LUNDBERG EXPLORATIONS LIMITED
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Toronto 1, Ont.

CONFIDENTIAL

REPORT ON THE GEOPHYSICAL SURVEYS IN THE SHAKWAK VALLEY AREA, YUKON TERRITORY FOR CANALASK NICKEL MINES LIMITED.

INTRODUCTION

In 1952 a discovery of nickel-copper bearing sulphides was made near Quill Creek some 18 miles north-west of Burwash Landing in the Shakwak Valley Area, Yukon Territory. The Hudson Bay Mining and Smelting Company acquired the claims and has carried on continuously a prospecting and development campaign in the area. In the staking rush that followed a second discovery was made near White River about 70 miles north-west of Burwash Landing. These claims were optioned by Prospectors Airways.

Early in 1953 after considerable study of this area a prospecting campaign was started by G. H. Johnson of East Rim Nickel Mines Limited.

Lundberg Explorations Limited were engaged to make an airborne magnetometer survey of the Shakwak Valley north-west from Burwash Landing to some 10 miles past White River.

This magnetic survey carried out at low level, was completed in April 1953. From a study of the records a number of areas were selected for more intensive study and staking. A preliminary map (No. 21-342-3) and report were submitted in August 1953.

During the summer a company, Canalask Nickel Mines Limited, was formed to take over the development of this area. In September the airborne magnetic surveys were continued to cover areas south-east of Burwash Landing as far as Haines Junction and also to include areas north and west of White River as far as Snag on the north and the Alaska boundary on the west. In all an area some 20 miles wide and 180 miles long has been covered by our airborne magnetic surveys.

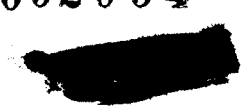
In order to follow up the results of the airborne surveys a staking and prospecting campaign was planned. Two crews of Lundberg Explorations Limited were engaged to assist in this campaign using magnetometers for the closer location of areas to be staked and selfpotential units for outlining of areas for detail study and exploratory drilling.

Since the Canalask staff is preparing reports, describing the Company's holdings, the geology and other pertinent facts, this report will be confined to discussions of the results of the magnetic and selfpotential surveys.

THE GEOPHYSICAL SURVEY

Methods

The methods used in these surveys should require no lengthy explanations or descriptions. However, it may be pointed



out that the airborne magnetometer used in this survey is designed and exclusively employed by Lundberg Explorations Limited. It features the recording of the vertical component of the earth's magnetic field so that the anomalies are found directly over the magnetic bodies. The instrument is so light in weight that it can be carried in a small aircraft. Therefore it is possible to make the surveys at low altitudes even in rather difficult terrain.

RESULTS OF THE SURVEYS

Mountains and valleys cover the areas surveyed, and with only one exception the topography is too rugged for flying a regular systematic grid of parallel profiles. Therefore the pattern of the surveys had to be modified but the flight lines were laid out so as to give as complete a coverage as possible. Although the profiles could not always be placed normal to the structure in most places where magnetic anomalies were recorded, it was possible to fly supplementary lines across the strike.

Recordings made over the two known mineral occurences show that the known bodies may be indicated magnetically. In the surveyed territory there are found a great many areas of high magnetic intensity. The patterns of the recorded magnetic trends are important guides to the geological structures as well as to indicate areas most favourable to prospect for ore bodies.

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Taken in order from the south-east and up north-west to the Alaska boundary there are the following magnetic anomalies:

About 9 miles south-west of Destruction Bay there begins a magnetic zone which in a broad arc through the Quill Creek showing continues with a north-westerly trend across the Donjek River, where extremely interesting magnetic anomalies are found. This zone is sometimes rather broad with a strong magnetic intensity variation probably in part caused by peridotite and magnetite rich diorite with other portions interpreted as most likely caused by mineralisations containing pyrrhotite.

The easterly section of this extensive zone should be examined in greater detail and protected by staking as soon as weather permits. The central portion of the zone covers the known showings (Quill Creek) and the westerly portion is the Donjeck area where the most interesting anomalies have been staked by Canalask.

On the ground selfpotential surveys were carried out on the Canalask claims in the Donjek area (Group No. 1). From the results of the survey the presence of sulphide has been indicated in three places. It is recommended that these three indications be tested by drilling. Information as to the location of recommended drill holes is given on separate working maps.

About 10 miles north of Group 1 there is a small magnetic anomaly where some claims have been staked (Group No. 2). The high magnetic intensity here is probably caused by mineralization in a bed of tuff. A lense of either magnetite or pyrrhotite could be

the cause of this anomaly. Therefore a selfpotential survey of this area is recommended to determine whether the anomaly is caused by pyrrhotite or magnetite.

