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VANCOUVER 1, B. C.

1760

February 24th, 1969

Mr. E. Shaw,
736 Granville Street,
Vancouver 2, B.C.

Dear Sir:

RE: Airborne Geophysical Survey
Magnetic, Maynard, Iron, Trout,
Blue Ox, Rainy Groups Mineral Claims
Benson River Area, B.C.
Nanaimo Mining Division

Pursuant to your request, the writer has conducted a combined airborne geophysical survey over the subject mineral claims owned by Mr. T. C. McAlpine and Quatsino Copper-Gold Mines Ltd. during the period January 25th to present. The following report and maps are the results of the magnetometer, electromagnetic, and radioactivity surveys.

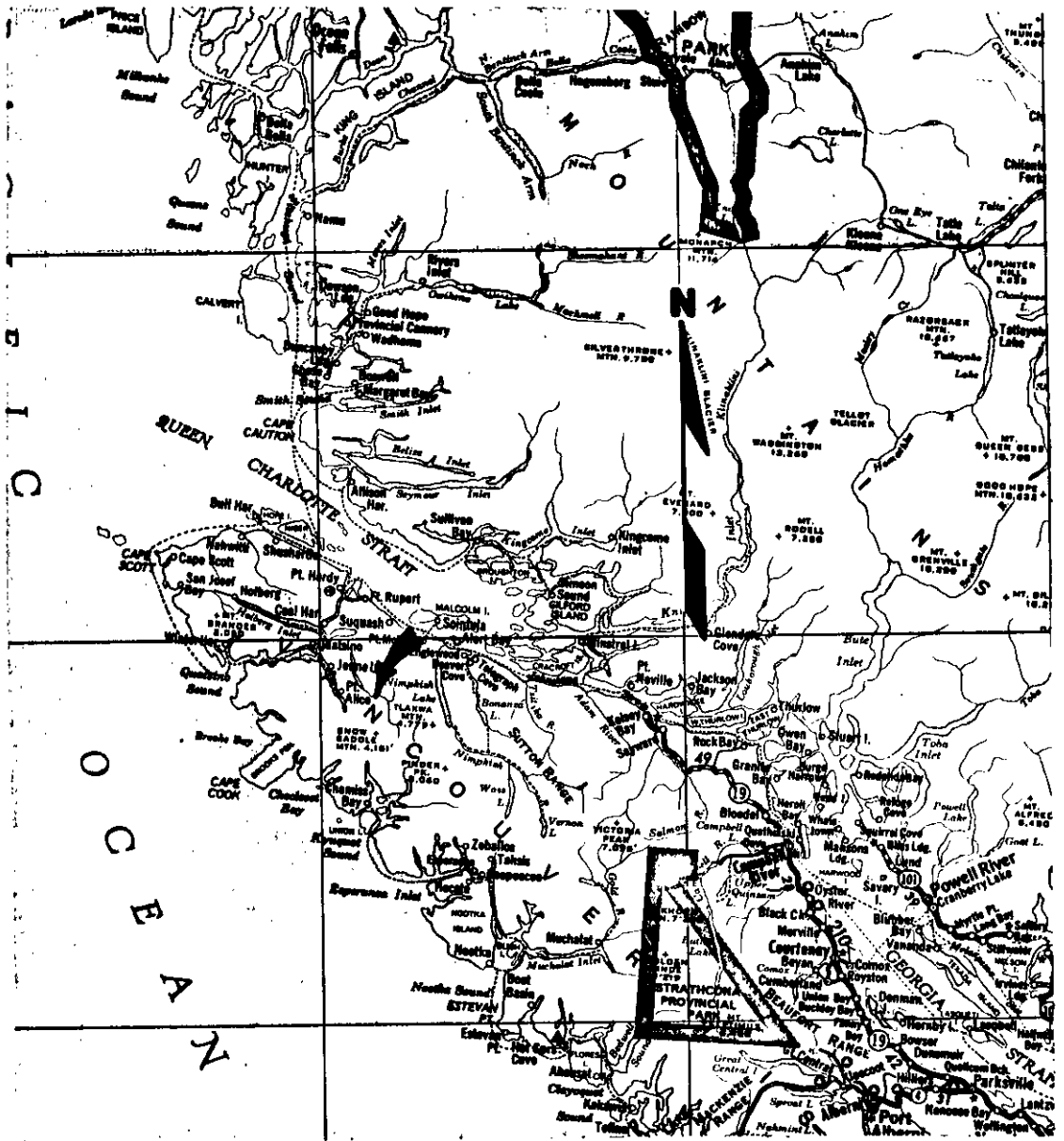
Respectfully submitted,



Harvey H. Cohen, P.Eng.

