

3451

GEOPHYSICAL SURVEY
MAGNETOMETER SURVEY
ON
HY22-49 GROUP
KAMLOOPS MINING DIVISION
BRITISH COLUMBIA

November 1-14, 1971

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT

NO. 3451 MAP

For:
EAGLE BAY MINES LTD. (N.P.L.)
Vancouver, B.C.

By:
F.C. Tomlinson, P.Eng.
Ste. 56 - 615 W. Hastings
Vancouver, B.C.



December 16, 1971.

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ATTACHED:

- 2 Map No. 1 Magnetic survey south portion
- 3 Map No. 2 Magnetic survey north portion
- 1 Location map
- 4 Map 1010 Geology of Ashcroft area



MAGNETOMETER SURVEY
HY 22-49 GROUP
KAMLOOPS MINING DIVISION
BRITISH COLUMBIA

INTRODUCTION AND PROCEDURE

Magnetometer survey was recently conducted over the northern and southern portions of the HY 22-49 mineral claims area between November 1st and 14th, 1971.

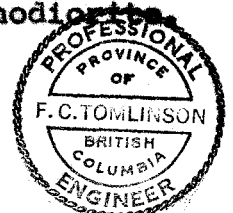
The sharpe M.F. I Fluxgate Magnetometer was used and operated by Carl Stephenson. Mr. Cal Peacock operated the compass blazed and flagged the cross-lines which were run in an east-west magnetic bearing from a north-south magnetic bearing base-line. The base-line followed a location line between claims. HY 21 and 22, 23 and 24, 25 and 26, 27 and 28 on the southern part of the group.

Mr. Robert Schumacher took notes of readings and assisted Mr. Peacock in measuring lines. He also noted rock out-crops and topographical features.

The grid was established over HY 35-46 inclusive on the northern part of the group and HY 23-28 inclusive on the southern part of the group.

GEOLOGY

The writer inspected the base-line and several of the lines flagged for the survey of the southern part of the group, but time did not permit examination of the work done on the northern portion. All the rock out-crops encountered on the lines examined were granodiorite.



According to the map submitted by Mr. Stephenson relative to the magnetic survey on the northern part of the group, the base-line and cross-lines were run on an astronomic bearing. Readings were taken at 100 ft. intervals on the base-line and on the cross-lines. 397 readings were taken on the northern part of the group and 259 readings were taken on the southern part of the group. Approximately 20 miles of lines were measured including the ends of alternate lines.

All readings were compensated for diurnal variations of the magnetic field by taking frequent readings at fixed points established for the purpose. A reading was taken at the start of each days work at the main fixed point at line 0 just north of the road on the base-line. Frequent readings were taken at this fixed point and other transfer stations at noted times throughout the day. The diurnal variation was plotted against time on a chart which gave the diurnal variation for anytime during the working day. Actual readings were adjusted and plotted in gammas.

MAPS

The compensated readings are plotted on the attached maps 1 and 2 by Mr. Stephenson, plans of the areas covered. Readings from minus to plus 90 have been designated as low colored blue, 100 to 390 have been designated as medium low colored yellow, 400 to 690 have been designated as medium colored green, 700 to 990 have been designated as medium high lavender, 1000 and over have been designated as high colored red.

The same procedure was used for the magnetic survey on the northern claims of the group.



INTERPRETATION AND CONCLUSION

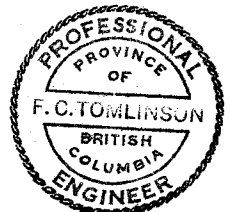
In general particularly as far as airborne magnetic surveys are concerned magnetic lows are considered worthy of investigation by other methods depending on the general geology of the areas under consideration.

