

GEOLOGICAL GEOCHEMICAL AND GEOPHYSICAL REPORT

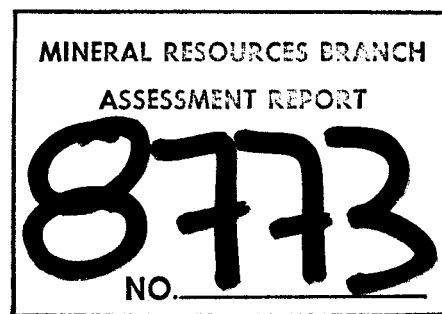
ON THE

SUN MINERAL CLAIMS

OMINECA MINING DIVISION

53°48'N; 127°33' W
N.T.S. 93-E-13EAST

OWNED BY: PLACER DEVELOPMENT LIMITED.



BY: R.W. CANNON, P. Eng.
W.S. PENTLAND

SUPERVISED BY: D.A. HOWARD, M. Sc., P. Eng. (B.C.)

DECEMBER 1980

Table of Contents

	<u>PAGE</u>
Statement of Expenditures	1
Introduction	2
Physiography	2
Figure 1 General Location Map Scale 1 in.=4 mi.	
Figure 2 Claim Map Scale 1:50000	
Control	3
Geology	3
Geochemistry	
Introduction	4
Results	4
Geophysics	
Introduction	5
I.P. Survey Results	5
Magnetometer Results	6
Statement of Qualifications	7
Certification	8
Appendix	
Analytical Procedures for Assaying Samples.	9

MAPS (IN POCKET)

Figure 3	MAP SHOWING SUN CLAIMS	SCALE 1:10000
4	MAP SHOWING CUT LINES	SCALE 1:10000
5	GEOLOGY OF THE SUN CLAIMS	SCALE 1:10000
6	SOIL SAMPLE GRID	SCALE 1:10000
6-1	COPPER CONTENT IN PPM	SCALE 1:10000
6-2	MOLYBDENUM CONTENT IN PPM	SCALE 1:10000
6-3	LEAD CONTENT IN PPM	SCALE 1:10000
6-4	ZINC CONTENT IN PPM	SCALE 1:10000
6-5	SILVER CONTENT IN PPM	SCALE 1:10000
7-1	I.P. SURVEY PERCENT FREQUENCY EFFECT N=1	SCALE 1:10000
7-2	I.P. SURVEY PERCENT FREQUENCY EFFECT N=2	SCALE 1:10000
7-3	I.P. SURVEY PERCENT FREQUENCY EFFECT N=3	SCALE 1:10000
7-4	I.P. SURVEY RESISTIVITY PLAN N=1	SCALE 1:10000
7-5	I.P. SURVEY RESISTIVITY PLAN N=2	SCALE 1:10000
7-6	I.P. SURVEY RESISTIVITY PLAN N=3	SCALE 1:10000
8	MAGNETOMETER SURVEY - TOTAL FIELD	SCALE 1:10000

Statement of Expenditures

The following are the expenditures incurred for geological mapping, soil sampling and Induced Polarization and magnetometer surveys on the Sun mineral claims for the period 15 June to 25 August 1980

1. Linecutting - Donegal Developments Ltd.	\$13742.	(1)
2. Induced Polarization Survey - P. Walcott Assoc.	\$14440.	(1)
3. Magnetometer Survey - 2 students for 8 days	\$ 1200.	(2)
4. Soil Sampling - 2 students for 13 days	\$ 1950.	(2)
5. Geochemical Assaying - 724 samples @\$9.15/sample	\$ 6625.	(3)
6. Geological Mapping - 1 geologist and 1 student for 10 days	\$2750.	(2)
7. Transportation - helicopter - 64 hrs. @\$350./hr. air fares - Vancouver to Smithers 5 men @\$150.	\$22400. \$750.	
8. Camp Costs - 222 man days @\$15.00/manday	\$3330.	
9. Drafting Maps = 11 days @ \$100.00/day	\$1100.	
10. Report Preparation - 20 days @\$200.00/day	\$4000.	

NOTES

- (1) Contracted
- (2) Students charged at \$75.00/day.
Geologist charged at \$200.00/day.
- (3) Geochemical assay charges:

Sample Preparation	\$.50
Molybdenum	1.65
Copper	.75
Zinc	.75
Lead	.75
Silver	.75
Gold	4.00
	<u>\$9.15</u>

Personnel - D. Barron - Student
D. Smith - Student
M. Hillhouse - Student
R. Pease - Geologist
W. Pentland Geologist
R. Cannon - Geophysicist
J. Stroleny - Draftsperson

Introduction

This report covers an exploration program on a portion of the Sun mineral claims. The Sun claims are located in the Omineca Mining Division approximately 50 miles southwest of Houston, B.C. on Bergeland Creek.

These claims are owned and operated by Placer Development Limited. The 85 two post claims were staked in 1974 covering an area west of and downhill from the Berg Cu-Mo property into the Bergeland Creek valley.

A part of the ground near Bergeland Creek is regarded as a potential site for tailings disposal from the Berg property. It was the purpose of the present program to determine if the area held any mineral potential.

The only practical means of access is by air. A logging road from Houston reaches McBride Lake approximately 20 miles north of the property. A 4-wheel drive road serves the Berg property located approximately 4 miles east of Bergeland Creek. The crews working on the Sun claims lived in the Berg camp and commuted to work using a helicopter based in Houston.

Linecutting and an induced polarization survey were contracted with the remainder of the work being done by four students and a geologist employed by Placer Development Limited.

Physiography

The area of interest is centered on Bergeland Creek and bounded by the Hazelton Mountains to the east and the smaller Nanika Range (Mt. Bergeland) to the west. The explored area forms an elongated valley trending southwest-northeast and open to the northeast. This valley is roughly 1600 meters in width and generally bounded on all sides except the northwest by steep slopes.

A second major creek joins Bergeland Creek from the northeast near the north central boundary of the exploration area. This fast flowing creek drains a section of the Hazelton Mountains including the Berg mineralized zone.

The sides of the valley containing Bergeland Creek have been glacially terraced or benched with numerous southwest-northeast trending grassy and variable swampy meadows. The intervening ground is moderately timbered with lodgepole pine, fir and hemlock.

128°00'

45'

30'

15'

127°00'

