018884 104A { 091 061 068 090 098 } MJ (Silver Crown) LOIS ✓ IRON CAP ✓ SPIDER I ✓

PF: 104A 091

M.J. MINING SYNDICATE

REPORT

on the

M. J. MINERAL DEPOSITS

Bear River Ridge, Skeena Mining Division

- by -

HENRY L. HILL & ASSOCIATES

- Examined by Plumb for Dorreen Mines, Limited

W. E. Plumb, P. Eng.,
Vancouver, B. C.
December 1st, 1956.

TABLE OF CONTENTS

ILLUSTRATIONS:

PHONES:
0848
9924

RESIDENCE:
WALNUT 2-9976

HENRY L. HILL & ASSOCIATES
CONSULTING MINING ENGINEERS

572 HOWE STREET
VANCOUVER 1, B.C.

December 1st, 1956.

REPORT

on the

M. J. MINERAL DEPOSITS

Bear River Ridge, Skeena Mining Division

SUMMARY:

Four mineral deposits controlled by the M. J. Mining Syndicate of Stewart, B. C. were examined by the writer early in August, 1956 for Dorreen Mines Limited, Vancouver. They occur on the western slope of Bear River Ridge in the vicinity of Long Lake, 23 miles by road north of Stewart, between elevations of 3,400 and 5,300 feet.

The veins occupy fissures in the Hazleton series of volcanic and sedimentary rocks along the eastern margin of the Coast Range batholith. The region has been recently glaciated and one of the deposits is still emerging from the receding icecap on Bear River Ridge.

The M. J. Zone crops out intermittently over an area 2,300 feet long by 1,000 feet wide at an average elevation of 4,900 feet. It carries low values in gold and copper and contains some high-grade lenses of silver, lead and zinc. Although initially considered well worth examining, subsequent mapping and sampling disclosed that the mineralization was too sporadic and the veins were too erratically distributed to hold much promise of developing into a commercial orebody at this location.

. . . continued . . .

Three other zones lower on the ridge were briefly examined and sampled. Two were small, mineralized shear zones with no tonnage possibilities. The third was a slightly mineralized volcanic flow of large areal extent but carrying very low values.

It is concluded that none of the deposits justify further work at this time.

INTRODUCTION

The M. J. Mining Syndicate holds by location a block of 42 mineral claims situate on the crest and western slope of Bear River Ridge above Long Lake, seventeen miles due north of Stewart, B.C. By agreement with the owners, the writer examined a number of base-metal veins on the property between the second and sixteenth of August, 1956 on behalf of Dorreen Mines Limited, Vancouver.

The property is reached from Stewart by a sixteen mile all-weather road extending up the Salmon River valley to the Silbak Premier Mine, thence by a six-mile summer road to the old Big Missouri Mine camp. From this point a very steep road one mile long, suitable only for four wheel drive trucks, leads to the Big Missouri dam on Long Lake. From the dam, a rowboat with outboard motor is used to transport men and supplies one and one-half miles to a cabin at the north end of the lake. Mr. M. J. Kearns, President of the Syndicate, kindly arranged for transport, supplies and the use of the cabin during this examination.

PHYSIOGRAPHY

A small scale map of the Stewart area is included herewith. Stewart lies at the north end of the Portland Canal, which is a narrow fjord cutting northward completely through the Coast Range mountains. The Salmon and Bear Rivers, headed by glaciers, flow southward into the Portland Canal at Hyder, Alaska and Stewart, B.C. respectively. Between these rivers the Big Missouri and Bear River ridges extend northward, gradually rising until they merge with the Stikine plateau. All the higher elevations are covered with permanent icecaps which, however, are rapidly receding. Long Lake, elevation 3,400 feet, occupies a narrow hanging valley between these ridges.

Although the climate is mild, precipitation is extremely heavy. The average annual snowfall at the Premier Mine, elevation 1,400 feet, is about forty feet. Consequently the field season in the vicinity of Long Lake lasts only from August to October.

The effects of recent glaciation on the western slopes of Bear River Ridge above Long Lake are marked. Apart from a little heather and moss on the lower slopes, the rocks are bare and are

. . . continued . . .

grooved, striated and polished by ice action. Faults, dykes and the upturned edges of folded strata are clearly evident and tend to control the drainage pattern.

Two small turbulent creeks traverse the claim area and drain into the north end of Long Lake. Canyon Creek is fault-controlled, while Joan Creek follows a formational contact. A gravel plain of re-worked morain extends for one-half mile to the north of Long Lake.

A selvage of glacial moraine several hundred feet wide and ten to fifty feet deep fringes the lower edge of the icecap and, just south of the Lois Claim, glacial moraine extends in a broad belt down to the edge of Long Lake, marking a very recent recession of the ice. It was the presence of large boulders containing base metals in this "float path" that led to the discovery of the E. J. veins, which occur in a series of rock "islands" projecting through the ice near the top of the ridge.

GEOLOGY

This region lies within the mineralized belt that, in general, follows the eastern margin of the Coast Range batholith throughout British Columbia. Here, the Coast instrusions follow the line of the Salmon River and the Salmon Glacier and swing sharply to the northwest about three miles west of Long Lake.

Three gently-folded, conformably-superimposed rock formations, part of the Hazleton series, underlie Bear River Ridge. From south to north these are the Bear River volcanics (the oldest), the Salmon River conglomerates and the Hazelton slates. The distribution of these rocks in the vicinity of Long Lake is shown on the accompanying map.

