4681

REPORT ON THE GEOLOGY AND GEOCHEMISTRY

OF THE

MET, SAN AND TAN GROUPS

(HUMP 1, 2, 3, 4, 5, 6, 7, 8,
21, 22, 29, 85, 86, 93, 94)

(PUT 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11,
12, 13, 14, 15, 16, 17, 18, 19, 20, 23,
24, 25, 26, 27, 28, 29, 30, 34, 36, 38)

LIARD MINING DIVISION

FOUR MILES NORTHWEST OF METSANTAN LAKE

57°28'N, 127°25'W

FOR

SULLIVAN AND RODGERS

BY

T. RODGERS, P. ENG.

T. C. SCOTT

JULY 18 TO AUGUST 17, 1973

T. Rodgers
5'1 KI -73

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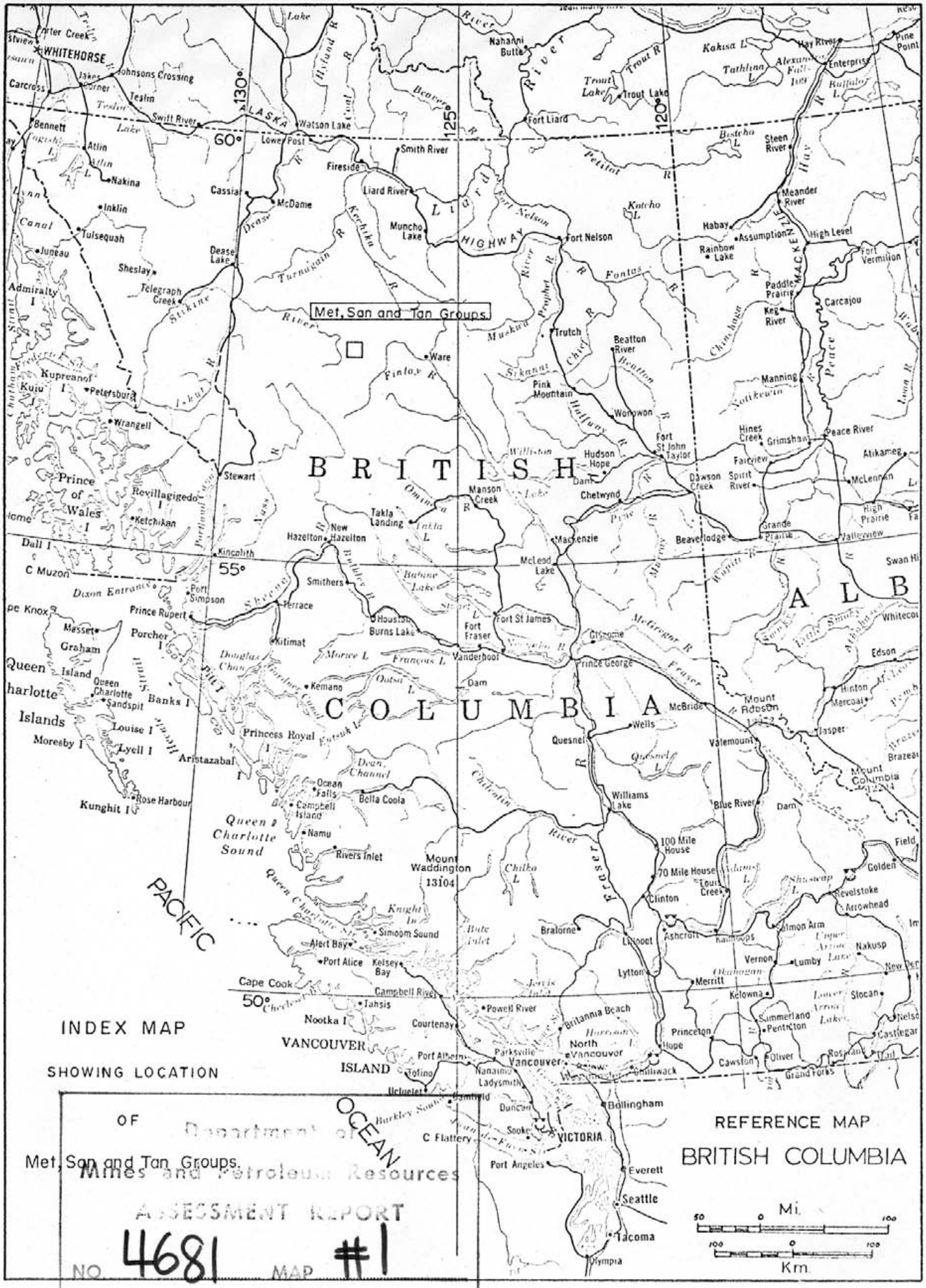
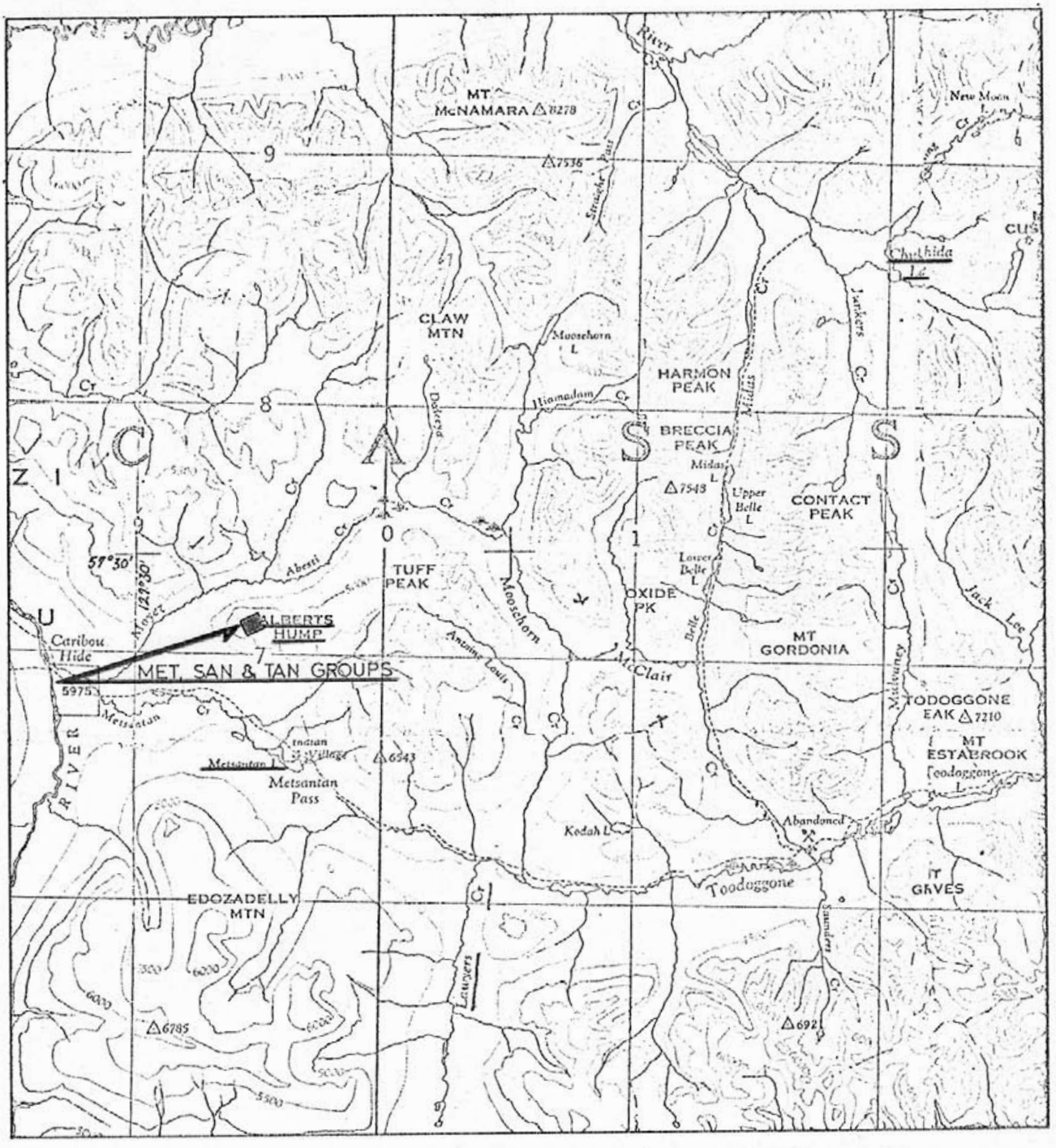
LIST OF ILLUSTRATIONS





LOCATION MAP
94 E
1:250,000

INTRODUCTION

During 1971, anomalous amounts of copper and molybdenum were detected in the soils on the east side of Alberts Hump. Examination of aerial photographs disclosed that the anomalies appeared to be related to a large circular structure. One hundred claims were subsequently staked to cover the anomalous area.

