GEOLOGICAL AND GEOCHEMICAL REPORT

ON THE

WHIP AND SAW GROUPS, WHIPSAW CREEK, 49° 120° S.W.

BY

W. HOLYK, P. ENG.

TEXAS GULF SULPHUR COMPANY

AUGUST 1, 1961 - OCTOBER 1, 1961

92H / 7E & 7W

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INTRODUCTION

The Whip and Saw claims (20 Whip and 8 Saw) are located about 16 miles southwest of Princeton, B. C.

In 1961, work was performed on these claims in May and June and in August and September. A report by Dr. W. R. Bacon, P. Eng., covers the geophysical work completed in May and June. During this period some geochemical sampling and geological mapping was carried out.

From August 1 to October 1, 1961, additional geological mapping was performed and a road was built from the existing Whipsaw Creek road to the property. A drill was moved in over the access road and three anomalous areas considered to be of first importance were investigated by three drill holes.

The work in the latter part of 1961 was under the supervision of Dr. W. Holyk who is a registered professional engineer of the Province of British Columbia.

GEOLOGICAL MAPPING

P. Read and assistants mapped the grid area at a scale of 1 inch = 200 feet in June, 1961. The No. 1 anomaly area from Z-4 N. to B-6N. and from 22 W. to 36 W. was mapped by D. A. Lowrie at 1 inch = 100 feet in September while drilling was in progress. The enclosed geological map of the grid area at 1 inch = 200 feet (Fig. 1) shows the relationship of the E.M. and magnetic anomalies to the

geology. This map shows that the greater part of the grid area is underlain by an intrusive porphyry lying between the Eagle metamorphic complex on the west and the metamorphosed sediments and volcanics of the Nicola Group on the east and north.

The 1 inch = 100 feet map (Fig. 2) of the No. 1 anomaly area shows the feldspar-quartz porphyry body as sill-like between the Eagle complex and the Nicola Group. In this specific area the porphyry contains abundant carbonate. The carbonate appears to increase westward from the Nicola contact to a maximum near the centre of the "sill" and then to decrease towards the Eagle contact. Some porphyry outcrops between A-6N. and Line B are differentially weathered, soft and slightly schistose. In some locations, the porphyry in the vicinity of the "granodiorite" contact is granitized, i.e., it contains visible amounts of mafic minerals, the phenocrysts are generally smaller in size, and the rock is more equigranular. Porphyry float and a few small outcrops of porphyry were observed within the Eagle metamorphic complex. The porphyry exhibits no cross-cutting relationships with other rock types either on surface or in the drill core.

The Nicola Group in this area consists of chloritized quartzites, amphibolite schist, chlorite schist, with some minor epidote development. Fractures in the core from drill holes W-1 and W-2 were carbonate filled. The Nicola

rocks contain about 5% pyrite disseminated throughout, with locally higher concentrations close to quartz veinlets. A few specks of chalcopyrite and molybdenite were observed in the core.

The "Eagle Granodiorite" in this area is a metamorphic complex and is quite gneissic in character. It contains bands of varied composition such as biotite gneiss, biotite amphibole gneiss and schist, chlorite schist, amphibole schist, meta quartzite, and porphyry. Also, interbanded with the foregoing are granite-gneiss, granodiorite, and crystalline limestone. It seems probable that the complex originated as a sedimentary-volcanic series similar in composition to that of the Nicola Group. The metamorphic grade is higher and some addition of granitic material has taken place.

DIAMOND DRILLING

Three holes were drilled in September, 1961, to test the anomalous geophysical and geochemical results. The total footage drilled was 683.5 feet and it is considered that the geophysical results were satisfactorily explained. Copies of the drill logs are enclosed and the locations of the drill holes are shown on the enclosed 1 inch = 100 feet geological map (Fig. 2).

ACCESS ROAD

An access road to the drill hole sites was constructed from a point located on the Whipsaw Creek Road approximately 14 miles from the Hope-Princeton Highway. The access road has a total length of about 2.7 miles and a rise in elevation of about 900 feet. The road was planned for use by 4-wheel drive vehicles but was found to be passable for ½-ton pickup trucks under good conditions.