In the Koidern Creek area there are two zones where magnetic highs are recorded. The zones are separated by a 4 mile strip along which it was impractical to make flight. The two magnetic zones, however, appear along the strike of the same formations and could represent a structural condition somewhat similar to the one found in the Donjek Creek section although the scale of this structure is smaller.

Three Groups of claims Nos. 3, 4 and 5) were staked on what appears to be anomalies of interest. On Group 5 the magnetic high is probably caused mostly by ultrabasic rocks. However, some gossan and sulphide mineralisations were observed here so it is quite possible that some parts of the magnetic anomaly could be caused by pyrrhotite. These three groups should be prospected in detail and explored by the selfpotential method.

In the White River area there is one large zone with high magnetic intensity. Granite and granodiorite rocks are found here, so the magnetic variations could very well be caused by magnetite rich facies of these intrusives. However, directly north of this basic intrusive there is a long narrow zone (near Shakwak fault) with several recorded magnetic highs. One of these is directly over the Prospectors Airways' showing. This

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zone continues to the south-east for a distance of 10 miles. It would seem very likely that the several magnetic highs along this zone could be caused by concentrations of phyrrotite.

This general area which had been staked previous to this survey is now under option to the Canalask Company (Group No. 6). The magnetic surveys made on the ground have confirmed the airborne results very closely, and the anomalies are recommended to be tested by selfpotential methods.

On claim Group No. 7 which adjoins the Prospectors Airways' holdings ground surveys with magnetic and selfpotential methods have been completed. Potential anomalies were obtained which could be indications of sulphides and these are recommended for drilling.

To the west of the Prospectors Airways' holdings there are two zones of magnetic high intensity. One of these is over a rocky ridge where the geological maps show the formations to be shales, sandstone, conglomerate and limestone. Unless there are some magnetite rich lenses in the conglomerate, the magnetic highs could very well be caused by pyrrhotite. If time allows some prospecting here might prove fruitful.

The other zone of magnetic high follows a drift covered valley probably underlain by the same formations mentioned above or by andesite, tuffs etc. The magnetic highs may be caused

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either by magnetite in lenses in the sediments or by pyrrhotite. Some interesting sulphide mineralisation has been reported from here so that there are good possibilities of the anomalies being caused by pyrrhotite. A large group of claims (Group No. 8) has been staked to cover this zone. It is recommended that self-potential surveys be made here to determine which magnetic highs are associated with sulphide mineralisations.

To the north the second airborne magnetic survey covered an area of fairly level and mostly drift covered ground. This survey covered the territory from the White River crossing on the Alaska Highway to Snag in the north and the Alaska boundary on the west. Geologically this area is located north of the Shakwak Valley fault, but apparently the same formation occurs on both sides of the fault.

The results of the magnetic survey support the assumption of similar mineralisation existing here as well as south of the fault. An east-west trending magnetic zone 4 miles wide and 20 miles long was recorded by the survey. In this area several magnetic highs were recorded. Some basic intrusives are no doubt present but several of the magnetic zones show characteristics which in other portions of the district are caused by pyrrhotite mineralisation. Five groups of claims (Groups Nos. 9 - 13) were staked by the Canalask Company. The area is fairly level, quite accessible, and would be ideal for airborne electrical surveys using the ground cable technique. It is therefore recommended that such a survey be

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made here as soon as weather permits, preferably not later than April 1st.

SUMMARY

From the results of the airborne magnetic surveys areas have been indicated where the search for sulphide mineralisation is considered favourable. In spite of the rugged topography the navigation during these surveys has been so accurate that all the magnetic anomalies of interest were located on the ground without any difficulties.

With the selfpotential method sufficient work was carried out on Groups Nos. 1 and 7 to permit the selection of sites for drilling.

Selfpotential surveys on Groups 2, 3, 4, 5, 6 and 8 are recommended.

An airborne electrical survey is recommended on a block including the staked Groups 9 to 13.

Respectfully submitted,

LUNDBERG EXPLORATIONS LIMITED,

per (signed) "Hans Lundberg",
President.

Toronto, Ontario,
January 30th,
1954.

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REPORT ON DRY CREEK CLAIMS, CANALASK

This general group of claims, consisting of Ross, Mol, Buck, Ken and Snag groups, are staked in a general East-West direction across the highway just south of Snag Road turnoff. The area is practically all overlaid with muskeg and other overburdon. Strong magnetic anomolies were notable from the air and from ground work, and very little can be learnt of the character of the deposits by surface prospecting. To the west a large hill outcrops, known as Niggerhead Mountain. This mountain has a sizeable showing of diorite and various pyroclastic rocks typical of the area South-West of the Shakwak Fault.