An anticlinal fold has caused the Bear River volcanics (chiefly green and purple tuffs) to be exposed as an erosion "window" to the northeast of Long Lake. The Salmon River formation, composed of massive conglomerate, sandstone and chert, forms a prominent scarp above the northeast side of Joan Creek and is also exposed on some of the islands in the icecap. The Hazelton slates, a thin-bedded, banded formation that includes black argillites and grey quartzites, underlies most of the area to the north of Canyon Creek as well as both sides of Long Lake.

Three types of intrusions, probably related genetically to the mineralization, occur in the area. A stock of augite porphyrite about one-half mile in diameter outcrops at the northeast corner of Long Lake between the volcanics and the slates. It contains the Spider and the No. 1 mineralized zones.

. . . continued . . .

A prominent belt of dykes about one mile wide ranging in composition from diorite to quartz porphyry trends southeast from Mount Dilworth, crosses Long Lake and Bear River Ridge, and has been traced for another ten miles into the Cambria Icefield. In the Bear River valley the dykes become so closely spaced that they can almost be considered an intrusive stock. This is significant because in the vicinity of the M. J. veins one of these dykes, mapped separately as "feldspar porphyry", suddenly enlarges eastward to form a small stock which may be the source of the mineralization. The Lois veins on Long Lake, the M. J. deposits on Bear River Ridge and the Independence veins in Bear River valley all occur along the northeast margin of this belt of dykes.

Numerous small lamprophyre dykes strike southeast across the area. They cut all formations and appear to be coincident with or slightly later than the injection of the vein material but are not, themselves, mineralized.

There are two prominent fault-patterns in the area. One strikes northwest, roughly parallel to the batholithic contact, the belt of dykes and the axes of regional folding; the other strikes essentially north-south and seems to have controlled the direction of ice-erosion and hence the valleys of the Bear and Salmon rivers, Cascade and Silver Creeks, and Long Lake, and possibly the Portland Canal. The north-south faults appear to offset the belt of dykes along the Bear River and again at Long Lake and are therefore probably the more recent "set". The Spider, No. 1 and Lois veins occur along northwest faults and are short and discontinuous, while the M.J. veins chiefly follow the north-south pattern and are more persistent.

MINERAL DEPOSITS

(1) GENERAL

Two mineralized zones - the M. J. and the Iron Cap - outcrop on the claims held by the M. J. Mining Syndicate. Three other vein deposits - the Spider, the No. 1 and the Lois - occur on old Crown Granted mineral claims just above Long Lake. At the time of the examination, the syndicate held a lease on the Lois claim, but not on the other Crown Grants. These veins were examined but were not found to extend into the M.J. ground. The various deposits are described below and the M. J. zone, on which most of the work was done, is shown in detail on the accompanying map.

(2) M. J. ZONE

This zone is a recent discovery. When the area was first prospected fifty years ago the icecap on Bear River Ridge extended

. . . continued . . .

almost to Long Lake. About five years ago numerous large boulders containing galena, sphalerite and pyrite in quartz were found in the moraine left by the retreating ice and traced up to the ridge, where about a dozen broad quartz-felsite veins were found in place on a series of rock "islands" projecting through the ice. The extent of the exposures varies from year to year, dependent upon annual snowfall and rate of melting. When examined in August this year the veins outcropped intermittently over an area 2,300 feet long by 1,000 feet wide, about four-fifths of which was obscured by snow-covered ice. They ranged from 4,700 to 5,100 feet in elevation.

As a basis for evaluation a survey was made of all the exposed veins, using a Brunton compass and tape. Most of the islands were triangulated and elevations were obtained by barometer using Long Lake as a base. The veins were mapped in detail (except on Carside Island) and sampled wherever this would provide the most information. The geology and the island outlines were sketched. The accompanying 100-scale map and photographic panorama are self-explanatory. The results of this work are summarized below:-

(a) Local Geology

In this area, alternating beds of Kaza argillites and Salmon River conglomerates apparently overlie shallowly the volcanics of the Bear River formation. A massive dyke of feldspar porphyry strikes southeasterly along the contact and probably represents the northeastern margin of the "Belt of Dykes". A zone of shearing about 1,000 feet wide strikes southerly with vertical dips across all these formations.

(b) Veins

The veins occupy sub-parallel fissures spaced 300 to 400 feet apart within the shear zone. Where they cut the core massive rocks (conglomerates, volcanics and porphyry) they are persistent, quite well defined and vary up to seven feet in width. Within the incompetent argillites, however, they consist of a myriad of thin stringers, horsetailing and anastomosing along the crenulated bedding planes to form "sheeted" zones up to twenty feet wide.

(c) Mineralization

The vein-filling is a hard, light grey felsitic rock (probably of rhyolitic composition) impregnated and bordered by white quartz which contains disseminated grains of pyrite, galena and sphalerite. A little copper staining was noted. No silver minerals were seen so the silver values must be contained in the

. . . continued . . .

galena. This is confirmed by assay results, which show about one half ounce of silver to one percent lead. Gold and copper values are uniformly distributed but of very low grade. Lead and zinc mineralization was seen in nine of the fifteen veins examined but only four of them (2-A, 2-B, 6-A and 7-A) carried concentrations greater than one percent, and these occurred as high-grade lenses separated by barren to low-grade material. Fourteen character samples, taken at various locations, are plotted on the map. Four of these taken on Vein 6-A, by far the richest vein observed in the area, illustrate the extreme variations in grade over short intervals:-

No.	Width	Au	Ag	Cu	Pb	Zn
335	34"	0.005	0.50	0.12	Trace	Trace
336	72"	0.005	0.25	0.12	Trace	Trace
337	30"	0.03	9.30	0.10	17.05	11.75
338	43"	0.01	2.20	0.20	4.70	5.45
Average	45"	0.01	2.26	0.14	3.99	3.29

(d) Hidden Deposits

A number of open cuts were blasted on some of the veins, in past seasons, by the owners. Two of these, No. 7 and No. 9, were still covered by snow in August and their reported positions are indicated on the map. They are both reported to contain veins assaying higher in lead, zinc and silver than those examined. A little broken vein material was found near the margin of No. 9 cut. Vein 5 is also reported to have been exposed to the north, toward Twin Island and to contain values in lead, zinc and copper.

