

6149

GEOLOGICAL REPORT

- on the -

HAPPY DAYS CLAIM

KAMLOOPS MINING DIVISION

British Columbia

- for -

J. R. Kerr,
295 Greenstone Drive,
KAMLOOPS, B.C.

COVERING: Happy Days Claim (20 metric units)

WORK PERFORMED: June 2nd. - December 29th., 1976.

LOCATION: (1). 50°35', 120°39'
(2). NTS Map 92I/10E
(3). Near Greenstone Mountain,
16 miles WSW of Kamloops.

Prepared by:
KERR, DAWSON & ASSOCIATES LTD.,
#1-219 Victoria Street,
Kamloops, B. C.
J. M. Dawson, P. Eng.,
December 29th., 1976.

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
NO. 6149

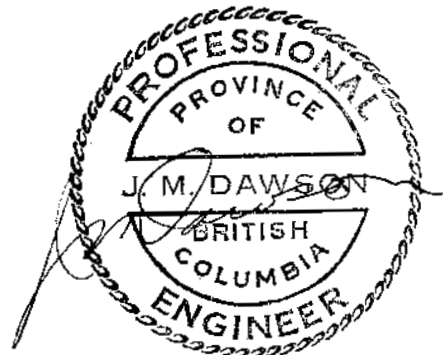
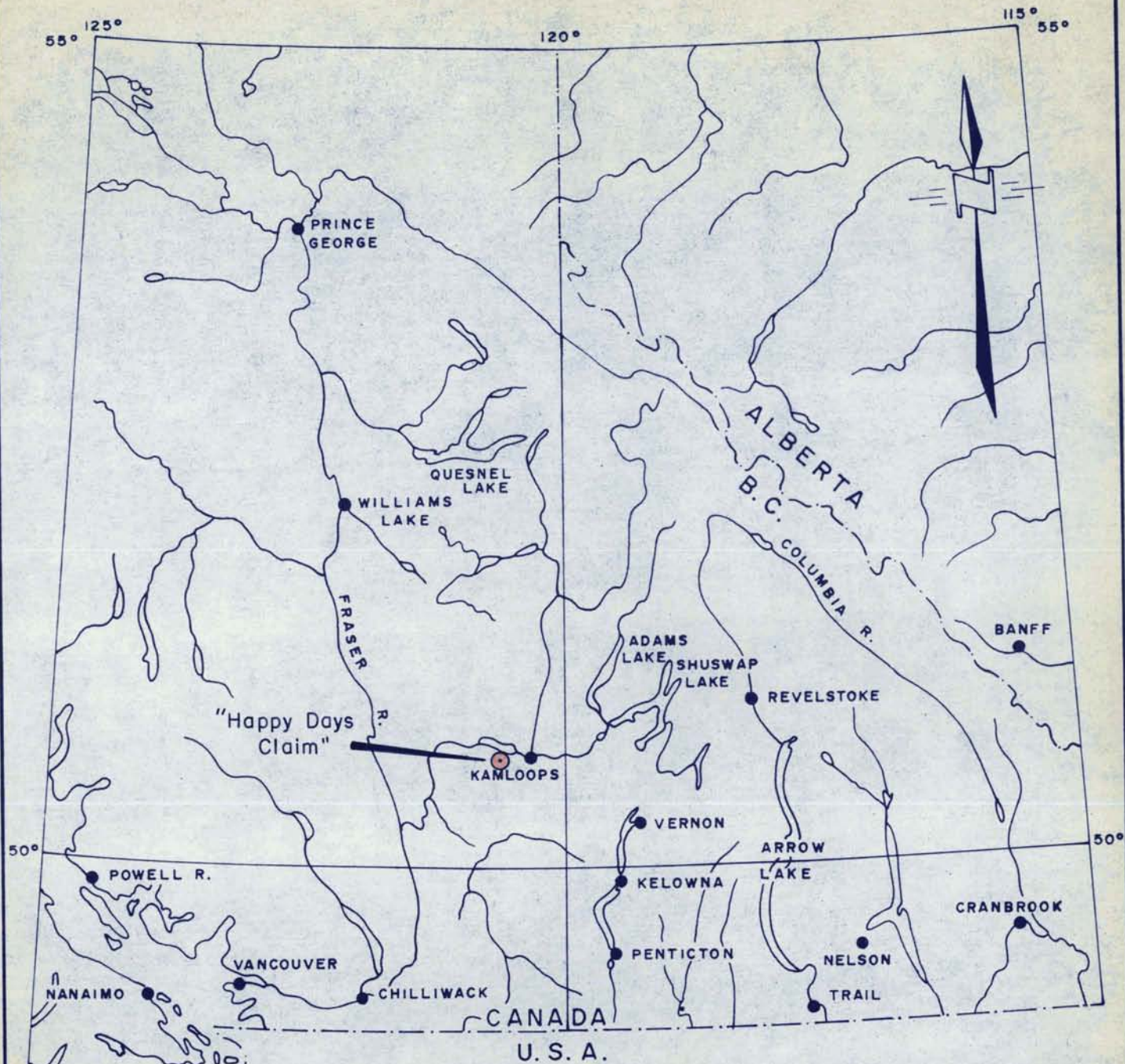