It is quite possible that the Shakwak Fault changes its course, or has otherwise been disturbed at or near the White River, as it is obvious that the rocks, which to the south of the White River lie only west of the Shakwak Fault, can be clearly seen much farther North East of the White River.

It is felt that a band of ultrobasic rocks must exist under the muskeg in this zone, and that the nature of the magnetic anomolies is such as to indicate a strong possibility of sulphide along this band. The anomolies are narrow and quite strong, which is characteristic of anomolies favourable to sulphides disposition in the area.

J. C. Dumbrille.

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REPORT ON HOLDINGS OF CANALASK NICKEL MINES LIMITED

This report is based on information secured from various sources and resulting from three visits to the area in May, June and August of this year.

PROPERTIES:

The properties of this company are divided into seven groups as follows:

1. DONJEK RIVER GROUP - JAY numbers 1-32; 37-172. Total of 168 claims.

2. DONJEK RIVER NORTH GROUP - LONTH numbers 1-16. Total of 16 claims.

3. LAKE CREEK GROUP - NOX 1 - 7; 9 - 10 and UTLUTT 1 - 8; 10 and 11 13 - 24. Total of 31 claims in all.

4. EDITH CREEK GROUP - WELL 1 - 14. Total of 14 claims.

5. VAN BIBBER OPTION - 88 claims optioned as a block.

6. GENERAL ENTERPRISES GROUP consisting of 69 claims optioned from General Enterprises. 8 claims optioned from Benson and 2 claims purchased. Total of 79 claims in all.

7. MARG GROUP - 1 - 79. Total of 79 claims.

In summary the company holds by staking and under option 475 claims of a nominal area of 50 acres per claim. As the claims are not surveyed, the actual acreage cannot be known as yet.

LOCATION:

The area in which the above properties lie is in the north-west Yukon, north-west of Kluane Lake and between that lake and the White River along the Alaska highway. White River is 250 miles from Whitehorse by highway. The general size of the area in which these groups lie is 50 miles long and 10 miles wide, along a well pronounced valley traversed by the Alaska highway. This area is known on Government reports as the Shakwak Valley Area.

GEOLOGY:

The general geology of the area is described in Memoir 267 of the Geological Survey of Canada, published in 1952 by H.S. Bostock and the complete description of the formations is obtainable from that report. The general structure of the area is that of a disturbed zone lying along a major fault known as the Shakwak Valley fault in the above Memoir. Bostock states that this fault is traceable for some 200 miles. There is no very definite evidence of this fault except the geological associations shown on each side of the valley. Considerable further study of the areas geologically will be necessary in order to actually locate the fault and its displacement. In the opinion of the writer this fault is more likely a fault zone with parallel displacement areas over a width of some 20 miles wide. Also there is some evidence of traverse displacement. It is known that basic dykes show up along the western side of this fault zone and these dykes are in places mineralized and highly altered. It is in the vicinity and in these dykes that the known deposits of nickel in the area have been proven to exist. Apparently the disturbed and mineralized sections of these dykes may be indicators of the presence of nickel bearing bodies in their vicinity. Our work shows that these disturbed dykes are detectable by magnetic geophysical survey.

In general the area is fairly well covered with overburden, particularly in the anomolous areas.

DESCRIPTION OF GROUPS:

In April of 1953 the Ontario Nickel Mines Ltd. employed Lundberg Explorations Ltd. to perform aerial magnetometer reconnaissance over the Shakwak area. The boundaries of this reconnaissance were from the White River on the north-west to the Duke River on the south-east with a width of approximately 20 miles wide. This area covered both the Prospectors Airways and Hudsons Bay Mining & Smelting nickel showings on which these companies were working.

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This survey resulted in the location of anomolies similar to those shown in the known nickel deposits and action was immediately taken to stake and acquire ground in the anomolous areas. By July of 1953 substantial progress had been made in this program and expenditures of upwards of $30,000. had been made on this work. The staff in the field was then enlarged and the work speeded up. As outlined in the first paragraphs ground has been acquired, consisting of 165 claims by option and purchase and 310 claims by staking. This staking was done on the basis of the airborne magnetometer survey and by checking with the magnetometer on the ground, prior to staking. The groups will be described in detail below:

Late this summer it was decided that extensions of the area by aerial magnetometer were warranted and considerable areas to the north-west and south-east of the original mapping were flown. The results of this aerial survey are now being investigated.

