

GEOLOGY OF THE HCJ CLAIMS
NEAR
GOLDEN, BRITISH COLUMBIA
Golden Mining Division

Geographic Coordinates
51°16' N
116°54½' W
NTS Sheet 82N/7W

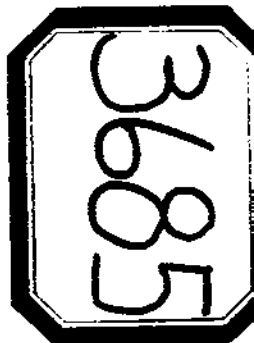
82N/7W

by
L. B. HALFERDAHL, Ph.D., P. Eng.

June 20, 1972

Work Conducted June 6-9, 1972 for Mr. D. A. Campbell,
Holder of the Claims

L. B. Halferdahl & Associates Ltd.,
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Edmonton, Alberta
T5J 1T7



3685

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Department of
Mines and Petroleum Resources
ASSESSMENT REPORT

NO. 3685 MAP _____

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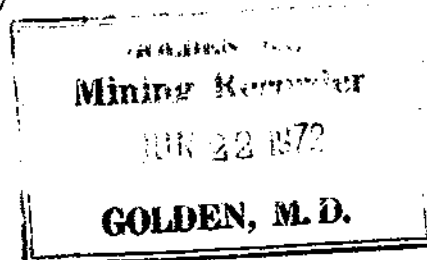


TABLE OF CONTENTS

	<u>Page</u>
Introduction	1
Summary and Recommendations	1
Property	2
Geographic Setting	2
Previous Work on the Wonah Quartzite	3
Regional Geology	4
Geology of the HCJ Claims	4
Conclusions	6
References	7
Certificate	8
Appendix: Field Crew	9

LIST OF ILLUSTRATIONS

#1 Figure 1 : Location Map	At End
#2 Figure 2 : Geology	At End

INTRODUCTION

The three HCJ mineral claims held by Mr. D. A. Campbell in the Beaverfoot Range southeast of Golden, British Columbia were mapped geologically in June 1972 at a scale of 1 inch = 200 feet. Mapping was carried out by a geologist and an assistant by chain and compass and pace and compass methods. Accommodation was obtained in Golden and transportation was provided by the geologist's station wagon.

This report presents the geological observations made on the ^{Mt. Wilson} Wonah Quartzite, the only bedrock exposed on the claims. The term Wonah Quartzite is retained herein as a stratigraphic term for use along the Rocky Mountain Trench even though the name Mt. Wilson Formation was previously applied to equivalent rocks farther north in the Main Ranges of the Rocky Mountains.

SUMMARY AND RECOMMENDATIONS

The three HCJ claims about 3 miles southeast of Golden, British Columbia are easily reached from Highway 95 on gravel and unimproved logging roads.

Work on the utilization of the Wonah Quartzite as a source of silica began in 1959 and has continued intermittently since, but commercial production has not been attained. Analyses show about 98 per cent SiO_2 and 0.02 to 0.12 per cent Fe_2O_3 .

The Wonah Quartzite on the east side of the Rocky Mountain Trench is Ordovician in age and is underlain by the Glenogle shale and overlain by Beaverfoot-Brisco limestone.

On the HCJ claims the Wonah Quartzite forms an almost continuous cliff up to a few hundred feet high. It consists of well cemented, very white to grey material almost free from impurities to more friable types, and brownish to rusty weathering material in which iron-bearing minerals can be observed. Bedding is not evident everywhere but measurements indicate that the beds are generally

parallel to the cliff and dip into it. Hence production by quarrying will require the finding of pure enough quartzite extending across the bedding for as much or more than 50 feet.

It is recommended that the Wonah Quartzite be examined, and sampled to find the highest quality material in the most favorable location provided markets can be obtained for any or all of lump silica for ferro-silicon, silica sand, stucco dash.

PROPERTY

The property mapped consists of three mineral claims on the southwest slope of the Beaverfoot Range about 3 miles southeast of Golden in the Golden Mining Division of British Columbia. The posts for these claims have been checked; they have been staked in accord with the Mineral Act of British Columbia.

