SIMPSON TOWER AREA
YUKON

Mount Billings Venture 1965

013713

SIMPSON TOWER AREA,
FRANCES LAKE, YUKON
129°30'W, 61°30'N

Geologist's Report

Mount Billings Venture

Erik A. Ostensoe.
November 1965.

TABLE OF CONTENTS

LIST OF SKETCHES

INTRODUCTION

This report pertains to prospecting, geological, geophysical, geochemical and sampling operations performed by Mount Billings Venture employees in the vicinity of Simpson Tower, Frances Lake area, Yukon, during the field season of 1965. Work was directed by the Field Manager, Ron McBean, with the assistance of the geologist, Erik Ostensoe.

Forty mineral claims were staked, nine separate and previously unexamined prospects were examined and an area of approximately sixty-five square miles was carefully prospected. A geochemical silt and soil sampling program was operated in conjunction with prospecting activities. Dip needle and magnetometer surveys were initiated and two prospects were trenched using hand tools.

The area which was prospected is outlined on the accompanying map (figure 1). Watson Lake, about eighty-five miles south-southeast of the area, served as a supply base. Main access was via air- and rotor-craft. A short side-road from the Ross River to Watson Lake road provided vehicle access to the West Arm of Frances Lake and enabled our crew to use a freighter canoe to advantage. Lake level is 2540 feet elevation and the top of Simpson Tower is in excess of 5000 feet above sea level.

The area of interest included low-level marshy ground close to the lake shore and much of the central ridge of the peninsula which divides the arms of Frances Lake. In almost all parts of the area below 4500 feet elevation heavy forest cover, undergrowth and muskeg, hampered both prospecting and overland travel. Above this elevation, large tundra and felsenmeere permitted relatively easy movement.

Although the Frances Lake area has been a fur-trapping ground for many decades and the Frances River-Frances Lake-Finlayson River-Pelly River route is an historic waterway to the central Yukon, very little evidence of previous prospecting activity was found. This anomalous situation may be explained by the fact that the western and most accessible side of the peninsula is largely underlain by black shales and limestones which do not encourage prospectors and that the east slope is covered with a heavy brush growth and old burn, with much glacial and periglacial debris

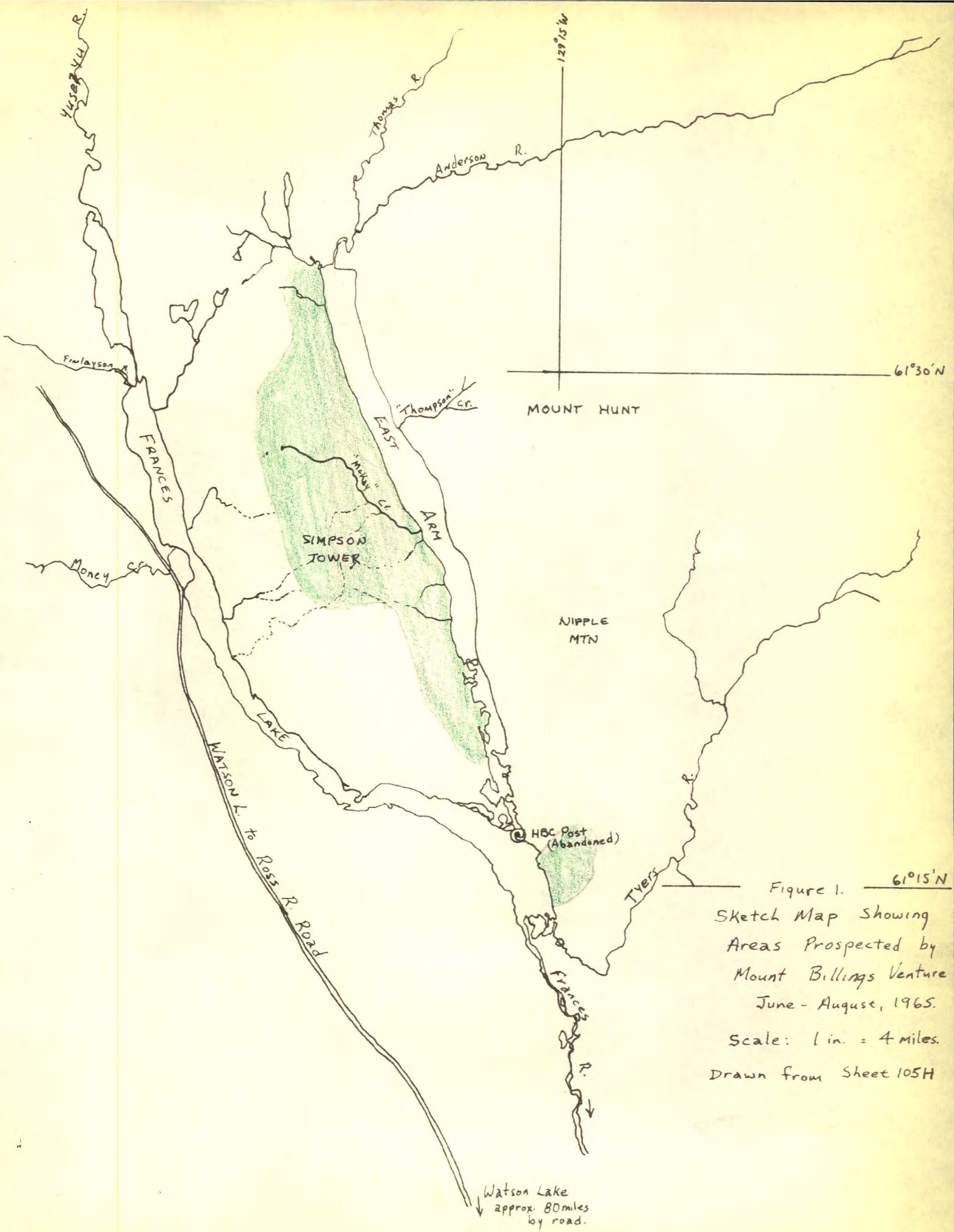


Figure 1.

Sketch Map Showing Areas Prospected by Mount Billings Venture June - August, 1965.

Scale: 1 in. = 4 miles.

Drawn from Sheet 105H

overlying the bedrock. Gravels of the streams that enter the lake from the peninsula are mostly fragments of shale and barren vein quartz. During July a Mr. Forrester trenched a galena occurrence at Thompson Creek on the east shore of the East Arm of Frances Lake.

Apart from a few notes compiled by G. M. Dawson during a trip through the Yukon in the 1880's, no published geological maps or notes pertaining to the Frances Lake area are known to the writer. Geophysics Paper 1381 of the Geological Survey of Canada Aeromagnetic Series includes most of the area of the Mount Billings Venture interest.

Peter Risby of Watson Lake, Yukon, brought the Simpson Tower area to the immediate attention of the Mount Billings Venture crew. The district had, however, figured in pre-season planning and an area 15 miles south of Simpson Tower was prospected by MBV druing early June, 1965 (figure 1).

