Ash Claim Group 895111

TABLE OF CONTENTS

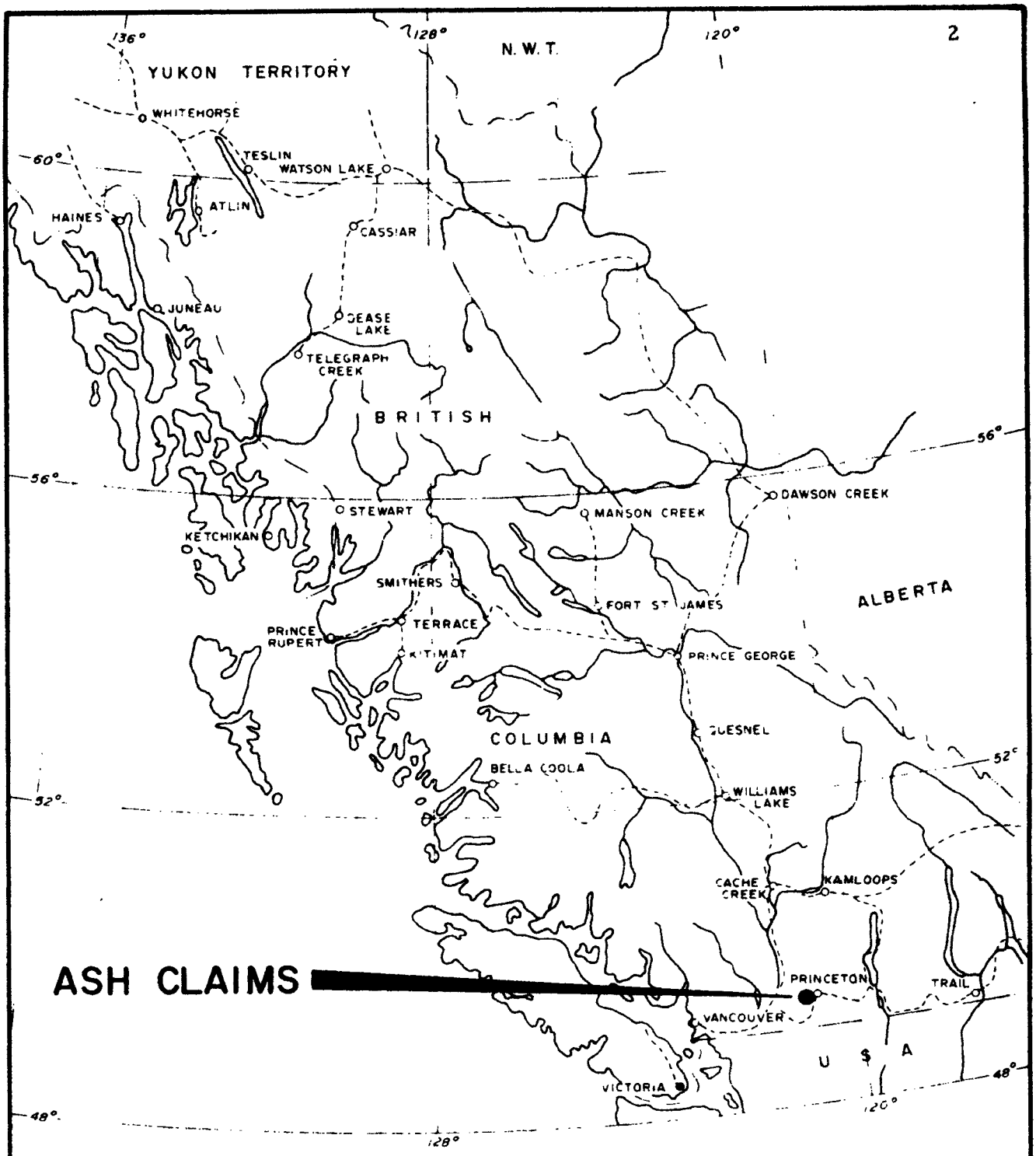
List of Illustrations

SAWYER CONSULTANTS INC.

INTRODUCTION

In the spring of 1979 Canadian Natural Resources Ltd. negotiated an option from Karma Ventures Ltd. to explore the Ash Claim Group located in the Wells Lake area, some 20 miles west of Princeton, in the Similkameen Mining Division, British Columbia.