NUMBER ONE GROUP #1 Area

This group of 168 staked claims lying at the junction of the Donjek River and Wolverine Creek covers a very strong anomoly which is overlain by river gravels and benches. There is very little rock outcrop in the area. The magnetic anomolies are strong and a limited amount of self potential geophysical surveying has been done this fall, and is continuing as long as weather permits. This self potential work has indicated some interesting areas within the magnetic zone which must be further investigated next year. It is worthy of note that the aerial survey indicates that the geological conditions found in the Hudsons Bay Mining & Smelting property on Quill Creek, approximately 8 miles to the east of this group, continue through the group. It is known that peridotite dykes containing nickel and copper have been picked up along a line joining this group with the Hudsons Bay prospect. It therefore appears that a cross shearing or faulting may occur along this line.

2. THE DONJEK RIVER NORTH GROUP #2 Area

This group of 16 claims is staked to cover a sharp magnetic anomoly found in the aerial survey and subsequently by ground surveying, which is completely overlain with overburden. The group lies approximately 7 miles north of the number one group on the west bank of the Donjek River.

3. LAKE CREEK GROUP #3 + 4 Area

This group of 31 staked claims lies on the northern slope of the Kluane Range, approximately 1,000 feet above the Alaska highway and 4 miles south of the highway. The anomoly indicated here is overlain with overburden except in two creek valleys which cut the anomoly. The rocks observed in these creek valleys were diorites and sediments and this group will warrant further exploration next year.

4. THE EDITH CREEK GROUP #5 Area

This group of 14 staked claims is located on a strong anomoly on the east branch of Edith Creek, approximately 8 miles south of the Alaska highway. Again the ground is overlain with overburden and no known mineral outcrops occur, although the ground has not been thoroughly prospected as yet.

5. THE VAN BIBBER OPTION #6 Area

The Van Bibber Option of 88 claims is located along the northern flank of the Kluane Range, parallel to the Alaska highway and about 4 miles south of the highway. A strong magnetic anomoly was located on this group and nickel and copper mineralization have been observed in one of the creeks cutting the group. Two samples taken from the rocks in this creek canyon wall assayed .8% copper and .26% nickel and 1.3% copper and .43% nickel respectively. The host rock is mineralized diorite. Just before winter set in one of the prospectors in the employ of the company found an interesting copper showing in the south end of this group. Full data on the work done on this group has not been compiled by the engineer in the field and cannot be reported on as yet.

6. THE GENERAL ENTERPRISES GROUP #7 Area 092054 [redacted]

The General Enterpsises group lies to the west of the Van Bibber group, approximately 4 miles and is the group on which most of the work has

been done to date. A base line was cut the full length of the holdings for a distance of about 12,000 feet and cross lines at 200 foot intervals, extending for approximately 1,000 feet each way from this line were cut. Self potential and magnetic surveying was done on this grid and substantial anomolies of both types were picked up in the work. This anomolous condition extends through from the Prospectors Airways group and lies in a hanging valley above the main Shakwak Valley. The rocks outcropping on both sides of this hanging valley are identical in character of those encountered to the westward and at one point approximately midway down the group the writer picked up samples from the north side of this valley containing copper and nickel. A number of these pieces were assayed as a grab sample and gave an assay of 6.55% copper and .56% nickel. This outcrop lay to the north of the main anomoly but represented a tongue of peridotite in the wall rocks.

7. THE MARG GROUP #6 Area

The Marg Group of 79 staked claims was located to cover a strong anomoly noted in the aerial survey to the west of the number six group. The ground in this area is largely covered by overburden and where outcrops were shown diorite containing pyritic mineralization was noted.

In summary, it may be said the seven groups above briefly described cover the best appearing anomolies shown in the geophysical survey. The season did not permit adequate prospecting of the groups. None of the groups can be said to have been well prospected. The work done is in the nature of general reconnaissance and intensive prospecting must follow this seasons work.

CONCLUSIONS AND RECOMMENDATIONS:

It is the writer's opinion that intensive prospecting of the various groups should be commenced immediately after the spring breakup. Continuance of the geophsyical surveying on the ground should be pushed, in conjunction with general prospecting and geological examination. There are many places on the various groups where creek beds cut the anomolies and these must be thoroughly prospected and sampled where mineralization shows. It is regrettable the shortness of the season did not allow this work to be done this year. Snow covers the ground quite early in the area and the prospectors were driven from the field around the first of October. Comparing the results of the geophysical work carried on in the number 1 and number 6 groups with the known conditions in the proven nickel bearing formations in the area, it appears that there is an excellent chance of locating nickel deposits in these groups. The presence of ultra-basic dykes wherever outcrops have been obtained in the anomolous area convinces us that geological conditions are favourable for nickel deposition. The favourable results achieved in the more recent flying carried on this fall indicates that the area is larger than we had initially envisaged.