HHC/jm

REPORT ON THE
AIRBORNE GEOPHYSICAL SURVEY
MAGNETIC, MAYNARD, IRON,
TROUT, RAINY, BLUE OX
GROUPS, M. C.'S
BENSON RIVER AREA, B. C.
NANAIMO MINING DIVISION



KEY MAP SHOWING LOCATION OF BENSON RIVER AREA, B. C.

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REPORT ON THE
AIRBORNE GEOPHYSICAL SURVEY
MAGNETIC, MAYNARD, IRON, TROUT
BLUE OX, RAINY MINERAL CLAIMS.
BENSON RIVER AREA, B.C.
NANAIMO MINING DIVISION

INTRODUCTION

LOCATION

The Magnetic, Maynard, Iron, Trout, Blue Ox, and Rainy Mineral Claims consist of six groups of eight claims lying contiguously oriented in a general north-south direction. The property covers an area on the north part of Vancouver Island along the Benson River and south of its conflux with Benson Lake (Elk Lake).

The region is heavily wooded with hills from moderate to steep reaching elevations of up to 2000 feet in the near proximity while the valley floor averages 500 feet in elevation above sea level.

For the purpose of this survey, access was by air using Port Hardy airport as a base.

Geographically, the properties centre at:

Longitude 127° 13' W

Latitude 50° 21' N

and is shown on map 92 L/6 east half Alice Lake

(Scale 1:50000)

SUMMARY OF CLAIMS

<u>NAME</u>	<u>RECORD NO.</u>	<u>DATE.</u>	<u>REGISTERED OWNER</u>
MAYNARD 1	13464	Feb. 15/69	T. C. McAlpine. → dec.
MAYNARD 2	13465	Feb. 15/69	A-H Answorth
MAYNARD 3	13466	Feb. 15/69	
MAYNARD 4	13467	Feb. 15/69	
MAYNARD 5	13468	Feb. 15/69	
MAYNARD 6	13469	Feb. 15/69	
MAYNARD 7	13470	Feb. 15/69	
MAYNARD 8	13471	Feb. 15/69	
MAGNETIC	13472	Feb. 21/69	T. C. McAlpine.
MAGNETIC 2	13473	Feb. 21/69	"
MAGNETIC 3	13474	Feb. 21/69	"
MAGNETIC 4	13475	Feb. 21/69	"
MAGNETIC 5	13476	Feb. 21/69	"
MAGNETIC 6	13477	Feb. 21/69	"
MAGNETIC 7	13478	Feb. 21/69	"
MAGNETIC 8	13479	Feb. 21/69	"
IRON	13761	May 22/69	T. C. McAlpine.
IRON 2	13762	May 22/69	"
IRON 3	13763	May 22/69	"
IRON 4	13764	May 22/69	"
IRON 5	13765	May 22/69	"
IRON 6	13766	May 22/69	"
IRON 7	13767	May 22/69	"
IRON 8	13768	May 22/69	"
TROUT	13802	May 25/69	T. C. McAlpine.
TROUT 2	13803	May 25/69	"
TROUT 3	13804	May 25/69	"
TROUT 4	13805	May 25/69	"
TROUT 5	13806	May 25/69	"
TROUT 6	13807	May 25/69	"
TROUT 7	13808	May 25/69	"
TROUT 8	13809	May 25/69	"

