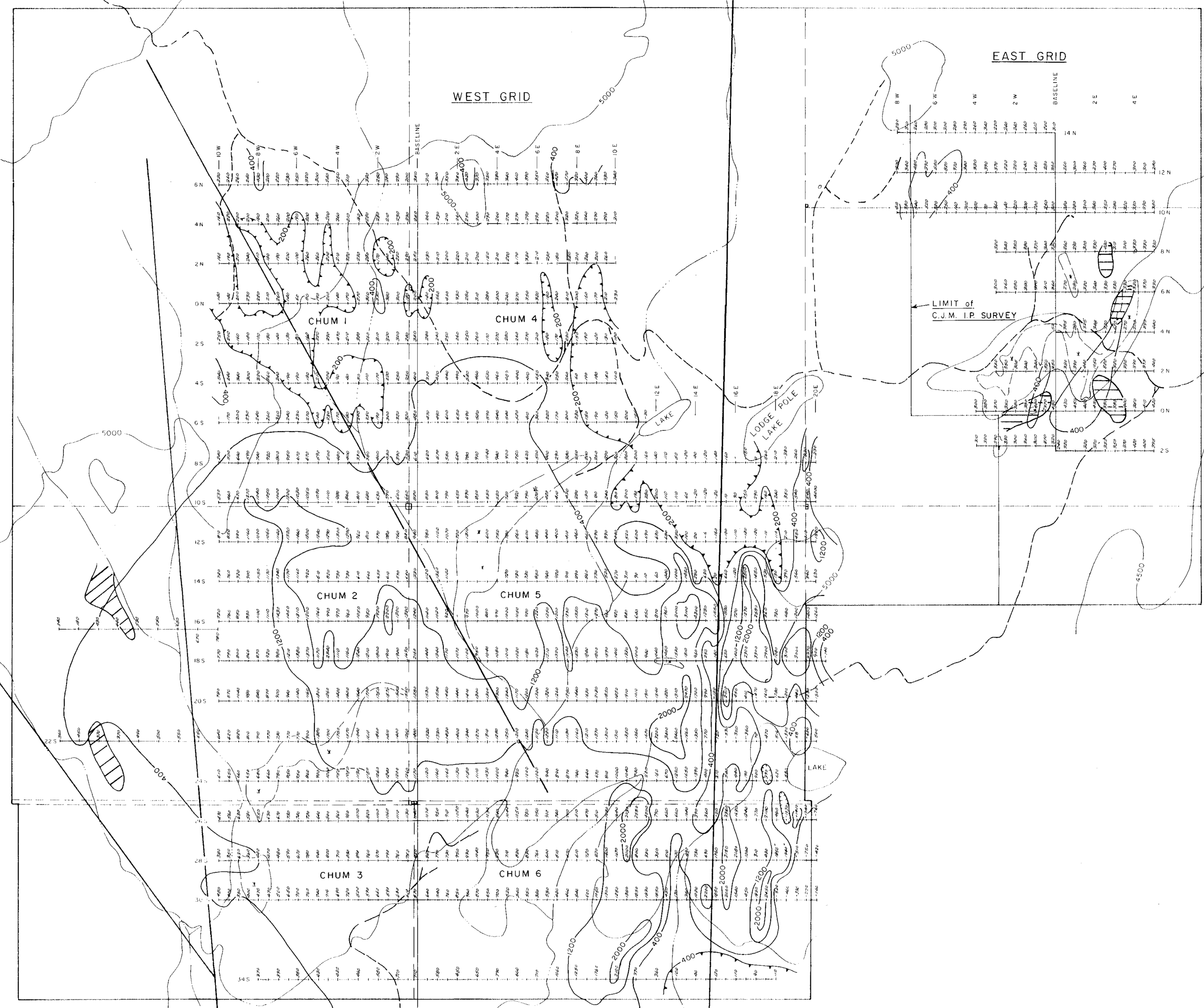
*M. Ostark*



CHUM PROPERTY			
Drawn by: M.J.O.	Traced by: <i>[Signature]</i>		
Checked by: [ ]	Revised by: [ ]		
COMPILATION MAP GEOLOGY, Cu SOIL GEOCHEMISTRY, I.P. & GROUND MAGNETICS			
Scale: 1:10,000	Date: MARCH, 1978	Plate: 2	FORM 210-00



To KAMLOOPS



MINERAL RESOURCES BRANCH  
ASSESSMENT REPORT  
**6711**  
NO.

*M. Orlanck*

0 500  
METRES

CHUM PROPERTY			
Drawn by	M.J.C.	Checked by	J.W.F.
Revised by		Revised by	
Ground Magnetic Survey			
Readings in gammas			
Date	1.12.1984	Date	MAR 13, 1978
Sheet		Sheet	3