It is my opinion that the company holds very valuable ground in what appears to many competent engineers to be a promising new nickel-copper field, and that a program of intensive exploration by geological, geophysical and prospecting exploration followed by diamond drilling is warranted during the next summer season.

The work in the field has been under the direction of R. N. Sexsmith. Lundberg Explorations staff have conducted the geophysical work. Mr. Sexsmith and Mr. Lundberg collaborated with me in the preparation of this report.

J. C. Dumbrille,
Consulting Engineer.

October 31, 1953.

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①	JAY GROUP	168 CLAIMS
②	LONTH GROUP	16
③	NOX GROUP	9
④	UTLUT GROUP	22
⑤	WELL GROUP	14
⑥	VAN BIBBER OPTION	88
⑦	FROMME OPTION	79
⑧	MARG GROUP	79
⑨	ROSS GROUP	16
⑩	MOL GROUP	24
⑪	KEN GROUP	16
⑫	BUCK GROUP	16
⑬	SNAG GROUP	24

Note: Flight lines as flown by Lundberg Explorations Ltd. for Canalask Nickel in 1953.

CANALASK NICKEL MINES LTD.

HOLDINGS IN YUKON TERRITORY 1953

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Scale: One Inch to Four Miles

Miles 4 3 2 1 0 4 8 12

Donjek River

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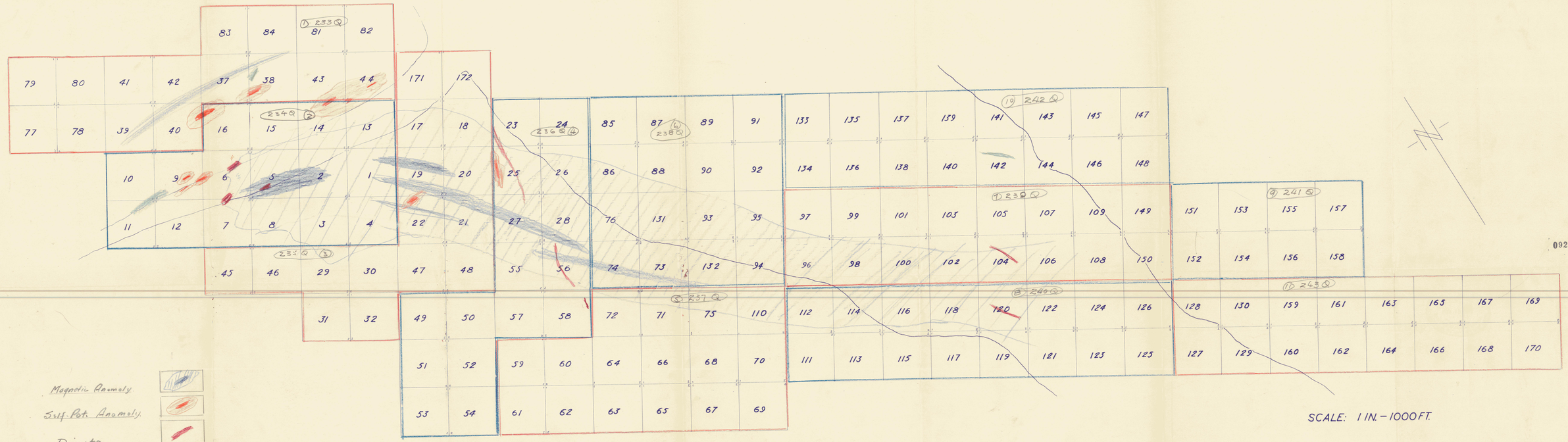

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SCALE: 1 IN. – 1000 FT.