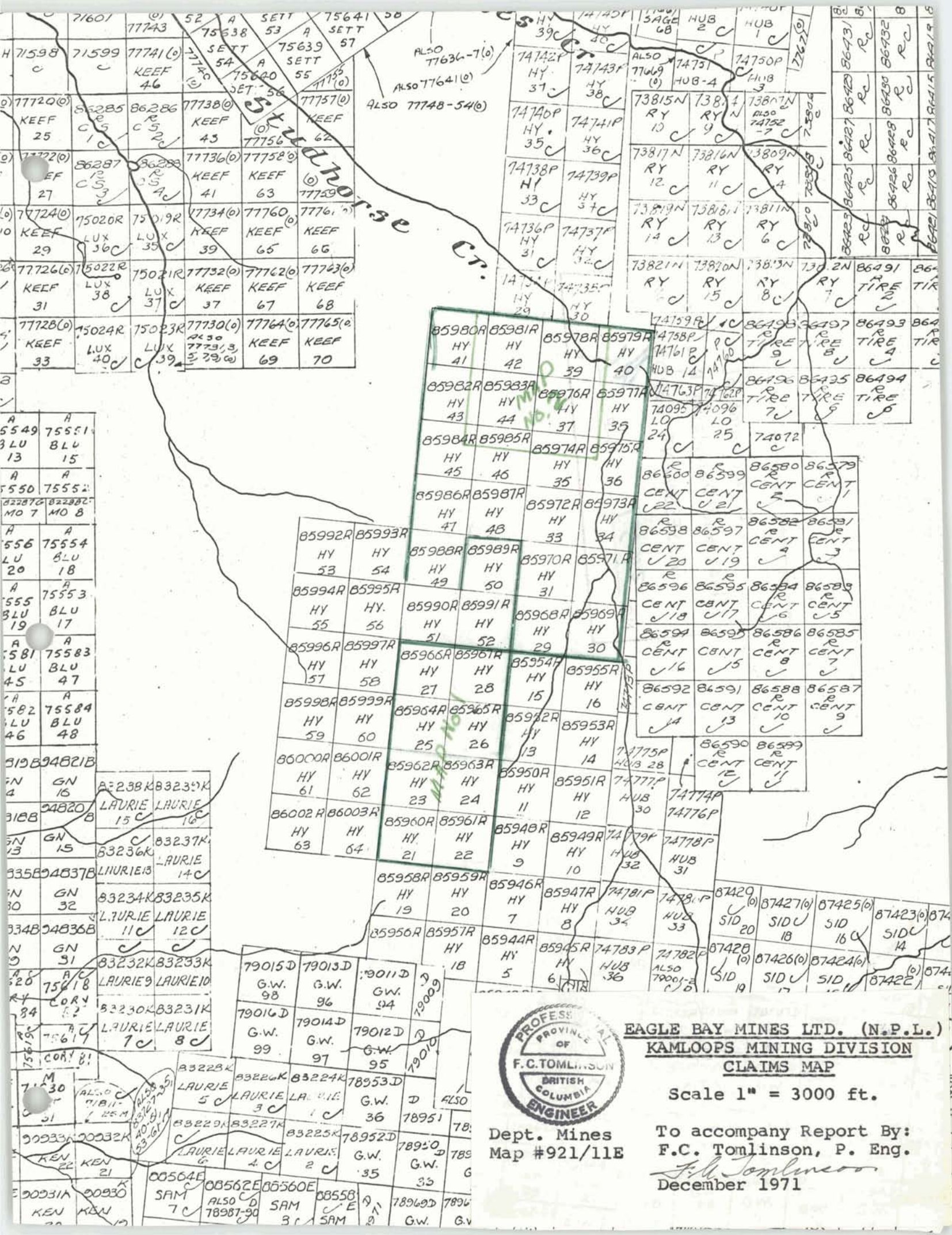
Map No. 1 showing the readings taken on the southern part of the group and the locations of rock out-crops (oc) on the lines. All the out-crops on lines 3,4,5,6,7,8,9,10 west, are all fairly coarse dark granodiorite. The out-crops on lines 8,9 and 10 show from low to medium low to medium. On line 7 there are out-crops at 3,4,8 and 13 which show high readings over 1000 gammas in medium high areas dropping off to medium.

The granodiorite out-crops and in the blasted pits show a preponderance of ferromagnesian minerals without intense alteration and show very little if any sulphide mineralization.

Map No. 2 area shows a preponderance of low, medium low and medium readings with a few isolated high and medium high readings in the southern part of the map area. No out-crops have been recorded in the area surveyed. The low readings may be due to a heavy mantle of overburden overlaying the upper Triassic Nicola group consisting of basalt andesite; tuff and agglomerate; limestone, quartzite; argillite, greywacke and arkose, the high readings may be due to intrusive granodiorite in southern part of the map area.

There are no definite anomalies in the areas covered by the magnetic survey due to visible sulphide mineralization. This does not exclude the possibility that there may be areas with sulphide mineral under areas covered by overburden.





EAGLE BAY MINES LTD. (N.P.L.)
KAMLOOPS MINING DIVISION
CLAIMS MAP

Scale 1" = 3000 ft.

Dept. Mines
 Map #921/11E

To accompany Report By:
 F.C. Tomlinson, P. Eng.

F.C. Tomlinson
 December 1971

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
No. 3451 MAP

This map is prepared to serve as a guide only.
Positions of unsurveyed claims and placer leases
are plotted from locators' sketches
and are not guaranteed.
Letters C.G. indicate claim is Crown-Granted.
Symbol "C" indicates claim has forfeited.
B. C. DEPARTMENT OF MINES AND
PETROLEUM RESOURCES

RECOMMENDATIONS

It is recommended that a reconnaissance soil sampling be done not more than 200 ft. intervals on existing lines. If any anomalous area are indicated by the reconnaissance sampling, samples to be taken a closer intervals of 100 ft. on present lines and intermediate lines to be cut. Say 500 samples.

The soil sampling programme could be followed by an induced polarization (I.P.) survey over any anomalous soil sampling areas.

PROPERTY

The following located adjoining mineral claims are held by Eagle Bay Mines Ltd., HY 22-49 inclusive, Record Numbers 85961R-85988R respectively.

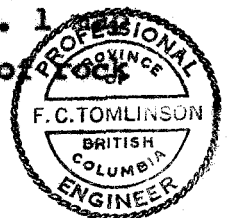
LOCATION AND ACCESSIBILITY

The property is located about 8 miles southeast of Ashcroft and 14 miles northwest of the Bethlehem Mine. The geographic location is 121° 08' West Longitude and 50° 42' North Latitude.

