

92I/7W
GEOCHEMICAL REPORT

ON THE

Cu Fr. and TDM CLAIMS

Highland Valley Area

(NTS 92I/7c)

Nicola Mining Division, British Columbia

For

CHATAWAY EXPLORATION CO. LTD. (N.P.L.)

401 - 550 Burrard Street

Vancouver 1, B. C.

By

M. H. Sanguinetti, E.Sc., Geologist
Supervised by: J. W. Stollery, B.Sc., P.Eng.

CORDILLERAN ENGINEERING LIMITED

1418 - 355 Burrard Street

Vancouver 1, B. C.

APRIL 4, 1972.

Claims: Cu fraction, TDM #1, 2, 5, 6, 25, 26
Location: 23 miles north of Merritt, B.C. and 2 mile
due west of the south end of Mamit Lake.
50°22'N, 120°52'W.
Date: July 3 to July 31, 1971.



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FOR

CHATAWAY EXPLORATION Co. LTD. (N.P.L.)

401 - 550 Burrard Street
Vancouver 1, B. C.

Department of
Mines and Petroleum Resources

ASSESSMENT REPORT #1

NO. 3591 MAP

BY

M. H. Sanguinetti, B.Sc., Geologist

Supervised by: J. W. Stollery, B.Sc., P.Eng.

CORDILLERAN ENGINEERING LIMITED
1418 - 355 Burrard Street
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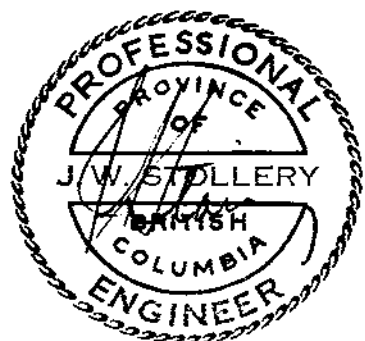


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INTRODUCTION

This report has been written at the request of Mr. W. J. Coulter, executive vice-president of Chataway Exploration Co. Ltd. (N.P.L.). It describes a geochemical soil survey conducted on the Cu fraction and certain TDM claims on the eastern side of Chataway's Highland Valley claim group.

Purpose of the survey was to use geochemistry as a preliminary guide to delimit the more favourable areas for detailed exploration and to attempt to trace the extent of known copper mineralization occurring in a creek near 568N - 528E.

This report has been written to comply with the British Columbia Department of Mines and Petroleum Resources requirements for assessment purposes.

PROPERTY

Chataway's Highland Valley claim group consists of 483 full-sized and fractional mineral claims which occupy more than 12,000 acres in the Kamloops and Nicola Mining Divisions. The claims to which this report pertains are in the Nicola Mining Division and are as follows:

<u>CLAIM</u>	<u>RECORD NO.</u>	<u>RECORD DATE</u>	<u>TITLE</u>
Cu fraction	49624	June 22	Chataway Exploration Co. Ltd. (N.S.C.) Canadian Superior Exploration Limited <i>with</i>
TDM #1	37128	July 3	"
TDM #2	37129	July 3	"
TDM #5	37132	July 3	"
TDM #6	37133	July 3	"
TDM #25	37142	July 3	"
TDM #26	37143	July 3	"

LOCATION AND ACCESS

(Figure 1)

The claim group is located near the eastern side of the Highland Valley District in the southcentral area of British Columbia at Latitude $50^{\circ}22'N$ and longitude $120^{\circ}54'W$. The closest centres of population are Merritt, 23 miles by road to the south and Ashcroft 30 miles to the northwest.

Principal access to the Dot Lake camp, near the centre of the property, is from Merritt by 8 miles of paved road to the Craigmont Mine and then by 15 miles of gravel road via the Aberdeen Mine.

Numerous bulldozer roads provide access on the property for 4-wheel drive vehicles only.

PHYSIOGRAPHY, VEGETATION AND CLIMATE

The Highland Valley forms part of the Interior Plateau physiographic region of British Columbia and has an average elevation of about 4,700 feet. Locally elevations range from 3,200' in the southeast to 5,200' in the northwest.

Rock exposures on the property are limited by a thick blanket of glacial till which generally exceeds 15 feet. Natural outcrop represents only about 5% of the surface area.