<u>Claim</u>	<u>Record Number</u>	<u>Record Date</u>	<u>Expiry Date</u>
HCJ 1	15735	June 24, 1970	June 24, 1972
HCJ 2	15736	June 24, 1970	June 24, 1972
HCJ 3	15737	June 24, 1970	June 24, 1972

Assessment work to be filed for these claims from the mapping presented herewith will extend the expiry dates above.

GEOGRAPHIC SETTING

The HCJ claims on the southwest slope of the Beaverfoot Range about 3 miles southeast of Golden on the east side of the Rocky Mountain Trench are about 130 miles west of Calgary and about 300 miles east of Vancouver. Golden is on the mainline of the Canadian Pacific Railway and the Trans Canada Highway.

From Golden the HCJ claims are reached by travelling about 3 miles southeast on Highway 95 and then turning east up the Alberg Road. At the

fork stay on the north side of Stacey Creek and continue up the mountainside on an unimproved road passable for a late model car with reasonable clearance, directly across the power line to reach the road which is close to the location line of the claims.

The claims are at elevations ranging from about 3500 to 4000 feet with some of the slopes being precipitous. Most of the larger trees have been removed by logging; the slopes are mostly bare or covered with scrub.

A powerline passes less than $\frac{1}{4}$ mile from the claims. Sufficient water for quarrying is available in Stacey Creek, although a water licence posted on the creek indicates that part of its flow has been pre-empted.

PREVIOUS WORK ON THE WONAH QUARTZITE

Previous work on utilization of the Wonah Quartzite for industrial purposes is summarized in several of the annual reports of the British Columbia Minister of Mines given in the references. Work began in 1959 on Moberly Mountain about 5 miles north of Golden and has continued intermittently since as far south as Gibraltar Rock on the Kootenay River. Attempts have been made to produce sand of flint glass quality from the more friable parts of the Wonah Quartzite. Several thousand tons have been shipped for various tests including lump quartzite for the manufacture of ferro-silicon. There has been no production. Analyses show the following ranges in chemical composition: SiO_2 97.94 to 98.85 per cent, Al_2O_3 0.47 to 1.25 per cent, and Fe_2O_3 0.02 to 0.12 per cent. Petrographic examination of samples from one place shows the quartzite to consist almost entirely of rounded quartz grains made angular by overgrowths with very minor magnetite and mica.

REGIONAL GEOLOGY

The mountains on the east side of the Rocky Mountain Trench near Golden, British Columbia are composed of Lower Paleozoic sedimentary rocks.

Middle Devonian	Harrogate	Limestone, shale, minor quartzite
Ordovician and Silurian	Beaverfoot-Brisco	Limestone and dolomitic limestone
Ordovician	Wonah	Quartzite
	Glenogle	Black Shale
Cambrian and Ordovician	Goodsir	Shale and limestone
	McKay	Limestone, shale, conglomerate

The structures in these rocks consist of folds with northwesterly trending axes, and faults some of which are roughly parallel to the fold axes and other cross faults.

GEOLOGY OF THE HCJ CLAIMS

The only bedrock exposed on the claims is quartzite of the Ordovician Wonah Formation. Being more resistant to erosion than the underlying shale of the Glenogle Formation and the overlying limestone and dolomite of the Beaverfoot-Brisco Formation, it forms a continuous northwesterly trending cliff up to a few hundred feet high extending from the south end of HCJ 3 almost to the north end of HCJ 1 except where cut by the valley of Stacey Creek. Considerable amounts of quartzite talus are present in places at the bottom of the cliff. Although no exposures of the underlying shale of the Glenogle Formation were located, fragments of it were found here and there in the drift. These observations, however, do not permit the contact to be located in Fig. 2 although it probably is only a short distance southwest of the base of the cliff.

