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Geochemical - Geophysical Report
AZURITE GROUP
Cas 1-32 and Adjoining Mineral Claims
(49° 120° SE) 9 miles south of Princetown,
B.C. for
Sinmax Mines Limited,
between June 23 and September 22, 1968.
W.S. Read, B.Sc., P. Eng.
November 15, 1968

WAYLAND S. READ, B.SC., P.ENG.

TELEPHONE 922-1847 AREA CODE 604

Consulting Geologist

860 YOUNETTE DRIVE, WEST VANCOUVER, B.C., CANADA

November 15, 1968

The Board of Directors,
Sinmax Mines Limited,
#510 - 850 W. Hastings Street,
Vancouver 1, B. C.

Gentlemen:

At your request, I have prepared a report on your
Azurite Group of Claims south of Princetown, B. C., with a com-
pilation of this past Summer's work.

Yours very truly,



W.S. Read, P. Eng.

wsr/h



GEOCHEMICAL - GEOPHYSICAL REPORT

AZURITE GROUP
Cas 1-32 and Adjoining Mineral Claims
(49° 120° SE)
9 miles south of Princetown, B. C.

in the

SIMILKAMEEN MINING DIVISION
Province of
British Columbia, Canada

for

SINMAX MINES LTD.

by

W.S. Read, B.Sc., P. Eng.,
860 Younette Drive,
West Vancouver, B.C.

November 15, 1968

TABLE OF CONTENTS

	<u>Page</u>
LOCATION	1
ACCESS	2
CLIMATE	3
CLAIMS HELD BY COMPANY	4
HISTORY	5
GEOLOGY	6
LINE CUTTING	9
MAGNETOMETER SURVEY	10
GEOCHEMICAL SURVEY	12
DISCUSSION OF RESULTS	13
CONCLUSIONS AND RECOMMENDATIONS	16
PERSONNEL	17
BIBLIOGRAPHY	18
CERTIFICATE OF QUALIFICATIONS	19

LIST OF ILLUSTRATIONS:

1 (A)	Geochemical Survey Plan	Scale 1 inch = 300 feet
1 (B)	Magnetometer Survey Plan	Scale 1 inch = 300 feet
2	Property Plan	Scale 1 inch = 300 feet
3	Preliminary Geology Plan	Scale 1 inch = 300 feet

LOCATION:

The Azurite Group of 67 recorded mineral claims (Cas, Big Eli, etc.) is located in the Similkameen Mining Division, British Columbia, Canada, on map sheet 92 H/8 W of the National Topographic System with approximate coordinates of $49^{\circ} 19' N$, $120^{\circ} 28' W$. The approximate elevation of the claims group is between 3,500 feet and 5,200 feet.

The claims lie east of the Copper Mountain road and west of Willis Creek, some eleven miles by road south of the town of Princeton. At this point a truck road to the southeast approaches the west boundary of the claim group.

ACCESS:

Princeton is about 190 miles east of Vancouver on B. C. Highway No. 3. The town has an airstrip suitable for light planes and facilities to service the surrounding area.

The claims are reached from Princeton via the Princeton-Copper Mountain access road, a partly paved secondary road. A truck road branches southeast to and near the claim boundary. There are no roads nor improvements in the claims. Much of the area is covered with light overburden, thick jack pine, and timber. Rock outcrops are quite sparse, except on ridges and deep cut gullies. Several ponds and small streams exist on the property, however, a fresh water supply may be somewhat limited during summer months.

CLIMATE:

The climate is continental in nature, classified as dry belt with snow cover during winter months. Temperature and precipitation records for Princeton, elevation 2,282 feet, between 1941 - 1964 are as follows:

Temperature, maximum 107° F., mean average 49° F., minimum -42° F.

Precipitation, total 14.1 inches, snow 59.5 inches.

Mining can be conducted year-round, with the summer and fall months providing the most ideal conditions for carrying out exploration or related field operations.

CLAIMS HELD BY COMPANY

The company has advised that they hold 67 claims listed hereunder. The transfer of the claims to the company has not been checked, as it is believed that the company has retained counsel to ensure itself of proper title to the ground. The claim corners visited seem to be reasonably well staked. The claims in part cover the Azurite, Copper Glance and other expired Crown Granted mineral claims.

