

665

GEOPHYSICAL - GEOLOGICAL REPORT

on the

WANOKANA 1 - 6 CLAIMS

located

TEN MILES SOUTHWEST OF PORT HARDY

50° 127° N.W.

Nanaimo Mining Division

by

**G.A. Noel (P. Eng.), Geologist
Utah Construction & Mining Co.**

August 8 - August 15, 1965

T A B L E O F C O N T E N T S

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I L L U S T R A T I O N S

Plate 1	Index Map	1 in = 30 miles	At front
Plate 2	Claim Map	1:50,000	" "
Plate 3	Topography and Geology	1 in. = 200 ft.	Rear pocket
Plate 4	Magnetic Contour Map	1 in. = 200 ft.	Rear pocket

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT

NO. 665 MAP

S U M M A R Y

The six-claim Wanokana group was staked for Utah Construction & Mining Co. in September 1961 to cover an aeromagnetic anomaly. A detailed magnetometer survey was conducted over this property from August 8 to 15, 1965 and the outcrop geology was mapped. Two small magnetic anomalies were outlined. The property is underlain by upper Triassic flows of the Karmutsen group and these are intruded by a tongue of quartz diorite near the center of the claims. The magnetic anomalies are believed due to concentrations of magnetite in the flows and surface trenching is recommended.

I N T R O D U C T I O N

The Wanokana 1-6 claims were staked by William Sevrens as agent for Utah Construction & Mining Co. on September 6 and 7, 1961 to cover a magnetic anomaly south of Kains Lake, which was originally located in an airborne magnetometer survey conducted over the north end of Vancouver Island by Utah Construction & Mining Co. in the fall of 1960. The field investigation of the resulting aeromagnetic anomalies was done during the summer of 1961 by a party consisting of two geologists and two assistants. Pace and compass traverses were made over the anomalies and Sharpe D-2 dip needle or Jalander magnetometer readings were taken systematically along these traverses. A more detailed magnetometer survey of the Wanokana claims was conducted by T.S. Samoil and C. Banninger from August 8 to August 15, 1965. In addition a geological outcrop map of the claims was completed.

The Wanokana claims are in the Nanaimo Mining Division, about ten miles southwest of Port Hardy, B.C., near the head of the east fork of Wanokana Creek. The map location of the claims is $50^{\circ} 40'$ North, $127^{\circ} 40'$ West. The terrain is generally low and rolling with numerous swampy meadows and, on the claims, elevations range from 1300 to 1700 feet. The property is reached by following the B.C. Forest Service's Nahwitti Forest Development road for 12 miles west of Port Hardy to Kains Lake; then following O'Connor Logging Co's logging road south of Kains Lake for about $1\frac{1}{2}$ miles to the head of Dick Booth Creek. From here, a rough trail leads about two miles southward to the property.

F I E L D W O R K

The 1965 fieldwork consisted of a ground magnetometer survey of the claims using a Jalander magnetometer, serial number 5779. This instrument is a direct reading fluxgate magnetometer which measures the vertical component of the earth's magnetic field. The maximum sensitivity of the instrument is about 10 gammas but accurate repeatability is probably limited to about 50 gammas. The instrument is manufactured in Finland and has a range of 0 to 250,000 gammas in five scales.

The location line between Wanokana 1 and 2, and Wanokana 3 and 4 was used as a baseline for the magnetometer survey. This baseline trends roughly $S 60^{\circ} E$ from the initial posts Wanokana 1 and 2, which was used as an origin for 3380 feet to the final posts of Wanokana 3 and 4. Magnetometer and altimeter readings were taken at 100-foot intervals along this baseline. Traverse lines were run $N 30^{\circ} E$ and $S 30^{\circ} W$ from the baseline at the even stations; that is, at 200-foot intervals.

In addition, several fill-in lines were run between these traverse lines, which generally extended 1500 feet northeast and southwest of the baseline. In all, a total of 34,900 feet of line was laid out and traversed. The base station, initial posts Wanokana 1 and 2, showed an elevation by altimeter of 1400 feet and a magnetometer reading of -550 gammas. The survey was then adjusted to correlate with this base station.