In mid-June, Risby assisted John McKay and Frances Magun, local trappers, in obtaining samples of sulfide mineralization from what became known as the ABE area. These pieces were of sufficient interest that MBV sent them for assaying and on June 22nd the three "Finders" and MBV prospector Art Lake, were returned to the area via helicopter to further prospect the showings and the surrounding territory. The geologist went to the area on June 29, by which time additional showings had been found. Mineral claims Mapel #1 to #4 inclusive and ABE #1 to #12 inclusive were staked to protect a barite showing and several areas of sulfide mineralization. Discoveries in what became known as the "May" area were visited. On the basis of his observations the geologist recommended that an agreement be made so that prospecting could be pursued with MBV participation. An option was subsequently arranged by Mr. McBean. As part of the option agreement MBV obtained the services of the finders for a short period and they were then retained as "casual employees" until August 17th when work ceased.

During this period the ABE showings were trenched and sampled and limited geochemical and dip needle surveys were completed in that area; the May showings were staked, trenched and sampled and magnetometer and dip needle surveys were initiated; the remainder of Simpson Tower was carefully prospected and several additional showings were located.

Concurrently, prospectors working from various camps on the lakeshore silt-sampled streams draining east from the entire peninsula and prospected what proved to be a very difficult area with few outcrops. Well-mineralized float was found at low elevations but although it appeared to be close to the source it was not traced to outcrop.

Due to the high level of mining activity in the Yukon, the Whitehorse assay office and assayers in Vancouver and Edmonton could not provide rapid service at any time during the field season. Lack of assay data hampered evaluation of some of the mineralized areas. A favorable spectrographic analysis of sulfides from the "Lower May" area was later found to be non-reproducible by conventional assay techniques.

Mr. G. Dirom of ASARCO visited the Simpson Tower area in mid-August but was able to examine only one of the mineralized areas. Although there were several uncompleted tasks in the Frances Lake area, the geologist had commitments to Yukon Pacific Prospecting Group which dictated that the Frances Lake work be suspended on August 17th.

MAPEL AND ABE CLAIMS

The Mapel barite showing is located at elevation 3700 feet close to the south side of the valley of McKay Creek and on a small tributary of that creek. The barite is exposed for about 20 feet strike length and is 5 feet wide, true thickness. Of this width, approximately 0.5 feet is soft grey shale. The trend of the barite bed conforms to that of the enclosing sedimentary rocks: strike north, dip 25° west. Much variation in attitude of the sedimentary rocks was noted in the area east of the barite occurrence. To the north of the outcrop the barite is covered by soil and plant debris; to the south, by rock debris, humus and the bed of a small stream. Art Lake, the discoverer, reported additional barite showings in the vicinity but they were not visited by the writer.

Specimens of barite cobbed from the outcrop are apparently quite pure, with only minor discoloration and no obvious carbonate content. A crude specific gravity determination was made on one specimen: the indicated value, 4.5, is that of pure barite. Chalcopyrite occurs as minute specks in the barite, and forms less than 0.1% of the total rock.

Rocks similar to those in the vicinity of the barite showings were reported by prospectors working two to five miles north and much of the southwestern part of Simpson Tower is formed by dark shales.

Claims covering the ABE showings are contiguous with the Mapel claims. "ABE 1" Two base metal sulfide occurrences were located in the ABE area: "ABE 1" lies north of McKay Creek, about 1500 feet east of the barite locality. An almost flat-lying vein of massive arsenopyrite with galena, sphalerite and jamesonite (?) and varying from to 2 to 6 inches in width outcrops near the base of a steep slope and can be traced for about 30 feet. Host rocks are weakly metamorphosed, slightly schistose argillites. No other significant mineralization was found in the immediate vicinity and no work other than a small amount of digging using hand tools was done.

Although some confusuon exists as to exact source of the material, it is thought tha t the following assays, of grab samples submitted by the finders, are of "ABE 1" mineralization:

Sample No.	Width	Au	Ag	Pb	Zn
R-1	Grab	.03			
R-2	"	.02	8.0	2.5	16.6
R-3	"	.04	2.92	0.2	6.0

Mineralization at the "ABE 2" locality was first discovered in a small outcrop on the south side of McKay Creek and was later traced for approximately 100 feet in a southeasterly direction by a series of small trenches. Sulfides, largely jamesonite (?), with galena, sphalerite, arsenopyrite, pyrrhotite and pyrite occur in sideritic gangue in association with various metamorphosed sedimentary rocks. Pyrrhotite gossan covers a rather large area south of the showings and chalcopyrite is wide-spread but in very small quantities in association with the pyrrhotite.

"ABE 2" showing was explored by a large sidehill cut on the original outcrop and by four trenches on a small flat. Mineralization proved to be in continuous but narrow veins. A dip needle survey revealed low readings close to the trenches but did not indicate a magnetically anomalous area (figure 3, in pocket). The nearby pyrrhotitic areas were carefully checked over but no significant chalcopyrite occurrences were located. The following assays are from "ABE 2":

Sample No.	Location	Width	Au	Ag	Pb	Cu
R-108	Trench 3	57"	.005	.72	.7	Tr.
R-109	" 1	13"	.01	2.20	3.0	.05
R-110	Sidehill cut	6.0'	.01	.66	.1	Tr.

MAY AREA

Twenty-two claims were staked to protect three areas of mineralization on the east side of Simpson Tower (figure 2). These were explored by prospecting, dip needle and magnetometer techniques.

Figure 4 is a 1 inch=100 feet plot of a magnetometer survey carried out in the vicinity of Lower May showings. The radial pattern of lines was chosen for convenience and because the lack of outcrop made it desireable to work from known to unknown ground. Lines were brushed out sufficiently to permit easy walking and setting up of the Askania magnetometer. In most cases readings were taken at 25-foot intervals.

The northwestern section of the "grid" was not completed. One line (no.4) extended across a small stream onto a broad brush covered area. This area appeared to be a fan-like deposit of stream-borne debris which had been flushed from the upper slopes of Simpson Tower and deposited on this flatter low elevation ground. Readings on line 4 suggest that the anomalous areas south of the stream either do not exist or are deeply buried on the north side.

Two anomalous zones, both of which may be correlated with mineralized outcrops, were detected by the magnetometer survey. Maximum intensities were recorded close to outcrops. The southern extremities of lines 6 and 8 cross the flanks of a small bench-like terrace where the strong magnetic pattern is dissipated. The terrace is thought to be a stream deposit of sand and gravel and probably qualifies as a "kame terrace".

The easternmost anomalous zone appears to be insignificantly small but the western zone is more than six hundred feet long and its southern limit was not determined. Figures 5(a) and (b) are profiles on lines "A-A'" and "B-B'" of figure 4.