SUMMARY OF CLAIMS

<u>NAME</u>	<u>RECORD NO.</u>	<u>DATE.</u>	<u>REGISTERED OWNER</u>
BLUE OX	13857	June 13/69	T. C. McAlpine. <i>dec.</i>
BLUE OX 2	13858	June 13/69	<i>Atisworth</i>
BLUE OX 3	13859	June 13/69	
BLUE OX 4	13860	June 13/69	
BLUE OX 5	13861	June 13/69	
BLUE OX 6	13862	June 13/69	
BLUE OX 7	13863	June 13/69	
BLUE OX 8	13864	June 13/69	
RAINY	13849	June 13/69	✓ Quatsino Copper-
RAINY 2	13850	June 13/69	Gold Mines Ltd.
RAINY 3	13851	June 13/69	
RAINY 4	13852	June 13/69	
RAINY 5	13853	June 13/69	
RAINY 6	13854	June 13/69	
RAINY 7	13855	June 13/69	
RAINY 8	13856	June 13/69	

GEOPHYSICAL INVESTIGATIONS

MAGNETOMETER SURVEY:

The purpose of the Magnetometer Survey was to determine the existence of any magnetic anomalies on the property, and if so, what was their size, magnetic intensity and probable cause. An anomaly would result from the presence or absence of any magnetic accessory minerals in the underlying rock formations in detectable quantity; the magnetic survey would differentiate between the volcanic, sedimentary and intrusive members and detect sulphides that are magnetic and that could possibly be associated with valuable minerals.

Using these factors as a guide, the Geophysical Survey was conducted over an area 26,900 feet by 6,000 feet in order to adequately cover the property held by the company. A total of 66 line miles were recorded in this survey.

Factors which produce variations in the magnetic field are:-

1. A concentration of magnetic minerals possibly associated with valuable minerals.
2. A variation in amount of accessory mineral magnetite in granitic, volcanic, or sedimentary bedrock.
3. A variation in amount of magnetite distributed through or connected with the overburden.
4. A variation in depth of non-magnetic overburden on caprock over bedrock having a constant vertical magnetic intensity.
5. Variation in amount of magnetic minerals in adjacent bands of volcanic and/or sedimentary rocks. These variations are not expected to be great, and they produce elongated highs and lows parallel to the strike of the formation.
6. Any combination between variations in magnetic minerals in the rock and variations in magnetic or non-magnetic overburden or caprock thickness.

It will be seen from the above factors that the

geophysical survey employing a magnetometer, produces information that would assist in providing a structural picture as well as indicating and defining more favorable areas of greater geological significance for further exploration.

ELECTROMAGNETIC SURVEY:

The Electromagnetic Survey, conducted simultaneously with the Magnetometer Survey, measures the change in mutual impedance between a pair of coils as the impedance is affected by nearby conductors of electricity. The equipment employed transmits an electrical field through a 65 foot coil at a frequency of 1000 cycles per second. The coil is housed in a "bird" that is drawn by the aircraft, and records any fields produced by the transmitted field.

RADIOACTIVITY SURVEY:

The radioactivity was continuously measured employing a DR-229 Nucleometer constructed specifically for airborne work. It is a highly sensitive instrument of 24 tube construction. This survey system was employed to investigate any zones of radioactivity that may be caused by certain weathered products associated with mineralized zones.

PROCEDURE

The 48 claims are oriented north-south along the Benson River, Iron Lake area, and were covered by the survey of approximately 62 miles. The block measured 6000 feet by 26500 feet. Due to the terrain, the flight was set at a true heading of 359° . In this way the near constant height above ground could be maintained by the aircraft.

The survey was flown at a constant speed of 113.7 miles per hour with flight line spacing of 500 feet. Instrumentation was continuous, but recording was accomplished by photographing the instrument panel at pre-set intervals (depending upon the speed of the aircraft) to record the readings at 500 foot stations. Flight lines, 12 in number over the area, were flown 26,500 feet in length plus turning and reorienting distance. The flight pattern and grid lines were plotted in advance on topographic map 92 L 6 east half on a scale $1\frac{1}{4}$ inches to 1 mile. The survey was flown during a period of extreme calm weather; prominent landmarks were used as visual reference points for flight control.

The resulting readings and their respective coordinates were "key punched" and subsequently processed

by a Univac 1108 computer. The enclosed maps are the results of this process.