COAST LAND DISTRICT RANGE 5

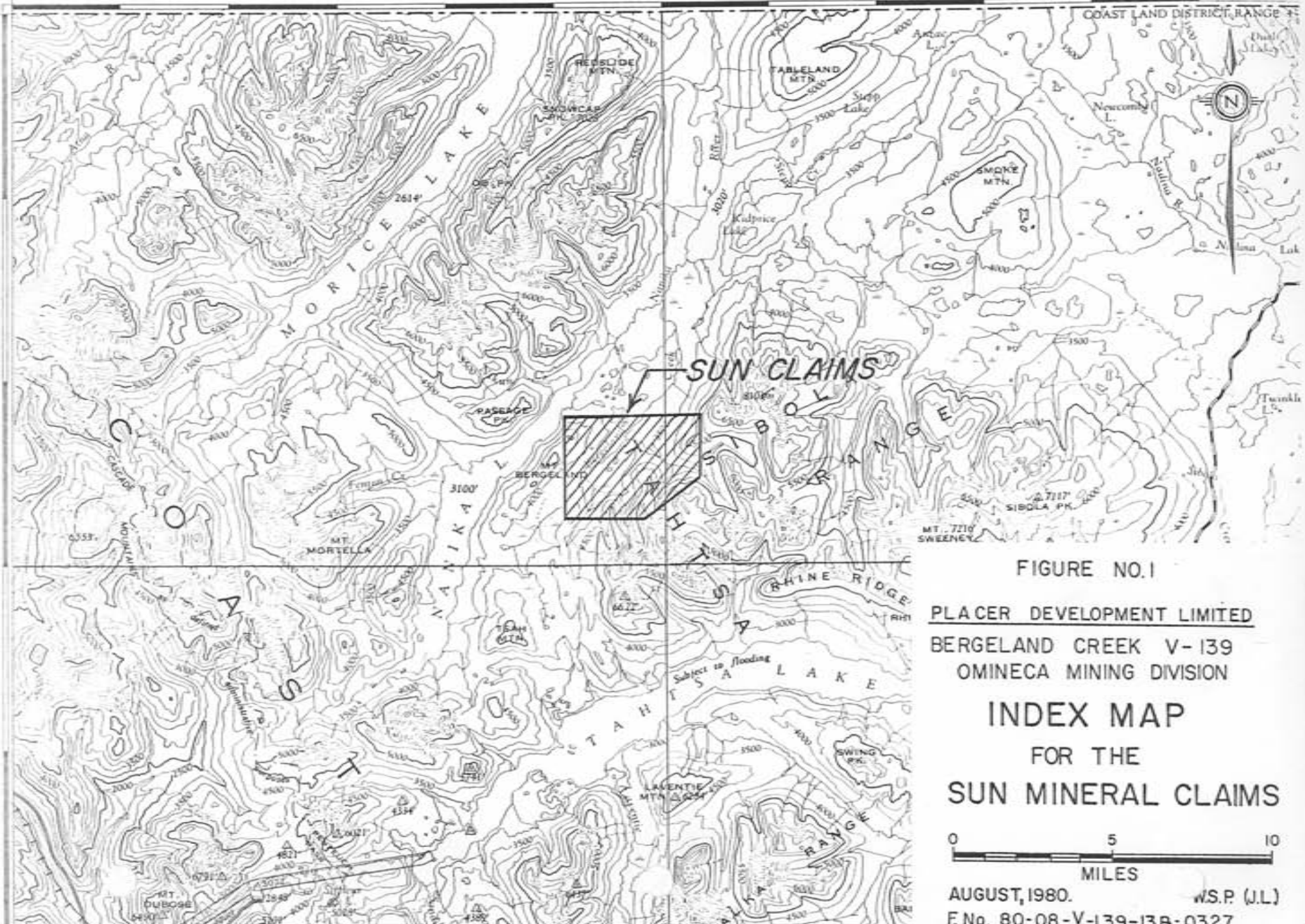


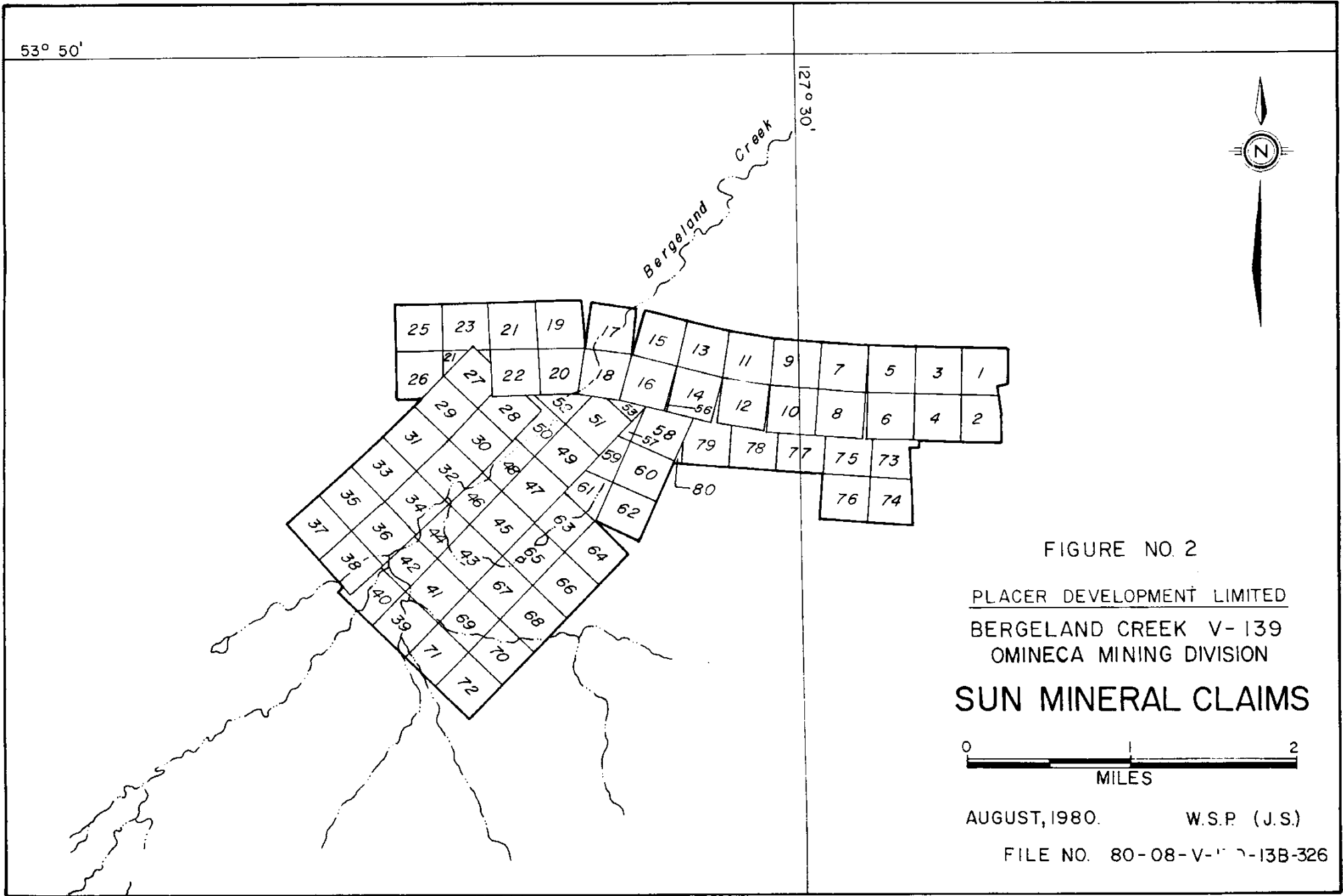
FIGURE NO.1

PLACER DEVELOPMENT LIMITED
 BERGELAND CREEK V-139
 OMINECA MINING DIVISION

INDEX MAP
 FOR THE
SUN MINERAL CLAIMS



AUGUST, 1980. W.S.P. (J.L.)
 F.No. 80-08-V-139-13B-0327



53° 50'

127° 30'

Bergeland Creek



FIGURE NO. 2

PLACER DEVELOPMENT LIMITED
 BERGELAND CREEK V-139
 OMINECA MINING DIVISION

SUN MINERAL CLAIMS



AUGUST, 1980. W.S.P. (J.S.)

FILE NO. 80-08-V-139-13B-326

Control

A line grid totaling just over 50 kms. was established on the property as control for all phases of the work. The lines were located at 200 meter intervals with stations at 50 meter intervals.

Geology

Geological mapping was done on a scale of 1:5000 with the final maps being reduced to 1:10000.

It should be noted that there is very little outcrop in the mapped area. While further traversing would probably find a few additional exposures the overall picture is unlikely to be changed. In view of this paucity of outcrop unit boundaries as shown should be regarded as very tentative.

The area is located immediately to the east of the Coast Range intrusives in what has been described as the transition zone between the Coast Range and the Nechako Plateau further to the east.

The area is primarily underlain by tuffs of the Jurassic Hazelton Group with a few limited exposures of monzonite porphyry along the southern and western boundaries. Two outcrops of coarse boulder conglomerate were also noted along the south boundary.

By far the most common rock is a quartz latite or possibly rhyolite welded tuff. It is generally light grey in color with clasts up to 3mm. Lapilli sized clasts, occasionally to several centimeters, were fairly common.

A hill, approximately 1000 meters by 500 meter and 50 meters high, in the center of the property is composed of a very fine grained silicious "dust" tuff. The rock appears to have been finely brecciated with development of chlorite along the fractures giving it a mottled appearance.

Several outcrops of fairly distinctive lithic lapilli tuff were found in a relatively narrow zone striking northeast along the northwest side of Bergeland Creek. The unit contains numerous angular white to grey quartz clasts to one centimeter with a few clasts of older tuff. The rock varies in color from black to dark red with the latter apparently due to hematite.

A few widely scattered outcrops of basalt were noted to the east and northeast of the mapped area indicating a zone of probably younger flows.

Rare outcrops of a crystal tuff were seen to the south along with the conglomerate and monzonite porphyry but no attempt has been made to infer any boundaries to these units.

Structurally the beds appear to be relatively flat lying with some minor folding. The few attitudes that were noted appear quite random.

For all practical purposes the area is completely barren of sulphides with only a very few grains of pyrite being noted in one outcrop. Alteration is limited to the chlorite in the "dust" tuff as previously noted.

Geochemistry (see appendix for analytical procedures)

Introduction

A total of 724 soil samples were collected and geochemically assayed in the Placer Development Laboratory in Vancouver for copper, molybdenum, lead, zinc, silver and gold.

The soils were taken at 50 meter intervals on lines 200 meters apart. All samples were taken from the "B" horizon using a mattoch. The samples came from depths of 12 cms. to 50 cms. with an average depth of approximately 25 cms. The samples were sieved to - 80 mesh in the laboratory.

In studying the results the following values in parts per million were used as a guide in determining areas of interest.

<u>Element</u>	<u>Threshold</u>	<u>Strongly Anomalous</u>
Cu	25	160
Mo	4	33
Pb	32	125
Zn	100	250
Au	0.03	0.8
Ag	0.3	1.6

Results

With the above values as a guide there are three areas of interest.

- (1) The highest results are on line 42E; 11N to 15N, line 44E; 10N to 16N and line 46E; 15N to 16N. This zone is strongly anomalous for copper and molybdenum, moderate for silver and weakly anomalous for lead and zinc.

However, while further checking in this area is required a study of air photos indicate the high values are likely due to fluvial deposition of mineralized material eroded from the Berg deposit which lies upstream.

- (2) A moderate to strong silver and weak zinc anomaly occurs on line 34E between 100N and 250 N in an outcrop area of quartz latite tuff.

- (3) Scattered and variably anomalous molybdenum values occur both north and south of the base line on lines 10E, 12I, 14E and 16E. The erratic distribution indicates glacial dispersion from an unknown mono-minerallic source.

It should be noted that all the gold values were less than 0.02ppm.

Geophysics

Introduction

An Induced Polarization and Resistivity Survey was carried out by Peter Walcott and Associates Ltd. during the period July 7 to July 30, 1980. The survey covered a total of 35.6 kms. of cut lines. Seventeen lines were surveyed with line and dipole "a" spacings of 200m and 100m respectively. The I.P. survey was carried out using McPhar (frequency domain) equipment (Model P660) employing frequencies of 0.31 and 5.0 Hertz, using dipole "N" spacing of N=1, 2 and 3.

A magnetometer survey was conducted along 52.5 km. of cut line using a station spacing of 25m. A Scintrex M.P.-2 Proton magnetometer was used in the field survey and a Scintrex MBS-2 Base station recorder was used to calculate and correct for diurnal changes.

I.P. Survey Results

The I.P. results have been presented as contoured plan maps of the resistivity and percent frequency effect for "N" spacings of 1, 2 and 3. (see pocket at back of report) These maps are at a scale of 1:10000.

Two slightly anomalous zones (i.e. greater than 2%PFE) were detected as follows:

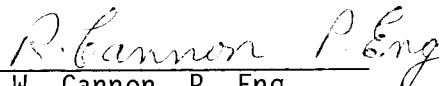
Zone 1	N=1	Line	Station (in hundreds)
		18E	17.5S - open to South
		20E	15.5S to 17.5S
		22E	15.5S to 17.5S
		24E	15.5S to 16.5S
		26E	13.5S to 15.5S
	N=2	18E	17S
		20E	16S, 18S
		22E	15S to 16S
		24E	15S to 17S
		26E	13S to 16S
	N=3	18E	16.5S
		20E	14.5S to 16S
		22E	14.5S to 16S
		24E	13.5S to 16.5S
		26E	12.5S to 15.5S

Zone 2	N=1	Line	Station (in hundreds)
		24E	10.5S to 12.5S
		26E	9.5S
	N=2	22E	10S
		24E	10S to 11S
		26E	7S to 9S
		28E	7S to 9S
	N=3	24E	9.5S
		26E	6.5S to 9.5S
		28E	8.5S to 9.5S

Almost 50% of the area surveyed had PFE results less than 1%. Resistivity results showed some correlation with topographic features (i.e. lows and swampy ground etc.)

Magnetometer Results

The magnetic survey revealed only one anomalous zone located on line 10E between 2.5S and 10S and still open to the South. The results of this survey (corrected for diurnal change) are presented as a contoured plane map at the back of this report (Scale 10,000, contour interval 500 gammas).


R.W. Cannon, P. Eng.


W.S. Pentland

RWC/cs

December 19, 1980

STATEMENT OF QUALIFICATIONS

I, W.S. Pentland, with a business address in Vancouver, British Columbia, and a residential address in Delta, British Columbia, hereby certify that:

1. I am a geologist graduating from the University of British Columbia, Vancouver, British Columbia, with a B.A. in 1951.
2. From 1951 to 1980, I have worked in mineral exploration in various parts of Canada.
3. I personally examined the area and have assessed the results of the work

Respectfully submitted,


W.S. Pentland

Dated this *14* day of *December*
1980, Vancouver, British Columbia

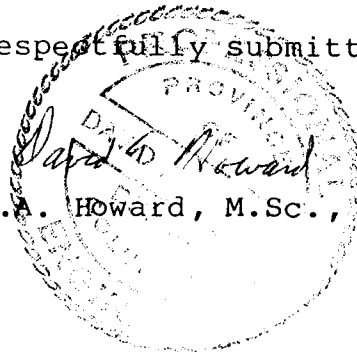
CERTIFICATION

I D.A. Howard, with a business address at 700-1030 West Georgia Street, Vancouver, British Columbia, do hereby certify that:

1. I am a professional engineer registered in the Province of British Columbia.
2. I have examined the report by W.S. Pentland, on work done in 1980, on the Sun Claims, 53°48'N, 127°33'W, in the Omineca Mining District.
3. To the best of my knowledge the acquisition of the data and expenditure claimed for the performance of work is correct.