Sawyer Consultants Inc. was retained to carry out an exploration program on this property for Canadian Natural Resources Ltd. In the period July 15th, 1979 to September 30th, 1979, a work program consisting of line cutting, geological mapping, geochemical soil sampling, a ground magnetometer survey, and induced polarization surveying over selected parts of the grid was completed. This brief report summarizes the work done and its results.



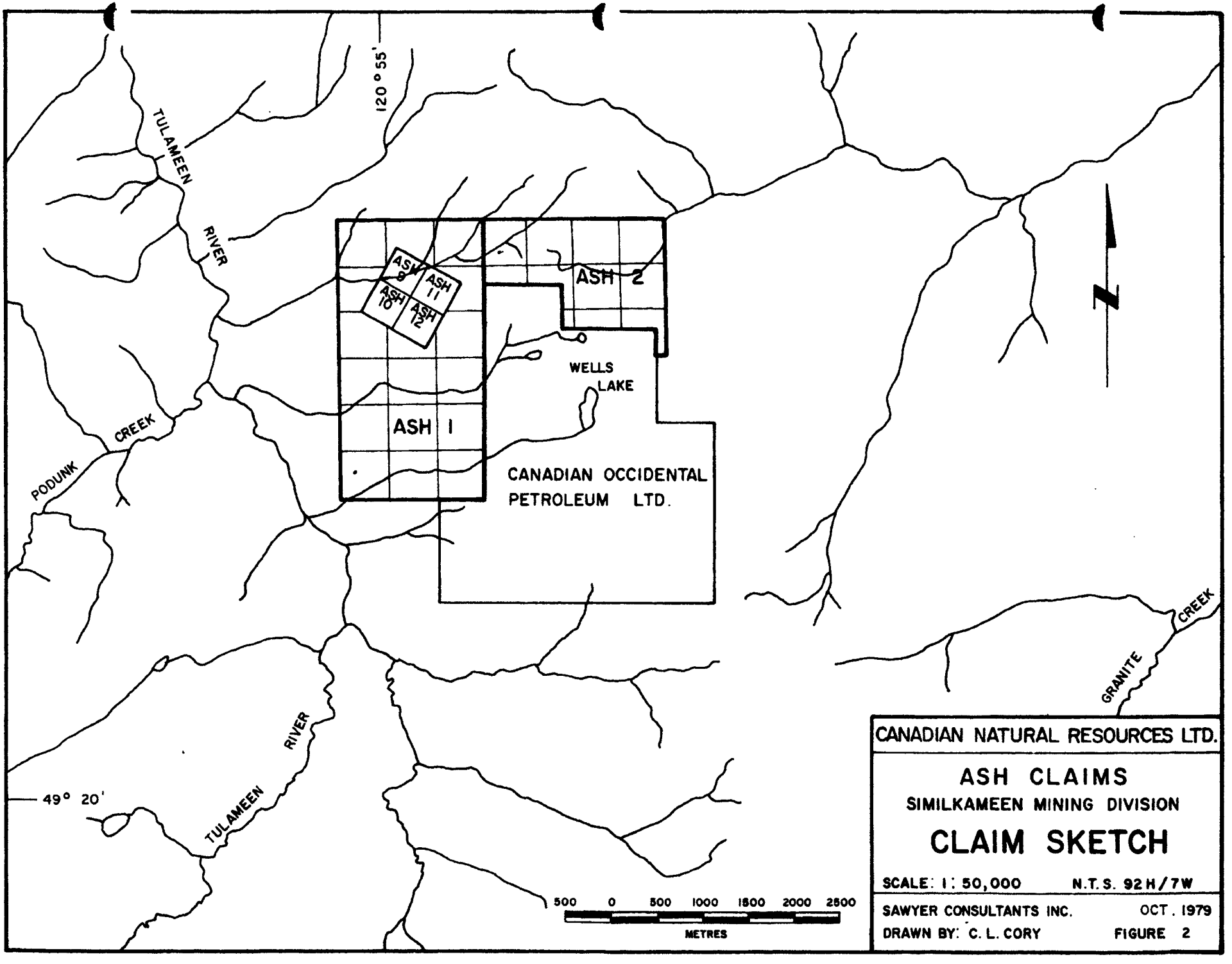
CANADIAN NATURAL RESOURCES LTD.

