

2120

C O M I N C O L T D.

EXPLORATION

WESTERN DISTRICT

GEOLOGICAL REPORT ON THE
HIGHLAND QUEEN PROPERTY
SITUATED 15 MILES SOUTHEAST OF
SPENCES BRIDGE, KAMLOOPS MINING DIVISION
50° 19' N, 121° 03' W
92I-6

Highland Queen "A" Group - 31 claims and nine fractional claims.

<u>Claim</u>	<u>Record Nos.</u>	<u>Requested Assessment Credit</u>
LD 1 Fr. - 9 Fr.	75042 - 50	nil
TH 1 - 20	72792 - 811	1 year each claim
TH 25 - 28	73280 - 83	Nil
TH 30, 32	73285, 73287	1 year each claim
TH 41, 42	73296, 97	1 year each claim
TH 44	73349	1 year
TH 63	73300	Nil
TH 64	73301	1 year
	Total:	<u>26 years</u>

Work was carried out on the above claims during the period
July 15 to September 30, 1969

Highland Queen "B" Group - 40 claims

<u>Claim</u>	<u>Record Nos.</u>	<u>Requested Assessment Credit</u>
JT 1 - 24	68589 - 68612	1 year each claim
JT 25 - 40	68613 - 68628	<u>Nil</u>
	Total:	24 years

Work was carried out on the above claims during the period
July 15 to September 30, 1969.

REPORT BY
M. D. MCINNIS, GEOLOGIST
UNDER THE SUPERVISION OF
R. J. NICHOLSON, P. ENG.

October 31, 1969
Vancouver, B.C.

GEOLOGICAL REPORT
HIGHLAND QUEEN PROPERTY
92I-6

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<p>Department of Mines and Petroleum Resources ASSESSMENT REPORT</p> <p>NO. <u>2120</u> MAP.....</p>
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EXPLORATION

WESTERN DISTRICT

GEOLOGICAL REPORT
HIGHLAND QUEEN PROPERTY
92I-6

INTRODUCTION

At time of mapping, the Highland Queen Property consisted of 40 JT claims, 45 Bill claims, 56 TH claims, and 9 LD fractional claims, totalling 150 claims, all located in the Skuhun Creek area of the Guichon Creek Batholith. The claims are all held by Highland Queen Mines (1968) Ltd., and were optioned to Cominco Ltd. in mid 1969. A program of geological mapping, minor geochemical surveying, followed by line cutting and geophysical surveying was undertaken by Cominco on the claims.

The geological and geochemical work, the results of which are embodied by this report, was for the most part carried out on the JT claims, on the LD fractions, and on the TH claims which had been staked in areas clear of pre-existing claims. To a lesser extent, geological mapping was carried out on Bill claims clear of pre-existing claims, and on Bill and TH claims which apparently had been staked in areas of pre-existing claims. After termination of geological mapping, it was decided to maintain two groups, "A" Group and "B" Group of 40 claims each comprised of JT, TH, and LD claims.

Geological mapping and geochemical surveying were, for the most part, complete by the end of August. Personnel resident on the property for the geological work were M. R. Murrell, M. D. McInnis, G. E. Grisak, and J. R. Bellamy. The exploration program was part of a larger program involving the adjoining Bin Property and Nes Property. Separate reports describe the line cutting work and geophysical survey.

LOCATION AND ACCESS

The property is located 15 miles southeast of Spences Bridge, at the junction of Skuhun and Skuhost Creeks. Access is by dirt road from the Spences Bridge - Merritt Highway, 14.2 miles southeast of Spences Bridge. The property is located about eight miles from the highway.

GEOLOGICAL MAPPING

Geological mapping was diligently carried out on a scale of 1" = 1000' over the optioned property. Because of the extensive overburden, most geological information was derived from traverses that covered hill-tops and ridges as well as areas, such as gullies and canyons, where there has been downcutting into the overburden. Usually, two two-man crews carried out separate traverses from hill-tops to the Skuhun valley floor via canyon or gully. However, overburden areas were also thoroughly examined to investigate the presence of outcropping.

A base map with a scale of 1" = 1000' and contour interval of 50' draughted from 1965 B. C. Government air photos by Lockwood Surveys was used mainly for control. Additional control was obtained through the use of 1960 B. C. Government air photos of scale 1" = 1/2 mile. The photos were used mainly to outline probable locations of outcrop rather than for field orientation. Outcrop position and shape were located on field maps by pace and compass and were assigned a station number. Field notes, with corresponding station numbers, were kept. Outcrop sketches and station numbers were subsequently transferred to the base map.

