

Box 11

103-T-2

**REPORT**

**ON**

WEDEENE RIVER

DEPOSITS

*Dec/1959*

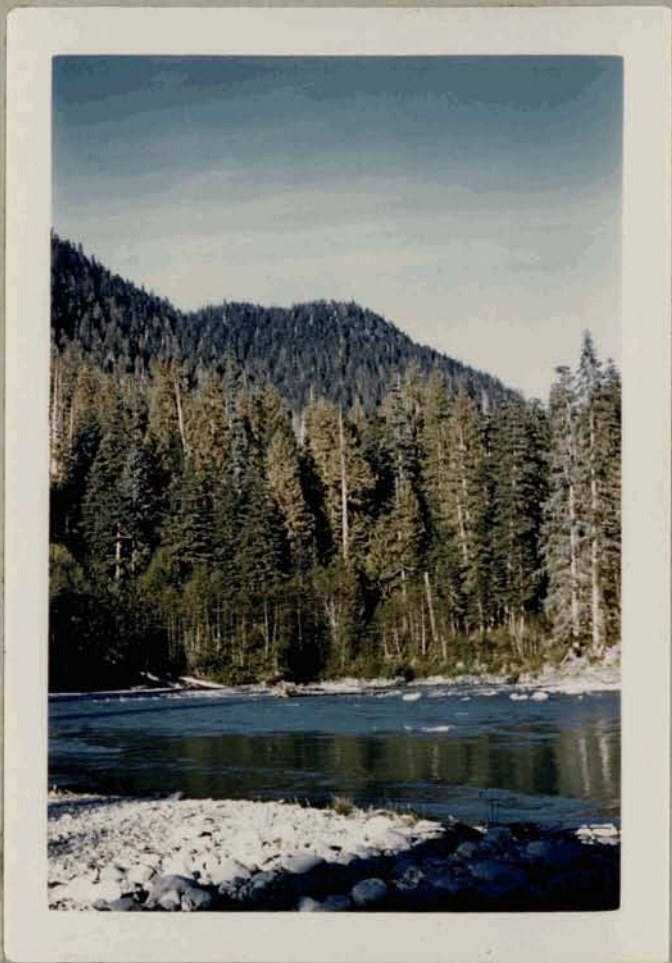
Skeena

MINING DIVISION

Alex Smith  
Geologist

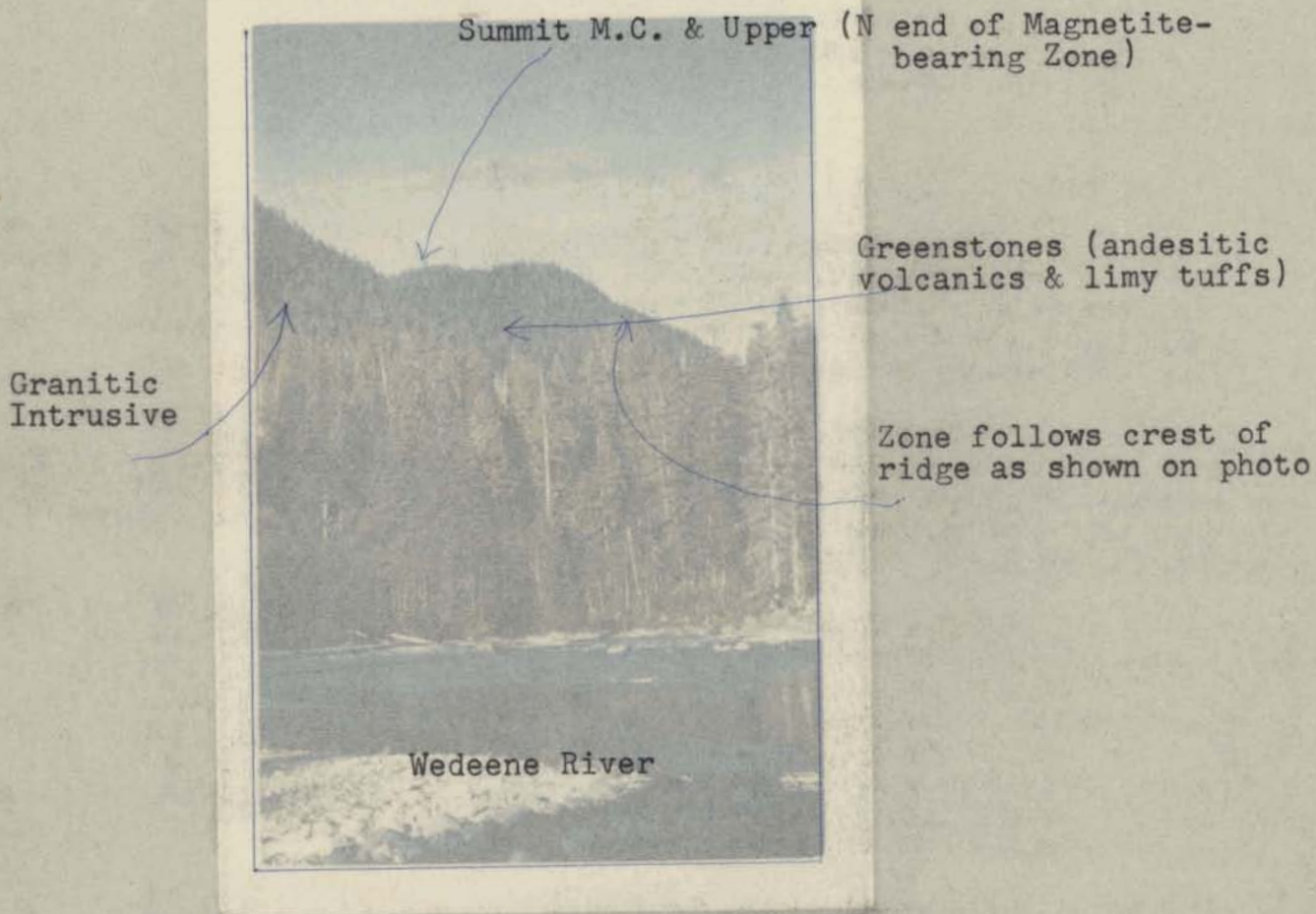
**XENGINEER**

23,156



LOOKING E FROM WEDEENE RIVER BRIDGE

C.N.Ry. 11 Mi. N of Kitimat





M E M O:

January 14th, 1959

Re: WEDEENE RIVER IRON DEPOSITS

The iron assays given in our report of December 19th, 1958, are for total iron. If a high grade magnetite concentrate is to be made, only the acid soluble iron would be recovered, but if the ores were to be used in a direct reduction process, the iron contained in the silicates would in part at least be available. To determine the amount of iron tied up in the silicates two composites, one of the higher grade core recovered in diamond drill hole #3 and another of the lower grade ore from diamond drill hole No.1 were assayed for acid soluble iron. The results are:

	<u>Total Iron</u> (as previously submitted)	<u>Acid Soluble</u> <u>Iron</u>	<u>Iron from</u> <u>Silicates</u>
DD #3	42.06%	39.84%	2.22%
DD #1	24.59%	20.22%	4.37%

As is to be expected, the lower the grade of the ore, the higher the silicate iron.

