A REPORT ON THE PRELIMINARY FOLLOW UP WORK

on

THE EMPRESS PROJECT

June - September 1967

by

R. I. J. Vogwill

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(N.P.L.)
330 MARINE BUILDING
355 BURRARD STREET
VANCOUVER 1, B.C.

INTRODUCTION

The primary area of interest for the EMPRESS PROJECT lies on the Aishihik Lake map sheet (115H N.T.S.) between latitudes 61 00N and 62 00N and longitudes 136 00W and 138 00W.

From the initial work done by Archer and Cathro last summer season six High Priority and three Low Priority areas were selected for follow up this season, as listed below:

High Priority:

(1) 3 miles n.w. of Little Buffalo Lake (two moly highs)

(2) Claims AH 13-28 (mag anomaly)

(3) Claims AH 1-12 (area of copper highs associated mag anomaly)

(4) 1½ miles s.w. of Little Buffalo Lake (coincident copper and moly highs)

(5) Claims AH 29-44 (mag anomaly)

(6) Claims AH 55-62 (mag anomaly)

Low Priority:

(1) 3/4 mile west of south end of Stevens Lake (one moly high from gossan)

(2) One mile s.e. of Bun Lake (3 moly highs from gossan)

(3) Claims HA 1-16 (mag anomaly)

A total of 6 camps were set up to cover these areas, all of which were within 40 miles of major transportation routes. Fixed wing aircraft, helicopter and 4 x 4 vehicles were used to establish these camps.

The field crew consisted of 2 Geochemical Samplers and a Geologist and the follow up work consisted of geochemical soil and silt sampling and geological mapping and prospecting. Where the high value last year was a silt both soil and silt sampling were done, but where the high value was only a soil only soil samples were taken.

No field testing was done and all soil and silt samples were sent to Atlas Explorations' lab. at Ross River for analysis.

No staking was done this season and certain groups staked last year are being allowed to lapse this year. These will be mentioned farther on in this report.

Each locale took approximately one week to complete, and food and necessary supplies were obtained in Whitehorse.

PHYSIOGRAPHY

The topography in most of the areas examined is gentle and rolling and most ranges are between 5000 and 6000 feet in elevation on a land base of between 3000 and 4000 feet

in elevation. Most major lakes lie at elevation of just over 3000 feet.

Above 4000 feet outcrop is generally abundant and vegetation scarce. Below this, vegetation increases and outcrop decreases because of flatter terrain. Outcrop is abundant in canyons of major drainage systems as steep, cliff-like occurrences. Marshy ground and muskeg are fairly abundant below 4000 feet.

Northern slopes are generally very heavily vegetated and perma frost is usually within one foot of the surface. Southern slopes, however, are grassy with no other vegetation.

Pleistocene glaciation has covered the bottom three-quarters of the map area, while the top one-quarter remains unglaciated.

FIELD WORK

I. GENERAL

(a) Geochemistry

Both soil and silt samples were taken during the season. If high values obtained last year were silts, then both silt samples and soil samples (in order to cover areas drained by these high value streams) were taken. If the original high value was a soil, only soils (with a few silts) were taken either on a grid line basis or contour lines.

Samples were taken below the ash layer in the B horizon and all samples were described in detail as to physical

appearance, depth, colour, and surrounding topography. Each sample location was marked with flagging on which was written sample number, etc.

Soil and silt results were plotted on enlarged grids and are shown at the back of the report.

(b) Geology

Most prospecting mapping was done using ½ mile = 1 inch aerial photographs and was mainly concerned with locating mineralization in order to explain anomalous silts and soils.

Some of the areas, however, had very little outcrop and here the Geochemistry was the deciding factor.

The most common rock types encountered were Tertiary volcanics (rhyolite flows and associated breccias), Coast Range intrusives (granite and granodiorite), and Mesozoic volcanics (andesites, welded tuffs and associated breccias).

Some fairly significant areas of mineralization were encountered and will be described under individual prospects.

II. DETAILED GEOLOGICAL AND GEOCHEMICAL DESCRIPTION OF INDIVIDUAL AREAS.

(For locations see base map Figure #1)

(1) 3 miles n.w. of Little Buffalo Lake 136°34', 61°55'

Two Mo highs were obtained here last year and the follow up work was unable to explain these high values. An extensive geochemical grid was run but failed to uncover

any anomalous areas in Mo or Copper. One high Mo value obtained last year was taken at the mouth of a small stream, the same spot was sampled this year and Mo was not detected.

The area lies entirely within the Coast Range Batholith and the main rock types were porphyritic granite and minor granodiorite.

No mineralization was found.

(2) 1½ miles s.w. of Little Buffalo Lake
136°30', 61°50'

A coincident copper and moly high was obtained here last year and some secondary copper mineralization was seen which could possibly explain the high copper value.

A geochem. soil grid was run but no favourable areas in either metal were noted.

The area lies entirely within the Coast Range Batholith and the main rock types were porphyritic Granite and Granodiorite. Within the granite a small shear zone containing copper stain assayed 0.88% Cu and Mo was not detected over a width of 9" and a length of 4'feet.

(3) Claims AH 1-12 Mag. Anomaly
136°04', 61°43'

The claims were staked over an airborne mag. anomaly in October 1966. No geochem was run on the group last year so only soils were run this year.

The rocks in the area are Mesozoic fragmental volcanic with associated porphyritic dyke rocks. A very little

copper was seen and a grab sample assayed 0.01% Cu and a trace of silver.

The geochem. grid turned up no areas of interest.

(4) Claims AH 13-28 (coincident Cu high and mag. anomaly)
136°04', 61°43'

Both silt and soil samples were run in this area and the soil results showed three favourable anomalous areas in copper. At the time of writing a closer soil grid was being run over the anomalous areas and as yet no results are available.

The area lies entirely within Mesozoic volcanic rocks with associated porphyritic dykes. Minor chalcopyrite was seen in outcrop and high values obtained last year can be explained by these occurrences.

(5) Claims AH 29-44 (mag.anomaly)
61°43', 136°04'

A soil sample grid was run over the claim group, but no encouraging results were encountered.

Outcrop coverage was very low, and no copper mineralization was seen.

The area lies entirely within Mesozoic volcanics (mostly fragmental) with associated dyke rocks.

(6) Claims AH 55-62 (mag. anomaly)
136°04', 61°43'

A soil sample grid was run covering the claim group but no encouraging results were found.

There was no outcrop on the claim group, so no rock types or mineralization were seen.

LOWER PRIORITY PROSPECTS

(1) 3/4 mile west of south end of Stevens Lake
(one moly high from gossan)
137°32', 61°42'

Contour geochem. soil sample lines were run over a gossan that formed at the contact between the Coast Range and a Tertiary volcanic plug. No encouraging results were found in the soils.

Two grab samples were taken over the gossan, which has formed as a result of the weathering of pyrite in the volcanics, assayed only a trace of Au. At the time of writing the assay results for Cu, Ag, and Mo had not been received.

Minor copper stain is present, with up to 2% pyrite in places.

(2) One mile s.e. of Bun Lake
(3 moly highs from a gossan)
136°28', 61°20'

This is the most promising area encountered so far.

Three moly highs were obtained last year from a gossan that formed at the contact between Coast Range granite and Tertiary volcanics.

This season contour soil lines were run above, below and around the gossan. These results show a large

anomalous area in copper downstream from main gossan area.

The interesting rock is the coast range granite which is silicified and well shattered and contains numerous quartz veins. These veins vary in size and contain low grade amounts of pyrite, galena and molybdenite. A grab sample was taken of these veins, but at the time of writing no assay results had been obtained.

(3) Claims HA 1-16 (mag. anomaly)
$137^{o}15'$, $61^{o}34'$

A soil sample grid was run over the claim group and three contour soil lines were run farther to the north along the Aishihik Lake road where moderate copper values were obtained last year.

No favourable areas were outlined on the claim group, but some fairly good values were obtained on the contour lines.

The area lies entirely within Mesozoic volcanic rocks, fine grained andesite, feldspar porphry flows and agglomerate, and highly vesicular andesite. No mineralization of interest was seen.

III. CONCLUSIONS AND RECOMMENDATIONS

(1) Two main areas of interest have been generated as a result of this year's field work: Bun Lake area and Claims AH 13-28. A closer soil sampling

grid has been already run on the latter, but no follow up work has been done in the Bun Lake area.

(2) Many high values obtained last year were checked this year and in most cases high values last year were not detected this year. This could possibly indicate that the type of geochemical reccse. carried out last year is not the most efficient and trustworthy for the area.

(3) It must be realized that the claim groups are not the most important prospects (except for AH 13-28) and because no significant anomalous results were found, they are being dropped (except AH 13-28).

(4) An assessment report is being written in order to apply the work done on AH 13-28 and keep them in good standing.

Respectfully submitted,

Richard Vogwill

Richard Vogwill.

ESTIMATED EXPENDITURE FOR EMPRESS PROJECT
1967 FIELD SEASON
3 Months - June to August 1967

1.	AIRCRAFT CHARTERS	
	(a) Fixed wing	$ 500.00
	(b) Helicopters	1,500.00
2.	VEHICLES	300.00
3.	SALARIES	
	Geologist: $700.00; 3 months @ $700.00/mon.	2,100.00
	2 Geochem. Samplers at $450.00/mon.	2,700.00
	Benefits at 7.5%	360.00
4.	CAMP COSTS	
	3 men @ $7.00/day for 3 months	1,900.00
	Purchase of Equipment	100.00
5.	GEOCHEM. SAMPLE ANALYSIS	
	Assume 1500 samples @ $1.50/sample	2,250.00
6.	TRAVEL EXPENSES	
	3 men Vancouver to Whitehorse and return	500.00
7.	GENERAL SUPERVISION	
	Chisholm	1,000.00
8.	ACCOUNTING ADMINISTRATION	
	15% of total salaries	620.00
9.	CONTINGENCIES MISCELLANEOUS	
	@ 10% of project total	1,300.00
	TOTAL	$15,130.00

DATE Aug. 14, 1967

FILE NO. ~~X7647~~ 3985-2

ASSAY CERTIFICATE

WHITEHORSE ASSAY OFFICE

P.O. BOX 340, WHITEHORSE, YUKON

RECEIVED FROM ~~Atlas Mine~~

SAMPLE NO.	GOLD OZ. PER TON	SILVER OZ PER TON
Y-754	TR	
Y-755	TR	

Empress Steven Lake

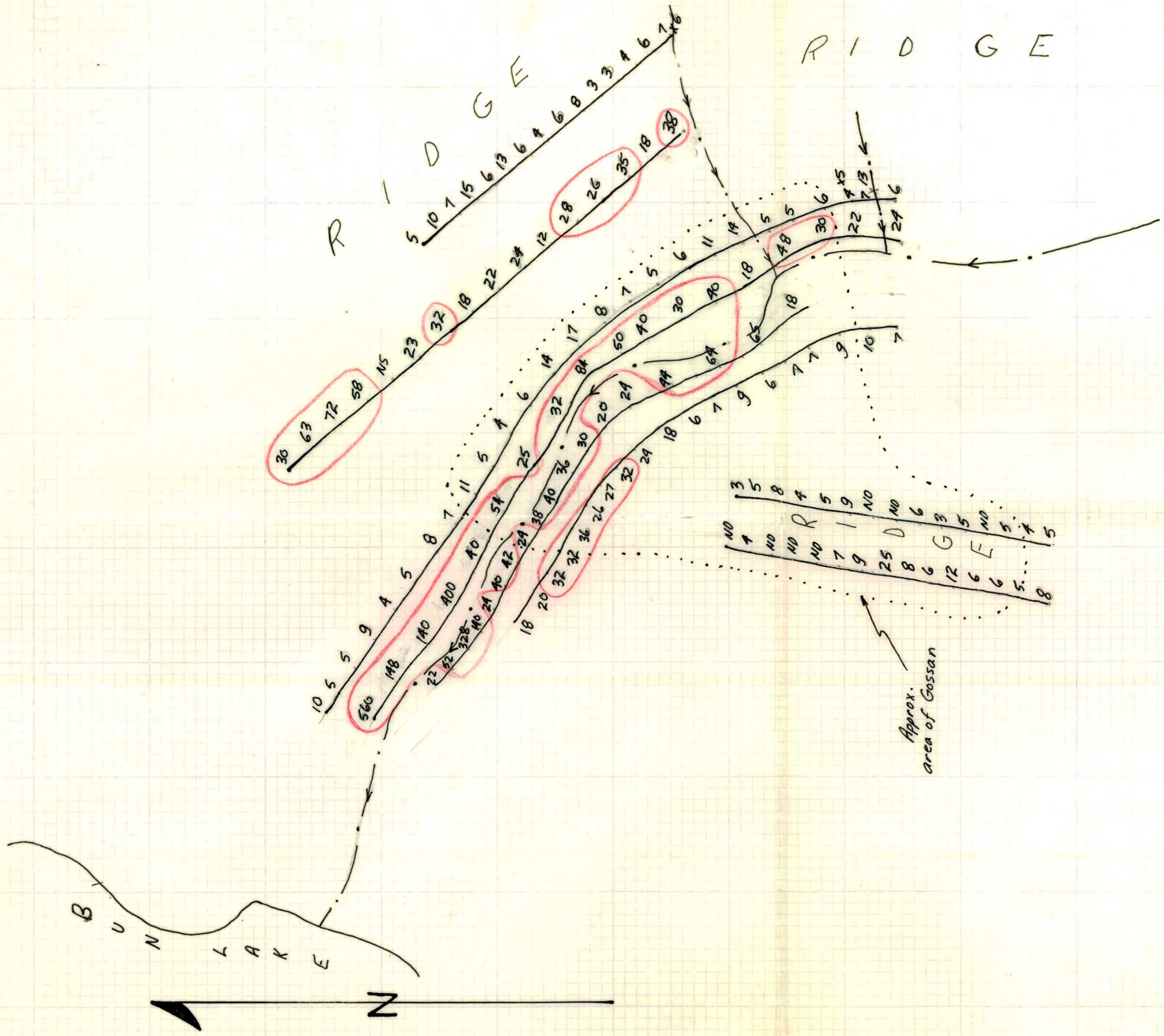
J S B

ASSAYER Geo. Spalding

EMPRESS PROJECT

Geochemical Map with Results
Low Priority Area #2, Bun Lake.

Aug/67.



ppm Copper.
.>35 Higher Values.
Scale 1" = 1000'

R.V.

WHITEHORSE OFFICE COPY RETURN PLEASE

Progress Report #1 - Empress Project
High Priority Area # 4 - AH 13-28

From : R. I. Vogwill
To : E. O Chisholm
C. L. Smith

General

A small fly - base camp has been set up on a small lake approx. 15 miles west of Mile 71 (Twin Lakes) on the Whitehorse - Carmacks road. Work started on AH-13-28 on June 3 and was finished June 9.

Food supplies are obtained by hiking 5 miles to the Southeast to the Jeep, driving to Whitehorse and driving - hiking back. The first time this was done, only two men were sent. This was found completely unsatisfactory because of the large load and it is now planned that 3 men will pick up supplies to ensure only one trip from where the Jeep is parked to the camp.

Chris Green & Dave Lightfoot are both doing good jobs. Lawrence Bill has quit.

Field Work

1. Geochemistry

Silt samples were taken in the pre - determined way ie. taking samples upstream from previous high values at 400' or 500' spacings. This was generally successful although many soil samples on the banks of streams had

to be taken, instead of silt samples, because many of the smaller streams have built up no appreciable sediment at the present time. Approx. 40 samples taken.

Soil sampling was run on a grid (lines 1000' apart & 300' sample spacings). Major drainage areas and areas of high soil values last year were covered. The lines run E-W, with the base line running N-S through a given point (Claim posts #2 for AH 21, 22 & #1 for AH 23, 24). The sampling was fairly successful and complete, although in places up to 3 samples had to be displaced because of water, vegetation etc. Approx. 150 samples taken.