JAY GROUP

DONJEK RIVER AREA

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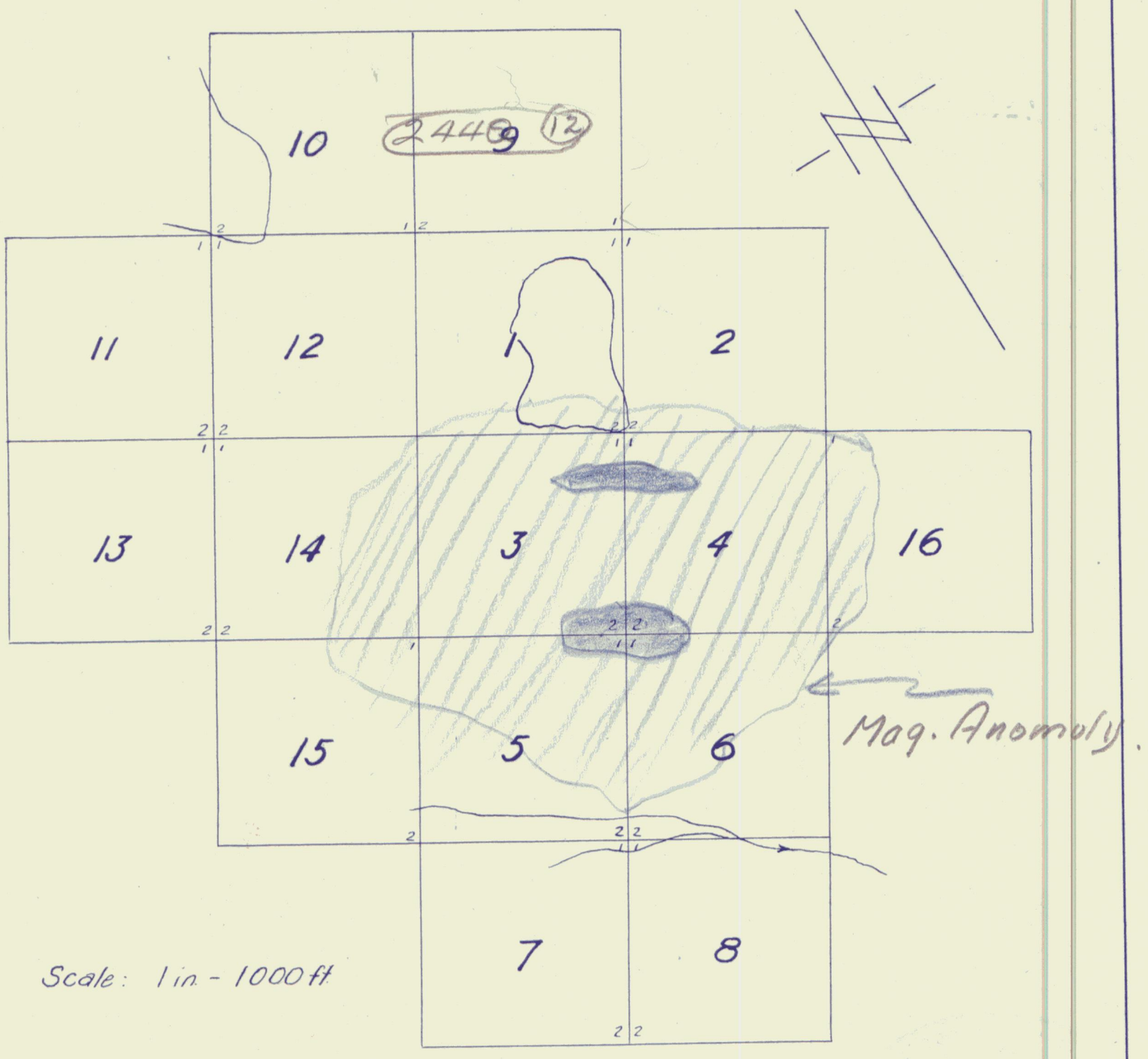

LONTH GROUP

DONJEK RIVER AREA

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Lake Creek

NOX

Magnetic Anomolies

UTLUT

(13) 248 Q

(14) 249 Q

(13) 250 Q

21 20 22 23

19 18 16 14 2 4 6 8 24

17 15 13 1 3 5 7

10 11

1 3 5 2 4 10 6 9

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Diorite

Volconics

Quartzite

SCALE: 1 IN. - 1000 FT.