Station "May" was established on a small outcrop of white silica. The nature of this silica, quartz vein, pegmatite, silicification or meta-quartz sandstone, was not determined. Its texture was sugary and chalcopyrite is irregularly distributed through it. A sample was assayed:

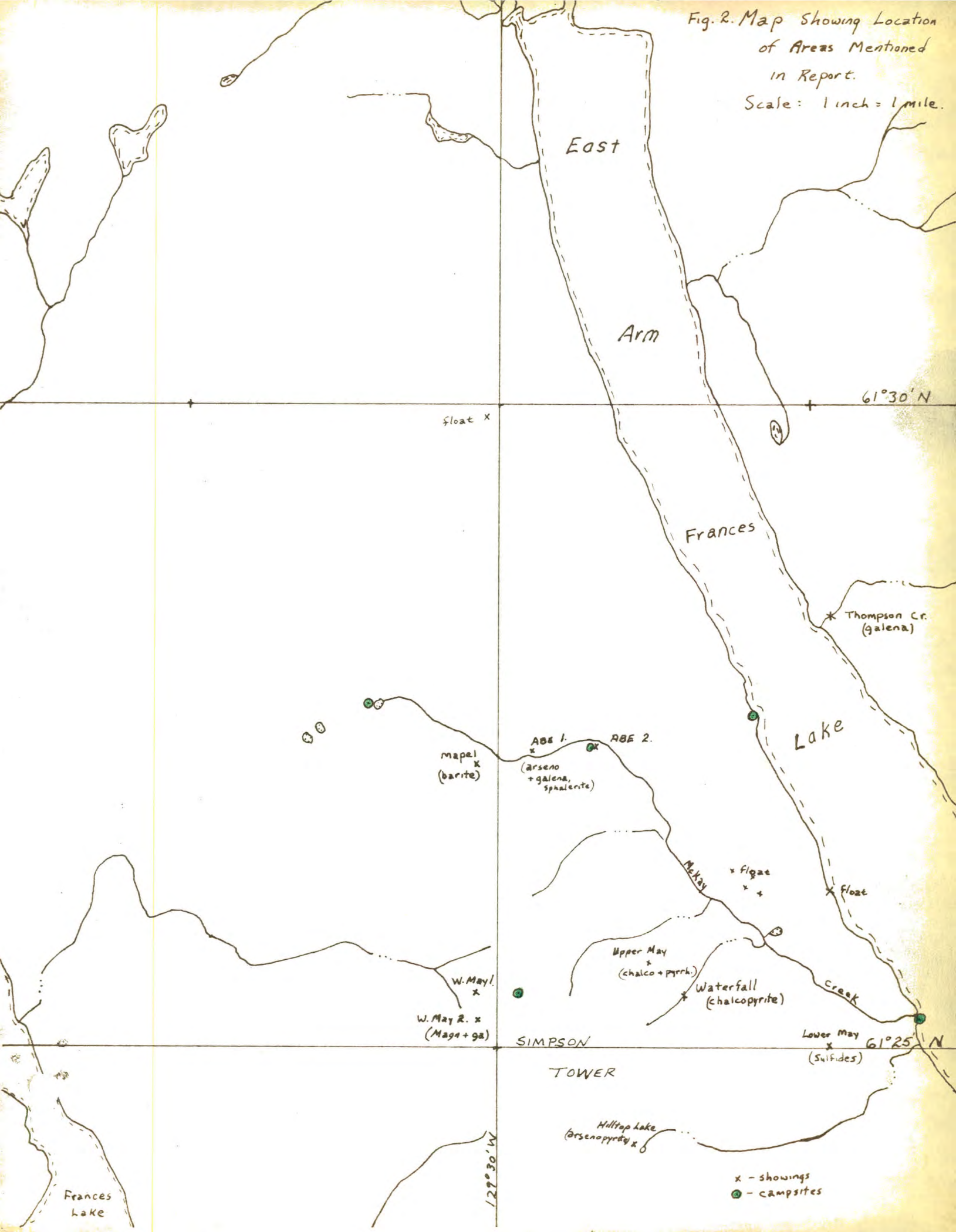


Fig. 2. Map Showing Location of Areas Mentioned in Report.
Scale: 1 inch = 1 mile.
East
Arm
61°30'N
float
Frances
Lake
Thompson Cr.
(galena)
ABE 1.
ABE 2.
mapel
(barite)
(arseno + galena, sphalerite)
McKay
float
float
Upper May
(chalco + pyrrh.)
Waterfall
(chalcopyrite)
Creek
W. May 1.
W. May 2.
(Maga + ga)
Lower May
(sulfides)
SIMPSON
61°25'N
TOWER
Hilltop Lake
(arsenopyrite)
129°30'W
Frances
Lake
x - showings
- campsites