2. Geology

According to Archer and Cathro, the area lies in a "structurally favourable area" of Mesozoic volcanic rocks. They have proposed a number of NE trending faults, one of which passes through this area. On the accompanying geological map several distinct NE trends can be seen (streams, possible faults etc.) but I still have not seen enough Copper mineralization to explain the high values obtained in this area last year. One high silt (right at 3+00 on the base line) was taken approx. 25' from an outcrop of andesite breccia and fine grained andesite in which I found very minor chalcopyrite. This could explain the high silt value and possibly the one below it, although the rock seemed fairly fresh. The only other Copper mineralization found in the area

was in the S.E corner, but this lies in claim group AH 1-12 and will be explained more thoroughly in that report.

The rocks seem most susceptible to mineralization in the N.E corner of the map where I encountered highly sheared and metamorphosed volcanic breccia and volcanic rocks containing large (up to 2±") veins of calcite along joints. There was, however, no copper mineralization.

The volcanic breccia is composed entirely of volcanic fragments in the NE part of the map, while to the S.W. some sedimentary fragments (chert, limestone) appear. The andesite, is fine grained, dark grey and usually contains associated pyrite and magnetite (minor). Dyke rocks consist of feldspar porphyry, hornblende and augite porphyries, and a augite-feldspar porphyry. The intrusive rock is very peculiar and a general field term for it, would be "dioritic."

3. Conclusions

1. Mag. anomaly due to associated magnetite in volcanic rocks.
2. Little Copper mineralization visible.
3. Should do smaller scale mapping if get anomalous areas from soil samples.
4. Difficult to explain most high Copper values obtained last year.

Richard Vogrill
June 14, 1967.

Photo # A 11369-5

Geological Map of AH 13-28

Silt Sampling on AH 13-28

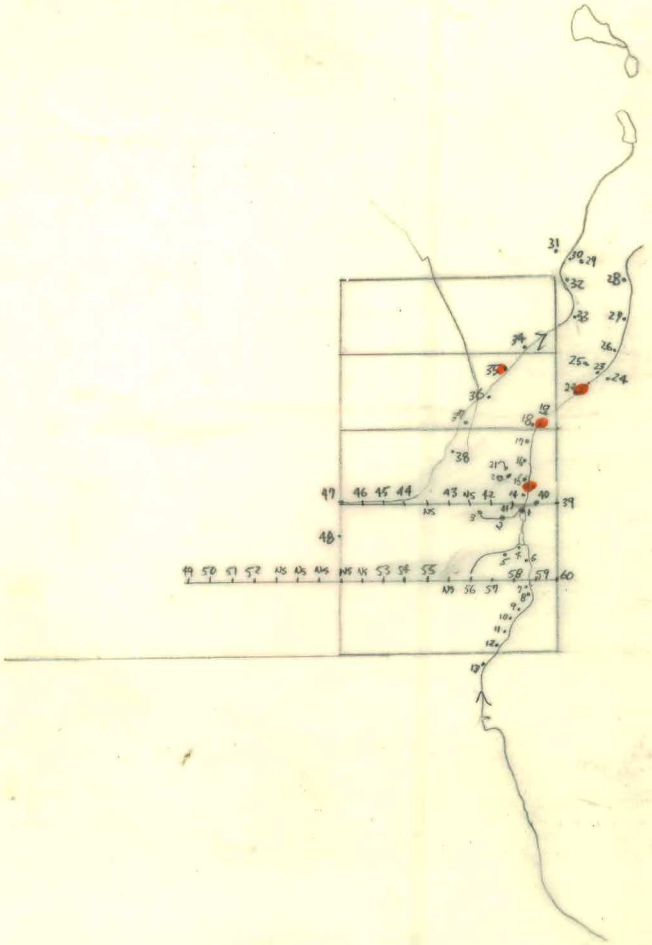
● - Previous highs

½ mile = 1"

A11369-5 RV

GRID #4

-showing sampling numbers
for 4-C-1 to 4-C-60

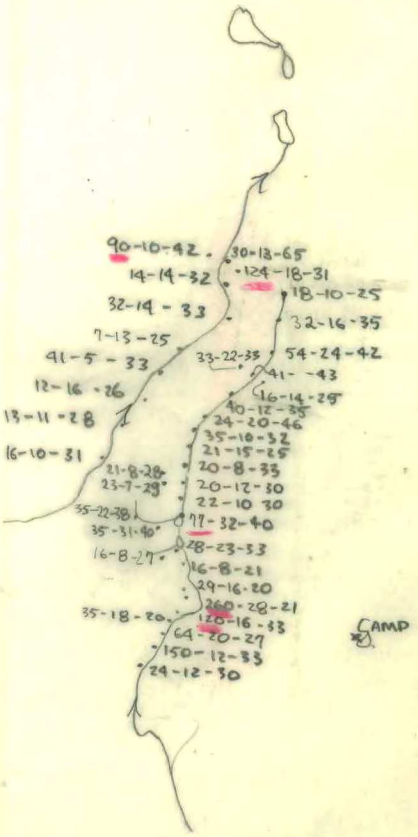


1/2" = 1 MILE

SILT SAMPLING GRID #4

COPPER - LEAD - ZINC

N

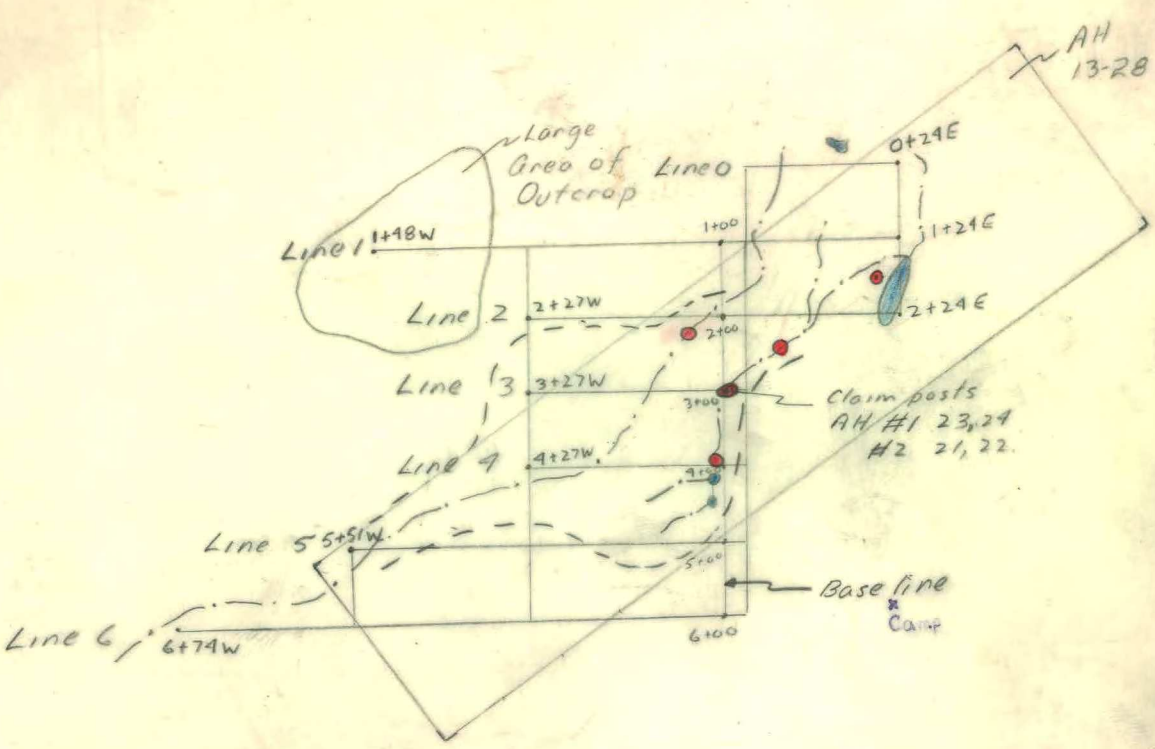


SCALE: 1/2" = 1 MILE

DRAWN BY: C. GREEN

AIR PHOTO A11369-5

Soil Sampling Grid AH 13-28



– – – = Major Drainage Areas

Samples with High Cu values (Last year) Silt / Soil

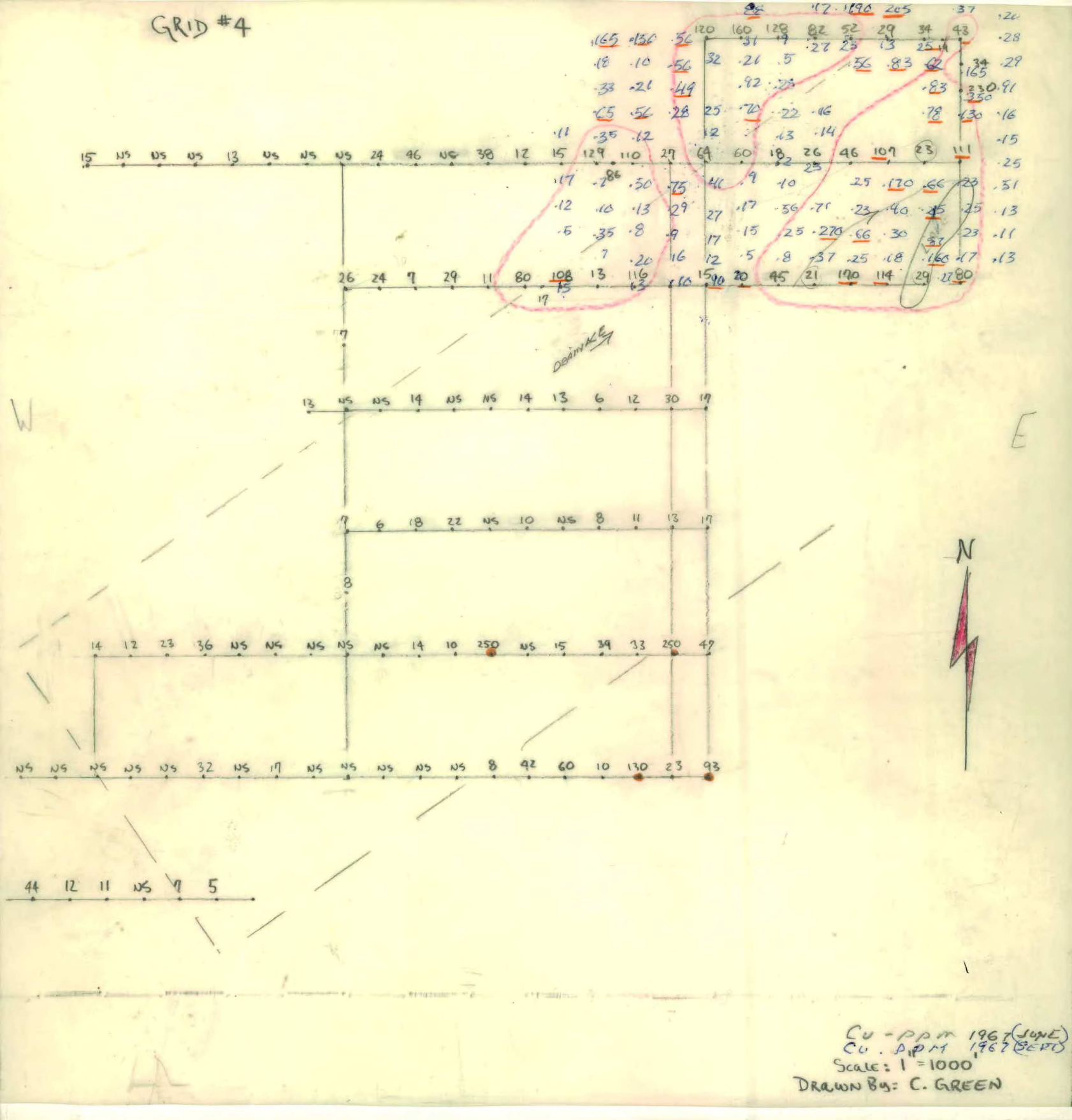
Samples taken at 300' spacings on lines.

Scale ½ mile = 1"

91369-5

R.V.

GRID #4



Cu - ppm 1967 (JUNE)
Cu - ppm 1967 (SEPT)
SCALE: 1" = 1000'
DRAWN BY: C. GREEN

EMPRESS.

Progress Report # 9.
Low Priority Area #2, Bun Lake

FROM: R. VOGWILL
TO: E.O. CHISHOLM
C.L. SMITH.

1. General

We were moved into Bun Lake on Aug 4.

Work began Aug. 5 and ended Aug 10 and consisted of geochemical soil sampling and prospecting - mapping.

We left the area on Aug 11.

2. Field Work

a. Geochemistry.

I decided to run contour geochem. lines, below, above and up the hill from the exposed gossan. It seems very hard to know how to get the best coverage on cliff-like outcrop. The first few lines were run over very rocky ground (ie talus etc) and some samples were impossible to take. Many of these samples were powdered rock (ie on the early lines).

The approx. location of these lines are shown on the accompanying map.

6. Geology

In this area I was dealing with two main rock types - granite of the Coast Range Batholith of Mesozoic Age and Tertiary rhyolite flows and breccias.

A contact between these two runs approx. E-W in the area of Bun Lake and it is here that the reported gossan occurs, although it is wholly in the granite.

The granite is coarse grained with very prominent pink Orthoclase grains and clear quartz grains. The percentage of mafic minerals ~~are~~ 15 very low and are mostly biotite. Local fine grained and bleached? variations of the granite are common. I would call a lot of the rock in these

bleached zones are Alaskite because of the almost complete absence of mafic minerals. Both acid and basic dykes are associated with the granite. A large number of quartz veins and veinlets occur in the granite and vary in size from 1' wide down to less than ¼ inch. These seem to follow local jointing planes and most are therefore striking in an E-W direction. The spacing between these veins varys, but generally you could expect to find up to 15 in 100' of outcrop in some areas.

The volcanic rocks are mostly siliceous with local spherulitic, brecciated and more basic zones. Good tracytoid alignment is common. Some ribbon cherts? present.

The granite is well-folded on a small scale and much of the gossan seems to occur on the axial planes of many of these folds.

3. Mineralization

A fairly fine network of quartz veins and veinlets cuts the intrusive, as I have mentioned and I feel that the gossan is a direct result of the weathering of sulphides in these. To the south on the geological map the quartz veins are generally wider and contain more mineralization going N and N.W. the granite gets finer grained as the contact is neared and these veins become hairline fractures filled with quartz.

Pyrite and galena are the main sulphides present. The % of sulphides is fairly low probably <0.5%. I saw one smear of MoS_2 which could indicate that there is more present that I saw.

This mineralization causes a limonite stain.

A point of interest is that one of last years field sheets shows that a man found some galena in a qtz. vein ≈ 3 miles S.E of Burnt Lake. If the intrusive is cut by enough of these veins and they are that

continuous, the area could look quite interesting.

Large areas of MnO_2 stain are common on the weathered surface of the intrusive. It is a blue-black colour.

A grab sample was taken by chipping off the best pieces from a number of these quartz veins.

A thin vein of specular hematite was found in volcanic rocks above camp.