<u>Claim Name and Number</u>	<u>Record No.</u>	<u>Tag No.</u>	<u>Expiry Date</u>
Cas #1	22075	890401	March 27, 1969
Cas #3 to Cas #32 incl.	22076 - 22105 incl.	890403 - 890432 inc.	March 27, 1969
Shannon #1	22233	765039	April 29, 1969
Little Eli #1	22234	765040	" " "
Big Eli #1 to Big Eli #12 incl.	22235 - 22246 incl.	890433 - 890444 incl.	" " "
Taf Fr. #1	22539		June 5, 1969
Dea #1 to Dea #4 incl.	22992 22995	692804 - 692807	July 39, 1969
Des #1 to #16 incl.	23168 - 23183	692808 - 692823	August 15, 1969
Asp #1 - 3 Fraction incl.	23787 - 23789	573690 - 573692	October 4, 1969

HISTORY:

Copper, gold, silver, platinum, other metallic minerals and coal, in lode and placer deposits have been located, developed and mined in the Princeton area since the 1860's. The earliest geological investigation in the Princeton district was made in 1859-61 in connection with the International Boundary Commission Expedition. Since that time periodic surveys have been made by various government and private organizations. Summary details of this background information are given in Memoir 243, Geology and Mineral Deposits of the Princeton Map-Area, British Columbia, by H. M. A. Rice of the Geological Survey of Canada 1947.

The claims are located in an area that is referred to as the Voigt camp and cover the lapsed Crown Granted claims known as the Azurite and Copper Glance Crown Granted in 1905, No. 54, No. 55, and No. 56. This is about two miles east of the Copper Mountain open pit recently purchased by Newmont Mining Corp. from Granby Mining Co. Ltd. for a reported \$8,000,000.00 cash, plus 40,000 shares.

It adjoins Cumont optioned ground to the north and west and Silver Standard optioned ground to the south.

GEOLOGY:

Geological investigations in the Princeton area were initiated in 1859-61. The area is underlain by a succession of volcanic rocks ranging in age from late Paleozoic to late Tertiary, by sedimentary rocks mostly interbedded with the volcanics and by intrusive rocks ranging in composition from granite to peridotite of Jurassic to late Cretaceous or early Tertiary. The most interesting mineralized zones located to date appear to have been related to the Copper Mountain intrusives of syenites-granodiorites and the basic peridotite-gabbro masses.

The area is structurally complex in detail with northerly trending major and minor faults. Rice considers the principal geological feature of this mining camp in the occurrence of two fair sized stocks and a number of irregular-shaped bodies of coarse-grained plutonic rock. These bodies are known respectively as the Copper Mountain stock, the Voigt stock and the Lost Horse intrusions form the Copper Mountain intrusions. They vary in composition from syenite to gabbro and are all conspicuously devoid of quartz. Not only do copper deposits occur with all of them, but primary copper minerals can be seen in them and in their associated pegmatitic dykes. They intrude, and have variously metamorphosed, volcanic rocks of the Nicola group.

Structurally, Nicola volcanic rocks form the western limb of a north-trending anticline and dip steeply to the west. Along the eastern border of the Copper Mountain stock these rocks have been extensively sheared in a direction roughly parallel with the bedding. They have also been intersected by many small faults that strike about east and dip steeply north, and by a series of small tension cracks that lie roughly normal to the shearing in the area between the Copper Mountain stock and the main belt of Lost Horse intrusions. In certain localities these cracks are very plentiful, and although structurally insignificant, they are of great economic importance because most of the ore deposition occurred among them.

The ore deposits of Copper Mountain are of three principal types, which may be designated by their mineral content as:

- 1) bornite deposits,
- 2) chalcopyrite-pyrite deposits,
- 3) chalcopyrite-hematite deposits.

The Azurite group is located on and adjoining the Voigt stock. The chalcopyrite-hematite ores occur only in the Voigt stock, occurring along east-west striking shear zones. The ore minerals are principally hematite, pyrite, chalcopyrite and magnetite, and have been found in place on the Azurite group, but much more work is required to determine its economic significance. During preliminary geological mapping 19 rock

and mineral specimens were collected as noted on the Preliminary Geology Plan (Map 3) and are submitted with this report.

The copper deposits of Copper Mountain are closely related to the Copper Mountain and Voigt stocks. Mineralization, however, followed the intrusion of the stocks, as is evident from the fact that the mineral deposits occur in the fractures in the stocks and in the surrounding metamorphosed rocks.