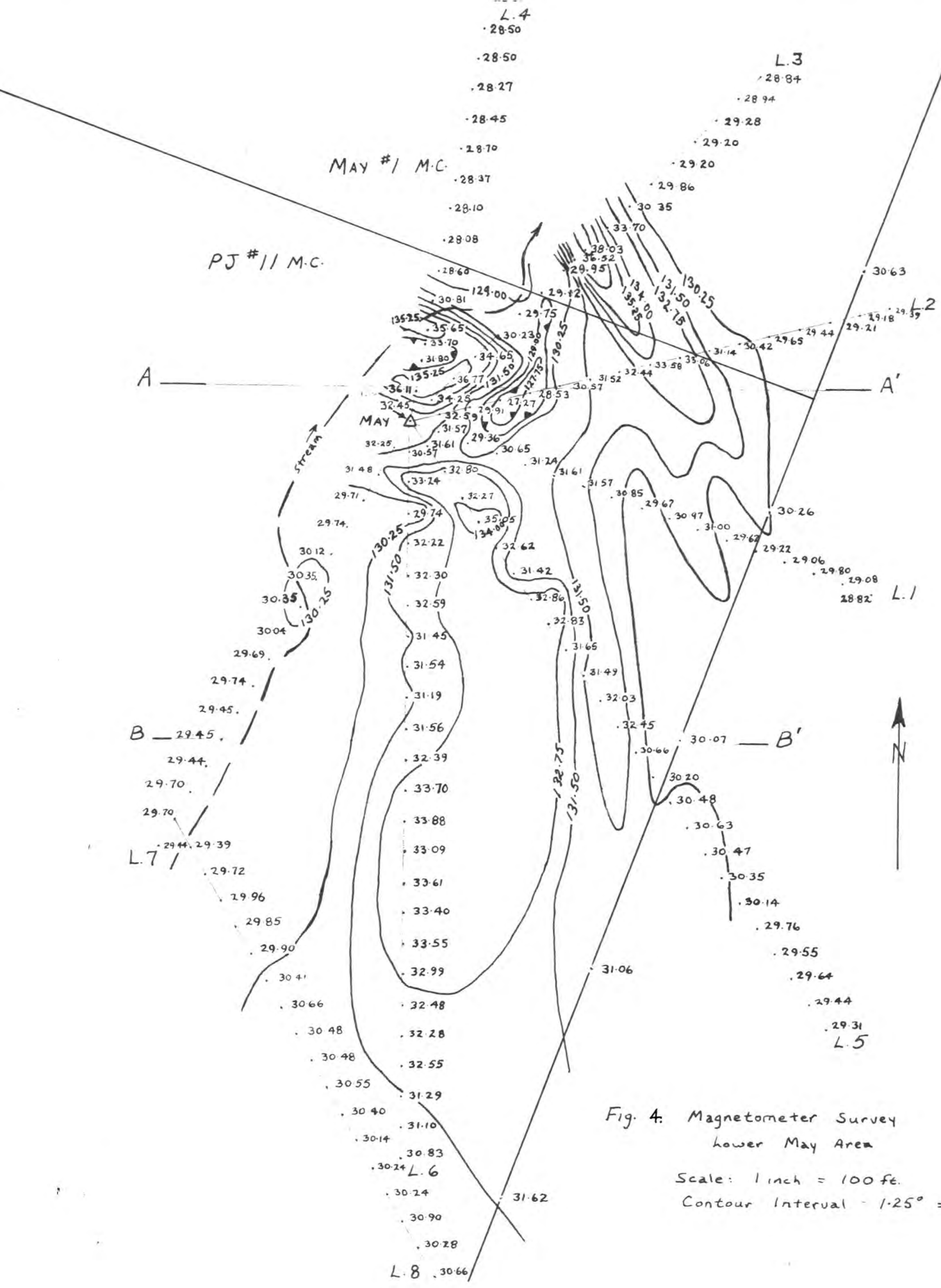


Fig. 4. Magnetometer Survey
Lower May Area

Scale: 1 inch = 100 ft.
Contour Interval - 1.25° = 273 γ

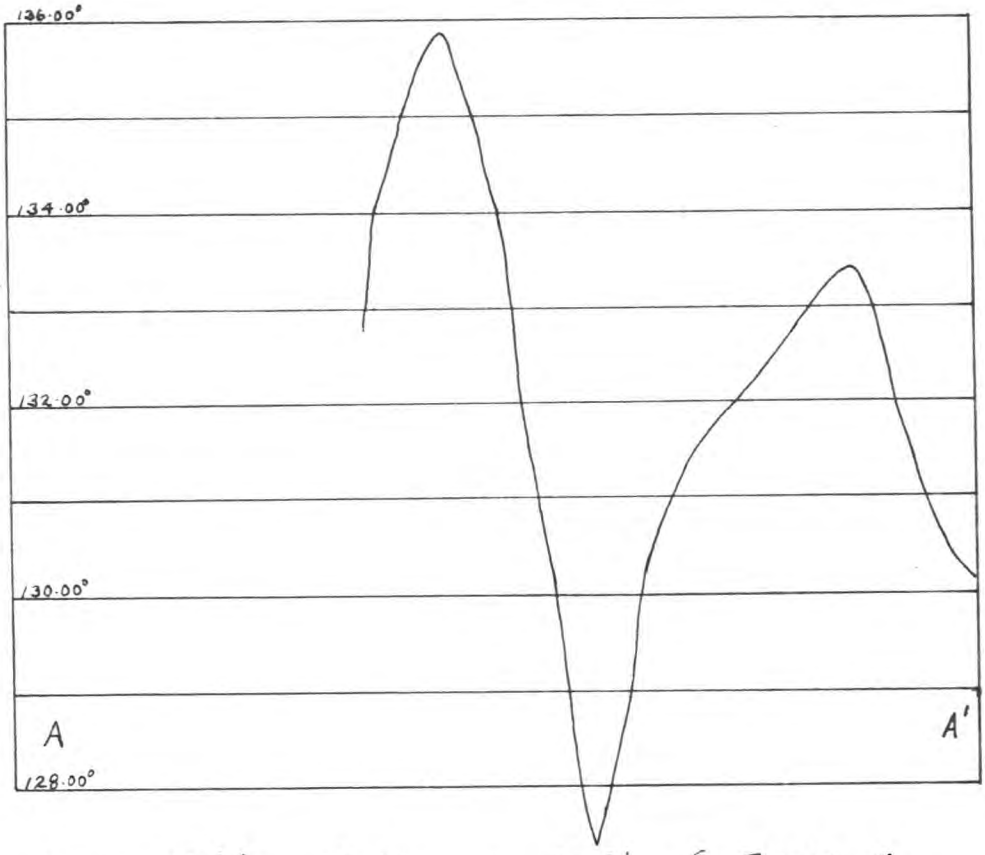


Figure 5 (a) Profile on A-A' of Figure 4.
Horizontal Scale: 1" = 100'
Vertical Scale 1" = 2° = 436 ft.

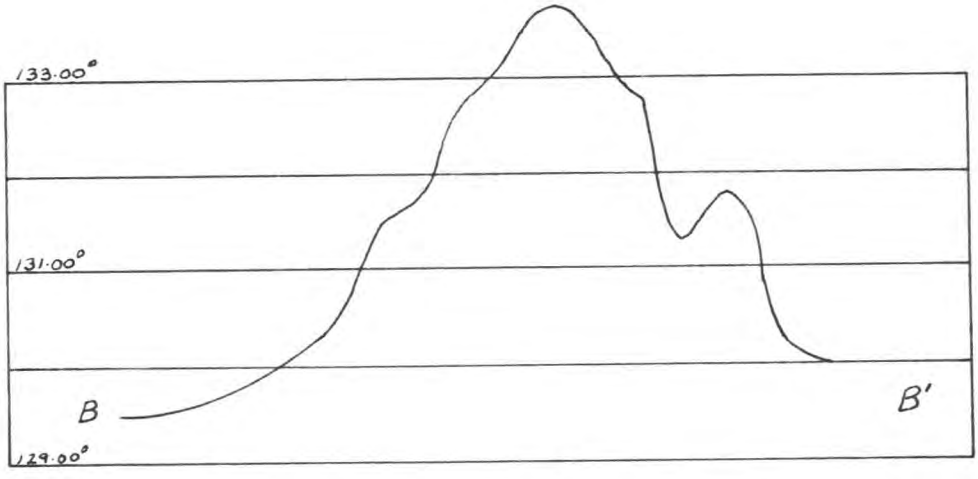


Figure 5 (b) Profile on B-B' of Figure 4.
Horizontal Scale: 1" = 100'
Vertical Scale: 1" = 2° = 436 ft.

Sample No.	Width	Au	Ag	Cu
R-105	Grab	Tr.	0.20	0.15

A trech was excavated just northeast of station "May" (figure 6) and encountered siliceous hornfels, "silica", massive sulfides and meta-argillite. In this trench the relationship of the various rock types was not clearly defined. The white silica lies on the west side of a band of high sulfide content, consisting of fine-grained pyrrhotite with varying amounts of chalcopyrite in small veinlets and as blebs in the pyrrhotite. At the south end of the trench siliceous hornfels is in contact with a north-south trending band of massive fine- to medium-grained sulfides. Meta-argillites lie on the southeast side of the sulfides and may be equivalents of the hornfels. Assays of samples from this trench are given on the sketch.