4. Conclusions

1. The area look quite favourable
   We should perhaps concentrate our attention more on the intrusive than the contact.

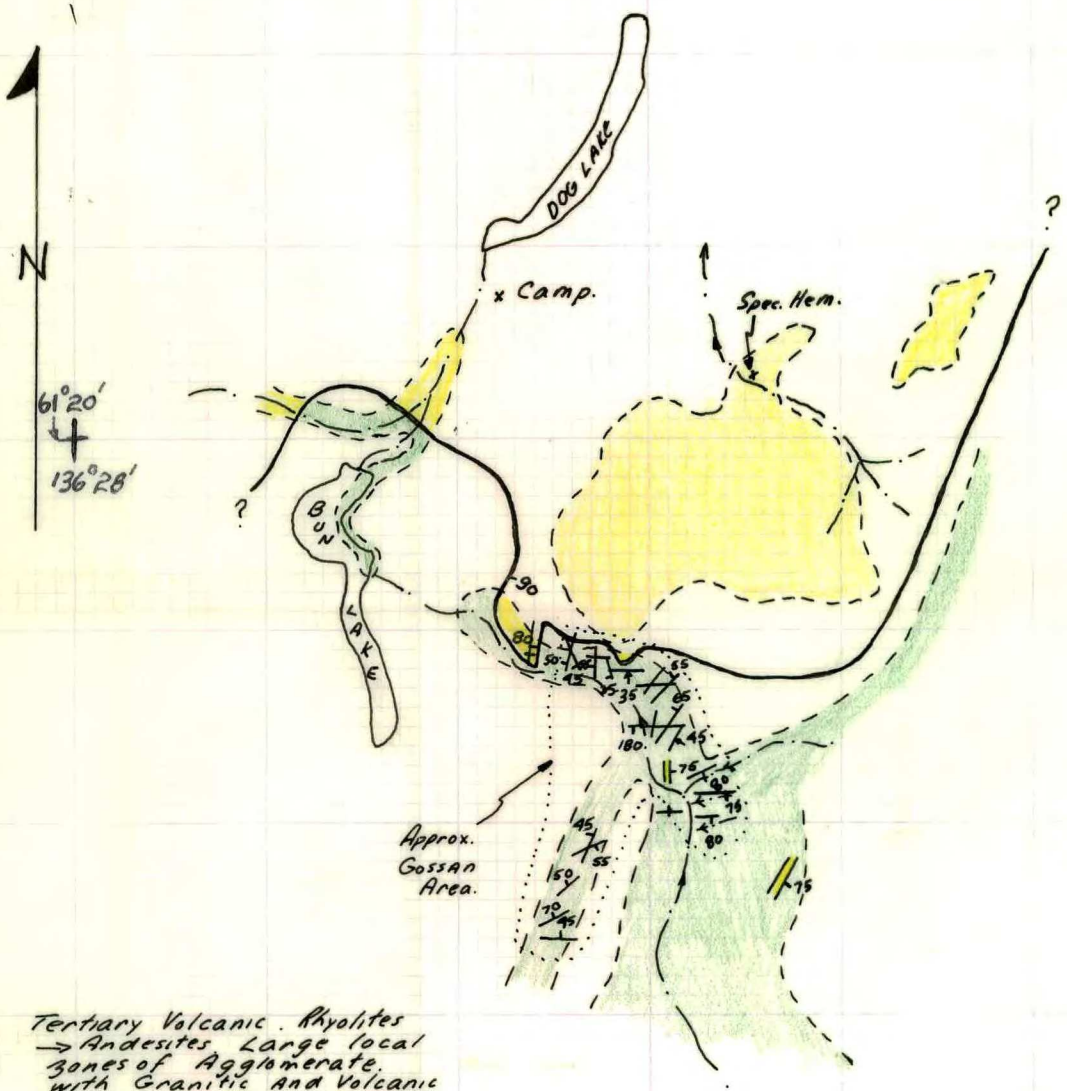
2/ The gossan is caused mostly by the weathering of the pyrite in quartz veinlets.

Richard Hogarth
Aug 12/1967.

EMPRESS

Geological Map, Bun Lake Area, Low Priority Area # 2.

Aug / 67.



Tertiary Volcanic. Rhyolites → Andesites. Large local zones of Agglomerate with Granitic and Volcanic Frags.

Coast Range Batholith. Granite with assoc aplite dykes, qtz veins and Andesitic dykes.

Outcrop outline

Known contact with dip in places.

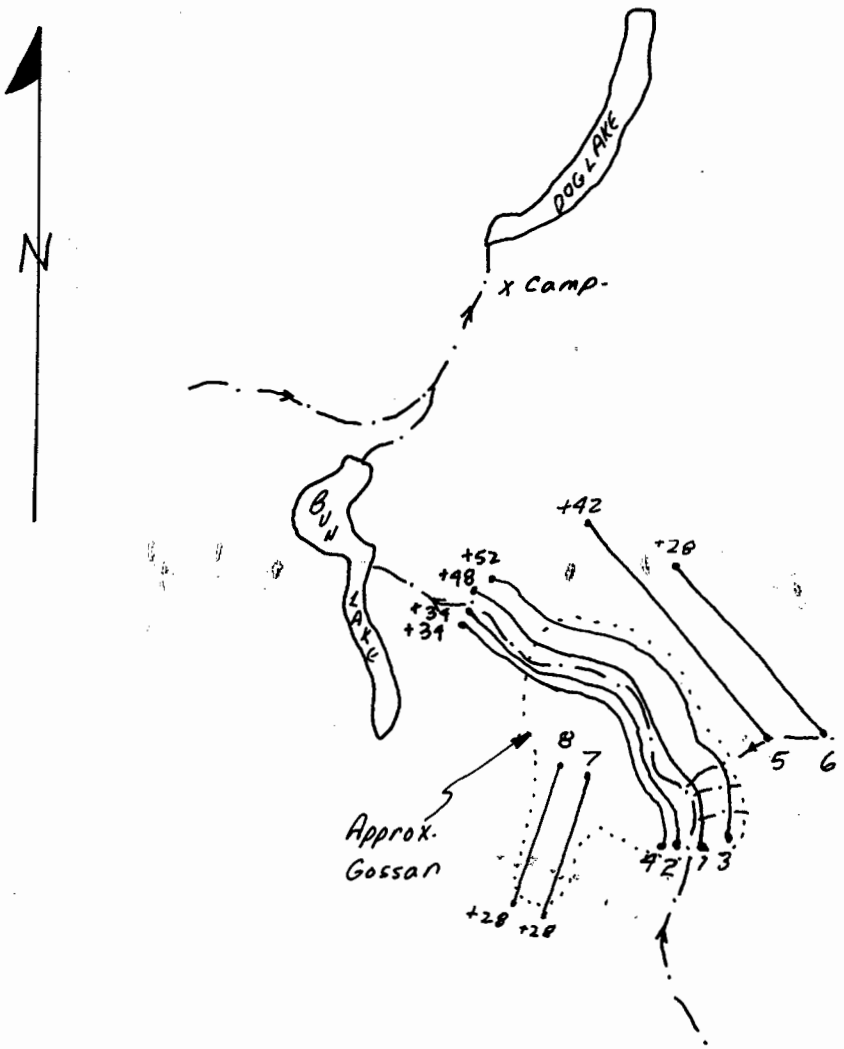
Jointing and Faulting.

Streams.

Scale 1" = ½ mile

R.V.

EMPRESS. Location of Geochem. Soil Lines. Aug 167
Low Priority Area #2, Bun Lake



Scale ½ mile = 1"

RV/

Progress Report #2 - AH 1-12 EMPRESS PROJECT.
High Priority Area #3

From: R. Voguill
To: E.O. Chisholm
C.L. Smith.

General

The work, initial stage exploration, has now been completed. The work was done between June 12 and June 16 and consisted of soil sampling on a grid pattern and mapping - prospecting traversing.

Field Work

1. Geochemistry

The grid was laid out as shown on the accompanying map, ¼ mile lines with 300' sample spacings. No problems were encountered except sample displacement due to vegetation, topography etc.

2. Geology

The rocks in the area are nearly all fragmental. Using 4 mm. as the ~~optimum~~ distinguishing grain size between breccia and tuff, most of the rocks in area are breccia, with local zones of very fine grained fragments.

The associated dyke rocks in the area are, as before, augite porphyry, feldspar porphyry (also as flows?), and augite - feldspar porphyry.

On the east side of the claim area, large fragments of epidote and some sedimentary fragments are present in the breccia. Further the south, however, this breccia is made up entirely of feldspar porphyry fragments, indicating the probable occurence of feldspar porphyry as flows with later brecciation.

The highly silicious rock, on the west side, which seems to have a dyke-like occurence, is, in some places, very rich in magnetite. Most of the rocks in the claim area contain minor associated magnetite.

Most of the outcrops are very non-descript in character, and structures such as jointing were not well developed in most.

Outcrop coverage very low ≈ 30%-35%.

3. Mineralization

Most rocks contain the usual pyrite up to .5% in places.

Copper mineralization is still, as before, pretty scarce and only 1 area contains Copper definitely. The other two (shown on map) are questionable because of the very small grains.

The one interesting area, however, is in the silicious (virtophyre?) rock talked about before and occurs in a narrow (5") shear zone parallel to jointing (N80°W/90°). Besides chalcopyrite; magnetite

pyrite, minor bornite - covellite, and hematite are present. The zone is however very short and cannot be traced for more than 10 feet at the surface. The magnetite acts almost as a cement, and must run up to 25% in places for a length of approx. 150'. A grab sample taken.

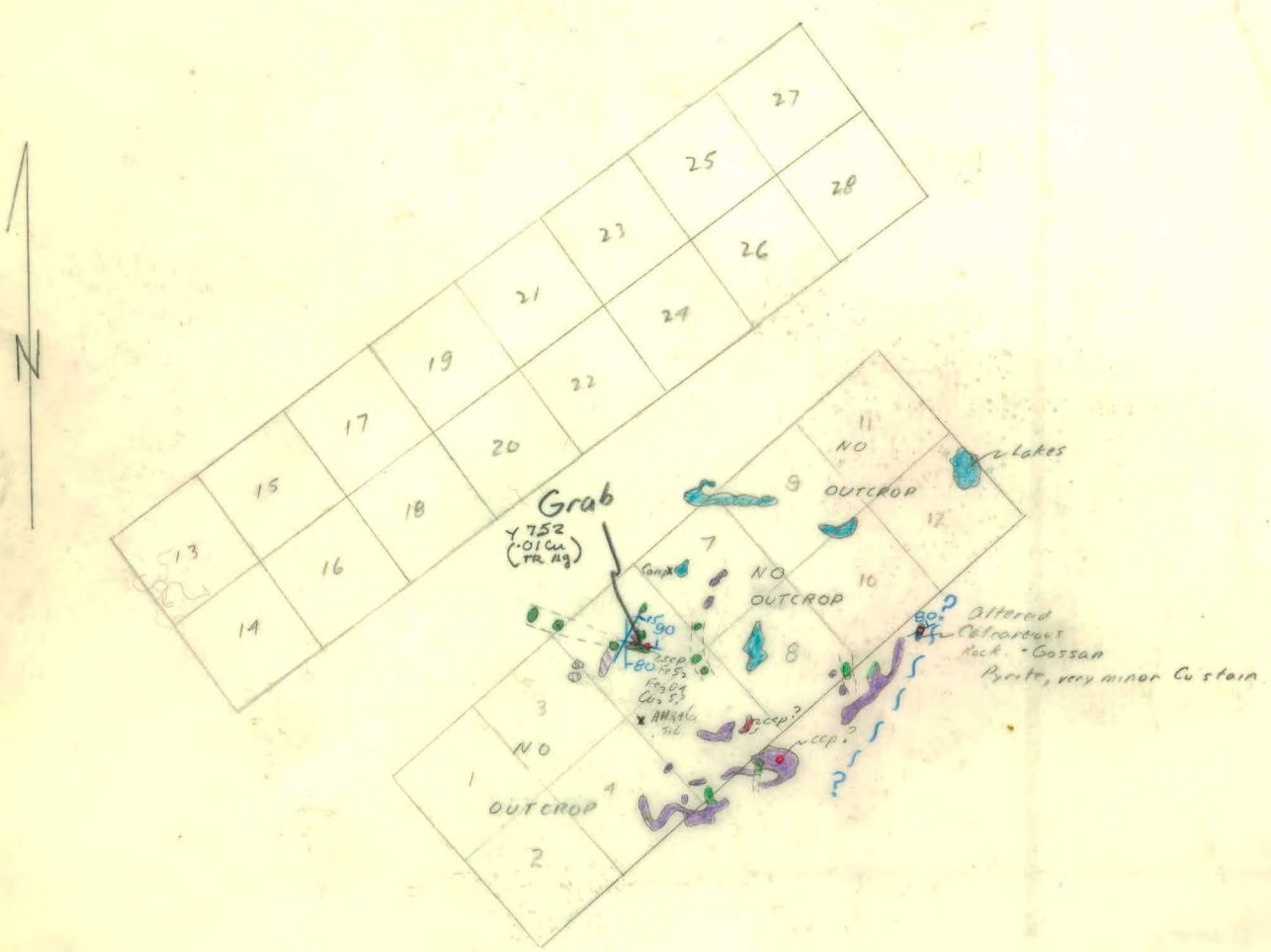
The other two occurrences of chalcopyrite are doubtful and very minor, but are interesting because of their occurrence in the breccia.

Conclusions

1. Can explain mag. anomaly
2. Very little Copper mineralization visible on the surface.
3. Area still warrants another (closer ie. smaller scale mapping etc) look if get some good soil results.

Richard Voyvild
June 16/1967.

Geological Map AH 1-12
High Priority Project #3



Very siliceous - Vitrophyre?

Dark, fine-grained andesite

Tuff grading to Breccia Fragmental Volcanics

Dyke Rocks + Feldspar Porphyry

● Mineralization (as marked)

Most rocks contain
≈0.2% FeS_2 on average
+0-1% Fe_3O_4 " "

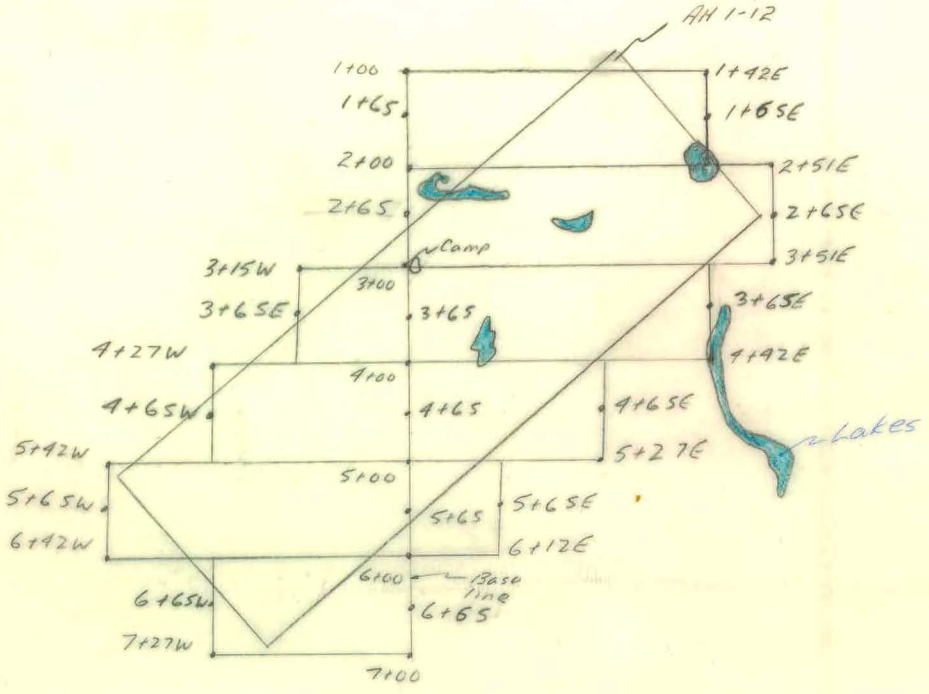
Y Dip + Strike of Jointing.

X Actual Location of Claim posts

A 11369 – 4 R.V.

$\frac{1}{2}$ mile = 1"

Geochemical Soil Grid - AH 1-12
High Priority Area #3



Approx. 150 sample taken

Scale 1" = ½ mile

R.V.

Progress Report #3. Empress Project.
High Priority Area #5, AH 55-62

FROM: R. VOGWILL
TO: E.O. CHISHOLM
: C.L. SMITH.

1. General.

Work began June 17 and was completed June 20 and consisted of geochemical soil sampling and prospecting - mapping (although no outcrop was encountered).

The original claims were staked short and the soil sampling grid was run on the hypothetical claim grid, therefore being bigger than the actual claims.

The claims were tagged.

2. Field Work

a. Geochemistry

The grid was set out as shown on the accompanying map and follows the hypothetical claim lines as mentioned above. The topography is very flat and the sampling was very successful.