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MINERAL RESOURCES BRANCH
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LOCATION MAP
HAPPY DAYS CLAIM
 KAMLOOPS MINING DIVISION, B.C.

Date: DEC, 1976	Scale: 1" = 64 Miles
Own by:	Dwg no. 14-1

INTRODUCTION

Recent increased world demand and higher prices have spurred renewed interest in molybdenum occurrences. The subject property covers a porphyry-type molybdenum occurrence on which considerable work was done in the past.

This report is based on reconnaissance field mapping as well as a synthesis of all previous data from a variety of sources. Fieldwork was carried out by the writer during summer and autumn 1976 and results are on a series of maps appended to this report.

SUMMARY AND CONCLUSIONS

- (1). The subject property consists of one 20 unit, metric claim encompassing 500 hectares or 1,235.6 acres located about 26 kilometers southwest of the city of Kamloops. The property is road accessible and topography is gentle.

- (2). The property was discovered in the 1950's but serious exploration work did not commence until 1966. Between 1966 and 1972, Tro-Buttle Exploration Ltd. and Dominic Lake Mining Ltd. carried out an extensive programme of exploration which included geological, geochemical and geophysical surveys, road building, trenching and approximately 3,500 feet of shallow drilling.

- (3). The property is underlain by volcanics and related sediments of the Triassic Nicola Group intruded by a younger (possibly Tertiary), zoned quartz monzonite stock. Geological and geophysical evidence suggests that the stock plunges steeply northeast. A northwesterly striking fault is posulated to be present east of the intrusive proper. An outlier of the Roper Lake Stock

occurs on the up-thrown side of the postulated fault.

(4). Molybdenum mineralization is widely distributed throughout the Roper Lake Stock, primarily as very fine grained clusters and streaks of molybdenite crystals in quartz veins, and to a lesser extent as disseminated grains and "paint" along dry fractures. Drilling has outlined a semi-circular annulus of higher molybdenum values along the northeastern side of the intrusive and in the adjacent country rock.

(5). The deposit has only been tested by shallow (maximum 200 feet) exploratory drilling. No detailed studies of alteration and/or mineral zoning or fracture density have been carried out, No induced polarization surveys have been done. The deposit is a typical porphyry with perhaps only a portion of the upper part of the "ore shell annulus" exposed. In the writer's opinion, this property is an excellent exploration bet with good possibilities for expanding grade and tonnage at depth.

PROPERTY

The property consists of one 20 unit
metric claim as follows:

<u>Claim Name</u>	<u>Record No.</u>	<u>Tag No.</u>	<u>Expiry Date</u>
Happy Days	169	02765	Dec. 30, 1976

The registered owner of this claim is
John R. Kerr, 295 Greenstone Drive, Kamloops, B. C.

