

642

DOMINION OF CANADA:
PROVINCE OF BRITISH COLUMBIA.
To Wit:

In the Matter of Expenditures on geological mapping by Avallin Mines Ltd. (N.P.L.) in the Nitinat Area, Vancouver Island.

I, Robert C. Smith

of 620 Howe Street, Vancouver 1, B. C.

in the Province of British Columbia, do solemnly declare that

\$1,955.00 was expended on wages and fring benefits for the following employees:

Project Geologist	D. C. Malcolm	July 19th to Aug 19th 1964
Assistant	D. Taylor	July 19th to Aug 19th 1964
Helper	Don Malcolm	August 1964
Geochemical	S. MacDonald	September 16-30, 1964

Avallin Mines Ltd., (NPL) FMC #36009 issued May 31st 1965.

wages;-	D.C.Malcolm	\$1100.00
	D.Taylor	550.00
	D.Malcolm	205.00
	S.MacDonald	100.00
		<u>\$1955.00</u>

Geology	\$1855.00
Geochemistry	100.00
	<u>\$1955.00</u>

And I make this solemn declaration conscientiously believing it to be true, and knowing that it is of the same force and effect as if made under oath and by virtue of the "Canada Evidence Act."

Declared before me at the City
of Vancouver, in the
Province of British Columbia, this 5th
day of May, 1965, A.D.

R.C. Smith

W. H. S. King

A Commissioner for taking Affidavits within British Columbia or
~~A Notary Public in and for the Province of British Columbia.~~

AVALLIN MINES LIMITED

GEOLOGICAL REPORT

BY

D. C. MALCOLM, B.A. Sc, P. ENG. 2568

Vancouver, B.C.
March 26th, 1965.

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① *Geology and claims*
② *Geochemical survey*

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 642 MAP

SUMMARY

In 1964 geologists mapped the Avallin claims and soil sampled them along traverse lines used in the mapping. The ground is underlain by folded Triassic sediments and volcanics intruded by granodiorite and quartz feldspar porphyry dikes, sills and plugs. Faulting is extensive and many high temperature chalcopyrite replacements occur in the limy members.

LOCATION

Latitude 48°52' Longitude 124°30', Elevation 2000 feet. The claims are on a ridge between Granite Creek and Tenas Creek 10 miles northeast by road from Nitinat Lake along the Nitinat River or 25 miles by road from Honeymoon Bay and Cowichan Lake.

GEOLOGY

(a) Topography

The property covers a spur between Tenas and Granite Creek which extends to elevation 2300 at the headwaters of Wilson Creek a branch of the Caycuse River. The lower parts of the ridge and the Creeks are at elevations of 400 to 500 feet. The lower slopes have been logged and are covered by slash but the main parts of the group are covered by first growth fir and hemlock. The MacMillan and Bloedel access road to the Nitinat follows the Nitinat River and the Granite Creek spur crosses the length of the claims. Other spurs have been used to log Granite Creek valley below the 1000 feet contour and Canadian Forest Product Vernon Creek roads cover part of the area north of Granite Creek.

(b) General Geology

The Nitinat Area is underlain by folded Triassic limestones, argillites, tuffs, fragmental volcanics, andesites and basic flows. The fold axes strike northwest.

These rocks have been intruded by granodiorite and quartz feldspar porphyry plutons. The rocks have been extensively faulted along northwest, north, northeast and east striking breaks.

High temperature chalcopyrite-magnetite replacements occur in a limy tuff horizon or horizons near the quartz feldspar porphyry. Pyrite and chalcopyrite with traces of bornite occur in an altered, sheared and brecciated quartz feldspar porphyry intrusion.

(c) Claim Geology

The claims are underlain by an anticline and a syncline of folded Triassic limestones, cherty tuffs, agglomerates and basalts. The formations parallel the ridge and valley slopes and this causes an erratic surface distribution of the formations.

The following is a stratigraphic section which has been estimated as measurements were not possible:-

Porphyritic Volcanics	-
Argillites	-
Sutton Limestone	100
Amygdaloidal & Pillow Basalt	200
Limestone	100
Red Beds	50
Basalt	100
Tuff and chert	150
Agglomerate	150
Limestone	150
Volcanics	300

A Saanich granodiorite plug occurs on the northwest claims and northwest striking dikes cross the claims.