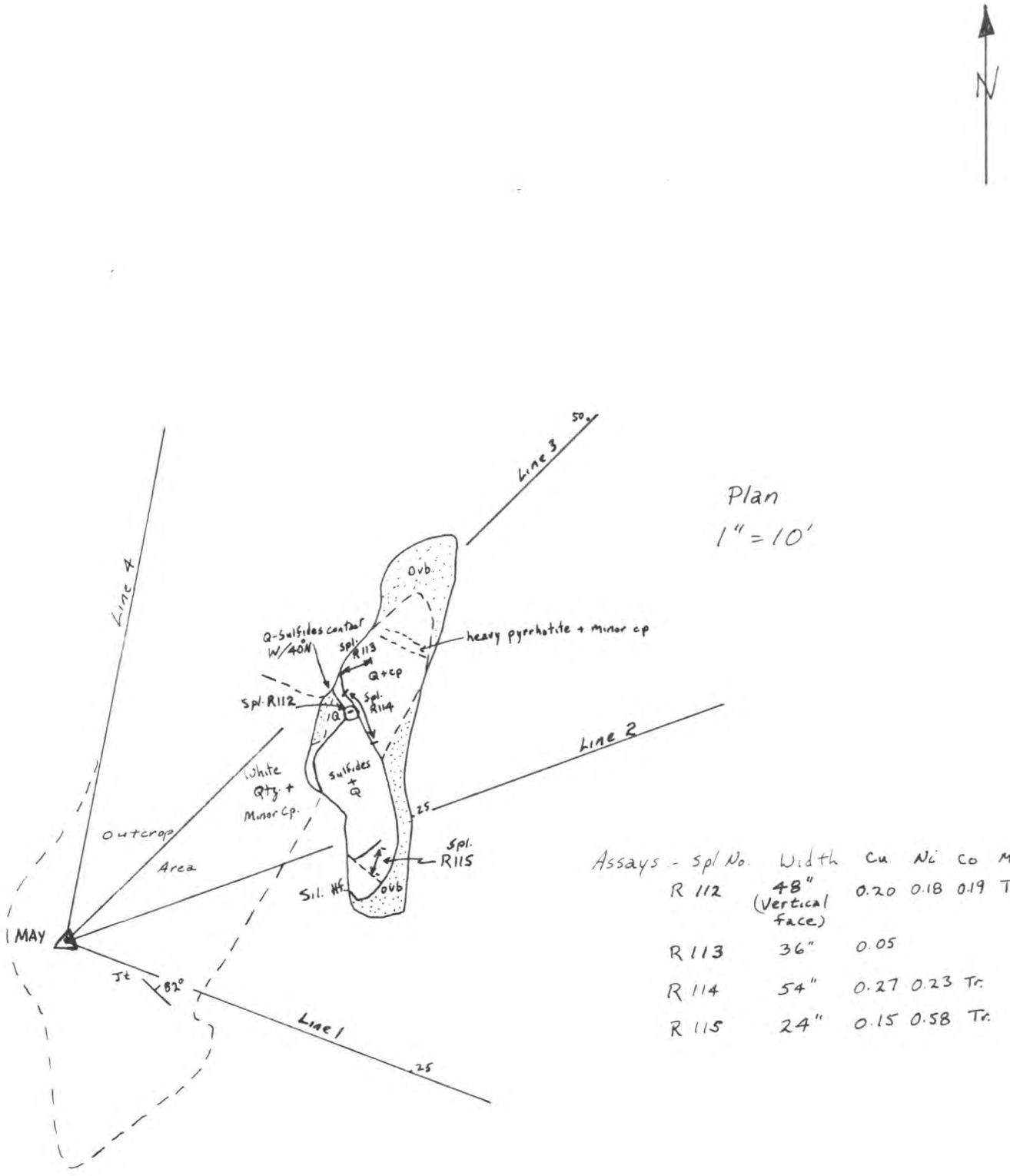
Figure 7 is a sketch of a sidehill cut dug just west of the 75-foot station on line 4. This occurrence appears to be the extension of mineralization indicated in figure 6. Assays are listed on the sketch. The spectrographic analysis indicated the following values: Co 0.4, Cu 0.2, Ni 0.6, Au Tr., Ag Tr., Mo 0.03, Pb not detected, Zn not detected.

Additional mineralization was located just north of the 175-foot station on line 3, (figure 8). The small stream is deflected by large sulfide-quartz boulders, some of which may represent mineralization in place but most of which appear to have slumped. Magnetite, chalcopyrite and pyrrhotite are present but the copper content is low. One small trench was begun but not completed. Mineralization found in this trench (figure 8) indicates an north-south trend, similar to that of the corresponding magnetic anomaly (figure 4). One sample of the boulder material was assayed:

Sample No.	Width	Au	Ag	Cu	Zn	Mo
R-106	Grab	Tr.	.18	.17	.1	.06

Between the Lower May showings and Frances Lake, about one-half mile N45°E of station "May", McKay Creek and the small unnamed stream which passes station "May" cut canyons into flat-lying to 10° west dipping graphitic, lustrous black shale. Innumerable quartz veins and quartz carbonate veins with widths up to 18 inches are exposed in the canyon walls. Sulfides, mostly pyrrhotite, but occasionally chalcopyrite, occur irregularly in the quartz. A sample of this vein material was assayed:

Fig. 6. Main Trench Lower May Showings Mt. Billings Venture. Aug. 1965.



Plan
1" = 10'

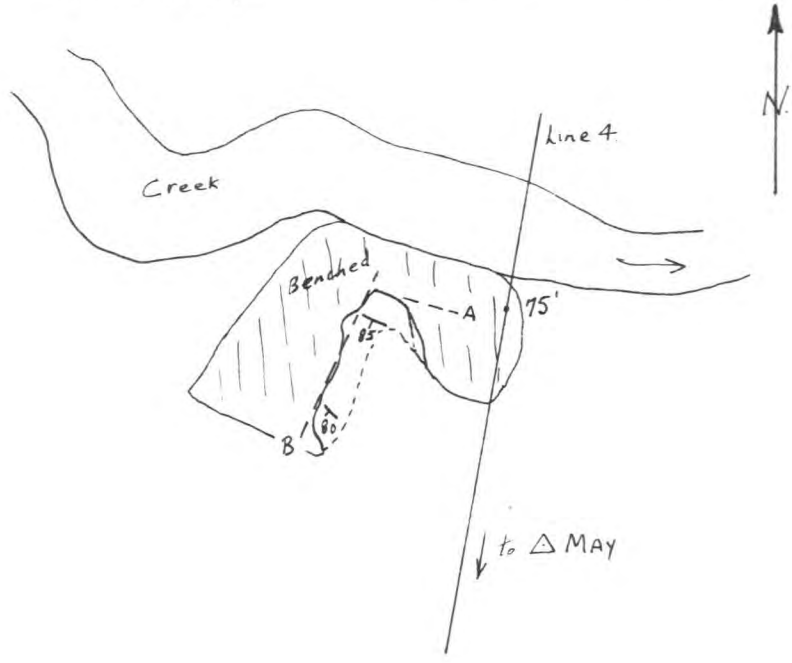
Assays - Spl No. | Width | Cu | Ni | Co | Mo

R 112	48" (Vertical face)	0.20	0.18	0.19	Tr.
R 113	36"	0.05			
R 114	54"	0.27	0.23	Tr.	
R 115	24"	0.15	0.58	Tr.	