Phosphorus and Titanium are low, assaying P 0.05%, TiO<sub>2</sub> 0.15% for a weighted composite of the above two samples.

*AS*  
Alex'r Smith

R E P O R T

on

WEDEENE RIVER DEPOSITS

SKEENA MINING DIVISION, BRITISH COLUMBIA

by

ALEX SMITH

Geologist.

Vancouver, B. C.

December 19th, 1958

REPORT

on

WEDDENE RIVER DEPOSITS

I N D E X

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PHOTO: Looking E from Weddene River Bridge

in front

MAPS:

Scale

- |   |           |           |
|---|-----------|-----------|
| 1. Packsack Drill holes, Tunnel area<br>1958.                                   | 1" = 50'  | in back   |
| 2. Sections - ditto   | 1" = 50'  | "         |
| <u>Claim Maps:</u>  | 1" = 200' | "         |
| 3. Overlay, Mineral Hill #1 showing<br>location & grade, surface samples.       |           |           |
| 4. Mineral Hill #1 dip needle survey<br>& outline of magnetite-bearing<br>zone. |           |           |
| 5. Mineral Hill #2 ditto  |           |           |
| 6. " " #3 "   |           |           |
| 7. Summit M.C. "  |           |           |
| 8. Weddene #1 Dip Needle survey sub-<br>mitted for assessment work 1958.        |           |           |
| 9. Weddene #2 ditto   |           |           |
| 10. " #3 "  |           |           |
| 11. Terrace Sheet Nat. Topog. Ser. Sheet<br>103-I                               | 1" = 4 mi | in pocket |
| 12. Weddene River Geologic & Topographic<br>map showing magnetite-bearing zone  | 1" = 600' | in pocket |

# R E P O R T

on

## WEDEENE RIVER DEPOSITS

### SKEENA MINING DIVISION, BRITISH COLUMBIA

#### SUMMARY AND CONCLUSIONS:

The Wedeene River deposits are on the railway 11 miles from the Port of Kitimat. Judging from the limited outcrops and the small amount of work done to date on the property -

1. The magnetite-bearing zone has length of 5000' + and a width averaging over 200'. In elevation it extends from the valley floor at elev. 250' up the ridge to elev. 2000'. There are no indications to date of limited vertical extent. The attitude of the zone is not known but many features in the zone dip at +75°.
2. In the small portion of this zone tested, 75% of the volume would average 30% Fe and 0.3% S. If 60% of the 5000' length were found to be of the same grade, then 5,000,000 T of 30% Fe per 100 vertical feet is indicated. This would be a major deposit for this coast.
3. The deposit, if it is a replacement of limy tuffs, is likely to be more persistent than the iron deposits on limestone contacts which have been mined along the coast, i.e. Wedeene may have a much greater tonnage.
4. A magnetic concentrator would be required to produce a 55% Fe product suitable for export. The overall grade is



comparable with that of the deposits now being exported, i.e. when the tonnages there removed as waste are included.

5. Wedeene might be suitable for use in a direct reduction process at Kitimat; if so, it is well situated for a low cost operation.

6. Sufficient work (mapping, drilling, mill tests) should be done in 1959 so that a decision can be made on the alternatives for the large payments - due December 31st, 1959 - by the present agreement.

7. There is a continuing interest in iron properties on the coast by companies looking for ore to export and by those contemplating a reduction plant in this area. The present market for magnetite concentrates and price (\$8.50 per T for 55% Fe on tidewater) makes Wedeene a valuable property.

LOCATION:

The Wedeene River deposits trend N30°E up the crest of a small ridge lying to the east of the main mass of Iron Mountain. Elevations range from 250' to 2000'. The claims extend northerly from the Wedeene River bridge on the Kitimat-Terrace branch of the C.N.R. By rail it is 30 miles north to Terrace and 8 miles south to the City of Kitimat, or 11 miles to the Port of Kitimat (see map 11 in pocket). Kitimat is also connected to Terrace by a good blacktop highway. Four miles of road with a bridge across the Kitimat River would be required to connect the property with this highway. Terrace is on the Prince Rupert line of the C.N.R. and is also serviced by twice daily flights by C.P.A. from Vancouver. At present there is no passenger service on the C.N.R. between Kitimat and Terrace, but arrangements can be made to travel on the daily local freight. Kitimat and Prince Rupert have regular coastwise passenger and freight services.

Iron Mountain lies on the eastern flank of the broad valley which extends north from Kitimat to Terrace and on to the Nass River, a distance of over 100 miles. This valley is the largest through-going feature cutting the Coast Range. The valley bottom is occupied by swamps, timbered bench lands, and braided river channels. The climate is typical marine wet coastal with an annual precipitation of 100" at Kitimat and 45" at Terrace, and an average mean annual temperature of 46° at Kitimat and 44° at Terrace. At Wedeene one might expect the snow to accumulate to 6 foot depth in winter time and last until late March.

The area is heavily timbered with large spruce, hemlock and cedar, and will undoubtedly be logged in the not too distant future.

PROPERTY:

The four principal claims (Mineral Hill #1 - #3 and Summit) are held as a Retention Lease by James Fairclough of Chilliwack. These four claims are under option to Quebec Metallurgical Industries Limited. Q.M.I. holds six adjoining claims, Wedeene #1 to 6 by location (see map 12 in pocket).

The Mineral Hill #1 - #3 and Summit were Crown-granted in 1928, but reverted to the government for non-payment of taxes. In 1949, before there was a reservation to the government on iron ores, Fairclough applied for a lease on these claims, which would have enabled him within a year to have obtained the Crown-grants to the property. The leases were not issued as they should legally have been because the Deputy Minister was not in favor. Shortly after Mr. Fairclough's application, the area near Kitimat was placed under reserve because of the impending Alcan project. The Deputy Minister used this as a continuing excuse for refusing the leases as the claims were in part in this reserve.

In 1951 a reserve was placed on iron ores reserving them to the Crown in order that sufficient ore could be retained on the Coast to supply an iron smelter, if such became economical.

In 1957, by Bill No. 91, the Social Credit Government brought in Retention Leases, which are five year leases

on which an annual rental of 50 cents per acre is paid. Our office was instrumental in obtaining the Retention Lease for Fairclough in October, 1957. They were renewable until production was found to be economic. The Retention Lease on these Wedecene claims reserves the iron to the Crown.

In 1958 the government by Bill 70 stopped issuing Retention Leases and said, by Order-in-Council 120, that owners of Retention Leases could, if they declared the iron on the property, obtain the rights to half the iron under a 20 Year Lease. The government would retain the rights to the remaining half as a device to prevent the export of that half. However, if the government's half was to be used locally, the claim or lease holder could regard it as his own without any additional payments, taxes or royalties.