Respectfully submitted,

D.A. Howard, M.Sc., P. Eng.

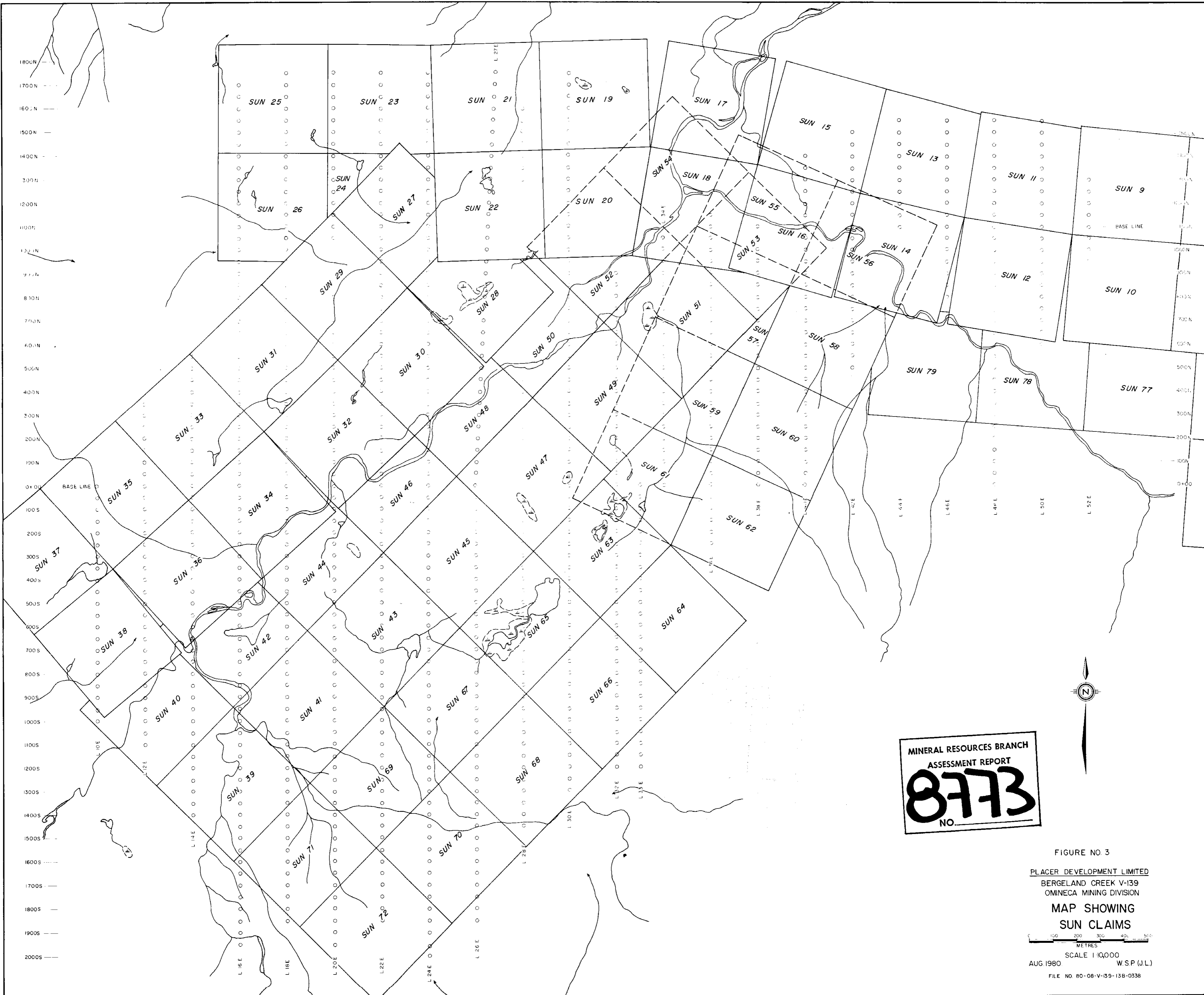


Dated this 19 day of *December*
1980, Vancouver, British Columbia

Appendix

STANDARD ANALYSIS METHODS USED BY PDL GEOCHEM LAB.

	UNITS	WT.G	ATTACK USE	TIME	RANGE	METHOD
MO	PPM	0.5	C HCL04/HNO3	4HRS	1-1000	ATOMIC ABSORPTION
CU	PPM	0.5	C HCL04/HNO3	4HRS	2-4000	ATOMIC ABSORPTION
ZN	PPM	0.5	C HCL04/HNO3	4HRS	2-3000	ATOMIC ABSORPTION
PB	PPM	0.5	C HCL04/HNO3	4HRS	2-3000	A.A. BACKGROUND COR.
AG	PPM	0.5	C HCL04/HNO3	4HRS	0.2-20	A.A. BACKGROUND COR.
AU	PPM	3.0	C HBR/BR	12HRS	0.02-4.00	A.A. SOLVENT EXTRACT

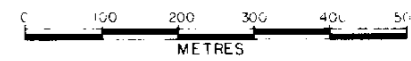


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8773
 NO.

FIGURE NO 3

PLACER DEVELOPMENT LIMITED
 BERGELAND CREEK V-139
 OMINICA MINING DIVISION

MAP SHOWING
 SUN CLAIMS

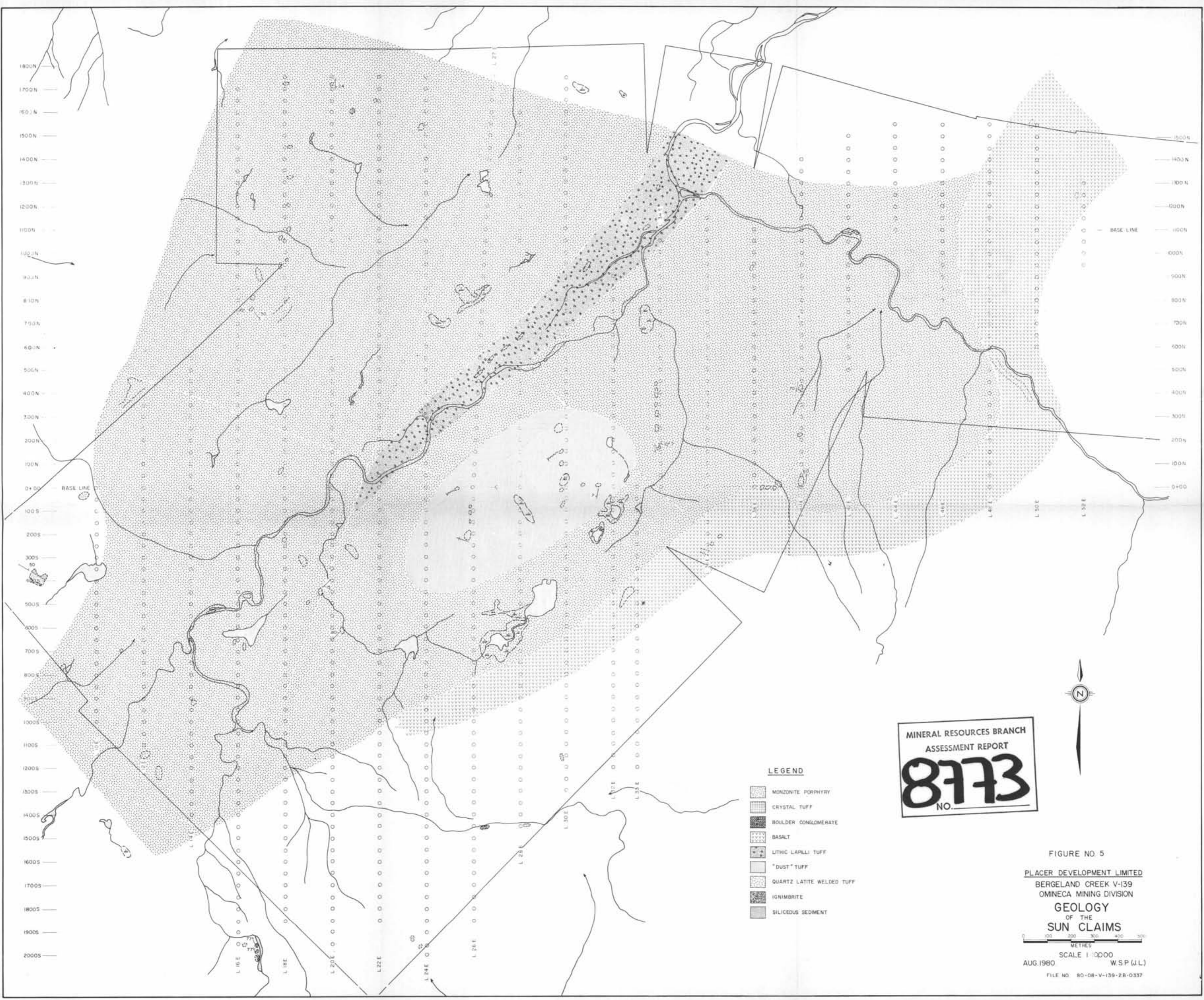


SCALE 1:10,000
 AUG 1980 W.S.P. (J.L.)

