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BP NORGE A/S MINERALS

HELGELAND PROJECT 1982

A N N U A L R E P O R T

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I Summary

Following visits to the Helgeland area in 1981 by H. Berchermann and M. Harris of BP Minerals International Ltd. and consultant C. Halls of Imperial College, and discussions with Norsk Hydro, an exploration program for gold in the Mosjøen-Tosenfjord district of the Caledonides was planned for 1982. The main exploration method consisted of regional stream sediment sampling following guidelines developed by M. Harris. The geology of the area covered consists of granodioritic to syenitic plutonics, together with subordinate gabbros and strings of ultramafic pods within a matrix of metasediments including a wide range of pelites (biotite-garnet schists and gneisses), marbles, quartzites and amphibolites. The intrusive belt of which the covered area is a part extends from the Grong-Olden basement culmination to Ofotfjord in the north, apparently representing a significant zone of crustal upwelling. The ages of both the intrusives and their hosts appear to range from Proterozoic to Lower Palaeozoic age, thus the district has been subject to a long and complex, practically continuous evolution up to the time of the Caledonide orogeny. Known mineral deposits in the district are distinctly polymetallic compared with the southern Caledonides, being relatively enriched in Zn, Pb, Ba, Sb, As, W and Au. Previously known Au mineralization occurs together with scheelite and arsenopyrite within quartz veins in the south-east of the area covered, these being presently held and under investigation by A/S Sulfidmalm.

During the 1982 investigation, 2864 stream sediment samples were collected at approximately 1 sample/km² by 7 sampling teams (x2-man) from mid-June to end-September (average approx. 10 spls/team day). Bulk rock samples were also collected from lithologies of interest i.e. predominantly from zones of strong alteration and fracturing.

Samples were analysed at Caleb-Brett for Au, As and base-metals, which resulted in the detection of 244 (approx. 8.5%) anomalous samples. The results are considered encouraging for follow up work in 1983, which will be restricted to clusters of anomalies, for which there are sufficient grounds- geological and structural- for the possibility of either fracture or lithologically-controlled gold mineralization.

The comparison of anomalies and regional geology as extracted from published data suggests the following positive correlation:

- Anomalies are predominantly clustered around the margins of intrusions, which are bordered by metasediments and metavolcanics of highly variable composition (marbles, dolomites, amphibolites and quartzites)- dated at approximately 900 m.y.
Intensive granitic veining around the margins of Caledonian intrusives indicates a favourable level of erosion- that is high levels of these intrusions are partly preserved.
- Some Au anomalies appear to be connected with marble horizons which strike intermittently over several kilometers and frequently host vein-type sphalerite-galena-arsenopyrite and also scheelite mineralization (Kilviken, Husvik, Ravatn, Söbergsliden)
Carbonate sequences of similar age, paragenesis and alteration features have been investigated in Newfoundland, Canada in the past few years, and were found to contain economically exploitable Au mineralization.
- A third group of anomalies is clearly confined to basic intrusions, the best example being on Leka island where a number of Au anomalies associated with AS and Cu anomalies were detected.

The anomalies are described in detail in chapter nine and a ranking of anomalies with proposed priorities is given in chapter five.

II

Conclusions and recommendations

The stream sediment survey for gold and appropriate pathfinder elements positively identified streams draining known arsenopyrite-gold mineralization, as well as all base-metal occurrences which were sampled. Tungsten anomalies found by Norsk Hydro in the district previously by panning were also detected by stream sediment sampling. We must therefore conclude that the anomalies found during the 1982 reconnaissance sampling are significant and should be followed up to determine their sources in bedrock.

Setting priorities for anomaly follow up is necessary as neither manpower nor budgets allow a complete follow up during the 1983 field season.

In addition, the follow up of the stronger anomalies might more easily lead to a geologically valid concept with respect to precious metal mineralization in the Helgeland Nappe.

More importantly one must explain the source of possible. Au mineralization i.e. possibly the acid-intermediate intrusives/volcanics - the hydrothermal system leading to economic concentrations will be sought.

Therefore the 1983 follow up programme will consist of:

- 1) Detailed resampling of anomalous drainage systems (Av. 1sample/100m)
- 2) Reconnaissance mapping of regional anomalies in scale 1:20000-50000 with special emphasis on:

- i) Any sign of rock alteration- naturally the nature of alteration is dependent on the host lithology and may range from the silicification of marbles to the carbonitization of acid-intermediate intrusives.

- ii) Tectonic features such as faults, veining, brecciation and shear zones.

- 3) Bulk rock sampling to aid the geological interpretation of the anomalies. These samples will be analysed for Au and appropriate pathfinder elements and additionally, whole-rock analysis should aid the detection and interpretation of alteration features.

Following the outlined programme we should be able to detect the sources of the stream sediment anomalies in bedrock and be able to develop a geological concept for detailed investigation of the most prospective anomalies.

III) Introduction, Regional geology and summary of previous exploration activities in the district.

The Helgeland Nappe (Fig.1) consists of mica schists and gneisses with subordinate marbles and amphibolites metamorphosed to amphibolite facies. The rocks have undergone severe polyphase deformation consisting of an early isoclinal folding phase, major thrusting and formation of later folds with an associated penetrative cleavage. Basal thrusting of the Helgeland nappe is a late feature and is dated at post F_2 (post - main Scandinavian event).

One of the interesting features of these nappes are the igneous intrusives, one of their number being the Bindal granite, the largest Caledonian granite of Scandinavia. Other intrusive bodies include serpentinites, gabbros and a differentiated plutonic series having compositions ranging from syenites to granodiorites to granites, and finally a late pegmatite vein system. A Rubidium/Strontium isochron from a late-stage differentiate from the Bindal granite has yielded a date of 424 ± 26 M.a. (Priem et.al. 1975). For more detailed description of the regional geological setting the reader is referred to Appendix (V). Bedrock geology and structural reconnaissance studies in the Helgeland district, Nordland 1982 by: Jon S. Petersen. These intrusives host several small vein type Quartz-Arsenopyrite-Gold mineralizations - one of which - Kolsvik was worked on a small scale in the past and is currently under detailed evaluation by Sulfidmalin A/S.

This occurrence extends in a narrow structure over several hundred metres with highly irregular distributed Arsenopyrite Gold mineralization. High grade samples assay up to several thousand ppm Au and an average grade of 40-50 ppm Au is estimated for the vein system. So far some 750.000 oz. have been delineated by close spaced drilling.

However the economic potential of this occurrence is difficult to assess as the ruggedness of the terrain demands underground exploration at an early stage.

During the early 70' the Helgeland nappe sequence was explored for scheelite mineralization by a regional panning programme by Norsk Hydro in cooperation with A/S Sydvaranger. The results were disappointing in as far as scheelite was found to occur widely dispersed and true anomalies could not easily be distinguished from the overall high background. The follow up of these anomalies revealed that the marble and calc-silicate sequences were frequently mineralized with scheelite occurring in high grade pods and nodules formed by remobilization. The irregular nature of the mineralization downgraded the economic potential and the investigations therefore came to an end.

As a result the Kolsvik-Husvik lineament and the Ravatn lineament (Refer to Landsat interpretation, page) were found to contain elevated scheelite concentrations.

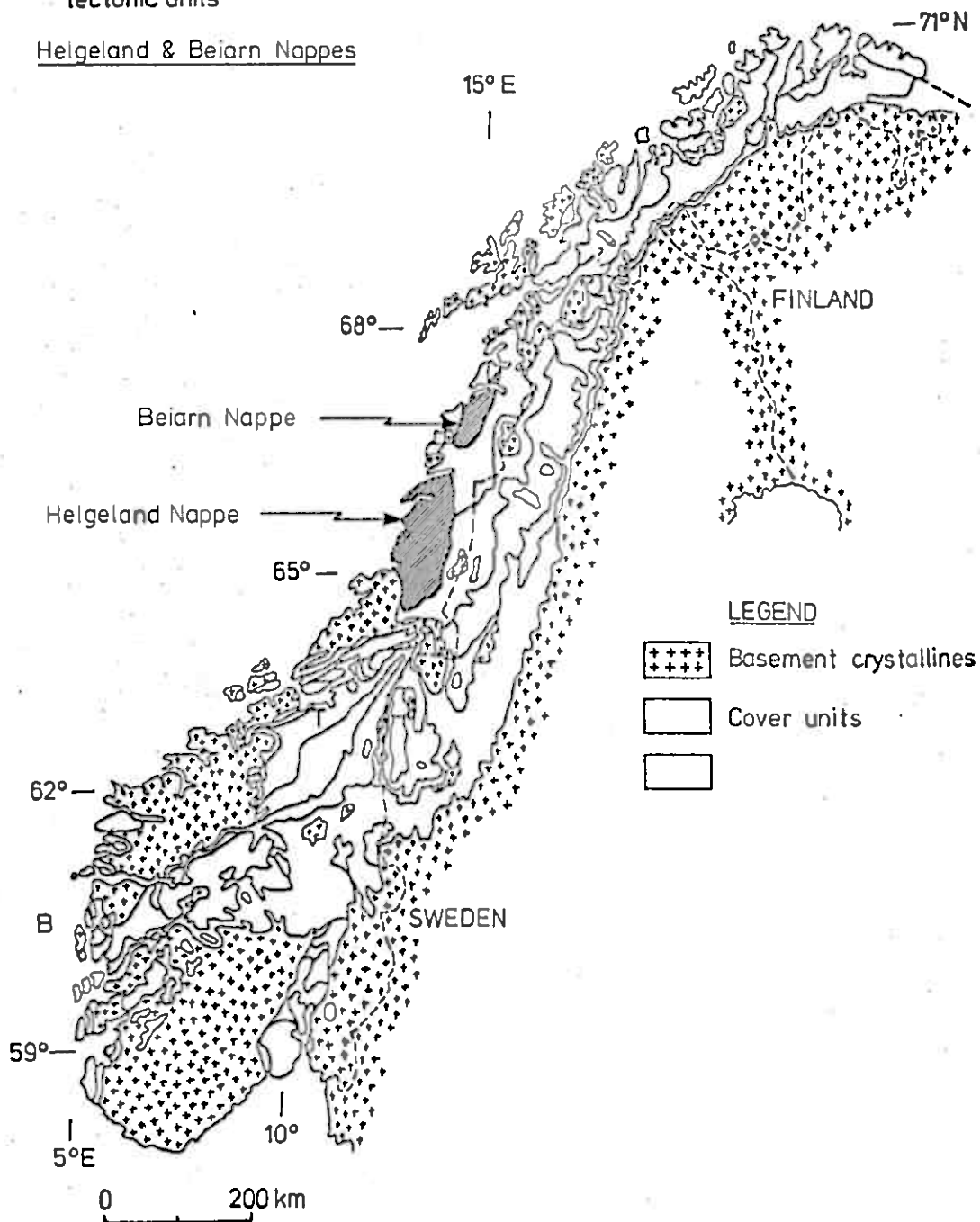
A regional stream sediment survey - analysis of the standard - 80 mesh fractions revealed the presence of anomalous element concentrations - indicative of late stage low temperature hydrothermal alteration (As, Sb, Ag, Hg, Cu, Mo, Zn) east of Husvik and east of Mosjøen at the margins of the Reinfjellet Granite. The regional Gold-sampling programme of BP-NH was therefore extended to cover these areas, east of the E6 as well.

First BP-NH exploration efforts in the district started in 1981 with reconnaissance field work and low level fixed wing flying in order to spot rust zones which might be related to porphyry style alteration and mineralization. Although 'rusty' lithologies are abundant in the district ground check ups showed that the strong staining of outcrops is due to the weathering

SCANDINAVIAN CALEDONIDES

Geology and main
tectonic units

Helgeland & Beiarn Nappes



of Ferromagnesian minerals.

The recognition of multistage acid intrusions in a prolonged period of time, with related precious metal mineralization, the presence of unexplained regional geochemical anomalies (As, Sb, W, Hg, Ag), major geotectonic zones and the successful application of a newly developed sampling method for low level Gold-concentrations in stream sediment by Dr. Mike Harris of BP Minerals International led to a large scale regional stream sediment survey, the results of which shall be described in the following chapters.

This programme was designed to delineate stream catchment areas which show element concentrations indicative of hydrothermal alteration systems with associated epigenetic precious metal mineralization.

In addition to the regional sampling programme limited regional mapping was undertaken in order to gain a better understanding of the geological-structural nature of the contacts between intrusives and metasediments. As an example the results of a few geological profiles in E-W direction through the Kolsvik-Husvik lineament north of STORBORJA appear below. The major lithologies are described from west to east.

1) Vein Diorite is a light grey, equigranular rock of quartz-dioritic composition, characterized by intense veining of leucocratic material (fig.

Fig. 2

Vein diorite with abundant leucosome and aplite veins.

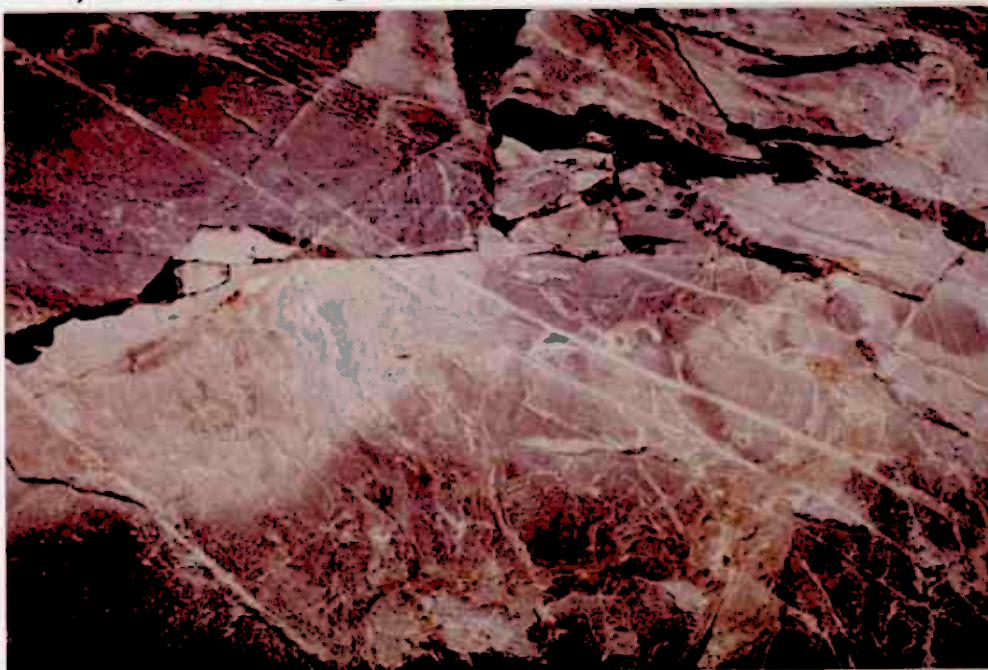


Fig. 3

Vein diorite.