The traverses were laid out by compass and tape and were tied to the baseline by running out and back on successive lines. However the northwest and southeast ends of these closed traverses have not been tied.

Geologic outcrops were mapped along the traverse lines and along Wanokana creek. It is estimated that the total area of outcrop represents less than two percent of the total area of the claims.

GENERAL GEOLOGY

The north end of Vancouver Island is underlain by upper Triassic sedimentary and volcanic rocks, with a few areas of Cretaceous sediments, and a number of small Jurassic plutons. The upper Triassic rocks are divided into three main units, the oldest or Karmutsen group being overlain successively by the Quatsino formation and the Bonanza group.

The Karmutsen group consists of a thick sequence of volcanics, mainly basic flows, with minor pyroclastics and thin lenses of limestone. The lower part is composed of thick flows of fine grained red basalt with minor flows of dark green andesite. The upper part has a higher proportion of vesicular andesite with poorly defined beds of basic pyroclastics.

The Quatsino formation in this area is represented by several relatively thin and lenticular beds of limestone. At the lower contact, the limestone is interlayered with the flows of the Karmutsen group and at the upper contact with argillites, cherts and volcanics of the Bonanza group.

The Bonanza group represents the uppermost Triassic and consists of sedimentary and volcanic rocks. The lower section is mainly sediments which are overlain by pyroclastics and a thick section of basic flows.

These Triassic rocks apparently form a broad syncline north of Holberg Inlet with limestone well exposed along each limb. The Bonanza rocks occupy the central part of the syncline and rocks of the Karmutsen group underlie the limestone to the north. The syncline trends east-west and is up to five miles wide.

The intrusive rocks of the northern part of Vancouver Island are considered to be of Jurassic age, but may include some Cenozoic intrusives. The larger intrusive bodies are exposed as a series of stocks along a roughly west-northwest arc, extending from the east end of Rupert Inlet through

Quatse and Nahwitti Lakes to Shuttleworth Bight. These intrusives range from granite to quartz diorite in composition and are accompanied by numerous acidic and basic dikes.

D E T A I L E D G E O L O G Y

The Wanokana claims are underlain by andesite and basalt flows of the Karmutsen group and these volcanic rocks near the headwaters of Wanokana Creek are intruded by a tongue of quartz diorite.

The flows are amygdaloidal andesite and basalt with quartz, calcite and potash feldspar amygdules. These flows in places contain considerable disseminated pyrite with a few specks of chalcopyrite. In general they exhibit a fair to moderate attraction to the hand magnet. About two miles north of the claims along the south side of Kains Lake these flows trend west-northwest and dip southwesterly at low angles.

The intrusive is generally a medium-grained grey hornblende-biotite quartz diorite, which in places contains disseminated pyrite and a few specks of chalcopyrite. The quartz diorite also contains finely disseminated magnetite and in hand specimens, it exhibits fair magnetic attraction. This intrusive may be an off-shoot of the Quatse Lake quartz diorite which outcrops about two miles to the southeast.

The inferred position of the Karmutsen-Bonanza contact, with or without intervening limestone, is inferred to be several thousand feet southwest of the southwest edge of the Wanokana group. This contact is believed to extend in a flat arc trending about N 60° W from its defined position about one mile north of the west end of Quatse Lake to its defined position along the Nahwitti River east of Nahwitti Lake.

There is no evidence of limestone, tactite alteration or magnetite either in outcrop or float on the claims. However limestone does occur in the Karmutsen group north and south of Kains Lake and north of Quatse Lake. Although there is very little outcrop on the claims bedrock is believed to be within ten feet of the surface in most cases.

G E O P H Y S I C A L R E S U L T S

The magnetic contour map (Plate 4) shows a rather confused pattern with two small magnetic highs at diagonally opposite extremities of the four claims covered in this survey. (Wanokana Nos. 1, 2, 3 and 4). The northeast high reaches 10,000 gammas and shows a 7000-gamma amplitude above background. Fairly deep magnetic lows lie to the south, west and north; to the east, the magnetics were not done at this time. This magnetic anomaly is roughly 800 feet long (northeast-southwest) by 200 feet wide.