Much of the property is covered by areas of windfall or dense stands of lodgepole pine. Spruce and fir grow in the more moist localities and at lower elevations. Numerous lakes, streams and swamps provide sufficient water for drilling purposes the year round.

Climate is typical of the southern interior, with an average annual precipitation of about 12 inches recorded at Mamit Lake. Temperature extremes range from 95°F

in August to -50°F in January. The snow-free period generally lasts from the beginning of May to mid-November, however, it is possible to conduct some types of field work throughout the winter.

HISTORY

Early work in the vicinity of the Chataway property started about 1887 with the discovery of chalcocite at the Aberdeen Mine. Small shipments of ore grading over 7% copper were shipped in 1916 and 1917.

The Vimy Mine was located about 1920. Development of the Upper Vimy consisted of a 155 foot shaft and a short crosscut, while the Lower Vimy was developed by two short adits. Some high grade ore was shipped prior to 1927.

No further records are available until 1955, 1956 and 1957 when the Vimy Mine was optioned to Northwestern Explorations Limited (now Kennco Explorations). Soil sampling, bulldozer stripping, a magnetometer and other geophysical surveys and surface diamond drilling were conducted during this period.

Chataway Mining Syndicate was formed in 1956 to hold claims in the Roscoe Creek area and was incorporated as

a public company in 1962. Claim holdings were extended every year by staking. The Southeast Quarter, including the Vimy Mine and Zone 4, was acquired in 1965. This section was optioned to Bralorne Pioneer Mines (and Pacific Petroleum) from 1965 to 1967. Their work delimited approximately 324,000 tons grading 1.26% Cu in Zone 4. During 1968 to 1969 the entire property was under option to King Resources Company who conducted mapping and partial induced polarization, magnetic and geochemical surveys. The TDM claims were staked during this period, but except for geological mapping, no other work was conducted in the area of the present survey. From January to October, 1970, Asarco held an option on the entire property and performed extensive percussion drilling.

From April to December, 1971, Bethlehem Copper Corporation conducted surveying and percussion drilling on jointly held ground on the Southeast Quarter. In September, 1971, the Northeast Quarter, including the TDM claims, came under option to Canadian Superior Exploration Limited.

REGIONAL GEOLOGY

The Chataway property is on the eastern side of and underlain by various phases of the Guichon Creek batholith. This batholith is an elliptical shaped complex of Lower Jurassic age (198 ± 8 my) composed of roughly concentric rings of granitic rocks of varying composition. The major axis of the batholith lies at N 10°W and is approximately 40 miles long, the minor axis is approximately 16 miles long. It has intruded volcanic and sedimentary rocks of both Cache Creek and Nicola Groups and is overlain by remnants of volcanic and sedimentary rocks of the Kamloops and Kingsvale Groups.

The batholithic rocks consist of seven nearly concentric major phases which in general decrease in relative age inwards (Northcote, p.21). The Hybrid phase is peripheral and the oldest of the batholith. The Highland Valley phase is younger and lies within the Hybrid phase and consists of two varieties, Guichon and Chataway, which are abundant in the north and south of the batholith respectively. The LeRoy

"Granodiorite" is a sub-phase which occurs in large irregular masses within the Chataway variety rocks. The Gump Lake phase is granodiorite and quartz monzonite and occurs on the east side of the batholith, north of the Chataway property. The Bethlehem phase occurs as a granodiorite ring encircling the central core of the batholith. The Witches Brook phase consists of three varieties which occur almost throughout the batholith. It has wide variation in texture and composition and is of intermediate age. The Bethsaida phase forms the core of the batholith and is composed predominately of quartz monzonite. Porphyry dykes and bodies occur in the Bethsaida, Bethlehem and Highland Valley phases.

PROPERTY GEOLOGY

Previous geological mapping covering the Chataway property has been described in reports by K. C. McTaggart (1963), K. E. Northcote (1968) and W. Meyer (1968).