GEOCHEMISTRY

Geochemical Soil Sampling

Soil samples were taken at or close to the 100 foot stations on the grid lines over the entire grid. The samples were taken from the layer immediately below the humus layer, were placed in plastic bags, labelled and packed for shipping. This work was directed in the field by P. Read.

Analysis

Extraction

The 1,163 samples from the Whipsaw property were processed in the Stamford, Connecticut, laboratory operated by Texas Gulf Sulphur Company. The samples were first dried, crumbled and screened. From each sample a portion weighing approximately 0.1 gm of the -80 mesh material was

darkness when not in use.

The results are shown on the accompanying map "Geochemical Soil Survey" (Fig. 3).

W. Hoyt P. Eng.

STATEMENT OF COSTS

Drilling	
(Contractor: T. Connors Diamond Drilling Company Limited)	
683 feet of AX	$ 6,889.02
Road Construction	
2.7 miles bulldozing, labour $1,320.00) Road repair $ 80.00)	1,400.00
Mapping, Drilling Supervision	
D. A. Lowrie, 32 days @ $23.00=$736.00 D. McRae, 32 days @ $10.00=$320.00 W. Holyk, 3 days @ $35.00=$105.00	1,161.00
Geochemical Analysis	
Cost of analyses = $1.72ea 1,163 samples @ $1.72 =	2,000.36
TOTAL	$ 11,450.38

Total Costs, Whip Group	$ 5,235.75
Total Costs, Saw Group	$ 6,214.63

W. Holyk.

W. Holyk, P. Eng.

WH/mch

Toronto, Ontario
February 23, 1962

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D. D. HOLE No. W - 1

Loc. WHIPSAW, B. C. Dip collar : 90° Bearing collar : - Length: 217'

Line A : : Collar el. :

24 + 00 W. : : Bottom el. :

Drilled by: T. Connors Core size: AX Begun: Sept. 9/61 Ended: Sept. 14/61 Logged by: D.A.L.

Samples	Footage drilled				Geology
	From	To	Len.	Rec. %	
	0	16.5	16.5	0	Overburden (Boulders, Clay)
	16.5	127	110.5	100	Meta impure qtzite, chloritic, amphibolitic + 5% py + minor epidote in places.
					27' - speck of cpy
					56' - ∠ schistosity to core axis = 40°
	127	129	2	100	Felds-qtz. porphyry, contact @ 129' is conformable, no alteration in seds. adjacent to contact.
	129	152	33	100	Meta impure qtzite, chloritic, amphibolitic + 5% pyrite. Occasional 1" qtz. veins with heavy pyrite associated.
	152	154	2	100	Felds-qtz. porphyry
	154	217	63	100	Meta impure qtzite, chloritic, amphibolitic + 5% pyrite, occasional qtz. veins.
					175' - ∠ schistosity to core axis = 30°
					173' - chloritic shear 8"
					197 - 198' - chloritic shear
					202' - speck cpy
					210' - ∠ schistosity to core axis = 35°
		217			END OF HOLE
					All rocks are fractured.
					Fractures contain limey fillings.

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D. D. HOLE No. W - 2

Loc. WHIPSAW, B. C. Dip collar : -50° Bearing collar : Grid East Length: 278.5'

Line B : : Collar el. :

26 + 60 W. : : Bottom el. :

Drilled by: T. Connors Core size: AX Begun: Sept. 16/61 Ended: Sept. 21/61 Logged by: D.A.L.

Samples	Footage drilled				Geology
	From	To	Len.	Rec. %	
	0	10	10	0	Overburden (Broken Rock at 4')
	10	15	5	100	Felds-qtz. porphyry, limey & rsty
	15	18	3	0	No core
	18	20	2	100	Felds-qtz. porphyry + lime, rsty
	20	25	5	25	" " " " "
	25	30	5	60	" " " " "
	30	64	34	98	" " " " " odd speck pyrite
	64	125	61	95	Impure meta-qtzite, chloritic, amphibolitic, + epidote + 5% py 110' - speck cpy, slight Cu stain speck hematite
	125	178	53	60	Impure meta-qtzite, chloritic, amphibolitic, + epidote + 5% py 158' - speck cpy 182' - " " 178' on ± 10% py, odd speck cpy qtz. strgrs more abundant 193' - 225' - recovery ± 50% 226' - speck cpy 228' - " " 231' - " " 264' - few speck moly. around 1/8" qtz. strgr 278' - speck cpy
	178	278.5	100.5	70	∠ schistosity throughout = ± 85°

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D. D. HOLE No. W - 3

Loc. WHIPSAW, B. C. Dip collar : -50° Bearing collar : Grid East Length: 188'

A-6 N. : : Collar el. :

36 + 18 W. : : Bottom el. :

Drilled by: T. Connors Core size: AX Begun: Sept. 23/61 Ended: Sept. 26/61 Logged by: D.A.L.