The property can be reached via the Bethlehem road from Ashcroft and thence by secondary roads that traverse the Barnes Creek-Glossy Mountain area.

GEOLOGY

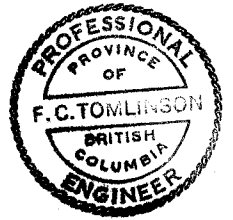
The claims area is presumably underlain by upper Triassic Nicola group rocks which are intruded by Guichon Creek granite and granodiorite. There are many out-crops of granodiorite on the No. 1 area covered by the survey. No out-crops of any other kind of



were noted.

Respectfully submitted,

F.C. Tomlinson
F.C. Tomlinson, P.Eng.



Vancouver, B.C.
December 16, 1971.

DOMINION OF CANADA:
PROVINCE OF BRITISH COLUMBIA.
To WIT:

In the Matter of

I, Roy Cameron

of 840 Austin, Coquitlam, B.C.

in the Province of British Columbia, do solemnly declare that:

Bob Schumacher	1 Nov. - 14 Nov.	\$ 870.00
Malcolm Peacock	1 Nov. - 14 Nov.	870.00
Carl Stephenson	1 Nov. - 14 Nov., 20 Nov. - 6 Dec.	1595.00
Roy Cameron	1 Nov. - 14 Nov., 20 Nov. - 6 Dec.	1165.00
Engineer Report (TED THOMPSON)	^{R.B. J.V.}	600.00
Room - Board		600.00
Truck Rental (Wallroy Investments)		600.00
Mag Rental		150.00

J.V. 6450.00

And I make this solemn declaration conscientiously believing it to be true, and knowing that it is of the same force and effect as if made under oath and by virtue of the "Canada Evidence Act."

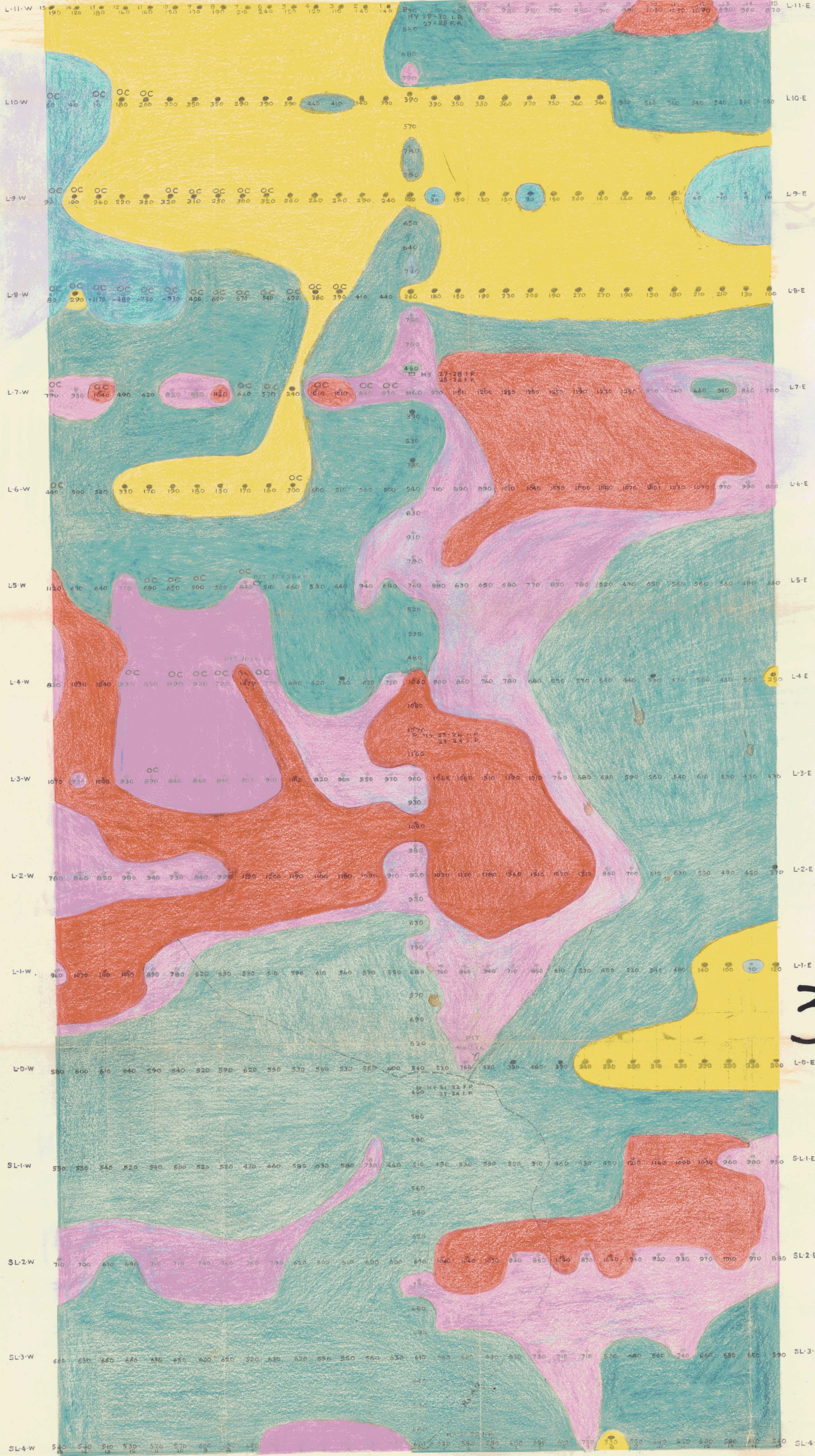
Declared before me at the City
of Vancouver, in the
Province of British Columbia, this 28
day of Dec. 1971, A.D.