No stratigraphic sections of the quartzite were measured because of the inaccessibility of the cliffs, but at least a few hundred feet of the Wonah Quartzite are present on the claims. About five miles southeast on Horse Creek, the Wonah is reported to be about 1500 feet thick (Evans 1933). On the HCJ claims the Wonah Quartzite consists of bands of fine grained, white to light grey, well cemented glassy quartz grains, medium grained less well cemented white sandstone, alternating layers of quartzite from $\frac{1}{4}$ to 2 feet thick whose weathered surfaces are grey and greyish buff, and rusty weathering quartzite. Fresh specimens of the last contain disseminated small black grains, but in much of the rest no impurities were noted with a 20x hand lens. In a few places cross bedding was observed. Where visible the beds range in thickness from $\frac{1}{2}$ to 2 feet, but in most places the attitude of the beds cannot be discerned in the massive quartzite. One joint with a mirror-like surface was measured on HCJ 2.

The northwest end of the cliff on the claims is marked by a northeasterly trending bluff. A few hundred feet up the mountainside to the northeast across the draw at the base of the bluff, the quartzite cliffs continue to the northwest. Although no other evidence was obtained for support, it is possible that this offset is due to a cross fault.

On the claims the beds strike 120° to 140° and dip from 60° to 75° NE. This strike is generally parallel to the trend of the cliff with the quartzite beds dipping into it. Therefore, mining of individual layers up to 10 or 20 feet thick would be by underground methods. Observations of weathered surfaces suggest that thicknesses of 100 feet or more may be free enough of impurities to constitute high grade silica. If so, quartzite could be quarried from the face of the cliff.

CONCLUSIONS

On and adjacent to the HCJ claims southeast of Golden, the Wonah Quartzite is more than 1000 feet thick. Although it dips into the side of the mountain, observations on weathered surfaces suggest that thicknesses of 100 feet or more could be quarried from the faces of cliffs. Trenching and sampling of unweathered quartzite or drilling is required to confirm this possibility.

Provided markets can be obtained, further evaluation of the Wonah Quartzite as a source of high grade silica on the HCJ claims and beyond them is warranted.

Respectfully submitted,

L. B. Halferdahl

Edmonton, Alberta
June 20, 1972

L. B. Halferdahl, Ph.D., P. Eng.



Expiry Date: August 5, 1972

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CERTIFICATE

I, Laurence B. Halferdahl, with business and residence addresses in Edmonton, Alberta, do hereby certify that

1. I am a registered Professional Geologist in the Province of Alberta and a licensed Professional Engineer in the Province of British Columbia.
2. I am a graduate of Queen's University, Kingston, Ontario (B.Sc. in 1952 and M.Sc. in 1954 in Geological Sciences in the Faculty of Applied Science) and of The Johns Hopkins University, Baltimore, Maryland (Ph.D. in 1959 in the Department of Geology).
3. From 1957 to 1969 I was on the staff of the Research Council of Alberta as a mineralogist and geologist where I was in charge of the mineralogy laboratory and conducted various field and laboratory investigations.
4. Since 1969 I have been a consulting geological engineer conducting and directing property examinations and evaluations, and exploration programs for metallic minerals, industrial minerals, and coal.
5. The data in this report were obtained from published reports and from my work on the property June 6 to 9, 1972.