A Quartz Feldspar Porphyry plug occurs on the north part of the group and dikes and sills of this rock extend to all parts of the claims.

The following is a description of the rock types:-

(1) Quartz feldspar porphyry:

This is a fine grained granitic textured rock with prominent small feldspar and rounded quartz crystals. A plug of this rock on the north claims in the group is extensively brecciated, sericitized, kaolinized and pyritized. On the upper part of Granite Creek there are numerous steep dipping north and east striking dikes of fresh appearing porphyry. Along the main ridge sills follow the contours.

(2) Granodiorite:

This is a medium grained granitic rock with equal quartz and feldspar and few femics. In some sections there is an increase in the femic content at the expense of the quartz and the rock becomes dioritic in composition. There is a plug of granodiorite at the mouth of Granite Creek with steep contacts and there is a second small body on Tenas Creek. A third dike like pluton occurs at the headwaters of Granite Creek. The rock is fresh with little alteration or mineralization.

(3) Argillites:

These are finely bedded black and dark brown soft rocks with numerous plant and marine fossil casts. Outcrops only occur in road cuts. These rocks form a marker for the top of the Sutton Limestone.

(4) Limestone:

Grey crystalline limestones and black limestones outcrop

throughout the property. They form prominent outcrops and nearly always show solution cavities.

In a few places in the limestone beds a limestone jasper pudding rock forms with angular pebbles of limestone and jasper in a limestone matrix. This is a peculiar rock similar in appearance to the Algoma pudding stones of Ontario which occur in quartzite.

Near porphyry dikes, deposits with magnetite, actinolite garnet and Ilvite have locally formed in the limestone beds.

(5) Chert and Tuff:

These are well bedded light grey to dark grey rocks. In most places these rocks have a high lime content but occasionally they are very siliceous. This latter might be a granitization or alteration.

(6) Hematitic Tuffs:

Red beds occur in the sediments. These are well bedded tuffaceous rocks with a varying amount of hematite to 30% or 40%. Generally they contain less than 10% hematite. They make an excellent marker bed.

(7) Agglomerates:

These are generally typical andesite agglomerates with fragments of volcanics in a tuff matrix. They grade into tuffs in places.

(8) Basalt:

Black amygdaloidal flows and pillow lavas cover most of the area northeast of Granite Creek and on the ridge in the central part of the claims. The rocks are dense with feldspar and quartz phenocrysts

and are generally black or very dark green in color. Small pillows are common; often with amygdaloidal rims. In some beds they are vesicular and occasionally they are discolored by hematite.

(d) Structural Geology:

The layered rocks are folded along a northwest striking axes plunging north at 30 degrees. The folds are open with dips of 20 to 30 degrees on the flanks with an anticline on O.G.M. 180 and a syncline in Granite Creek.

A conjugate system of fractures strike north, northeast, northwest and easterly. The northeast and the north striking faults are the most prominent and one north striking fault along Texas Creek can be followed for a length of at least 6 miles. Insufficient information is available to determine the movements along these breaks as it is difficult to match the folded beds or the intrusive swarms.

(e) Mineralization:

High temperature replacements of magnetite, pyrite, pyrrhotite and chalcopyrite replace skarn zones, limestones, limy tuff or chert beds and hematitic tuffs as follows:-

1. On O.G.M. 356 a series of skarn outcrops occur over a length of 2000 feet over an area 100 feet wide. They are mineralized with pyrite and very small amounts of chalcopyrite. No work has been done on them and they have not been sampled.

2. On O.G.M. 139 an area of skarn several hundred feet in length and width, on a dip slope, contains pyrite and traces of chalcopyrite.

3. On claims 155, 157 and 158 an altered brecciated feldspar porphyry is mineralized with pyrite with small amounts of chalcopyrite and molybdenite. The area is heavily gossan covered and surface samples are not reliable. Soil samples taken across the whole zone taken by Kenco Exploration Co. assayed as follows:

	<u>Mo ppm</u>	<u>Cu (ppm)</u>
1	14	28
2	8	82
3	3	40
4	7	23
5	4	40

4. On claim 156 a series of trenches in limestone and volcanics show numerous sulphide stringers in fracture zones. The sulphides are pyrrhotite chalcopyrite and bornite. Grades up to 3.5% copper over 5 feet occur but the work is not extensive enough to evaluate the showing.