The entire unit is migmatized and contains many xenolith of finegrained dark grey tonalitic material. Within these xenolith at least three different rock types of generally mafic composition are easily distinguishable by varying grain sizes. (Fig. 4-7)

In addition to intensive veining, narrow, elongated bands of migmatites as well as marbles and micaschists are locally encountered. Parallel foliation throughout these bands and the hosting vein diorite indicate a post-intrusive deformation of the latter.

Inclusions of finegrained tonalites in vein diorite, with progressive deformation.



Fig. 4

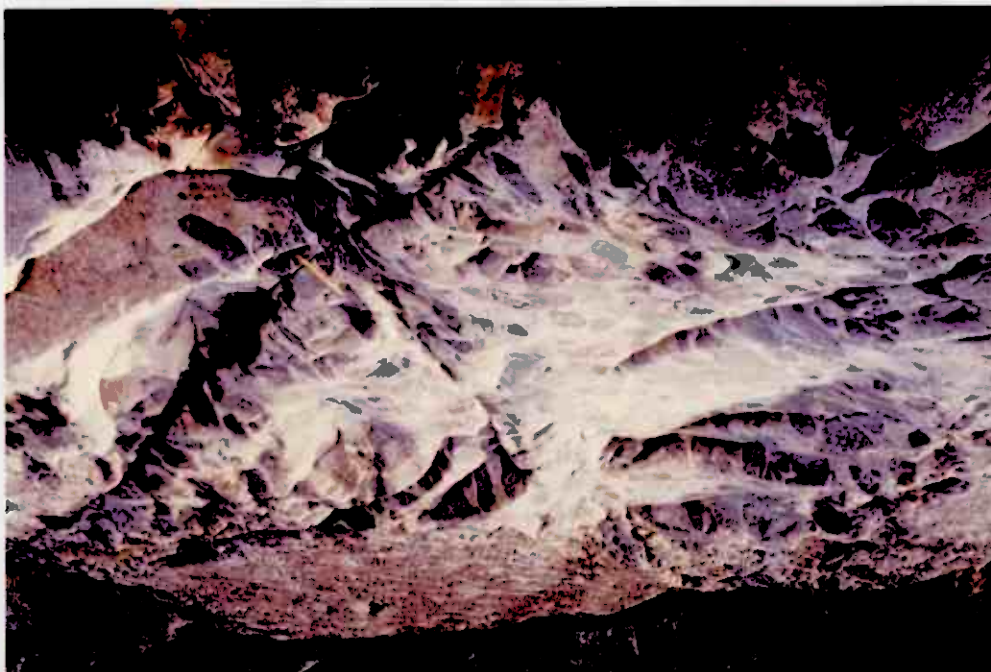


Fig. 5

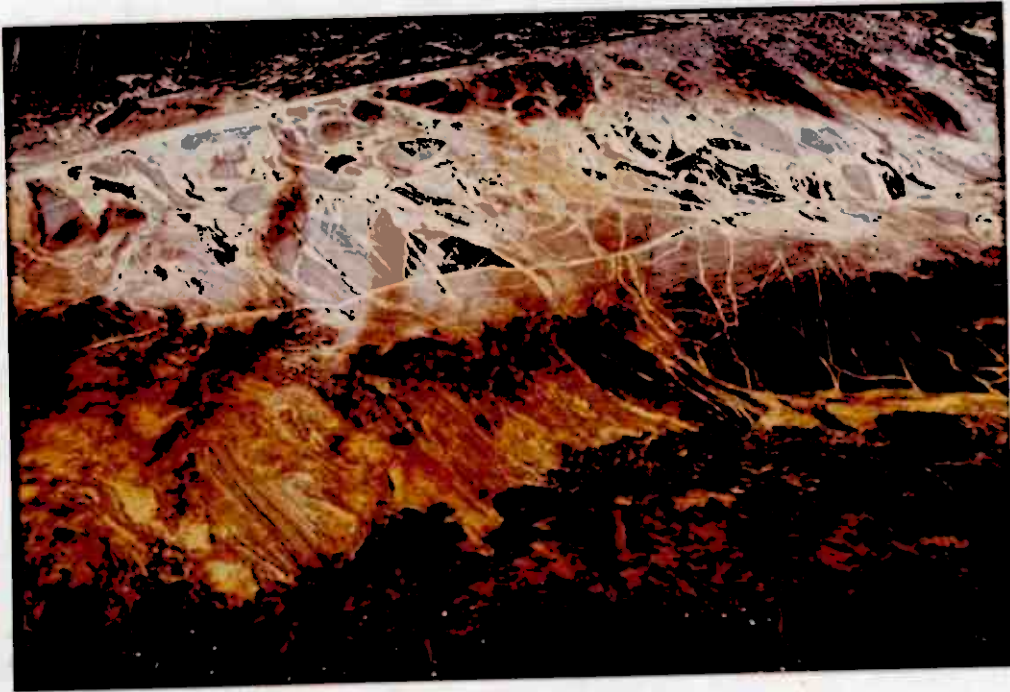


Fig. 6

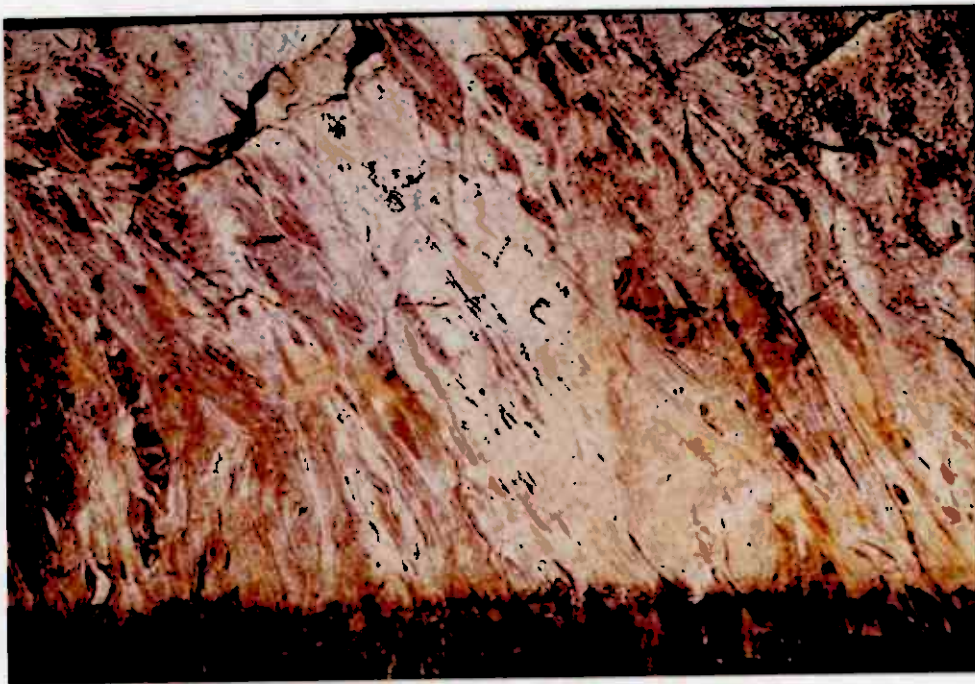


Fig. 7

2) Porphyritic Biotite Gneiss

This biotite rich, strongly foliated unit exhibits strong K-Feldspar blastesis which could be of anatectic origin. (Fig. 8, 9)



Fig. 8



Fig. 9

Porphyritic biotite gneiss.

3) Banded Migmatites

The migmatites consist of alternating mafic and felsic layers. Main constituent of the mafic layers is Biotite, whereas the felsic bands contain quartzo-feldspathic neosoms as well as few aplitic veinlets. (Fig.10-12)



Fig.10



Fig.11



Fig.12

Banded migmatites with neosome schlieren.

4) Micaschists

This schistunit forms the N-S running valley of Storelva. It contains substantial amounts of marbles and amphibolites. Towards NE light grey, massive diorites progressively invade the metasediments. Marble horizons are strongly recrystallized and exhibit frequently boudinaged structures. (Fig.13) Skarns, occasionally associated with the marbles contain vesuvianite, epidote, actinolite, few sulphides and small but high grade nodules of schhellite-mineralization.

The quartz-diorite to the east of Storelven is believed to represent a clearly postkinematic intrusion as numerous, angular shaped xenolith of micaschist and marbles characterize the contact zone. (Fig.14)

A few apophyses of the Quartz diorite extends into the porphyritic biotite gneiss west of the main valley. The outcrop pattern suggests again a post-kinematic age for the intrusion and also that a roof-zone position of these veins.

Fig.13



Fig.14



Fig. 15



Fig. 16
Mica schists and
marbles invaded by
Quartz-diorite.



Fig. 17
Pyroxenite inclu-
sions in homogen-
ous Quartz-diorite.



5) Quartz Diorite Intrusion

In the SE of the area studied numerous small inclusions of gabbro-suite rocks occur in the Quartz diorite.

These inclusions range in composition from leucogabbros to ultramafics.

Contact zones are tectonized with mylonitized Quartz-diorite.

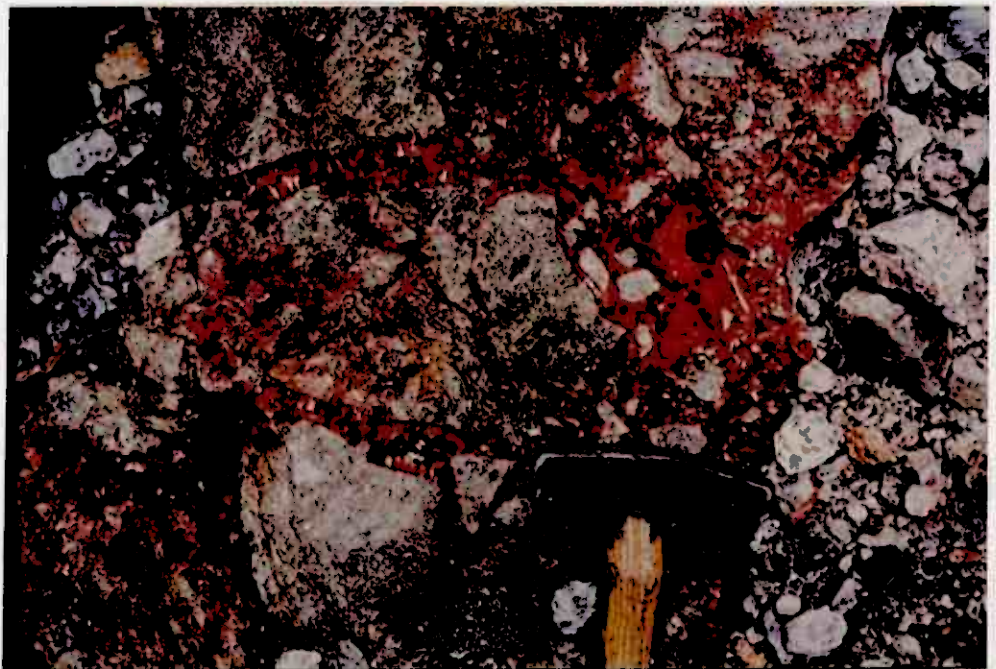
Occasionally compositional layering could be observed in this mafic suite.

It is conceivable that a layered, differentiated gabbro complex was invaded by the Quartz-diorite (Fig.17)

6) Major Structures

Two regional fault zones with mylonite development were detected and are believed to represent the youngest features; one zone is running N-S parallel to the Storelva valley and the other in ENE - WSW direction starting at Storbørja. A characteristic feature of these faults is the presence of cracks and joints filled with stilbite (a reddish zeolithe) (Fig.18)

Fig.18
Detail of breccia-
zone filled with
secondary stilbite.



These stilbite occurrences are a common feature mainly associated with post-kinematic intrusions, and widely recorded from the Kolsvik district. They are indicative of low temperature, hydrothermal Feldspar alteration.

The figures 19-21 show details of the mylonitized thrust zone with ENE - WSW direction.

Homogeneous Quartz-diorite is thrust upon heterogeneous vein-diorite (Fig.19)

Fig.20-21 are close ups from the stockwork, stilbite alteration.

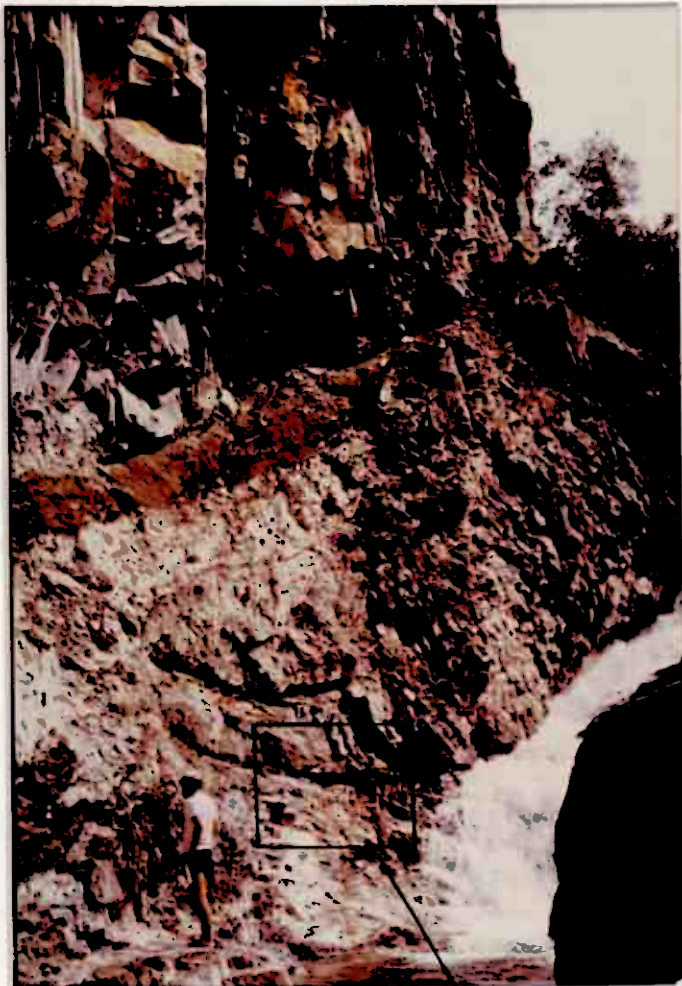


Fig. 19



Fig. 20



Fig. 21

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GEOLOGICAL SCETCH MAP
N' OF STORBØRJA, KOLSVIK-HUSVIK LINEAMENT

LEGEND:

- x VEIN DIORITE
- PORPHYRITIC BIOTITE GNEISS
- ▨ BANDED MIGMATITE
- ▩ MARBLE/CALC-SILICATE
- S MICASCHISTS
- + QUARTZ DIORITE
- U MELAGABBRO-ULTRAMAFIC