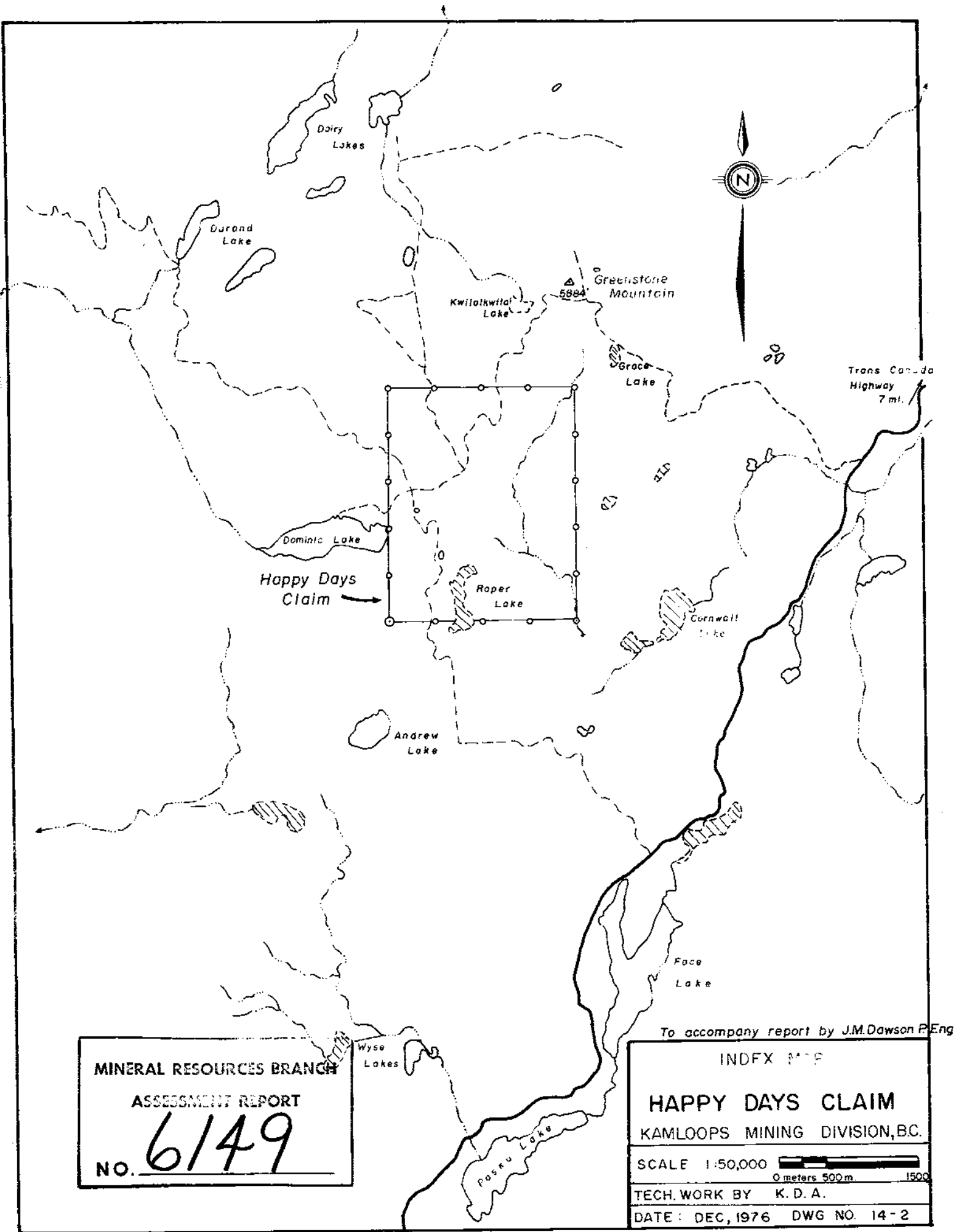
LOCATION AND ACCESS

The property is located in south-central British Columbia, about 26 kilometers west - southwest of the city of Kamloops. The approximate geographic center of the claim is at 50°35' north latitude and 120°39' west longitude.

The claim is accessible by road from Kamloops as follows: 18 kilometers west on Trans Canada Highway to Dominic Lake turnoff, 21.5 kilometers to the junction on Greenstone Mountain and thence about 5 kilometers to the vicinity of Dominic Lake and Roper Lake (see figure #14-2).

A number of drill site access roads and cat trails provide facile access to most parts of the claim.

The property is snow free from May through November and all roads can be negotiated by two-wheel drive vehicle.



MINERAL RESOURCES BRANCH
 ASSESSMENT REPORT
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To accompany report by J.M. Dawson P. Eng

INDEX MAP

HAPPY DAYS CLAIM
 KAMLOOPS MINING DIVISION, B.C.