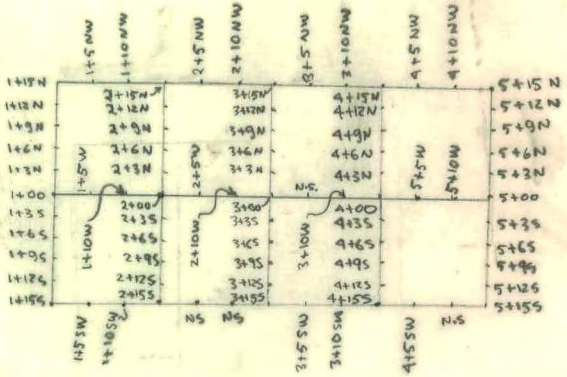
6. Geology

No outcrop was encountered on the claim group, probably because of the flat topography. Strong magnetic deflection was encountered on line 5 on the east side of the grid, which, at least, agrees with the government magnetic map, which shows an anomalous area.

3. Conclusions

1. There is a definite magnetic anomaly, but unable to explain it.
2. Area probably lies in Mesozoic volcanics.

Richard Vogwill
June 24/67.



N

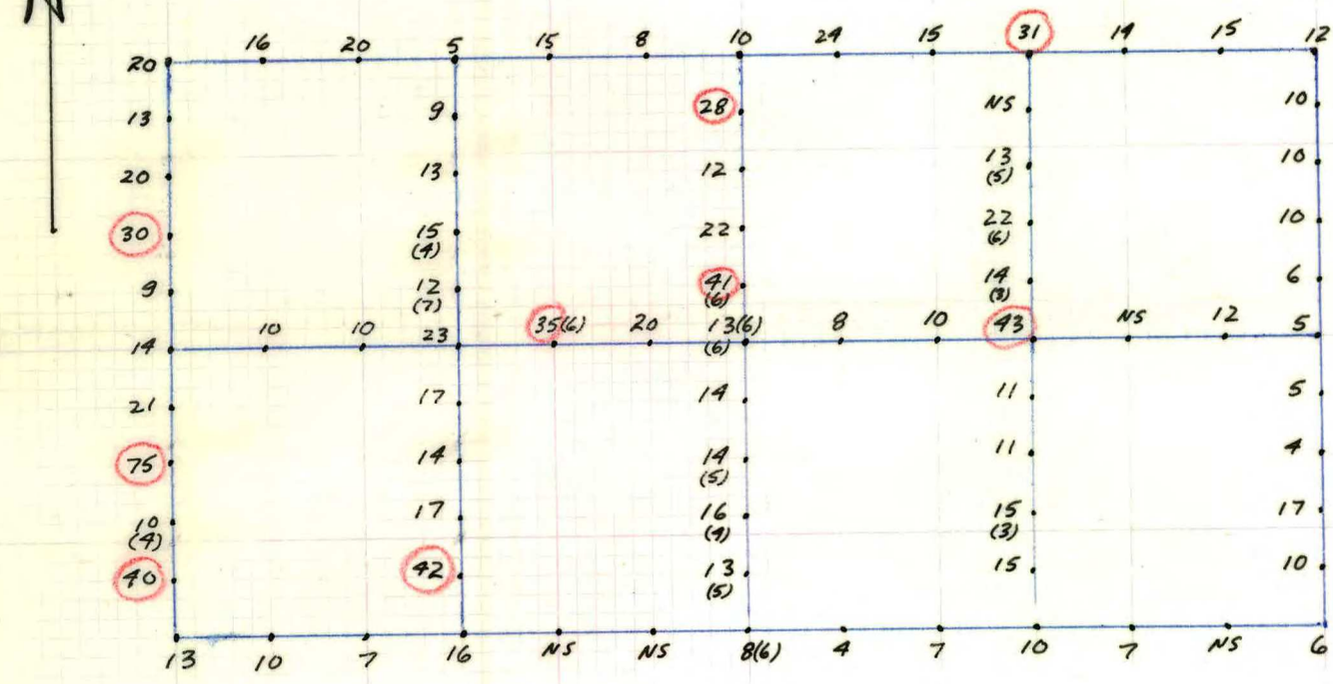
AREA # 5

A 11369-3

EMPRESS PROJECT.

Soil Sample Grid with Results
High Priority Area #5, AH55-62

July/67.



NS - No Sample.

41 ppm Copper

(6) ppm Mo.

(X) = Higher values

Scale 1" = 1000'

RNF

Progress Report #4
High Priority Area #6, AH 29-49

EMPRESS PROJECT.

FROM: R. VOGWILL

TO: E.O. CHISHOLM

: C.L. SMITH.

1. General

Work began June 21 and was finished June 26 and consisted of geochemical soil sampling and prospecting mapping. The soil sample grid was ~~laid~~ set out along the hypothetical claim grid. The claims, however, are improperly staked - in direction of staking, number of posts, labelling of posts and missing posts. These mistakes must invalidate the claim group.

The claim group is approx. 3½ miles from camp.

2. Field Work

a. Geochemistry

The grid was set out as shown on the accompanying map. Because of the improper staking only 5 sets of claim posts were present for 16 claims and therefore the grid overlapped the actual claims, 3000' on the N.E. end and 1500' on the S.W. end. Because of inaccurate pacing due to topography and possible magnetic deflection, lines 3-8 are not the intended 1500' apart, but with good control, they are located accurately on the grid.

The sampling was fairly successful, but in places, especially on lines 10 and 11, sampling was poor due to perma-frost etc.

6. Geology

On the claim group there is only one large area of outcrop, in the N.E. corner.

A highly sheared and altered fragmental volcanic rock (agglomerate) is the most abundant rock and has associated small dykes of dense, fine-grained andesite and augite porphyry. The agglomerate has a cementing matrix of feldspar porphyry and the rock is riddled with calcite veinlets occuring along shear and jointing planes. The fragments are of volcanic composition and are large (up to 3') and well rounded.

The highly sheared and altered limey rock that occurs in a possible belt on the S.W. could have originally been a lime rich breccia containing fragments of chert as well as the limestone.

Most jointing in the rocks occurs in conjugate sets, the major trend being N.W

c. Mineralization

I was unable to find any Copper mineralization on the claim group.

Pyrite and minor magnetite are, as usual in this district, present in fairly constant amounts.

The agglomerate seems very susceptible to mineralization because of its highly sheared and altered nature, but was bare of Copper mineralization.

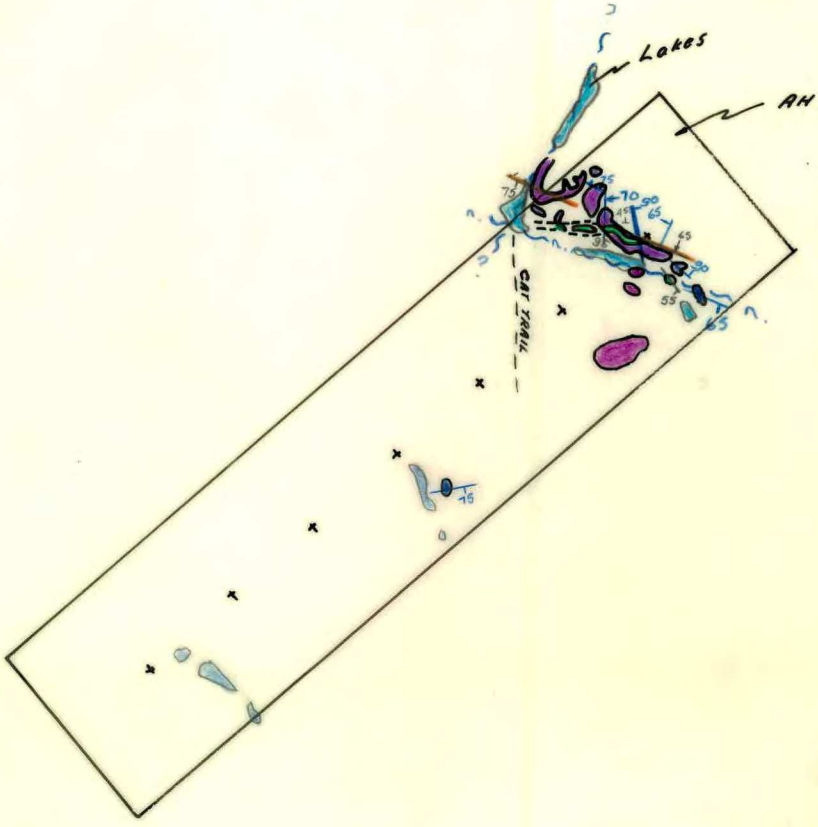
3. Conclusions

1. Magnetic anomaly POSSIBLY explained.
2. Claims should be restaked if further work is needed.
3. No Copper mineralization visible to me.

Richard Cogill / June 26/67.

EMPRESS Project

Geological Map of AH 29-44
High priority Area # 6



Fragmental rocks, mostly Agglomerate with minor assoc. dykes

Dyke rocks.

Highly sheared limey fragmental

Strike & Dip of contacts.

Strike & Dip of Calcite veinlets

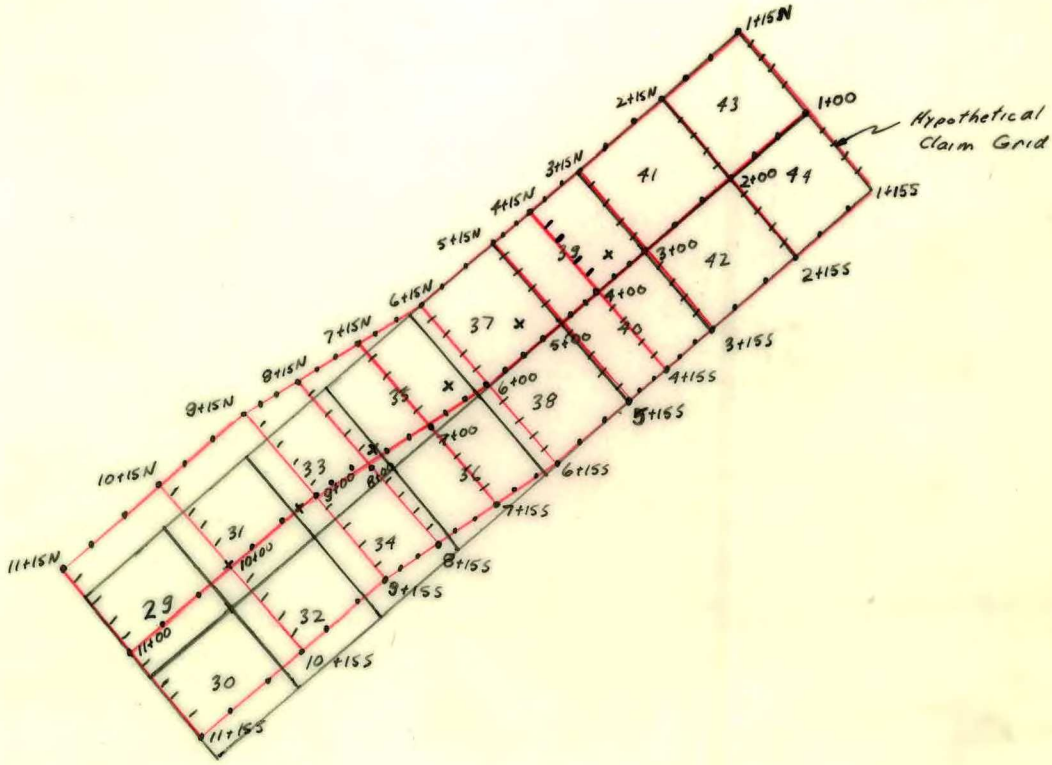
Strike & Dip of Faults (dark) & Joints (soft).

Scale $\frac{1}{2}$ mile = 1"

R.V.

Geochemical Soil Sampling Grid.
AH 29-49, High Priority Area #6

EMPRESS Project.



+ Actual Claim post locations

— outline of soil grid. + lines.

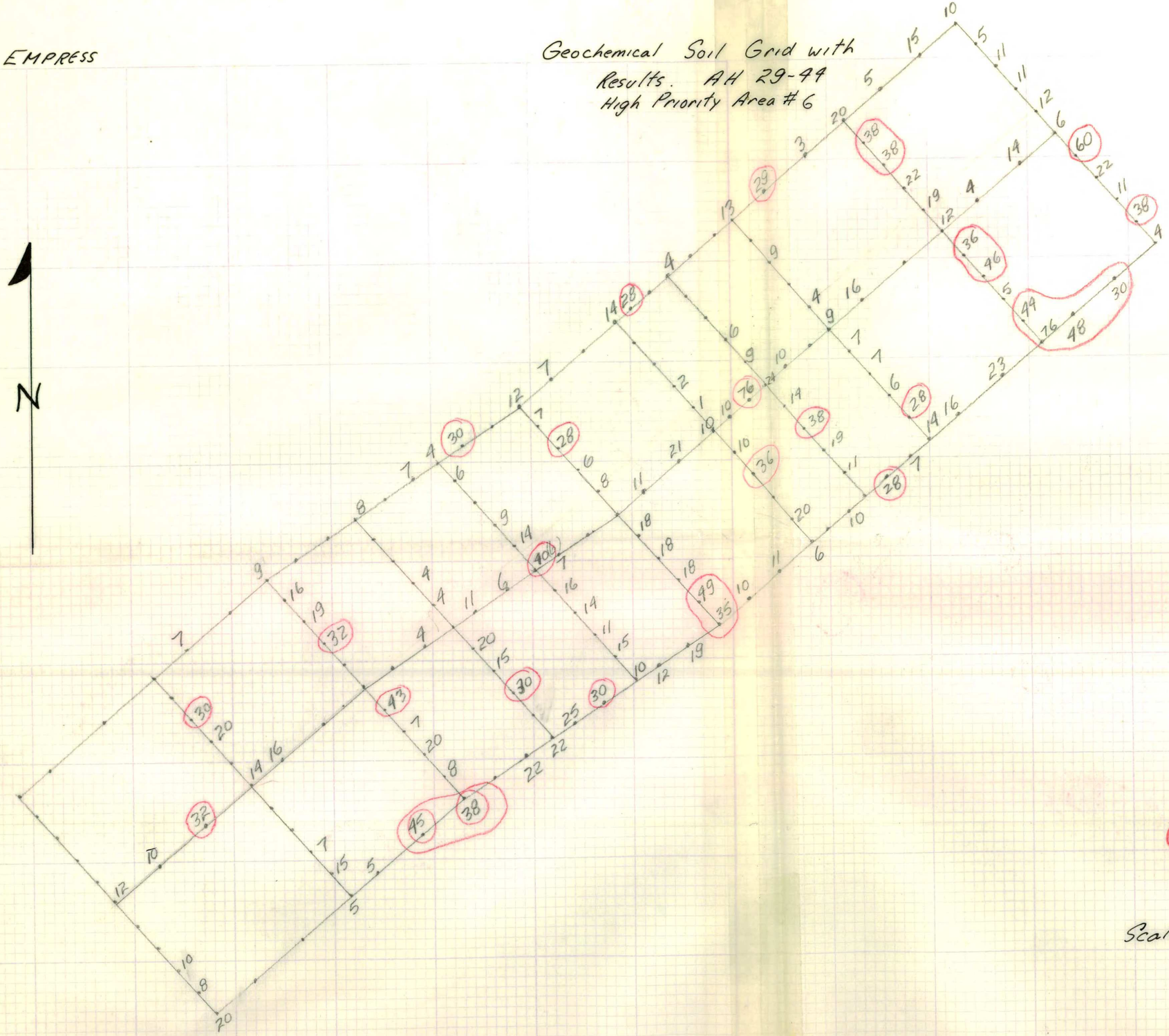
—●— Samples taken at 500' intervals

—|— Samples taken at 300' intervals

RV/.

EMPRESS

Geochemical Soil Grid with Results. AH 29-99 High Priority Area #6



(.725) Higher values

PPM Copper.