ANALYSIS OF RESULTS AND CONCLUSIONS.

At FL3 N46 on the "Magnetic Group" is centered an anomaly measuring 1800 feet by approximately 500 feet and having a magnetic intensity of 2000 gamma above background. Coincident with the centre of this significant anomaly is an EM high of plus 6. The conductivity is that of a moderate conductor that may be caused by disseminated sulphides. The magnetic intensity is due to magnetite content that appears to be massive or banded. The host rock - from the magnetic gradient, does not appear to be of intrusive origin - but of sedimentary or volcanic. Structurally, there appears to be a general north-south strike and easterly dip. The zone may be magnetite as replacement in sediments possibly associated with or overlying sulphides of copper.

At FL7 N50, an EM high of plus 5 measures 600 feet by 300 feet, and locates a moderate conductor of low magnetic intensity. This zone is indicative of disseminated sulphides, non-magnetic to low-magnetic in character.

At FL9 N52 an EM of plus 5 measuring 700 feet in length records a magnetic intensity of 1900 to 2000 gamma above background. The anomaly lies on the Maynard Group and extends easterly. The variation in recorded conductivity to the east could be due to a variation in the thickness of overburden, however, the centre is indicative of disseminated sulphides in the underlying rock - both magnetic and non-magnetic.

The EM anomaly extending east-west at N42 appears as a structural break across the underlying sedimentary structure. This may have a surface representation in the form of a "draw" on the westerly slope of the mountain. Associated with this feature is a magnetic high of 2500 gamma at FL10 N41 adjoining an EM high of plus 5 at FL9 N41. This could be a zone of magnetite rich rocks paralleling a zone of sulphides (possibly copper) The area lies to the west of Iron Lake.

The magnetic "high" at FL6 N36 on the Iron Group extends north-south for a distance of 3500 feet with a recorded magnetic intensity of 2000 gamma above background. To the east along FL5 parallel to the magnetic high is an EM of plus 5 to 6. A complex situation does exist at this location in that ^{at}_A N31 and N32 the magnetic high appears to be displaced by a "break" of over 500 feet. An EM high of plus 5 centered at FL4 N30 is of significance in its

proximity to ;the magnetic anomaly and could be due to disseminated sulphides associated with a magnetite mass to the north, and within a belt of limestone or other sedimentary rocks oriented north-south.

At FL10 N30 an EM anomaly of plus 5 intensity over a low magnetic influence traces a belt North for 800 feet and west for 1000 feet to form an L shaped anomaly - possibly associated with the east-west fault at this horizon. The area lies on the Trout Mineral Claims just north of Trout Lake and is indicative of disseminated sulphides, non-magnetic in character.