NOX - UTLUT GROUP

LAKE CREEK AREA

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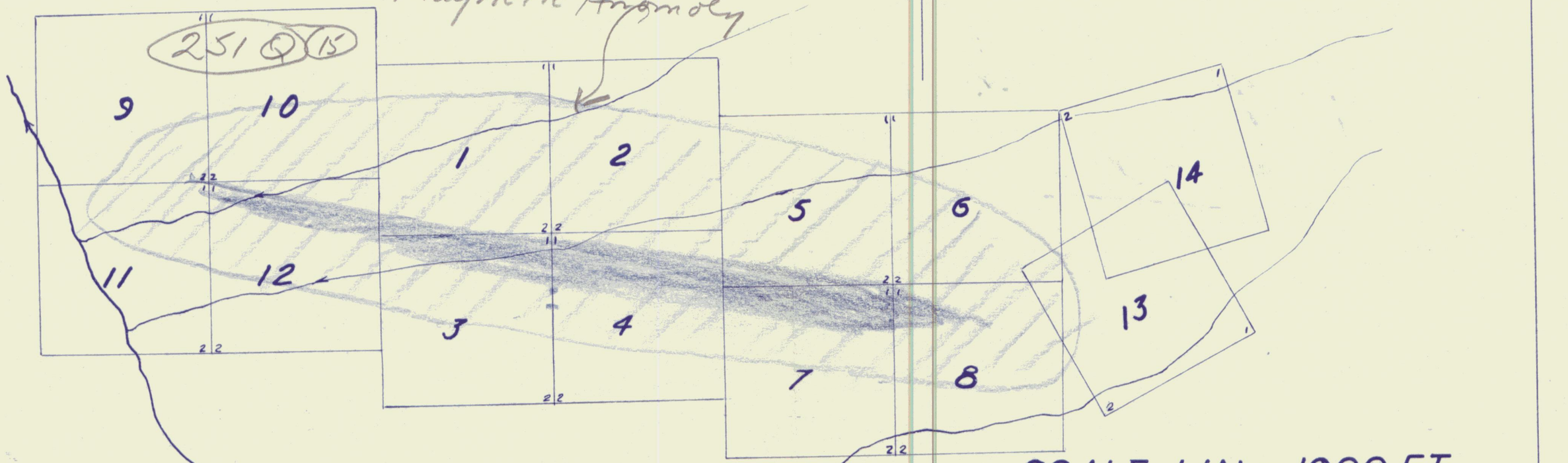

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WELL GROUP
EDITH CREEK AREA

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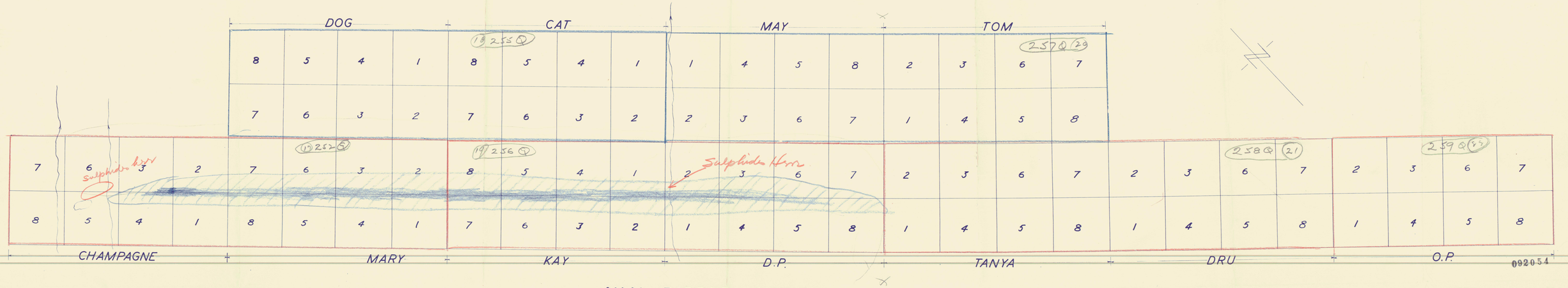

VAN BIBBER OPTION

PICK HANDLE LAKE AREA

SCALE: 1 IN.–1000 FT.

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261 Q (25)

Laura 8 | Ann 1 | Ann 2
Boundary 7 | Boundary 8 | Summit 7
Boundary 1 | Boundary 2 | Summit 8 | Summit 5
Boundary 3 | Boundary 4 | Summit 6

270 Q (24)

Blair 7 | GE 1 | GE 9 | GE 10
Blair 8 | GE 2 | GE 11 | GE 12
GE 3 | GE 13 | GE 14
Summit 4 | GE 4 | GE 15 | GE 16

260 Q (23)

Ann 3 | Ann 4
GE 24 | GE 23
GE 22 | GE 21

Mush 1
Summit 3
Mush 2

263 Q (23)

PM 1 | Laura 6 | PM 2
Laura 7 | Blair 1 | Blair 2

Laura 1 | GE 5 | GE 6
Laura 2
Laura 4 | Laura 3 | GE 7 | GE 8

Ann 6 | GE 19
GE 20 | Fox 8 | Fox 7 | Fox 6 | Fox 5 | Fox 4 | Fox 3 | Fox 2 | Fox 1
Ann 1 | GE 18
Ann 5 | Ann 8 | GE 17

Summit 2 | Summit 1

264 Q (22)

PM 8 | Blair 6
PM 7 | Blair 5
PM 6 | Blair 4
PM 5 | Blair 3
PM 4
PM 3

BOUNDARIES NOT SURVEYED

FROMME OPTION

WHITE RIVER AREA

SCALE: 1 IN. — 1000 FT.