FILE NO. 80-08-V-139-138-0338

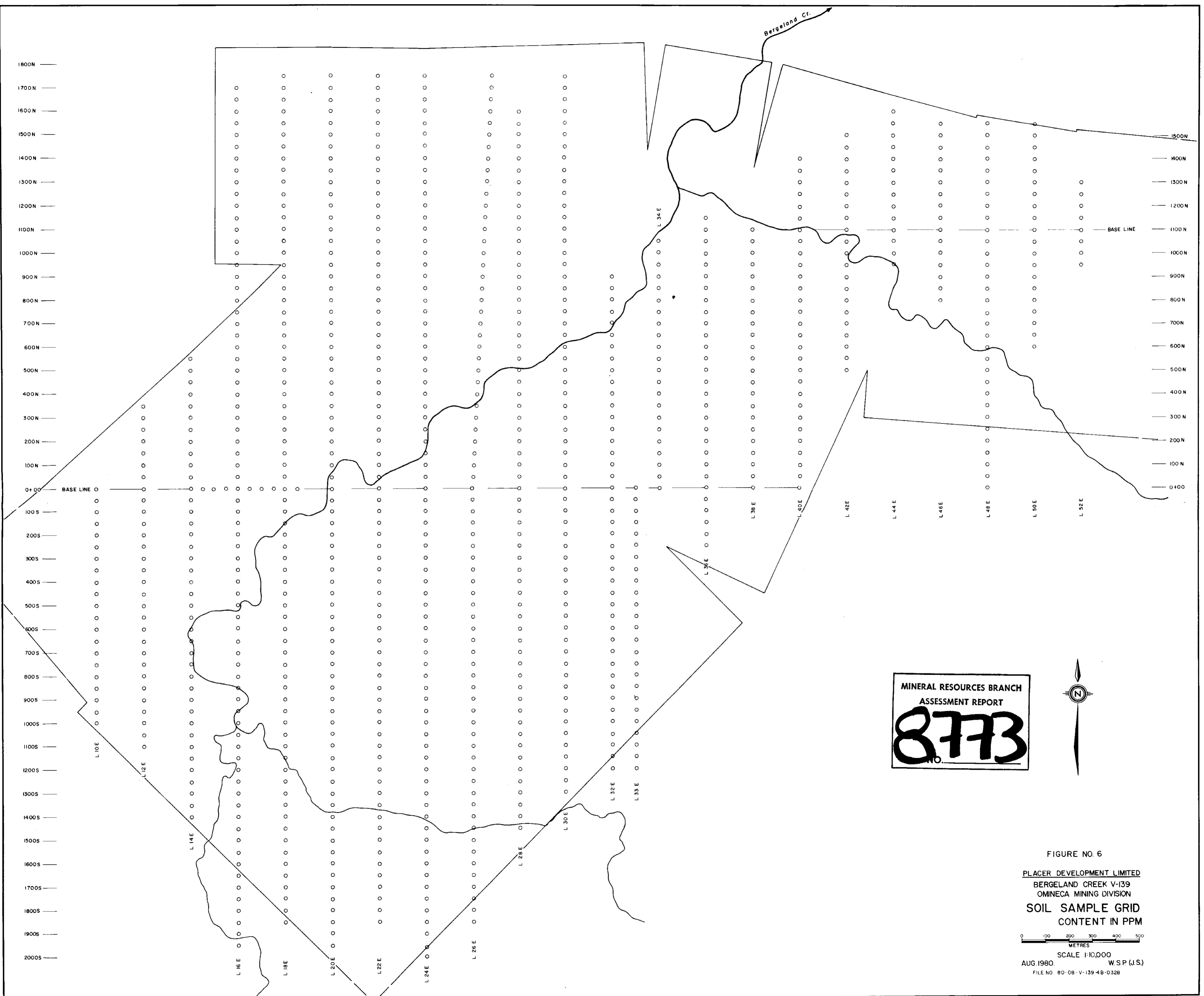


FIGURE NO. 4
 PLACER DEVELOPMENT LIMITED
 BERGELAND CREEK V-139
 OMINECA MINING DIVISION
 MAP SHOWING
 CUT LINES
 SCALE 1:10000
 SEPT, 1980. R.W.C.(J.S.)
 FILE NO. 80-08-V-139-38-0329



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8773
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FIGURE NO. 5
 PLACER DEVELOPMENT LIMITED
 BERGELAND CREEK V-139
 OMINECA MINING DIVISION
 GEOLOGY
 OF THE
SUN CLAIMS
 SCALE 1:10000
 AUG. 1980 W.S.P. (J.L.)
 FILE NO. 80-08-V-139-ZB-0337



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FIGURE NO. 6
 PLACER DEVELOPMENT LIMITED
 BERGELAND CREEK V-139
 OMINICA MINING DIVISION
SOIL SAMPLE GRID
CONTENT IN PPM
 0 100 200 300 400 500
 METRES
 SCALE 1:10,000
 AUG 1980. W.S.P. (J.S.)
 FILE NO. 80-08-V-139-4B-0328

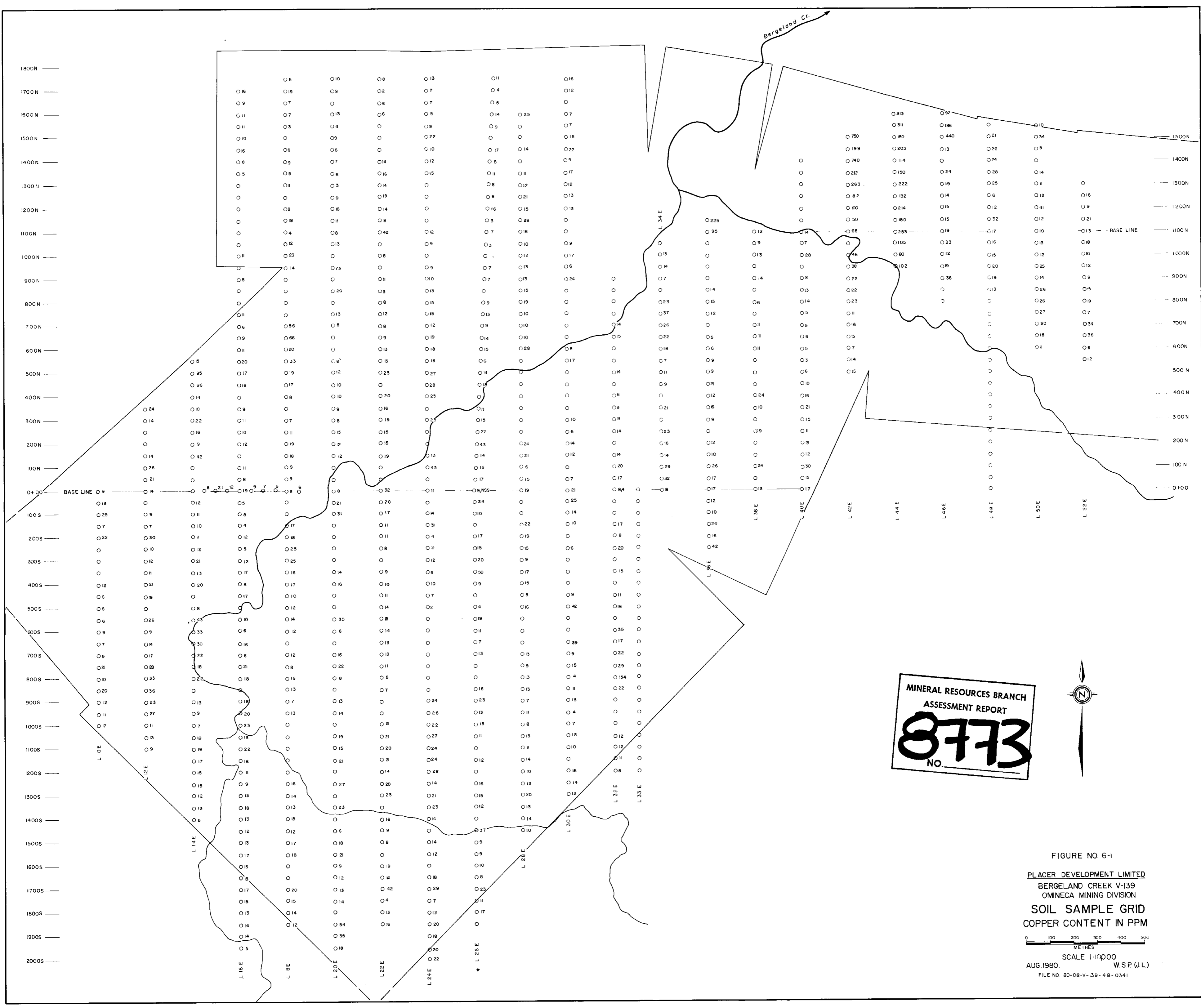
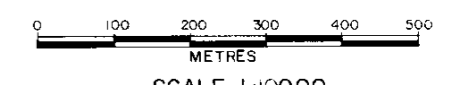


FIGURE NO. 6-1

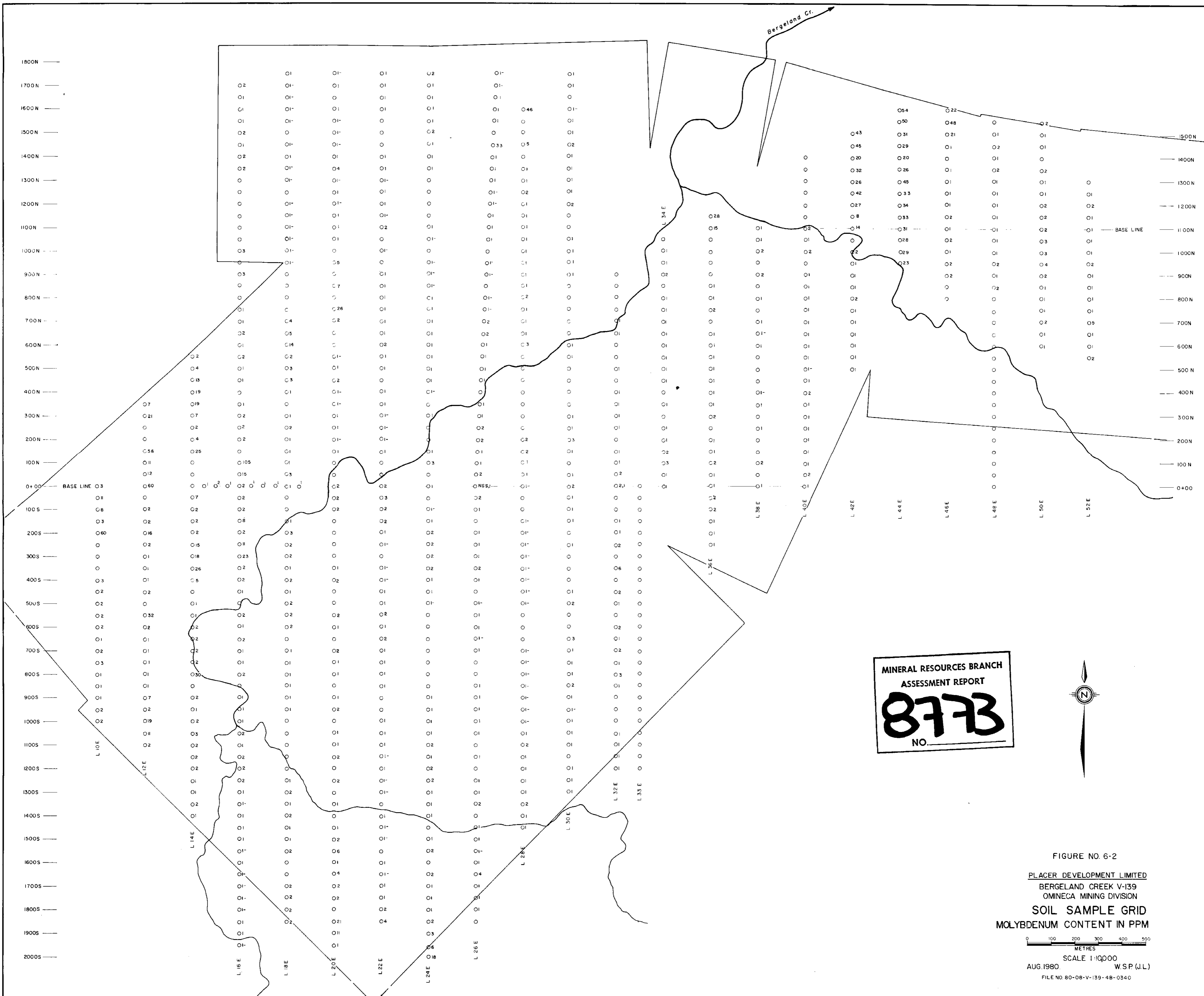
PLACER DEVELOPMENT LIMITED
 BERGELAND CREEK V-139
 OMINCEA MINING DIVISION
SOIL SAMPLE GRID
 COPPER CONTENT IN PPM



SCALE 1:10000
 AUG. 1980. W.S.P. (J.L.)
 FILE NO. 80-08-V-139-4B-0341

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 NO.