LINE CUTTING:

Two transit baselines were cut for a total length of 2-1/2 miles in an easterly direction. The main baseline is 1.86 miles long and the north baseline 0.64 miles. Picket crosslines were turned off at 400 foot intervals and driven a total of 28.04 miles as shown on the accompanying maps. The lines have stations marked every 100 feet with slope corrections made between stations so that all distances mentioned are horizontal measure.

Total lengths:

Main Baseline	1.86 miles	
North Baseline	<u>0.64 "</u>	2.50 miles
Picket cross lines		<u>28.04</u>
Total		30.54 miles

Starting point for the main baseline was two feet east and one foot north of the SW corner Copper Glance C.G. L. 3267 (cancelled) and SE corner Azurite C.G. L. 3268 (cancelled). This point was arbitrarily set as 30 + 00 east. As work progressed, other Crown Grant posts were located and tied into the grid for additional control.

MAGNETOMETER SURVEY:

Type of Magnetometer:

A McPhar fluxgate magnetometer, model M 700, was used for this survey. This is a hand held instrument requiring only coarse levelling and is not significantly affected by orientation.

The magnetometer measures the vertical component of the earth's magnetic field to 5 gammas on the lowest scale range. The full scale ranges vary progressively from a minimum of plus or minus 1,000 gammas to a maximum of plus or minus 100,000 gammas. The values can be read directly from the scale.

Temperature compensations have been built into the instrument and the only necessary correction to the readings is for the diurnal variation. The variation in each survey loop is assumed to be linear and is determined by subtracting the initial and final readings. The correction added to each reading in the loop is the product of the total diurnal. Variation of the loop and the ratio of time elapsed up to the time of the reading over the total time elapsed for the loop.

Field Procedures:

The instrument was set or zeroed for the area and station 30 + 00 E on the main baseline given a value of 1000 gammas. The baseline was surveyed, corrections in the readings made for diurnal variation and the stations at the junction of the crosslines with the baseline, were

used as control points for each survey loop.

Readings were taken at every station on the baseline and every 100 feet on the crosslines. Where further detail to outline anomalous zones was needed, the station interval was closed to 50 feet and 25 feet. Diurnal variation was low and corrections were treated linearly in respect to elapsed time.

GEOCHEMICAL SURVEY:

Soil samples were taken along the baselines and along the crosslines at the 100 foot intervals. A mattock was used for digging the sample hole. When possible the upper part of the "B" soil horizon was sampled. This layer was usually greater than one foot thick.

The samples were collected in brown Kraft soil sample bags arranged in line order and forwarded directly to the assayers in Vancouver as soon as each shipment lot was collected. The samples were assayed for copper by T.S.L. Laboratories Ltd., Vancouver, B.C., using hot nitric acid extraction and metal determination by the atomic absorption process.

The assay results were plotted on the base plan at a scale of 1 inch = 300 feet, colour coded and contoured within ranges as shown on the map.

DISCUSSION OF RESULTS:

Magnetometer Survey:

The readings were plotted on a base map to a scale of 1 inch equals 300 feet, which was used as a base map for all surveys. Readings were plotted as gammas relative to the main baseline station at 30 + 00 E.

The area has quite extensive cover of light overburden covering rocks of the Copper Mountain intrusions, Otter intrusions and the older Nicola volcanic rocks making definite correlation of magnetics to geology difficult.

Several anomalous zones have been outlined as shown on map 1 B, but tighter line spacing would be necessary for complete definition due to a set of north trending joints carrying hematite, pyrite, chalcopyrite and magnetite. The anomalies could be made up as a wide complex zone or several narrower zones. During the course of the magnetometer survey, the operator noted that surface iron stain did not necessarily mean that there would be corresponding magnetic highs.

The main trend of anomalous zones are found in close proximity to the Copper Mountain intrusions and in the Nicola group close to these contacts. The east half of the north baseline shows only minor variation and may be underlain by Otter intrusions. Areas where the Nicola group appeared to be more remote from the Copper Mountain

intrusives also gave readings in the background range.

Geochemical Survey:

The following concentration ranges for copper were selected after inspection and analysis of the analytical data:

Range	Cu ppm
Background	0 - 25
Threshold	25 - 49
Anomalous	50 - 99
	+ 100

These results were contoured and colour coded on the map for easier study. Due to changes in topography and drainage, ion migration is expected. This should be taken into account when exploring for the source of the anomalies.