The eastern portion of the claim group is underlain by Witches Brook (Dot) phase quartz monzonite and granodiorite which has intruded Chataway variety rocks. Along the north-eastern border of the claims the Witches Brook and Chataway rocks are in contact to the east with the marginal Hybrid or "gabbroic" phase. This varies from quartz diorite to gabbro and possibly resulted from a mixture of Chataway granodiorite with Nicola and Cache Creek rocks. Outcrops along the creek on TDM 25 mining claim are of medium- to fine-grained, euhedral granodiorite of the Witches Brook "B" phase.

Kamloops Group (Tertiary) volcanics in the form of dark green and brown vesicular basalt overlie batholith rocks near Gypsum Mountain and Cougar Lake. Areal extent of this rock is not large.

Copper mineralization is widespread on the property occurring principally as low-grade disseminations and fracture fillings on the western half of the property and as high-grade veins (Zone 4) and lower grade disseminations and veinlets (Vimy) on the eastern half. Mineralization has been found in all batholithic phases and chiefly occurs as chalcopyrite, bornite, chalcocite and native copper. Fine disseminated native copper occurs in Witches Brook "B" granodiorite around TDM 25 mining claim within the bounds of the current geochemical survey.

GEOCHEMICAL SURVEY

(Figure 2)

A geochemical soil survey was conducted which consisted of 234 samples taken along 21,600 feet of line. East-west lines were cut out every 400 feet and picketed and flagged at 100 foot stations. Intermediate lines at 200 feet were cut and chained at selected intervals.

Soil samples were collected by grubhoe and trowel from the enriched B-1 horizon at each 100 foot station. A description of the sample depth, soil type, drainage and slope was recorded at each site. The samples were placed in numbered kraft envelopes and delivered to Crest Laboratories (B.C.) Ltd. in Vancouver. There each sample was dried and seived and the minus 80 mesh fraction digested by perchloric and nitric acids. The atomic absorption method was used for copper analysis and the colourimetric method for molybdenum.

RESULTS

MOLYBDENUM

A total of 146 samples were analyzed for molybdenum with generally negative results. With the exception of 4 samples, which are noted on Figure 2, all values are less than 2 ppm Mo and are not recorded on the map. Two samples, near 572N - 554E, returned 7 and 12 ppm Mo respectively. Both samples were relatively high in organic content and were taken along a northeast trending linear depression which may be the surface expression of a fault. Additional prospecting may be warranted along this structure.

COPPER

A total of 234 samples were analyzed for copper and the results were statistically interpreted as follows:

Arithmetic Mean	(μ)	= 60.2 ppm
Standard Deviation	(σ)	= 41.2 ppm
Threshold	($\mu+1[\sigma]$)	= 101 ppm
1st order anomaly	($\mu+2[\sigma]$)	= 142 ppm

From these the following categories were derived:

Background	0 - 60 ppm
Possibly Anomalous	61 - 101 ppm
Probably Anomalous	102 - 142 ppm
Anomalous	> 142 ppm

The plotted results indicate a weak, narrow discontinuous anomaly along the northeast trending creek. This is strongest in the vicinity of 568N - 525E. Most of these samples are slightly organic. Fine disseminated native copper occurs in Witches Brook "B" granodiorite which outcrops along the creek near this point. A second weakly anomalous area on lines 576N and 578N in the vicinity of 538E is associated with low swampy ground. Samples taken here were slightly organic which may in part account for the anomalous values. The existence of copper mineralization associated with northeast and northwest trending structures has been well documented in other areas of the batholith and must not be disregarded here.

SUMMARY AND CONCLUSIONS

Chataway Exploration Co. Ltd. (N.P.L.) is the recorded owner of 483 mineral claims in the Kamloops and Nicola Mining Divisions. These occupy more than 12,000 acres on the eastern side of the Guichon Batholith in the Highland Valley District and are easily accessible by road.

Early mining activity before 1930 centred about mineralization at the Aberdeen and Vimy Mines and along Roscoe Creek. The property has been under option to Bralorne Pioneer Mines 1965-1967 (Southeast Quarter only), King Resources Company 1968-1970, Asarco 1970, Bethlehem 1971 and portions are currently under option to Canadian Superior Exploration and International Mogul Mines Limited. Exploration work by Chataway and the optionors has included surveyed grids, partial magnetometer, induced polarization and electromagnetic surveys, geochemical sampling, extensive bulldozer trenching, more than 50 diamond drill holes aggregating over 13,000 feet, and more than 190 percussion drill holes aggregating over 23,000 feet.