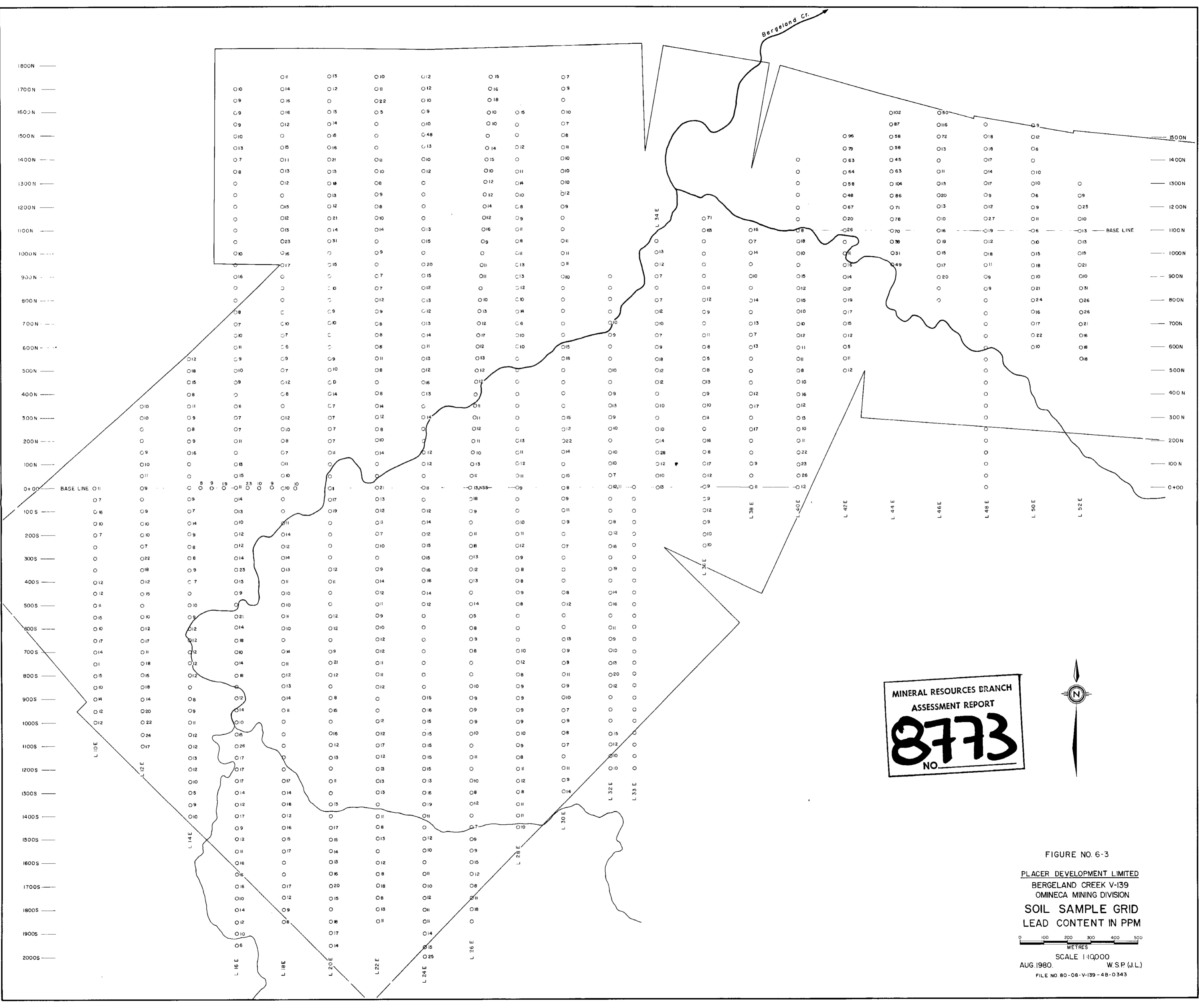




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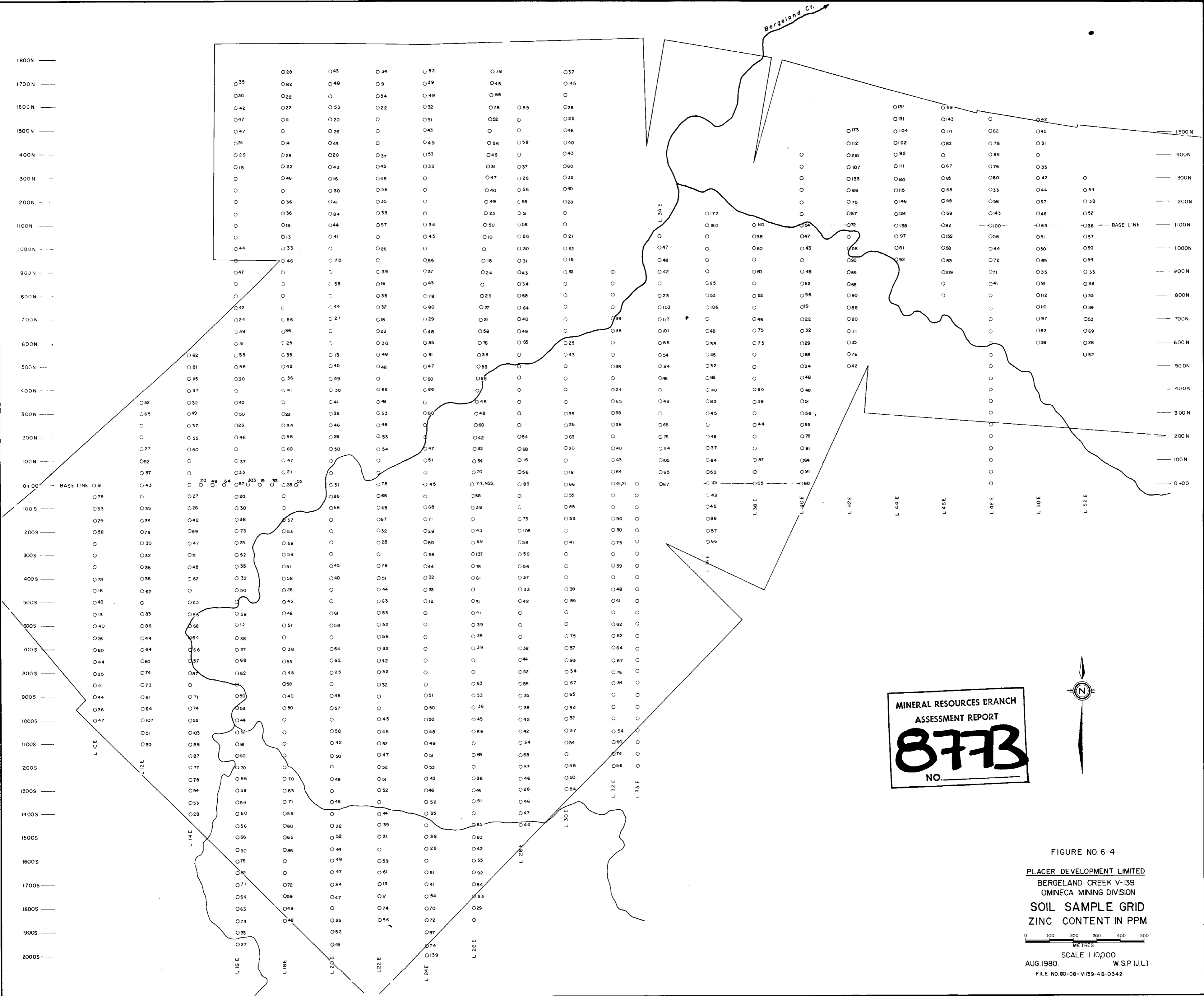
FIGURE NO. 6-2
 PLACER DEVELOPMENT LIMITED
 BERGELAND CREEK V-139
 OMEGA MINING DIVISION
SOIL SAMPLE GRID
 MOLYBDENUM CONTENT IN PPM
 0 100 200 300 400 500
 METRES
 SCALE 1:10000
 AUG.1980 W.S.P.(J.L.)
 FILE NO. 80-08-V-139-4B-0340



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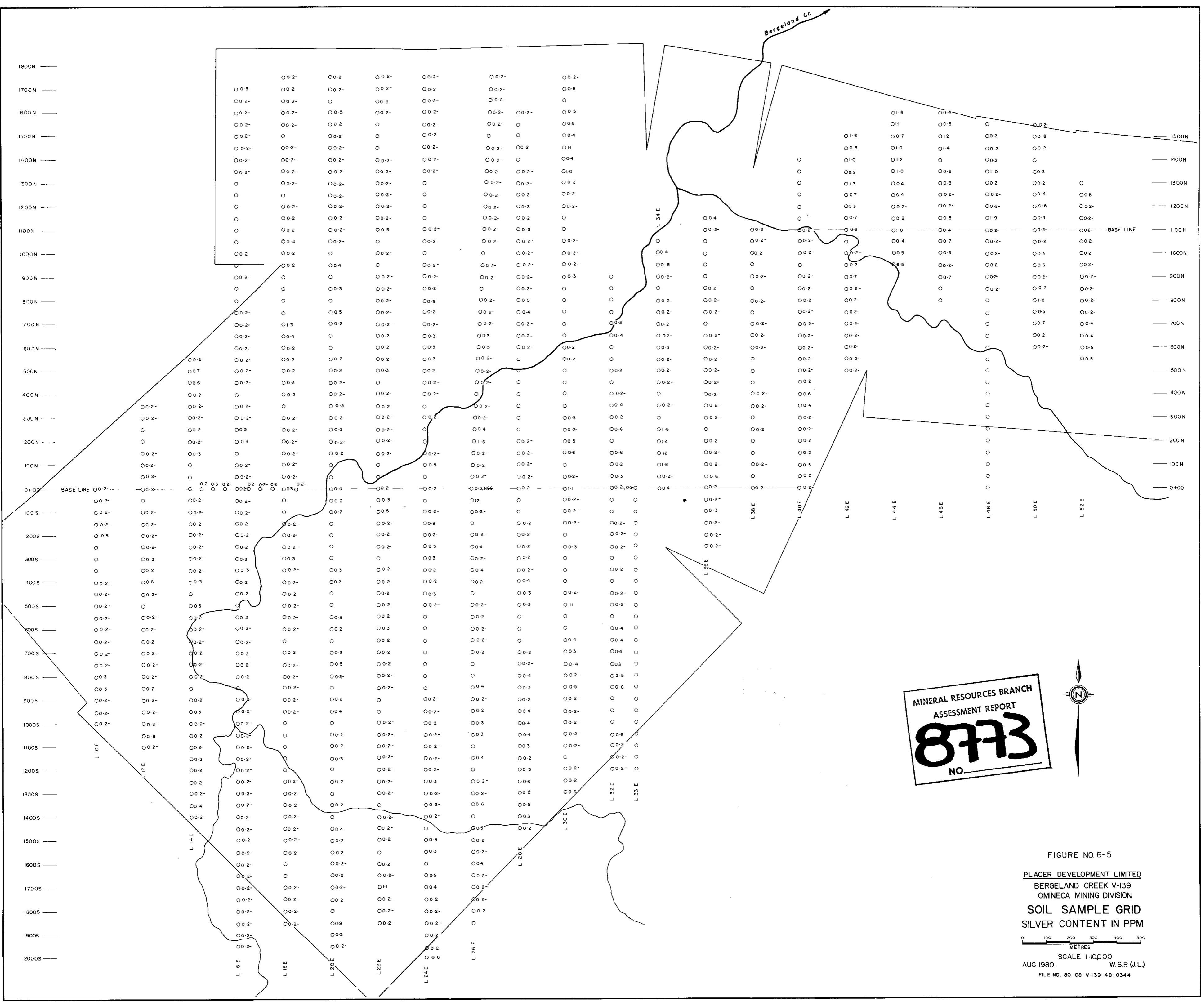
FIGURE NO. 6-3
 PLACER DEVELOPMENT LIMITED
 BERGELAND CREEK V-139
 OMINECA MINING DIVISION
SOIL SAMPLE GRID
LEAD CONTENT IN PPM
 0 100 200 300 400 500
 METRES
 SCALE 1:10000
 AUG. 1980. W.S.P. (J.L.)
 FILE NO. 80-08-V-139-4B-0343