Roy Cameron

Julius Lerner
A Commissioner for taking Affidavits for British Columbia or
A Notary Public in and for the Province of British Columbia.
Sup. - Mining Recorder

In the Matter of

Statutory Declaration
(CANADA EVIDENCE ACT)



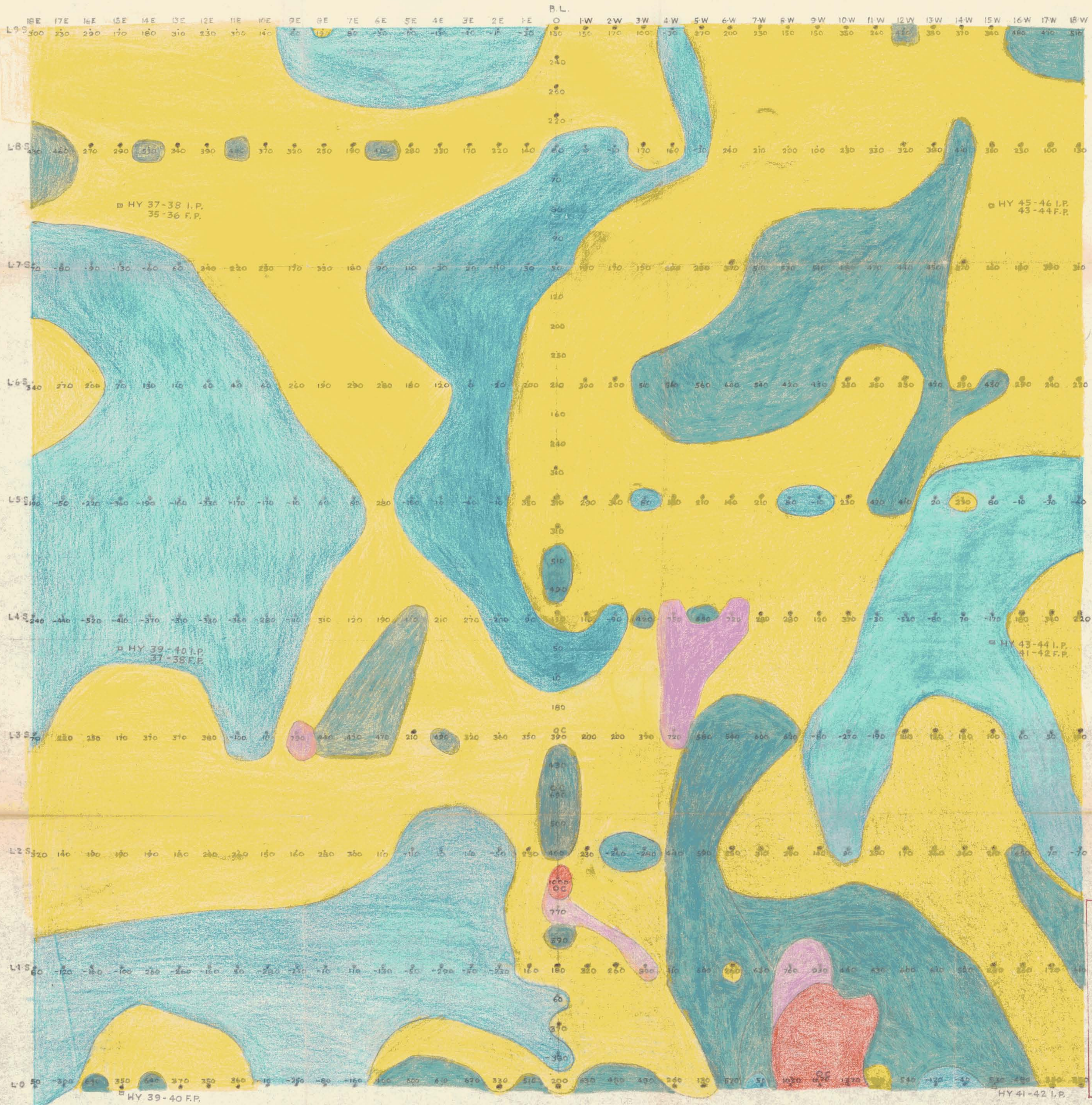
3451
M-3

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
3451
Map #3

Map No 1
LEGEND
 - TO 90 Low
 100 TO 390 Red Low
 400 TO 690 Medium
 700 TO 990 Red High
 1000 + High
 SCALE: 1:100
 GRID 400' x 100'
 OC - OUTCROP

MAGNETOMETER SURVEY
 HY MINERAL CLAIMS
 HIGHLAND VALLEY, B.C.
 Nov. 29, 1971.
 CARL STEPHENSON.
 To Accompany Report by
 A. L. Tomlinson & P. L. ...