In 1972, a field program of systematic geochemical soil sampling and geological mapping was undertaken. Additional claims were staked to the west of the original group while some of the more easterly claims were abandoned.

The field work, of 1973, included soil sampling, geologic mapping, I.P. and magnetic surveys. Several trenches for rock sampling were also prepared. In order to maintain a close control on the accuracy of the geophysical survey, a new grid of cut lines was prepared. This grid also provided very accurate base for the geological mapping. All of the above work was carried out in the area of the most promising geochemical targets as outlined by the 1972 work.

The following report describes the work performed and the results of the 1973 field program.

LOCATION AND ACCESS

The Met, San and Tan groups are located four miles north of Metsantan Lake near the headwaters of the Stikine River. They center approximately on 57°28'N and 127°25'W.

TOPOGRAPHY AND CLIMATE

The property is on the east side of the Spatzizi Plateau and is characterized by rolling rather than rugged terrain. The maximum elevation of Alberts Hump is slightly over 5250'. This, together with the moderate annual precipitation, means that most of the property is above this line. Snow stays on the ground until June and begins to fall again in September, reaching a maximum depth of five feet.

CLAIMS

One hundred claims were staked in March, 1972 (Hump 1-100 inclusive) and a further thirty-eight claims were staked in July, 1972 (Put 1-38 inclusive). These claims were later grouped as follows:

Met Group: Put 1-16, 27-38, Hump 1-4, 90, 92-100.

San Group: Put 7-26, Hump 5-8, 21-32.

Tan Group: Hump 9-16, 33-52, 69-72, 77-80, 85-88.

GEOLOGY

The Met, San and Tan groups are underlain by a group of volcanic rocks of an undetermined age. They may, however, correspond to the Hazelton group of the McConnel map sheet area.

Detailed mapping on the property was done in the area of the most significant geochemical anomalous found in 1972. Map 213-G-1 displays the results on a scale of 1" to 400'.

Two distinct rock types are present. The main unit is a feldspar porphyritic andesite. It is characterized by 1/8" plagioclase feldspar set in an dark green aphanitic matrix. A few 1/8 long ascicular hornblende crystals can be seen in the matrix along with occassional fine grained books of biotite. Outside the circular lineaments seen on the aerial photographs, the rock displays a low grade propylitic alteration with conspicous magnetite. Within the lineaments the magnetite has been altered to hematite, giving the rock a purple colour, and the feldspars display argillic alteration

The andesite is distributed around a core of agglomerate which also displays propylitic alteration. The agglomerate fragments are well rounded and range in size from 1/8" to 1" in size. They appear to be of similar composition as the andesite.

There appears to be a very close relationship between the distribution of rock types, prominent structural features and intense silicic alteration. The flat-lying agglomerates occur only within the confines of the circular lineaments, as seen on aerial photographs. Pervasive silicic alteration occurs in a circular zone roughly corresponding to the lineaments. This alteration is so intense that the original fabric of the rocks has been obliterated and the contact between the agglomerates, and andesites is not recognizable.

Within the circular lineament, a zone of intense alunite alteration

coincident with intense silicification, occurs. It straddles the andesite-agglomerate contact. (Schedule 'C')

The geology suggests that the area may have been a volcanic vent or caldera in which the intense alterations occur along a cone-in-cone fracture zone (silicification) and within vent areas (alunite).

Mineralization is sparse and only a trace amount of very fine pyrite can be seen in the silicified zones. These zones, however, coincide with the geochemical anomalies.