The shape of the anomalies is irregular. However, in the instances where outcrops were mapped in the anomalous areas, in the majority of cases copper minerals were reported. This confirms the method is useful in delimiting target areas and a useful preliminary tool in this area. The threshold range fell to background northeast of 82 + 00 E on the main baseline in a line very close to that of the magnetic trend and may be underlain by Otter intrusions.

The somewhat patchy results in the southwest area may be

due to intrusions of the Copper Mountain intrusives through the Nicola group. Some of these intrusives were found to contain copper mineralization.

In general, the threshold range covers much of the Copper Mountain intrusions, the anomalous range shows copper mineralized sections within these intrusions and background appears to be underlain mainly by Otter intrusions and some of the Nicola group.

CONCLUSIONS AND RECOMMENDATIONS:

Soil sampling for copper has outlined several anomalous areas of irregular shape. Outcrops are scarce over much of the claims group but, from the preliminary geological mapping, copper mineralization was noted when outcrops occurred within anomalous areas. Other anomalous areas occur that appear to be completely overburden covered. Line and sample spacing is adequate for this type of survey and the only further geochemistry to be contemplated would be an extension of area coverage.

The magnetometer survey has outlined several anomalous zones but closer line spacing is necessary for complete definition, as the anomalies could be made up of a wide complex zone or several narrower zones. However, while closer detail is desirable, due to target size it would appear to be more practical to increase the area covered at this spacing and have a magnetometer available during physical follow-up work. The funds saved could be directed into other geophysical work over selected lines. Induced polarization, in particular, should be considered.

PERSONNEL:

Contract field work between June 23 and September 22, 1968.

Wayland S. Read, P. Eng., Mining and Geological Consultant,
860 Younette Drive,
West Vancouver, B.C.

Edwin A. Shannon - Party Chief - Completed first half of Mining
Technology course, B.C.I.T. Geophysical
training and previous geochemical experience
and training with Coranex Ltd.,
5072 Sanders Street,
Burnaby 1, B.C.

David P. M. Hadoto, Geological Assistant. Third Year U.B.C.
faculty of Science, majoring in Geology.
Previous two summers experience with
Dr. Sinclair, U.B.C. Geology project and
with Homestake Mining Co.,
3514 West 1st Avenue,
Vancouver 8, B.C.

BIBLIOGRAPHY

Camsell, Charles, Preliminary Report on a Part of the Similkameen District, British Columbia, No. 986 Geological Survey of Canada 1907.

Dolmage, V., Geology and Ore Deposits of Copper Mountain, B. C. Memoir 171 Geological Survey of Canada 1934.

Rice, H. M. A., Geology and Mineral Deposits of The Princeton Map-Area, British Columbia, Memoir 243 G.S.C. 1947.

CERTIFICATE OF QUALIFICATIONS

I, Wayland Stuart Read of 860 Younette Drive, West Vancouver, B. C., do hereby certify that:

1. I am a practising mining geologist and my address is 860 Younette Drive, West Vancouver, B. C.
2. I am a graduate in geology from Acadia University, Wolfville, Nova Scotia, and have been granted the degree of Bachelor of Science in Geology and have engaged in practising my profession for the past ten years.
3. I am a member of the Association of Professional Engineers of British Columbia and the Yukon Territory, a fellow of the Geological Association of Canada and a Junior Member of the Canadian Institute of Mining and Metallurgy.
4. I have no interest in the securities of Sinmax Mines Ltd., nor in the property held by them and discussed in this report.
5. This report is based on my personal visits and work on the property and on results of the work by Edwin A. Shannon and David P. M. Hadoto employed by Wayland S. Read Limited.

Respectfully submitted,

W. S. Read

Wayland S. Read, B.Sc., P.Eng.,
Consulting Geologist.

860 Younette Drive,
West Vancouver, B. C.

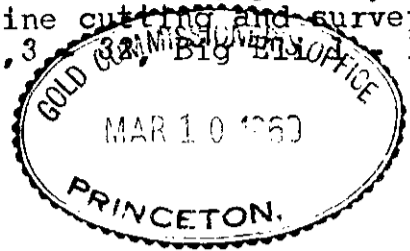
November 15, 1968.

WR

DOMINION OF CANADA:
 PROVINCE OF BRITISH COLUMBIA.