Samples	Footage drilled				Geology
	From	To	Len.	Rec. %	
	0	22	22	0	Overburden (mainly broken bedrock)
	22	48	26	50	Granite gneiss + minor py
	48	53.5	5.5	100	Sheared brecciated zone + ± 20% py
	53.5	80	26.5	80	Granite gneiss + minor py
	80	105	25	80	Sheared brecciated zone + minor py. Marked alteration, rapid change in composition of bands
	105	107	2	100	Sheared altered (metased) + 10% py
	107	108	1		2" pink carbonate + cpy, sphal.
					107 - 108' - Core lost
					108' - ½" pink carbonate + cpy, sphal., (moly ?)
	108	126	18	100	Metased + minor py, brecciated in part
					∠ schistosity @ 120' = 60°
					122' - speck of cpy
	126	128	2	0	Core lost
	128	188	60	90	Sheared, brecciated, bleached zone ± 5% py
					142' - ½" pink carbonate + minor cpy, sphal., (possibly some moly)
					152 - 154' - No core
					154 - 155' - Sheared brecciated zone
					155 - 156.5 - No core
					156.5 - 164.5 - Sheared brecciated zone + py
					164.5 - 166 - Sheared brecciated zone + 40%p; Cu = ± 0.3%
					166 - 174.6 - Sheared brecciated zone + minor py
					174.6 - 175 - 4" 50% py + cpy; Cu = ± 1%
					176 - 1" 50% py, speck cpy
					160 - Less alteration, minor py

F
E
D
C
B
A
Z

8 6 4 2 8 6 4 2 8 6 4 2 8 6 4 2 8 6 4 2 8 6 4 2

55 65 70

3

Some ultrabasic float

3 Shattered, Altered ε < 5% Pyrite

Shattered with f.g. sulphides

1 2 3

Porphyry Breccia

Some Porphyry Breccia

Altered

ε Sulphide stringers

ε < 5% Sulphides

Shattered ε <5% Pyrite

Altered ε Sulphides

Altered ε Sulphide stringers

<5% Sulphides

Altered ε Sulphide Stringers

OLD BASELINE

Breccia

Brecciated Porphyry

Shattered ε Sulphide stringers

ε Minor Porphyry

Porphyry Breccia

Eagle Fragments

Trench - Skarn Fe_3O_4

Breccia

Trench - Skarn Cu stain Mo?

Altered

Altered Eagle ε pegmatite

Hydro-Thermal Alteration

Altered

Shattered

5700 5600 5500 5400 5300

Skarn With Pyrite ± Fe_3O_4

Main Gneiss

Shattered With Minor Sulphides

Shattered With Fe Stain

Old Pit in Skarn

400 γ

Skarn

Limonite Breccia

58

Gneissic Steep

f.g. gneiss with small skarn lenses ± minor Fe_3O_4 (?)

Shattered

In Places Shearing 290-330 / steep but no marked alteration or Sulphides

2% Pyrite

< 5% Disseminated Pyrite

20% disseminated pyrite

5% Pyrite

Breccia

Metasediments

35

40W 30W 20W 10W 0W

W. Hoelgl P. Eng.

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322°
NA

3 NICOLA GROUP
2 PORPHYRY (Quartz Latite)
1 EAGLE GRANODIORITE
⊗ E·M CONDUCTOR
MAGNETIC CONTOUR
AREAS OF FLOAT CONSIDERED RELIABLE
GEOLOGIC CONTACT

MI

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TEXAS GULF SULPHUR COMPANY

WHIP & SAW CLAIM GROUPS
SIMILKAMEEN MINING DIVISION B.C.

GEOLOGICAL PLAN

SCALE: 1" = 200' AUGUST '61 W.J.S.