5. On O.G.M. 104 skarn deposits occur in limestone on Granite Creek. This is the original Gillespie prospect and is explored by short tunnels. One trench assayed 4% copper over 5 feet but values are not uniform and the extensions are not explored. A new outcrop 100 feet east in the river canyon was found in 1964 and the beds extend to O.G.M. 138 where trenching showed 5 feet of 4.6% copper and an 18 foot width of lower grade material.

6. On claim 106 two trenches show limestone, skarn and irregular high grade bedded sulphides. The trenches are 100 feet apart and float of the high grade can be found for an additional 100 feet along the strike of the beds.

7. Two trenches on claim 118 show chalcopyrite disseminated in a limy volcanic near an irregular porphyry intrusive. Values over 5 feet are less than 1% copper.

8. The main deposits are on claims 181, 182 and 184.

Here the limestone is overlain by agglomerates and underlain by well bedded cherty tuff; all on a dip slope. Numerous trenches over an area 3000 feet long and 1000 feet in width expose both high grade actinolite, magnetite, chalcopyrite, ilviate and epidote skarn zones and bedded siliceous chalcopyrite pyrrhotite deposits. The former would assay between 0.5 and 8% copper and the latter between 5 and 20% copper. One bedded sulphide deposit 2 1/2 feet thick is exposed in two trenches 100 feet apart and would average over 10% copper and probably much higher.

One X-Ray diamond drill hole on claim 182 showed 20 feet of limestone skarn with about 1% copper.

In total the mineralization is impressive on the claim group and additional trenching should increase the surface tonnage appreciably. The deposits occur in one or two horizons that outcrop over much of the surface of the claims. The deposit on the northern claims is a porphyry copper deposit with typical geology.

GEOCHEMICAL SURVEY

The surface traverses were tested by soil sampling and assaying using rubeanic acid strips. The method was not particularly suited to overall prospecting but would be valuable in tracing the known deposits for detailed coverage.

GEOPHYSICAL SURVEYS

A self potential survey was made over the main deposit.

RECOMMENDATIONS

1. The deposit on O.G.M. 155 should be diamond drilled to determine if values in copper and molybdenum occur in economic quantities below the gossan.
2. A road should be built to the main showing and the high grade stripped and shipped. Surface prospecting and pack sack drilling over the ridge slopes should uncover additional high grade at or near the surface.

*DC Mahalan
Peng 2658*

<u>CLAIM</u>	<u>TAG NO.</u>	<u>RECORDED</u>	<u>RECORD NO.</u>
O.G.M. 107A	336004	July 25	8796
" 108A	358744	August 3	9148
" 109A	336003	July 25	8797
" 110A	336002	July 25	8799
" 111A	336009	July 25	8799
" 112	B 44216	July 18	6286
" 139A	336007	July 25	8800
" 140A	336005	July 25	8801
" 141A	336008	July 25	8802
" 142A	336006	July 25	8803
" 143B	364524	Oct. 2	9212
" 144B	364523	Oct. 2	9213
" 177	B 44281	Aug. 5	6335
" 178	B 44282	Aug. 5	6336
" 179	B 44283	Aug. 5	6337
" 180	B 44284	Aug. 5	6338
" 181	B 44285	Aug. 5	6339
" 182	B 44286	Aug. 5	6340
" 183	B 44287	Aug. 5	6341
" 184	B 44288	Aug. 5	6342

Geochemical Survey.