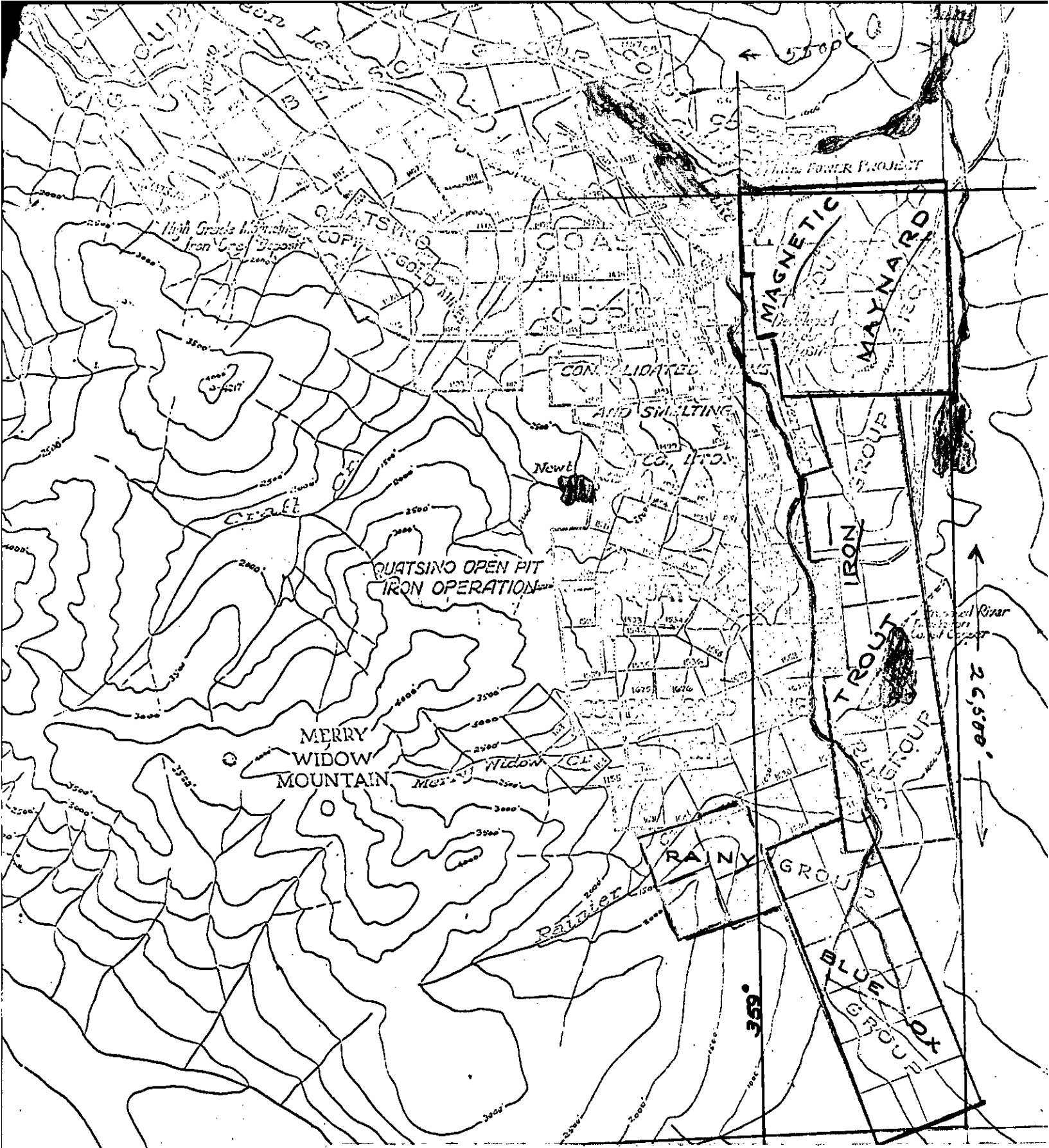
The EM anomaly at FL6 N23 extends for 1800 feet in a north-easterly direction. The recorded influence, that of conductivity of disseminated sulphides with moderate magnetics could be due to the properties of the overburden - electrolyte filled shears - the trend conforms to the direction of the river connecting Trout Lake and Benson River.

The anomaly at the northwest part of the Rainy Group, roughly elliptical in shape 800 feet by 500 feet is on a zone of greater than normal conductivity and magnetic field. The magnetics show a structural trend southwesterly from north-south, creating a condition that could be of geological significance. The recorded conductivity, magnetic field, and indicated structural change could

produce a favorable locus for ore deposition.

Centred at FL7 N13, an EM anomaly 1500 feet by 1000 feet reaches a plus 7 coinciding with a magnetic influence of 1300 gamma. The recorded magnetics could be due to concentrations of magnetite in the overburden, and the conductivity to electrolyte filled shears. However, the anomalous condition is too large in size to be limited to these causes, and should be investigated further. A definite structural change is evident, but the overburden succeeds in masking to a large degree the underlying rock.

The anomaly on the Blue Ox Group centres at the middle of the claims. The EM intensity of plus 9 is the highest recorded in the area, and is due to disseminated to massive sulphides. The magnetic field of 500 gamma is of the magnitude of minor magnetite or pyrrhotite. With the area of significance being 1400 feet by 500 feet, it produces a zone that has all the indications of containing sulphides of copper or iron other than magnetite in quantity that should be massive to disseminated.