SCALE 1:50,000 0 meters 500m 1500

TECH. WORK BY K. D. A.

DATE: DEC, 1976 DWG NO. 14-2

PHYSIOGRAPHY AND VEGETATION

The claim is located on parts of the gentle south slope of Greenstone Mountain. Topography is gently rolling and maximum relief is in the order of 400 feet (120 meters). Elevations vary from less than 4,900 feet A.S.L. (1,500 meters) in the south-east corner of the claim block to about 5,300 feet A.S.L. (1,600 meters) at the northern boundary.

The property is heavily forested with a mature growth of pine, spruce and fir and the only areas devoid of trees are roads and cat trenches. A mantle of glacial till is fairly evenly spread over the area and averages from 10 to 15 feet deep. Because of the lack of relief and the layer of till most bedrock is exposed in trenches and roadcuts.

HISTORY

The property was discovered in the 1950's although the first work recorded was in 1966. In that year Tro-Buttle Explorations carried out geochemical and magnetic surveys and did some trenching and road construction. In 1967, geological mapping, magnetometer and geochemical surveys were performed and 2,447 feet of diamond drilling in 15 holes and 1,005 feet of percussion drilling in 9 holes was carried out. In 1970 and 1971, further soil sampling and mapping was done. In 1972, mapping, geochemical and magnetometer surveys were carried out in areas peripheral to the known showings.

GEOLOGY

The Greenstone Mountain area lies midway between the calc-alkaline Guichon Creek Batholith and the alkaline Iron Mask Batholith. This region is underlain by rocks of the Nicola Group which are cut by three small stocks located on the slopes of Greenstone Mountain approximately equidistant from its summit: the Gilbert Lake Stock which is calc-alkaline and has associated copper and molybdenum mineralization; the Dairy Lakes Stock, an alkaline intrusion with copper mineralization only, and the Roper Lake Stock, a calc-alkaline body with associated porphyry-type molybdenum mineralization.

The subject property is underlain by volcanic and minor intercalated sedimentary rocks of the Nicola Group which are intruded by the Roper Lake Stock. Younger dikes of both acid and basic affinity cut the major rock types. Near the north end of the property, small satellite intrusions of the Dairy Lakes Stock cut the Nicola rocks.

The bulk of the Nicola rocks consist of medium to coarse grained, greenish gray, semi-porphyrific andesites and basalts. Typically, subhedral crystals of augite and/or hornblende up to 1/2 cm. long lie in a greenish-gray matrix of chlorite and feldspars. Some of these rocks may represent dikes or small hypabyssal intrusions from a nearby volcanic center. Near the north end of the claim, a number of trenches expose highly altered, sheared and silicified volcanics and (?) sediments; these rocks are so altered that original textures are hard to distinguish. Pyrite as disseminated grains and stringers is common.

In the vicinity of the Roper Lake Stock, the Nicola rocks are baked to a hard, flinty, hornfelsic rock and pyrite is abundant. One outcrop of volcanoclastic sediments was noted near the southwest corner of Roper Lake. Here, poorly sorted, coarse volcanic wacke with some interbeds of argillite outcrops near the intrusive contact. These rocks strike roughly east-west and dip steeply north.

The Roper Lake Stock is a north-northwesterly trending, elliptically-shaped intrusion approximately 1,600 meters long by about 800 meters wide; a small outlier of this body lying northeast of the main outcrop area of the stock may be on the up-thrown side of a northwesterly - trending fault.

The composition of the Roper Lake Stock approximates a quartz monzonite; however, primary textures vary throughout the body and in places later alteration further complicates the picture. A crude zoning was noted in the intrusive with a core of "quartz-eye porphyry" grading outward to a medium to fine grained quartz monzonite, slightly porphyritic in part.

The outer ring of the Roper Lake Stock is a pinkish - gray, largely equigranular, medium to fine grained quartz monzonite. Scattered phenocrysts of quartz and potash feldspar may be found in many outcrops. Potash feldspar phenocrysts are generally subhedral and may be as much as 2 cm. long.