GENERAL LOCATION SKETCH

ASH CLAIM GROUP

SCALE: 1" = 125 MILES

FIGURE 1


120° 55'
TULAMEEN RIVER
ASH 9
ASH 11
ASH 10
ASH 12
ASH 2
ASH 1
WELLS LAKE
CANADIAN OCCIDENTAL PETROLEUM LTD.
PODUNK CREEK
GRANITE CREEK
49° 20'
TULAMEEN RIVER
500 0 500 1000 1500 2000 2500
METRES
CANADIAN NATURAL RESOURCES LTD.
ASH CLAIMS
SIMILKAMEEN MINING DIVISION
CLAIM SKETCH
SCALE: 1: 50,000
N.T.S. 92H/7W
SAWYER CONSULTANTS INC.
OCT. 1979
DRAWN BY: C. L. CORY
FIGURE 2

PROPERTY

The property is comprised of a total of six claims. Four of these, Ash 9, 10, 11, and 12, were staked under the old two-post system and date from 1969. The other two claims were staked early in 1979 on the new British Columbia modified grid system and include a total of 30 units. These two later grid claims, named Ash 1 and Ash 2, completely surround the earlier Ash 9 to 12 claims. Total acreage involved in the property is approximately 2037 acres. Ash 2 and the eastern edge of Ash 1 claims partly overlap existing grid staked claims owned by Canadian Occidental Minerals Corporation which take precedence by virtue of their earlier recording date.

The following table summarizes the pertinent claim data.

Claim	Record No.	Recorded	Expiry Date	Registered Owner
Ash 9	25482	July 22, 1969	July 22, 1980	S. J. Young
Ash 10	25483	July 22, 1969	July 22, 1980	S. J. Young
Ash 11	25484	July 22, 1969	July 22, 1980	S. J. Young
Ash 12	25485	July 22, 1967	July 22, 1980	S. J. Young
Ash 1	558	April 30, 1979	April 30, 1980	David O'Sullivan
Ash 2	559	April 30, 1979	April 30, 1980	David O'Sullivan

The claims lie to the east of the Tulameen River and are centred just to the west of a small lake, Wells Lake, which lies approximately 3.5 miles north of Granite Mountain. The area is approximately 20 miles west of the town of Princeton, British Columbia, whence access to the property is possible by two routes. The northerly route is along the road from Princeton to Coalmont thence south through Lodestone Lake to the Wells Lake area. The more southerly route leaves Highway #3 approximately 9 miles west of Princeton and travels via Whipsaw Creek past Skaist and Granite Mountains to Wells Lake. In the property area these roads are very poorly maintained and are passable only with difficulty to four-wheel drive vehicles for a distance of approximately 5 miles in either direction from Wells Lake. The property lies within NTS map sheet 92H, Hope, British Columbia, on the 1:250,000 scale, and map sheet 92H/7, Princeton, British Columbia, on the 1:50,000 scale.

HISTORY AND PREVIOUS WORK

The general area within which the Ash claims lie has attracted the attention of prospectors over many years, the earlier work being directed towards both lode and placer occurrences of gold and other precious metals. More recently the area has been covered by at least two major mining companies as part

of a regional geochemical program and anomalous values in copper and molybdenum have been detected in the immediate claims area. The only detailed follow-up work which appears to have been done was a very limited program in the 1960's by Copper Range Exploration and by Hanna Mining who optioned the property from Copper Range Explorations, and later by Canadian Occidental Minerals Ltd., in the 1970's to tho present. The latter work, by Canadian Occidental Minerals Ltd., and that carried out for Canadian Natural Resources Ltd. in 1979, described in this report, appear to have been the most detailed.

1979 WORK PROGRAM

The work program carried out under the general direction of Sawyer Consultants Inc., on behalf of Canadian Natural Resources Ltd., in the period June to October 1979 consisted of the following.

(a) Establishment of a control grid of base line and picket lines. Lines were spaced 100 metres apart and stations along these lines were flagged at 50 metre intervals. The base line was picketed at 100 metre intervals.

(b) Geological mapping using the picket line grid for control. The mapping was carried out by Dr. A.M. deQuadros, assisted for a limited period by Mr. T.G. Hawkins, of Sawyer Consultants Inc.

(c) Geochemical soil sampling. A total of 1480 soil samples were collected at 50 metre intervals along all of the grid lines. The samples were submitted to the Vancouver Laboratories of Bondar-Clegg & Co. Ltd. where they were analysed for total copper and total molybdenum content. The results for each of these metals were treated by standard statistical techniques to determine threshold values and the individual values were plotted on a base map at a scale of 1" = 100 metres. The plotted values were contoured on a statistical basis. In addition, a limited amount of profile sampling at selected locations was also carried out to attempt to determine the source of the metals and to what degree, if any, the anomalies were transported.