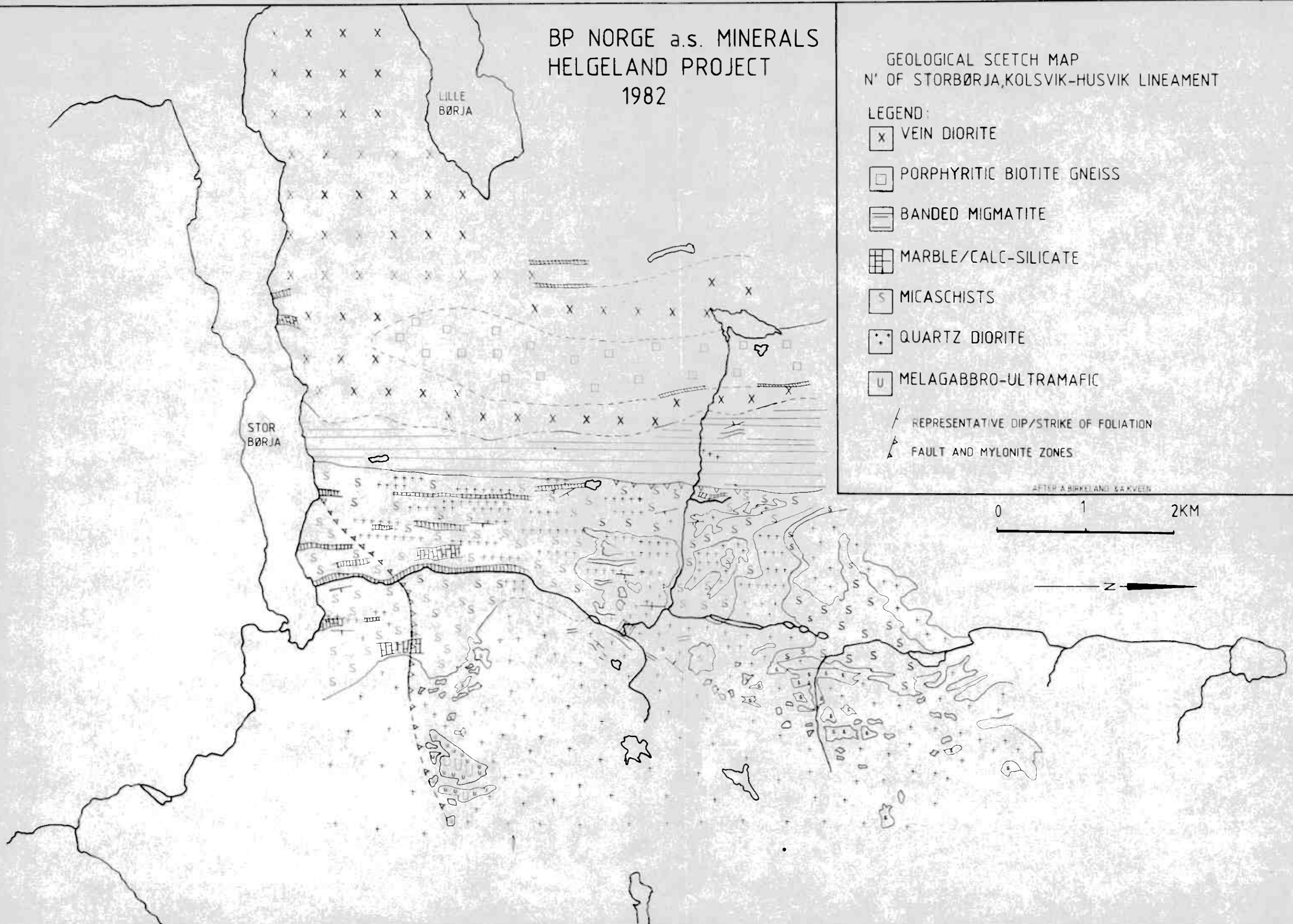
/ REPRESENTATIVE DIP/STRIKE OF FOLIATION

▲ FAULT AND MYLONITE ZONES

AFTER A. BIRKELAND & K. KVEEN

0 1 2KM

— Z —



IV) Stream sediment sampling programme

Field work in 1982 started in mid-June from a base camp at Hongset 40 km east of Brønnøysund.

This camp accommodated in average 8 field assistants forming 4 sampling teams. The entire work programme was designed and supervised by H. H. Berchermann. The sampling programme covering the eastern side of the Bindal massif as well as the Reinfjellet granite was organized from a second base camp at Majavatn with 3 sampling teams supervised by Jon Hsuan. Stream sediment sampling started along the coastline out from locally hired boats.

Later in the season helicopter supported fly camps were used to sample the inner and remote parts of the massif. Field teams were sent out in average for 4 days covering some 10-15 km² by foot.

The average sampling rate was 10 samples/team day. During two days - applying a leap-frogging technique with the helicopter 98 stream sediment samples from the most difficult terrain could be recovered.

A total of 2864 stream sediment samples have been collected during the 1982 field season in the Helgeland district.

The area sampled - from Vefsnfjord in the north to Indre Folda in the south, Vega in the west and Reinfjellet in the east totals 4.000 km². However considering that parts of the area were not sampled due to competitor activities an average sample density of 1/km² is calculated.

Field parameters were recorded on field cards, an example of which is shown below:

EXAMPLE

Sample locations are shown in maps 1-17 in Appendix I

The first two digits of the sample numbers are team identification numbers, so that every sample can be easily attributed to the sampler.

The samples with an average weight of 750 gr. ($>0,5$ mm) were dried at the base camps and shipped to Trondheim for further preparation.

As normally several teams sampled one subarea (e.g. Reinfjellet Granite) at the same time, but samples sent for analysis in batches of about 200 samples were restricted to one team, laboratory failures resulting in clusters of anomalies are excluded.

At three percent of the sample points duplicate samples were taken from the same stream in order to check the variability of element concentration within the stream.

In order to check the reproducibility and accuracy of the laboratory, standards with known concentrations of the elements analysed were included in every batch. A summary list of the analytical results of the standard and blank samples is enclosed in Appendix

In addition the dust derived from the sample preparation was kept and sent for Au-analysis to check whether any detectable amounts of gold are lost during the sample preparation. These samples showed never any Gold above detection limit, so that cross-contamination of samples during sieving can be excluded.

V Results

All stream sediment samples were analysed for Au, As, W, Cu, Pb, Zn. In addition the first 6 batches were analysed for Mo and Sb and the first 13 batches for Ag. The latter three elements were discontinued as the majority of the samples returned with concentrations below detection limit. The ranges of elemental concentrations are shown below:

<u>Element</u>	<u>Minimum</u>	<u>Maximum</u>
Au	<1	857ppb above detn. limit
As	<1	138ppm
W	<1	185ppm
Cu	5	205ppm
Pb	3	1050ppm
Zn	7	4571ppm
Mo	<1	45ppm
Sb	<1	1ppm
Ag	<1	1ppm

From the total of 2864 stream sediment samples, 244 returned with Au concentrations clearly above the detection limit, that is 8.5% of the samples were anomalous.

All these samples are recorded on the stream sediment anomaly maps in appendix II. For the following elements provisional thresholds were chosen at:

AS > 5ppm
W > 10ppm
Cu > 50ppm
Pb > 100ppm
Zn > 200ppm

Computer-aided threshold calculations will follow later, as it became apparent that the variability of the geological environment make it necessary to split the whole data-set into smaller groups and calculate specific thresholds for the various lithologies.

However the strongest anomalies are clearly detectable even with this rigid approach, and any detectable Au in a stream sediment sample is anomalous *sensu-stricto*.

Duplicated field samples showed considerable variation in Au content, so that a statistical treatment with subsequent threshold calculation for Au

anomalies seems inappropriate. More important for the ranking of anomalies is the association of Au anomalies with pathfinder element anomalies such as As and W. Elevated base-metal concentrations may reflect hydrothermal, epigenetic sulphide mineralization, frequently associated with Au mineralization.

The three sets of maps in 1:50000 scale in appendices I-III show:

- I Sample location and sample number (paper copies)
- II Stream sediment anomalies of Au, As, W and base-metals qualitatively (transparencies)
- III Stream sediment anomalies, topography and claim boundaries. semiquantitative (paper copies)

VI) Tenure

An overview over the tenure situation in the Helgeland district is shown on map in Appendix

The most active competitor in the region is Sulfidmalm A/S who were granted the state owned claims around Kolsvik in 1978. As a result of a restarted regional geochemical survey during 1982 Sulfidmalm A/S continued claiming along the Kolsvik-Husvik lineament mainly. However some ground was taken by Sulfidmalm A/S in the Reinfjellet region and further south around Svenningdal, where regional geochemical sampling could be observed as well. In addition A/S Sydvaranger performed geochemical stream sediment sampling on the map sheet Grane and Drevja but subsequent claiming did not appear.

Reviewing this situation with Sulfidmalm A/S being active in the district for several years and restarting their regional sampling with refined methods a decision was made to claim each anomalous stream catchment area for the Joint venture in order to ensure a thorough and unrestricted follow up of the geochemical anomalies.

As a result 167 claim blocks were granted to the Joint venture from the Bergmester of the Nordland and Trondheim district. These claim blocks total 258 km² or 1033 claims.

Very few anomalous sample points - every stream sediment sample with clearly detectable Gold is regarded as anomalous - were not claimed because the corresponding catchment area would be too vast. These samples are listed in table Appendix

The blocks applied for with the mining authorities were normally granted, only in one instance - claim block 24, Tettingelven, the Sulfidmalm application for the same ground reached the Bergmester two days earlier and the J.V. application was rejected. It is not envisaged to peg all 1033 claims in the field, instead a rapid follow up with closed spaced resampling of anomalous drainages should enable us to delineate the most prospective blocks during the 1983 field season.

Claims, covering catchment areas, where stream sediment anomalies cannot be further delineated or reproduced will be given up during 1983.

As, within the budget frame set, not all anomalies can be followed up during the coming field season anomalies will be ranked on geological and geochemical merits mainly and follow up will start in the most favourable areas. As a precaution however claim blocks which cannot be investigated in 1983, will be pegged and secured for the Joint-venture.

VII) Landsat interpretation

A study of the Landsat image (Path no 214, Row 14) was undertaken in order to map regional foliation patterns, and more important produce a map with satellite lineaments - thus compiling the major geotectonic lineaments.

The image used, was a geometrically corrected colour composite (MSS 457) in scale 1:250.000. The results are shown in maps in Appendix

From map Tectonic lineaments the following interpretation is proposed:

- the lineaments can be separated in two major systems.

System 1 covers the azimuthal sector $N68^{\circ}$ - $112^{\circ}E$ as exhibits regional importance not only in this part of Nordland but also further to the south and north.

The system is subparallel to the Kvaløya-Nordkapp and Møre-Trøndelag intensity zones, (J. B. Ramberg and R. Gabrielsen) where faults of regional importance were found to be associated with this system.

System 2 ($N158^{\circ}$ - $22^{\circ}E$) is subparallel to the Oslo-Trondheim intensity zone (Gabrielsen and Ramberg 1979 a) and is represented at best by the Kolsvik-Husvik lineament.

Detailed studies of these systems revealed that system 2 is clearly the younger one expressed by open fracturing and brittle deformation, whereas system 1 seems to have had a long history characterized by repeated movements with frequent epidote and quartz mineralization.

A late caledonian age is assumed for system 1 and system 2 is believed to be of post-caledonian age.

- two additional lineaments, subparallel to the Kolsvik-Husvik lineament could be detected to the west (Hundala lineament) and to the east (Ravatn lineament) of Mosjøen.

Evidently at the intersections of the Ravatn lineament with numerous lineaments of system 1 a concentration of strong geochemical anomalies occurs. The foliation pattern reveals a homogenous deformation style for the Helgeland nappe with predominant NE-SW direction, subparallel to the assumed strike direction of the bordering thrust planes.

Tight isoclinal folds in Km-scale occur frequently in the metasedimentary sequences along the Eiteradalen and the Kolsvik-Husvik lineament.

This coincidence between tectonic lineaments and regional foliation pattern may be taken as indications of overprinting of a tectonic foliation during thrusting.

In general, terrains with acid to intermediate intrusives exhibit more closely spaced and circular foliation patterns, whereas terrain built up from metasedimentary units is characterized by elongated and gently folded lineations.

It is note-worthy that at least the two northernmost of the three Velfjord intrusions appear to have rotated, as can be observed from the deformation style of the bordering metasediments.

VIII Photogeological interpretation

Photogeological interpretation at 1:40000 scale is currently underway for the entire area covered by sampling in 1982. This is considered a prerequisite for the program for two reasons : a) The occurrence of highly fractured areas and sub-facies of the intrusives, together with the occurrence of marble-amphibolite packages and ultramafic pods can often be clearly detected prior to entering the area, thus saving field time and at the same time providing possible explanations for the anomalies detected in 1982, b) the almost 'here-be-there-dragons' quality of the majority of 1:50000 base-maps is inadequate for detailed follow up regarding accurate positioning, geological mapping etc. The interpretation consists of defining i) structural features e.g. fractures/jointing, folding/foliation, ii) lithological features e.g. intrusive facies, carbonate-rich sediments, ultramafics, highly veined areas and circular features. In the 1983 field season, the resulting coverage on individual air-photos will be used directly in the field by all personnel.

IX Ranking of anomalies

In the following, the anomalies found during the 1982 field season are described and a ranking performed as the current budget frame does not allow follow up of all anomalies.

The following criteria are used to set priorities for follow up work:

- 1) Au anomalies associated with pathfinder element anomalies.
- 2) The nature of overburden observed during reconnaissance sampling in order to avoid follow up of anomalies which might be derived from fluvio-glacial debris.
- 3) Anomalies which appear to be relatable to structures and lineaments i.e. faults, circular features, intersection of lineaments and folds, are favourable for follow up.
- 4) Geological setting. The spatial relationship between the catchment area of an anomalous stream and metasedimentary sequences, bordering acid-intermediate intrusives appears to be significant, Especially the association of regional anomalies with amphibolites and impure marbles/dolomites is favoured for follow up work.
- 5) Easily accessible areas will have priority for follow up.

Map sheet Tjøtta

The vein-type lead-zinc mineralization at Husvik was clearly detected by our sampling (up to 4571 Zn and 609ppm Pb). In addition the area around these occurrences, and also upstream from the old workings was found to be anomalous in Au and As.

The regional geology consists of intensely veined mica-gneiss with intercalated marble horizons.

The mineralization in Husvik is clearly confined to the marble horizons or the contact zone between these and micaschists. A similar type of mineralization is reported some 15kms along strike of the marble horizon to the south on map sheet Vevelstad.