GEOCHEMICAL WORK

Minor silt and seepage sampling was carried out on the property. Stream silt samples were collected at approximately 2000 feet intervals along Skuhun Creek, using a scoop to collect the samples from the stream bed. In addition, five seepage samples were also collected from the stream bank along Skuhun Creek - from the "B" horizon at 500 ft. interval. A shovel and mattock were used to collect the seepage samples.

All geochemical samples were packaged in kraft sample bags and sent to Cominco's Vancouver geochemical laboratory for drying and analysis. A hot nitric acid digestion and analyses by atomic absorption was employed in Vancouver. Results of the analyses are tabulated in Table I.

TABLE I

Seepage Samples

<u>Sample No.</u>	<u>Cu in ppm</u>
SS 94	45
SS 95	110
SS 96	85
SS 97	400
SS 98	60

Silt Samples

<u>Sample No.</u>	<u>Cu in ppm</u>
SS 6	40
SS 7	35
SS 8	20
SS 11	60

GEOLOGY

The Guichon Creek Batholith has been described in K.E. Northcote's PhD thesis. His classification scheme is used here. On the Highland Queen A and B Claim Groups, three rock units have been observed - the Chataway variety of the Highland Valley phase, the Skeena phase and the Witche's Brook phase. The presence of the Guichon variety of the Highland Valley phase is inferred from mapping done on the adjoining properties.

a) Chataway Variety

One of the most distinctive rock units in the batholith is the Chataway granodiorite. It is a medium to coarse grained, mottled pink and cream or mottled light green and cream rock. The rock type occupies the central portion of the property.

The Chataway variety has a total mafic content of 15 - 20%, made up of phenocrysts of hornblende and biotite, and groundmass mafics of the same minerals. Phenocrysts, with an average grain size of 1 inch, make up approximately half of the total mafic content. Groundmass mafics, approximately .05 inch in size, make up the other half of the total mafic content. Phenocrysts of subhedral to euhedral, poikilitic hornblende predominates over subhedral biotite phenocrysts in a ratio of 2:1. The same ratio seems to apply to the groundmass mafics.

The most characteristic feature of the Chataway variety is the well separated, evenly disseminated, subhedral to euhedral mafics. Hornblende grains show this feature particularly well, having very distinct crystal outlines. Also characteristic, but not definitive, is the strongly poikilitic texture of the hornblende, enclosing grains of feldspar and quartz.

b) Guichon Variety

The Guichon variety, although outcropping on Bill Claims to the northwest, is inferred to lie in the southwest portion of the property. The type is a light grey to grey, medium to coarse grained, hypidiomorphic rock, usually of granodiorite composition. This variety is richer in mafics, especially biotite, than the Chataway variety. Fine to medium grained, euhedral to subhedral hornblende and subhedral, medium grained biotite make up most of the mafic grains. Commonly, the hornblende is slightly poikilitic, enclosing grains of feldspar and quartz. The biotite occurs as evenly distributed aggregates, probably the most characteristic feature of the Guichon phase.

c) Skeena (Bethlehem) phase

The intermediate aged Skeena phase encircles the central core of the batholith. This light grey, medium grained rock is limited in distribution to the extreme northeastern corner of the property, and to a few small exposures in the road cut south of the junction of the Skuhun and Skuhost Creeks. It is suspected that the Skeena phase in these areas form a narrow, discontinuous, or lensy band.

The Skeena phase is a slightly porphyritic rock with phenocrysts of relatively large, subhedral to euhedral, poikilitic hornblende and subhedral phenocrysts of biotite. The ratio of hornblende phenocrysts to biotite phenocrysts is about 3:1, with biotite sometimes completely absent. Hornblende phenocrysts are conspicuously poikilitic and have an irregular distribution. Biotite grains predominate in the groundmass mafics which make up less than 1% of the total rock content. Overall, the mafic grains have a marked uneven distribution.

d) Witche's Brook phase

Unlike the other phases, Witche's Brook phase breaks the concentric pattern of the batholith phases and occurs as irregular masses or dyke-like bodies cutting other phases. In the northeastern portion of the property, Witche's Brook occurs as small irregular masses or dyke-like bodies cutting older Skeena and Chataway phases. It is similar to, and appears to grade

into Skeena although overburden coverage prevents complete field verification. Where it appears to grade into Skeena, there is an increase in the number of large, poikilitic hornblende grains and a corresponding decrease in small groundmass mafics.