FIG. 1

36 W 34 32 30 28 26 24 22W

6N 4N 2N B 8N 6N 4N A 8N 6N 4N

P LIMEY

CLAIM POSTS

IP - W-8

IP - W-7

3 2 1

GP GS LP P LP LP

GP P GWCKE LP + MINOR MALACHITE GP QTZITE L CHL-SCH. P LP LP P

LP LP RSTY RSTY LP 45

GP GP ASCH S

RSTY GD GP + 2% PY GP BRULE LP

S S+5% PY S GP GD GP GP S GP LP LP D.H. W-2 LP LP RSTY

LP LP ST SCH. LP

GD GD GD RSTY +5% PY SINK QTZITE + PY MS GD, RSTY GP LP LP LP + 1% PY LP RSTY LP RSTY 11x CHL-SCH+L STEEP SLOPE

PIT CPY, PY Cu = ± 2% - 2" WIDTH

D.H. W-3 L CHL. SCH + 10% PY MS ASCH MS DRY POND LP + 1% PY LP PITTED SURFACE LP LP CHL-SCH LP RSTY

GOSSAN LIMONITE GOSSAN DRY CREEK PIT RSTY S & GD SEC'Y GOS. SEC'Y GOS SLATY MS (BIO-AM. SCH)

BRULE

GP BA SCH GD GD RSTY BA SCH ASCH GD BGN + ASCH LS S1 GP GD GD GD GD RSTY ML P GP GP LP LP + 1% PY LP + 1% PY RSTY LP

LP DRAG FOLDING 61 LP RSTY

CHL. SCH G4 RSTY LP + EPIDOTE GD GP ASCH GD GP GP ASCH FINE MS + 20% PY ASCH GP GP GS LIMEY P + 2% PY DRILL CAMP LP LP, RSTY 2% PY LP CHL. SCH MOSS, HUMUS

CLAIM POSTS IP W-6 IP W-5

GP LP + 10% PY LP + 5% PY GP + PY

GP + 2% PY GP GP GD GP GP RSTY LP RSTY LP + 5% PY LP RSTY L CHL. SCH

GGN LST. P RSTY ASCH ASCH P RSTY GP + 2% PY D.H. W-1 LP RSTY CHL. SCH

GP + PY DEPRESSION Q + 20% PY

P RSTY CHL. SCH SINK P RSTY P RSTY + 5% PY P RSTY D + 20% PY RSTY P + 2% PY P RSTY + 10% PY A SCH + 20% PY A SCH + 10% PY LP + 1% PY LP LP + 5% PY A CHL. SCH + 1% PY STEEP HILL

A SCH. A SCH + 10% PY P RSTY CHL. SCH

PIT BIO. SCH. GD

A SCH + 10% PY CHL. MICA SCH

LP + 20% PY CHL. SCH

LP RSTY LP RSTY + 2% PY A SCH + 5% PY

LIMEY GWCKE LP + RST. CHL. VOL + 1% PY CHL. SCH LP RSTY LEACHED LP

36W 34 32 30 28 26 24 22 W

LEGEND

Eagle Granodiorite	G Gn - granite gneiss Gd - granodiorite	3
Porphyry	LP - Limey porphyry GP - granitized	2
Nicola Group	A Sch - Amphibole schist Lchl - Limey chlorite MS Metasediments Bio. Am. - Biotite Amphibole ML. - Meta-limestone Q - Quartzite	1

SYMBOLS

D.H. Drill Hole

x+ Location of float

Contact inferred

61 Strike and Dip of schistosity

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W. Hedley P. Eng.

TEXAS GULF SULPHUR CO.

GEOLOGY OF THE

NO. 1 ANOMALY AREA

WHIPSAW CLAIM GROUP

SIMILKAMEEN MINING DIVISION, B.C.