MAP SHEET: 1826 IV TJØTTA

CLAIM NAME	NO.	AREA KM ²	Au PPB	PATHFINDER ELS.	OVERBURDEN	GEOLOGY	STRUCTURES
HUSVIK	11	2.5	31,6	+AS +W +Zn +Pb	0	+	0
" B	41	1.0	9	+As +W +Zn	+	+	0
SØRTJORD A	52	1.5	52	0	0	+	+
" B	51	0.75	76	+W	0	+	0
SØRDALEN	42	1.0	72	-	0	+	0
HESTDALEN	40	0.5	30	+As	0	+	-
ØVERJORD	6	2.25	15,20,30	+As	0	+	0
NUBMARKEN	10	1.5	29	0	+	+	0
VESTVÅGEN	9	4.0	9,39,79,16	0	0	+	0

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CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1826 IV TJØTTA		DJ 182 II

Claim Name HUSVIK No 11 Area 2.75 km² Appl.date 12.10.82

Stream Length 2 km Drainage Area 2 km² Av. Topog. MODERATE

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
140154		<1	20	16	.54	2		
140155	31	<1	23	26	98	5		
140156		<1	17	20	163	2		
140157		<1	18	26	77	3		
140158	6	63	43	348	125	<1		
140159		<1	42	609	929	9		
140160		53	11	29	1413	<1		

Regional Geology: GRANODIORITE - MICASCHIST

Overburden: SOIL, PEATBOG

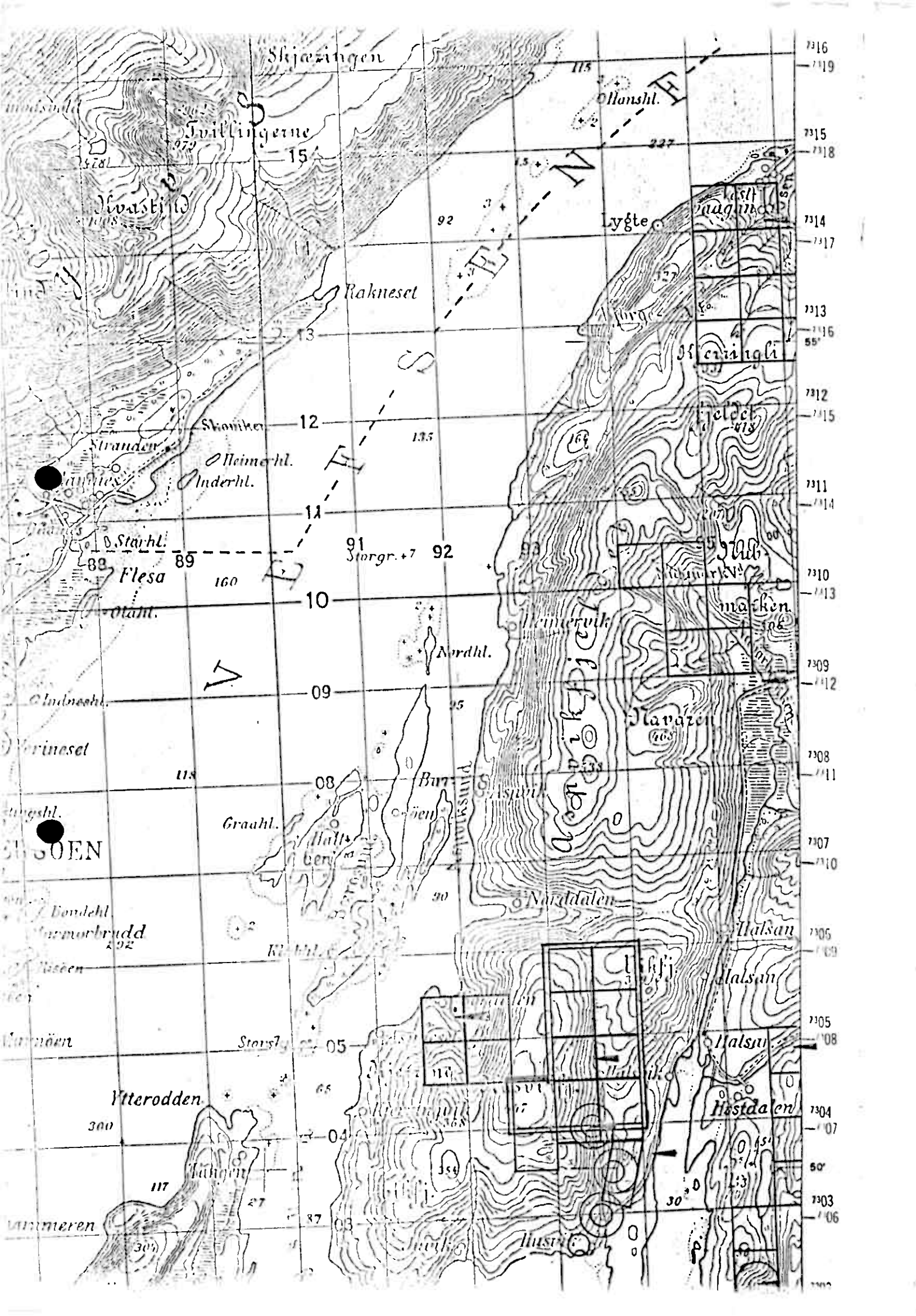
Field Comments: PORPHYRITIC GRANODIORITE

Access: BY ROAD

Photogeology:

Est No. Follow up Samples 20

Time Requ'd 2 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1826 IV TJØTTA	D008 D009+D007	ØK 182 I

Claim Name HUSVIK 'B' No 41 Area 1.0 km² Appl.date 29.10.82

Stream Length 1 km Drainage Area 2,5 km² Av. Topog. MOD/STEEP

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
140068	9	1	16	7	36	4		
140160		53	11	29	1413	<1		
140067		5	23	32	196	2		
140136		3	31	44	4571	1		

Regional Geology: MICASCHIST/GNEISS

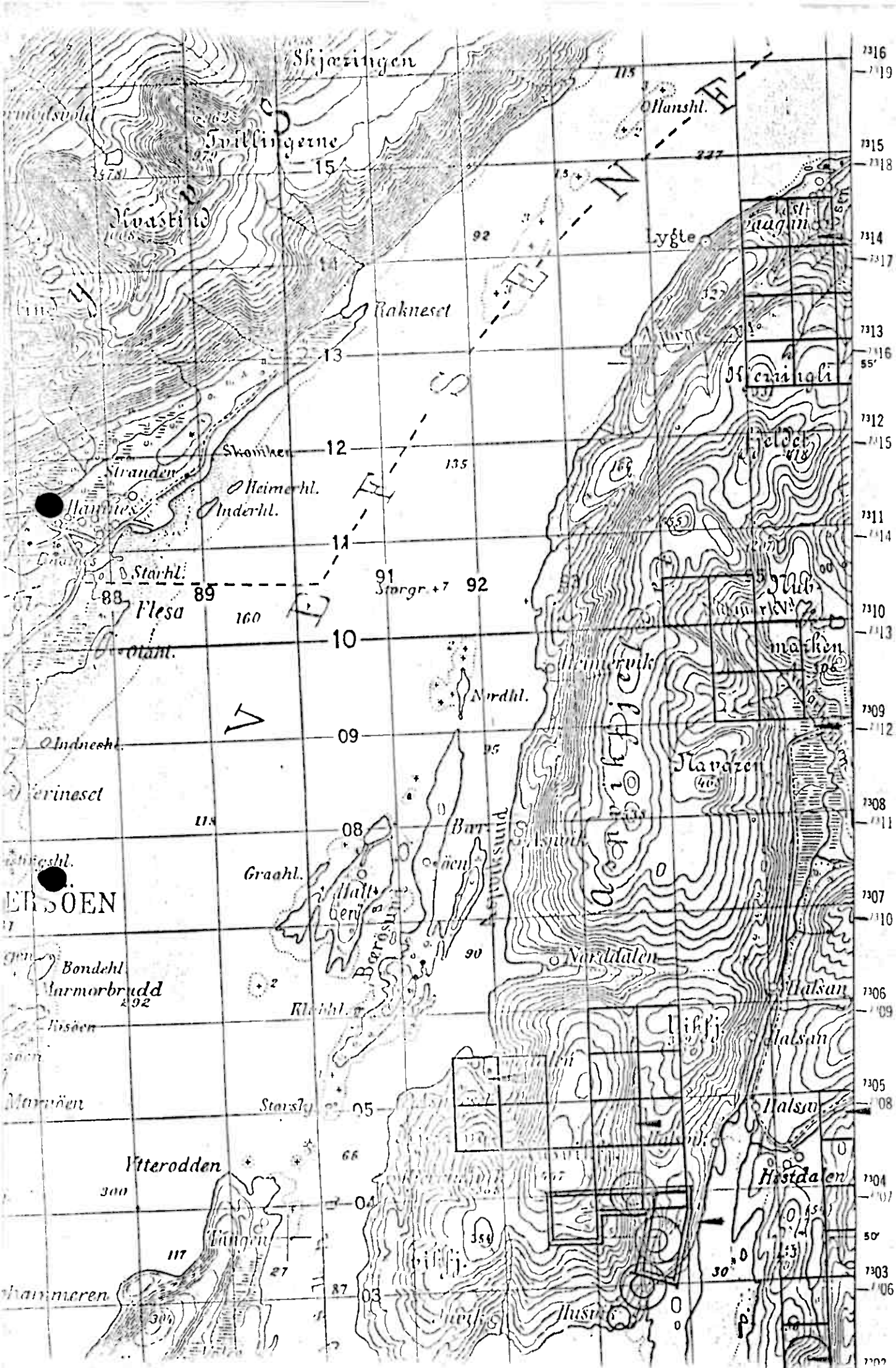
Overburden: SOIL

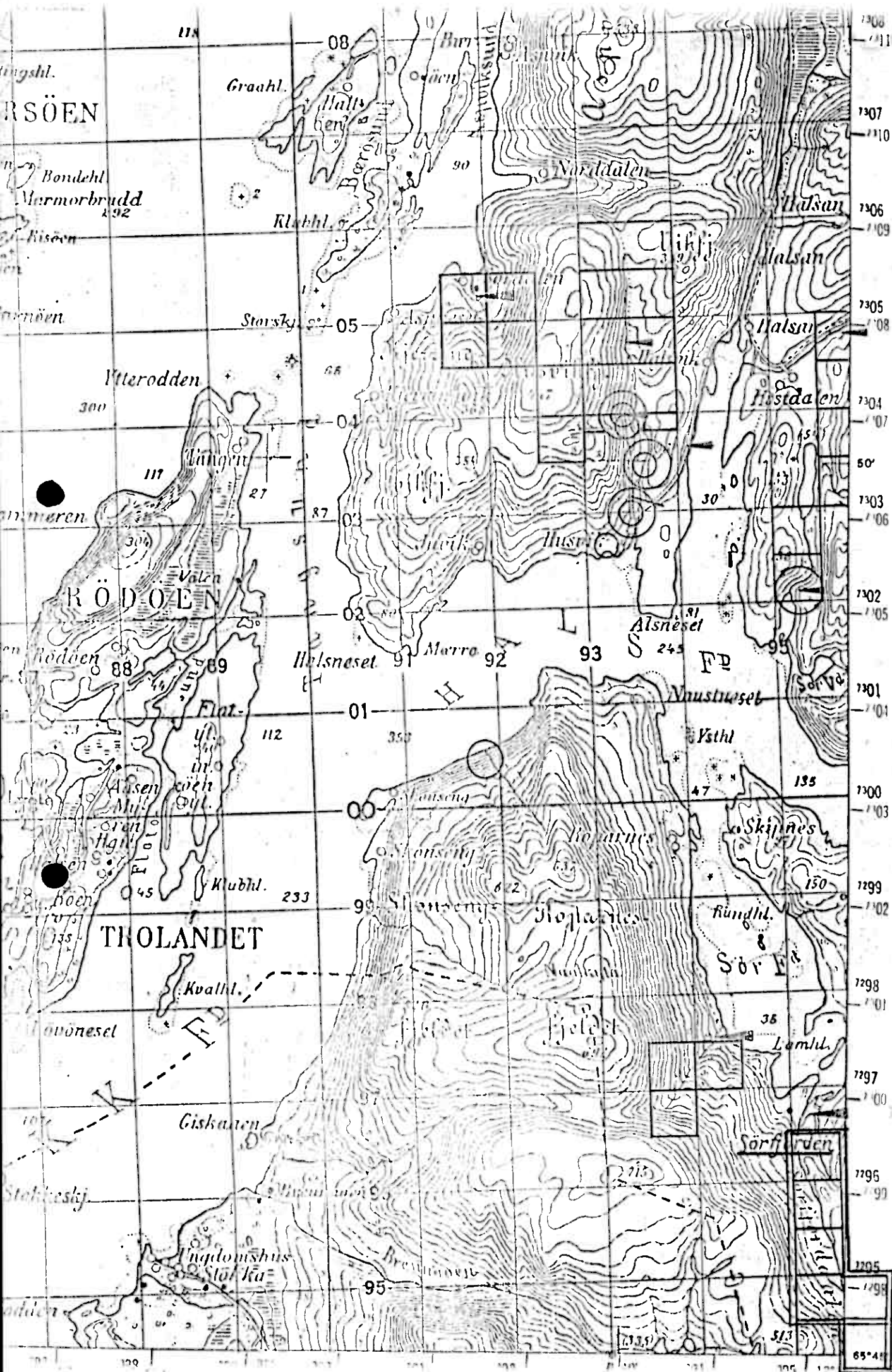
Field Comments: SAMPLE PARTLY FROM BANKS, WASHED BY THE SEA.