3451 M2

LEGEND

- TO 90
- 100 TO 390
- 400 TO 690
- 700 TO 990
- 1000 +

Map No 2
 SCALE: 1" = 100 Ft.
 GRID 400' x 100'



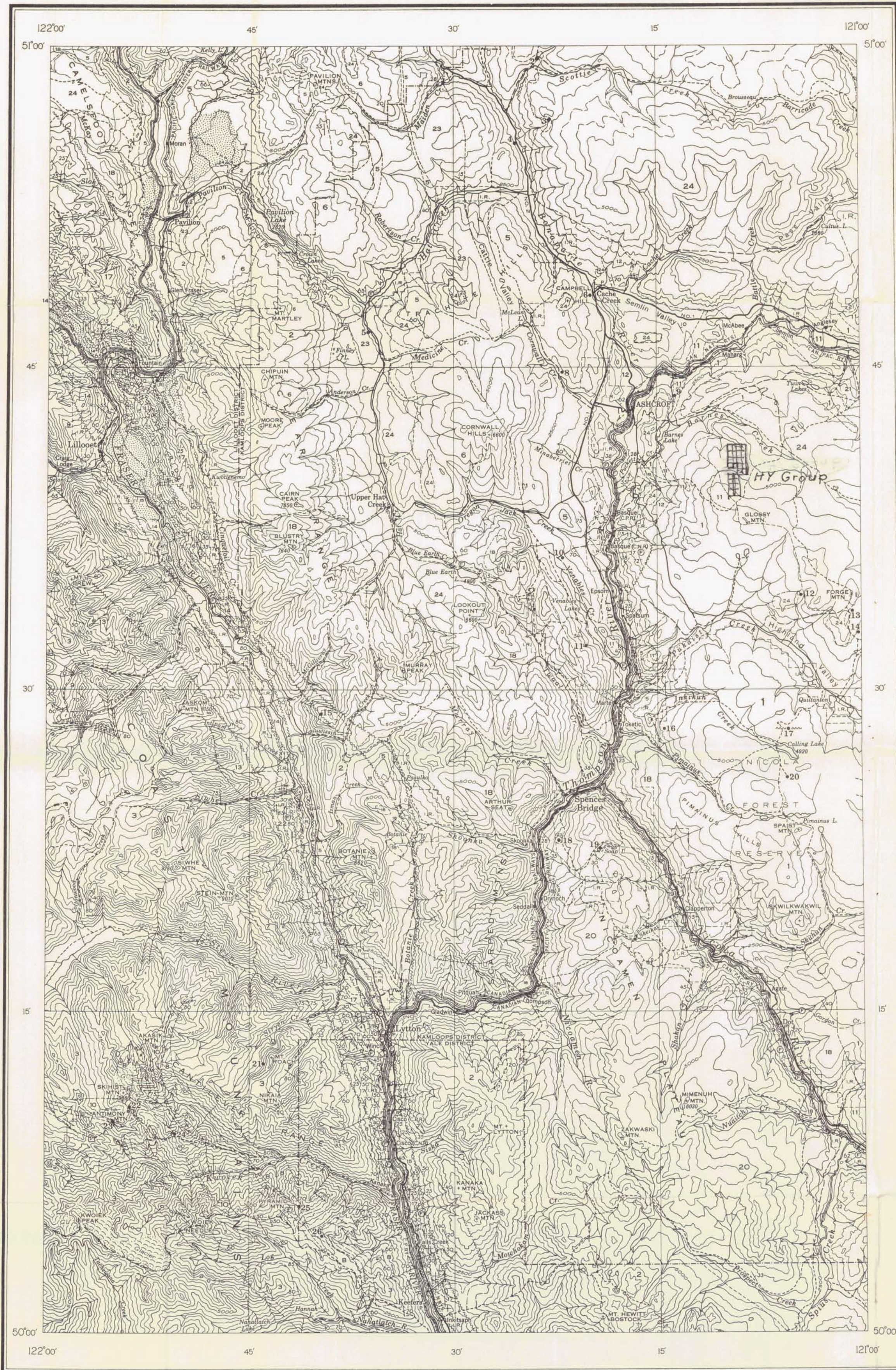
MAGNETOMETER SURVEY
 HY MINERAL CLAIMS
 HIGHLAND VALLEY, B.C.
 DEC. 2, 1971.
 CARL STEPHENSON