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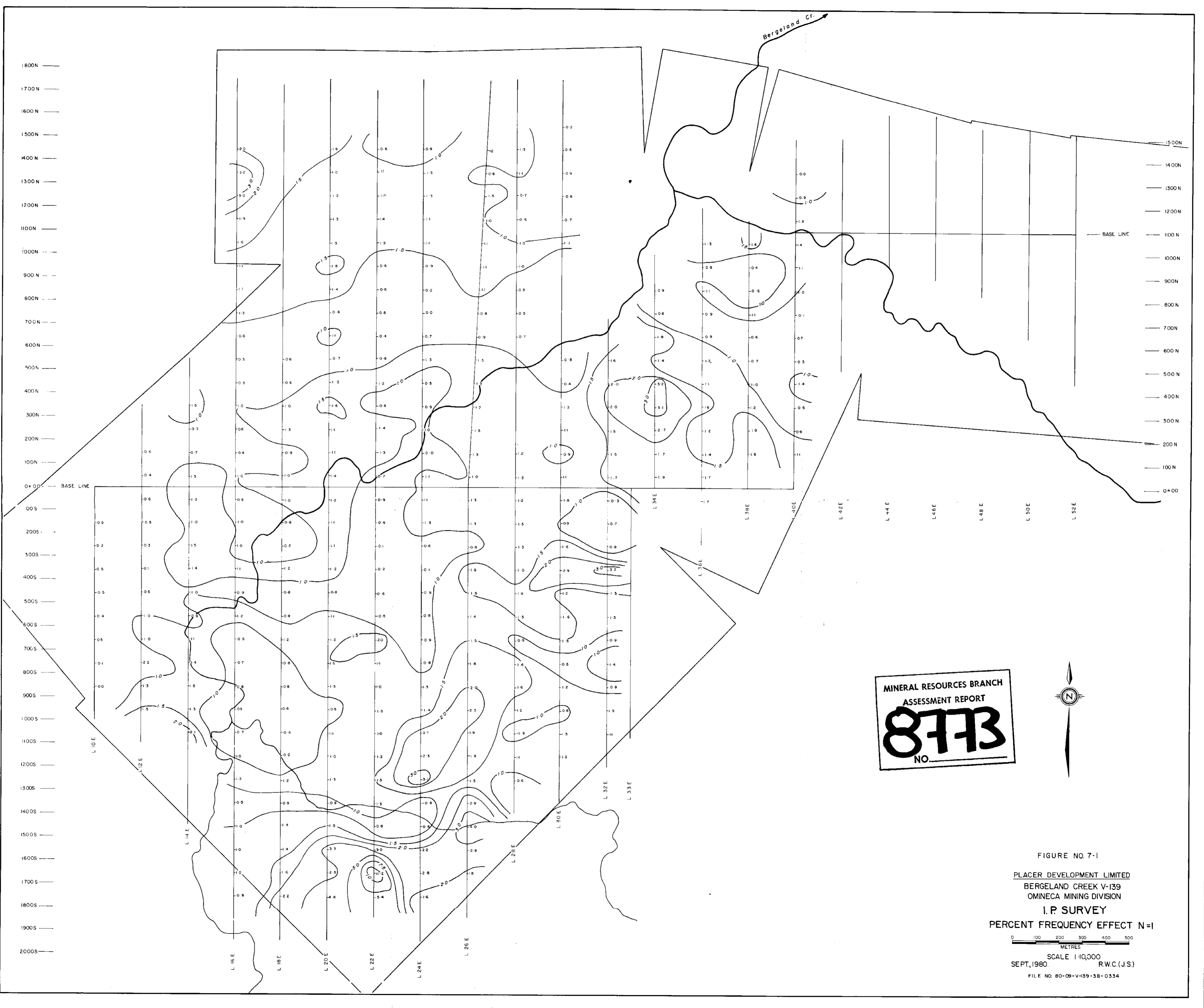
FIGURE NO. 6-4
 PLACER DEVELOPMENT LIMITED
 BERGELAND CREEK V-139
 OMINECA MINING DIVISION
SOIL SAMPLE GRID
ZINC CONTENT IN PPM
 0 100 200 300 400 500
 METRES
 SCALE 1:10,000
 AUG. 1980. W.S.P. (J.L.)
 FILE NO. 80-08-V139-4B-0342



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8773
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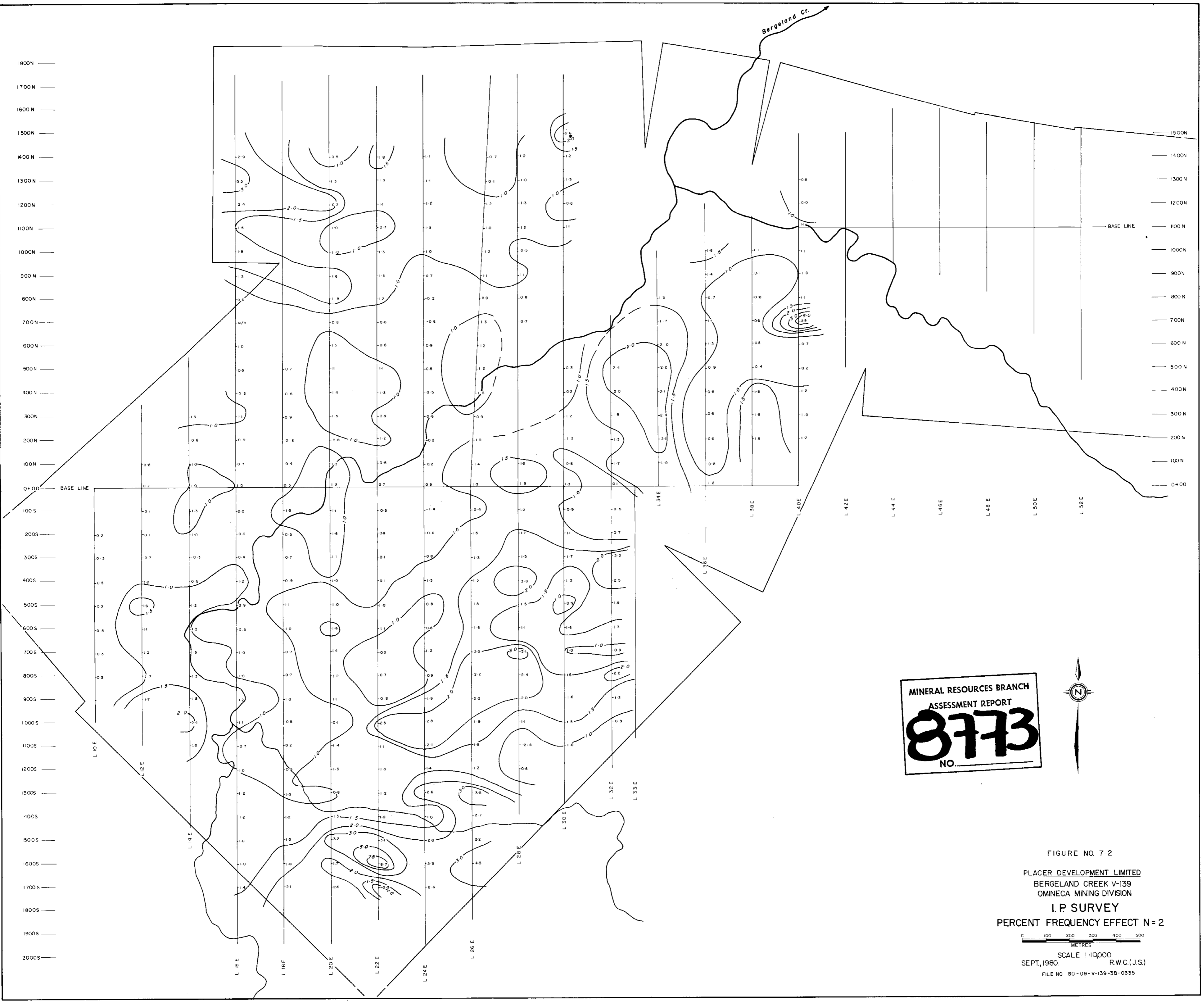
FIGURE NO. 6-5
 PLACER DEVELOPMENT LIMITED
 BERGELAND CREEK V-139
 OMINECA MINING DIVISION
SOIL SAMPLE GRID
SILVER CONTENT IN PPM
 0 100 200 300 400 500
 METRES
 SCALE 1:10000
 AUG 1980. W.S.P. (J.L.)
 FILE NO. 80-08-V-139-48-0344



MINERAL RESOURCES BRANCH
 ASSESSMENT REPORT
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 NO. _____



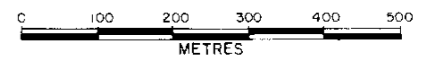
FIGURE NO. 7-1
 PLACER DEVELOPMENT LIMITED
 BERGELAND CREEK V-139
 OMINECA MINING DIVISION
 I. P. SURVEY
 PERCENT FREQUENCY EFFECT N=1
 0 100 200 300 400 500
 METRES
 SCALE 1:10,000
 SEPT, 1980 R.W.C.(J.S.)
 FILE NO. 80-09-V-139-38-0334