The average rock is an equigranular mix of quartz, plagioclase and orthoclase which frequently is fine grained and sugary - resembling an aplite. Ferromagnesian minerals rarely constitute more than 10% of the rock volume and usually make up about 5%. They are primarily plates and books of very fine grained biotite. Minor fine grained, partly chloritized hornblende prisms are seen in a few instances. Small amounts of pyrite are usually found in most outcrops, either as discrete grains or as thin stringers along incipient fractures.

In addition to the above textures, minor segregations of pegmatitic material are occasionally seen - mostly of pinkish potash feldspar crystals up to several centimeters long.

Alteration produces a bleached, whitish, sugary, textured rock where unoxidized. Fine grained pyrite is usually disseminated throughout and a fine network of quartz veins is sometimes present. Where oxidized, this rock is so thoroughly coated by yellow-brown limonite that individual mineral grains are hard to distinguish. Minor sericite was noted at one place in a trench on the east side of Roper Lake.

Quartz veining of several generations is commonly seen throughout the stock - usually these veins are narrow (1 cm. or less) although veins as wide as 25 cm. are present. Minor vugs are noted in some quartz veins.

The occasional porphyritic nature of the outer phase of the stock becomes more pronounced towards the south central area where a striking porphyritic texture is seen. This rock consists of a whitish buff, very fine grained, quartz-feldspathic groundmass with smoky-gray, rounded to subhedral phenocrysts of quartz. These quartz "eyes" can be as large as 2 cm. in diameter but average about 5 mm. Occasional euhedral potash feldspar crystals as large as 3 cm. long are also present. This rock type also commonly has large, euhedral pyrite cubes (up to 1 cm. across) scattered through the groundmass like the quartz "eyes".

Two varieties of dikes cut both the intrusive and Nicola rocks. The more frequently occurring dikes are intermediate to basic in character. Typically they

are slightly porphyritic - small (2-3 mm.) phenocrysts of whitish feldspar in a very fine grained, greenish-gray groundmass. These dikes were noted in at least 6 places, but cannot be traced far because of lack of outcrop; they generally trend northerly and appear not to exceed 3-5 meters in thickness.

A variety of quartz feldspar porphyry dike was noted cutting both Nicola volcanics and the intrusive. This rock approximates the composition of the Roper Lake Stock and is probably a late stage phase; however, its texture is distinctive. Quartz and rounded feldspar phenocrysts lie in a fine grained groundmass of quartz, feldspar, and minor biotite. The biotite gives the rock a mesh - like texture as the flakes appear crowded into the groundmass by the growing phenocrysts. Again these dikes do not seem to be of significant size - mostly 2 to 5 meters in width. The only one on which an attitude could be obtained strikes north - northeast.

Not much is known of the structure of rocks underlying the subject property as the massive nature of the rocks and their limited outcropping precludes measurement of bedding, joints, quartz veins, fracture density, etc. The intrusive body itself is elongated in a north-northwesterly direction. On air photographs, several linears in north-westerly directions are present. In particular, the northwesterly trending draw lying between the intrusive proper and the small outlier to the east, may represent a fault with the outlier on the upthrown side. Magnetometer surveys performed on the property indicate a "low" which is more or less confined to the known outcrop area of the intrusive.

If the intrusive were a cylindrical, pipe-like body with a fairly steep plunge to the northeast, the small outlier might represent part of the mineralized annulus exposed because it is several hundred (?) meters higher than rocks on the southeast side of the postulated fault.

MINERALIZATION

Pyrite can be found in almost every outcrop on the property but is usually more abundant in the Nicola rocks, particularly in the thermally altered rocks adjacent to the Roper Lake Stock and in the northern part of the property. Pyrite is usually fine grained and occurs along fractures or as disseminated grains in Nicola rocks. Where quartz veins are abundant as in the outer shell of the Roper Lake Stock and the contact zones, pyrite frequently occurs as disseminated grains or small clusters within such veins. In the quartz-eye porphyry core of the stock, it commonly occurs as larger, discrete, euhedral crystals.

Molybdenite is the only other sulphide mineral seen on the property. It is widely distributed throughout the Roper Lake Stock (see figure #14-3) and also occurs in peripheral areas of the intruded Nicola rocks. It is invariably fine grained and is most frequently found in quartz veins but does occur as "paint" along dry fractures or as disseminated grains in

intrusive rock. Such disseminated grains are seldom more than a few centimeters away from a quartz vein.