Department of
 Mines and Petroleum Resources
 ASST. MENT REPORT
 NO 3451
 #2

To accompany Report by Carl Stephenson P. Eng

LEGEND

- CENOZOIC**
- TERTIARY**
MIOCENE OR EARLIER
KAMLOOPS GROUP (23, 24)
- 24 Basalt, andesite, and rhyolite; associated tuffs and breccias
- 23 COLDWATER BEDS (?): sandstone, shale, and conglomerate; coal
- Eocene**
- 22 Conglomerate, breccia, arkose, and shale; basaltic lava and breccia (relates to Kamloops group unknown)
- CRETACEOUS OR TERTIARY**
- 21 Conglomerate, sandstone, and shale
- CRETACEOUS**
LOWER CRETACEOUS
KINGSVALE GROUP
- 19, 20 19. Arkose, conglomerate, shale, and greywacke
20. Basalt and andesite; agglomerate, tuff, and breccia
- 18 SPENCES BRIDGE GROUP
Andesite, dacite, basalt, and rhyolite; tuff, breccia, and agglomerate; conglomerate, sandstone, greywacke, and arkose
- 15, 16, 17 JACKASS MOUNTAIN GROUP
15. DIVISION A: greywacke, argillite, and siltstone; arkose and conglomerate
16. DIVISION B: conglomerate, greywacke, and argillite
17. DIVISION C: greywacke, argillite, conglomerate; arkose
- LILLOOET GROUP**
- 14 Argillite, volcanic conglomerate, and tuffaceous sandstone
- BREW GROUP**
- 13 Argillite, quartzite, and conglomerate
- JURASSIC**
MIDDLE AND UPPER JURASSIC
- 12 Shale, conglomerate, and sandstone
- TRIASSIC**
UPPER TRIASSIC
NICOLA GROUP
- 11 Basalt and andesite; tuff and agglomerate; limestone, quartzite, argillite, greywacke, and arkose
- TRIASSIC OR EARLIER**
- 8-10 8. Phyllite, quartzite, limestone; greenstone; schist
9. Argillite, slate, phyllite, quartzite, greywacke, chert, limestone; greenstone; schist
10. Phyllite, argillite, conglomerate, greywacke. May be in part of late Mesozoic age
- 7 Schist and gneiss
- PALAEZOIC**
- PERMIAN AND(?) EARLIER**
CACHE CREEK GROUP
- 5, 6 5. Greenstone; chert, argillite, minor limestone and quartzite; chlorite and quartz-mica schist
6. MARBLE CANYON FORMATION: limestone
- INTRUSIVE ROCKS**
- LOWER CRETACEOUS OR LATER**
- 4 Quartz diorite, albite syenite
- CRETACEOUS**
LOWER CRETACEOUS
- 3 Granodiorite
- JURASSIC OR CRETACEOUS**
LOWER CRETACEOUS OR EARLIER
- 2 MOUNT LYTTON BATHOLITH: granodiorite, quartz diorite, and diorite
- JURASSIC**
LOWER JURASSIC
- 1 GUICHON CREEK BATHOLITH: granite, granodiorite, quartz diorite, diorite
- COAST INTRUSIONS**
- JURASSIC (?)
A Hornblende diorite and related rocks
B Serpentinized ultra basic rocks
- INDEX TO MINING PROPERTIES**
- | | |
|--|---|
| 1 Big Slide (Grange) mine (Gold, silver, copper) | 14 Highland group (Copper) |
| 2 Scottie Creek deposits (Chromium) | 15 Victory claim (Copper) |
| 3 Ferguson Creek deposits (Chromium) | 16 Toket deposit (Iron) |
| 4 Maggie mine (Copper, silver, lead, zinc) | 17 O.K. mine (Chataway group) (Copper) |
| 5 Hat Creek coal (Coal) | 18 Spences Bridge coal (Coal) |
| 6 Cache Creek occurrence (Chromium) | 19 Soap Lake deposit (Sodium Carbonate) |
| 7 Fairview group (Zinc) | 20 Kathleen claim (Copper) |
| 8 Cornwall Creek (Chrome Pt) occurrence (Chromium) | 21 Lytton Gold prospect (Gold) |
| 9 Coronation group (Silver, lead, zinc) | 22 Clarke prospect (Antimony) |
| 10 Basque epsomite deposits (Magnesium sulphate) | 23 Green Gold Jade claims (Vesuvianite) |
| 11 Martel mine (Gold, molybdenum) | 24 Glacier group (Gold, silver) |
| 12 Glossy group (Copper) | 25 Paystreak group (Silver) |
| 13 Transvaal group (Copper) | 26 Serpentine and Summit groups (Gold) |



DESCRIPTIVE NOTES

West of Fraser River, the map-area occupies part of the Coast Mountains of British Columbia, and the high ridges southeast of Lytton mark the northern extremity of the Cascade Mountains. Elsewhere the area forms part of the Interior Plateau, and its vegetation and climate are largely characteristic of the 'dry belt' of this region.

The Cache Creek group (5, 6) constitutes a thick succession of mainly chert argillite, altered volcanic rocks, and crystalline limestone, much of which is deformed and largely altered to talc, chlorite, and sericite schists. The distinctive crystalline limestone of Marble Canyon and Pavilion Mountains is mapped separately as the Marble Canyon formation (6).

Lenses and patches of metamorphosed rocks (7) within the Coast intrusions consist in part of chlorite, hornblende, and quartz-mica schists, and in part of granitic gneiss. Some parts of the large area of these rocks on Scarped Mountains are identifiable as Cache Creek (5), but other lenses may include strata of Mesozoic age.

Unfossiliferous, metamorphosed rock groups of uncertain identity (8-10), west of Fraser River, probably comprise strata of both Palaeozoic and Mesozoic age. One group of mainly micaceous and graphitic phyllite (8) is probably of late Palaeozoic age, but may include younger formations. Another varied assemblage of sedimentary and volcanic rocks (9), at least 7,500 and probably 10,000 feet thick, is probably in part Cache Creek. Still another group, comprising many thousands of feet of grey to black phyllite, grey argillite, conglomerate, and greywacke (10), extends southeast into Hope map-area, where it appears to include rocks of the Upper Jurassic (?) or Lower Cretaceous Ladner group. It also affords points of resemblance with the Lower Cretaceous Brew group (13).