Also, at the last session of the legislature, by Bill No. 70 a holder of a Retention Lease would be entitled to obtain a Crown-grant in place of a Retention Lease, provided he submitted his application before May 31st, 1959. Such Crown-grants, however, would probably not convey rights to the iron.

It is thought that the Mineral Act of the Province as it now reads would not allow the government to give a third party the rights to the iron in a claim, so that the situation would appear to be stalemated as far as the government half of it was concerned. The government could enter and mine their half to supply a local industry if the lease holder refused to do so. The 20 year leases which we could obtain if we declared the iron would carry fairly

heavy working requirements, amounting to a total of \$10,000. per claim over the 20 year period.

It is anticipated that the government will bring in new legislation at the January, 1959 session of the legislature that will eliminate a lot of the features to which the industry is objecting. It would be advisable to wait until after this session before making a decision whether we (1) continue to hold the ground as a Retention Lease or (2) apply for Crown-grants or (3) declare the iron and obtain a 20 year lease.

We have made two \$1000. payments (December 31, 1957 and '58) under the present option agreement with Fairclough. On December 31st, 1959 Fairclough can elect payment either by \$40,000., payable \$7000. annually, or, payment of \$300,000., as royalty at 25 cents per long ton iron ore if as and when mined. Before December 31st, 1959, the company can choose to complete the purchase by a lump sum with payment of \$35,000., December 31st, 1959, or by the \$40,000., payable \$7000., annually.

We have advised Fairclough that we would like to defer these payments two years because of the lower grade ore and the recent legislation.

GENERAL GEOLOGY:

The major north-south valley extending north from Kitimat cuts across the Coast Range Batholith. This valley is a tectonic feature and the mineralization at Wedeene may be related to it. In the region, which lies to the east of

the crest of the Coast Range, the batholithic rocks enclose north trending septa of older rocks. At Wedeene River these older rocks are mainly andesitic volcanics (bedded greenstone tuffs with some flows) similar in appearance to the Upper Triassic volcanics found in the same setting to the northward on the east margin of the batholith. Minor lenses of limestone are interbedded with the volcanics.

In the vicinity of the deposits some of the tuffs are distinctly limy and grade to what might be classed as a limestone. The deposit may be a replacement of a zone of these limy tuffs.

1500 feet to the west of the deposit batholithic rocks (quartz diorite?) outcrop along the crest of the ridge of Iron Mountain, and extend northerly up the railroad for several miles.

Although they do not lie along an igneous contact, the Wedeene deposits have characteristics of a pneumatolytic deposit.

#### ECONOMIC GEOLOGY:

Outcrops are not plentiful (~5% outcrop area) and we have not made a geological survey of the ground. Systematic dip needle traverses and magnetite outcrops indicate a magnetite-bearing zone (trending N30°E) 5000' in length and ranging between 100 and 600 feet in width. Within this zone the magnetite occurs in bands (or lenses?) up to 30 or 40' wide and in smaller lenses and in disseminations in the gangue of epitodized greenstone. As mentioned above, some

of the adjacent rocks are limy tuffs grading to limestone.

The magnetite outcrops appear to dip at 75° or over. This, however, may not be the dip of the zone as a whole. At places the enclosing rocks strike easterly with dips of 25 to 40° to the north. The zone shows two or three offsets with the same trend. These features may reflect rolls or offset by faulting.

We do not have too much information on the overall character of the deposits, but work to date indicates -

1. The southern portion of the zone on the Mineral Hill #1 claim shows magnetite-skarn rock carrying about 30% iron and 0.3% sulphur as pyrite and with but minor chalcopyrite.
2. The original work on the property was an adit about 120' in length driven in the 1920's by W. G. Moore, the discoverer. The last 35' showed abundant malachite. Here fresh rock carries a dissemination of chalcopyrite similar to the ore at Tasu. Chip samples taken in 1956 assayed 28' of 0.9% Cu plus 18' 0.4% Cu. We have not found similar copper ore outcropping nor in the small amount of drilling done to date. This copper-bearing magnetite would appear to lie along the eastern margin of the main zone, and at present we have no indication of the quantity of such ore available.
3. At the northern end of the deposit of the Summit claim, the eastern half of the zone carried about 3% pyrite in cubes ranging from 1/16" to 1/4" in size. Here again the magnetite occurs in bands or lenses.

DIP NEEDLE SURVEY:

The results of a preliminary dip needle survey are shown in detail on the 200 scale maps of the individual claims (maps 3-10). The magnetite-bearing zone lies near the eastern margin of the leased claims (map 12 in pocket). Nothing of interest was found on the survey of the Wedeene #2 and 3 claims.

On the Wedeene #1 claim the southward extension is covered by overburden and the dip needle may not be sensitive enough to trace the zone in that direction. We do not know what happens at the north end of the zone. Our last traverse in the middle of the Summit claim indicated a width of 400'. One thousand feet north the extension is cut by a deep canyon with greenstone bluffs on both sides, but showing no magnetite.

GRADE AND TONNAGE:

Except for the intersection in the adit, we have no information on the potential value of the deposit as a copper prospect.

Late in the 1958 season we drilled four 50' vertical packsack drill holes in the vicinity of the tunnel, as shown on the accompanying 50 scale plan and sections (maps 1 and 2). .75% of the total core was assayed and averaged 32.8% iron and 0.3% sulphur. Only occasional specks of chalcopyrite were noted. In the same general area of the Mineral Hill No. 1 claim nine surface samples were taken on outcrop areas, each averaging about 20' x 40' (Map 3). As-



says ranged from 9 to 37% iron and averaged 0.04% sulphur. The lower sulphur content of the surface samples indicates the leaching of sulphur.

The outcrops along the zone in the 3000' interval between this area sampled on the Mineral Hill #1 and the Summit claim are of similar appearance; i.e. bands of apparently high-grade magnetite interspersed with epidotized greenstone, with or without lenses and disseminations of magnetite.

If the zone, on further work, proves to be similar to the area sampled to date, we might expect between four and seven million tons of 30% iron per hundred vertical feet.

#### METALLURGY:

As about one-quarter of the magnetite occurs as disseminated crystals in the epidote skarn rock, metallurgical testing is indicated to determine the fineness of grind necessary to make an economic recovery. High grade magnetite and unmineralized skarn can be separated cheaply and simply using a magnetic pulley, but the disseminated material will probably require crushing and grinding to 60 mesh or so.

#### ECONOMIC OUTLOOK:

The indicated grade at Wedeene River is higher than that of the overall tonnage from the deposits now being mined for export; e.g. at Quinsam, Texada and

Quatsino the ore mined and treated averaged 35 to 40% Fe, but to get at this ore they have had to remove over ton for ton waste. In up-grading the ore to the 55% Fe required for export, they installed magnetic concentrators, and in the case of Texada, flotation units to remove the copper concentrate. Part of the waste removed at these operations has been skarn, but much of it has been limestone - which is cheaper to grind. At Wedecene grinding costs might be higher.