Commonly, molybdenite is seen as small clumps of very fine grained crystals or "dust" scattered irregularly through narrow (1 cm. or less) quartz veins. The widest mineralized quartz vein is exposed in a trench in the contact zone about 200 meters north of Roper Lake. Here a 25 cm. wide vein in a dike of intrusive material is heavily mineralized with MoS_2 . The molybdenite is very fine grained and occurs primarily as numerous sheets of semi-massive material up to several millimeters wide. These "sheets" parallel the vein walls. A visual estimate of the grade of this material is that it is greater than 5% MoS_2 .

The drilling performed in 1967 was of an exploratory nature and the deepest hole was 207 feet. Drill targets were selected on the basis of geochemistry or visual evidence of mineralization in trenches. The drill core was not logged in detail; however, mineralization is similar to that noted on surface by the writer. When drill hole locations and assay values are

plotted and correlated with geology (see figure 14-4) a gross segregation of higher values is noted along the eastern and northeastern margins of the stock. Holes drilled in the quartz-eye porphyry core seem lower in MoS_2 content and those on the west side of the intrusive are lowest of any drilled. This semi-circular annulus of higher values when fitted to Sutherland-Brown's phallic model, suggests a north easterly plunging porphyry system.

ECONOMIC POTENTIAL

Available evidence suggests that the mineralization occurring on the subject property is typical of the higher levels of a typical Type I (Sutherland Brown) molybdenum porphyry system. The drilling done to date was of an exploratory nature and the deepest hole is 207 feet - most of the other holes are less than 150 feet deep. No detailed fracture density or alteration studies were ever carried out. No induced polarization survey was done to try to decipher the geometry of the intrusion and the sulphide and alteration zones at depth.

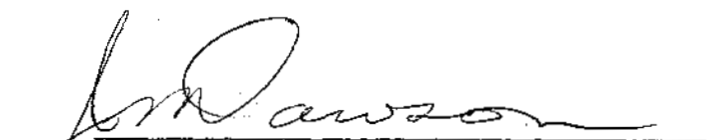
In the writer's opinion, this property presents an excellent exploration target for the discovery of economic reserves of molybdenum at depth and is ideally situated for a low cost, bulk mining operation.

Respectfully Submitted:

KERR, DAWSON & ASSOCIATES LTD.,



December 29th., 1976.
KAMLOOPS, B. C.


J. M. Dawson, P. Eng.,
GEOLOGIST

APPENDIX A

PERSONNEL

PERSONNEL

Field:

J. M. Dawson, P. Eng.	Geologist	June 2, 3, Oct. 17, 18, 19, 20, 21, 7 days
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Office:

J. M. Dawson, P. Eng.	Geologist	December 16, 17, 28, 29, 4 days
W. Gruenwald, B. Sc.	Geologist	December 28, 29, 2 days

APPENDIX B

STATEMENT OF EXPENDITURES

STATEMENT OF EXPENDITURES

(1). Labour:

J. M. Dawson, P. Eng. 11 days @ \$150.00/day	\$1,650.00	
W. Gruenwald, B. Sc., 2 days @ \$75.00/day	<u>150.00</u>	\$1,800.00

(2). Expenses and Disbursements:

(a). Base Map Preparation	\$ 55.40	
(b). Truck Rental		
6 days @ \$15.00/day	\$90.00	
310 mi. @ \$0.15/mile	<u>46.50</u>	136.50
(c). Cost of acquisition of Private data from G. Dirom's files	63.45	
(d). Typing, xerox, mylar, sepias, blueprints, maps, etc.	<u>57.30</u>	<u>312.65</u>
TOTAL PROGRAMME COSTS -----		<u><u>\$2,112.65</u></u>

APPENDIX C

AFFIDAVIT IN SUPPORT OF STATEMENT OF EXPENDITURES

C A N A D A) IN THE MATTER OF the Statement
Province of British Columbia) of Expenditures for Geological
TO WIT:) Exploration of the Happy Days
claim in the Kamloops Mining
Division.