Nicola group rocks (11) consist mainly of medium-grained, basaltic and andesitic lavas, largely altered to greenstones, greenish grey tuff, and agglomerate. Argillite, chert, greywacke, and limestone, associated with volcanic rocks near Basque, have yielded marine fossils of Upper Triassic age. The group has been metamorphosed by the Guichon Creek batholith (1) and occurs as small root pendants within, or as relatively small bodies along, the border of the batholith.

Conglomerates, shales, and sandstones of Jurassic age (12) occupy a narrow synclinal belt near Ashcroft. The sandstones, commonly arkosic, and the conglomerates are greenish grey. The black shales, commonly carbonaceous, have yielded ammonites of Middle and Upper Jurassic age. East of Basque, conglomerate at the base of the succession rests unconformably on granitic rocks (1).

The Brew group (13) consists mainly of banded argillite, impure quartzite, and boulder conglomerate, and contains marine fossils of early Lower Cretaceous age. The Lillooet group (14) and the Jackass Mountain group (15-17) form a belt of folded and deformed Lower Cretaceous sedimentary rocks along Fraser River, and are in faulted contact with all adjacent rock groups.

The Spences Bridge group (18), consisting of about 5,000 feet of varicoloured volcanic rocks, mainly lavas, and minor continental sediments, has yielded fossil plant remains of mid-Lower Cretaceous age. The lavas are generally much decomposed, and are commonly traversed by thin stringers of pink and white calcite. The group is gently folded, much of it lying horizontally or nearly so.

Sedimentary rocks (19) and volcanic rocks (20) of the Kingsvale group unconformably overlie the Spences Bridge group along Nicola River. The light-coloured sedimentary strata at the base of the group reach a thickness of 300 to 1,000 feet on Shaken Creek, but may be missing elsewhere. Fossil plant remains collected from them are of late Lower Cretaceous age. Small areas of sedimentary rocks on Botanie Creek and Fraser River near Stein River were mapped with the Kingsvale group on the basis of fossil evidence. The volcanic rocks, which constitute the bulk of the group, are largely of andesitic and basaltic composition and flows are commonly amygdaloid.

Evidence obtained in Nicola map-area to the east suggests that certain local accumulations of conglomerate and sandstone (21) may be either of Cretaceous or Tertiary age. The conglomerate contains boulders and pebbles of Cache Creek and Nicola group rocks as well as of granite.

A succession of sedimentary and volcanic rocks (22) 4,500 feet thick has yielded fossil leaves of Eocene age. Coarse conglomerates in the exposed sections contain easily recognized boulders of Lower Cretaceous rocks (13-17). These Eocene strata form one of the many fault blocks along Fraser River, and the steep dips and close folds are mainly the result of fault movements.

Most of the Kamloops group consists of volcanic rocks (24), but with them are included several small areas of Tertiary sedimentary beds (23), which at upper Hat Creek and south of Spences Bridge are coal bearing. The sedimentary strata are probably the equivalent of the Coldwater beds of the adjoining Nicola map-area. The volcanic rocks exhibit a wide range of colours; they are mainly dark, dense, fine-grained basalts, but include thick beds of agglomerate, minor breccia, and tuff. Thin beds of argillaceous material yielded poorly preserved leaves of Tertiary age.

All of the map-area was covered by ice during Pleistocene time except perhaps some of the higher peaks of the Coast Mountains. Pleistocene and Recent drift mantles most of the plateau region. White silt deposits are prominent along Thompson River east of Spences Bridge. Alluvial fans, and ice-contact and glacial outwash deposits are common, and the major valleys are lined with marginal terraces of sand, gravel, and clay.

Batholithic rocks of the Coast intrusions consist mainly of granite, granodiorite, quartz-diorite, and diorite. The Guichon Creek batholith intrudes Upper Triassic rocks (11) and is overlain by Middle and Upper Jurassic rocks (12). The Mount Lytton batholith (2) is overlain by lavas of the Spences Bridge and Kingsvale groups (18-20) and may be of early Lower Cretaceous age, but is probably more nearly contemporaneous with the Guichon Creek mass. The widespread granodiorite (3) of the Coast Mountains is believed to be of mid-Lower Cretaceous age. Elongate bodies of ultrabasic rocks (8), with which are associated bodies of hornblende diorite and related rocks (A), are exposed in the Coast Mountains. The rocks of the main serpentine belt in the southwest corner of the map-area are, apparently, about in line with those of the serpentine belt to the southeast in Hope map-area, and are probably of Cretaceous age. Small undifferentiated bodies of serpentine associated with Cache Creek rocks along Bonaparte River carry significant chromite deposits.

Several minor intrusions (4) cut rocks of the Fraser River Lower Cretaceous belt (14-17).