(d) A ground magnetometer survey using the picket line grid for control was carried out under contract by Peter E. Walcott & Associates. Corrected values for the vertical component of the earth's magnetic field were plotted and contoured.

(e) 14.45 kilometres of induced polarization surveying were carried out under contract by Peter E. Walcott & Associates over selected parts of the grid to investigate geochemical and/or geological features.

The results of all of this work are briefly described below.

GEOLOGY

Regional Geology

Regionally, the Ash claims are underlain by the Eagle Granodiorite Complex, part of the Jurassic Coast intrusives. This complex consists of a highly folded series of granodiorite gneisses, biotite gneisses and biotite hornblende gneisses intruded by both concordant and discordant quartz rich veins and pegmatites. The gneisses show both meta-sedimentary intrusive and anatectic features and are, in general, highly folded, mostly isoclinally but also ptygmatically, and exhibit strong foliation. In general it appears that intrusive elements predominate.

The significant mineralization occurring in the area consists of pyrite-molybdenite in quartz veins and large irregular quartz intrusions, sometimes accompanied by chalcopyrite. It is not clear whether these represent a high level expression of a molybdenum porphyry system at depth but this was the early impression from previous work in the area and personal observation. The more detailed work concluded during the past field season has not eliminated this possibility.

Local Geology

Mapping by Sawyer Consultants Inc. in July and August 1979 led to the following classification of rock units in the area.

Biotite Gneiss - this is the most common sedimentary rock unit occurring on the property. It is a well foliated rock with quite intensive layering of varying thicknesses being developed. The main component is biotite with varying content of plagioclase and relatively minor development of garnet and sulphides. In parts of the property the biotite gneiss tends to grade into the granodiorite gneiss.

Biotite - Hornblende Gneiss - this is also well foliated, and thinly layered. Component minerals include biotite, hornblende, quartz, and plagioclase with minor garnet and epidote. Some of the layers are composed almost entirely of hornblende. In general the biotite hornblende gneiss tends to occur in irregular, thin, unmappable units in both the biotite gneisses and granodiorite gneisses.

Granodiorite Gneiss - this rock unit occurs throughout the property having a generally gradational relationship to the biotite-gneisses. It exhibits a strong mineral banding which makes minor folds, commonly tightly isoclinal, easily visible. deQuadros has described the rock as being generally "a biotite-granodiorite, medium to coarse grained, with strong jointing, distinctive foliation, and blocky", composed essentially of biotite, plagioclase, quartz, and accessory hornblende.

Veins and Dykes - late differentiates, evident as veins and dykes which appear to occur randomly throughout the property having no preferred orientation. They may be either concordant or discordant and, compositionally, range from felsites, and micro-granodiorites to various quartz-rich rocks. They may range in width from a few centimetres to tens of metres and in general consist of quartz ± muscovite, ± orthoclase, ± epidote, ± garnet, with accessory minerals which may include magnetite, pyrite, chalcopyrite, and molybdenite. Frequently a thin envelope of alteration, of kaolin and/or chloritized-epidotized rock, can be recognized in association with these late intrusives.

The grade or metamorphism to which most of the rocks of the area have been elevated may be classified as mid-range garnet-amphibolite facies, based on the mineralogy observed which includes quartz, biotite, hornblende and garnet. deQuadros has commented that the granodiorite, with its similar mineralogy, may be an anatectic equivalent of the sediments but the origin of the late quartz rich veins has not been defined with certainty. Some particular attention was paid to alteration because of the clues which this might afford with regard to the possible high level porphyry system environment. Unfortunately the alteration observed was relatively restricted and erratic. Some chloritization of biotite is evident throughout the property and films of epidote are present on many fracture surfaces. As mentioned above, kaolinization is evident in rocks close to the quartz veins. There appears to be no definable zonal arrangement to the alteration.

Mineralization observed includes scattered occurrences of pyrite in the biotite gneisses which are not considered to be of any economic significance. The significant mineralization is the association of pyrite-molybdenite, sometimes with chalcopyrite, in quartz veins. The extent locally of these quartz masses and the degree of concentration of molybdenite in association with them is in places quite spectacular and the possibility remains that a stockwork of such quartz veins may be developed in and around the showings. A lack of exposure prevents extensive mapping of this at the present.