(e) Vein Correlations

Analysis suggests that the seven vein-systems mapped may possibly be grouped as follows:-

Vein 1: This narrow, discontinuous low-grade vein is exposed for 450 feet, passing under the ice to the north and the moraine to the south.

Veins 2 and 3: These veins, if continuous across the 250 foot snow gap, have a combined length of 700 feet and vary in width from five inches to12.5 feet. The north end contains spotty lenses of high-grade lead and zinc; the south end is visibly low grade. Both ends disperse rapidly in the slates.

. . . continued . . .

Vein 5: This may correlate with the small veins on Twin Island, 300 feet to the north. It is reported to contain low values in lead, zinc and copper over width of two feet. Both ends pass under the ice. It may, instead, join either Vein 6-A or 6-B, 650 feet to the north.

Vein 6-A and Short Island:- This is almost certainly the same vein, with an exposed length of 300 feet. It contains erratic high values in lead and zinc. If continuous with Vein 5 it would have an indicated length of 750 feet, and would pass under the ice at both ends.

Veins 6 and 7: There is at least a possibility that the No. 6 veins on Long Island may correlate with the No. 7 veins on Carbide Island, 1,300 feet farther north. About one-third of Carbide Island is covered by stringers of felsitic vein material. Roughly one-sixth of this is quartz. Some of the quartz contains galena and sphalerite, concentrated in two areas as shown. One sample taken over six feet assayed: gold - 0.01 ounces; silver - 0.45 ounces; copper - 0.15%; lead - 1.15%; zinc - trace. Should veins 7-A, 6-A and 5 be continuous, they would form a zone 2,300 feet long, about five feet wide, mineralized erratically and still open at the south end. Only 450feet of this length is exposed, however, and correlating across a gap of 1,300 feet is highly conjectural.

(f) Evaluation

The M. J. Zone is 23 miles from tidewater by the shortest practicable land route and occurs at an average elevation of 4,900 feet in a region of heavy precipitation and late run-off where the field season is only about three months. To be economic under these conditions orebodies must be both extensive and rich. It is estimated that at least 500,000 tons of milling ore with a net smelter return value of $25.00 per ton would be required.

To achieve this minimum tonnage, at least two of the veins would have to persist for 2,000 feet, with an average width of three feet, to a depth of 400 feet. From the mapping it is fairly evident that, while the zone of shearing probably does persist for long distances, the distribution of the veins within it tends to be discontinuous and erratic and it is considered that a great deal of sub-surface exploration would be required to delimit orebodies. This, however, does not appear to be justified by the observed grade of the outcrops. Only about ten percent of the vein exposures were mineralized and the higher grade concentrations were lenticular and widely separated. There was very little surface oxidation and several cuts had exposed fresh faces with no improvement in grade. There is no geological indication that mineralization would improve with depth.

. . . continued . . .

(3) IRON CAP ZONE

This name derives from the iron-stained erosion surface of a single gently-dipping basaltic volcanic flow exposed for 3,000 feet along the south side of Joan Creek. It forms the uppermost horizon of the Bear River volcanics and dips at about twenty degrees conformably under the lowest sedimentary beds of the Salmon River formation. The upper four feet or so is heavily impregnated with fine grained iron pyrite that appears to fill vesicles in the dense, black, fine-grained rock. In addition to pyrite this rock contains a little chalcopyrite, galena and sphalerite as well as minute blebs and veinlets of opaque, pale-blue chalcedony. While the gossan is widespread, no economic concentrations of the base or noble metals were found.

Two open cuts had been blasted by the owners near the top and bottom of the zone, and they report low but consistent values in silver, lead and zinc. One sample, No. 326, was channelled by the writer across eight feet in the upper cut (elevation 4,420 feet) and assayed 0.30 ounces in silver with a trace of gold. No other areas worthy of sampling were observed and nothing further was done with this zone.

(4) NO. 1 ZONE

This is shown as No. 1 Vein on the small map entitled "Long Lake Vicinity" accompanying this report. It occurs on the old Crown Granted Spider No. 1 Claim. It was examined to determine whether it extended into the M. J. Claims to the southeast. It was found to be a narrow intermittent vein of quartz occurring at intervals along an open fissure striking southeast and dipping 55 degrees southwest. At the point marked "X" on the map the vein was 44 feet long, varied from two to 24 inches in width and was slightly mineralized with galena and chalcopyrite. Sample No. 324 was taken here. At this point also a small vein, six to 24 inches wide, entered from the north. Sample No. 325 was taken at the north end of this vein, where chalcopyrite was visible across two feet. These samples assayed:-

Au - Ag - Pb - Cu

No.	Width	Au	Ag	Cu	Pb	Zn
		10¢	48	2	15	
324	18"	0.30	12.20	0.12	1.90	Trace
325	24"	0.10	1.25	3.80	Trace	Trace

The fissure at this point was ten feet wide. It was traced for 120 feet to the southeast and for 325 to the northwest and was found to die out in both directions. To the southeast the rocks were continuously exposed but only a few barren quartz stringers were found.

. . . continued . . .

In this direction, the augite syenite intrusive (the host rock) merged gradationally with the Bear River tuffs and it is probable that the tuffs were too incompetent to sustain the fracturing. The vein, as exposed, is too small to be economic.