The belt of Lower Cretaceous rocks along Fraser River may be regarded as a series of fault blocks or slices involved in a major zone of faulting along which rocks to the west have been relatively elevated. From the south border of the map-area to Cinquefoil Creek the Cretaceous rocks appear to occupy a graben. Farther north, rocks to the west of the Cretaceous belt appear to be elevated, and those to the east relatively depressed, with respect to the Lower Cretaceous rocks.

Albitization and, to a lesser extent, prehnitization are features of many of the rocks in and adjacent to the Fraser River Cretaceous belt. The abundant albite of some of the intrusive rocks is a product of metasomatism, a process that is believed also to have affected the older bedded rocks (14) of the Cretaceous belt; the albite of the younger formations is probably of detrital origin.

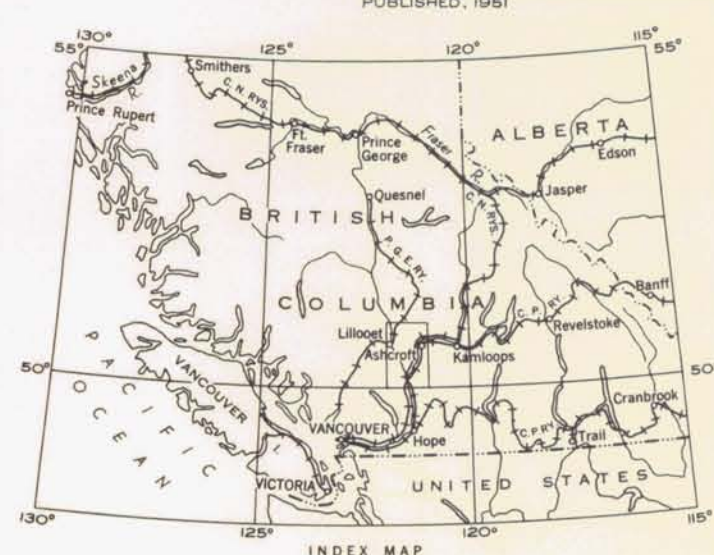
The map-area contains a variety of metallic and industrial mineral deposits, several of which have been productive. Placer gold has been mined on all major streams, but only in small amount since early years of the present century. Siltstone is found in irregular quartz veinlets along a fault zone in granodiorite near the headwaters of Stein River. Plutonic rocks of the Guichon Creek batholith are host to copper deposits near Highland Valley, and contain hematite deposits in shear zones near Toket. The copper minerals occur in veins and shattered zones associated with tourmaline and hematite, and the wall-rocks are commonly highly sericitized. The greatest production came from the O.K. mine, which during the period of its activity mined and concentrated 10,000 tons of ore containing 3.5 per cent copper. The Maggie mine on Bonaparte River was prospected underground as a copper deposit. Fifty tons of selected ore yielded 2 ounces of silver a ton, 8 per cent copper, and low assays in lead and zinc. Chromite occurs in ultrabasic rocks along Bonaparte River, the principal discoveries having been made on Scottie Creek and the creek south of it. Gold and silver have been reported from quartz veins in the schist, argillites, and batholithic rocks in the southwest corner of the map-area. The Big Slide (Grange) mine has produced gold, copper, and silver from narrow quartz veins in diorite. Considerable exploration work has been done at the Martel property on narrow lenticular quartz veins in Cache Creek rocks that contain molybdenum and gold. Narrow quartz veins carrying sphalerite, galena, and chalcocite occur in Triassic rocks east of Ashcroft.

Coal has been mined with limited success from the deposit at upper Hat Creek. Occurrences of gypsum, jade, vesuvianite, magnesium sulphate and sodium carbonate have been recorded, and some magnesium sulphate has been produced from the deposit at Basque. Much of the Marble Canyon formation is composed of very pure limestone.

- Heavily drift-covered area
- Bedding (horizontal, inclined, vertical, overturned)
- Schistosity (inclined, vertical)
- Foliation (inclined, vertical)
- Glacial striae (direction of ice-movement known, direction unknown)
- Fault
- Fossil locality
- Mining property

Geology by S.Duffell and K.C. McTaggart, 1945-46, and K.C. McTaggart, 1947
Cartography by the Geological Mapping Division, 1951

Map 5451 ON
ASSESSMENT REPORT
Mines and Petroleum Resources
Department of
The coloured version of this map is no longer available. To meet current demand it has been reissued in uncoloured form, thereby effecting a substantial saving in time of preparation. There is no loss of information, but the map will be clearer to read if all or some of the map-units are hand-coloured. Released 1969.



MAP 1010A
ASHCROFT
KAMLOOPS, LILLOOET AND YALE DISTRICTS
BRITISH COLUMBIA
Scale: One Inch to Four Miles = 1/253,440
Approximate magnetic declination, 24° 15' East
Copies of this map may be obtained from the Geological Survey of Canada, Ottawa

- REFERENCE
- Main highway with route number
 - Other roads
 - Trail
 - Church
 - Post Office
 - Land District boundary
 - Forest Reserve boundary
 - Indian Reserve boundary
 - Intermittent stream
 - Glacier
 - Contours (interval 500 feet)
 - Contours (position approximate)
 - Height in feet above mean sea-level

3451
M-4

Base-map compiled by the Bureau of Geology and Topography from surveys and from information supplied by the Department of Lands and Forests, British Columbia.