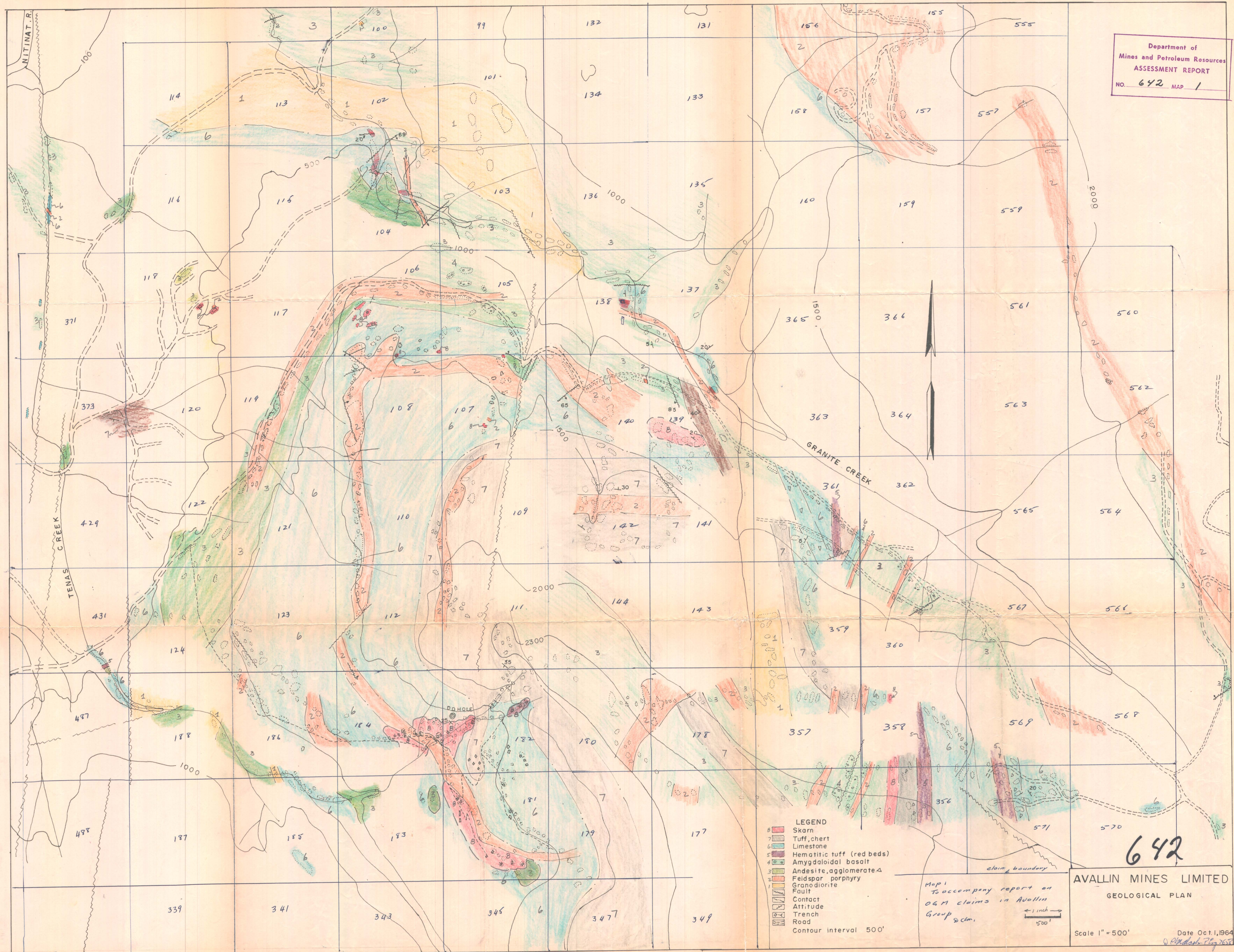
Soil sampling. Geological traverses were made using a Brunton Compass and a 100 foot chain. soil samples were taken at each of the 100 foot stations on the traverse using a $1\frac{1}{2}$ inch auger, about 2 oz samples were taken at a depth of 1 foot to 18 inches in the topsoil beneath the humus layer, and placed in plastic and paper bags marked with the traverse and sample number.

Soil testing. The testing of the samples was done in a laboratory at Jordan River, Vancouver Island using a prepared Rubeonic acid strips obtained from G.S. Eldridge & Coy., and made by impregnating strips of filter paper in a solution of 1 gram of rubeonic acid (dithio-axamide) in 100 millilitres of acetone and drying them.

The copper in the soil is extracted by adding 500 grams of hydrated sodium acetate to 1 litre of acetic acid and shaking the mixture for 15 seconds, the solution is filtered on to a rubeonic acid strip and the resultant dot appearing on the strip is compared with a standard dot prepared from known amounts of copper bearing soil; the results are recorded on the attached map.

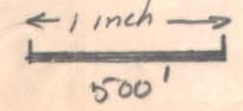
D. Malcolm.

Standard G.S. Eldridge Rubeonic acid test.