To Wit:

In the Matter of Geochemical-Geophysical,
 Geological Surveys, line cutting and surveying.
 Azurite Group - Cas 1, 3, 12,
 Des 1 - 16, etc.



I, W. S. Read, P.Eng.

of Wayland S. Read Limited - Geological Consultant
 860 Younette Drive, West Vancouver, B.C.

in the Province of British Columbia, do solemnly declare that the following supervision and work was done:

- 2 Transit Baselines - Direction E-W. Total length 2½ miles.
- Cutting, surveying and chaining 28-04 miles of picket crosslines.
- Magnetometer survey over 29.5 miles.
- Geochemical survey over 30.5 miles.

Costs:

Assaying 1626 soil samples for copper, including preparation. T.S.L. Laboratories, Vancouver. \$1926.80

Transportation costs	972.71	
Chain saw rental - 10 weeks @ \$35.00	350.00	
Magnetometer (McPhar M700, Sharpe MF1)		
3½ inst. months @ \$220.00	770.00	
Camp and equipment write-off	750.00	
Food & supplies. 2½ months @ \$400.00	1000.00	
Transit & chains. 2½ months @ \$65.00	162.50	
Engineering supplies - allow	150.00	
Blue Prints	116.13	<u>4271.34</u>

Personnel:

A. Band contract, crew June 27-August 1968	\$2102.20
M. Schram " " July 26-August 1968	648.00
E. Shannon, Party chief June 22-Sept. 22'	1875.00
D. Hadoto, Geological Assistant, June 22 to September 1, 1968	1484.38
W. S. Read, June 10½ days, July 7 days, Aug. 6 ¾ days, Sept. 8 days, Oct. 8 days, Nov. 10¼ days -- (50½ days @ \$100.00)	5050.00

Draughting 507.01 11666.59

Office and overhead 7% of \$15937.93 17864.73

1115.66

And I make this solemn declaration conscientiously believing it to be true, and knowing that it is of Profit 10% of \$17,053.59 18980.39

the same force and effect as if made under oath and by virtue of the "Canada Evidence Act." 1705.36

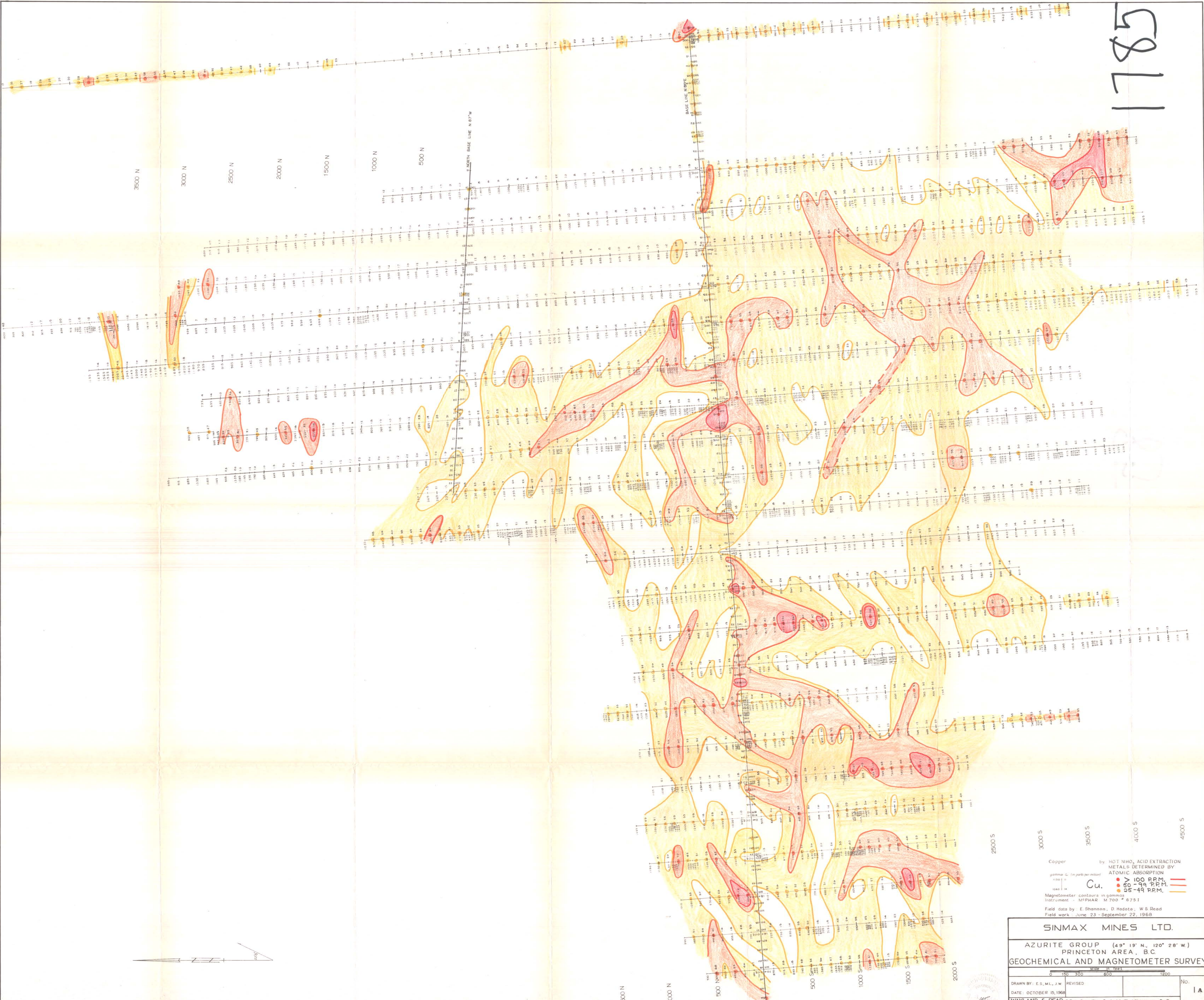
Declared before me at the *City*
 of *Vancouver*, in the
 Province of British Columbia, this *15*
 day of *January* 1969, A.D.