(5) LOIS VEINS

A mineralized shear zone and a slightly mineralized dyke, about 400 feet apart, trend southeasterly from Long Lake on the old Lois Crown Granted mineral claim. In 1956 the A. J. Mining Syndicate held a lease on this claim, so it was examined briefly by the writer. Three samples were taken, as shown on the accompanying map.

104A 068

The shear zone is best exposed in No. 1 open cut, where it is six feet wide, strikes 140 degrees and dips 60 degrees northeast. The vein material is an altered andesitic tuff containing chlorite, epidote and some quartz, impregnated with fine-grained pyrite, galena, sphalerite and a little chalcopyrite. The shear was traced for 700 feet to the southeast, where it ended at a contact between a granitic dyke and purple tuffs of the Bear River formation. No mineralization was noted in the last 400 feet, while much of the remainder was obscured. The mineralization appears to end at Station 2, about 120 feet above the lake.

The dyke is about fifty feet wide, strikes southeasterly and dips 58 degrees northeast. It is massive, light-green and felsitic. At open cut No. 2 it was mineralized with pyrite and a little copper stain. Open cut No. 3 exposed a two-foot shear zone along the footwall of the dyke, containing sphalerite, galena and some chalcopyrite. The rest of the dyke appeared to be barren. Both cuts were sampled, with low results as plotted. The dyke was obscured by overburden toward the lake and passed under glacial moraine 150 feet to the southeast.

As the shear zone lack persistence and the dyke is very poorly mineralized, these veins are considered uneconomic.

CONCLUSIONS

It is concluded from this examination that:

(1) As exposed, these deposits are of too low a grade to be economic in this locality.

(2) The indicated potential appears insufficient to warrant any expenditures on exploration at this time.

. . . continued . . .

(3) Although the M. J. Zone appears to be sub-commercial, its presence does suggest the possibility that other, more concentrated deposits may occur beneath the ever-diminishing icecap elsewhere on Bear River Ridge.

Respectfully submitted,

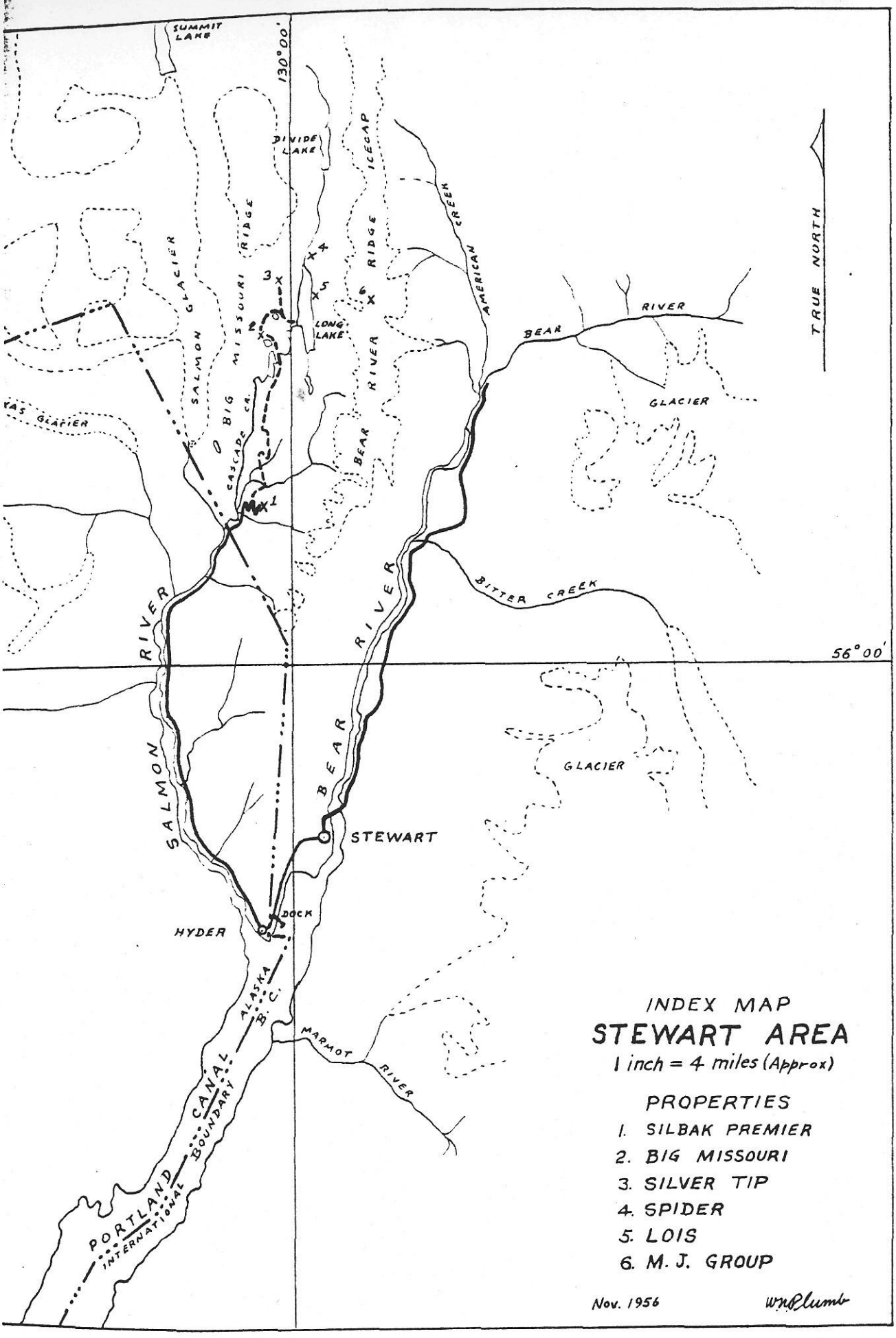
HENRY L. HILL & ASSOCIATES,

Per:

W. N. Plumb, P. Eng.

Approved: _____
Henry L. Hill

WNP/b
Vancouver, B. C.
December 1st, 1956.