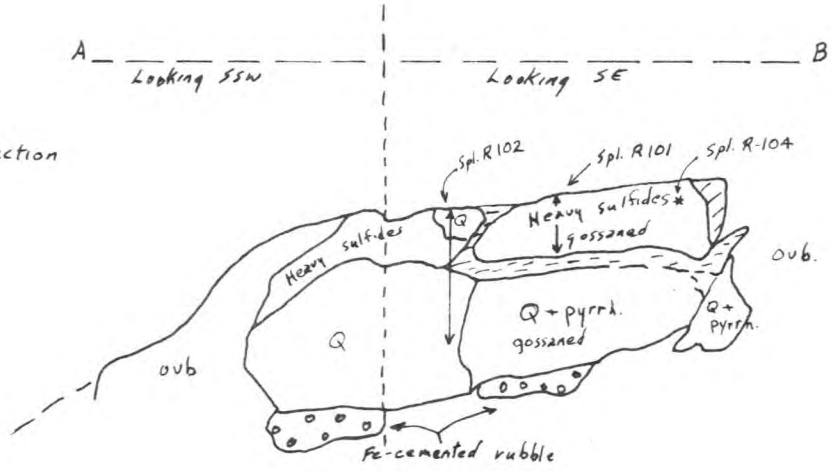
Fig. 7. Sidehill Cut - Lower May Showings

Mt. Billings Venture. Aug. 1965.

(a) Plan
1" = 10'



(b) Vertical section
1" = 5'

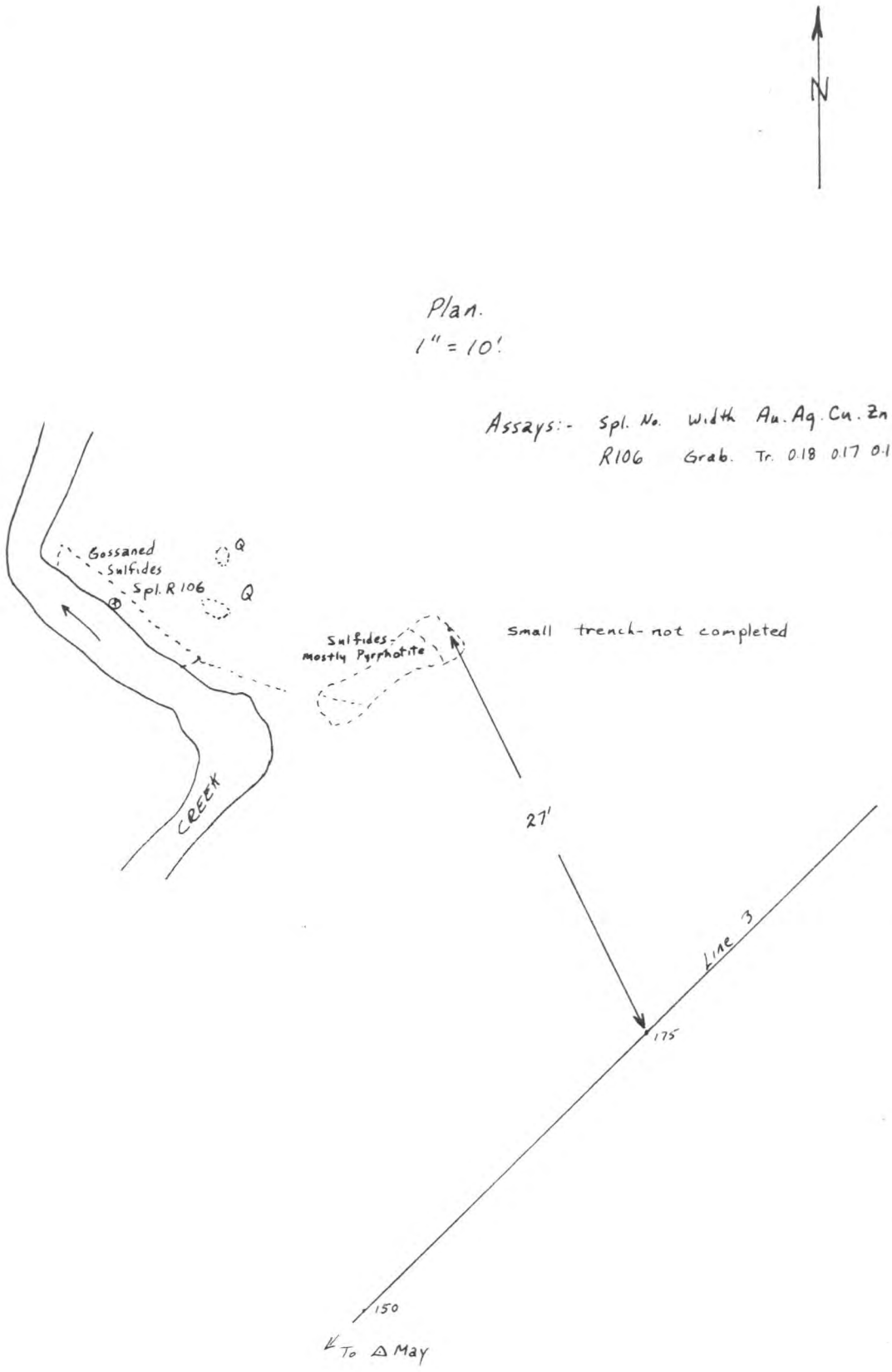


Assays :-

Spl. No.	Width	Au	Ag	Cu	Zn	Ni
R-101	16"	Tr.	0.12		1.3	Tr.
R-102	42"	Tr.	0.14	0.17		

R-104 - Grab - Spectrographically analysed.