W. S. Read

Jess Turner

Commissioner for taking Affidavits for British Columbia or
 A Notary Public in and for the Province of British Columbia.
 Sub-mining Recorder

1785



Copper by HOT NHO₃ ACID EXTRACTION
 METALS DETERMINED BY
 ATOMIC ABSORPTION
 Cu. ● 50-100 P.P.M.
 ● 100-500 P.P.M.
 ● 500-1000 P.P.M.
 ● 1000-5000 P.P.M.

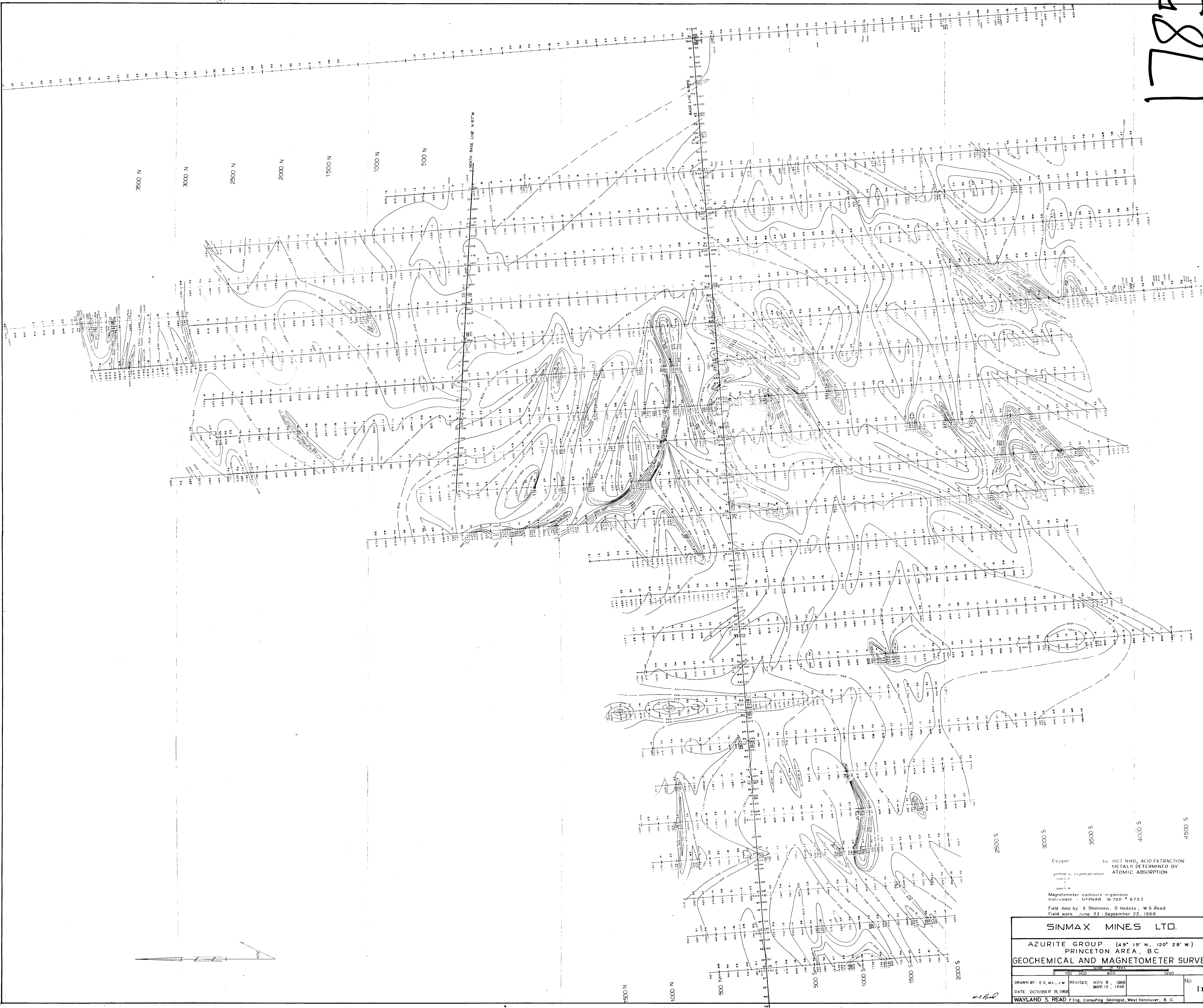
Magnetometer contours in gamma
 Instrument - M'PHAR M 700 # 6751
 Field data by E. Shannon, D. Hadzo; W.S. Read
 Field work - June 23 - September 22, 1968