Mining costs at Wedecene would be low - large tonnages of ore could be open-pit without removing waste outside the margins of the zone. Being on the railroad, and only 11 miles from the Port and facilities of Kitimat, concentrates could be laid down cheaply at tidewater. With a 2000' spur the ore could be loaded direct into railroad cars.

Kitimat might be an ideal place for a central concentrator for such ore as Tasu, Prince of Wales Island and Wedecene, or for electric smelting, if large blocks of power were available cheaply at Kitimat. If a direct reduction process were employed, the Wedecene ore might not have to be up-graded to above 35%.

In the development of Kitimat, Alcan encouraged and planned for the coming in of other metallurgical plants and for forest industries. During 1955 to 1956, when there was a high demand for aluminum, they started on a large expansion at Kitimat, and indicated they would not have any large blocks of power available in the near future. The situation now is quite different; the expansion program has

been stopped and they may be willing to contract for such power.

Wedeene should be considered in relation to any development by Northwest Power Industries, and to the possible role of Nass River power as a standby for Kitimat.

RECOMMENDATIONS:

1. We have on hand 50 lbs of samples, rejects from the drilling and surface sampling, and metallurgical tests should be run to determine the grindability of the ore and recovery at various grinds.
2. A detailed geological survey and magnetometer work are needed to outline the ore zone. (Note - We are installing a magnetometer in one of our prospecting planes and should traverse the Kitimat-Terrace area for other deposits).
3. Packsack drilling should be continued, preferably on a grid pattern to arrive at the general overall character and grade of the deposit.
4. Deeper drilling will be necessary to determine the vertical extent and attitude.
5. An economic study of the facilities at the Port of Kitimat, particularly for power and dock, should be made.
6. We should ask Fairclough to defer the larger cash payments for two years.

7. After we have had a chance to study the legislation brought down by the January, 1959 session, we should determine if we wish to hold the claims by Retention Lease or Crown-grant, or by a 20 year lease declaring iron.

Vancouver, B. C.

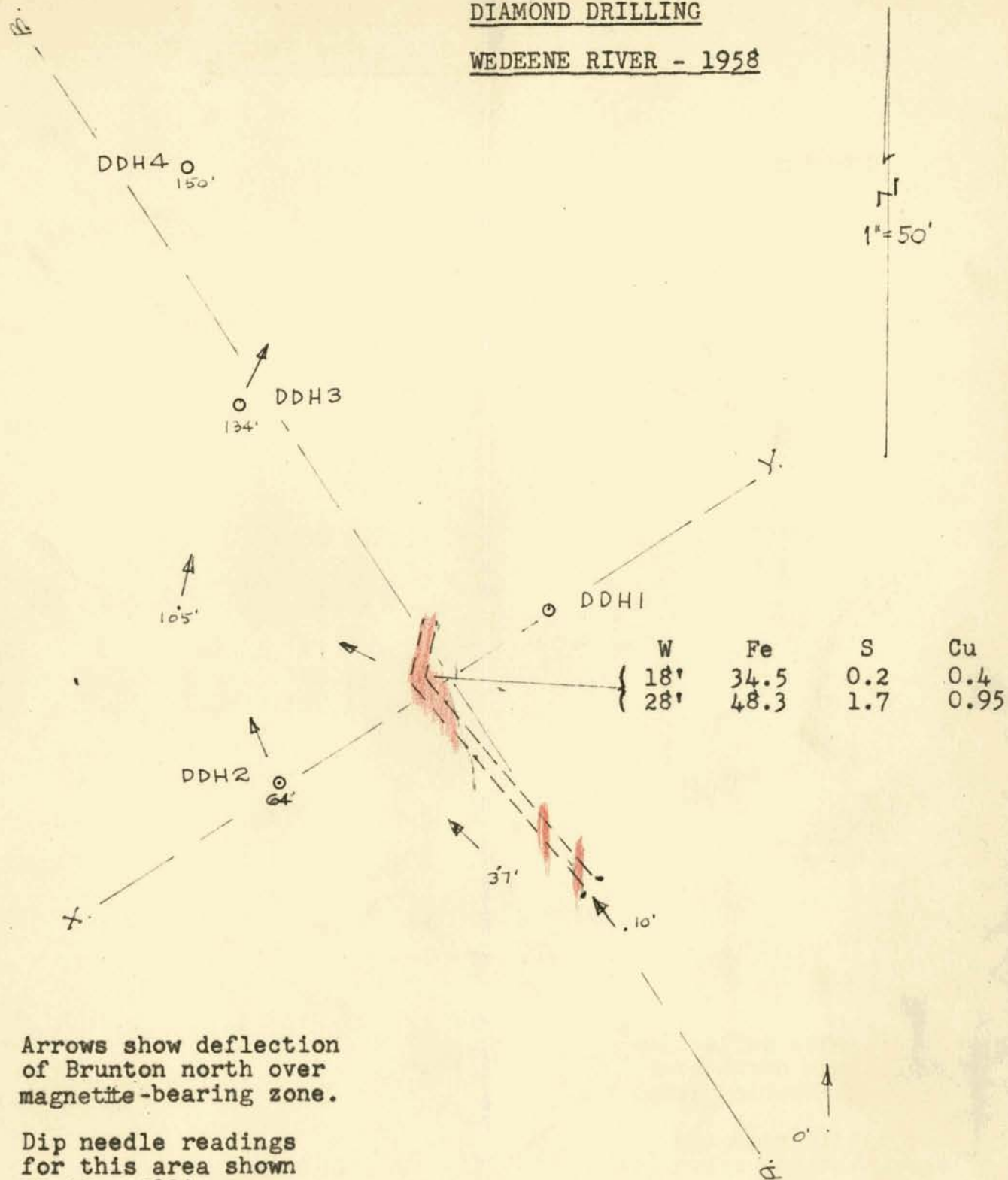
December 19th, 1958



Alex'r Smith, Geologist

DIAMOND DRILLING

WEDEENE RIVER - 1958



Arrows show deflection of Brunton north over magnetite-bearing zone.

Dip needle readings for this area shown on 1" = 200' map.