Fig. 8. Trench #2 Lower May Showings Mt. Billings Venture. Aug. 1965



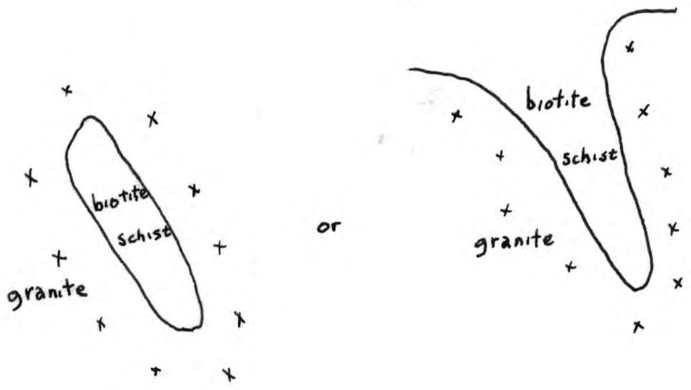
Sample No.	Width	Au	Ag	Cu
R-107	Grab	Tr.	.16	0.01

The "Waterfall" locality is indicated on figure 9 (in pocket). Chalcopyrite occurs with pyrrhotite in veins in hornfels near a granite contact. Exposures are in a steep northeast draining canyon which, except late in the season, carries a fast flowing stream. High magnetometer readings were recorded over a distance of two hundred feet, up to the granite contact and several small sulfide mineralized outcrops were found south of the canyon. No satisfactory geological work has been done on this occurrence and the magnetometer survey consisted of only one cross-cutting line. Away from the narrow confines of the canyon the area is covered by a very thick growth of small brush which impedes prospecting. Access to the showings was gained by a crude trail slashed from the claim line at Final Posts May #7 and #8. Mr. Kern of Duval Corporation visited this showing on September 19 but apparently saw only part of the mineralized area. One chip sample from the canyon was assayed:

Sample No.	Width	Cu
R-111	15' (true width ±5')	1.10

About 500 feet west of the Waterfall area fractures in granite are filled with coarsely crystalline zeolite which was identified by Dr. Green of the Geological Survey of Canada as stilbite. This mineral is not known to have any commercial possibilities.

The magnetometer line which crossed the Waterfall area was extended westerly to cross mineralized area referred to as "Upper May". Although the line did not cross the actual outcrops it circumscribed them. No anomalous readings were recorded and it was concluded that the Waterfall occurrence was not continuous with the Upper May. The latter appears to be a pendant of hornfelsed sedimentary rocks in the Simpson Tower granite body because granite outcrops on both sides (see sketch). Although one magnetometer line straight down the slope was required to illuminate the possibility that the Waterfall mineralization follows the east



contact of the granite and hence may extend north rather than northwest from the canyon outcrops. This line was not put in.

In the Upper May locality siliceous biotite schist contains bands of pyrrhotite with erratic occurrences of chalcopyrite. Most outcrops are frost-broken, and bedding attitudes are disrupted. One observation was recorded: N30E/24SE . Widths of pyrrhotite bands vary from 6 inches to three feet, of which up to 60 per cent may be sulfides. Massive chalcopyrite occurs as veins in the pyrrhotite and disseminated chalcopyrite occurs in small amounts throughout the pyrrhotite. Although much well mineralized rock can be found, bands containing sulfides are commonly separated by several feet of poorly- to un-mineralized schist. Best exposures are at the top of a boulder talus and these outcrops have shed mineralized float which forms a large portion of the surface of the talus pile.

SHOWINGS AT HIGHER ELEVATIONS ON SIMPSON TOWER

Working from camps on the northend of the Tower our prospectors were able to thoroughly examine the top of the ridge and parts of the west slope. Several showings were located.

Showings West May 1 and West May 2 are at timberline on the west slope of the Tower. Although they are separated by at least 2000 feet horizontal distance the mineralization is similar: magnetite with galena and traces of chalcopyrite. West May 2 includes several small pods of magnetite which are exposed in a stream cut. These have maximum widths of two to three feet and appear to be typical skarn occurrences near a granite boss and in meta-sedimentary rocks which are cut by a few granitic dykes. The sedimentary rocks have attitude N23E/34NW. A sample assayed as follows:

Sample No.	Width	Ag	Pb	Zn
W. May 2	Grab	.90	.2	.4

The West May 1 showing was found on a broad tundra surface. Although it was grubbed into at several points over a distance of about 200 feet the exposures are insufficient to permit determination of the attitude (though it appears to be almost flat-lying) or thickness. A magnetometer survey would very quickly provide a great deal of information about the strike, and extent of this showing. The skarn-like nature of the mineralization is not encouraging and the non-ferrous metal content appears to be similar to that of West May 2.

The Hilltop Lake showings were located by our prospectors but were not examined by the geologist. Mineralization is massive arsenopyrite with galena and sphalerite and is reported to be 3 to 4 feet wide and to outcrop in two areas about five hundred feet apart. This description was given by Tom Fenton whose observations were elsewhere found to be quite reliable. The locality is about 1000 to 1500 feet south of the south limit of exposed granite on Simpson Tower. One assay was obtained:

Sample No.	Width	Au	Ag	Pb	Zn
Hilltop Lake	Grab	.005	7.68	1.4	Tr.

FLOAT

Several float occurrences are marked on the accompanying map (figure 2). Those in the vicinity of McKay Creek are all quartz sulfide boulders with sulfide content of 30 to 50 per cent. Minerals include pyrrhotite, pyrite, arsenopyrite, galena, sphalerite. Some of the boulders were located in muskeg areas on low pine-ridges and the largest was found on the beach of Frances Lake. There is, of course, no evidence of the source of these boulders but their similarity suggests that they have a common source. The mineral association is similar to that of ABE showings and Hilltop Lake but neither of these bedrock occurrences appears to contain galena and sphalerite in similar quantities. Although it is possible that the boulders were glacially or even stream transported from the ABE area, the Hilltop Lake locality is in an area of south stream drainage and glacial transport is assumed to have been southerly. For these reasons Hilltop Lake can be ruled out as a possible source.

Our prospectors located a glaena-sphalerite bearing quartz float boulder in the course of their stream-sampling and prospecting work north of McKay Creek. The mineralization is rather fine-grained and is quite unlike any found in either the ABE or May areas. Careful silt and soil sampling revealed an anomalous area but mineralization was not found in place.

GEOCHEMICAL TESTING

More than one hundred silt and soil samples were analyzed in the field for heavy mineral content. The reactions were recorded as "positive","mild positive" and "negative". Figure 10 is a compilation of silt sampling data.

Two anomalous areas were delineated by geochemical techniques: just north of "ABE 1", and three and one-half miles north of "ABE 2". In the latter area the prospectors reported that slate from outcrops when crushed and tested for heavy metals gave positive reactions. However a piece of float well-mineralized with lead and zinc sulfides, was found suggesting that the positive silt tests were associated with vein-type concentrations as well as with a high background.

SUMMARY

Although MBV's 1965 program did not locate any economic mineral deposits, the work indicated a mineralized area which had not been previously prospected. Traditional prospecting techniques resulted in the location of nine separate occurrences of significant mineralization. Reconnaisance prospecting employing geochemical techniques indicated that an anomalous area north of McKay Creek may contain base-metal sulfide mineralization.

RECOMMENDATIONS

The writer believes that sufficient encouragement resulted from the past season's work to justify limited additional investigations. The objectives of this work would be

(1) to determine the dimensions of the high quality barite occurrence and to thoroughly prospect the immediate vicinity in search of additional barite.
(2) to locate the source or sources of mineralized float found near McKay Creek and several miles north of McKay Creek.
(3) to map and adequately prospect the Waterfall showing.
(4) to check an area of positive heavy metals geochemical sampling immediately north of "ABE 1" showing.
(5) to investigate the Hilltop Lake mineralization.