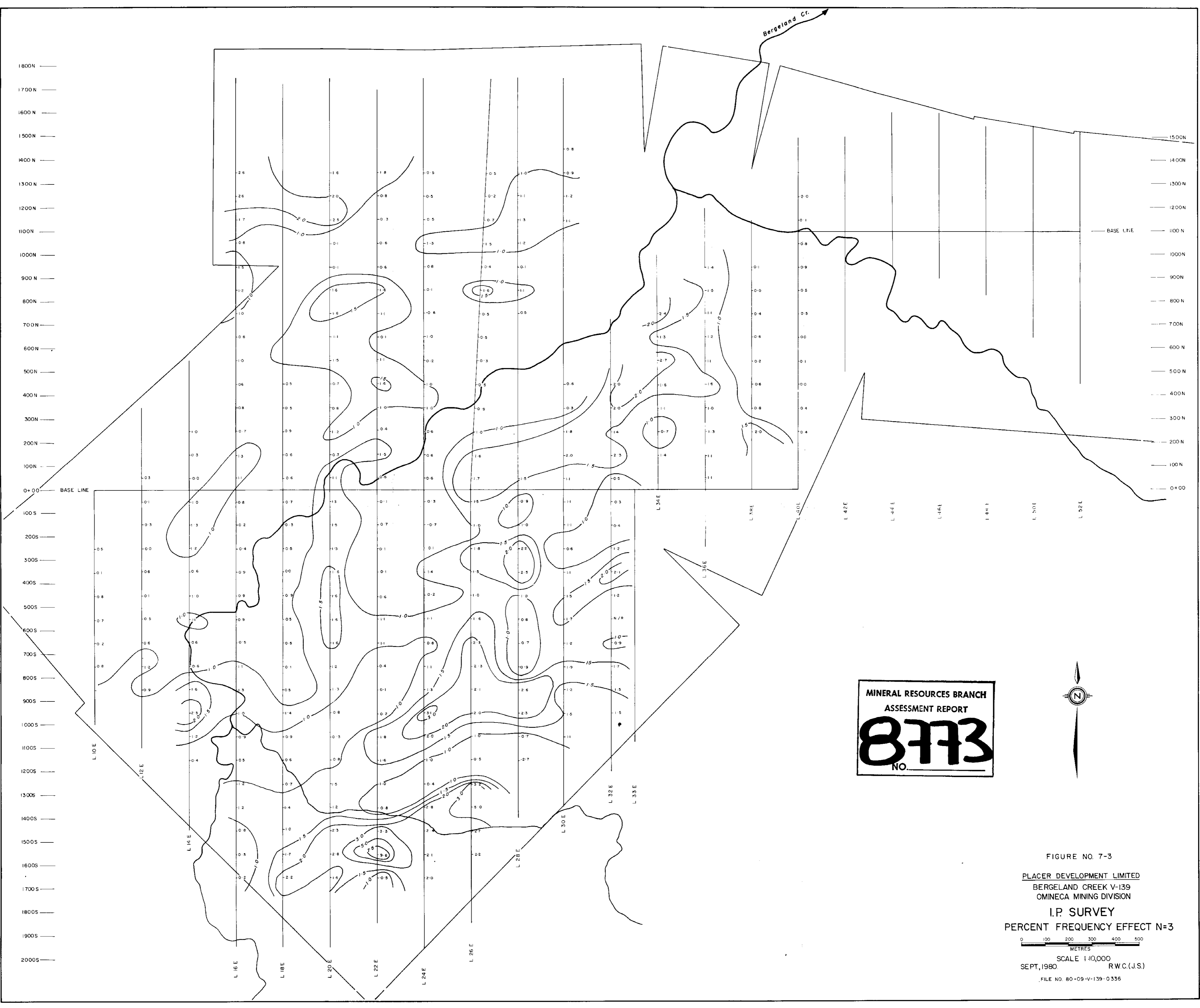
MINERAL RESOURCES BRANCH
 ASSESSMENT REPORT
8773
 NO. _____



FIGURE NO. 7-2
 PLACER DEVELOPMENT LIMITED
 BERGELAND CREEK V-139
 OMINECA MINING DIVISION
 I. P. SURVEY
 PERCENT FREQUENCY EFFECT N = 2



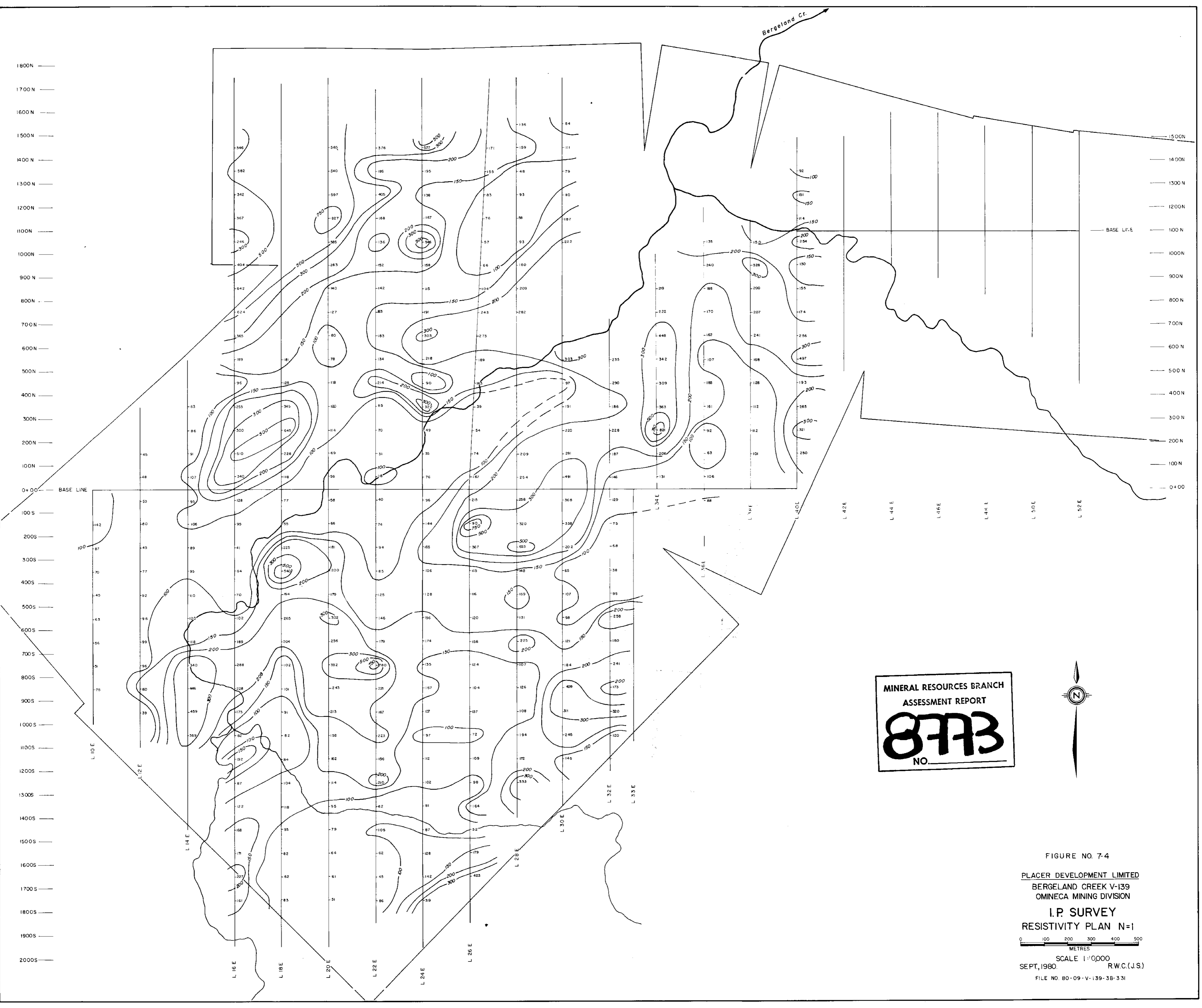
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 SEPT, 1980 R.W.C.(J.S.)
 FILE NO. 80-09-V-139-3B-0335



MINERAL RESOURCES BRANCH
 ASSESSMENT REPORT
8773
 NO.



FIGURE NO. 7-3
 PLACER DEVELOPMENT LIMITED
 BERGLAND CREEK V-139
 OMINICA MINING DIVISION
 I.P. SURVEY
 PERCENT FREQUENCY EFFECT N=3
 0 100 200 300 400 500
 METRES
 SCALE 1:10,000
 SEPT, 1980 R.W.C.(J.S.)
 FILE NO. 80-09-V-139-0336



MINERAL RESOURCES BRANCH
 ASSESSMENT REPORT
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 NO. 1



FIGURE NO. 7-4

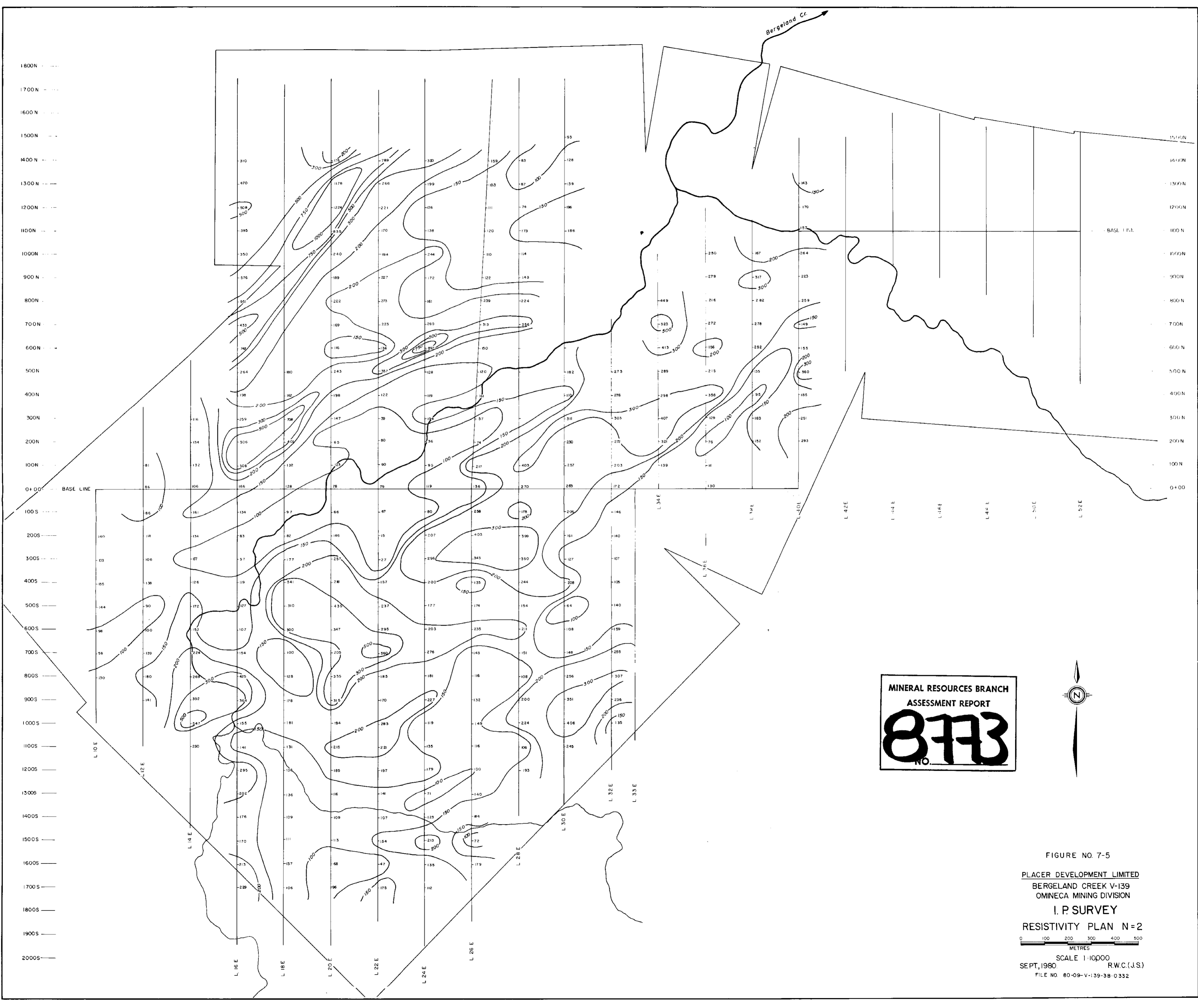
PLACER DEVELOPMENT LIMITED
 BERGELAND CREEK V-139
 OMINCA MINING DIVISION

I.P. SURVEY
 RESISTIVITY PLAN N=1

0 100 200 300 400 500
 METRES

SCALE 1:10000
 SEPT, 1980 R.W.C.(J.S.)