Access: ROAD

Photogeology:

Est No. Follow up Samples 10 Time Requ'd 1 Team Days





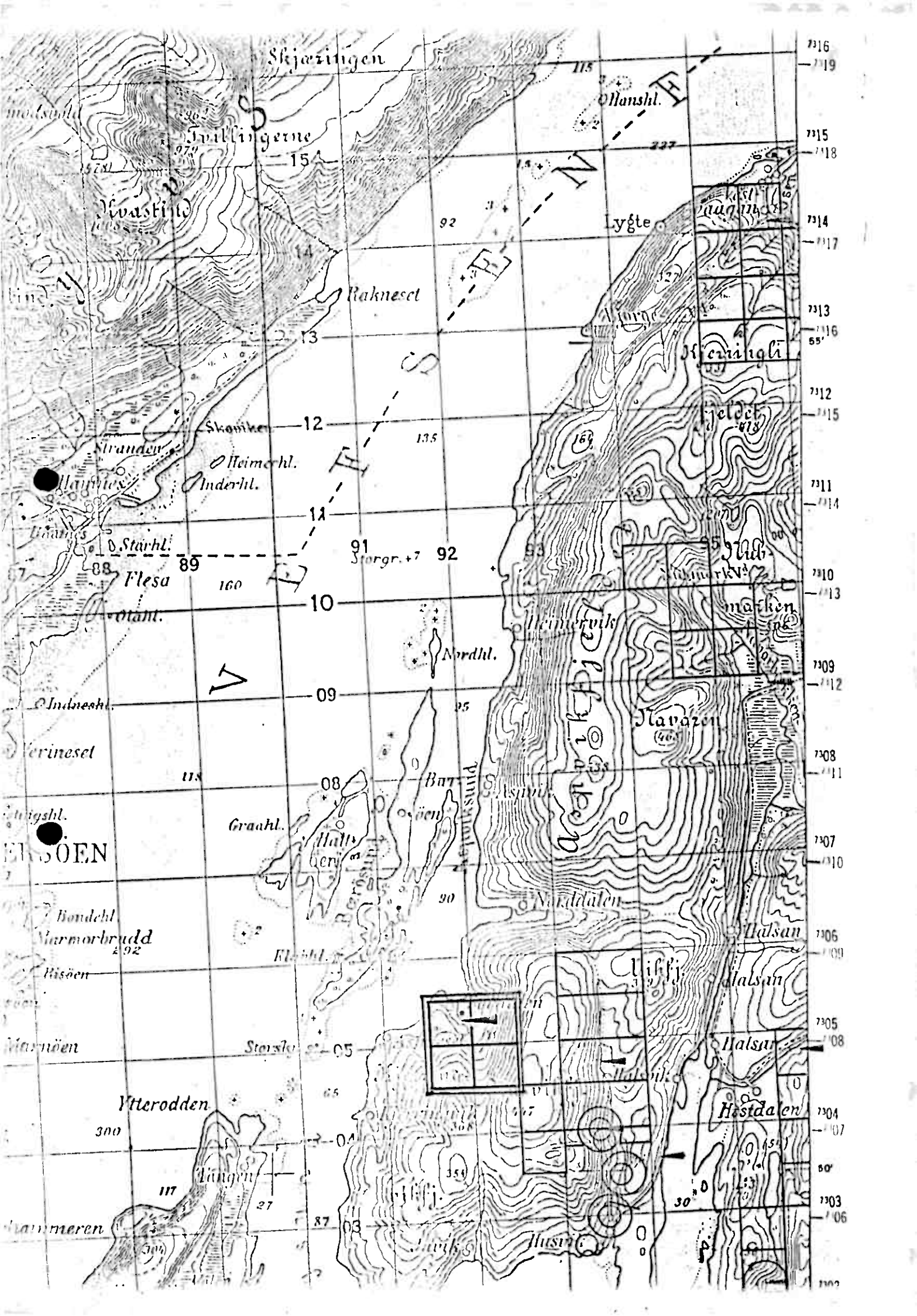
CLAIM DETAILS

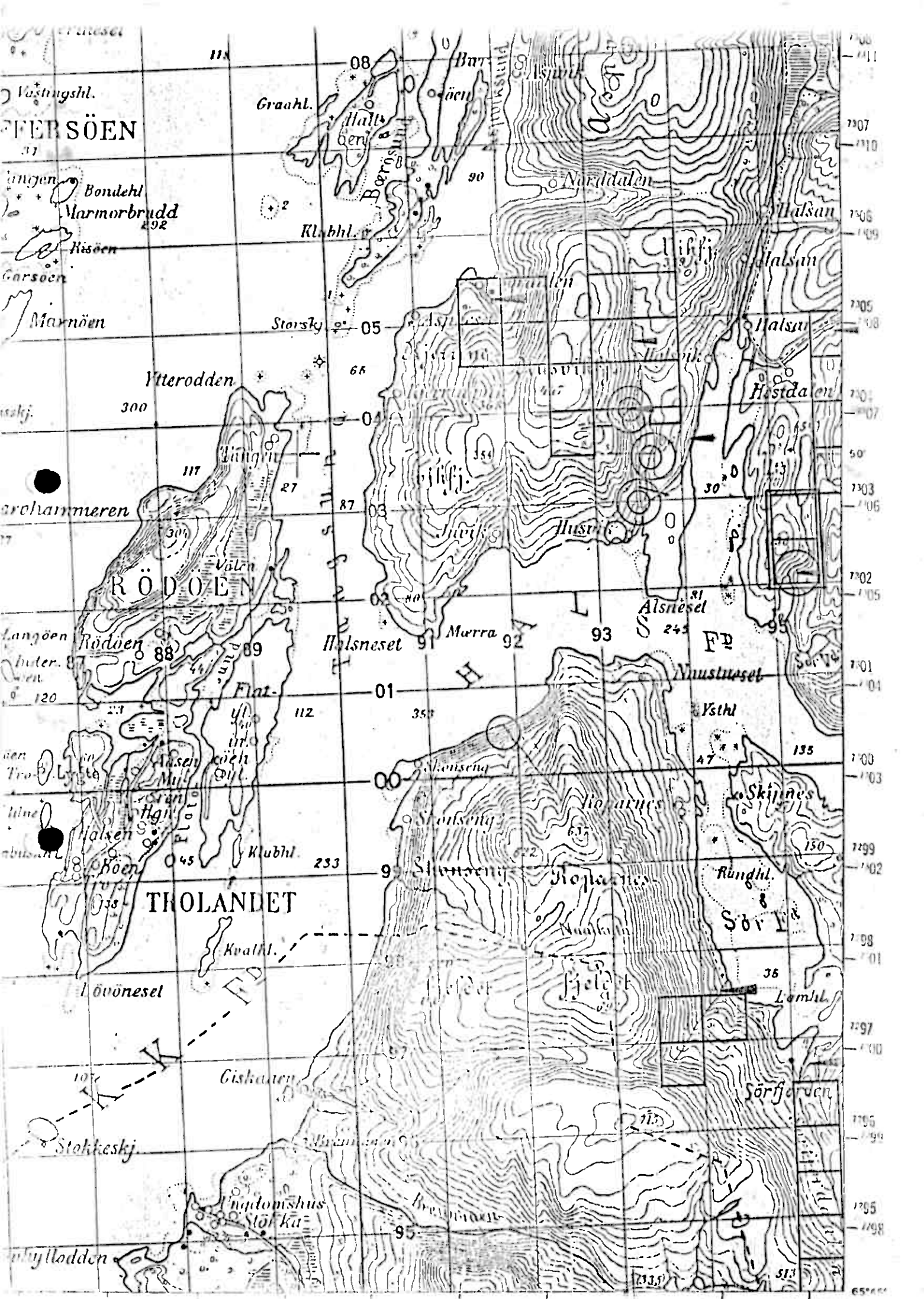
Est No.	Follow up Samples	10-15	Time Requ'd	1-2	Team Days
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CLAIM DETAILS

Est No. Follow up Samples	10	Time Requ'd	1	Team Days
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HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1826 II TJØTTA 1826 I MOSJØEN	D009 D008+0010	

Claim Name ØVERJORD No 6 Area 2,25 km² Appl.date 1.10.82

Stream Length 1,5 km Drainage Area 2,25 km² Av. Topog. GENTLE/MOD.

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Anal.
140094	15	<1	15	6	35	<1		
140095		<1	17	10	45	<1		
140093		<1	10	6	29	<1		
140092	20	<1	6	3	20	<1		
140091		<1	14	9	58	<1		
140090		<1	14	5	62	4		
160044	30	7	38	13	44	1		

Regional Geology: MICASCHIST

Overburden: ALLUVIUM - STREAM DEPOSIT

Field Comments: (140092) SAMPLE FROM DELTA

Access: ROAD NORTHERN PART. WALK 1 km.

Photogeology:

Est No. Follow up Samples 20-30 Time Requ'd 2-3 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1826 IV TJØTTA	C010 C009.C011 (STEREO)	DJ 183 IV

Claim Name NUBMARKEN No 10 Area 1,5 km² Appl.date 12.10.82.

Stream Length 1 km Drainage Area 1,5 km² Av. Topog. MODERATE

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Sb	Add. No
140152	29	<1	16	18	77	1	<1	2
140151		3	10	23	35	<1	<1	2
140153	<1		16	17	77	1		

Regional Geology: MICASCHIST - GRANITIC DYKES

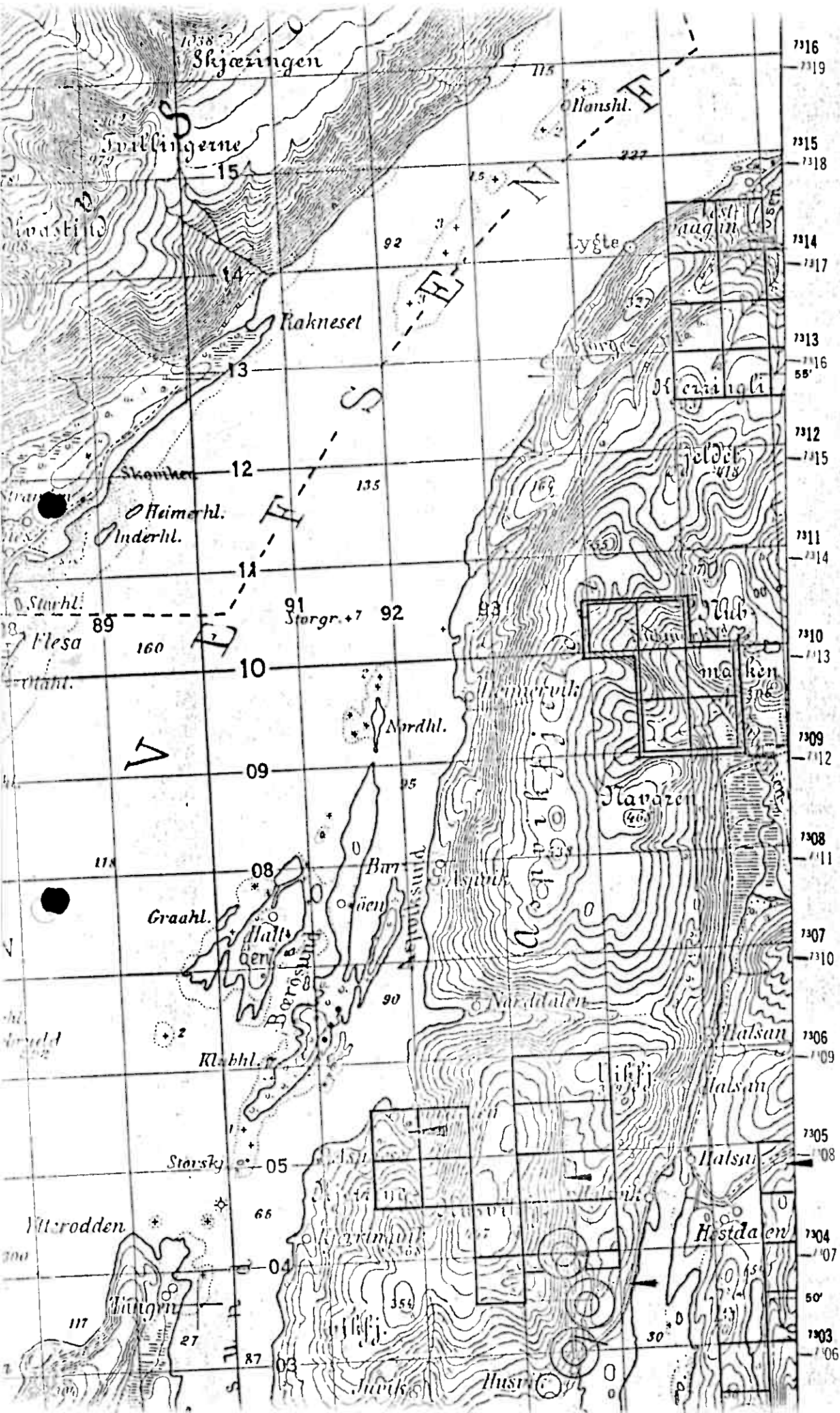
Overburden: SOIL

Field Comments: BOULDERS OF GRANODIORITE (PORPHYRITIC) IN STREAM (140152).
SKARN AND SMALL AMOUNTS OF SULFIDES (140151).

Access: BY ROAD - WALK

Photogeology:

Est No. Follow up Samples 10 Time Requ'd 1 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1826 I MOSJØEN 1826 IV TJØTTA	C010 C009,C011 (STEREO)	DJ 183 IV

Claim Name VESTVÅGEN No 9 Area 4 km² Appl.date 12.10.82

Stream Length 8 km¹ Drainage Area 4-5 km² Av. Topog. MODERATE

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Adj.
140118	9	<1	20	38	136	<1		
140119		<1	15	21	170	<1		
140120	39	<1	15	12	43	<1		
140117	79	<1	21	17	33	<1		
140116		<1	14	15	51	<1		
140121		<1	12	9	24	<1		
140122		<1	8	26	5	<1		
140123		<1	18	10	37	<1		
140125		<1	11	18	46	<1		
140124		<1	7	10	28	<1		
140104		<1	8	6	22	<1		
140165		<1	11	9	50	<1		
140114		<1	11	11	48	<1		
140015	16	<1	15	8	30	<1		
170047		<1	11	7	39	2		
170049		<1	13	4	31	2		
170048		2	17	3	32	2		

Regional Geology: MICASCHIST - GRANITE - GRANODIORITE - QUARTZITE WITH MICA

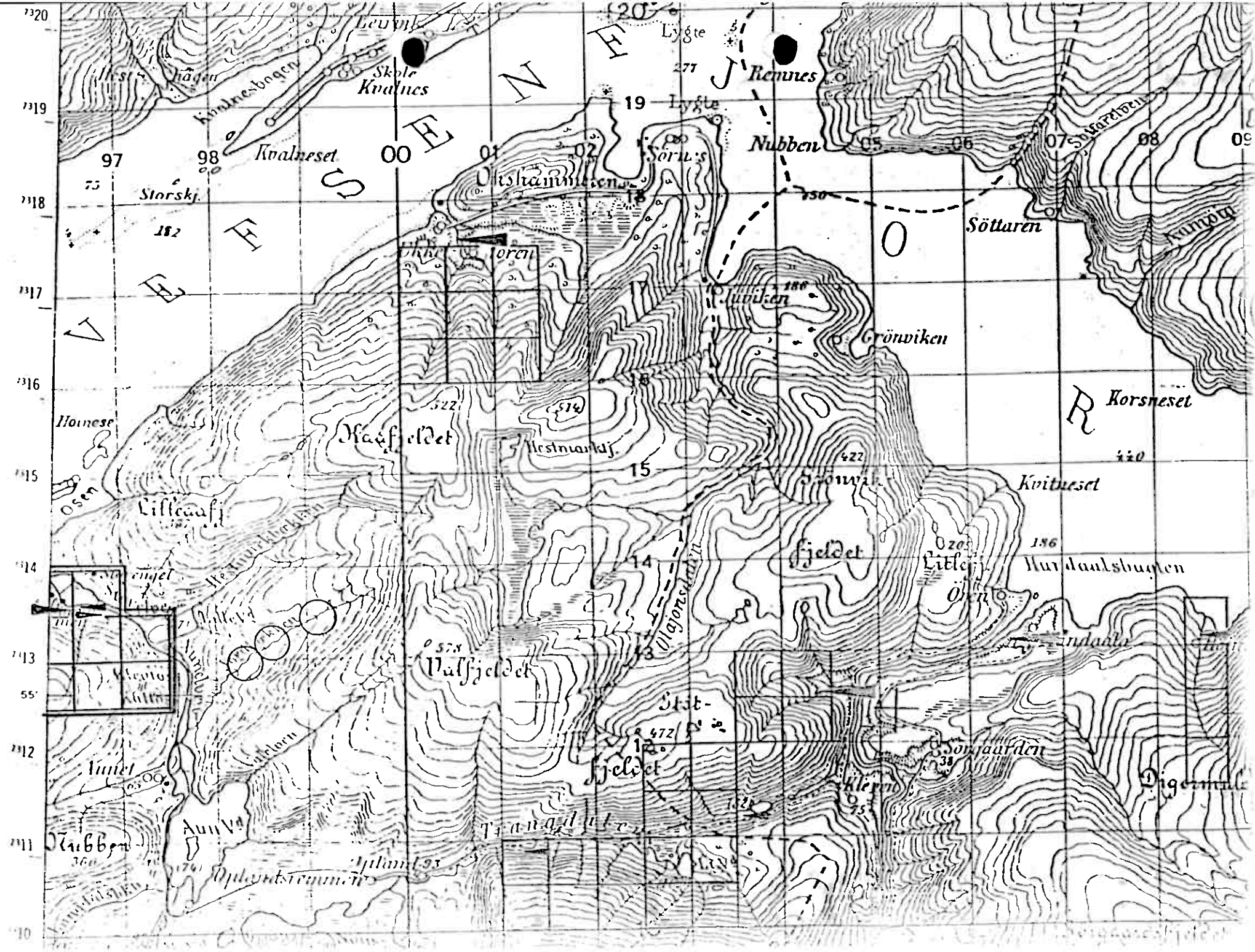
Overburden: SOIL, PEATBOG, ALLUVIUM

Field Comments: CONFLUENCE OF A STREAM. (140117) THE CREEK FOLLOWS A CLIFF WALL (140015) GRANODIORITE

Access: NOT FAR FROM ROAD

Photogeology:

Est No. Follow up Samples 20-30 Time Requ'd 2-3 Team Days



Map Sheet Mosjøen

Anomalies are evenly distributed, but concentrate in areas where amphibolites and marbles occur hosted by micaschists.