GEOCHEMISTRY

Soils are poorly developed; B or C horizon was sampled near surface of ground.

Concentrations of molybdenum and copper in soils over the more westerly and northwesterly parts of the property, essentially in the area of the original four Ash claims (Ash 9-12 inclusive) and extending beyond the limits of these claims to the northwestern part of the Ash claim 1 are strongly anomalous. These anomalous values confirm the indications of above background concentration of these metals detected in regional silt sampling programs carried out by Rio Tinto Exploration and others in earlier years. The highest values occur in the area of the presently known showings of molybdenite in quartz with normal dispersion downslope from these. The actual area of these strong anomalies does extend slightly beyond the mapped main showing but is thought in general to

be reflecting the same style of mineralization in relatively restricted source areas at surface. The profile sampling which was carried out in general confirmed the validity of these anomalies as reflecting immediately underlying bedrock geology. In one profile sample location, in a swamp, the results of the profiling, as would be expected in this environment, showed the highest values, being near surface. In the other locations the reverse was true.

Towards the end of the program, while the IP surveys were in progress, the writer extended the area of the geochemical soil sampling off the grid and essentially just beyond the property limits to the northwest and again a zone of anomalous values in molybdenum was detected, although due to the limited extent of this additional sampling it was not completely defined. Study of the topography in the area indicates that the source of these anomalous amounts of molybdenum in these most northwesterly lines cannot be the mineralization in the known showings on the Ash claims, and the most likely source is the rocks occupying the higher ridges to the northwest. Limited observations of geology during this extended geochemical sampling indicated alteration in granodioritic and intrusive rocks and a generally higher sulphide content, predominantly pyrite. This data is in our opinion important and is a clear indication that the extent of the permissive area for porphyry molybdenum mineralization in the vicinity of the Ash claims has not been fully defined. Additional sampling to close off the area of these anomalous values would be desirable.

GEOPHYSICS

For detail and data on the geophysical work carried out by Peter E. Walcott & Associates, the reader is referred to the report dated November 1979 by Peter E. Walcott, P. Eng., on "A Magnetic and Induced Polarization Survey, Ash Claims, Princeton area, British Columbia." The work completed and the results are briefly discussed below.

Magnetometer Survey

The principal object of this survey was to provide, if possible, some aid in differentiation of various rock types to assist in mapping in overburden covered areas. Unfortunately, the survey proved of little assistance in this regard and although the appearance of the contoured map is different in the most northeasterly part of the grid this is attributed, by Walcott, primarily to the fact that there is an increase in the density of the readiugs in this area. In general, readings exhibit locally steep gradients suggesting shallow overburden for the most of the area, except in the valley bottoms.

Induced Polarization Survey

The survey was read using McPhar equipment in a dipole-dipole array initially, and for most of the survey, with a 75 metre dipole. The initial lines

read, 3N and 4N, over the main showings failed to give any pronounced response with the above array however a moderately anomalous zone was detected on n=1 and n=2 separations in a swampy area to the west of the showing on line 4. In order to try to ascertain the probable source of the anomaly in the swamp area, a smaller dipole, 25 metres, was used over the main showings. A very weak response was obtained on the first separation over the showings and the best readings on subsequent separations migrated westwards to correspond with the results from the initial work using the 75 metre dipole. Walcott has interpreted this as meaning that the responses obtained are related to the main showing and thus have molybdenum sulphide mineralization as a probable causative source. Extension of the survey to the north defined a moderately anomalous area of similar characteristics. It is assumed therefore that this anomalous zone has a similar source, i.e. molybdenum sulphide mineralization. The location of this anomalous IP zone is west of the main geochemical anomaly which, as described above, appears to be directly related to the known surface showings.

A second anomalous IP effect was detected further east, around 10E to 12E, across lines 3N to 6N, corresponding to some geochemical copper/molybdenum highs.

CONCLUSIONS

The following cenclusions are drawn from the work completed, which is described in brief in the foregoing report.

(1) Molybdenite and minor copper mineralization occurs in association with quartz veins and quartz intrusions which cut gneissic rocks of the Eagle Granodiorite Complex, in the northwestern part of the Ash Claims Group.

(2) The most prominent geochemical anomalies are related to the known surface showings, which in places are quite spectacular, and the pattern of these anomalous values, both in copper and in molybdenum, fairly accurately reflect the limited extent of the known showings.