FILE NO. 80-09-V-139-3B-331



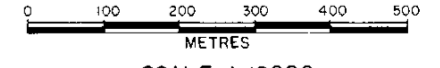
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 ASSESSMENT REPORT
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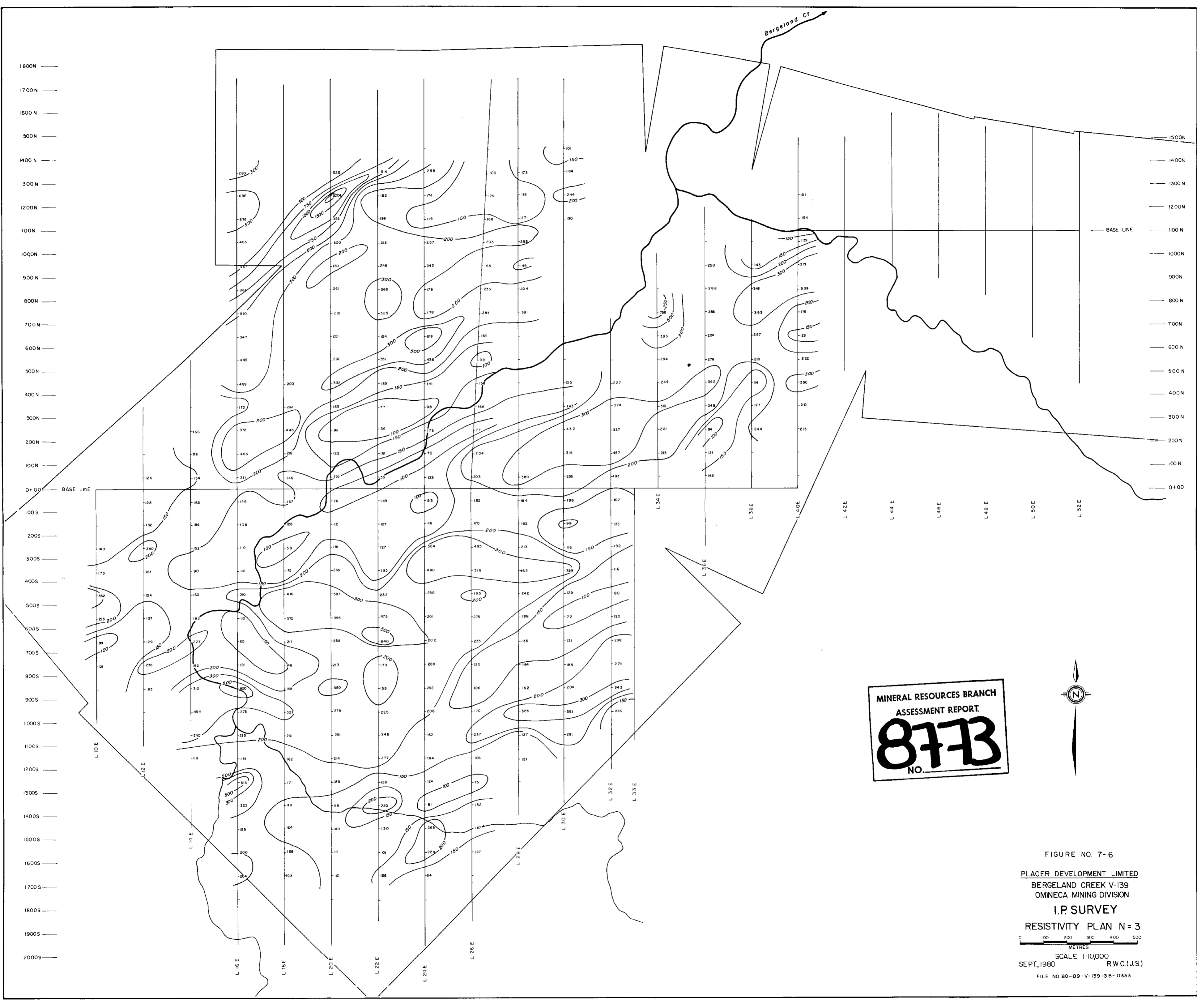
FIGURE NO. 7-5

PLACER DEVELOPMENT LIMITED
 BERGLAND CREEK V-139
 OMINICA MINING DIVISION

I. P. SURVEY
 RESISTIVITY PLAN N=2



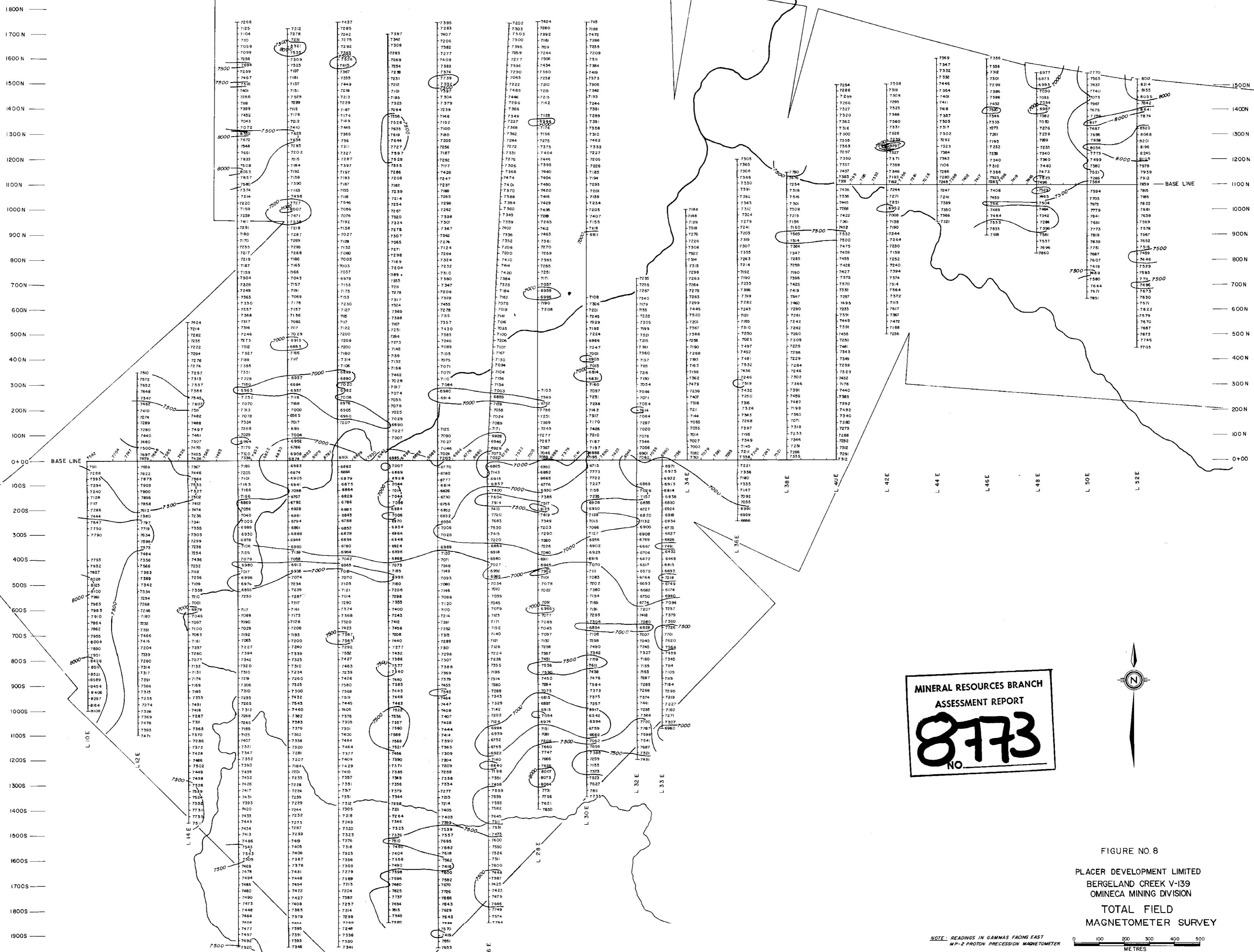
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 SEPT, 1980. R.W.C.(J.S.)
 FILE NO. 80-09-V-139-3B-0332



MINERAL RESOURCES BRANCH
 ASSESSMENT REPORT
8773
 NO. _____



FIGURE NO. 7-6
 PLACER DEVELOPMENT LIMITED
 BERGLAND CREEK V-139
 OMINCEA MINING DIVISION
 I.P. SURVEY
 RESISTIVITY PLAN N= 3
 SCALE 1:10,000
 SEPT, 1980. R.W.C.(J.S.)
 FILE NO. 80-09-V-139-3B-0333



MINERAL RESOURCES BRANCH
 ASSESSMENT REPORT
8773
 NO.

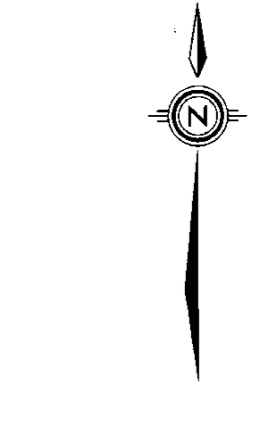
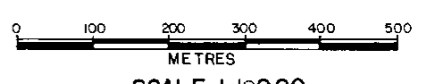


FIGURE NO. 8

PLACER DEVELOPMENT LIMITED
 BERGELAND CREEK V-139
 OMINCEA MINING DIVISION
 TOTAL FIELD
 MAGNETOMETER SURVEY

NOTE: READINGS IN GAMMAS FACING EAST
 MP-2 PROTON PRECESSION MAGNETOMETER



SCALE 1:10000
 AUG. 1980. W.S.P. (J.S.)
 FILE NO. 80-08-V-139-3B-0330