Scale: 1 inch = 100 feet

D.A.L. Nov. '61

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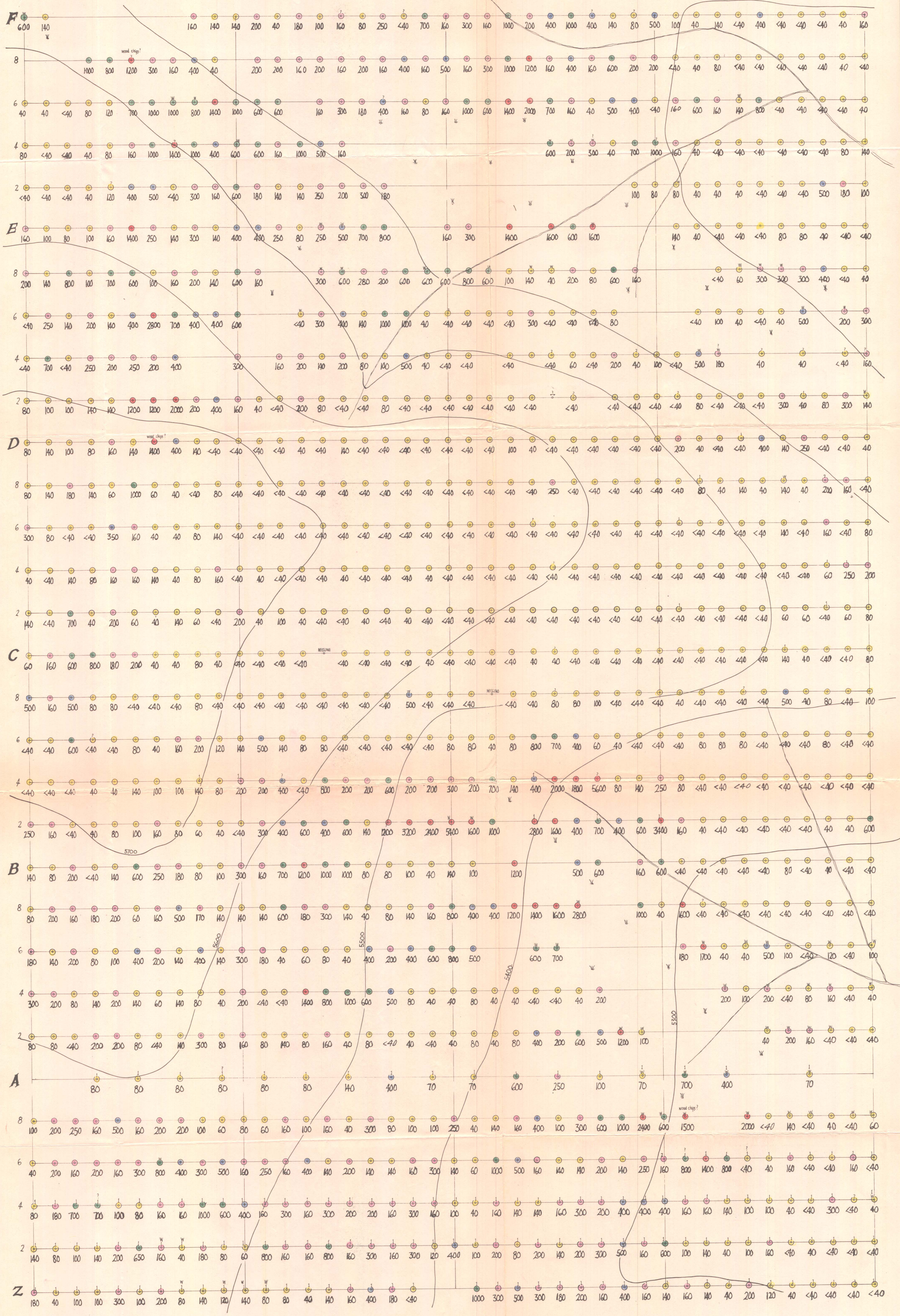
FIG. 2



LEGEND

- > 1000 ppm Cu
- 501 - 1000 ppm Cu
- 301 - 500 ppm Cu
- 141 - 300 ppm Cu
- 0 - 140 ppm Cu

? Sample number and/or location uncertain

Sample tested for copper by rubeanic acid field method,

1 test strip in sample book

2 test strip not in sample book

W Sample taken from wet area

300 Copper concentration in parts per million biquinoline method (precision 50%, accuracy ± 25%)

322° MA

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W. Hugh, P. Eng.