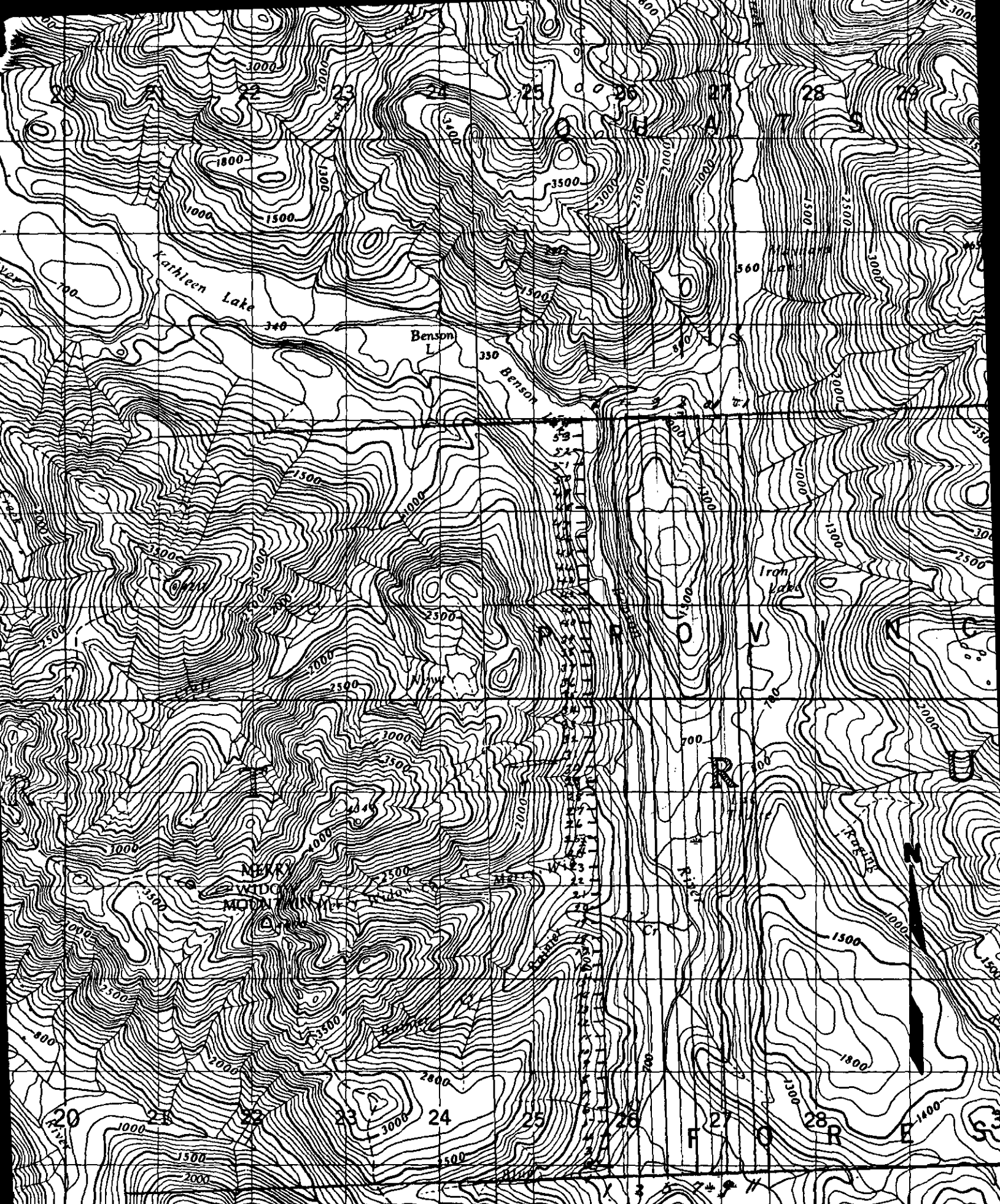
AIRBORNE GEOPHYSICAL SURVEY
 MAP SHOWING
AREA OF GEOPHYSICAL SURVEY
AND CLAIM LOCATION