Scale 1" = 1000'

R.V.

EMPRESS PROJECT

Progress Report # 7

July/1967.

Claims HA 1-16, Aishihik Lake Area
Low Priority Area # 3.

TO: E.O. CHISHOLM
C.L. SMITH

FROM: R. VOGWILL

1. General

The original plan was to drive to Stevens Lake (Low Priority Area #1) via the Aishihik Lake and thence to Stevens Lake by cart road. The cartroad, however, does not continue as a drivable road to Stevens Lake, it becomes a small trail after the first mile and is impassible. We therefore proceeded to Claim groups HA 1-16 on the Aishihik Lake road which is Low Priority Area # 3.

Work began on July 17 and was finished on July 24.

2. Field Work.

a. Geochemistry

A soil sample grid was run over the claim group as shown on the accompanying map. Also 3 contour geochem lines were run, as shown, above last years "moderate" copper values These moderate copper values do not coincide with the claim group, but are farther to the north. One high silt sample taken last year is on a stream that drains the claim group. Two silts were taken up stream from this high value.

b. Geology

The claim group was suppose to be staked on a "favourable limestone unit" which showed moderate copper soil values.

I did not find this limestone unit and do not believe it exists in this particular area. Also the claims were staked over a mag. anomaly, not a limestone unit and there are no

previous high copper soils associated with the claim group. The moderate copper values are farther to north.

Archer and Cathro show the Yukon Group outcropping in the area, which presumably contains the favourable limestone unit. The area I have mapped should be in the Yukon Group according to their map, but I encountered only Mesozoic volcanic rocks. There is a lot of greissic and schistose float in the area, however, but no limestone float. This float is part of the Yukon Group.

The area mapped lies entirely within Mesozoic volcanic flows with associated agglomerates and brecciated zones. These flows came from the north side of the map area and flowed towards the south. Overall, I would say that they are relatively undisturbed, although some minor folding has taken place.

The two main rock types in the area are a hard, dense, fine grained, blue-grey andesite and muddy looking feldspar porphyry andesite with large agglomeritic areas. The fine grained andesite is the youngest flow, I believe, and lies stratigraphically lower than the feldspar porphyry flow(s) The main outcrop of the blue-grey andesite is on the southern edge of the map, where it forms the leading edge of one of the earlier flows. Successive flows on top of this have led to a terraced terrain in this area. On the air photos the successive flows can be seen very distinctly. Some areas of the blue-grey andesite have slight brecciation, but these are very local. The feldspar-porphyry andesite, on the other hand, has very large zones of breccia (agglomerate more likely, as the fragments are well rounded).

Also outcropping ~~on~~ the map area is a vesicular andesite, purple in colour and containing amygdules of calcite, quartz and possibly some greenish mineral, possibly a feldspathoid.

The rocks in the area are extensively sheared and fractured (on a very small scale in many places) and

the rocks are heavily weathered in most outcrops.

Alteration is mostly propylite and chlorite-epidote is abundant in places.

B3. Mineralization

I have not found any copper mineralization in the area. The mag. anomaly on the claim group is due to the magnetic volcanic rocks, especially the dense, blue grey andesite.

The rocks are well fractured and altered and would therefore be good receptors of mineralization, but besides the high concentration of Fe in the rocks (pyrite and magnetite) I was unable to find any other mineralization.

4. Conclusions

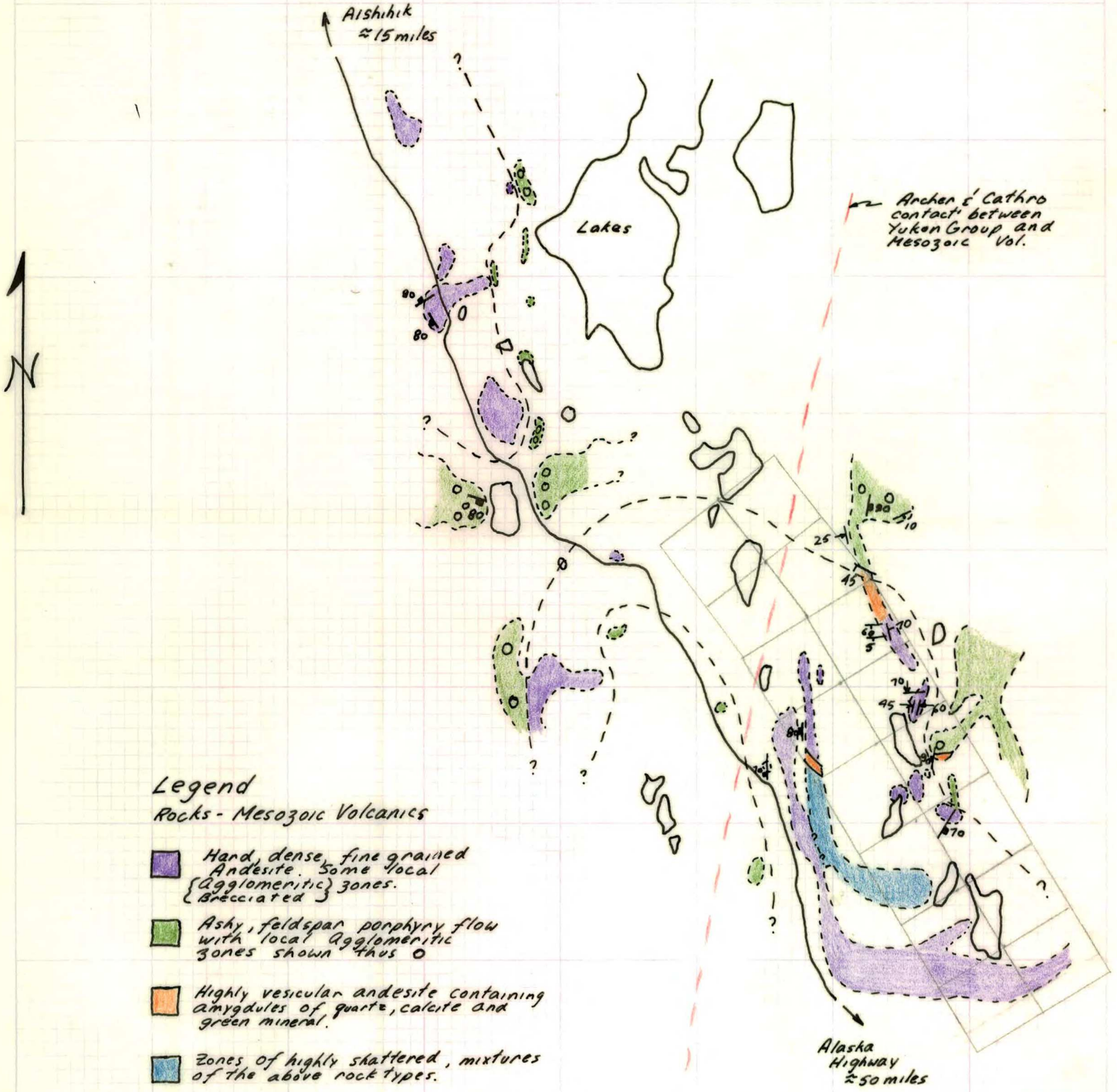
1. I am unable to explain the "moderate copper soil values" to the north of the claim group.
2. I can explain the mag. anomaly on the claim group.
3. I saw no copper mineralization in the area.

Richard Vogrich
July 25/1967.

EMPRESS PROJECT

Geological Map, HA 1-16 and surrounding Area
Low Priority Area #3

July/1967.



Legend

Rocks - Mesozoic Volcanics

- Hard, dense, fine grained Andesite. Some local {Agglomeritic} zones. {Brecciated}
- Ashy, feldspar porphyry flow with local Agglomeritic zones shown thus O
- Highly vesicular andesite containing amygdules of quartz, calcite and green mineral.
- Zones of highly shattered, mixtures of the above rock types.
- Dip & Strike of Joints
- Dip & Strike of Bedding
- Outcrop outline and contacts

Scale 1" = ½ mile

Air Photo A11069
209

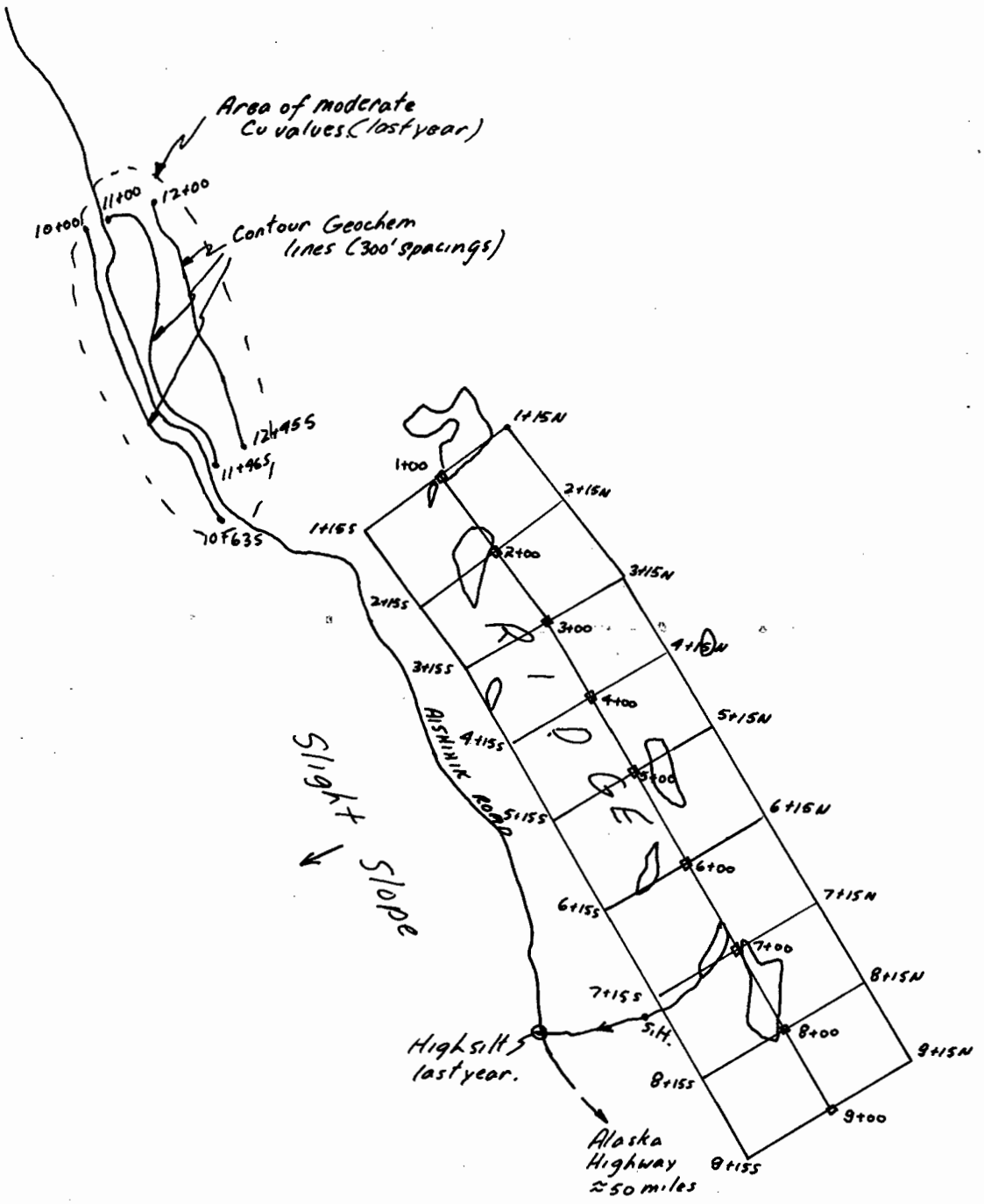
RV/

EMPRESS PROJECT

Geochemical Map.

Showing lines for HA 1-16
and surrounding Area
Low Priority Area #3

July/67.



Samples taken at 300' intervals on NE-SW lines.

Samples taken at 500' intervals on NW-SE lines.

Scale 1" = ½ mile.

R.V

EMPRESS PROJECT. Progress Report #8 August 1/67.

Low Priority Area #1, Stevens Lake.

FROM: R. VOGWILL
TO: E.O CHISHOLM
C.L. SMITH.

1. General

Work began on July 29 and was finished on July 31.
We drove a jeep up to the south end of Polecat lake and from here we transported our gear by means of Iver Mast's boat (with engine) into Stevens lake. (There is a small channel joining Stevens lake and Polecat lake)

2. Field Work

a. Geochemistry

Since last year's high samples were soils, only soil samples were taken. I decided to run contour geochem. lines over the area because of its small size. These lines were fairly closely spaced (≈ 500' slope distance) and samples were taken at 300' intervals. The lines were extended in order to get background values over the unmineralized area.

A few silts were taken from springs etc during the soil sampling.

The location of the lines is shown on the accompanying map.

b. Geology.

Archer & Cathro show a plug-like body of Tertiary volcanic rocks in contact with the Coast Range Batholith and it is at this contact that the gossan occurs.

I concentrated my mapping on the gossan only and I encountered only the Tertiary volcanic rocks except for a dyke of coarser grained intrusive rock.

The gossan occurs in a highly sheared section of the volcanic rocks and is approx. ½ mile long and 1000' wide.

The plug-like body of volcanic rocks is composed almost entirely of a light-brown grey, porphyritic, siliceous volcanic

rock which I have been calling a rhyolite porphyry. As the margins of the slug are approached the rock seems to lose its porphyritic nature and becomes a more dense and massive rhyolite. The rock could originally have been a pyroclastic, which has become welded because in some outcrops I found many fragments, highly sheared, not really having a brecciated appearance, but more tuffaceous.

Andesite and andesite porphyry dykes are associated with the rhyolite porphyry

The one intrusive outcrop is a dyke of coarse grained, siliceous, plutonic rock, possibly a feeder from the main mass of the Coast Range Bath.

All the rocks are well jointed and in the area of the gossan the outcrops are very sheared and altered.

c. Mineralization.

In the area of the gossan the rhyolite has an average sulphide content of approx. 1.5%. The sulphides are almost all pyrite with very minor chalcopyrite, tetrahedrite?, pyrrhotite?, and molybdenite?. I saw some copper stain on one outcrop, but not in any of the others. There is a yellow colouration to some of the rock, but I didn't feel that it was Mo stain, but due rather to the Fe.

The sulphides occur as disseminated grains and also along hairline fractures (the latter occurence is very minor)

The rock is highly sheared but I wasn't able to connect this shearing with the mineralization (ie the mineralization didn't seem to be concentrated along these shears, but rather is disseminated throughout).

Two grab samples were taken along two separate

outcrops on the gossan. I plan to have them assayed for Cu, Mo, Ag, Au.

3/ Conclusions

1/ I couldn't see enough MoS_2 in outcrop to explain the high value obtained last year.

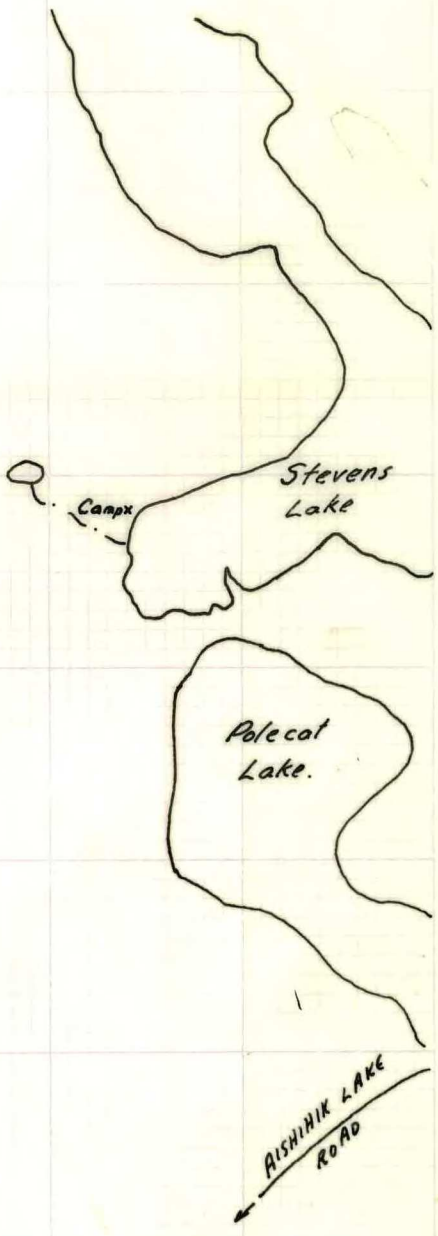
2/ I believe that the gossan is indigenous and the area could be interesting if the assays are good.