TEXAS GULF SULPHUR COMPANY

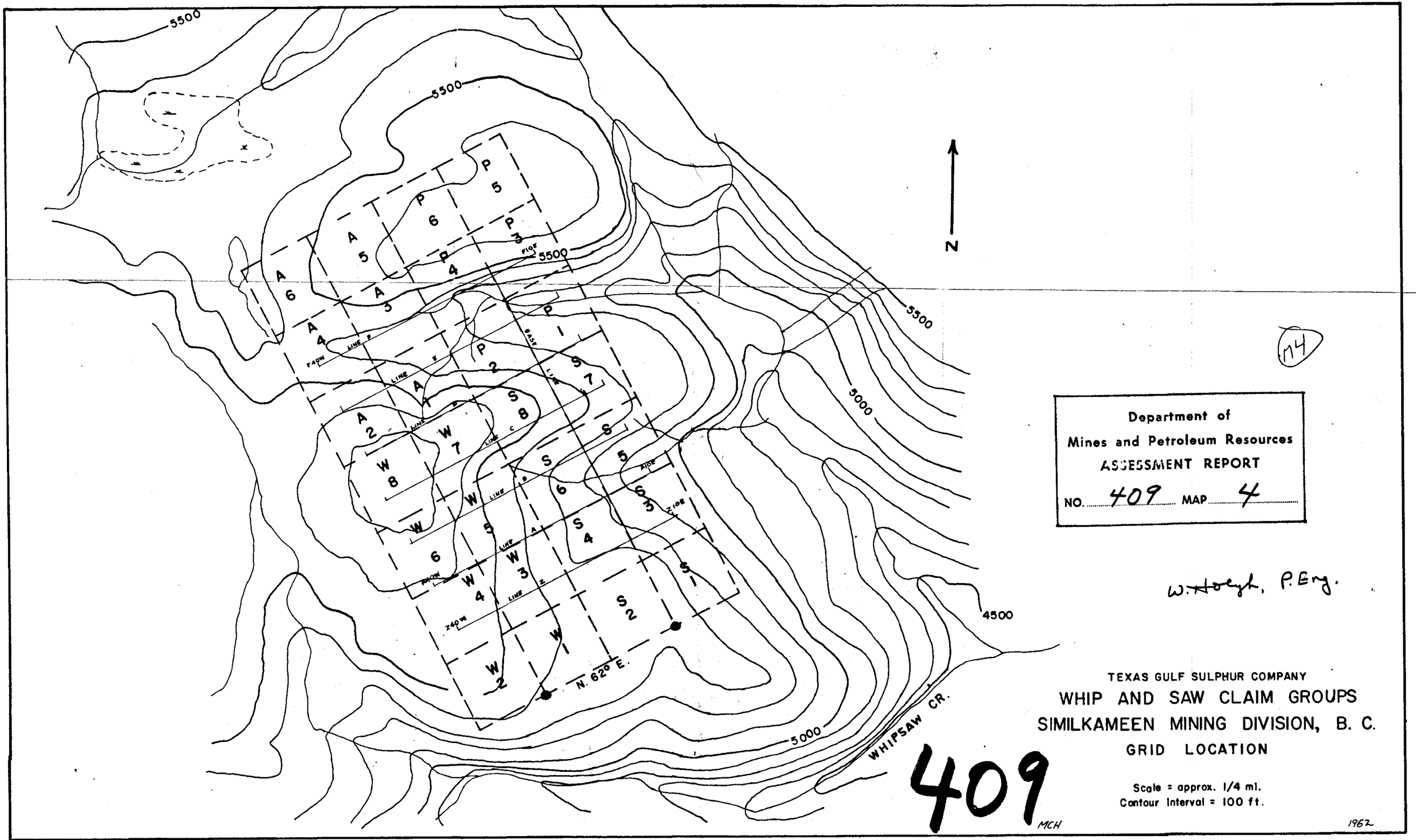
WHIP & SAW CLAIM GROUPS SIMILKAMEEN MINING DIVISION B.C.

GEOCHEMICAL SOIL SURVEY

SCALE: 1" = 200' SEPTEMBER '61 W.J.S.

TAKEN FROM D. RASKIN'S MAP of AUGUST 1961

FIG. 3



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W. Hoegh, P.Eng.

TEXAS GULF SULPHUR COMPANY

WHIP AND SAW CLAIM GROUPS
SIMILKAMEEN MINING DIVISION, B. C.
GRID LOCATION

Scale = approx. 1/4 mi.
Contour Interval = 100 ft.

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MCH

1962

Fig. 4