L. B. Halferdahl

Edmonton, Alberta
June 20, 1972

L. B. Halferdahl, Ph.D., P. Eng.



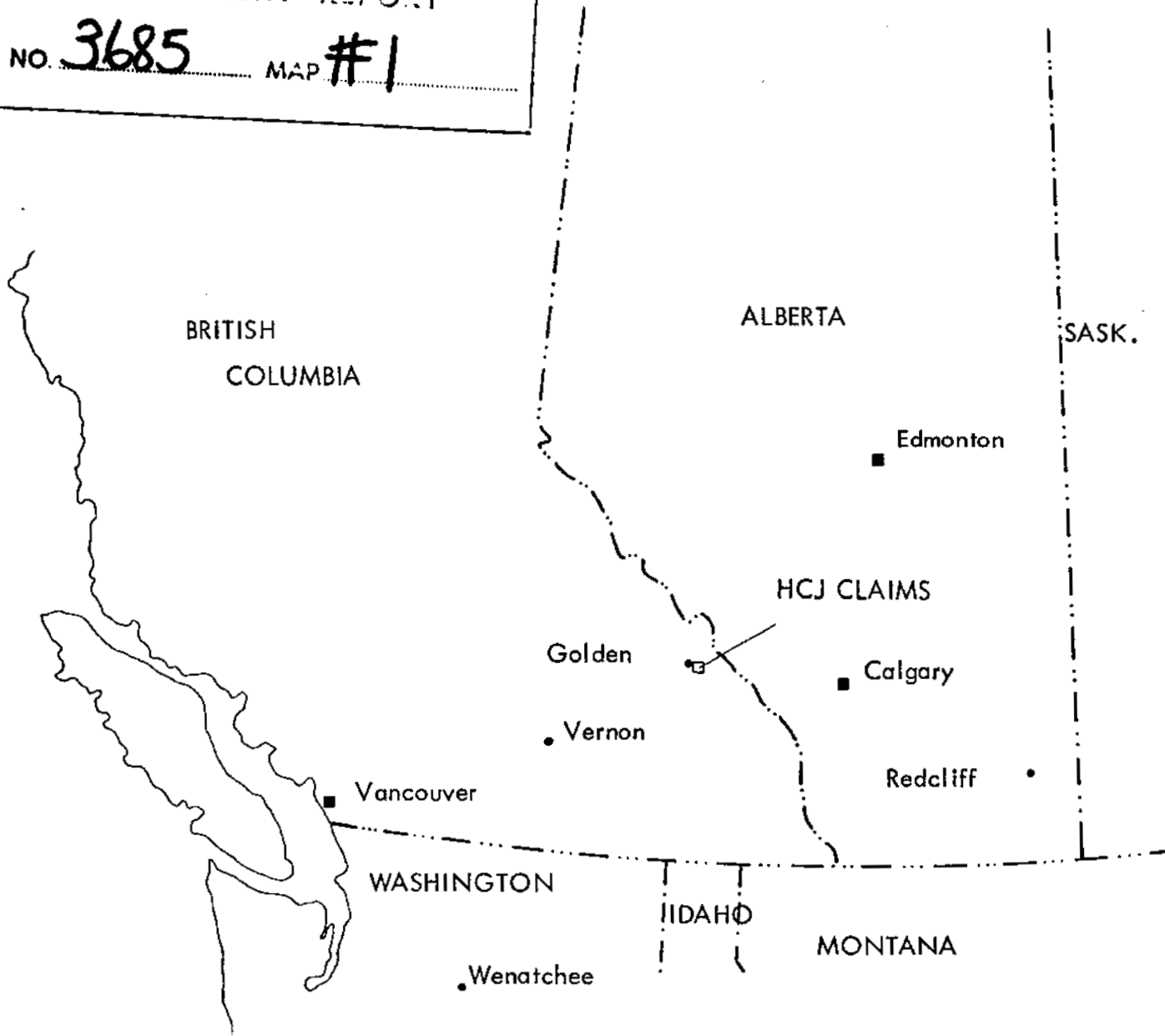
Expiry Date: August 5, 1972

APPENDIX: FIELD CREW

<u>Name</u>	<u>Position</u>	<u>Days Mapping</u>
L. Halferdahl	Geologist	June 6, 8, 9, 1972
J. Lee	Assistant	June 6, 8, 1972

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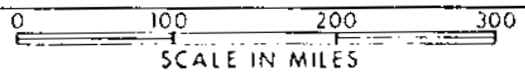
NO. **3685** MAP **#1**