GEOCHEMISTRY a) Rock

In order to establish the significance of the 1972 geochemical survey, a number of rock samples were collected for analysis. A total of 13 trenches were dug by hand using a Cobra rock drill and powder. Mucking was done by hand. A total of 818.4 cu. ft. of rock excavated. Fifteen samples, of not less than 15 lbs. each, were collected and submitted for analysis. Each sample was assayed for Cu, Mo, Zn, Ag and Au. The results are shown on map 213-GC-1. There appears to be very little correlation between the soil sample analyses and the rock sample analyses.

b) Soil

One hundred and thirty-three soil samples were collected for analysis. The samples were taken with a mattock and placed in high wet-strength kraft bags and were sent to Chemax Labs of N. Vancouver, B.C. Eighty of these were on extensions of the 1972 grid where anomalous values were detected. Fifty-three samples were collected from a contour traverse

on the west side of the property. The results of the sample analysis appear to be of the same distribution as those of the 1972 geochemical survery, therefore, the same cut-offs for background and anomalous values were used. Each sample was analyzed for Cu, Zn, Ag and Au. The results are shown on map 213-GC-1.

The interpretation of the results is as follows:

(i) Copper Background values for copper are low, with a mean of 15 p.p.m. Values above 60 p.p.m. are clearly anomalous but, if they reflect any mineralization it is unlikely to be of economic grade.

(ii) Zinc Background values for zinc have a mean of 93 p.p.m. Taking 300 p.p.m. as a threshold, amounts greater than 600 p.p.m. can be expected to indicate sulphide mineralization in bedrock.

(iii) Silver Because the detection limit is 0.5 p.p.m., the distribution is so skewed that background values could not be determined. However, taking 1.0 p.p.m. as a threshold, 2 p.p.m. is anomalous. Areas with soils containing greater than 5 p.p.m. Ag are considered to be of interest.

(iv) Gold Again, because of the very skewed distribution, normal statistical techniques cannot be applied. However, if 80 p.p.b. is used as a threshold, values greater than 200 p.p.b. are clearly of interest.

The only anomalous zone indicated by the 1973 soil sampling is in the area centering on 32W-16N. Here, the values for zinc range from 424 to 844 p.p.m. and is clearly an area of interest as is coincides with the circular lineaments related to the intense alteration. Unfortunately, no outcrops occur within this zone.

DECLARATION OF COSTS

A) Personnel

T.C. Scott	19 days @	36.73	$ 697.87
M. Ramalingaswami	28	26.74	748.72
P. Gray	7	23.95	167.65
I. Jackisch	6	20.26	121.56
S. Vulimiri	25	17.49	437.25
R. Campbell	14	23.20	325.80
H. Lafferty	11	44.62	490.82
	93 man days		$2,988.67

B) Field Expenses

93 man days at $70.73 per day (See appended Schedule of Costs)	$6,577.89

C) Laboratory Expense

Soil geochemical analyses	$ 541.25
Rock geochemical analyses	69.50

D) Office Expense

Drafting, reproduction, typing, etc.	$ 200.00
	$10,377.31

Declared before me at the City of Vancouver, in the Province of British Columbia, this 6th day of November 1973, A.D.

D. Scott

G. P. Nelson

A Commissioner for taking Affidavits within British Columbia or
A Notary Public in and for the Province of British Columbia.

Sub-mining Recorder

T. Roger 5.XI.73

Schedule A

SUMAC 210/220 PROJECTS

Allocatable Costs - 1973		$
Camp equipment & supplies		4,605
Equipment rental		4,000
Fuel		1,806
Catering		4,522
Communications		1,416
Transportation		11,407
Helicopter charter		20,804
	Total	48,660

Man-days

Property	Period	Max. No. of Men	Man-days
Moosehorn	3 June - 10 July	12	355
Alberts Hump	11 July - 18 Aug.	10	206
Kutcho	19 Aug. - 9 Sept.	8	127
		Total	688

Cost per man-day

$= \frac{48,660}{688} = \$70.73$

T. Pullen 5.XI.73

Schedule B

CHEMEX LABS LTD.

212 Brooksbank Avenue, North Vancouver, B.C.

Description of preparatory and analytical procedures.

PREPARATION PROCEDURE FOR ROCK GEOCHEM SAMPLES - Weighing less than 450 gms.

(1) Samples are sorted, recorded and dried @ approx. 120°F.

(2) Dried samples are processed to -1/8" through geochem crusher only.

(3) The entire crushed sample is pulverized to -100 mesh using rotary pulverizer.

(4) Pulverized sample is rolled 100 times to produce a homogeneous pulp.