(3) Other anomalous values in molybdenum in soils have been detected at the extreme northwestern part of the property and beyond the property boundary. This zone of anomalous molybdenum values has not been completely defined and will require further work to establish its limits and significance.

(4) The source of the anomalous molybdenum in these most northwesterly soils cannot be the known showings on the Ash claims, because of considerations of topography and drainage. The most likely source for these anomalous values is the rocks occupying the higher ridge to the northwest of the property.

(5) Limited geological observation in the area of these geochemical values suggest an increase in the amount of alteration in the granodiorite gneisses and other rocks and an increase in general sulphide content.

(6) The magnetic survey was of little use in adding to our knowledge with regard to the mineralization and as an aid to mapping.

(7) The IP survey results were in one sense disappointing in that the amplitude of the responses obtained was low. However the weak responses obtained are thought to be due to the same type of mineralization that is exposed in the main showings, i.e. predominantly molybenite mineralization in quartz which, because of its physical characteristics, would not be expected to give a strong response.

(8) The anomalous zone indicated by the IP survey to the west and northwest of the main showings and geochemically anomalous zones is probably caused by molybdenite mineralization in quartz veins or a quartz vein stockwork and as such may be part of a general porphyry molybdenum system.

(9) Some further exploration more fully to investigate this possibility is warranted, but is perhaps better carried out by a group whose resources are more oriented towards primary exploration.

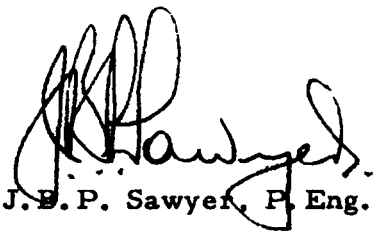
RECOMMENDATIONS

The decision has already been made by Canadian Natural Resources Ltd. not to carry out further exploration on the Ash claims. While the writer has no quarrel with this decision, which reflects the priorities of Canadian Natural Resources Ltd., we would recommend some further exploration more fully to investigate the molybdenum mineralization in the Ash claims area and the area to the northwest of this property. As a first stage, a limited amount of drilling on the IP anomaly zone would serve to verify the conclusions reached above with regard to its source and to establish some indication of the tenor of mineralization which might be expected.