Rocks of seven major phases of the batholith as well as numerous varieties of dykes have been identified on surface by mapping and in drill core. Two major structural patterns, trending northeast and northwest, occur on the property.

Widespread copper mineralization has been located on the claim group with many showings associated with northeast and northwest trending structures. Fine disseminated native copper occurs on TDM 25 mineral claim within the bounds of this survey.

A geochemical soil survey consisting of 234 samples was conducted on the Cu fraction and TDM 1, 2, 5, 6, 25 and 26 mineral claims. A narrow discontinuous copper anomaly was located parallel to a northeast trending creek. It is felt that native copper mineralization on TDM 25 would not account for the extent of the anomaly and that additional work in the form of geophysical surveys and trenching are warranted to investigate this area.

APPENDICES

RECOMMENDATIONS

It is recommended that:

1. Geochemical sampling be extended to the eastern property boundary and to the south and west to join up with older surveys by Bralorne and Chataway. Additional grid lines should be cut to complete this work.
2. A reconnaissance magnetometer survey should be conducted on the geochemical survey grid to aid in interpreting the existing geological mapping and in locating any areas of intense alteration.
3. A reconnaissance induced polarization survey (using 400 foot dipole-dipole spreads) be conducted on the geochemical survey grid (400 foot spaced lines).
4. Hand trenching, bulldozer trenching or percussion drilling be conducted on any coincident geochemical-geophysical anomalies to determine the cause of such anomalies.



Respectfully submitted

CORDILLERAN ENGINEERING LIMITED

M. H. Sanguinetti
M.H. Sanguinetti, B.Sc., Geologist

Supervised by: J.W. Stollery, P.Eng.
Geol. Eng.

April, 1972

REFERENCES

BAYLEY, E.P.

- 1970: "Summary Report of Percussion Drilling Program", Asarco, Private Report.

BRITISH COLUMBIA

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WEEKS, J.P. and MEYERS, E.P. and JAMES D.H.

- 1965-1967: Miscellaneous Reports by Bralorne-Pioneer Mines.

Canada

Province of British Columbia

To Wit:

In the Matter of

**A geochemical report on behalf of
Chataway Exploration Co.Ltd. (N.P.L.)**

J. Michael H. Sanguinetti for , of **1418-355 Burrard Street**
Cordilleran Engineering Limited
Vanocuver in the Province of British Columbia.

Do Solemnly Declare that linecutting and a geochemical soil survey were conducted on the Cu fraction TDM #1, 2, 5, 6, 25 and 26 mineral claims in the Nicola M.D. located in the Highland Valley area, 2 miles due west of the south end of Mamit Lake, during the period July 3rd to July 31st, 1971. The following expenses were incurred:

1. Wages:	
A.P.Horne, (Sampler, line cutter) 1 month, \$1000/mo, July 3-31	\$1,000.00
T.Lesperance (Sampler, line cutter) 1 month, \$500/mo, July 3-31	500.00
M.Sanguinatti (geologist), 3 days, \$100/day, July 12,23,24	<u>300.00</u>
	1,800.00
2. Truck Rental: 4 wheel drive on property	223.81
3. Supplies, sample shipment, food	460.68
4. Analyses, Crest Laboratories (B.C.) Ltd.	403.30
5. Consulting Services, interpretation of results	125.00
6. Report, data compilation, draughting	<u>480.00</u>
	TOTAL \$3,492.79

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 City of Vancouver
in the Province of British Columbia.
VANCOUVER, B. C.
this day of

APR 14 1972 A.D. 19
[Signature]
Sub-Mining Recorder

[Signature: Michael H. Sanguinetti]

Dated _____ 19

In the Matter of

Statutory Declaration

Form No. Z 4 - 220

 WILLSON STATIONERS

CORDILLERAN ENGINEERING LIMITED

MINERAL EXPLORATION
MANAGEMENT AND
ENGINEERING CONSULTANTS

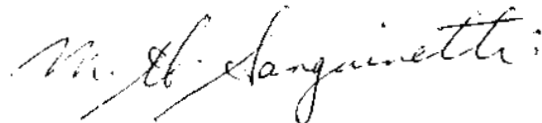
1418-355 BURRARD STREET
VANCOUVER 1, B.C.
TELEPHONE (604) 681-8381

WRITER'S CERTIFICATE

I, Michael H. Sanguinetti, of Vancouver, B.C.
hereby certify that:

1. I am a geologist residing at: 2960 West 32nd Avenue,
and employed by Cordilleran Engineering Limited of
1418 - 355 Burrard Street, Vancouver 1, B. C.
2. I am a graduate of the University of British Columbia,
B.Sc., in 1965, and have practiced my profession since
that time.
3. I am the author of this report which is based on a
geochemical survey conducted on the Cu fraction and
various TDM claims during July, 1971.

CORDILLERAN ENGINEERING LIMITED



M. H. Sanguinetti, B.Sc.
Geologist

April 4, 1972
Vancouver, B.C.

CORDILLERAN ENGINEERING LIMITED

MINERAL EXPLORATION
MANAGEMENT AND
ENGINEERING CONSULTANTS

1418-355 BURRARD STREET
VANCOUVER 1, B.C.
TELEPHONE (604) 681-8381

SUPERVISOR'S CERTIFICATE

I, John W. Stollery of North Vancouver, B.C.
hereby certify that:

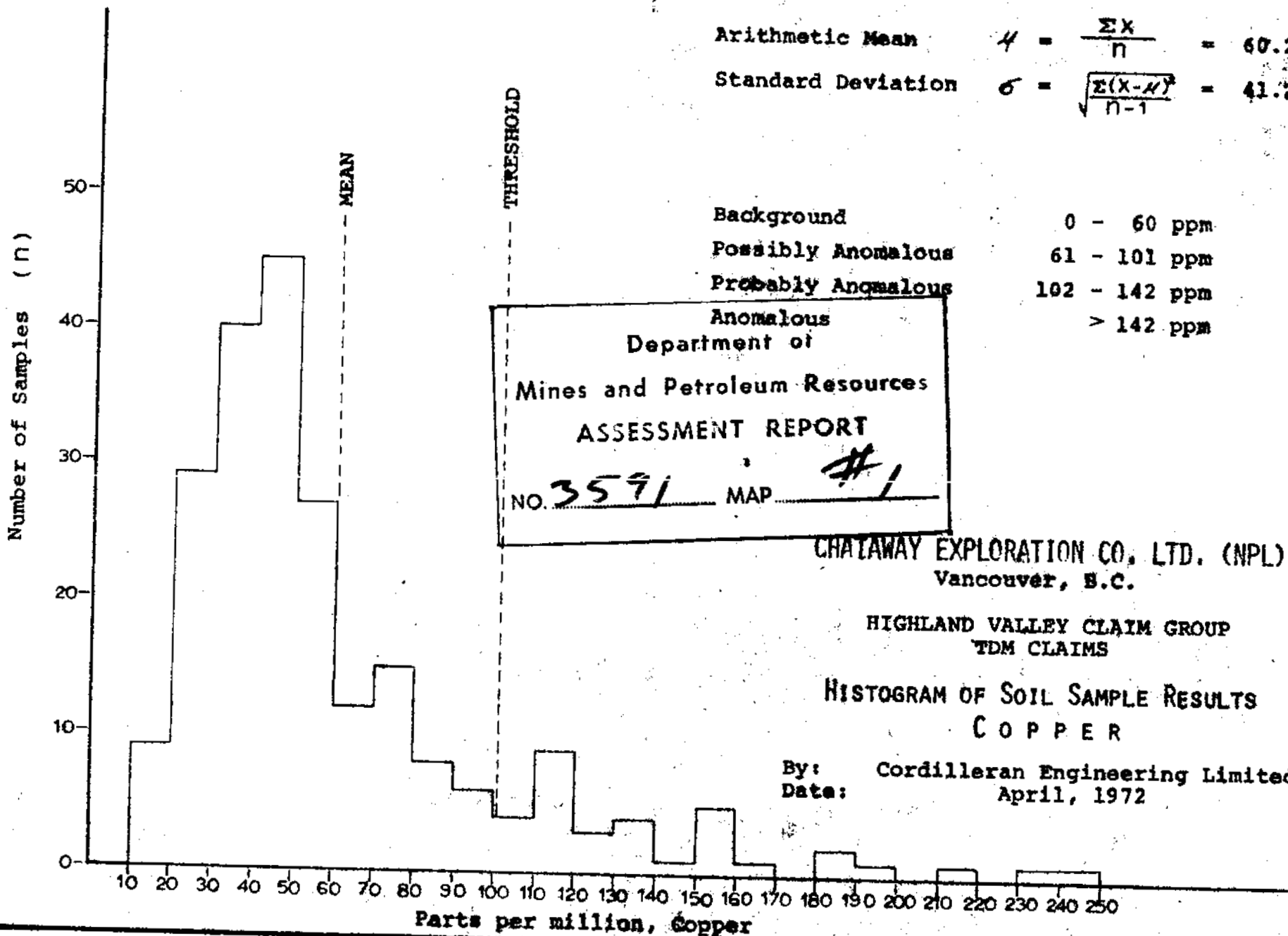
1. I am a geological engineer residing at 4076 Ruby Ave., and employed by Cordilleran Engineering Limited of 1418 - 355 Burrard Street, Vancouver 1, B. C.
2. I am a graduate of the Provincial Institute of Mining, Haileybury, Ontario (1958) and received a Bachelor of Science degree from Michigan Technological University, Houghton, Michigan, (1961).
3. I am a certified member of the Association of Professional Engineers of Ontario and British Columbia.
4. I supervised the writing of this report which is based on a geochemical survey conducted on the Cu fraction and various TDM claims during July, 1971.