Volcanics –
Diorite - Porphyry –
Magnetic Anomaly –
Self Pot. Anomaly –

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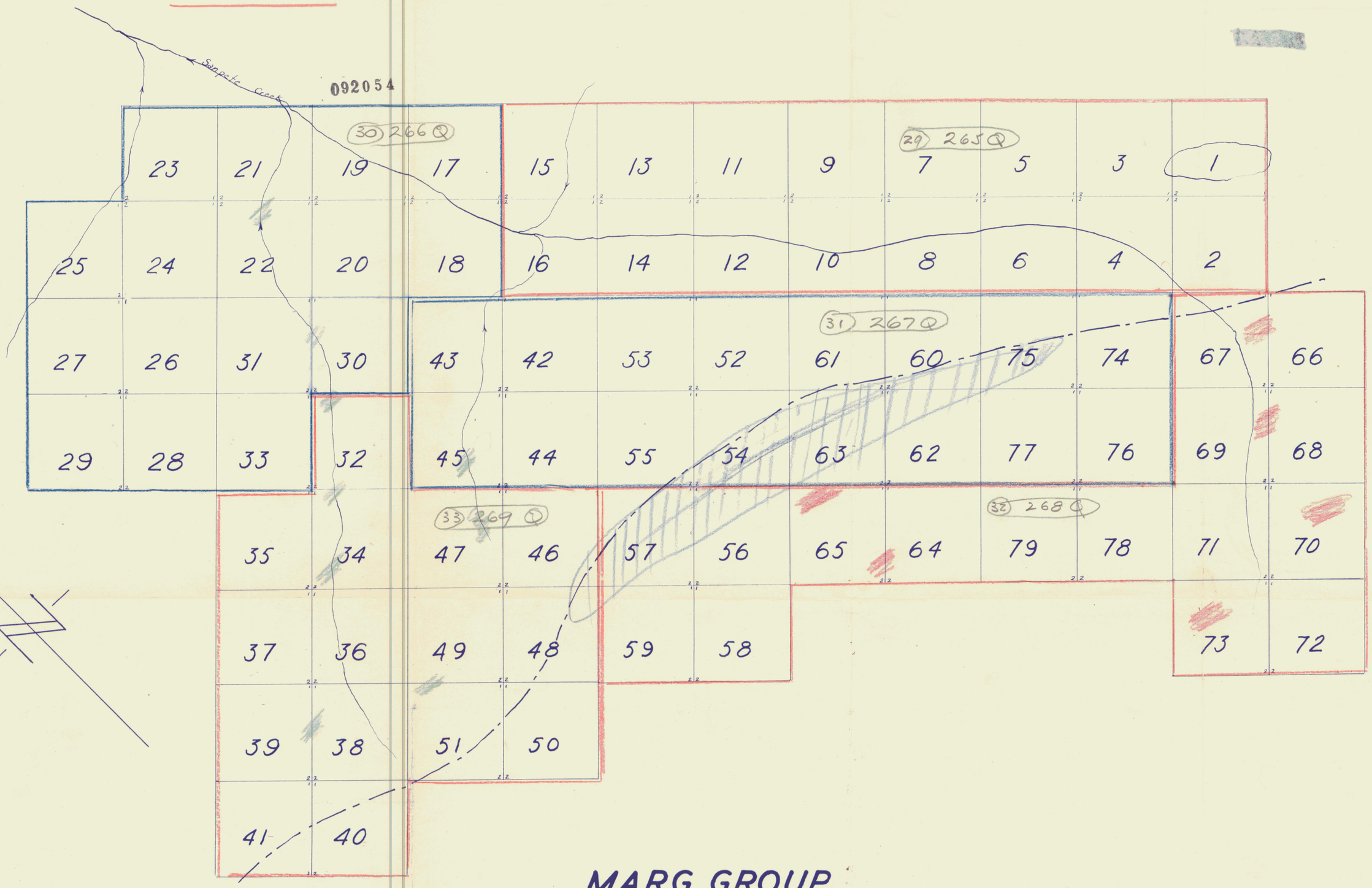

MARG GROUP

WHITE RIVER AREA

Sediments &
Volcanics

Diorite

Scale - 1 in - 1000 ft.

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DRY CREEK AREA
YUKON

SCALE: 1 IN – 1000 FT

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