MAGNETIC, MAYNARD, IRON, TROUT, BLUE OX, RAINY
 BENSON RIVER AREA
 NANAIMO MINING DIVISION

SCALE: 1" = 3500'

FEB. 1969

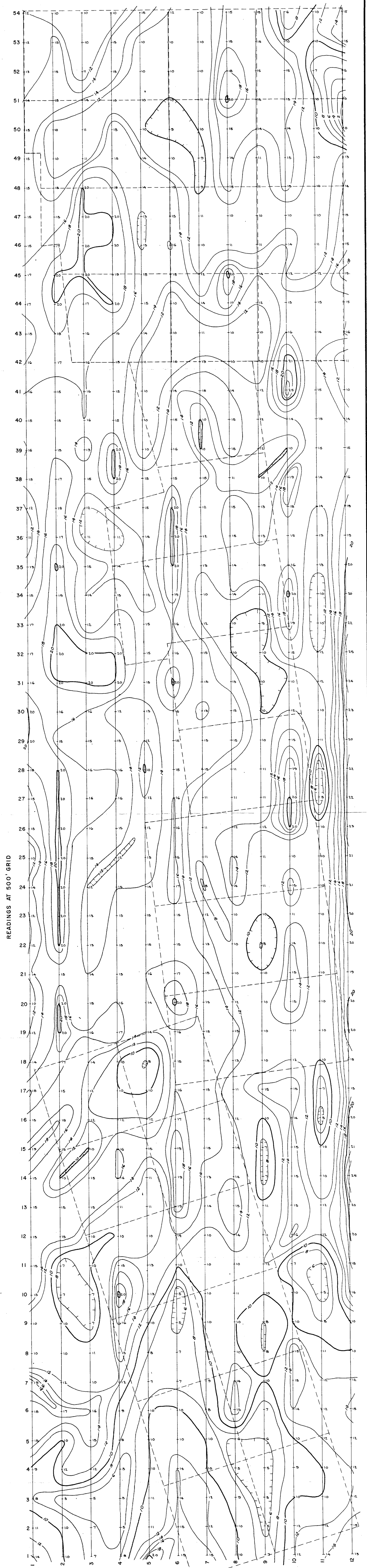
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AIRBORNE GEOPHYSICAL SURVEY
MAGNETIC, MAYNARD, IRON, TROUT, BLUE OX
 AND RAINY GROUPS M.C.'s
BENSON RIVER AREA
 NANAIMO MINING DIVISION.
FLIGHT LINE PATTERN

SCALE: 1/4" = 1 MILE

FEB. 1969



READINGS AT 500' GRID

FLIGHT LINES AT 500' GRID

NOTE:
 FLIGHT LINES 500 FT SPACING
 RECORDED READINGS 500 FT. SPACING
 MAGNETOMETER IN 100 GAMMA
 CONTOUR INTERVAL 200 GAMMA