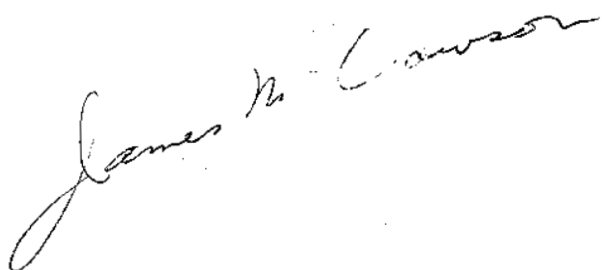
I, JAMES M. DAWSON, Geologist of 1523 Robinson Crescent, in the City of Kamloops, in the Province of British Columbia,

DO SOLEMNLY DECLARE:

- (1). THAT the geological investigation of the Happy Days claim was carried out by myself.
- (2). THAT the Statement of Expenditures set out in Appendix C of my report entitled "Geological Report on the Happy Days claim" dated June 2nd. to December 29th., 1976, truly represents the amounts expended on geological investigation of the said claims.

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 Kamloops in the)
Province of British Columbia,)
this 29th. day of December,)
A. D. 1976.)



A commissioner for taking Affidavits for British Columbia

*Commissioner for taking Affidavits
within British Columbia*

APPENDIX D

REFERENCES.

REFERENCES

- Cockfield, W. E. (1948): - Geology and Mineral Deposits of Nicola Map Area; GSC Memoir #249.
- Guardia, F.J.L. (1971): - Report on 1971 Geochemical Survey, Dominic Lake Group; Private Report to Tro-Buttle Exploration.
- Dirom, G.A. (1967): - Progress Report on Diamond Drilling on the Dominic Lake claims; Private Report to Dominic Lake Mining Company.
- Dirom, G.A. (1967): - Drill logs and Assay Results on Drilling on Dominic Lake claims.
- Annual Reports of B. C. Minister of Mines, 1966, 1967, 1968, 1971, 1972.
- Sutherland Brown, A. (1976): - Morphology and Classification of Porphyry Deposits in the Cordillera; in CIMM Special Volume #15, pp.44-51.

APPENDIX E

WRITER'S CERTIFICATE

JAMES M. DAWSON, P.ENG.
GEOLOGIST

9 - 219 VICTORIA STREET
KAMLOOPS, B.C.

PHONE (604) 374-8427

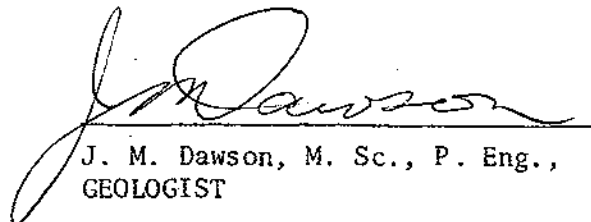
CERTIFICATE

I, JAMES M. DAWSON OF KAMLOOPS, B. C. HEREBY CERTIFY THAT:

- (1). I am a geologist residing at 1523 Robinson Crescent, Kamloops, B. C., and employed by Kerr, Dawson and Associates Ltd. of Suite #1 - 219 Victoria Street, Kamloops, B. C.
- (2). I am a graduate of the Memorial University of Newfoundland - B. Sc. (1960), M. Sc. (1963), a fellow of the Geological Association of Canada and a Member of the Association of Professional Engineers of B. C. I have practised my profession for 13 years.
- (3). I am the author of this report which is based on a geological mapping programme carried out by myself as well as a perusal of various private and public reports.



KERR, DAWSON & ASSOCIATES LTD.,


J. M. Dawson, M. Sc., P. Eng.,
GEOLOGIST

December 29th., 1976.
KAMLOOPS, B. C.



LEGEND

- 2 ROPER LAKE STOCK
- 1 NICOLA VOLCANICS
- Approximate boundary of Roper Lake Stock
- Approximate boundary of Geochemical Soil Anomaly (Values > 15 ppm. Mo.)
- P.H. Percussion Drill Hole; Assay values as % total Mo
- D.D.H. Diamond Drill Hole; Assay values as % MoS₂