The Witche's Brook phase has a total mafic content of 20%. Typically, large, poikilitic subhedral to euhedral phenocrysts make up one quarter of the total mafic content while small lath-like groundmass grains make up the remaining three-quarters. Usually, hornblende phenocrysts are slightly more abundant than biotite phenocrysts. The hornblende phenocrysts are poikilitic, subhedral to euhedral and range in size from .075 inch to 2 inch; biotite phenocrysts are weakly poikilitic, subhedral, and range in size from .1 - .2 inches. Witche's Brook phase rocks have a fairly even distribution of mafics with an overall fine-grained appearance.

ALTERATION

Weak chloritization is common, occurring in all phases of the batholith found on the property. Chloritized rocks often show a greenish coloration due to the breakdown of mafics to chlorite. This alteration usually occurs locally, being particularly abundant in areas of shear or in rocks bordering suspected faults.

Thin, crystalline films of potassic feldspar are found typically on fracture plane surfaces in areas of shear. In some places, it appears to have been introduced along fracture planes and has subsequently altered the wall rock to a depth of no more than $\frac{1}{2}$ inch. More commonly, the crystalline material has undergone a secondary argillic alteration to form a pink, powdery substance on the fracture planes, or occasionally to penetrate the wall rock.

A second type of feldspar alteration, often but not necessarily related to the faults or shear zones, has given the plagioclase a distinct light green coloration. It is possible that this alteration, found in all phases of the batholith, is an argillic alteration or an albitization.

STRUCTURAL GEOLOGY

Three prominent directions of joint sets were measured in the course of mapping. The jointing can be grouped into north-northeasterly, easterly, and southeasterly directions. Faulting on the property has been inferred from jointing, from air photo interpretation, and from geophysical information. Although probably more faulting is present on the property than can be determined, one north-easterly trending fault is inferred to occupy the Skuhun Creek valley, and two southeasterly trending faults are depicted - one a fault contact between Guichon and Chataway, and the other a fault contact between Chataway and Witche's Brook. A 200 ft. wide shear zone of undetermined length has been exposed in a road cut south of the Skuhun - Skuhost Creek junction. The shear strikes southeasterly, and contains minor gouge.

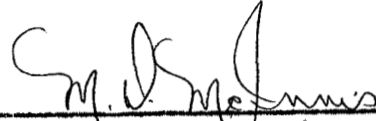
CONCLUSIONS

The lack of encouragement to date does not preclude the possibility of economic mineralization on the property. Further investigation will be carried out.

ATTACHMENTS

1. Plan, "Highland Queen, Geology", Scale 1" = 1000'
2. Plan, "Highland Queen, Claim Location", Scale 1" = 1000'
3. Statement of Expenditures
4. Statutory Declaration relating to Expenditures
5. Statement of Qualifications

Report by: _____



M. D. McInnis

Endorsed by: _____



J. Richardson
Professional Engineer

MDM/nc
October 31, 1969

EXHIBIT "A"

EXPENDITURE STATEMENT
GEOLOGICAL MAPPING
HIGHLAND QUEEN PROPERTY
KAMLOOPS MINING DIVISION

HIGHLAND QUEEN "A" GROUP

Salaries

Senior Geologist, D. W. Heddle, 1 day during July at \$35/day	\$35.00	
Senior Geologist, R.J. Nicholson, 5 days August 1 to Sept. 21 at \$35/day	175.00	
Geologist, M.D. McInnis, 28 days July 15 to Sept. 21 at \$30/day	840.00	
Geologist, M.R. Murrell, 12 days July 15 to August 10 at \$30/day	360.00	
Field Assistant, G.E. Grisak, 10 days July 15 to Sept. 5 at \$25/day	250.00	
Field Assistant, J.R. Bellamy, 8 days July 15 to August 10 at \$25/day	200.00	
Field Assistant, A.J. Gates, 2 days Sept. 1 to Sept. 21 at \$25/day	50.00	
Draughtsman, G. Toop, 1 day in September at \$25/day	<u>25.00</u>	\$1,935.00

Contract Charges

Topographic Map (Lockwood Surveys)	81.00	
Road Maintenance (Chataway Lodge)	<u>13.00</u>	94.00

Camp Services including expense accounts 450.00

Communication 20.00

Transportation

Truck rental - $\frac{1}{2}$ vehicle month at \$300/month		<u>150.00</u>
		\$2,649.00

HIGHLAND QUEEN "B" GROUP

Salaries

Senior Geologist, R.J. Nicholson, 4 days Aug. 1 to Sept. 21 at \$35/day	\$140.00	
Geologist, M.D. McInnis, 27 days July 15 to Sept. 21 at \$30/day	810.00	
Geologist, M. R. Murrell, 11 days July 15 to Aug. 10 at \$30/day	330.00	
Field Assistant, G.E. Grisak, 10 days July 15 to Sept. 5 at \$25/day	250.00	