Claim Bdy. 480' SW to SE Cor Mineral Hill #1

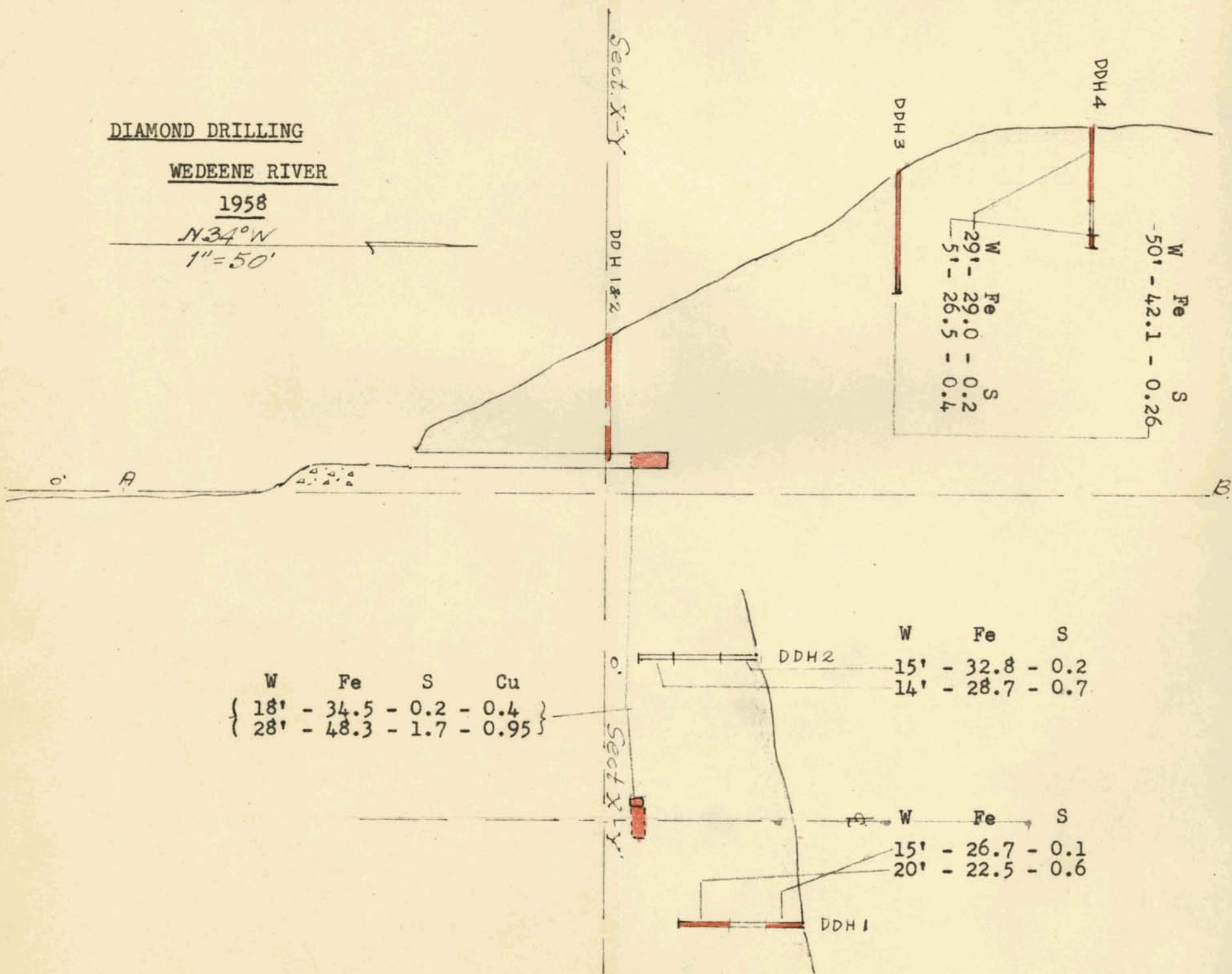
DIAMOND DRILLING

WEDEENE RIVER

1958

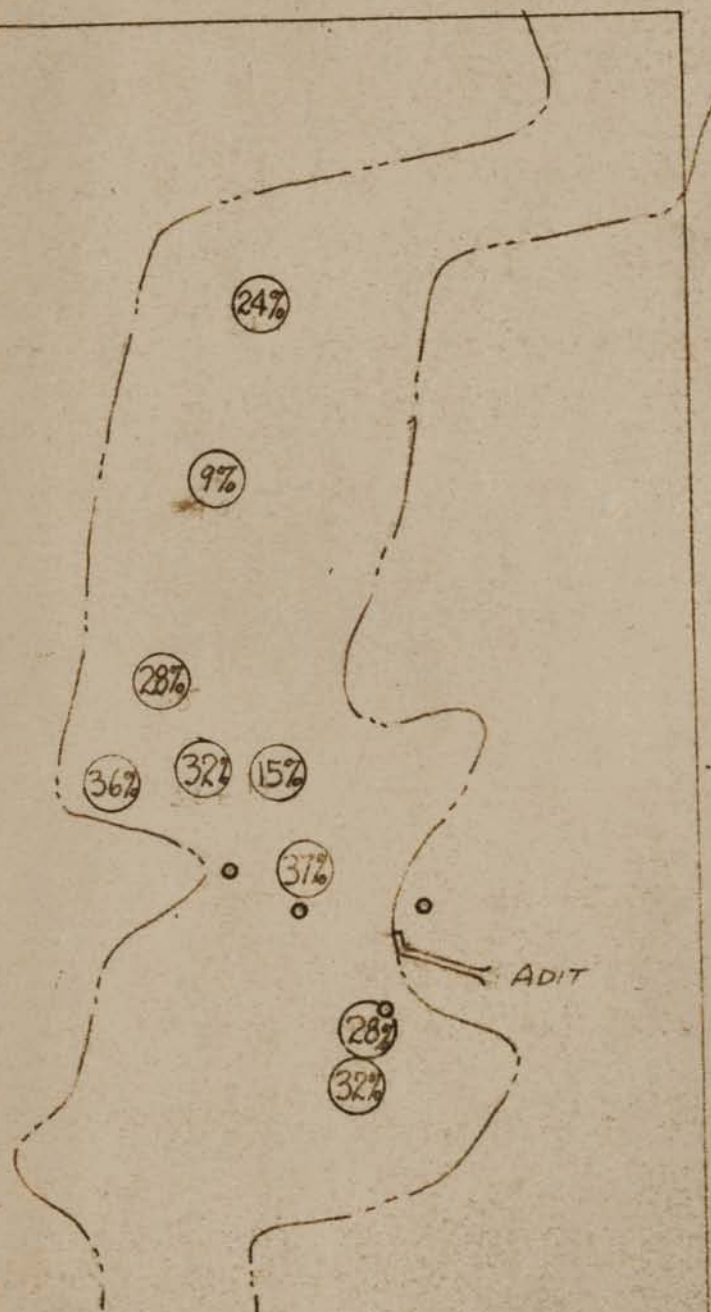
N34°W

1" = 50'



1" = 200'