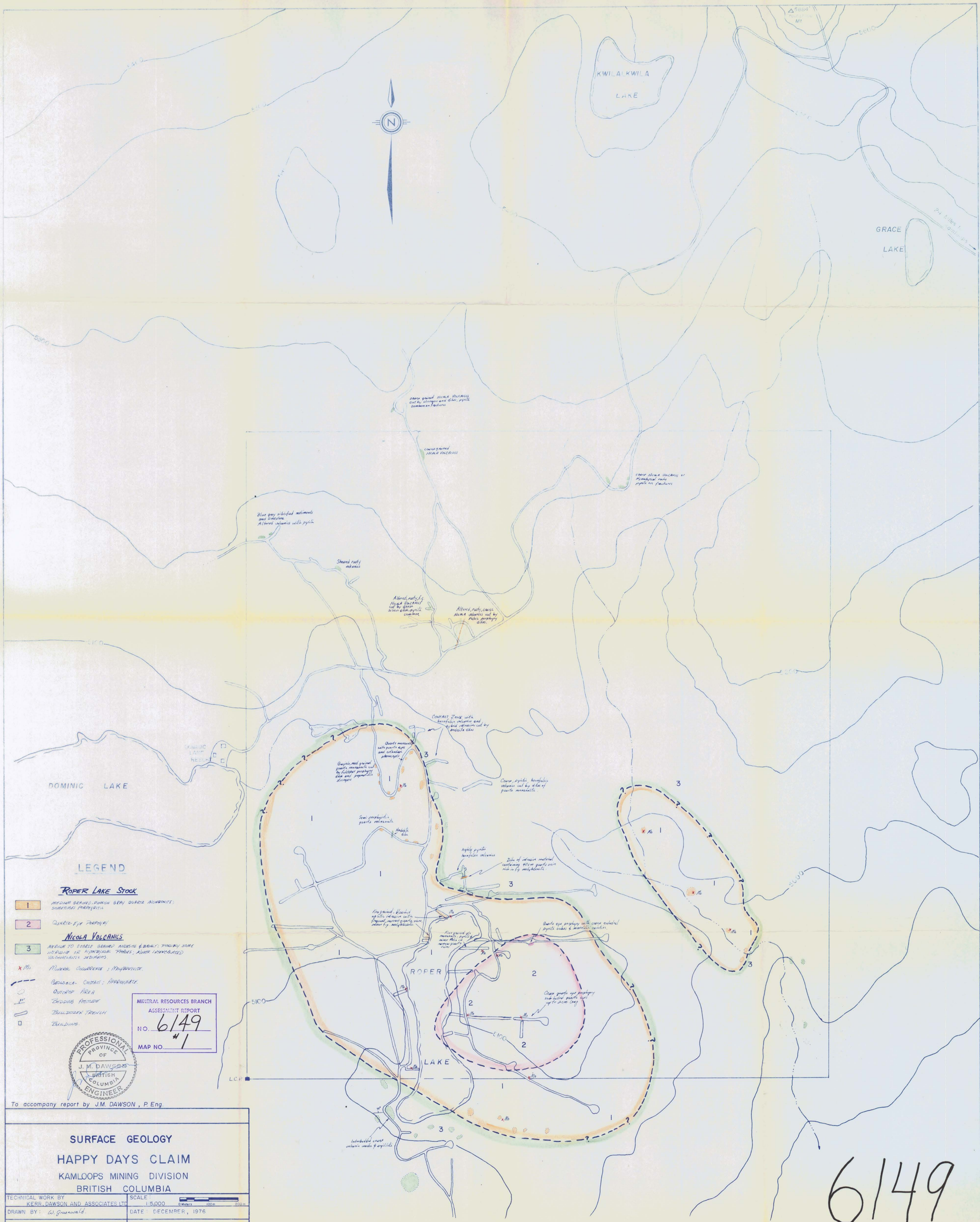


MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
NO. **6149**
#2
MAP NO. **2**

To accompany report by J.M. DAWSON, P. Eng.

PLAN SHOWING PREVIOUS EXPLORATION	
HAPPY DAYS CLAIM	
KAMLOOPS MINING DIVISION	
BRITISH COLUMBIA	
TECHNICAL WORK BY KERR, DAWSON AND ASSOCIATES LTD.	SCALE 1:5,000
DRAWN BY: W. Guenzel	DATE: DECEMBER, 1976
APPROVED BY: J.M. DAWSON P. Eng.	DRAWING NO. 14-4

6149



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