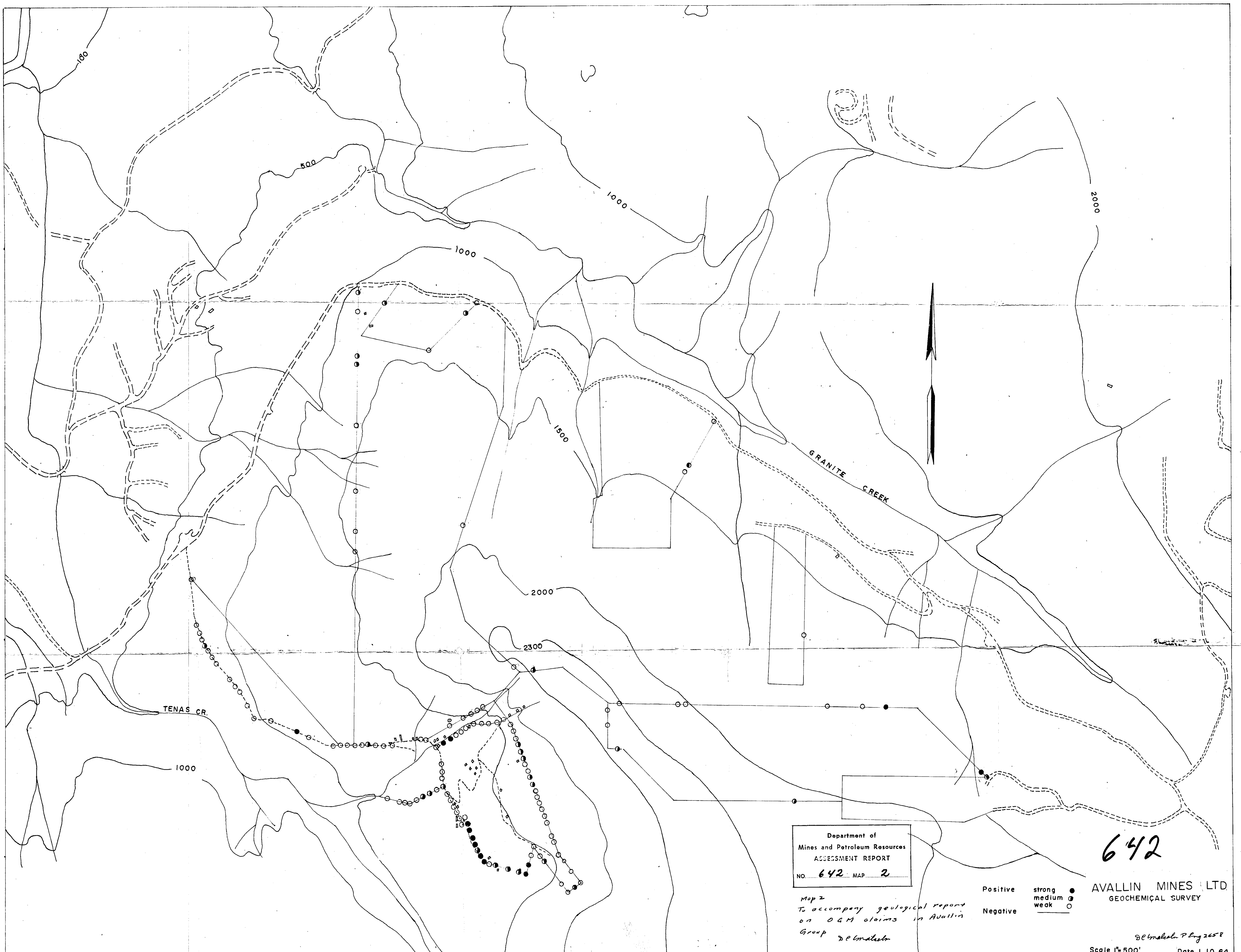
- LEGEND**
- 8 Skarn
 - 7 Tuff, chert
 - 6 Limestone
 - 5 Hematitic tuff (red beds)
 - 4 Amygdaloidal basalt
 - 3 Andesite, agglomerate &
 - 2 Feldspar porphyry
 - 1 Granodiorite
 - 0 Fault
 - Contact
 - Attitude
 - Trench
 - Road
 - Contour interval 500'

Map 1
To accompany report on
O&M claims in Avallin
Group 2 clm.



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AVALLIN MINES LIMITED
GEOLOGICAL PLAN



Department of
Mines and Petroleum Resources
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Map 2
To accompany geological report
on O & M claims in Avallin
Group 2660/2658

Positive strong ●
medium ○
weak ○
Negative ○

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AVALLIN MINES LTD
GEOCHEMICAL SURVEY

Scale 1"=500' Date 1, 10, 64