(5) 0.5 grams of pulp is weighed into test tube for $HClO_4$-HNO_3 digestion and final analyses of ppm Cu, Mo, Pb, Zn, Ag etc. A 5 gram sample is digested to dryness with aqua-regia for the ppb gold analyses.

The Pulverizer and crusher are thoroughly cleaned between samples to reduce contamination problems.

PROCEDURE FOR THE ANALYSIS OF TRACE GOLD IN SOIL AND SILT MATERIALS.

Step 1. The sample is dried at 110°F, sieved to -80 mesh and stored in a coin envelope.

Step 2. A 2 gm sample is weighed into a 100 ml beaker.

Step 3. 15 ml of aqua regia (3 parts HCl to 1 part HNO_3) is added to the pulp.

Step 4. After sitting for 15 minutes, the sample is heated to dryness.

Step 5. More aqua regia is added and the sample is again evaporated to dryness.

Step 6. The soluble salts are dissolved in 25% HCl and mixed.

Step 7. The gold is extracted as the bromide in 5 ml. of methyl isobutyl ketone.

Step 8. The organic layer is then analysed on the Atomic Absorption Spectrophotometer against prepared standards.

GEOCHEMICAL LABORATORY PROCEDURE FOR THE HANDLING AND ANALYSES OF SOIL AND SILT MATERIALS CONTAINING TRACES OF Cu, Mo, Pb, Zn, Ni, Co and Ag.

Step 1. Samples are dried @ 110°F and then sieved to -80 mesh consistency through a nylon and stainless steel sieve. Presieved materials are processed starting at Step 2.

Step 2. 0.50 grams of the dry pulp is weighed into a calibrated test tube.

Step 3. 3 mls. of perchloric acid and 1 ml. of nitric acid is added to sample.

Step 4. Samples are digested at low heat initially and then the temperature is raised to 203°C. Digestion time 2 to 3 hours.

Step 5. Digested samples are cooled, made up to 25 ml. volume with distilled water and solutions are thoroughly mixed.

Step 6. Analyses for Cu, Mo, Pb, Zn, Ni, Co and Ag by Atomic Absorption procedures. Detection limits as per our brochure.

Bruce W. Brown,
Manager Laboratory Division.

SCHEDULE "C"

Department of Geology
University of British Columbia
Vancouver 8, B.C.
6 September 1973

Mr. T. Rodgers
1022 510 West Hastings Street.
Vancouver, B.C.

Dear Mr. Rodgers:

The following is a description of the rock which I recieved from Dr. Stirewalt with the request to identify the yellow mineral for you, and which I also prevailed upon you to have me give a petrographic description of.

Rock Type: Altered Acid Volcanic

Mineralogy and Mode:
Alunite 60%
Quartz 40%
Rutile tr.
Leucoxene tr.
Magnetite? tr.

Texture:

The groundmass is a fine grained mixture of quartz and alunite. In this are set phenocrysts of quartz, some of which show the rounded and embayed forms typical of quartz phenocrysts in many acid volcanics, and coarser grained patches of alunite which have the forms of feldspar and perhaps mafic phenocrysts. Some of the quartz phenocrysts show distinct secondary enlargment. There is no evidence of strain in the rock.

Comments:

Alteration has been extremely complete. It is notable that while the original rock may have been low in calcium, iron, and magnesium the present rock appears to contain none of these components, with the possible exception of a small amount of iron in the alunite.

The thin section is apparently cut less than .03mm, resulting in a low maximum interference colour for the alunite. The birefringence of the alunite in this rock, as determined by oil immersion methods, is approximately .02. This leads to the conclusion that the mineral is true alunite, although it probably does contain small amounts of sodium and almost certainly a small amount of iron. The iron would account for the yellow colour of the mineral in hand specimen. The mineral is colourless in thin section.