Richard Vogill
August 3/1967.

EMPRESS PROJECT

Geological Map, Low Priority Area #1. Stevens Lake Area

August/67.



Legend

Rocks

- Coarse-grained intrusive. Qtz. Monzonite Coast Range.?
- Tertiary Volcanics – Rhyolite porphyry. Welded Tuff.
- Dip & Strike Jointing Vertical.
- Dip & Strike Bedding.
- Streams

Scale 1" = ½ mile

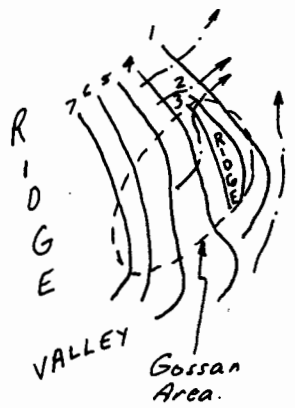
A.P. A11369-30

RM.

EMPRESS

Geochemical Soil Sampling Lines
Low Priority Area #1

AUGUST/67.



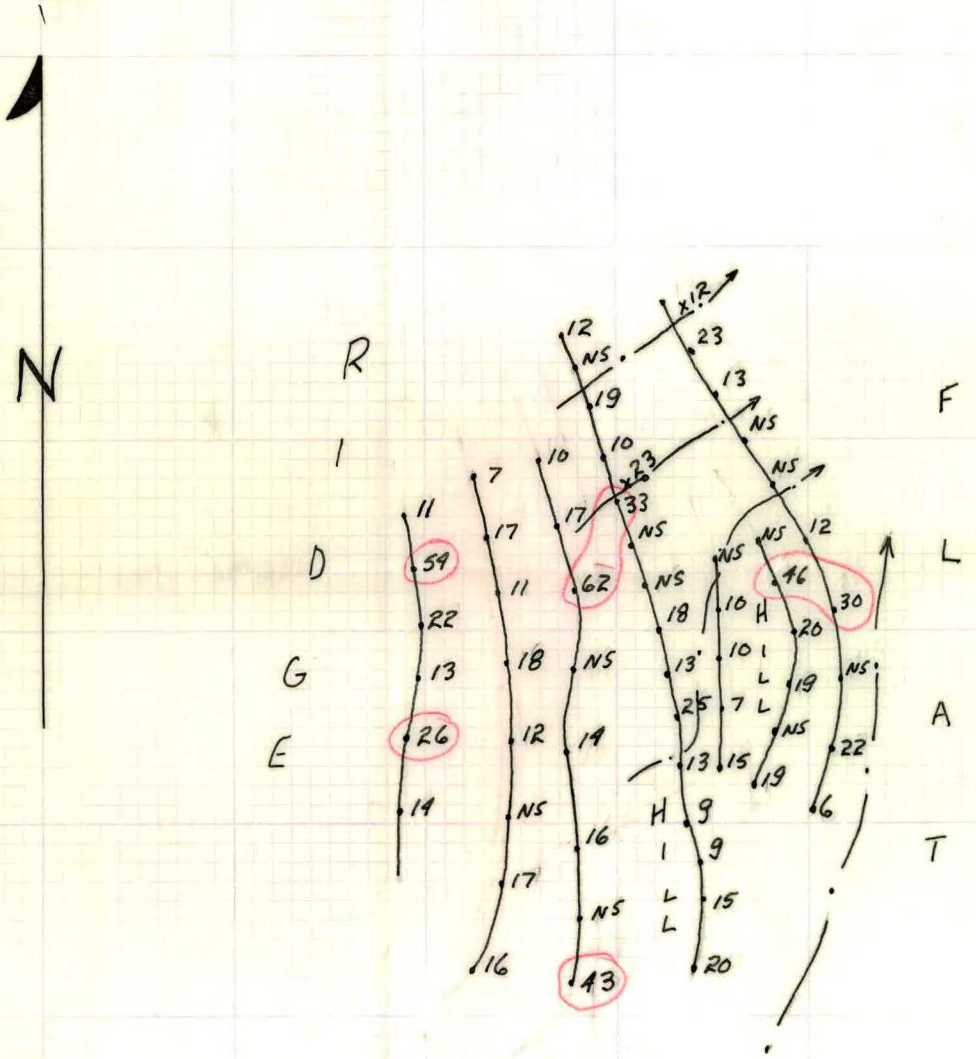
Scale 1" = ½ mile.

RV.

EMPRESS.

Geochemical Map with Results
Low Priority Area #1, Stevens Lake.

August/67.



Scale 1" = 1000'

R.V.

EMPRESS PROJECT. Progress Report # 5 July 1967.
High Priority Area #1

FROM: R. Vogwill
TO: E. O. Chisholm
: C. L. Smith.

1- General

A small camp was set up on June 30- July 2 on the West end of little Buffalo Lake. Work started on Area #1 on July 3, but 5 hours were spent walking to and from the area so I decided to set up a small fly camp nearer the project area, about ½ mile west of Loon Lake.

From this camp, work was finished in 4 days.

2. Field Work

(a) Geochemistry

Silt sampling was carried out up stream from last year's high values, in a limited quantity. The one large stream was sampled for about a mile upstream @ 500' spacings, but the stream became marshy and braided and further silting was impossible.

The other stream, from which a high was obtained last year, is only 1000' long and only two silts could be taken.

Numerous silts were taken by the samplers during their soil sampling. Spring derived streams and smaller streams were covered in this manner and should help to give a more complete picture.

Soil sampling was fairly successful and approx. 80% of set samples were taken. The topography is generally gentle, and, as usual, on many north slopes and marshy areas samples were impossible to take. Most samples on lines 1, 2, 5, 6, 7, 8 are probably residual, while on lines 3 and 4 a higher glacial soil is more abundant. The grid was a fairly long one, but I feel it covered the drainage area as well as possible.

Two contour geochem. lines (soils) were run under and along the "cliffs of limonite gossan" that were mentioned in last years report. They are shown in the NE corner of the Geochemical map and comprised approx. 20 samples.

2. Geology

The area lies entirely within the Coast Range Batholith, and the rocks are composed mainly of siliceous plutonic rocks.

I had trouble interpreting Archer and Cathro's geological map in this area. They show a contact striking NNE just north of Loon Lake, between Granodiorite - diorite on the west and Quartz monzonite on the east. I was unable to find such a contact and don't believe that it runs through this area.

80% of the rock I encountered in this area, has large (up to 3") phenocrysts of pink Orthoclase and Archer and Cathro, in their summary of petrology, at the end of last years report describe this rock as a Granite and yet a granite fails to appear on their geological map.

Two main rock types are apparent in the area, granodiorite and porphyritic granite.

The granite is phanerite, coarse grained and light in colour index. Large pink phenocrysts of Orthoclase are

abundant although finer grained areas are present and contain no phenocrysts. The plagioclase (very little present) is milky white and turnined. The quartz occurs as rather smoky, rounded, glassy grains. The main mafic mineral is biotite with minor hornblende also present.

The rock is coarsely jointed and weathers to a crumbling mass of quartz and feldspar grains.

The granodiorite is fine grained and has a more massive character than the granite. Because of the absence of the large Orthoclase phenocrysts, it naturally has a higher relative plagioclase content. The main mafic minerals are biotite and minor hornblende.

A small dyke occurs in the SE corner of the map area and I would call it a latite to dacite porphyry. It contains small phenocrysts of plagioclase, set in a fine grained aphanitic groundmass.

The major rock in the area is the granite and only the SW corner contains granodiorite. According to Arden and Cathro the granite intrudes the granodiorite. The granite contains many small aplite dykes and stringers which occur mainly along joints in an E-W direction with a northerly dip. The aplite is greyish-brown with a sugary, aphanitic texture and is resistant to weathering much more than the surrounding granite.

Jointing in the granite is very extensive, a NNW direction being the oldest and most prominent. Bedding is generally NNW with a steep dip to the west.

3. Mineralization

I have been unable to explain the high Mo silt values on the edge of Loon Lake. I saw no mineralization, although the whole area appears to be a good receiver of a porphyry-type Copper deposit due to the rock's highly fractured nature.

The gossan in the NE corner of the map is very peculiar. I think it is due to a combination of the Biotite in the rock and the topographical setting of the outcrop. The Biotite would be of the high Fe variety due to its occurence in the siliceous intrusive. The outcrop is continually buffeted by wind and rain due to the high cliff-like outcrop. The moisture draws out the Fe and the wind causes it to migrate so that, in this particular outcrop brown banding is very prominent. The same rock in other areas does not exhibit this because of ~~a~~ more protected outcrops.

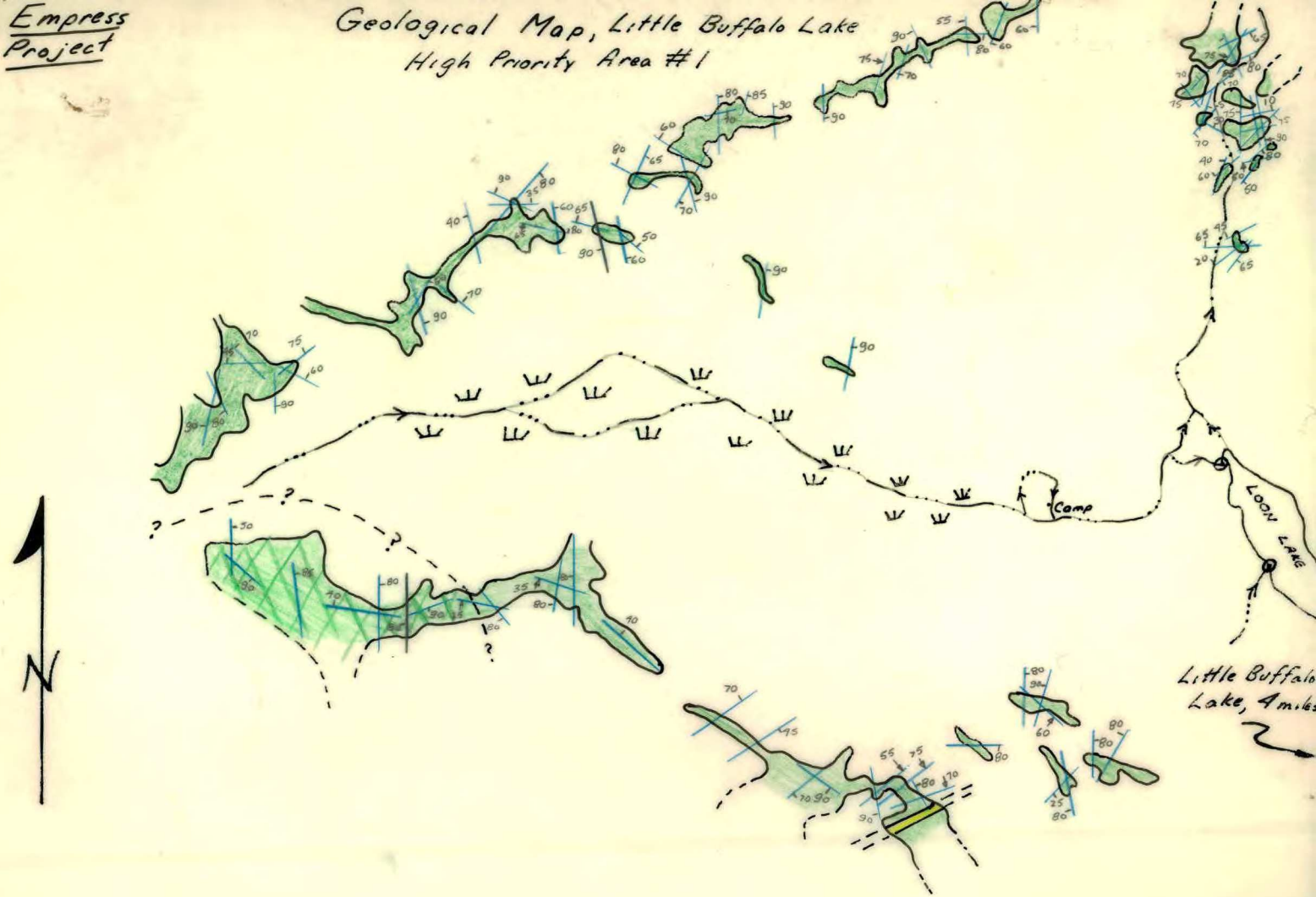
4. Conclusions

1/. I am unable to explain the anomalous Mo values.
2/. The geological setting is good for mineralization but none was seen
3/. My petrological interpretation of the area differs somewhat from Archer and Cathro's.
4/. I observed no granodiorite - qtz. monzonite contact.
5/. High soil values would warrant a closer look.

Richard Vogwill
July 15/67.

July/67. Empress Project

Geological Map, Little Buffalo Lake
High Priority Area #1



Coast Range Batholith.

- Granite (porphyritic) mainly with minor areas of more basic composition.
- Granodiorite.

Others

- Latite-Dacite Porphyry.

- Dip & Strike of Bedding.
- Dip & Strike Joints & Minor Shearing.

Scale 1" = ½ mile

W - Swamp.

R.W.

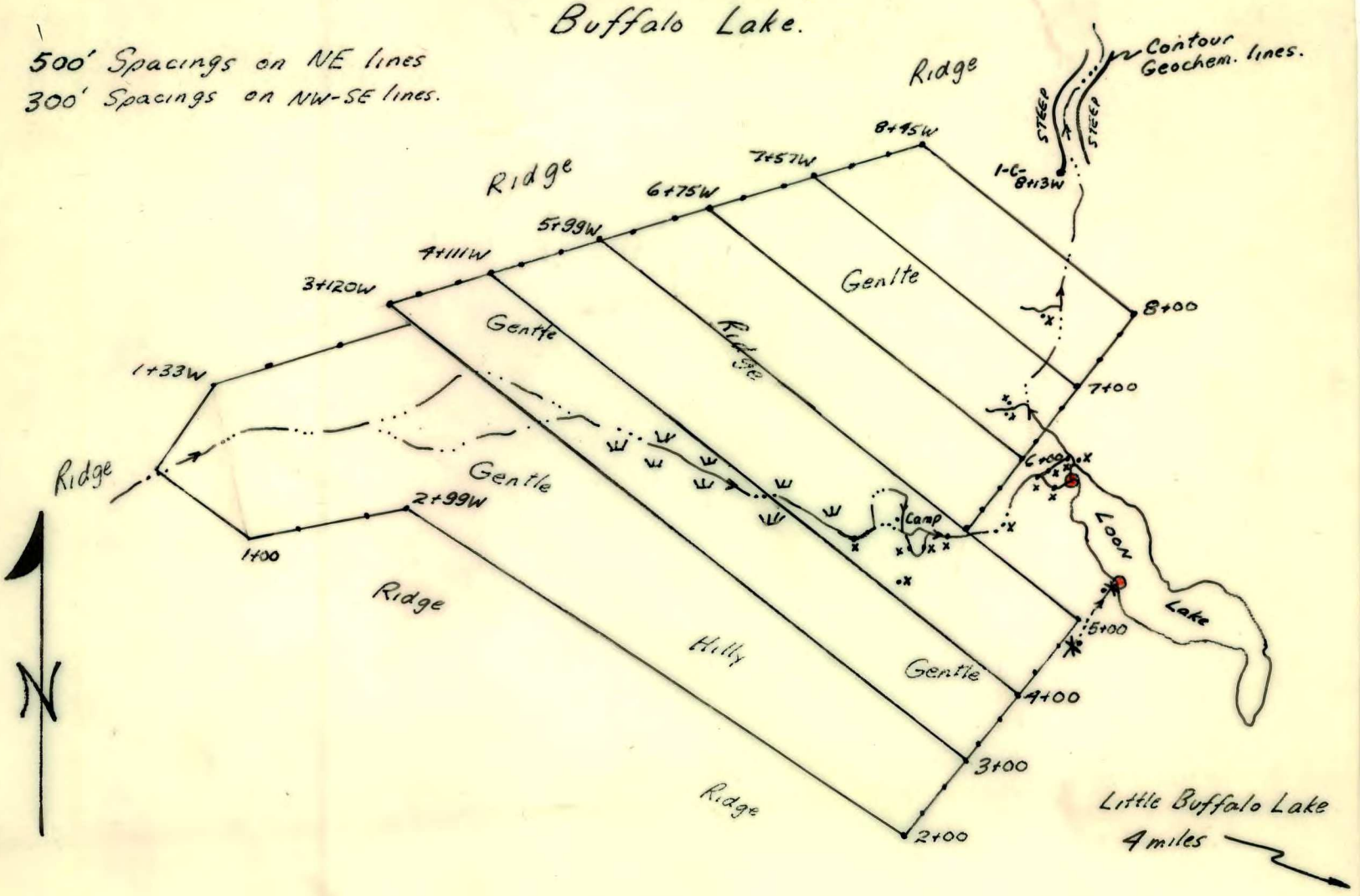
A11522-160.