About 3000 feet to the southwest a smaller and more intense magnetic high has been outlined. This anomaly shows a peak value of 16,600 gammas, about 15,000 gammas above background and has deep lows to the south and north. This anomaly is 400 feet long (northwest-southeast) by 100 feet wide.

A number of small magnetic anomalies (below 6000 gammas peak value) are scattered through the four claims. This pattern suggests a volcanic assemblage of varying magnetic susceptibilities.

C O N C L U S I O N S

Only two significant magnetic anomalies have been outlined on the Wanokana claims in the 1965 ground magnetometer survey. These anomalies may be due to concentrations of magnetite probably in volcanic flows. These areas should be checked by surface trenching for iron or copper mineralization.

The magnetic low along Wanokana Creek in the northwest corner of Wanokana No. 4 and the northeast corner of Wanokana No. 2 is considered an expression of the quartz diorite intrusive.

J. R. Noel

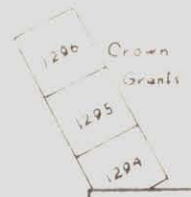
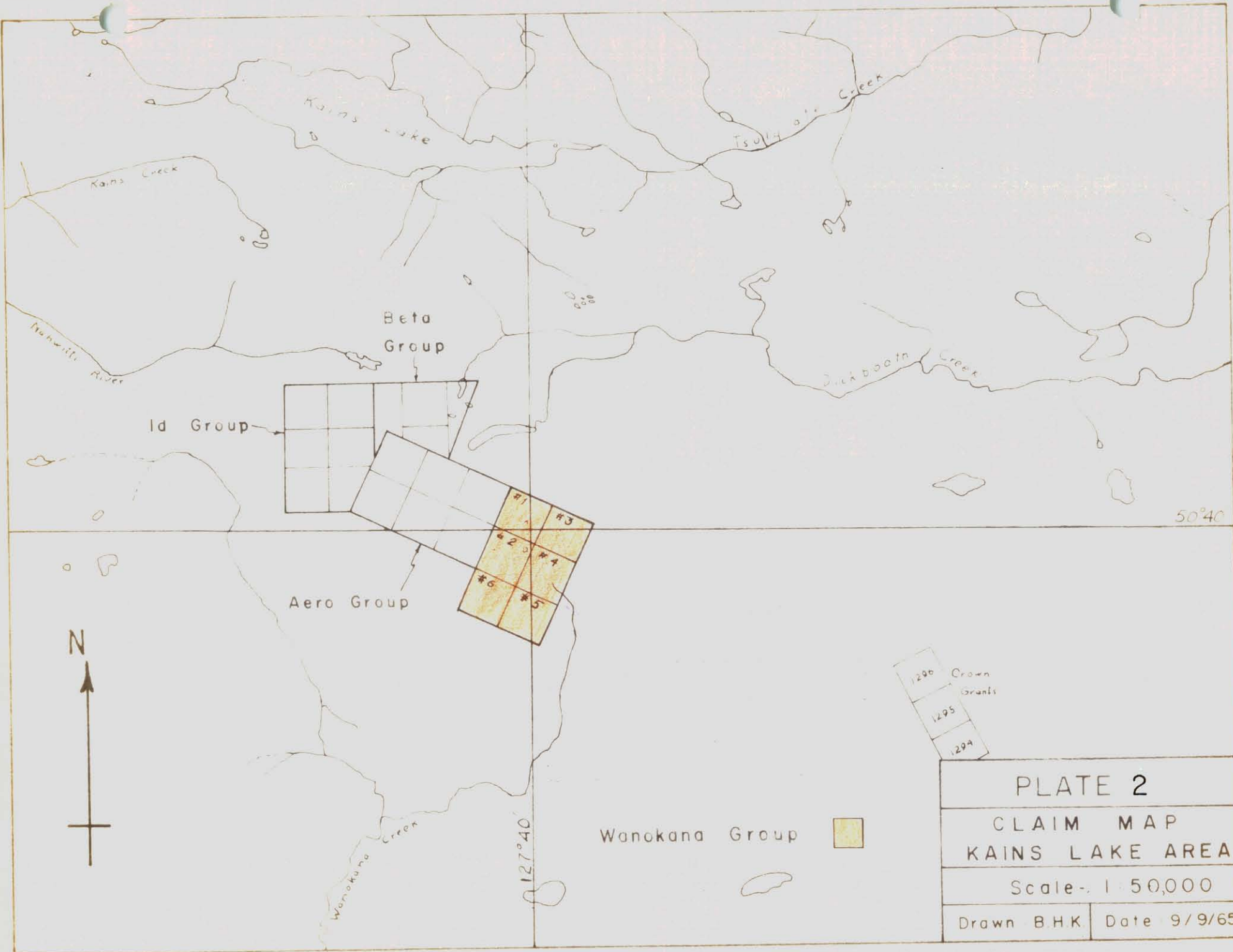