SINMAX MINES LTD.

AZURITE GROUP (49° 19' N, 120° 28' W)
 PRINCETON AREA, B.C.
 GEOCHEMICAL AND MAGNETOMETER SURVEY

SCALE IN FEET
 0 150 300 600 1200
 DRAWN BY: E.S.M.L., J.W. REVISED
 DATE: OCTOBER 15, 1968
 WAYLAND S. READ, P. Eng., Consulting Geologist, West Vancouver, B.C.

1785



Copper by HOT NH_4 ACID EXTRACTION
 METALS DETERMINED BY
 ATOMIC ABSORPTION

gamma's c. (in parts per million)

Magnetometer contours in gammas
 Instrument - MCFAR M 700 # 6751

Field data by E. Shannon, D. Hadote, W.S. Read
 Field work June 23 - September 22, 1968

SINMAX MINES LTD.		
AZURITE GROUP (49° 19' N, 120° 28' W) PRINCETON AREA, B.C.		
GEOCHEMICAL AND MAGNETOMETER SURVEY		
0 150 300 600 1200 SCALE		
DRAWN BY: E.S.M.E., J.W.	REVISED: NOV 8, 1968 NOV 15, 1968	No. 1B
DATE: OCTOBER 15, 1968		
WAYLAND S. READ, Eng. Consulting Geologist, West Vancouver, B. C.		

1785



SINMAX MINES LTD.	
AZURITE GROUP (49° 19' N., 120° 28' W.) PRINCETON AREA, B.C.	
PROPERTY PLAN	
DRAWN BY: J. W. REVISOR DATE: OCTOBER 15, 1968	No. 2 3
WAYLAND S. READ P. Eng., Consulting Geologist, West Vancouver, B. C.	

LEGEND

Upper Cretaceous: ■ Other intrusions - pink & pale white granite, Feldspar, porphyry

Jurassic: ■ Copper Mountain intrusions - Syenogabbro, diorite, andesite

Mesozoic: ■ Nicola Group - Vari-coloured lava, argillite

--- Drainage channel

x Location of mineral showings (mainly Chalcopyrite, pyrite)