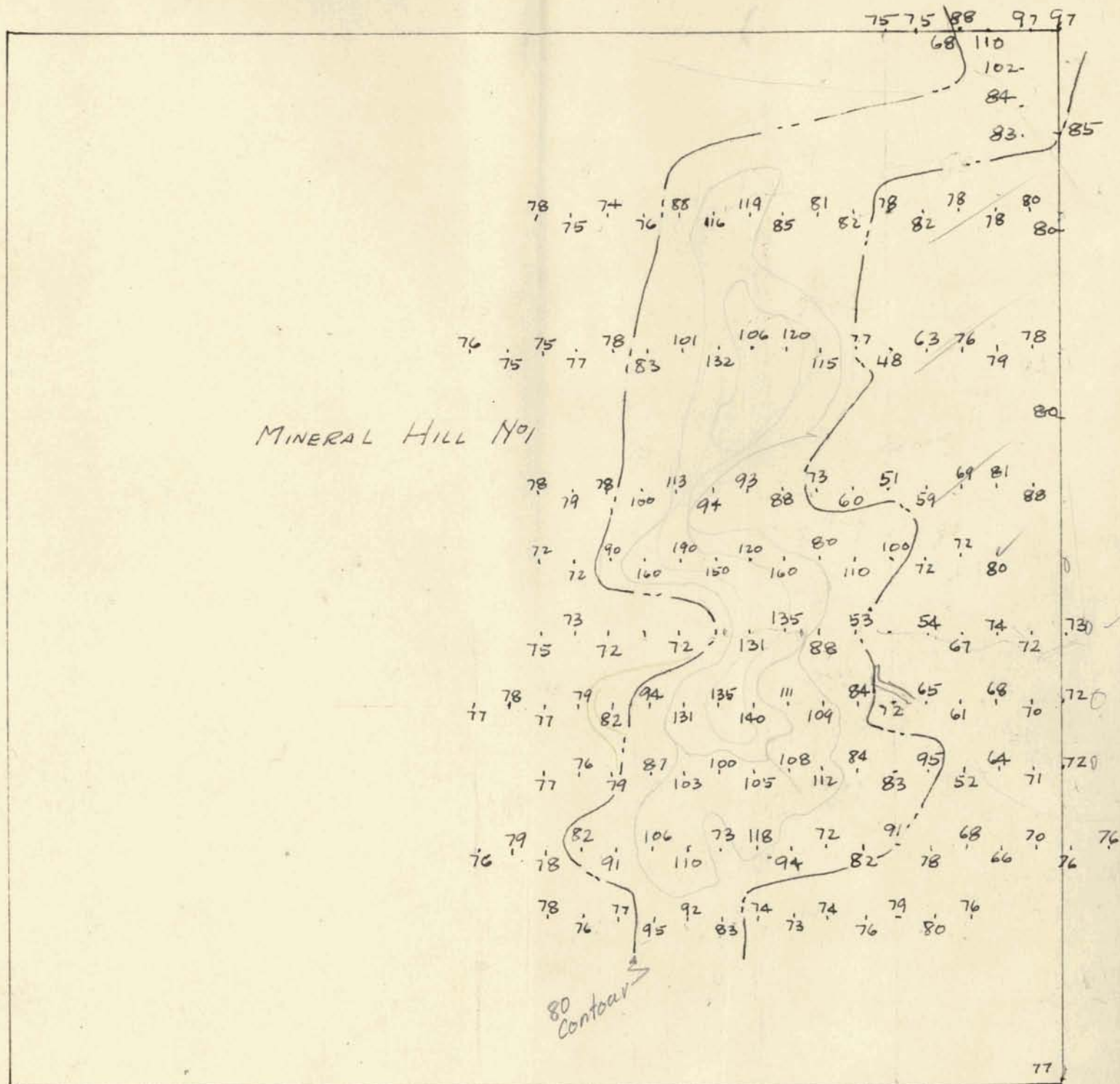
MINERAL HILL No 1



○ PACKSACK D.D. HOLE  
50' ± @ - 90°

⊙ CHIP SAMPLE of  
OUTCROP AREA

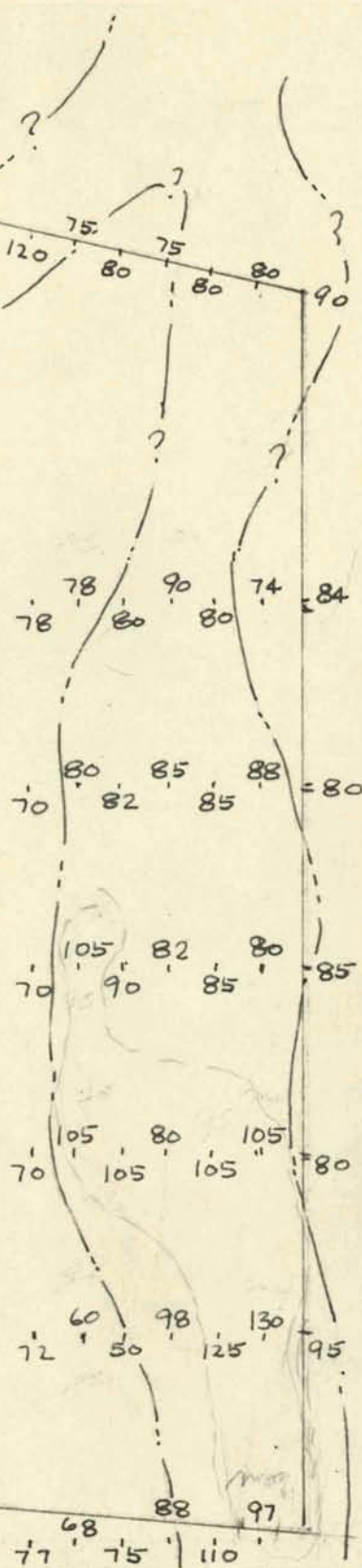
1" = 200'





1"=200'