Empress Project

Geochemical Soil Sampling
Grid & Silt Samples
High Priority Area #1, Little Buffalo Lake.

July/67.

500' Spacings on NE lines
300' Spacings on NW-SE lines.



● - Last year high Mo values

Hilly - General Topog.

•X Silt taken

Scale 1" = ½ mile.

R.V.

EMPRESS PROJECT

Progress Report #6
High Priority Area #2
Little Buffalo Lake

July / 1967.

FROM: R. VOGWILL

TO: E.O. CHISHOLM

: C.L. SMITH.

1. General

After completion of High Priority Area #1, we moved back to our camp on Little Buffalo Lake and finished High Priority Area #2 in 3 days, July 10-13.

The original high value here last year was a soil sample with coincident high Mo and Cu values, so only a soil sampling grid was run over the area.

2. Field Work.

a. Geochemistry.

A soil sampling grid was set out as shown on the accompanying map, lines spaced at 1500' (≃ ¼ mile) and samples spaced @ 300'. The topography is generally gentle except where the outcrop was and here cliffs up to 300' high formed a deep ravine. The sampling was highly successful and approx. 90% of the samples set, were taken.

The location of the high soil last year was on a glacial mound of dirt and rock which ~~the~~ parallels the above mentioned ravine, and trying to cover the source of the high metal content is thus very difficult even with a very comprehensive grid. The grid did, however, cover

most of the apparent possibilities of this source as far as drainage and topography are concerned.

6. Geology

The area lies entirely within the Coast Range Batholith and the rocks are siliceous intrusive ones with a well jointed character.

The two main rock types in the area are porphyritic Granite → Qtz. Monzonite and a finer grained, non-porphyritic Granodiorite.

The Granite - Qtz. Monzonite is coarse grained, porphyritic with large phenocrysts of Orthoclase locally. The plagioclase (very minor) is milky white and turnired. The quartz occurs in rounded, clear (sometimes smoky) grains with a glassy lustre. The main mafic mineral is biotite with minor hornblende. The rock weathers so that it has a reddish colour, the Orthoclase standing out very readily to the naked eye.

The Granodiorite, is finer grained and has a higher colour index than the Qtz. Monzonite. Very little Orthoclase is seen in hand specimen. The plagioclase is milky white and turnired and the quartz generally occurs in clear, rounded, glassy grains. The main mafic minerals are biotite and hornblende.

The outcrops are well jointed and on the south end of the east side of the ravine small qtz. veinlets occur along jointing planes. Here the rock crumbles to a weathered mass of quartz and feldspar grains.

3. Mineralization

I found a narrow zone of closely spaced jointing planes trending N50°E/80°S along which Copper stain existed. This showing was very small and although this particular jointing orientation is repeated many times in the outcrop, I was unable to find any other signs of mineralization.

It is debatable whether or not this explains the high Copper value in last years soil sample. The drainage is in the correct direction, but if the sample was taken on glacial debris, I doubt that this secondary mineralization could account for it. The two locations are approx. ½ mile apart and there were no signs of primary mineralization.

4. Conclusions

A grab sample was taken over a length of 4' and a width of 9". 0.88% Cu Mo-ND

1. The high value from last year has not been adequately explained.
2. The area is interesting, in that, the Copper stain shows that the metal is present somewhere and the outcrop could be deeply leached.
3. The rock is very susceptible to mineralization, in that it is well fractured.
4. Further work should be done.

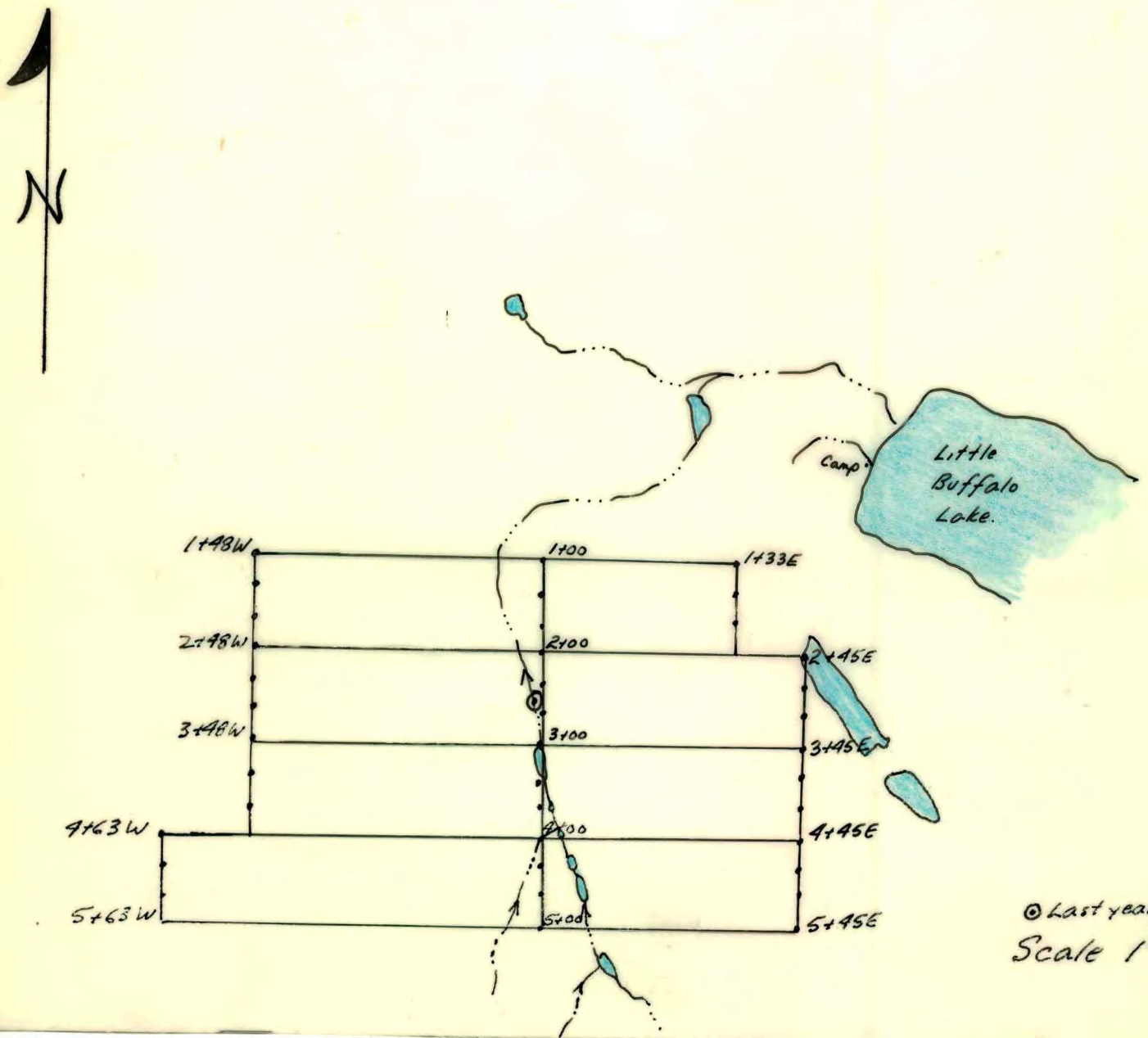
Richard Coggill

July 15/67.

Empress Project. Geochemical Soil Sampling Grid. July/67.

High Priority Area #2, Little Buffalo Lake.

N-S lines have 500' spacings
E-W lines have 300' spacings.



⊙ Last year high.

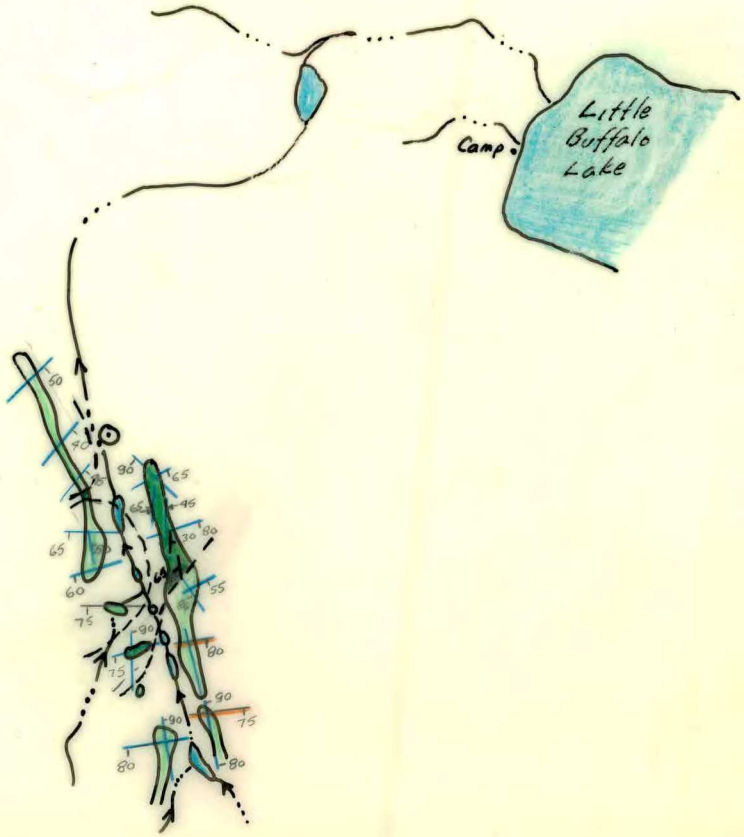
Scale 1" = ½ mile.

R.V.

Empress Project.

Geological Map
High Priority Area # 2
Little Buffalo Lake

July/67.



N

Coast Range Batholith.

- Porphyritic Granite → Qtz. Monzonite
- Granodiorite

Dip & Strike of Bedding.

Dip & Strike of Joints

Small Qtz. veinlets along Joints

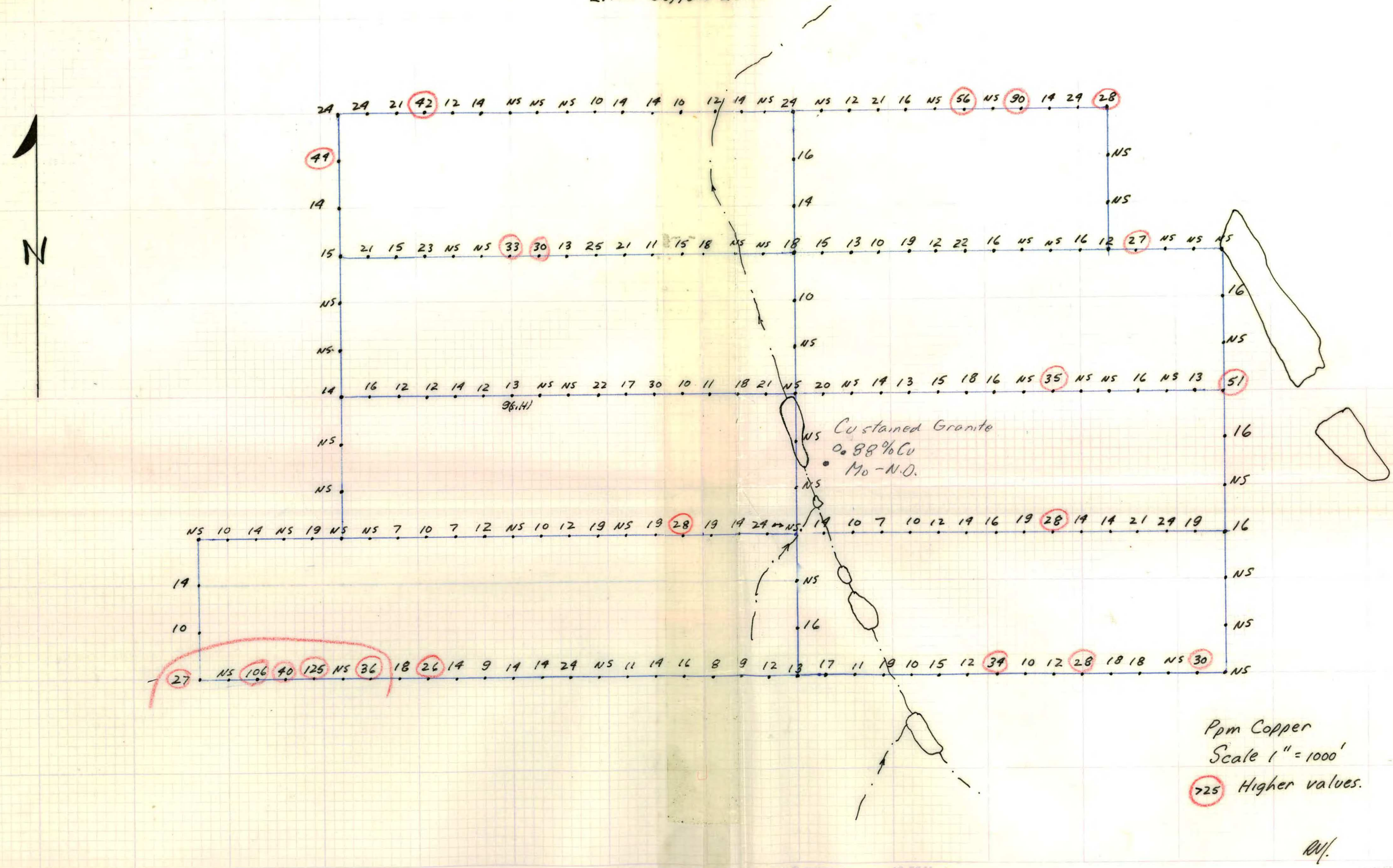
Scale 1" = ½ mile

R.V.