INDEX MAP

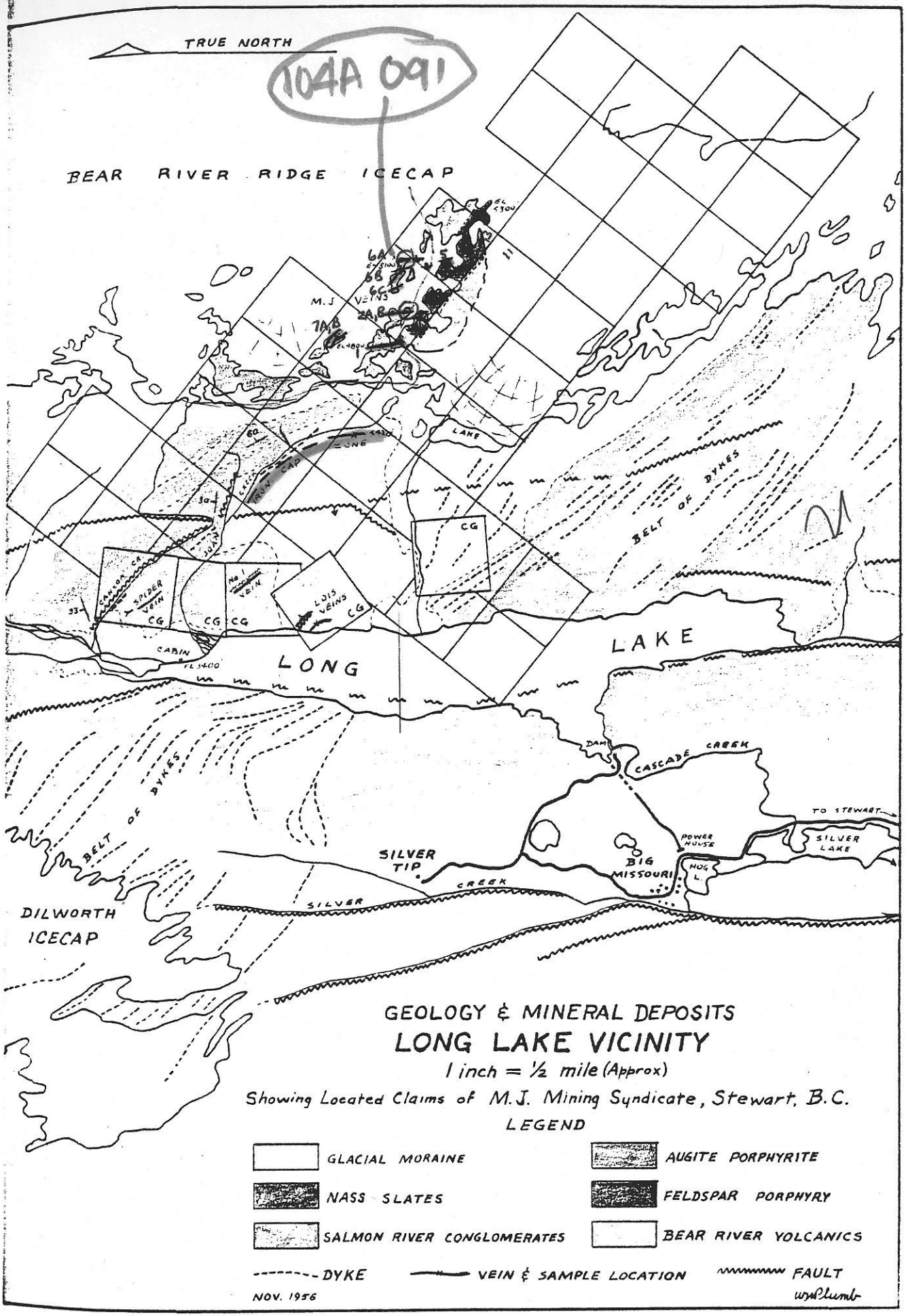
STEWART AREA

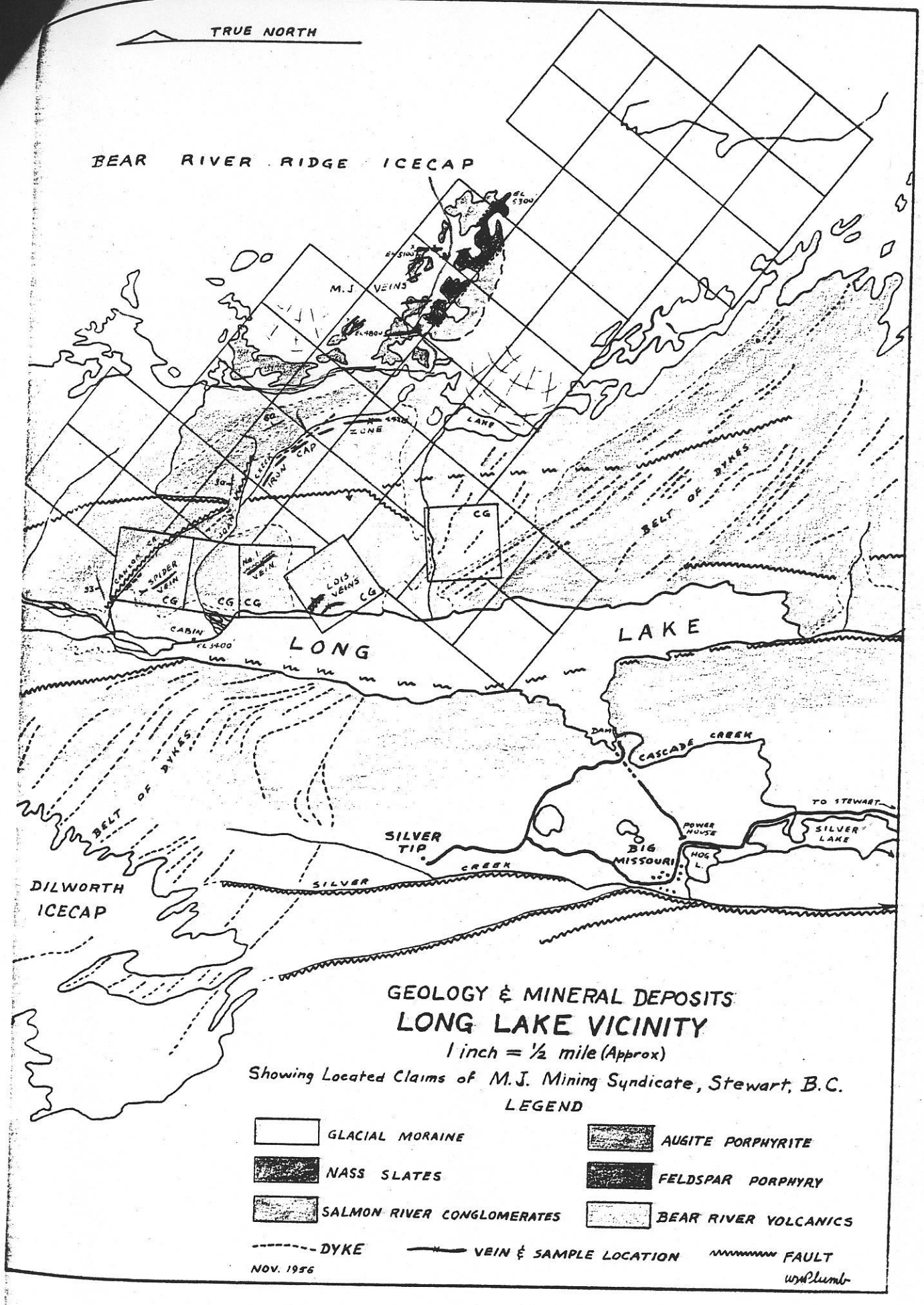
1 inch = 4 miles (Approx)