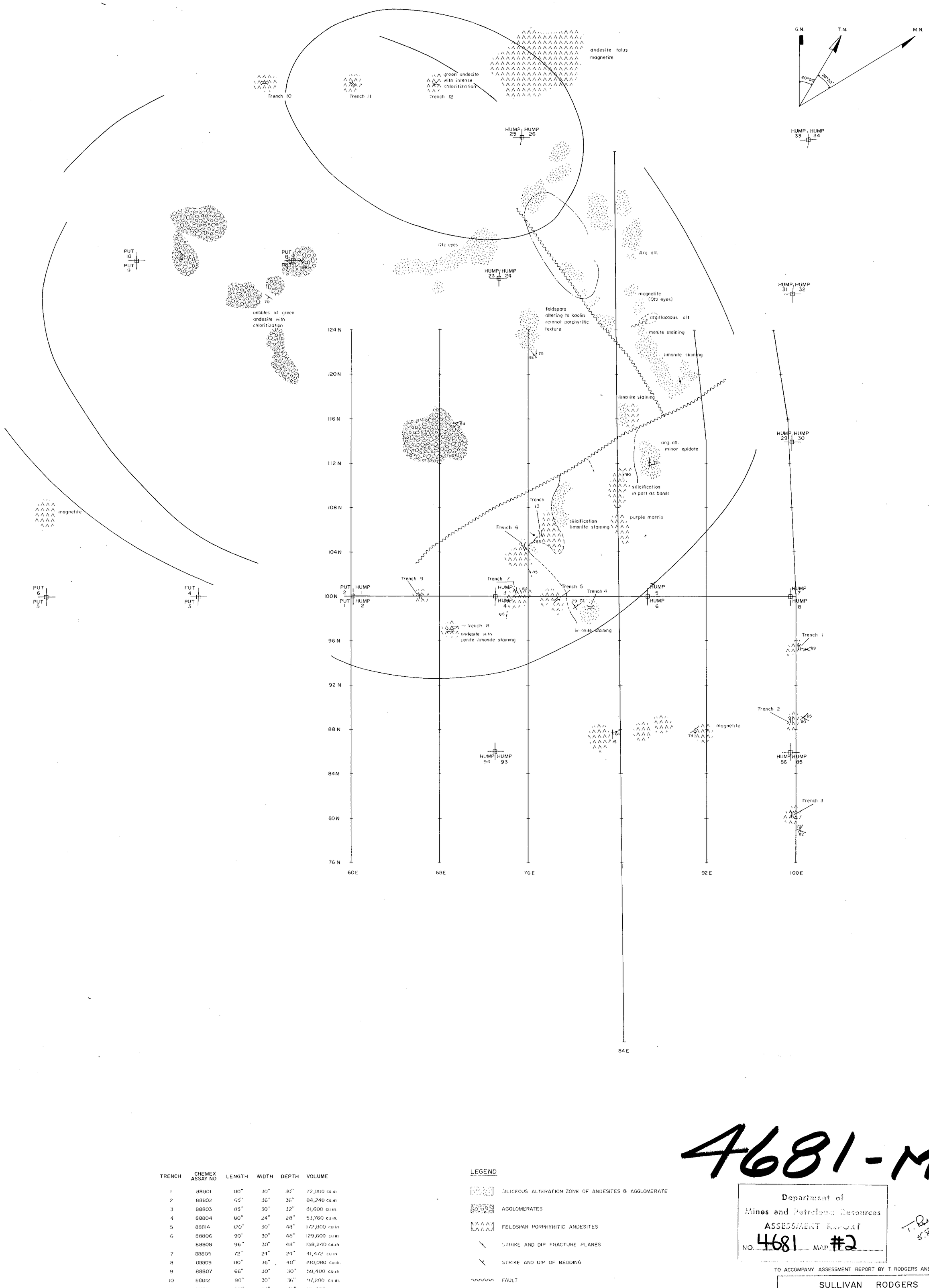
The identification of the alunite was based upon the facts that it is uniaxial positive with n =1.58±.003 and n =1.60±.003. It gives off a watery vapor with a distinct sulfur smell when heated in a open tube. The enclosed X-ray pattern of the sample shows peaks which can be completely explained by a mixture of alunite and quartz.

I showed the thin section to John Ross yesterday and he seemed duely impressed with the amount of alunite present and for that matter the fact that it was alunite. I must admit that I find the rock quite facinating also, in fact if it were possible I would be very interested in obtaining a couple good samples of the rock for possible future use as teaching specimens.

If in the future I can be of help to you, I would very much appreciate hearing from you.