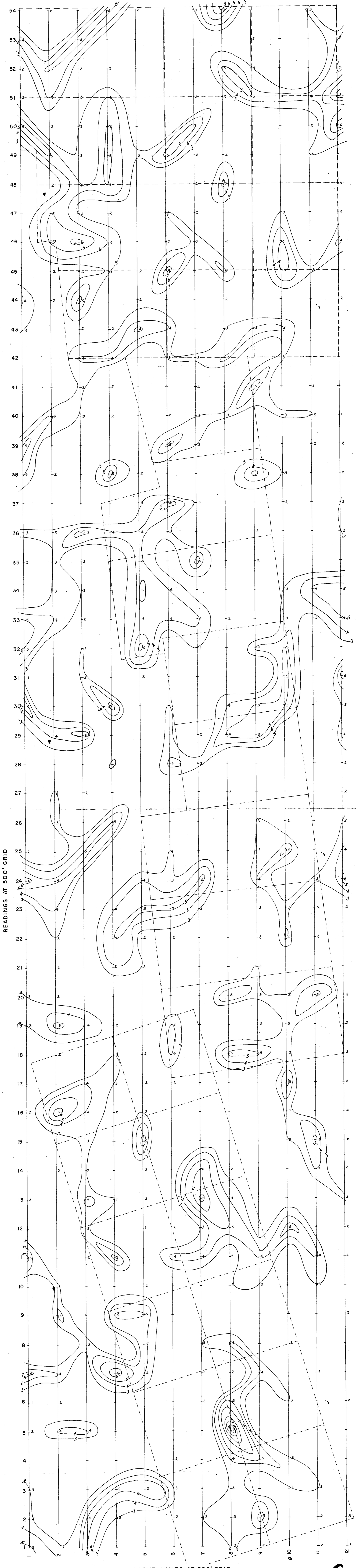
1760

Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 NO. 1760 MAP 1

Magnetic, Maynard, Iron, Trout, Blue Ox, Rainy, M.C.'s

MAGNETOMETER
 AIRBORNE GEOPHYSICAL SURVEY.
 BENSON RIVER AREA, B.C.

HARVEY COHEN ENGINEERING LTD. SCALE: 1" = 500'
 FEBRUARY 1969



READINGS AT 500' GRID

FLIGHT LINES AT 500' GRID

1760

NOTE
 FLIGHT LINES 500 FT SPACING
 RECORDED READINGS 500 FT SPACING
 ELECTROMAGNETIC READINGS IN MILLIAMPS

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 ASSESSMENT REPORT
 NO. 1760 M.P. 2

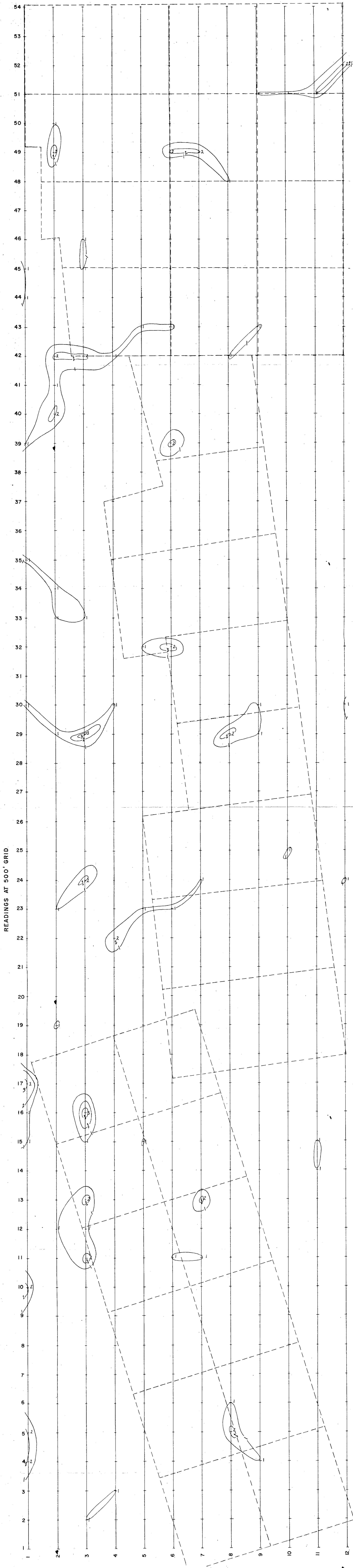
Magnetic, Maynard, Iron, Trout, Blue Ox, Rainy, M. C.'s

ELECTROMAGNETIC
 AIRBORNE GEOPHYSICAL SURVEY.
 BENSON RIVER AREA, B.C.

(2)

HARVEY COHEN ENGINEERING LTD.

SCALE: 1" = 500'
 FEBRUARY, 1969



READINGS AT 500' GRID

FLIGHT LINES AT 500' GRID

1760



NOTE:
 FLIGHT LINES 500 FT SPACING
 RECORDED READINGS 500 FT. SPACING
 RADIOACTIVITY IN .001 MR/HR

Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 NO. 1760 MAP 3

Magnetic, Maynard, Iron, Trout, Blue Ox, Rainy, M.C.'s

RADIOACTIVITY
 AIRBORNE GEOPHYSICAL SURVEY.
 BENSON RIVER AREA, B.C.

3

HARVEY COHEN ENGINEERING LTD.

SCALE: 1" = 500'

FEBRUARY 1969