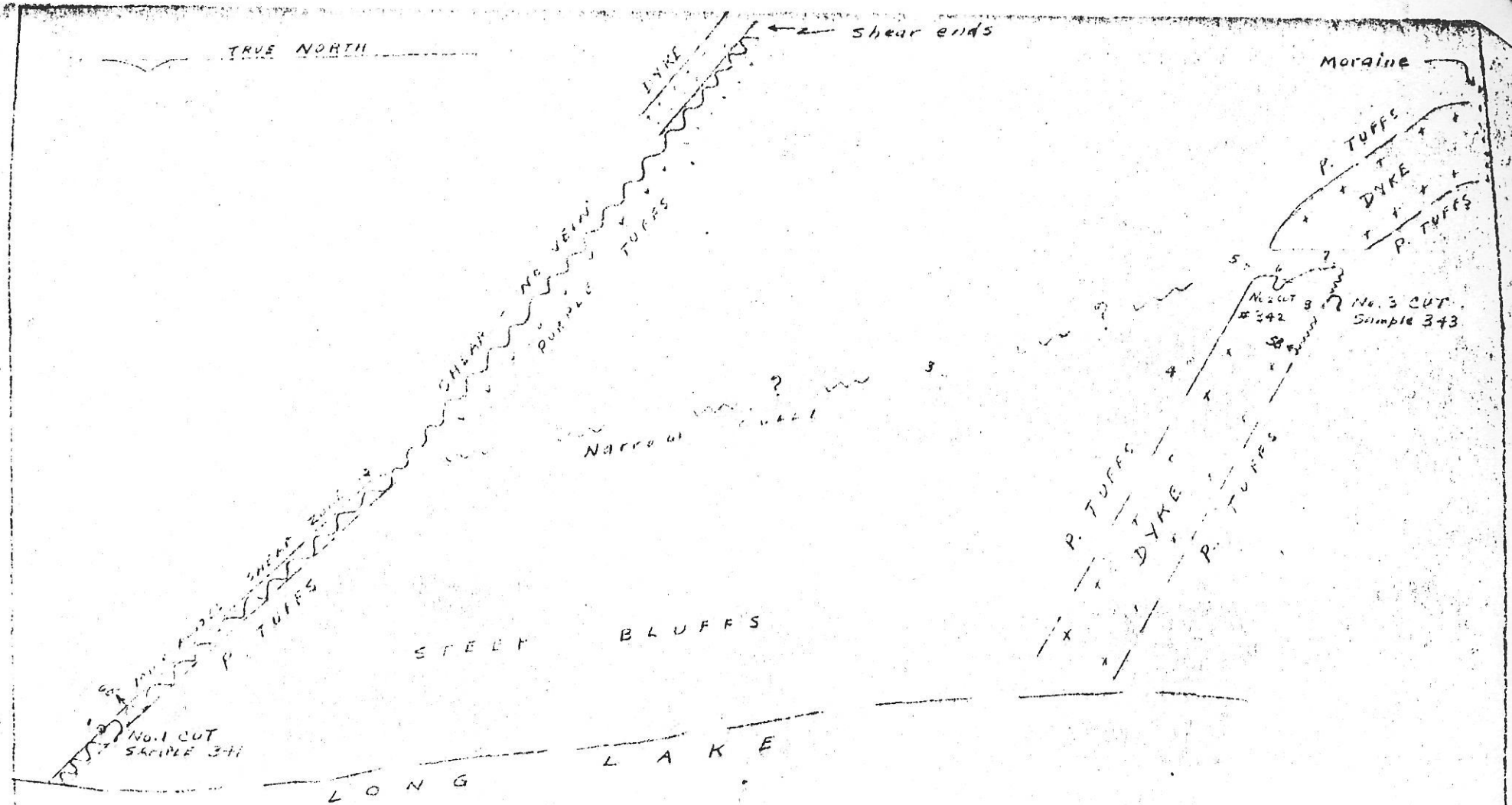
PROPERTIES

1. SILBAK PREMIER
2. BIG MISSOURI
3. SILVER TIP
4. SPIDER
5. LOIS
6. M. J. GROUP

Nov. 1956 W.M.B. Clumb


TRUE NORTH
104A 091
BEAR RIVER RIDGE ICECAP
M.J VEINS
LAKE
BELT OF DYKES
CG
SPIDER VEIN
No 1 VEIN
LOIS VEINS
CABIN
LONG LAKE
DAM
CASCADE CREEK
TO STEWART
POWER HOUSE
SILVER LAKE
BIG MISSOURI
HOG L.
SILVER TIP CREEK
SILVER
DILWORTH ICECAP
GEOLOGY & MINERAL DEPOSITS
LONG LAKE VICINITY
1 inch = ½ mile (Approx)
Showing Located Claims of M.J. Mining Syndicate, Stewart, B.C.
LEGEND
GLACIAL MORAINE
AUGITE PORPHYRITE
NASS SLATES
FELDSPAR PORPHYRY
SALMON RIVER CONGLOMERATES
BEAR RIVER VOLCANICS
DYKE
VEIN & SAMPLE LOCATION
FAULT
NOV. 1956


TRUE NORTH
BEAR RIVER RIDGE ICECAP
M.J. VEINS
EL 5300
EL 5100
EL 4800
ZONE
LAKE
CREEK
TRUNK
CAP
BELT OF DYKES
CG
SPIDER VEIN
No. 1 VEIN
LOIS VEINS
CABIN
EL 3400
LONG LAKE
DAM
CASCADE CREEK
TO STEWART
POWER HOUSE
SILVER LAKE
HOG L.
BIG MISSOURI
SILVER TIP
CREEK
SILVER
DILWORTH ICECAP
GEOLOGY & MINERAL DEPOSITS
LONG LAKE VICINITY
1 inch = ½ mile (Approx)
Showing Located Claims of M.J. Mining Syndicate, Stewart, B.C.
LEGEND
GLACIAL MORAINE
AUGITE PORPHYRITE
NASS SLATES
FELDSPAR PORPHYRY
SALMON RIVER CONGLOMERATES
BEAR RIVER VOLCANICS
DYKE
VEIN & SAMPLE LOCATION
FAULT
NOV. 1956
W.M. Plumb