CORDILLERAN ENGINEERING LIMITED

J. W. Stollery, P.Eng.
Geological Engineer

April 4, 19 72
Vancouver, B.C.



Arithmetic Mean $\bar{X} = \frac{\sum X}{n} = 60.2 \text{ ppm}$

Standard Deviation $\sigma = \sqrt{\frac{\sum (X - \bar{X})^2}{n - 1}} = 41.2 \text{ ppm}$

Background	0 - 60 ppm
Possibly Anomalous	61 - 101 ppm
Probably Anomalous	102 - 142 ppm
Anomalous	> 142 ppm

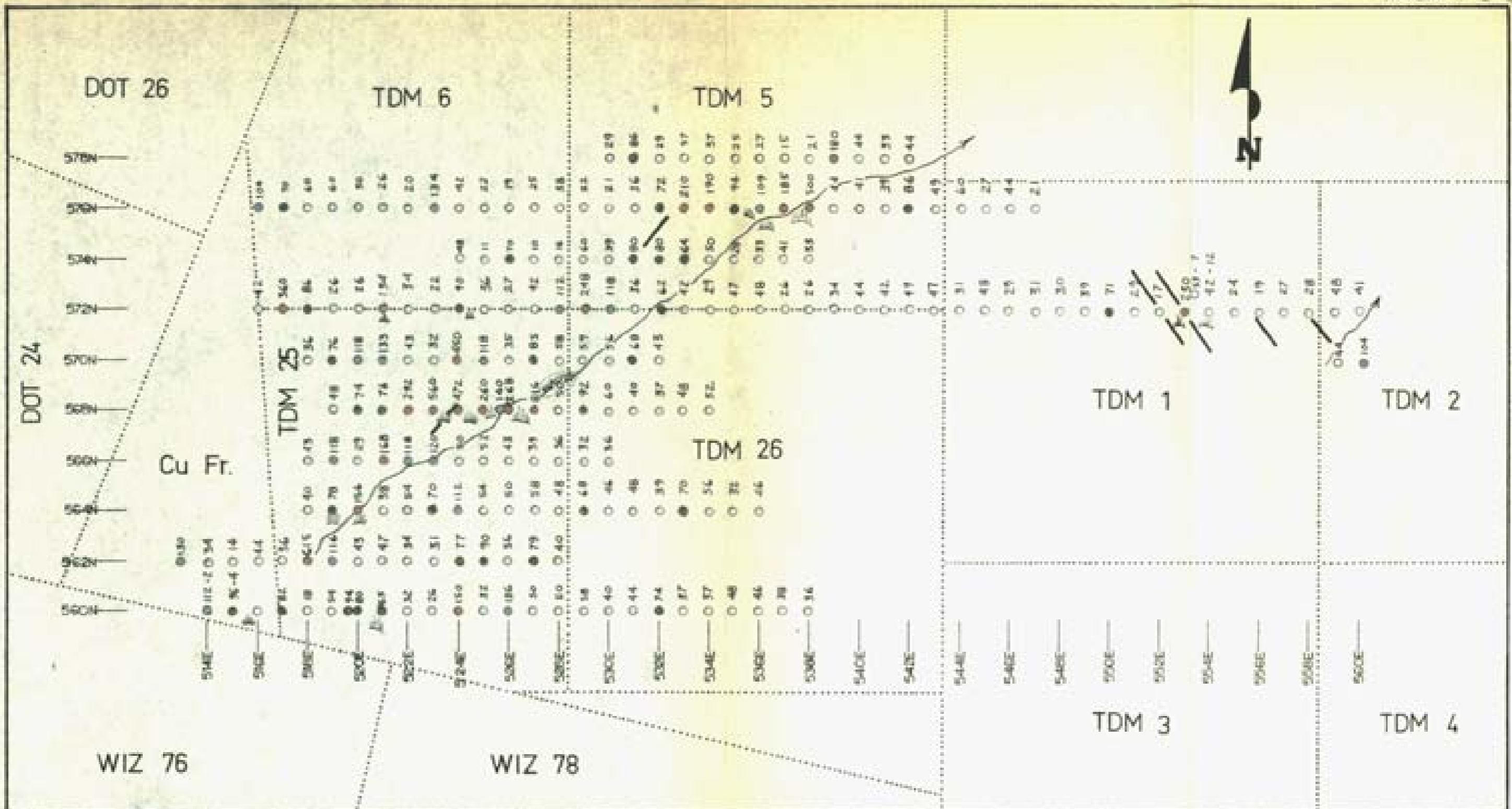
Anomalous
 Department of
 Mines and Petroleum Resources
ASSESSMENT REPORT
 NO. 3591 MAP #1

CHATAWAY EXPLORATION CO., LTD. (NPL)
 Vancouver, B.C.

HIGHLAND VALLEY CLAIM GROUP
 TDM CLAIMS

HISTOGRAM OF SOIL SAMPLE RESULTS
 COPPER

By: Cordilleran Engineering Limited
 Date: April, 1972



LEGEND

- Background ○ - 60 ppm
- Possibly Anomalous 61 - 101 ppm
- ⊙ Probably Anomalous 102 - 142 ppm
- ⊗ Anomalous > 142 ppm

○ 78-4 Values in ppm, Cu-Mo
 N.B. All molybdenum values < 2ppm are omitted
 / Linear Feature