PLATE 2	
CLAIM MAP	
KAINS LAKE AREA	
Scale - 1:50,000	
Drawn B.H.K.	Date 9/9/65

Wanokana Group



SCALE: 1 INCH = 30 MILES

INDEX MAP

WANOKANA GROUP
KAINS LAKE AREA, V.I.

PLATE I

A P P E N D I X A
STATEMENT OF QUALIFICATIONS

S T A T E M E N T O F Q U A L I F I C A T I O N S

The field work for this report was done by G.A. Noel, T.S. Samoil and C.J. Banninger whose qualifications are outlined below:

1. G.A. Noel, P. Eng., geologist for Utah Construction & Mining Co., Vancouver, B.C.; completed B.A. Sc. (Geology) at University of B.C. in 1950 and M.A. Sc. (Geology) at University of Toronto in 1951; employed by Kennco Explorations (Canada) Limited from May 1951 through March 1956 as a field geologist in B.C. and Yukon Territory under the supervision of J.S. Scott; employed by Utah Construction & Mining Co. from March 1956 to the present in B.C. and Alaska mineral exploration as a project geologist, acting district geologist and senior project geologist under L.C. Clark, W. Bourret, H.G. Peacock and E.S. Rugg.
2. T.S. Samoil, survey-draftsman for Utah Construction & Mining Co., Vancouver, B.C.; completed two years of university (University of Alberta and U.B.C.); 1951-1952, employed as instrumentman on road surveys by Alberta Dept. of Highways; 1952-1953 employed as instrumentman on highway construction by Hislop Construction Co. Ltd.; 1953-1954 employed as instrumentman on quantity surveys at Kitimat by N.W. Hullah Construction Co. Ltd; 1956-present employed by Utah Construction & Mining Co. as a field-technician-draftsman on exploration projects in B.C. and Alaska. This latter work has included responsibility for all forms of topographic surveys, geochemical surveys, and such geophysical surveys as magnetometer, resistivity and induced polarization surveys.
3. C.J. Banninger, student assistant employed during 1965 field season by Utah Construction & Mining Co., Vancouver, B.C.; completed three years of University in honors geology at U.B.C.; 1963 field season, employed as student assistant by Southwest Potash Co.; 1964 field season, employed by Croydon Mines Ltd.

A P P E N D I X B
STATEMENT OF COSTS

S T A T E M E N T O F C O S T S

Salaries and Expenses

(Expenses @ \$10/ man-day)

G.A. Noel	5 days @ \$1160/month (3 days in field Aug.11-13 incl.) (2 days in office Sept. 8, 9 incl.)	\$ 223.00
T.S. Samoil	11 days @ \$555/month (8 days in field-Aug.8-14 incl.) (3 days in office Aug. 18-20 incl.)	\$ 315.00
C.J. Banninger	8 days @ \$425/month (8 days in field Aug.8-14)	\$ 193.00
Miscellaneous	(transportation, maps, secretarial)	<u>\$ 100.00</u>
	Total:	<u>\$ 831.00</u>



G.A. Noel, P. Engineer.