The northern tip of the Bindal granodiorite is not anomalous with respect to Au, but single As anomalies occur in the contact zone with micaschists.

In the north-east of the map-sheet, due north of Aun-vatn, three W anomalies along one stream coincide with a thin marble horizon in mica-gneisses.

A skarn-type W mineralization (scheelite) in this marble horizon of (700x 100m) is conceivable.

MAP SHEET: 1826 I MOSJØEN

CLAIM NAME	NO.	AREA KM ²	Au PPB	PATHFINDER ELS.	OVERBURDEN	GEOLOGY	STRUCTURES
TRANGDALEN B	56	1.5	6	0	0	+	+
TRANGDALEN	8	1.0	5	+W	0	+	+
LIVATN	12	1.0	5	-	0	0	0
STØTFJELLDET	104	1.0	166	-	0	0	0
LANGVANN	7	0.5	20	-	+	0	-
HOINESDALEN	38	1.0	1.2	-	0	0	0
DIGERMULKEN	37	1.0	2	0	0	+	0
UKKELFJORD	53	2.25	133	0	0	0	0
STEIDALSMOEN	107	1.5	34,40,70	0	+	+	
OYDALEN	106	3.5	23,308,857	0	0	+	+
HATTEN	108	4.5	60,70,40, 34,23	+W	+	+	+
SØFTING	145	0.75	198	+As	0	+	
STORTEN	105	0.25	8	-	0	0	0
FJELDSKARET	116	0.25	2	0	0	+	0
HESTAKSLEN	159	1.5	23	0	0	0	
DEMMELODALEN	160	0.5	29,23	-	0	+	-

HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1826 I MOSJØEN		DL 184 III

Claim Name TRANGDALEN 'B' No 56 Area 1.5 km² Appl. date 3.11.82

Stream Length 3 km Drainage Area 1.5 km² Av. Topog. MOD/STEEP
100-550 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add. Sb	Add. In
140065		<1	15	6	52	4	<1	<1	<1
140066		<1	16	9	31	<1	<1	<1	<1
140106		<1	32/39	10/11	70/76	<1	<1/<1	<1	<1
140107	6	<1	11	5	17	<1	<1	<1	<1
140108		<1	24/19	9/6	77/64	1	<1/<1	<1	<1
140109		<1	12	10	55	1	<1	<1	<1
140110		<1	9	12	33	1	<1	<1	<1
140111		<1	15	14	50	4	<1	<1	<1
140112		<1	24	16	51	5	<1	<1	<1
140113		<1	14	10	46	2	<1	<1	<1
140148		1	14/13/17	7/7/9	39/44/41	<1	<1	<1	<1
140149		1	23	17	45	1	<1	<1	<1

Regional Geology: GRANITE, GNEISS, MICASCHIST, GNEISSIC GRANODIORITE, GRANODIORITE.
NEARBY GABBROIC/AMPHIBOLITIC BODY.

Overburden: SOIL, BOG TALUS

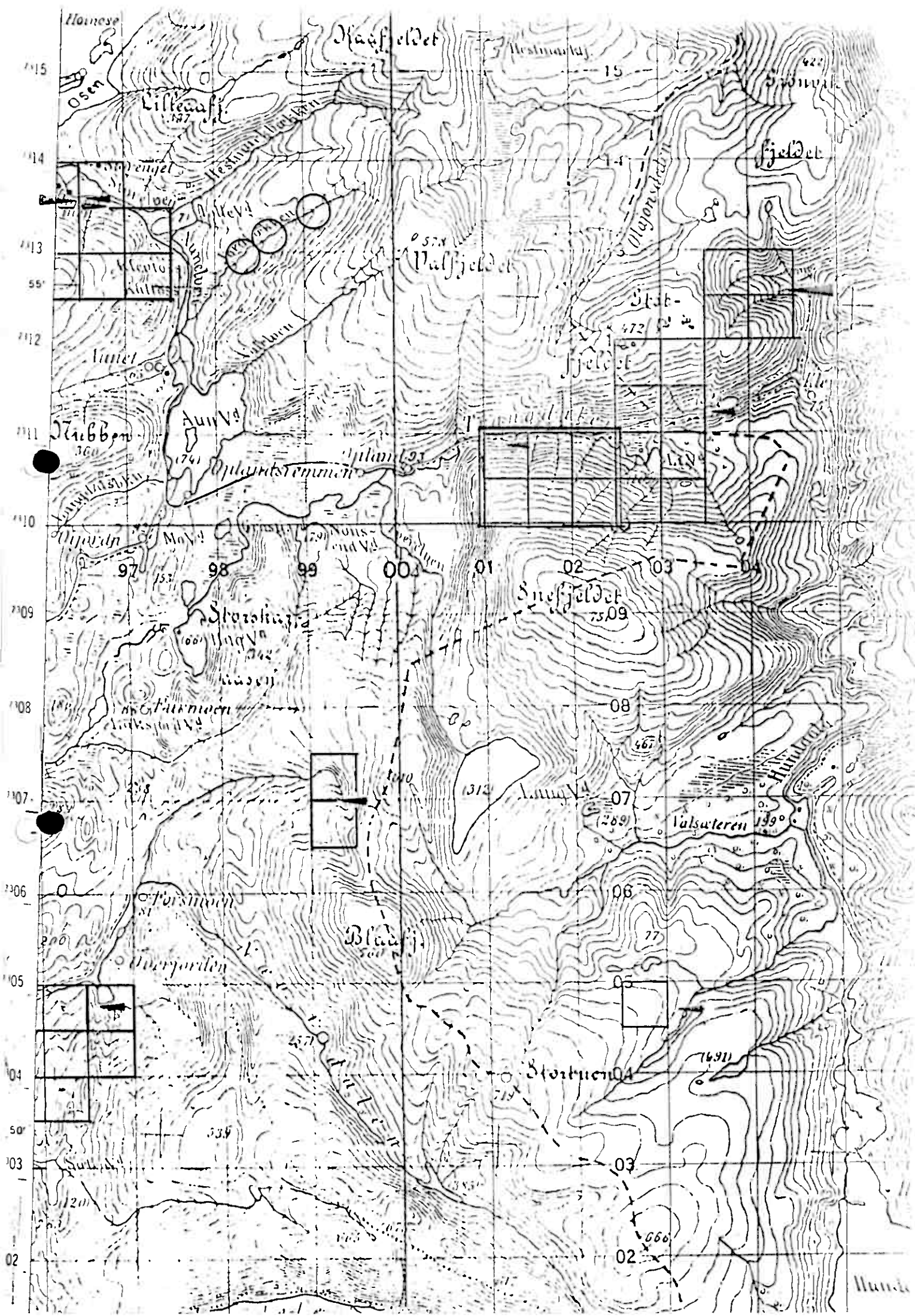
Field Comments:

Access: ROAD

Photogeology:

Est No. Follow up Samples 20

Time Requ'd 2 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1826 I MOSJØEN		DK 182 I, II

Claim NameTRANGDALEN..... No ...8... Area ...1... km² Appl.date 1.10.82

Stream Length ...2... km² Drainage Area ...2... km² Av. Topog. STEEP 100-400 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.	Add.
140009		<1	14	14	143	2	<1	<1	<1
140010		<1	34	23	145	3	<1	<1	<1
140011		<1	9	6	33	8	<1	<1	7
140012		<1	12	2	24	3	<1	<1	<1
140013		<1	7	1	17	<1	<1	<1	<1
140147	5	<1	12/14	7/8	34/36	<1	<1/<1	<1	<1

Regional Geology: (FOLIATED) GRANODIORITE, MICASCHIST, MARBLE.

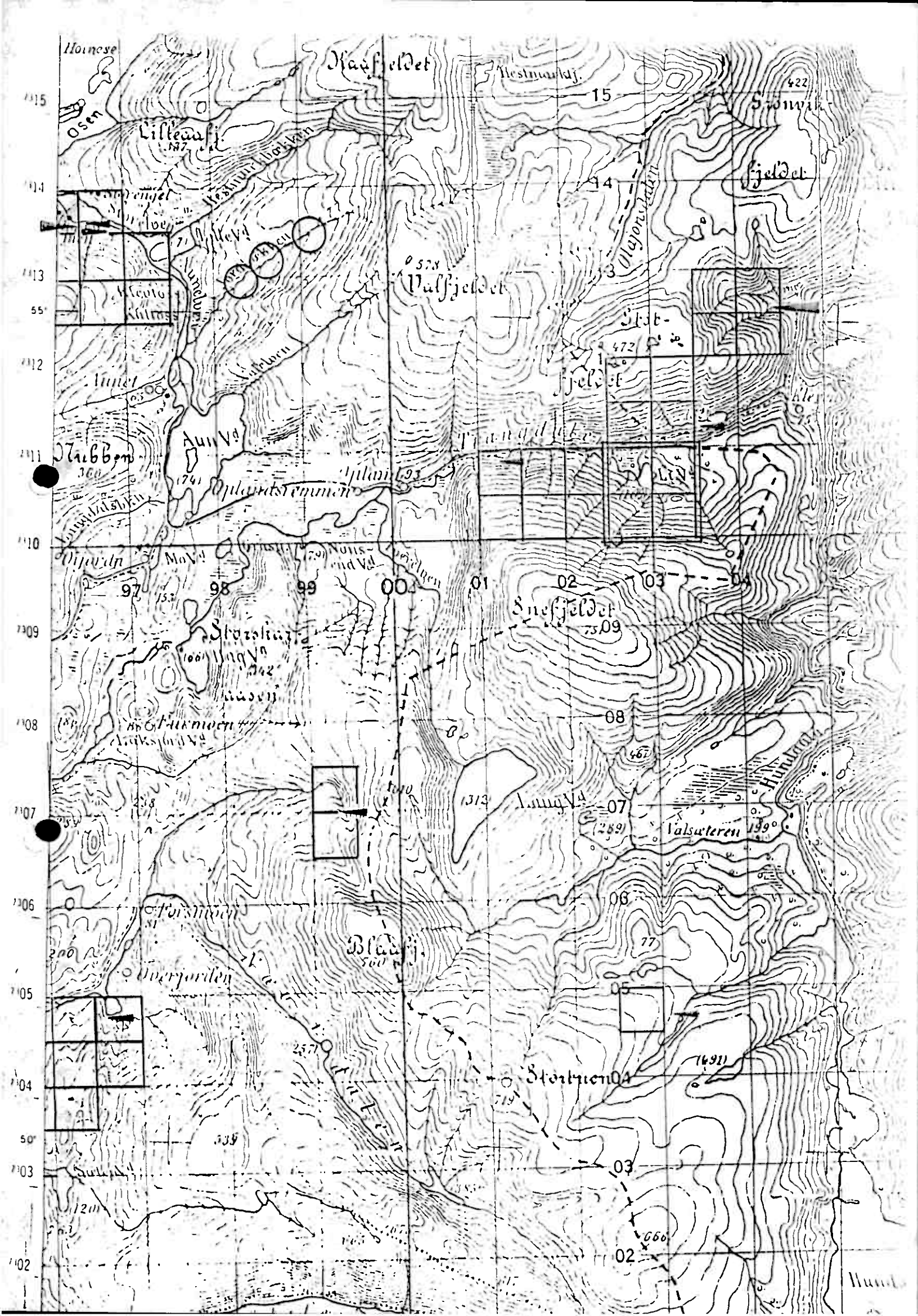
Overburden: PEAT BOG

Field Comments:

Access: ROAD

Photogeology:

Est No. Follow up Samples20..... Time Requ'd2..... Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1826 I MOSJØEN		DL 184 I, II

Claim Name LIVATN No 12 Area 1 km² Appl.date 12.10.82

Stream Length 1 km² Drainage Area 0,5 km² Av. Topog. STEEP 90-470 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add. Sb	Add. Mo
140109		<1	12	10	55	1	<1	<1	<1
140147	5	<1	14	8	36	<1	<1	<1	<1