Respectfully yours,

Clarence Duffy



TRENCH	CHEMEX ASSAY NO.	LENGTH	WIDTH	DEPTH	VOLUME
1	88801	80"	30"	30"	72,000 cu.in
2	88802	65"	36"	36"	84,240 cu.in
3	88803	85"	30"	32"	81,600 cu.in.
4	88804	80"	24"	28"	53,760 cu.in.
5	88814	120"	30"	48"	172,800 cu.in
6	88806	90"	30"	48"	129,600 cu.in
	88808	96"	30"	48"	138,240 cu.in
7	88805	72"	24"	24"	41,472 cu.in
8	88809	110"	36"	40"	190,080 cu.in.
9	88807	66"	30"	30"	59,400 cu.in
10	88812	90"	30"	36"	97,200 cu.in.
11	88811	90"	24"	40"	86,400 cu.in.
12	88810	90"	36"	48"	155,520 cu.in
13	88815	90"	24"	24"	51,840 cu.in.
			TOTAL VOLUME		1,414,152 cu.in
					818.375 cu.ft

LEGEND

- SILICEOUS ALTERATION ZONE OF ANDESITES & AGGLOMERATE
- AGGLOMERATES
- FELDSPAR PORPHYRITIC ANDESITES
- STRIKE AND DIP FRACTURE PLANES
- STRIKE AND DIP OF BEDDING
- FAULT
- AREA MARKING THE OCCURRENCE OF ALUNITE
- LINEAMENTS AS OBSERVED ON AERIAL PHOTOGRAPHS