Further work on the ABE and Lower May showings should not be contemplated unless encouraging results are obtained elsewhere in the area.

A helicopter-borne EM survey of the west side of the East Arm of Frances Lake would, if completed early in the season, be of much help in planning further ground work. The difficulties of ground work in the low elevation areas of muskeg and no outcrops are such that all efforts to reduce such work would be rewarded by savings in time and money.

The writer does not believe that silt or soil testing geochemical work would improve upon similar work of the past season. Biogeochemical techniques (i.e. analysis of foliage) may be effectively applied in areas, such as muskeg, where humus has accumulated and silts and soils are not obtainable.

A portable EM unit, similar to Sharge's SE 250, would be a more efficient tool than trenching or magnetic techniques in preliminary exploration of base metal sulfide showings.

December 30/65

MEMO TO;- Mr. E.O. (Ted) Chisholm
FROM:- Dr. A.E. Aho

Ron McBean has submitted this property and area to us for consideration in inclusion in our general exploration program. I have suggested that you contact him at the telephone number of 299-2078 to discuss the possibility of whether we might be interested in doing something in this area. I have told him that we would give him some definite answer by about the end of January when I return from my vacation.

------- ------

DISCUSSED EXAMINATION OF THIS AREA WITH McBEAN IN VANCOUVER JUNE 15 OR SO. McBEAN WAS TO CONTACT US AT ROSS OR WHSE AND WE WILL HAVE A LOOK AT SIGNINGS. PROBABLY FOR INFORMATION ONLY AS WE ARE BOOKED FOR SUMMER

EOC
25 June/66

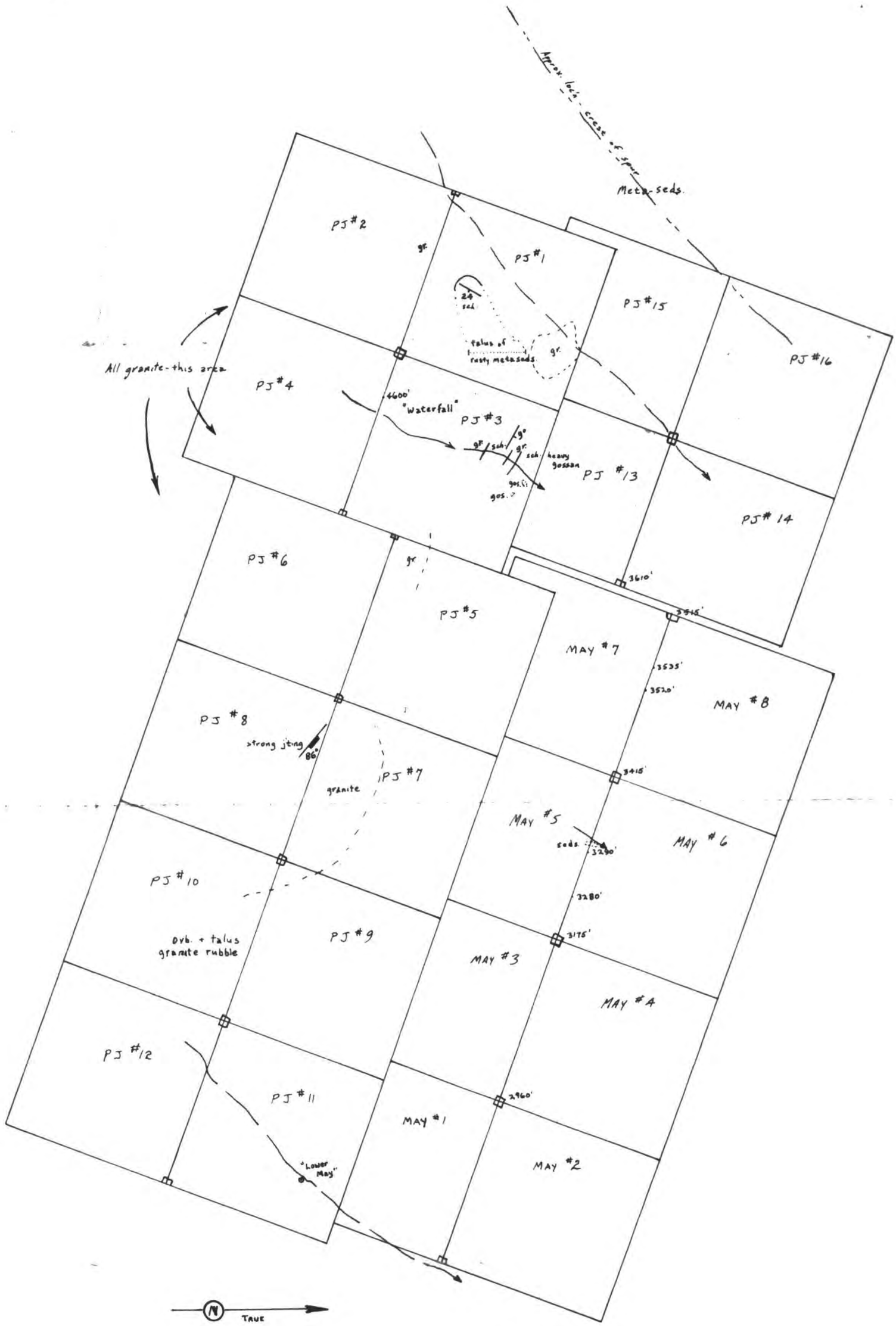


Fig. 11. PJ and MAY M.C.'s

Simpson Tower Area

Spot elevations taken using pocket altimeter

Datum: Elevation of Frances Lake - 2540'

Scale: 1 inch = 1000 feet.

61°35'N

129°30'W

Pb-Zn float

(Barite)

EAST ARM

FRANCES LAKE

Fig. 10
Silt and Soil Sampling
FRANCES LAKE AREA
Mount Billings Venture
1965.

Scale: 1 inch = 1 mile.

- □ Positive Heavy Metals
- ○ Mild Positive
- △ Negative
- ++++ Mineralization

61°20'N

129°30'W

Fig. 3. Dip Needle Survey
ABE 2 AREA
Scale: 1" = 100'
Dips plotted in degrees.
1° ≈ 260'. July 1965.

inches
0 1 2
0 1 2 3 4 5
centimetres

YUKON GEOLOGICAL SURVEY

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.

Fig. 9. Magnetometer Survey

PJ and May Claims

Scale: 1 in = 400 ft. August, 1965.

NB. Readings in degrees. Add 100 to each reading before converting to gammas.

1° = 218.1 gammas.

inches
0 1
0 1 2
centimetres
This reference scale bar has been added to the original image. It will therefore be the same as on the image, therefore it can be used as a reference for the original size.
GEOLOGICAL SURVEY