--- Probable location of shear zone or fault

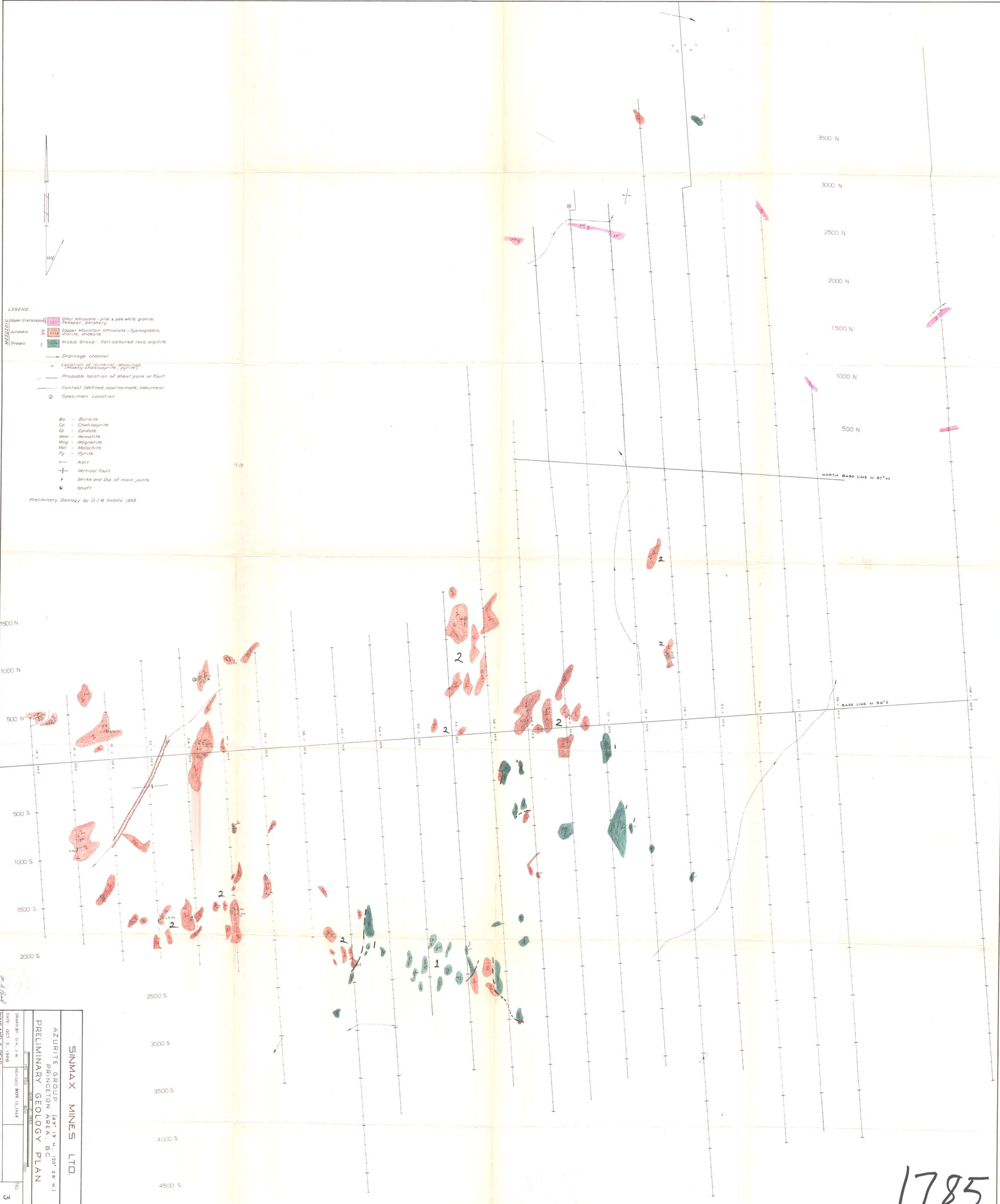
--- Contact (defined, approximate, assumed)

⊙ Specimen Location

Ba - Barnite
 Cp - Chalcopyrite
 Ep - Epidote
 Hem - Hematite
 Mag - Magnetite
 Mal - Malachite
 Py - Pyrite

--- Adit
 + Vertical fault
 - Strike and Dip of main joints
 ▬ Shaft

Preliminary Geology by D.J.M. Hodata 1968



SINMAX MINES LTD.

AZURITE GROUP (49° 19' N, 120° 28' W)
 PRINCETON AREA, B.C.
 PRELIMINARY GEOLOGY PLAN

DRAWN BY: O.H. J.W. REVISION: NOV. 15, 1968
 DATE: OCT. 3, 1968

WAYLAND S. READ, Eng. Consulting Geologist, Vancouver, B. C.

No. 3

1785