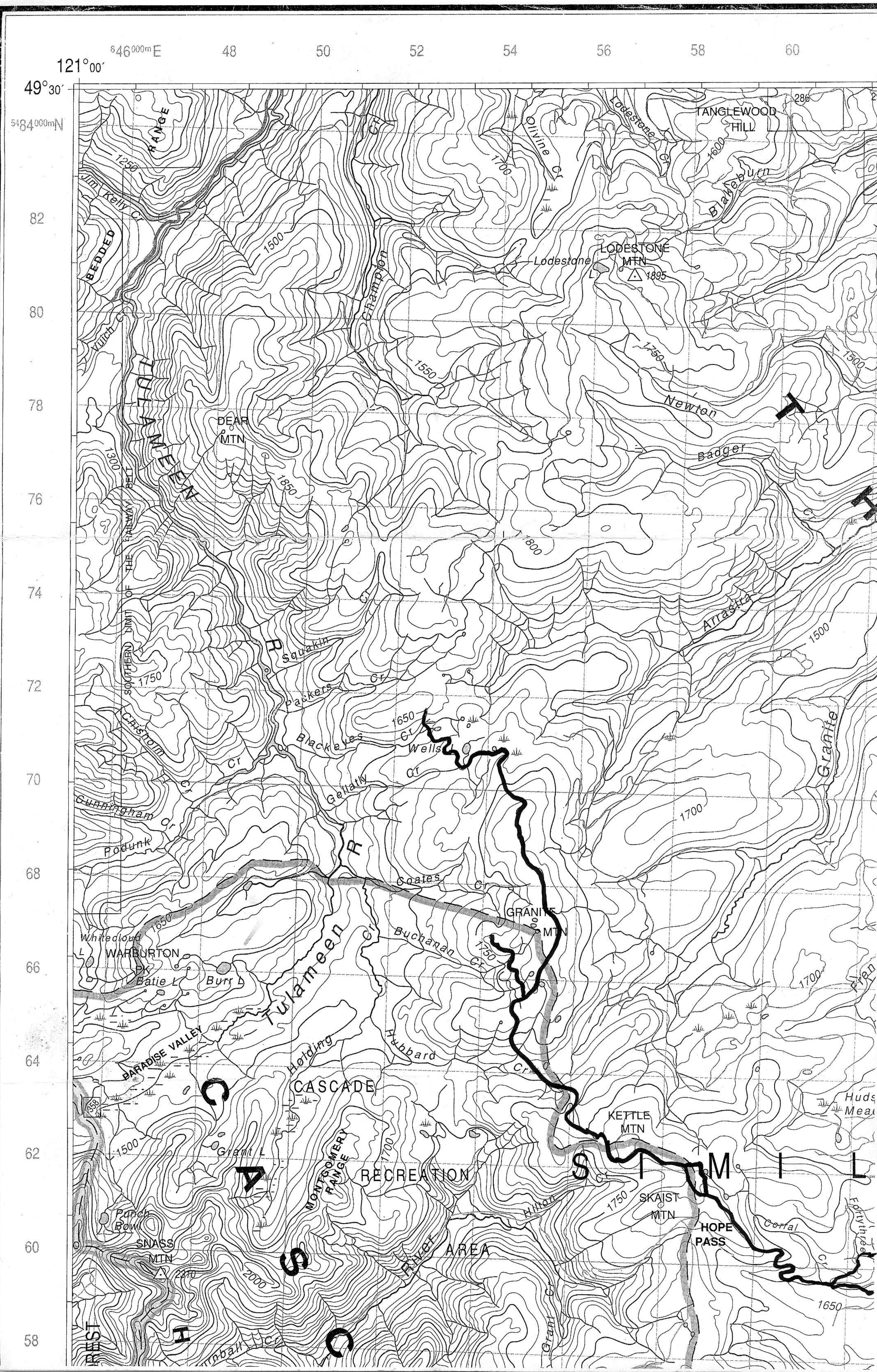
Unless the results of this work are entirely negative, further geochemical prospecting and mapping more completely to define the zone of anomalous molybdenum values in soils detected by the writer at the end of the season should be carried out. Later, further IP surveying over this zone, if warranted, would be desirable and interpretation of the results of such a survey would be able to take advantage of the information gained by the sub-surface investigation of the already indicated anomaly on the Ash claims, suggested above.

Respectfully submitted,

SAWYER CONSULTANTS INC.



J.E.P. Sawyer, P. Eng.