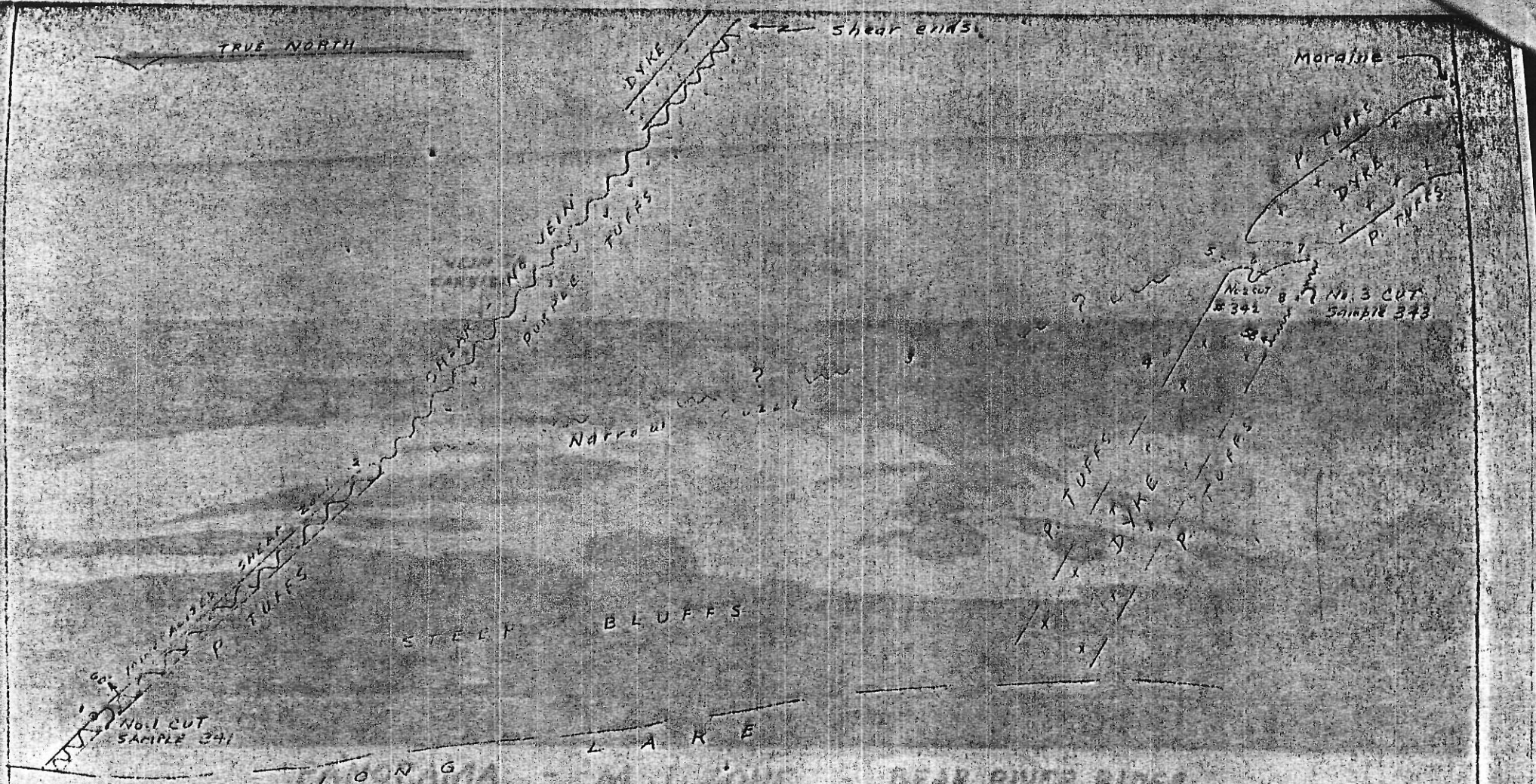


NUMBER	WIDTH	Au oz	Ag oz	Cu %	Pb %	Zn %
341	6.0'	Trace	0.30	0.07	1.35	1.50
342	4.5'	Trace	0.30	Trace	Trace	Trace
343	4.3'	Trace	0.40	0.10	Trace	0.30

LOIS VEINS

1 in. = 100 ft.

Nov '56 WHP.