Regional Geology: MARBLE, MICASCHIST

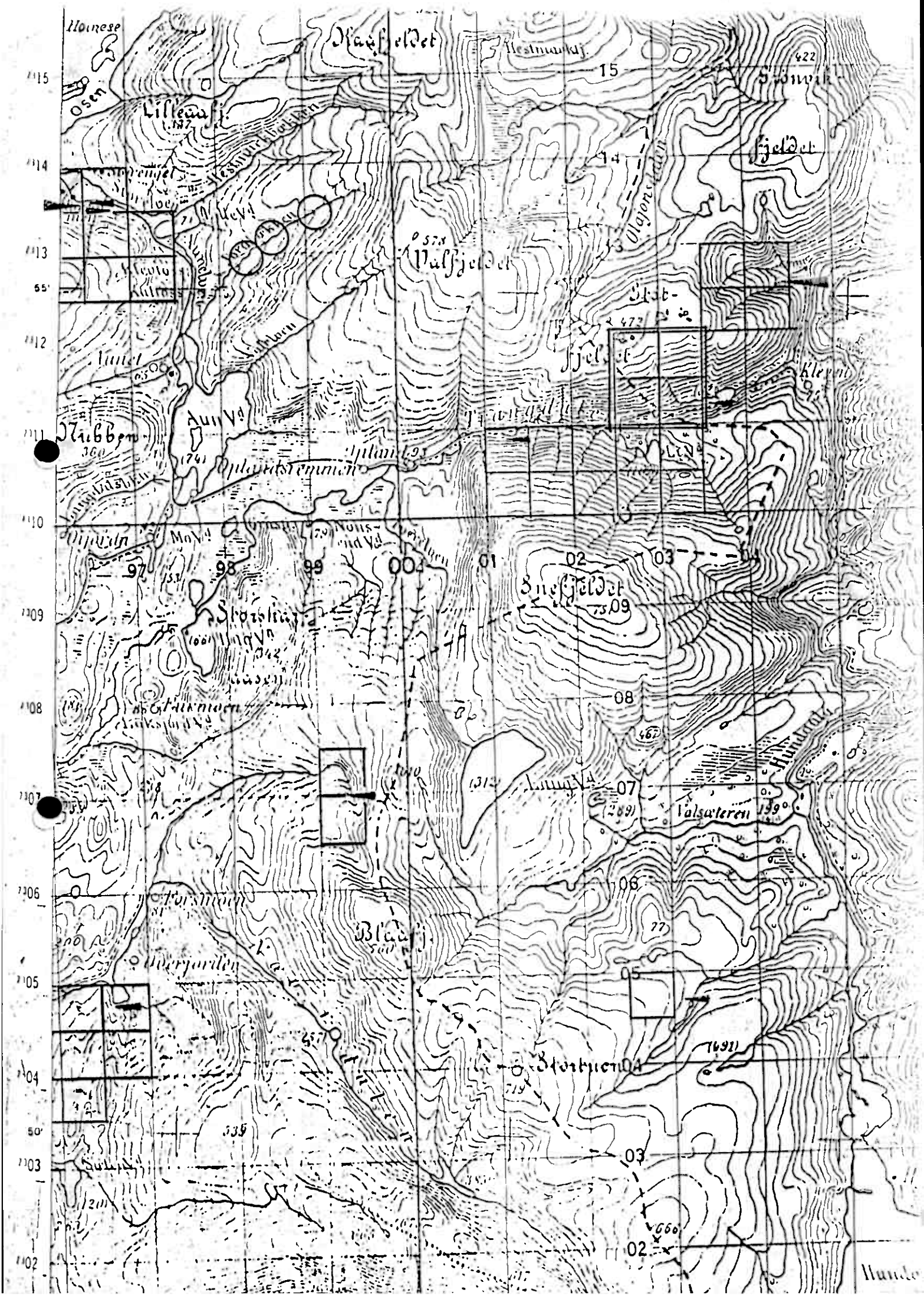
Overburden: PEAT BOG

Field Comments:

Access: BOAT + 4 KM WALK - HELICOPTER

Photogeology:

Est No. Follow up Samples 10 Time Requ'd 1 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1826 I MOSJØEN		DL 184 II

Claim Name STØTFJELLODET No 104 Area 1 km² Appl.date 17.12.82

Stream Length 2 km² Drainage Area 1 km² Av. Topog. STEEP 100-420 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
110227		<1	14	18	138	<1		
110228	166	<1	17	11	39	<1		
110229		<1	10	7	26	<1		

Regional Geology: MICASCHIST - GRANODIORITE/GRANITE

Overburden: TILL

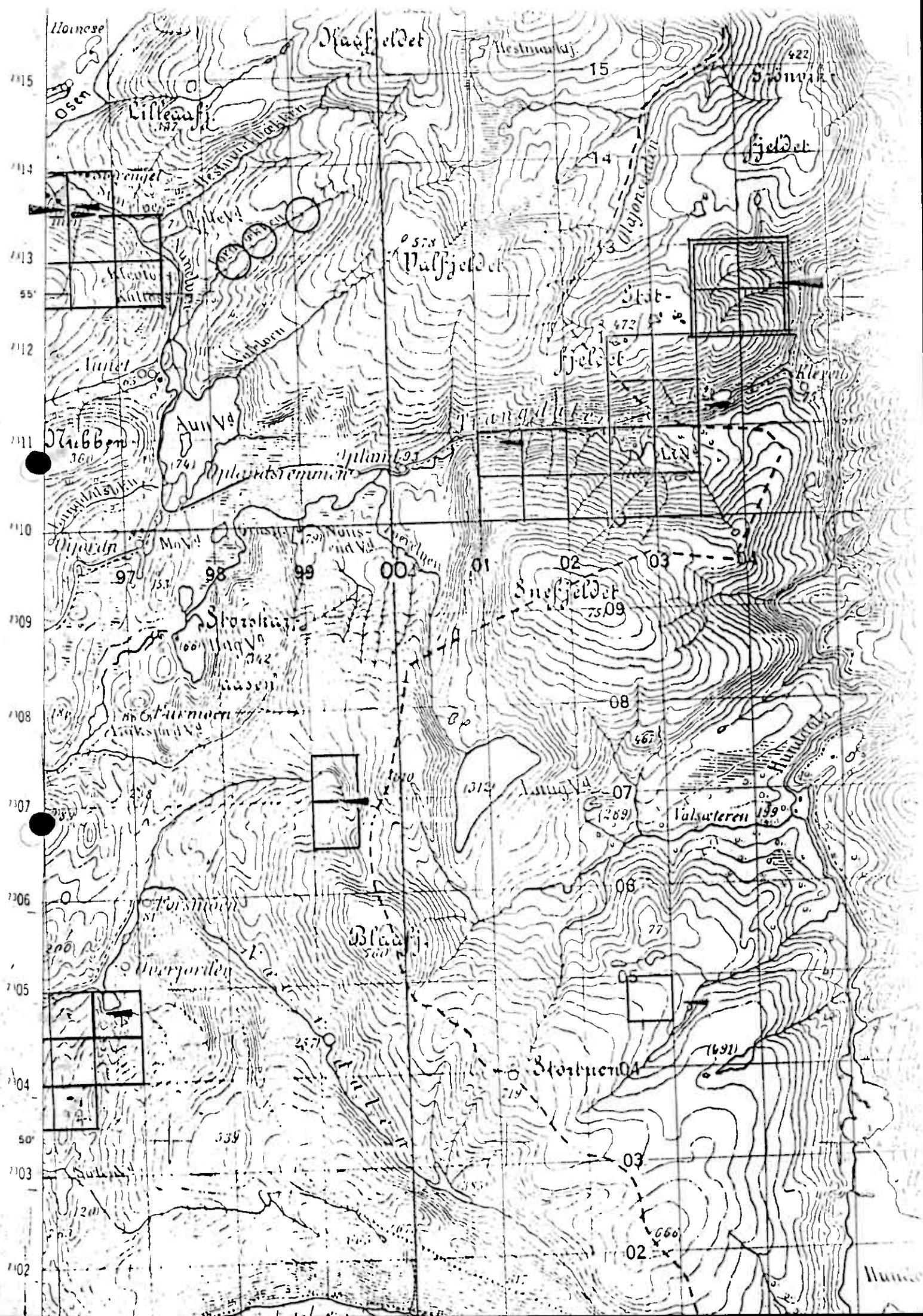
Field Comments: GRANITE

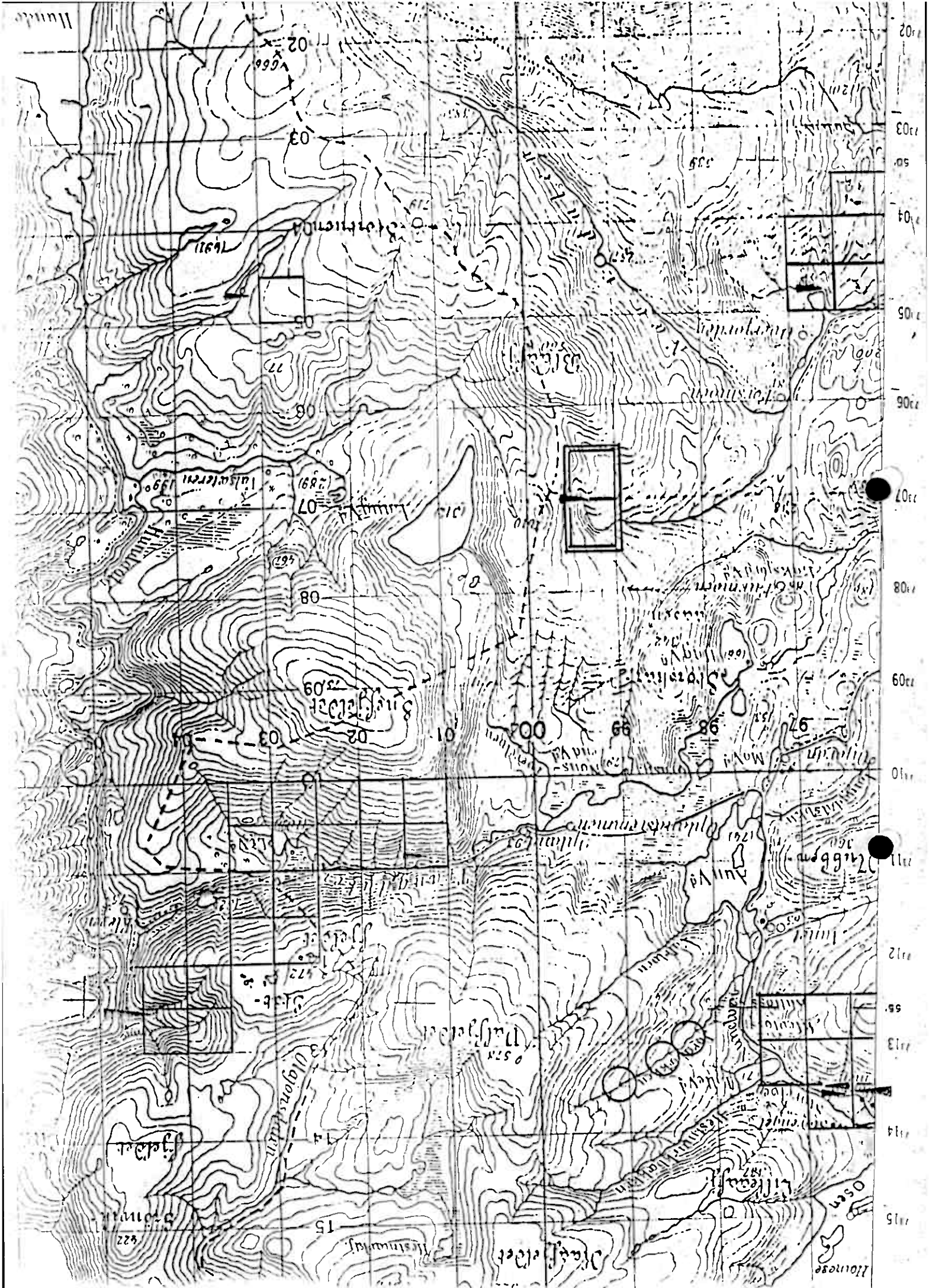
Access: FROM ROAD

Photogeology:

Est No. Follow up Samples 20

Time Requ'd 2 Team Days





HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1826 I MOSJØEN		

Claim Name HØINESDALEN No 38 Area 1 km² Appl.date 29.10.82

Stream Length 1,5 km² Drainage Area 1 km² Av. Topog.MOD. STEEP
0-570 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add. Sb	Add. Mo
160051	1/2	<1	17/15/16 /16	9/8/8/10	63/59/52 /60	<1	<1/<1/ <1/<1	<1	<1

Regional Geology: MICA GNEISSES

Overburden: TILL

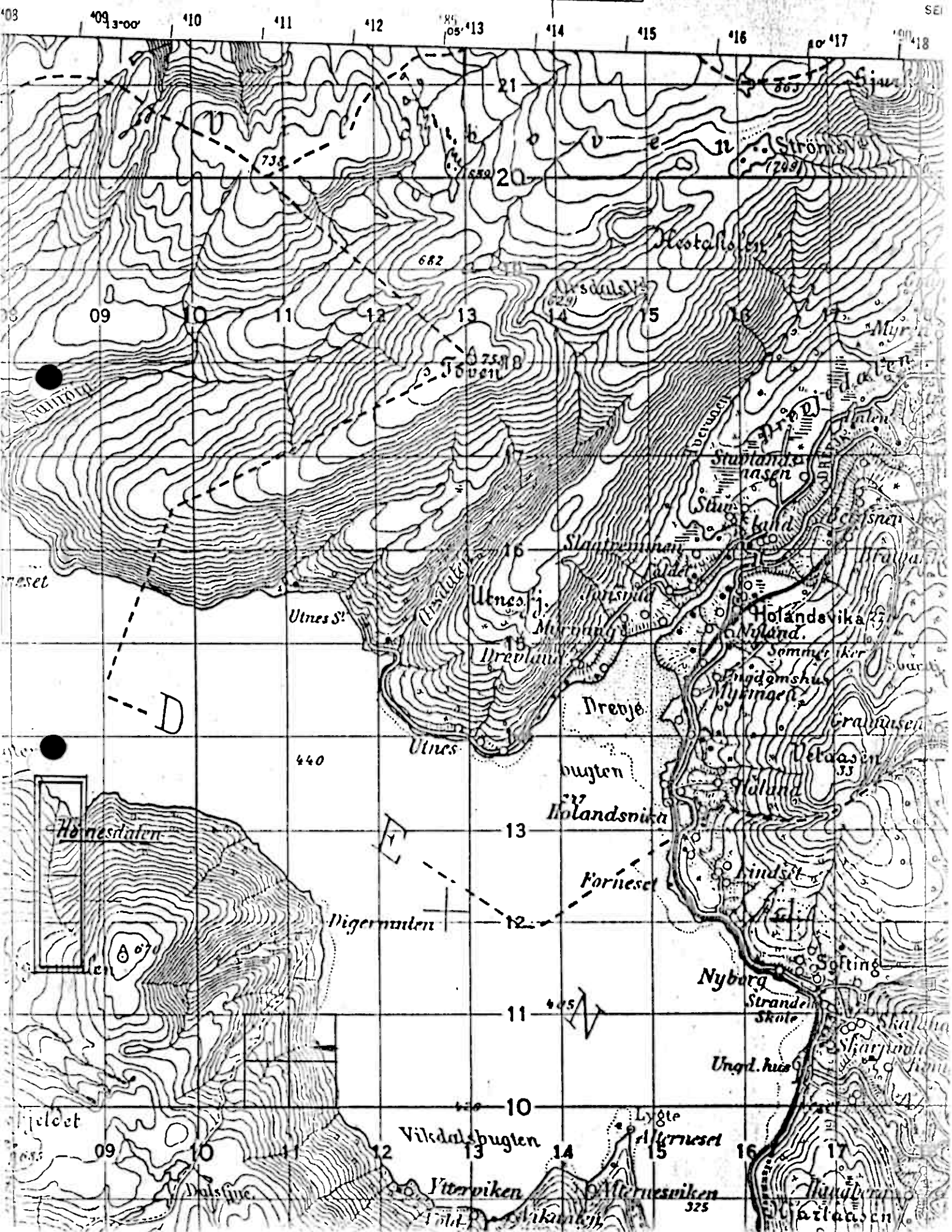
Field Comments:

Access: BOAT OR HELICOPTER

Photogeology:

Est No. Follow up Samples 10 Time Requ'd 1 Team Days

SHEET
SE



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1826 I MOSJØEN		DM 184 IV

Claim Name DIGERMULEN No 37 Area 1 km² Appl.date 29.10.82

Stream Length 0,75km Drainage Area 0,5km² Av. Topog. STEEP 0-460 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add. Sb	Add. Hg
160055	2	<1	31	15	44	<1	<1	<1	<1
160056		3	16	14	74	5	<1	<1	<1

Regional Geology: GRANITE, GRANODIORITE, BASIC ROCKS, METASEDIMENTS.