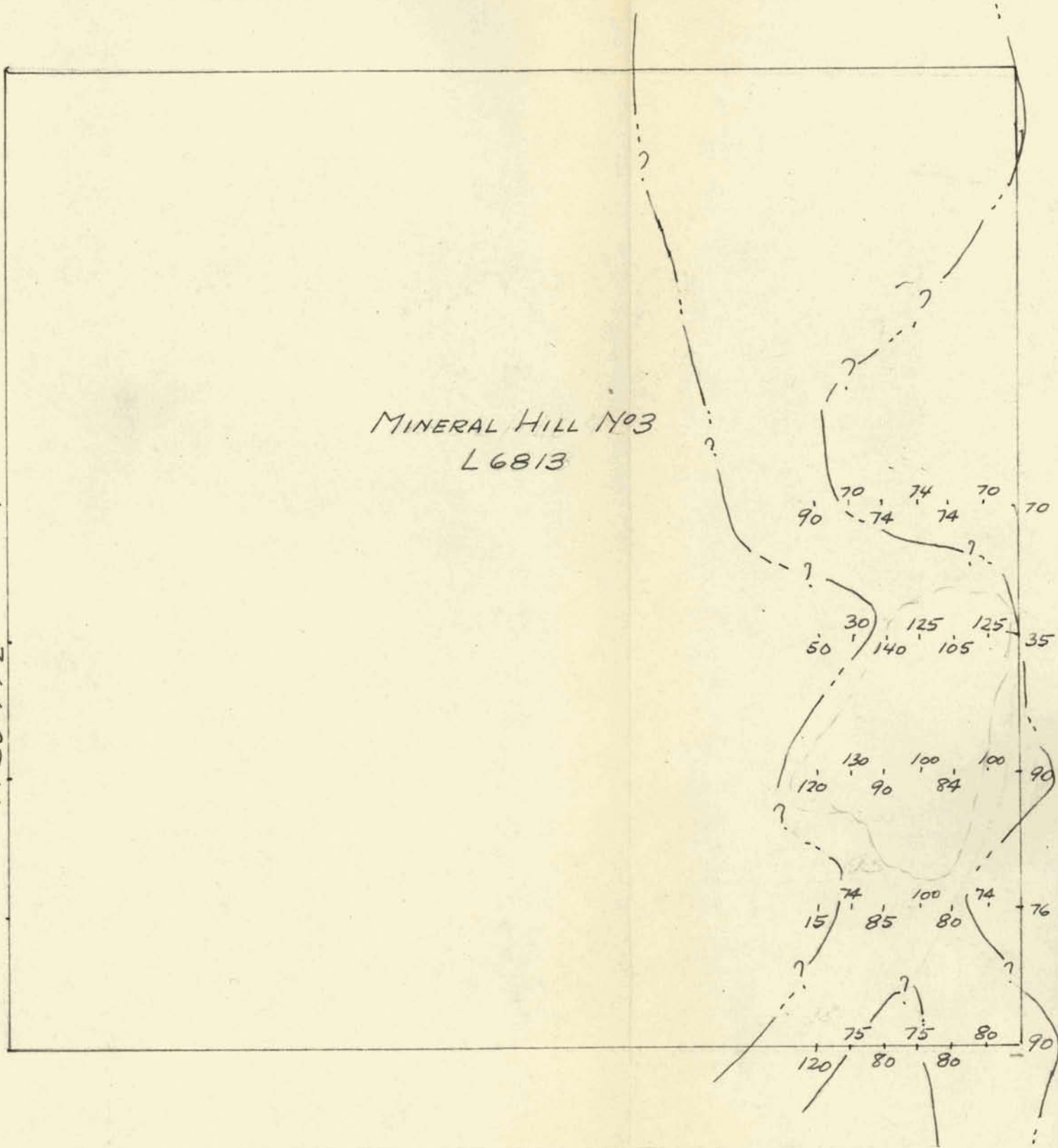
MINERAL HILL NO 2  
L 6812



Scale 1" = 200'

N 35° 47' E

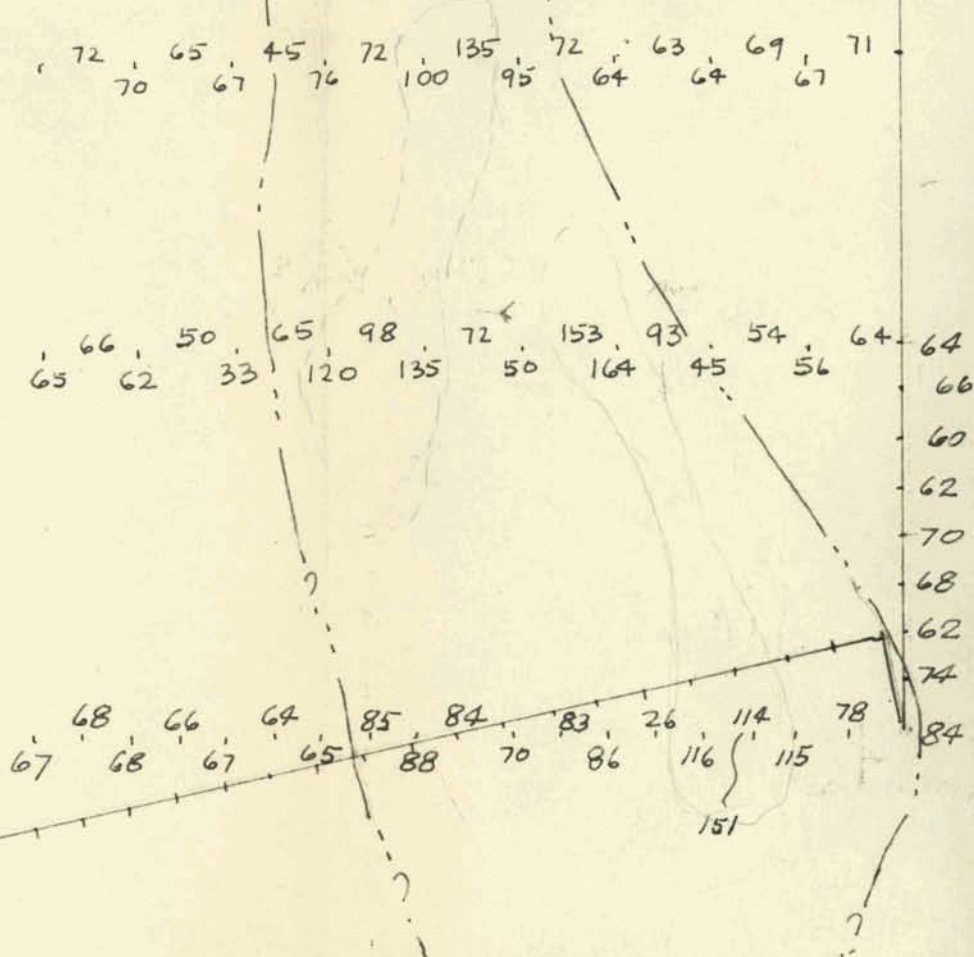
MINERAL HILL NO 3  
L 6813



Scale 1"=200'

N47°46'E

Summit  
L6814





77 78 76 76 77 77 79 78 77 78 78 78 77 79 78 78

#1 Post

78 79 78 78 79 78 78 79 78 78 79 78 78 79 78 79 78 79

WEDEENE

#1

81 80 80 79 80 80 80 80 80 78 78 79 79 79 79 79 78 77

WEDEENE #2

N 29° 03' E

78 79 78 80 79 79 79 80 78 80 78 80 80 80 77 80 80

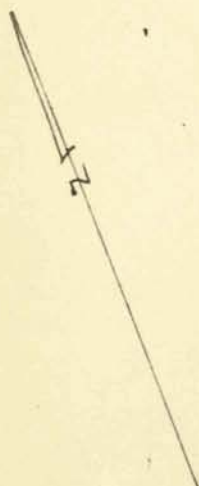
SCALE 1" = 200'

78 79 78 78 79 78 79 80 79 79 78 78 78 79 80 80 78

#2 Post

Only random readings on this line which crosses River.  
Readings similar to these on lines to north.