Canada

Province of British Columbia

To Wit:

In the Matter of

SUB-MINING RECORDER
RECEIVED
SEP 13 1965

M.R. # 82795 D. \$ 4.00
VANCOUVER

I, **Gerald A. Noel**, of #718-510 West Hastings St.,
Vancouver 2, B.C. in the Province of British Columbia.

Do Solemnly Declare that I am Project Geologist for Utah Construction & Mining Co. in the Province of British Columbia and that during the period August 8 through September 9, 1965 Utah Construction & Mining Co. paid salaries and expenses as follows, for work actually done on and for the Wanokana No's 1, 2, 3, 4, 5, and 6 claims located in the Nanaimo Mining Division. These claims have record numbers 15465, 15466, 15467, 15468, 15469, and 15470, and were recorded on September 12, 1961.

G.A. Noel was paid \$223.00 for 3 days fieldwork (Aug. 11- August 13, 1965) and 2 days office work (September 8 and 9, 1965) at the rate of \$1160.00 per month.

T.S. Samoil was paid \$315.00 for 8 days fieldwork (Aug. 8-Aug. 14, 1965) and 3 days office work (August 18-20, 1965) at the rate of \$555.00 per month.

C.J. Banninger was paid \$193.00 for 8 days fieldwork (August 8-August 14, 1965) at the rate of \$425.00 per month.
Field expenses amounted to \$10.00 per man-day or a total of \$190.00.

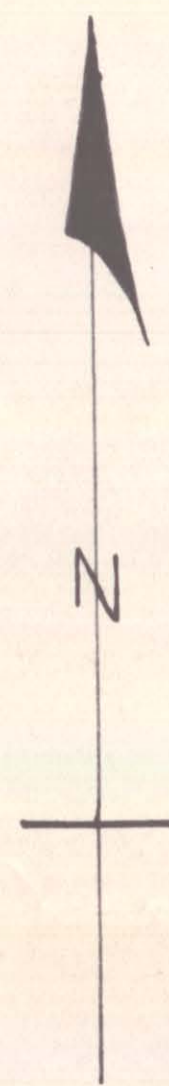
Miscellaneous expenses in the amount of \$100.00 were incurred for transportation, maps, and secretarial services.

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 13th day of
September A.D. 19 65.