Expiry Date: August 5, 1972

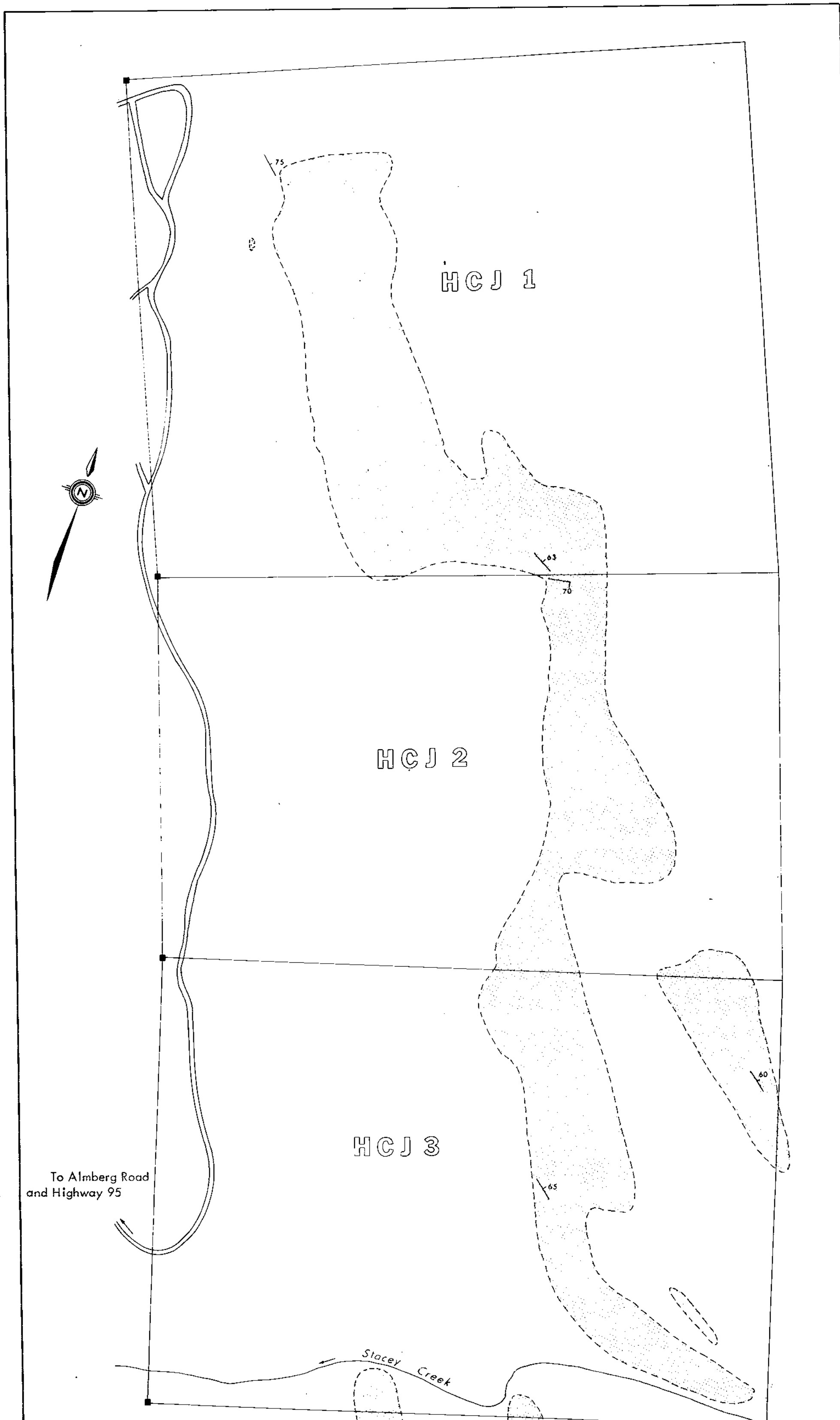
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Fig. 1 Location Map
STACEY CREEK AREA

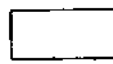
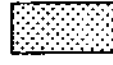


LBH

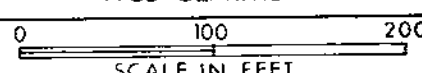
June 1972



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-  Covered
-  Wonah Quartzite (Ordovician)
- Strike and dip of bedding / 75
- Strike and dip of joint / 70
- Outcrop boundary - - - - -
- Claim post ■
- Claim boundary ————
- Claim name and number HCJ2
- Road = = = = =



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Fig. 2 Geology HCJ CLAIMS	
 SCALE IN FEET	
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NO. 3685 MAP #2