4681-M2

T. Rodgers 5.XI.73

TO ACCOMPANY ASSESSMENT REPORT BY T. RODGERS AND T.C. SCOTT

SULLIVAN RODGERS

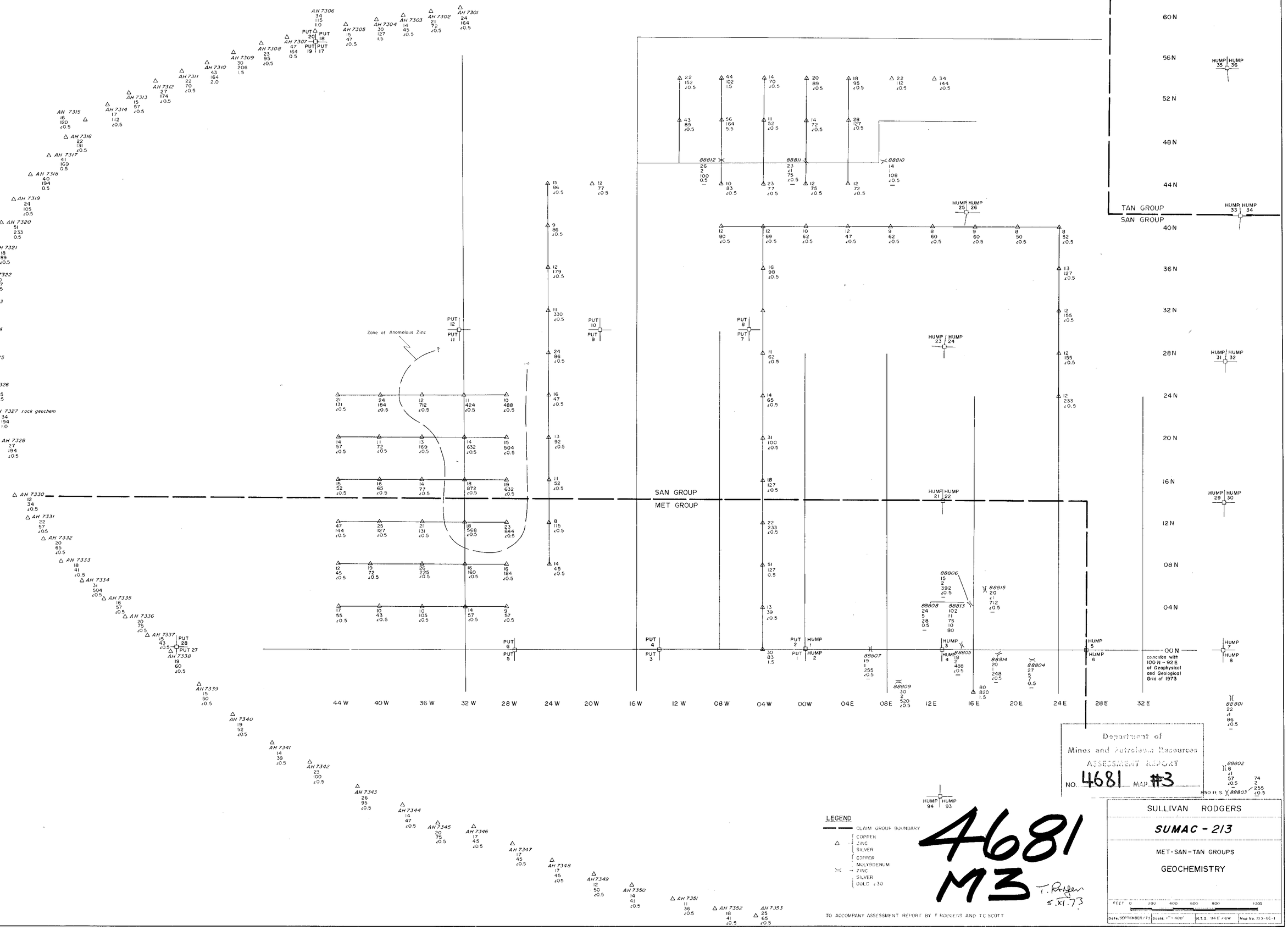
SUMAC - 213

MET-SAN-TAN GROUPS

DETAILED GEOLOGY

FEET 0 200 400 600 800 1200

Date: SEPTEMBER /73 | Scale: 1" = 400' | N.T.S. 94 E / 6W | Map No. 213-G-1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AH 7304 30 127 1.5
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AH 7302 21 72 ∠0.5
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PUT 20 PUT 18
PUT 19 PUT 17
AH 7307 47 164 0.5
AH 7308 23 95 ∠0.5
AH 7309 30 206 1.5
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AH 7350 14 41 ∠0.5
AH 7351 11 36 ∠0.5
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AH 7353 25 65 ∠0.5
Zone of Anomalous Zinc
?
PUT 12 PUT 11
PUT 10 PUT 9
PUT 8 PUT 7
PUT 6 PUT 5
PUT 4 PUT 3
PUT 2 PUT 1
21 131 ∠0.5
24 184 ∠0.5
12 712 ∠0.5
11 424 ∠0.5
10 488 ∠0.5
14 57 ∠0.5
11 72 ∠0.5
13 169 ∠0.5
14 632 ∠0.5
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16 65 ∠0.5
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23 77 ∠0.5
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12 72 ∠0.5
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12 47 ∠0.5
9 62 ∠0.5
8 60 ∠0.5
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13 127 ∠0.5
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12 155 ∠0.5
14 65 ∠0.5
12 233 ∠0.5
31 100 ∠0.5
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HUMP HUMP 29 30
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88813 102 11 75 10 80
88815 20 1 712 ∠0.5
88805 18 2 488 ∠0.5
88814 20 1 248 ∠0.5
88804 27 5 7 0.5
88807 19 1 255 ∠0.5
88809 30 2 520 ∠0.5
80 820 1.5
HUMP HUMP 3 4
HUMP HUMP 1 2
HUMP HUMP 5 6
HUMP HUMP 7 8
00N coincides with 100N - 92E of Geophysical and Geological Grid of 1973
88801 22 1 86 ∠0.5
88802 8 1 57 ∠0.5
74 2 255 ∠0.5
850 m S 88803
HUMP HUMP 94 93
SAN GROUP
MET GROUP
60N
56N
52N
48N
44N
TAN GROUP
SAN GROUP
HUMP HUMP 35 36
HUMP HUMP 33 34
40N
36N
32N
28N
HUMP HUMP 31 32
24N
20N
16N
12N
08N
04N
44 W
40 W
36 W
32 W
28 W
24 W
20W
16W
12 W
08W
04W
00W
04E
08E
12E
16E
20E
24E
28E
32E
LEGEND
CLAIM GROUP BOUNDARY
COPPER ZINC SILVER
COPPER MOLYBDENUM ZINC SILVER GOLD ∠30
TO ACCOMPANY ASSESSMENT REPORT BY T RODGERS AND TC SCOTT
Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4681 MAP #3
4681
M3
T. Rodgers
5.XI.73
SULLIVAN RODGERS
SUMAC - 213
MET-SAN-TAN GROUPS
GEOCHEMISTRY
FEET 0 200 400 600 800 1200
Date: SEPTEMBER/73
Scale: 1" = 400'
N.T.S. 94 E/6W
Map No. 213-GC-1