Gerald A. Noel

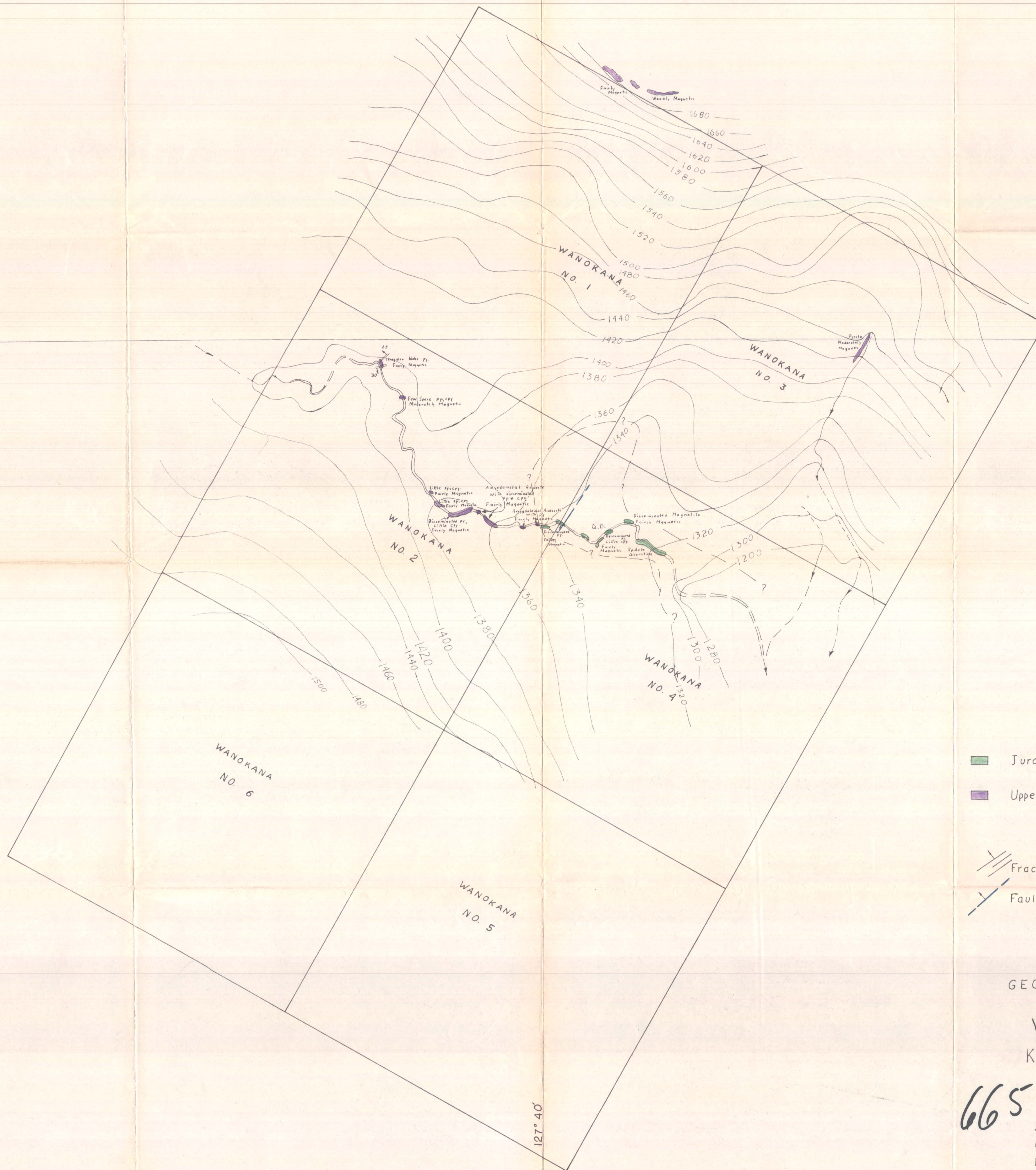
Julie Lusser
A Notary Public in and for the Province of British Columbia
A Commissioner for taking affidavits for British Columbia
SUB-MINING RECORDER



50° 40'

127° 40'

50° 40'



Department of
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LEGEND



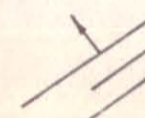

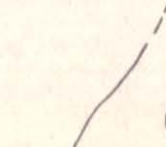

-  Jurassic Intrusives - Quartz Diorite
-  Upper Triassic - Karmutsen Group
Andesite and Basalt Flows
-  Fractures
-  Faults
-  Geologic Contact
-  Limit of Outcrop

PLATE 3

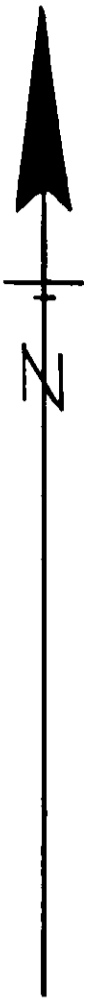
GEOLOGY AND TOPOGRAPHY

WANOKANA GROUP
KAINS LAKE AREA
VANCOUVER ISLAND

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Scale : 1 in. = 200 ft.
Contour Interval : 20 ft
Elevations by Altimeter

Arnold
P. Eng (B.C.)
Drawn - B.H.K.
Date 10/9/65



Department of
Mines and Petroleum Resources
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Contour Interval: 1000 ft or as indicated

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 PLATE 4
 MAGNETIC CONTOUR MAP
 WANOKANA GROUP
 KAINS LAKE AREA
 VANCOUVER ISLAND
 Drawn by: T.S.S.
 Date: Aug. 18, 1965
 Scale: 1 in. = 200 ft.
 92-L-12