HIGHLAND QUEEN "B" GROUP

Salaries - Continued

Field Assistant, J.R. Bellamy, 7 days July 15 to August 10 at \$25/day	\$175.00	
Field Assistant, A. J. Gates, 2 days Sept. 1 to Sept. 21 at \$25/day	50.00	
Draughtsman, G. Poop, 1 day in September at \$25/day	25.00	
	<hr/>	\$1,780.00

Contract Charges

Topographic Map (Lockwood Surveys)	81.00	
Road Maintenance (Chataway Lodge)	<u>13.00</u>	94.00

Camp Services including expense accounts 350.00

Communications 20.00

Transportation

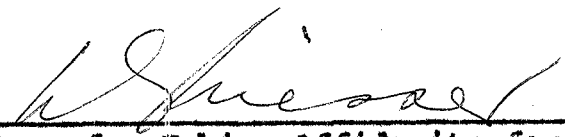
Truck rental - 1/2 vehicle month
at \$300/month 150.00

Geochemical Laboratory Charges 25.00

\$2,419.00
2 449
\$5,068.00

Signed by: 
R. J. Nicholson, P. Eng.

This is Exhibit "A" to the Statutory Declaration of
R. J. Nicholson declared before me the 31st day
of October, 1969


A Commissioner for Taking Affidavits for
British Columbia

**STATUTORY DECLARATION
RELATING TO EXPENDITURES ON A
GEOLOGICAL SURVEY OF THE
HIGHLAND QUEEN PROPERTY,
KAMLOOPS MINING DIVISION**

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

In the Matter of

I, **ROBERT JOHN NICHOLSON, Professional Engineer**

of **the City of Vancouver**

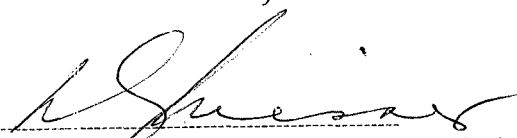
in the Province of British Columbia, do solemnly declare that

1. I do personally know M. D. McInnis who prepared the accompanying geological report as a result of a survey carried out under my supervision on certain mineral claims situated in the Kamloops Mining Division.
2. Copies of the said report are being filed with the Mining Recorder in Vancouver.
3. Attached hereto and marked with the letter "A" upon which I have signed my name at the time of declaring hereof, is a statement of expenditures incurred in connection with the geological survey of the said claims showing in addition the dates during which those making the said survey performed their work.

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 **31st**
day of **October 1969**, A.D.




A Commissioner for taking Affidavits within British Columbia or
A Notary Public in and for the Province of British Columbia.

In the Matter of

Statutory Declaration
(CANADA EVIDENCE ACT)

C O M I N C O L T D.

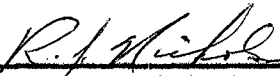
EXPLORATION

WESTERN DISTRICT

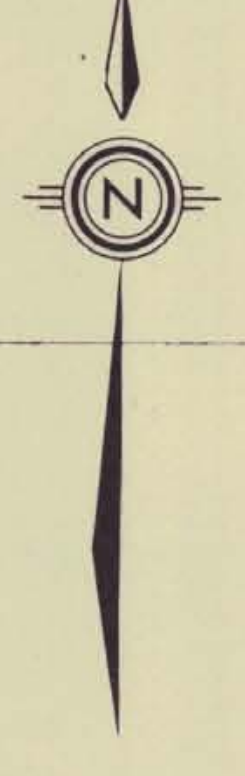
STATEMENT OF QUALIFICATIONS

M. D. McInnis was responsible for carrying out the geological survey on the Highland Queen Property and for the preparation of this report. Mr. McInnis graduated as Bachelor of Science from the University of British Columbia in Honours Geology 1969. He has been working in a responsible capacity with Cominco Ltd. since May 5, 1969.

I consider him to be a capable geologist.



R. J. Nicholson, P. Eng.



2120

To accompany Curry Report
dated October 31, 1968 by Dr. William
H. Highland, owner of property,
Kalamazoo, M. D.