121°00′
49°30′
646000m E
5484000m N
TANGLEWOOD HILL
LODESTONE MTN
1895
Lodestone L
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Olivine Cr
Blakeburn
Champion
Newton
Badger
Arrastra
Granite
DEAR MTN
TULAMEEN
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Squakin
Packers Cr
Blackeyes
Wells Cr
Gellatly Cr
Chisholm Cr
Gunningham Cr
Podunk
SOUTHERN LIMIT OF THE RAILWAY BELT
Jim Kelly Cr
Vuich Cr
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Coates Cr
GRANITE MTN
Buchanan Cr
Hubbard
Tulameen
Holding
Whitecloud L
WARBURTON PK
Batie L
Burr L
PARADISE VALLEY
CASCADE
RECREATION
AREA
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SNASS MTN
2370
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Coral Cr
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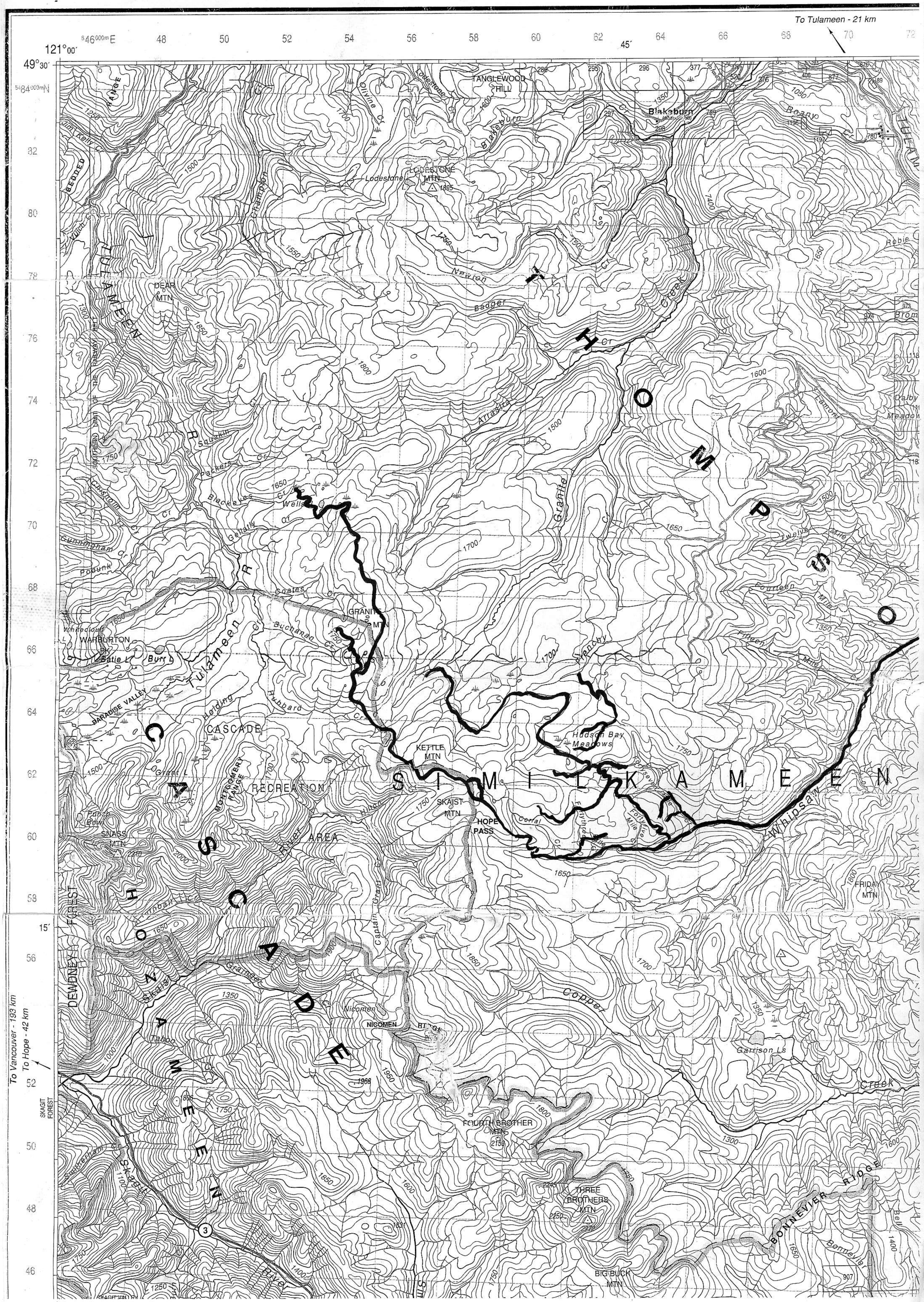
To Tulameen - 21 km
To Hope - 42 km
To Vancouver - 193 km
THOMPSON
SIMILKAMEEN
CASCADE
HOZAMEEN
TULAMEEN
BEDDED RANGE
CASCADE RECREATION AREA
MONTGOMERY RANGE
BONNEVIER RIDGE
NICOMEN RIDGE
SOUTHERN LIMIT OF THE RAILWAY BELT
DEWDNEY FOREST
SKAGIT FOREST
TANGLEWOOD HILL
LODESTONE MTN
DEAR MTN
GRANITE MTN
KETTLE MTN
SKAIST MTN
HOPE PASS
FRIDAY MTN
THREE BROTHERS MTN
FOURTH BROTHER MTN
BIG BUCK MTN
SNASS MTN
Blakeburn
WARBURTON
PARADISE VALLEY
Hudson Bay Meadows
Whipsaw
Copper Creek
Granite
Champion
Olivine Cr
Lodestone
Newton
Badger
Arrastra
Frenchy
Fortyseven Mile
Fortyfive Mile Cr
Fortythree Mile
Corral Cr
Fourteen Mile
Fifteen Mile
Twelve Mile
Lamont
Robie
Boany
Holmes
Garrison Ls
Bonnevier
Bell
Captain Grant Cr
Nicomen
Grainger
Skaist
Taboo
Skagit
River
Wells Cr
Blackeye Cr
Packers
Squakin
Gellatly
Coates
Buchanan Cr
Hubbard
Holding
Tulameen
Burr L
Battle L
Whitecloud L
Chisholm Cr
Cunningham Cr
Podunk
Jim Kelly Cr
Punch Bowl
Grant L
3
121°00′
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