EMPRESS PROJECT

Soil Sampling Grid with Results
High Priority Area #2
Little Buffalo Lake

July/67

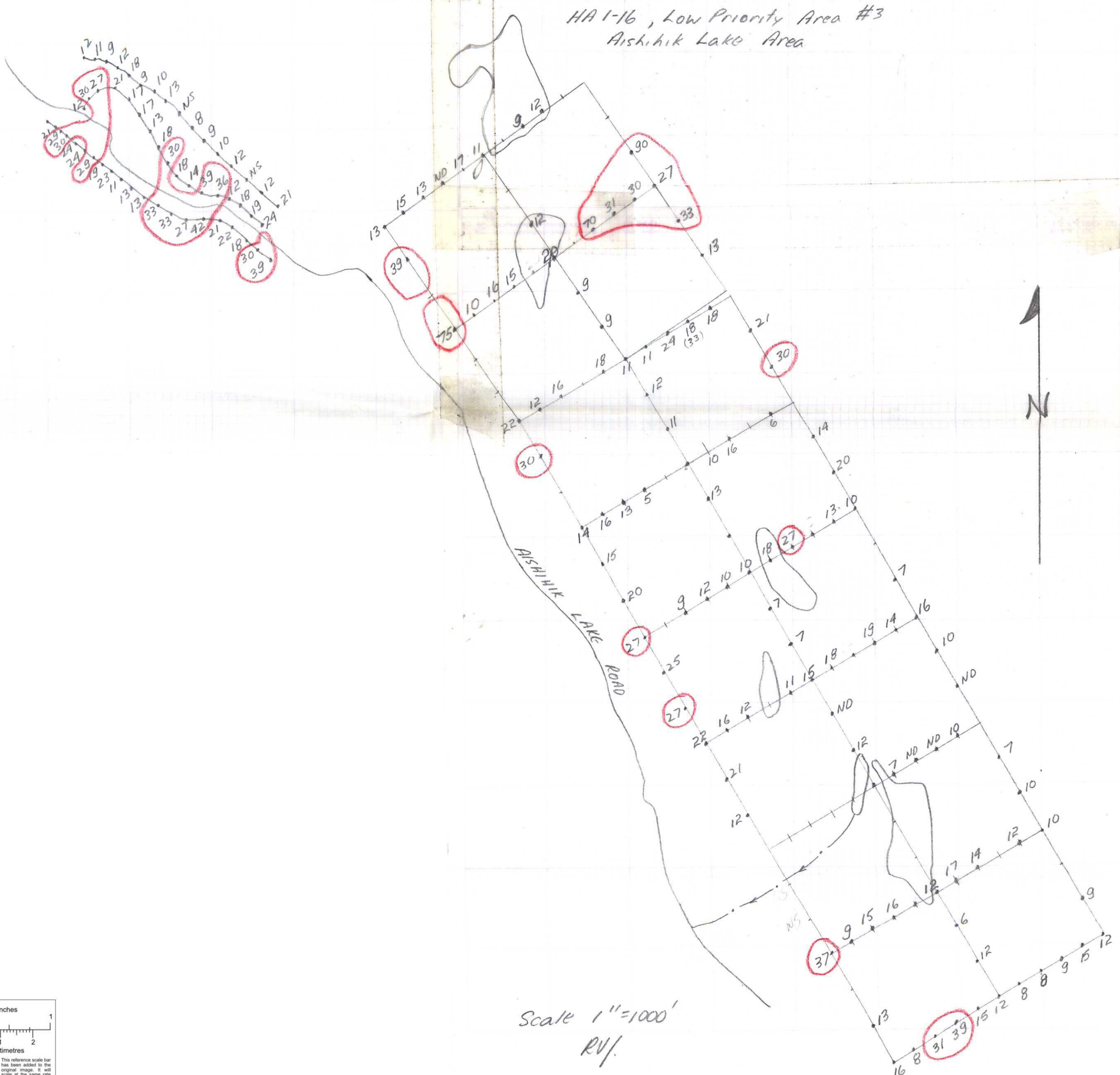


RM.

Geochemical Grid with Results.

HA 1-16, Low Priority Area #3

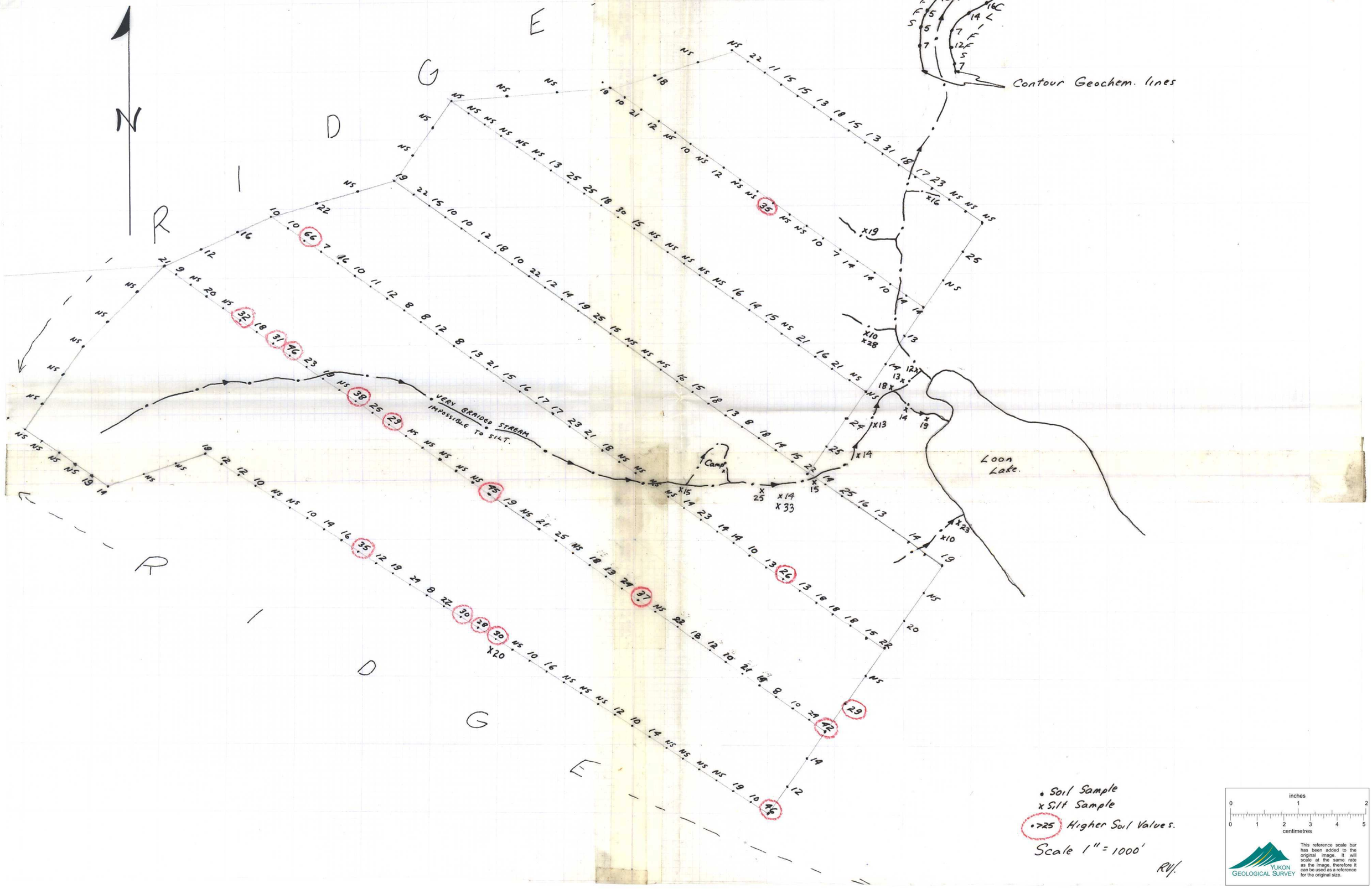
Aishihik Lake Area



EMPRESS PROJECT.

Geochemical Soil & Silt Grid with Results

High Priority Area #1
Loon Lake Area.



NATIONAL TOPOGRAPHIC SERIES

DEPARTMENT OF NATIONAL DEFENCE
ARMY SURVEY ESTABLISHMENT

FIRST EDITION

CANADA SHEET 115 H

AISHIHIK LAKE
YUKON TERRITORY

Scale 1:250,000 or 1 inch = 4 miles (approximately)

Miles 5 0 5 10 15 20 Miles
Kilometres 5 0 5 10 15 20 25 30 Kilometres

inches 0 1 2 3 4 5
centimetres 0 1 2 3 4 5

This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.

YUKON GEOLOGICAL SURVEY

Price 25 Cents

Compiled by the Topographical Survey 1950, from air photographs taken in 1947 and 1948 by the R.C.A.F. Lithographed and printed by the Army Survey Establishment R.C.E., Department of National Defence, 1952.

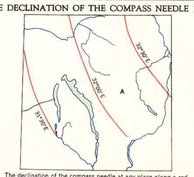
Copies may be obtained from the Map Distribution Office, Department of Mines and Technical Surveys, Ottawa.

REFERENCE

Road, Hard Surface, All Weather	More than 2 Lanes / 2 Lanes	Route No.	Less than 2 Lanes / Dry Weather
Road, Loose Surface, All Weather	2 Lanes or More / Less than 2 Lanes		
Road, Special, etc.	Snow Road, Pack Route / Cart Road		Portage or Trail
Boundary, International		Boundary Mon.	
Boundary, Provincial		Survey Mon.	
Boundary, County or District		Bench Mark	BM 1514
Boundary, Township, Seigniory or Parish		Triangulation Sta.	
Boundary, Indian Reserves, Park		Spot Elevation (in feet)	4590
Surveyed Line		Telephone, Trunk Route	
Railway, Standard Guage	Multiple Track / Station	Abandoned	Single Track / Stop
Main Electric Power Line			

Building		Fire Lookout Tower	
School		Wireless Station	
Post Office	P	Mine	
Church		Cliff	
Stream, Indefinite or Unsurveyed		Contours, Elevation	
Stream, Intermittent		Contours, Approximate	
Stream, in Dry River Bed		Contours, Depression	
Braided Stream		Esker	
Marsh or Swamp		Wooded Areas	
Marsh or Swamp, in water		Navigable Canal	Navigable
Glacier or Snowfield		Rapids and Falls	R F
Sand, Gravel or Mud	Sand / Gravel / Mud	Ferry	F
		Dam	
		Lighthouse	
		Aerodrome (Elevation in feet)	2156
		Seaplane Anchorage	

THE DECLINATION OF THE COMPASS NEEDLE 1950



The declination of the compass needle at any place along a red line is the declination given on that red line. At other places the declination is between those given on the neighbouring red lines; thus at the place marked A the declination is between 32°00'E. and 32°30'E. The declination of the compass needle is decreasing 3½ minutes annually.

TEN THOUSAND METRE
UNIVERSAL TRANSVERSE MERCATOR GRID
ZONE 8

GRID ZONE DESIGNATION
8V
100,000 M. SQUARE IDENTIFICATION

LD MD
LC MC
680
40

IGNORE the SMALLER figures of any grid number; these are for finding the full coordinates. Use ONLY the LARGER figures of the grid number: example: 340000

TO GIVE A STANDARD REFERENCE ON THIS SHEET TO NEAREST 1,000 METERS

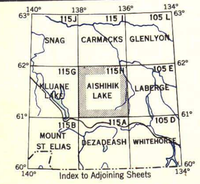
SAMPLE POINT: BENCH MARK

1. Read letters identifying 100,000 meter square in which the point lies.
2. Locate first VERTICAL grid line to LEFT of point and read LARGE figure labeling the line either in the top or bottom margin, or on the line itself.
   Estimate tenths from grid line to point.
3. Locate first HORIZONTAL grid line BELOW point and read LARGE figure labeling the line either in the left or right margin, or on the line itself.
   Estimate tenths from grid line to point.

LD 8 2
2 2

SAMPLE REFERENCE: LD 82 22

If reporting beyond 18° in any direction, prefix Grid Zone Designation, ex. 8V LD8222

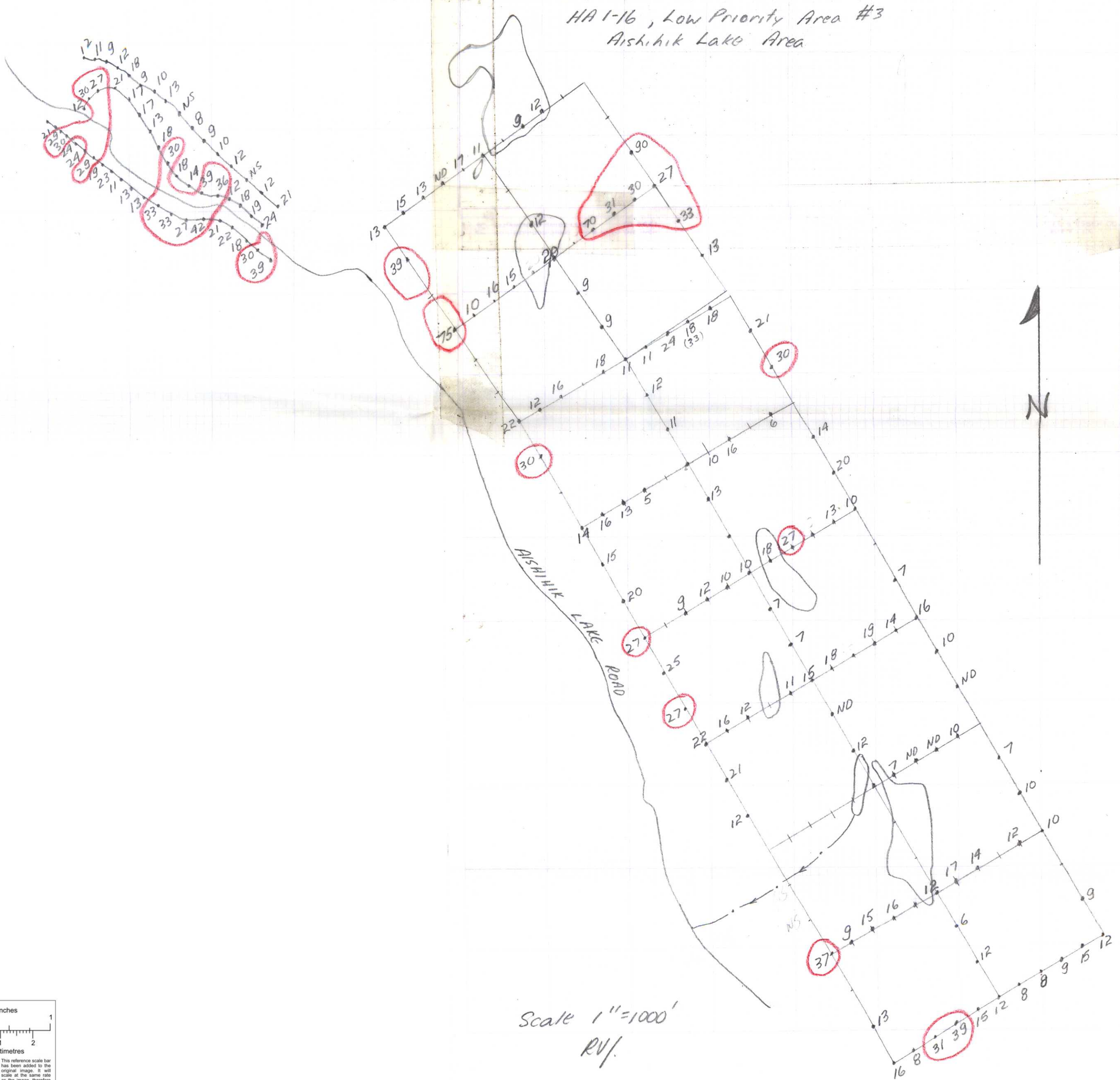


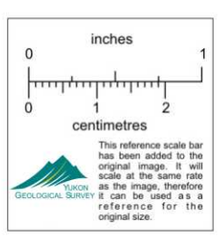
Index to Adjoining Sheets

Geochemical Grid with Results.

HA 1-16, Low Priority Area #3

Aishihik Lake Area





EMPRESS PROJECT.

Geochemical Soil & Silt Grid with Results

High Priority Area #1
Loon Lake Area.

N

GRID

Contour Geochem. lines

VERY BRAIDED STREAM
IMPOSSIBLE TO SILT.

Camp

Loon Lake.

• Soil Sample
x Silt Sample
•725 Higher Soil Values.

Scale 1" = 1000'

RV.

inches
0 1 2
0 1 2 3 4 5
centimetres

YUKON GEOLOGICAL SURVEY

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