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2120 - MAP #1

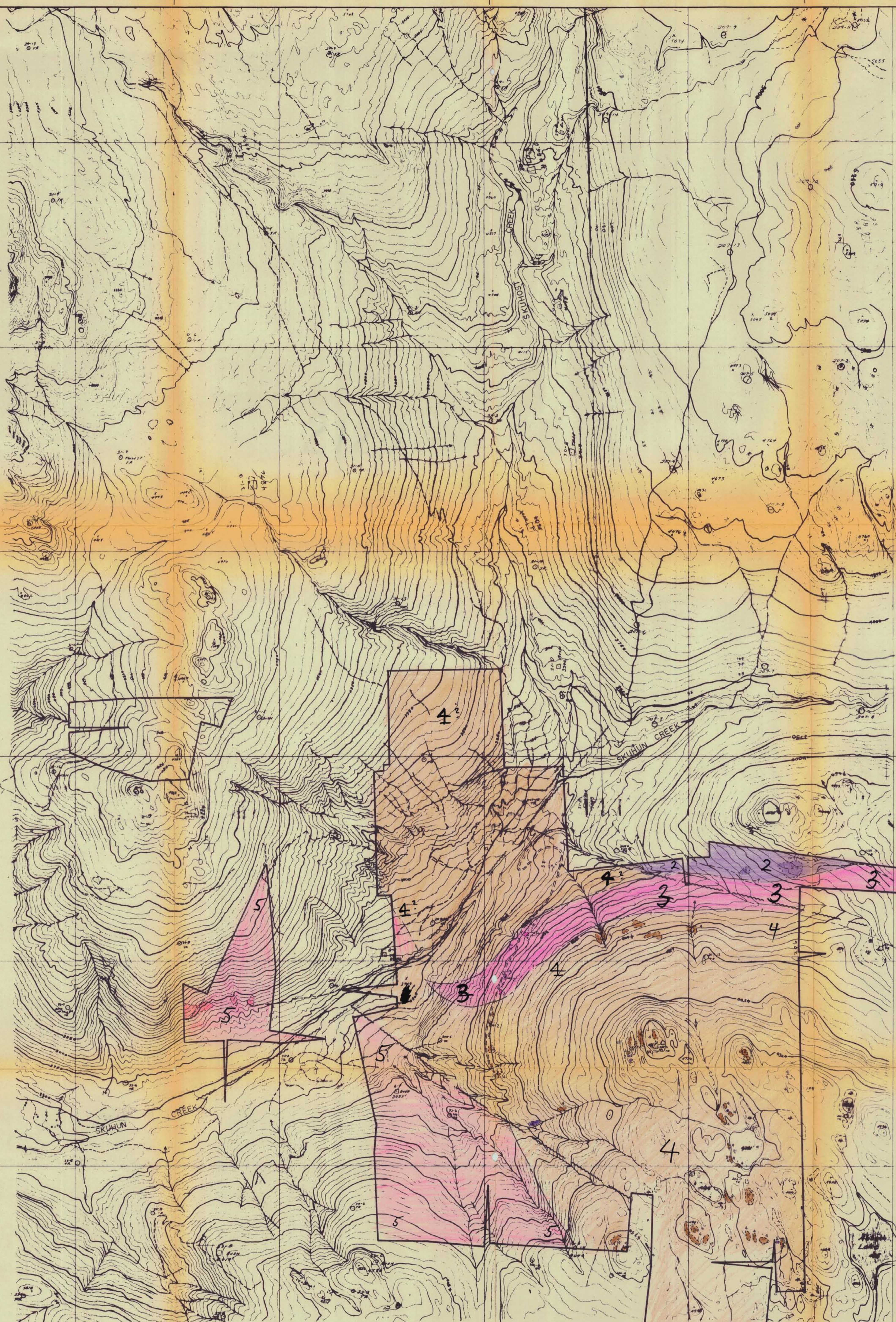
HIGHLAND QUEEN PROPERTY

Drawn by R.J.N. Traced by G.K.T.

CLAIM	TENURE	DATE

Scale 1" = 1000'
M.T.S. 9216
SEPT. 24, 1968





To accompany Geology Report,
dated October 31, 1969, by Mr. M. J. ...
on the Highland Queen Property,
Kearney, Md. D. ...

Drawn by:	
Checked by:	
Project:	
Scale:	1" = 1000'
Date:	OCT 29, 1969
Sheet:	
HIGHLAND QUEEN PROPERTY	
GEOLOGY	

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2120 MAP #12

LEGEND

- 5 Guichon Variety
- 4 Chataway Variety
- 3 Skeena Phase
- 2 Witches Brook Phase
- 1 Bethesda Phase

SYMBOLS

- Geochemical Samples - assay in p.p.m.
- ////// Shear Zone
- ~~~~~ Fault
- Pink Potassic Alteration
- Mineralization
- Chloritization
- Greenish Feldspar Alteration
- Geological Contact Inferred
- 75° Strike and Dip

2120