3591
 M-3

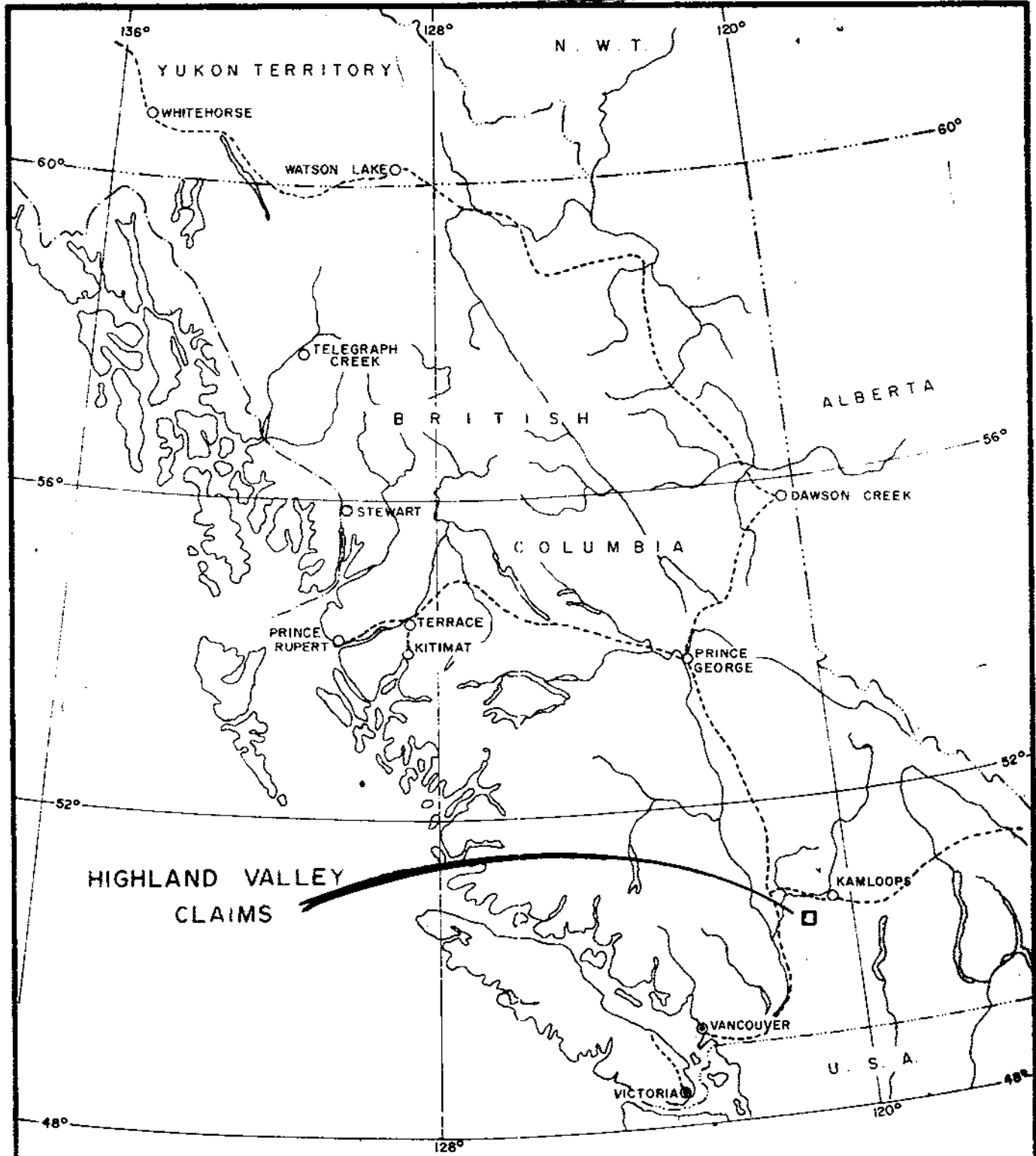
M. Longinetti

To accompany a Geochemical Report on the Cu Fr. and TDM Claims by M. Longinetti, B.Sc., April 4, 1972.

CHATAWAY EXPLORATION CO. LTD. (NPL)
 VANCOUVER, B.C.
 HIGHLAND VALLEY CLAIM GROUP
TDM CLAIMS
GEOCHEMICAL SOIL SURVEY
 SCALE: 1" = 400'
 by
 CORDILLERAN ENGINEERING LIMITED
 VANCOUVER, B.C.

FIGURE 2

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3591 MAP #3



CHATAWAY EXPLORATION CO. LTD. (N.P.L.)

3591

PROPERTY LOCATION MAP

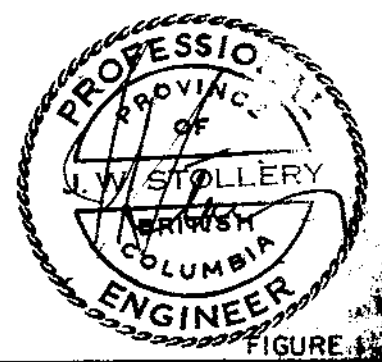
BRITISH COLUMBIA
SCALE : 1" = 125 MILES

M2

BY,

CORDILLERAN ENGINEERING LIMITED

1418-355 BARRARD ST.
VANCOUVER 1, B.C.



M. St. Jacques
April 4/72
 APRIL, 1971

Department of

Mines and Petroleum Resources

ASSESSMENT REPORT

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NO. 3591 IMP