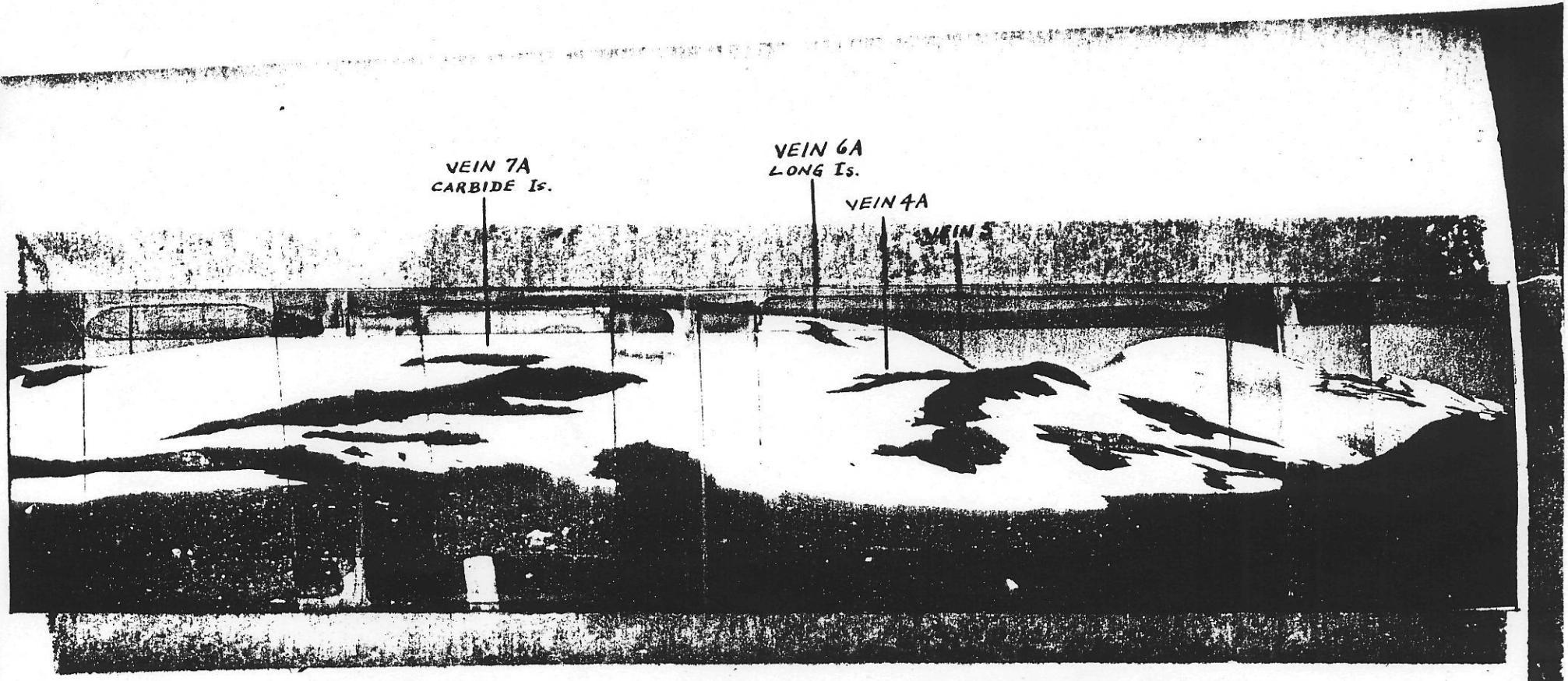


NUMBER	WIDTH	Au oz	Ag oz	Cu %	Pb %	Zn %
341	6.0'	Trace	0.30	0.07	1.35	1.50
342	4.5'	Trace	0.30	Trace	Trace	Trace
343	4.3'	Trace	0.40	0.10	Trace	0.30

LOIS VEINS

1 in. = 100 ft.

Nov 56 WHP



PANORAMA - M. J. ZONE - BEAR RIVER RIDGE