75 75 88 97 97 70 74 85 76 77 78 78 77 79 81 78 77 77 79 79  
 68 110 74 74 77 81 77 78 76 75 80 80 82 78 78 77 78  
 102  
 84 #2 Post  
 83 85



SCALE 1" = 200'

80 78 77 79 76 79 76 77 76 75 77 76 76 77 76 77  
 81 74 78 77 73 80 76 76 75 76 77 77 76 77 77

80 76 70 75 72 75 75 77 76 77 76 76 76 77 77 77  
 82 73 72 74 74 75 77 76 77 76 76 76 77 76 76

W E D E E N E #3

N 22° 58' E

72 73 74 76 74 76 76 77 78 77 76 77 77 77 78 75  
 72 73 74 75 75 75 77 75 77 76 77 78 78 76 77

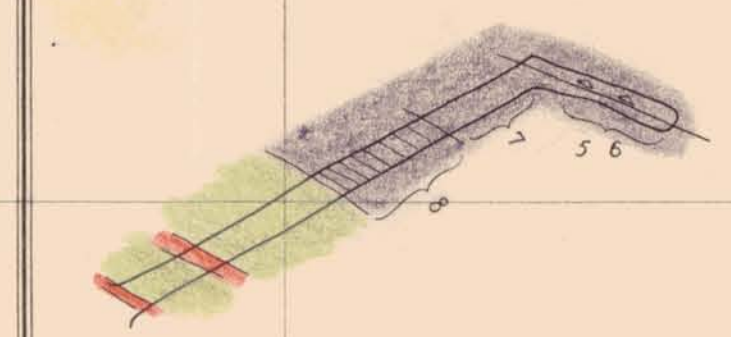
74 76 76 78 76 76 77 76 78 78 78 79 78 78 77 77  
 75 76 75 77 75 77 77 75 76 78 78 78 78 77 77 76

#1 Post

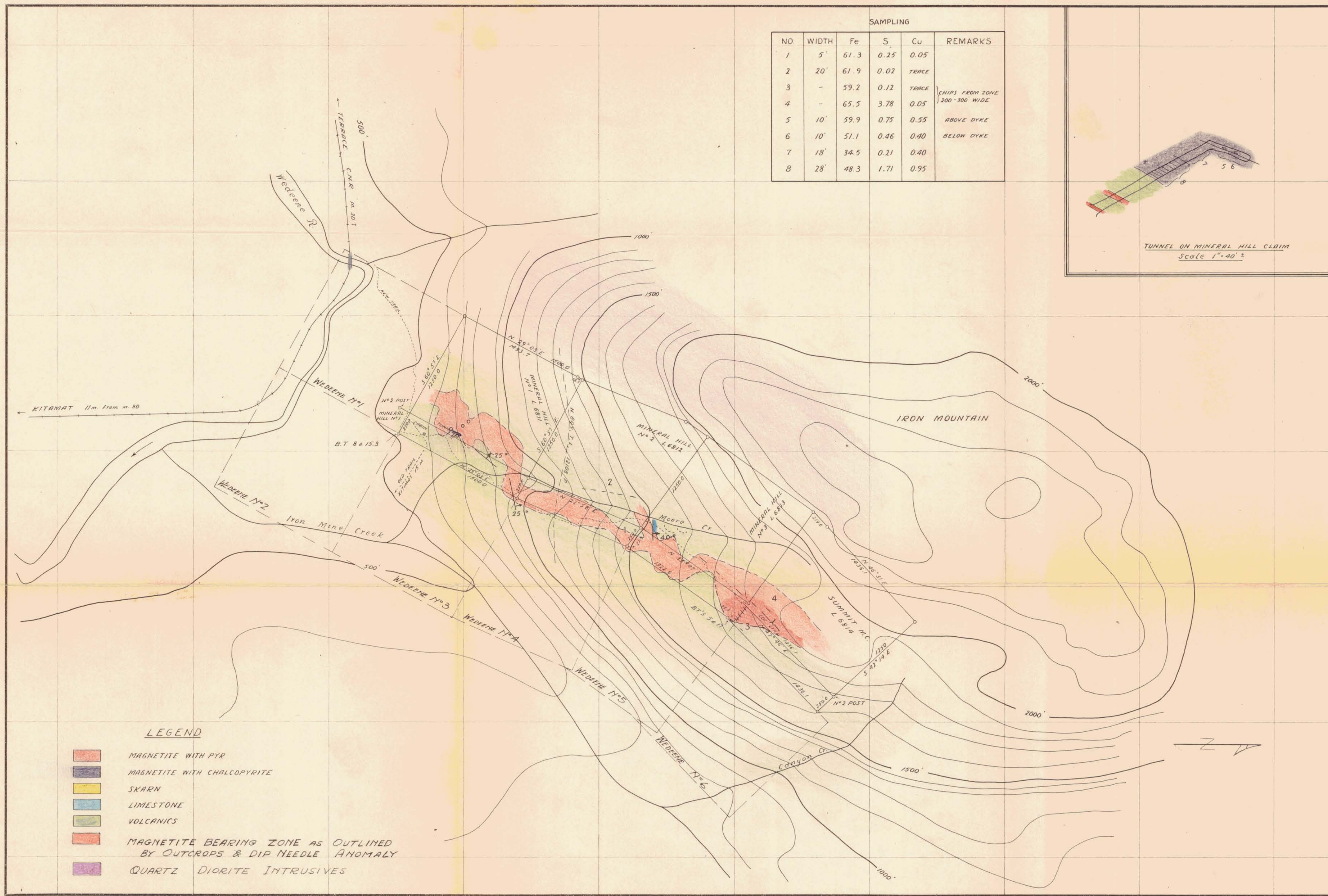
77 78 76 76 77 77 78 79 78 77 78 78 78 77 79 78 78  
 77 76 77 78 78 78 79 79 78 77 79 79 77 78 77

SAMPLING

NO	WIDTH	Fe	S	Cu	REMARKS
1	5'	61.3	0.25	0.05	
2	20'	61.9	0.02	TRACE	
3	-	59.2	0.12	TRACE	CHIPS FROM ZONE 200-300 WIDE
4	-	65.5	3.78	0.05	
5	10'	59.9	0.75	0.55	ABOVE DYKE
6	10'	51.1	0.46	0.40	BELOW DYKE
7	18'	34.5	0.21	0.40	
8	28'	48.3	1.71	0.95	



TUNNEL ON MINERAL HILL CLAIM  
Scale 1"=40'



- LEGEND**
- MAGNETITE WITH PYR
  - MAGNETITE WITH CHALCOPYRITE
  - SKARN
  - LIMESTONE
  - VOLCANICS
  - MAGNETITE BEARING ZONE AS OUTLINED BY OUTCROPS & DIP NEEDLE ANOMALY
  - QUARTZ DIORITE INTRUSIVES

SCALE 1 INCH TO 600 FT

COMPANY QUEBEC METALLURGICAL INDUSTRIES LTD WORKING PLACE  
 PROPERTY MINERAL HILL No 1, 2, 3 AND SUMMIT  
 LOCATION WEEDENE RIVER TYPE OF MAP

DATE OCT 1956  
 DRAWN BY  
 MAP No.