Overburden: TILL, ALLUVIUM

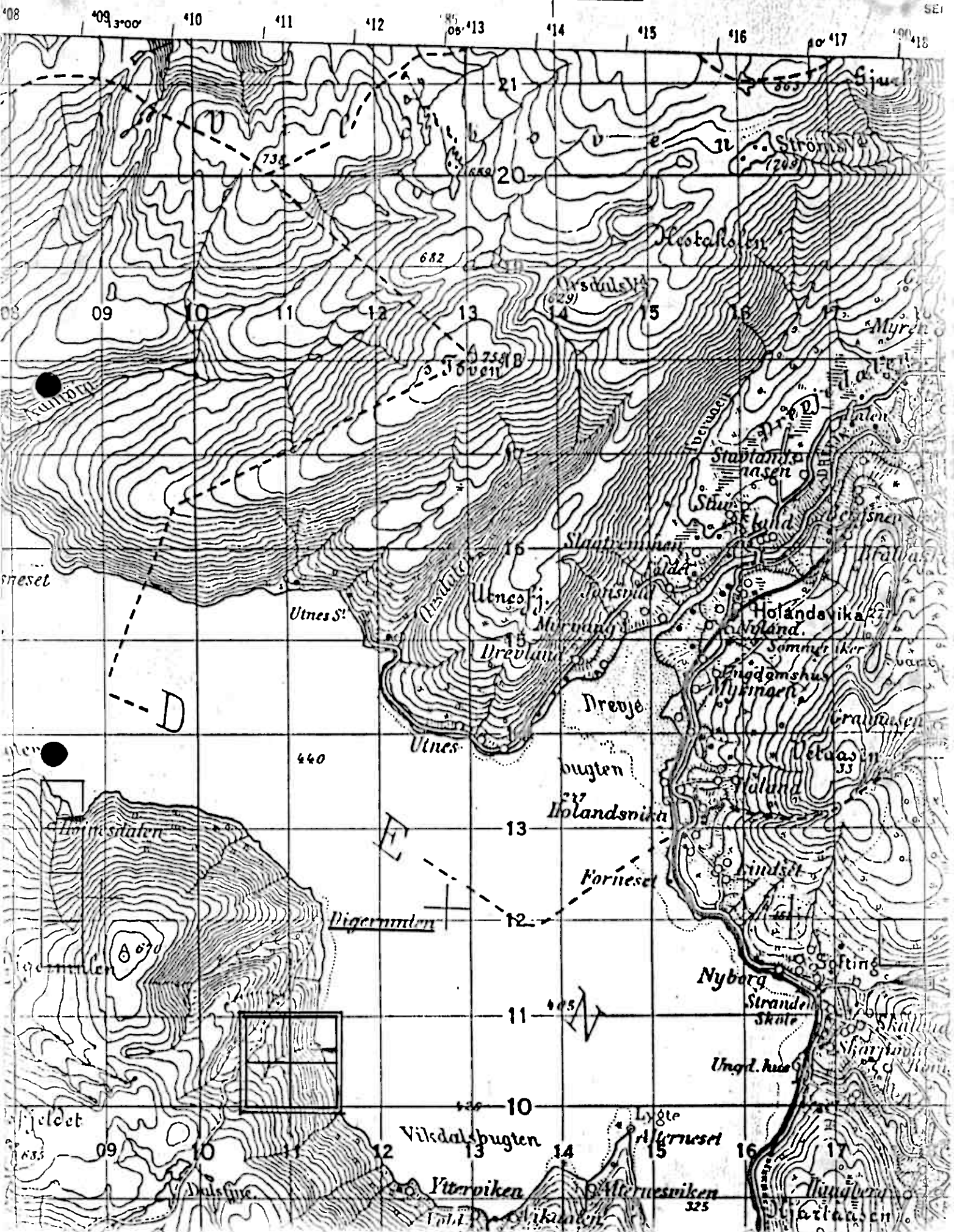
Field Comments:

Access: BOAT

Photogeology:

Est No. Follow up Samples 8

Time Requ'd 1 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1826 I MOSJØEN		DL 185 I

Claim Name UKKELFOREN No 53 Area 2,25 km² Appl.date 3.11.82

Stream Length 3 km Drainage Area 4 km² Av. Topog. MODERATE 0-500 m.

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add.
170052		<1	9/13	4/1	29/29	2	<1/<1	
170053	133	<1	13/10/12 /11	1/3/3/3	32/29/30 /29	4	<1/<1/ <1/<1	

Regional Geology: GNEISSES, MICA SCHISTS, NEARBY PORPHYRITIC GRANITE.

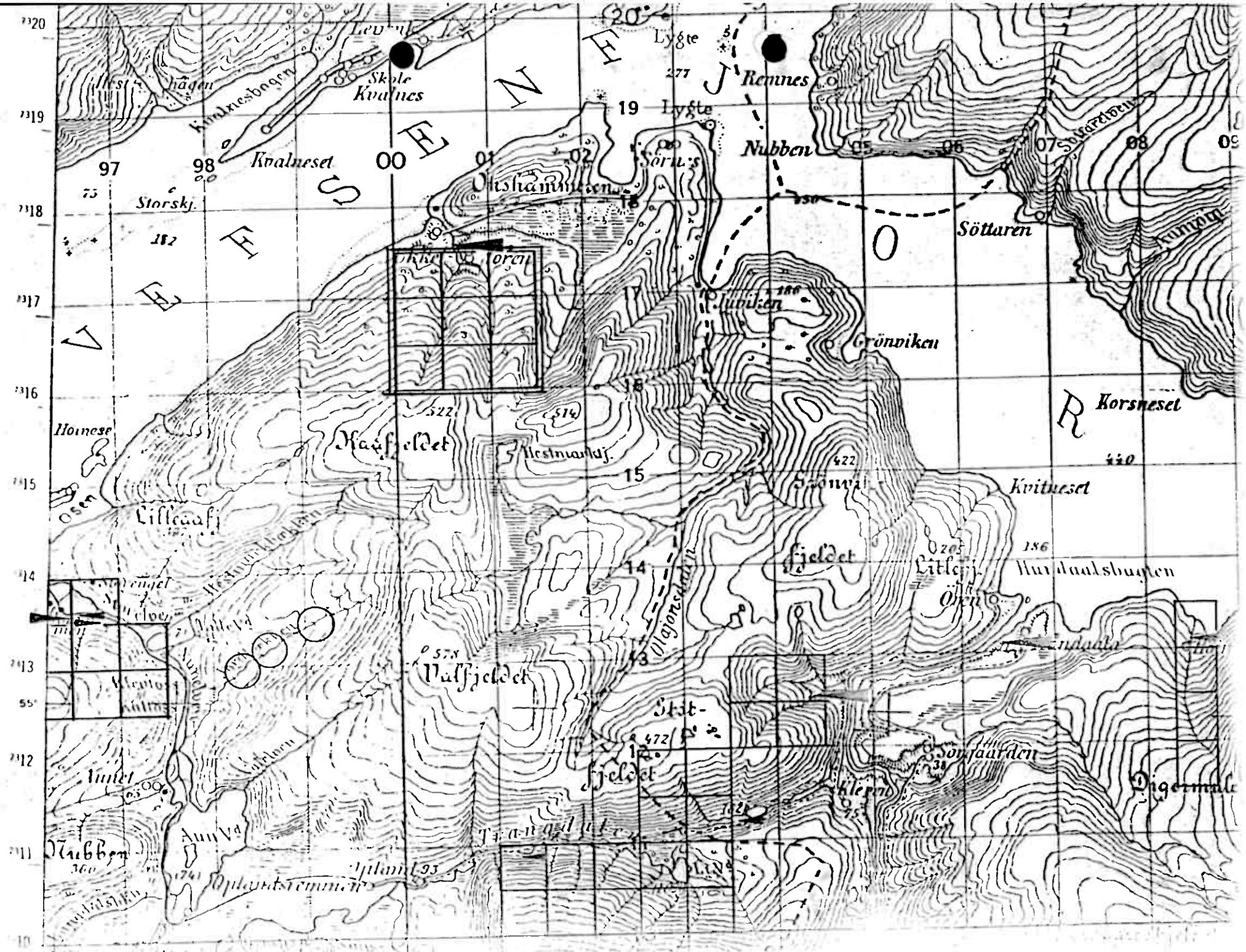
Overburden: ALLUVIAL

Field Comments:

Access: ROAD

Photogeology:

Est No. Follow up Samples 25 Time Requ'd 2 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

Claim Location:	M 711	Aerial Photos	Øko.kart
	1826 I MOSJØEN		DN 181 II, IV

Claim Name STEINDALSMOEN No 107 Area 1,5 km² Appl.date 20.12.82

Stream Length 2 km Drainage Area 1,5 km² Av. Topog.MOD. STEEP 100-460 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
110094	34	<1	25	31	95	<1		
110099		3	13	23	40	<1		
110100	40	1	23	26	88	5		
110101	70	<1	20	17	59	<1		
110102		1	23	17	113	5		
110103		<1	19	15	73	3		

Regional Geology: AMPHIBOLITE - MICASCHIST AND MARBLE

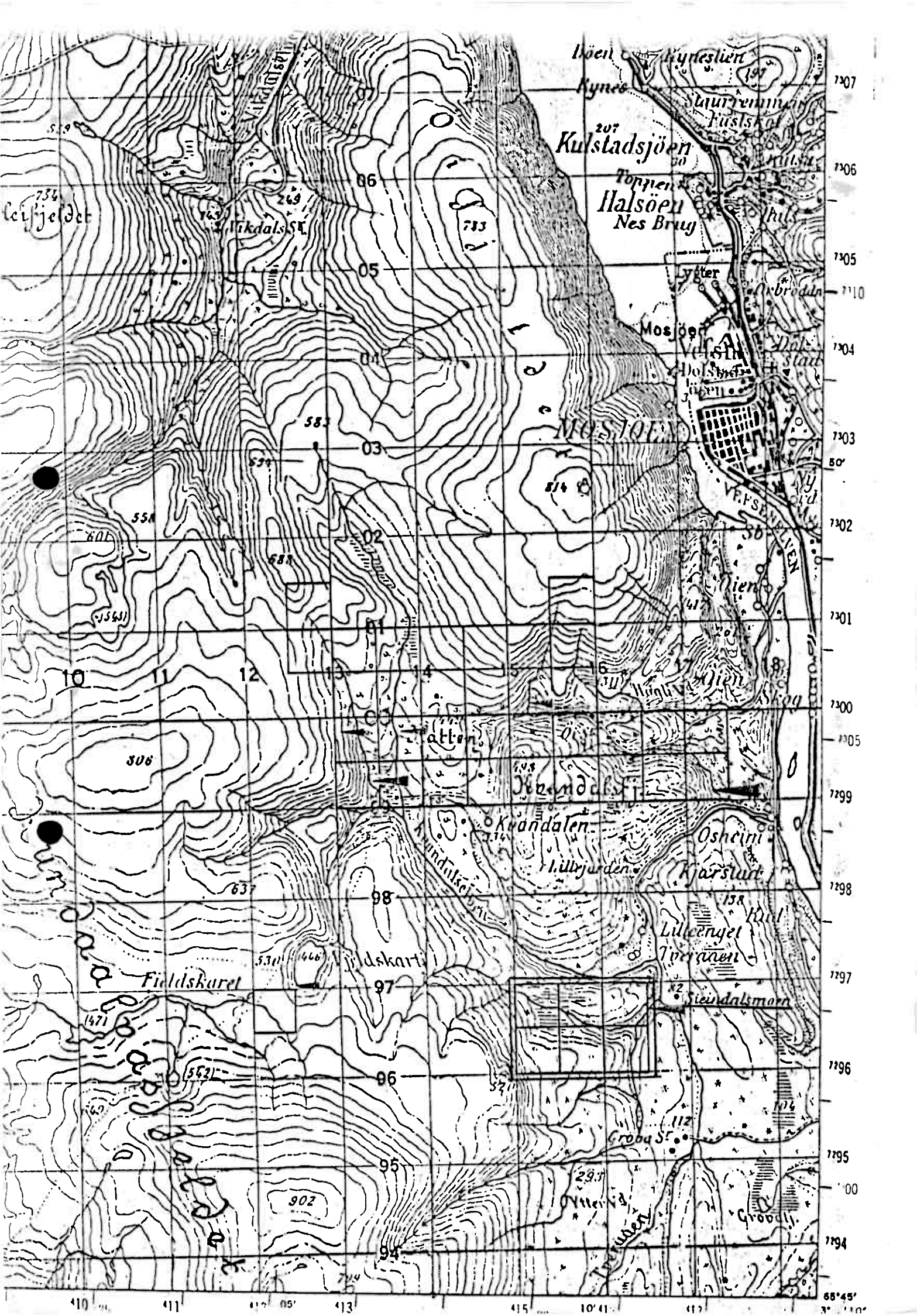
Overburden:

Field Comments: MICASCHIST AND PORPHYRITIC GRANITE

Access: 2 Km WALK FROM ROAD

Photogeology:

Est No. Follow up Samples 20 Time Requ'd 2 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1826 I MOSJØEN		DN 182 II, IV

Claim Name ØYDALEN No 106 Area 3,5 km² Appl. date 17.12.82

Stream Length 5 km² Drainage Area 4 km² Av. Topog. STEEP 30-630 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
110104		<1	20	6	52	<1		
110105	23	<1	14	9	46	<1		
110168	308	<1	18	6	31	2		
110169	549/857	<1	18	7	31	3		

Regional Geology: MICASCHISTS, NOT FAR A DISTANCE FROM AMPHIBOLITE.

Overburden:

Field Comments: NO OUTCROP. CLAY IN STREAMBED DUPLICATE OF 110168.

Access: NOT FAR FROM ROAD - APPROX. 1 km WALK

Photogeology:

Est No. Follow up Samples 50 Time Requ'd 4 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1826 I MOSJØEN		DN 182 I, III

Claim Name HATTEN No 108 Area 4,5 km² Appl.date 20.12.82

Stream Length 5 km Drainage Area 5 km² Av. Topog. MOD TO STEEP
310-680 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
110165 - Skindalsvæn	60	< 1	19	9	59	22		
110100	40	< 1	23	26	88	5		
110101	70	< 1	30	17	59	< 1		
110094	34	< 1	20	31	95	< 1		
100105 - Øygarden	23	< 1	14	9	41	< 1		

Regional Geology: AMPHIBOLITES - MICASCHIST WITH MARBLE HORIZONS

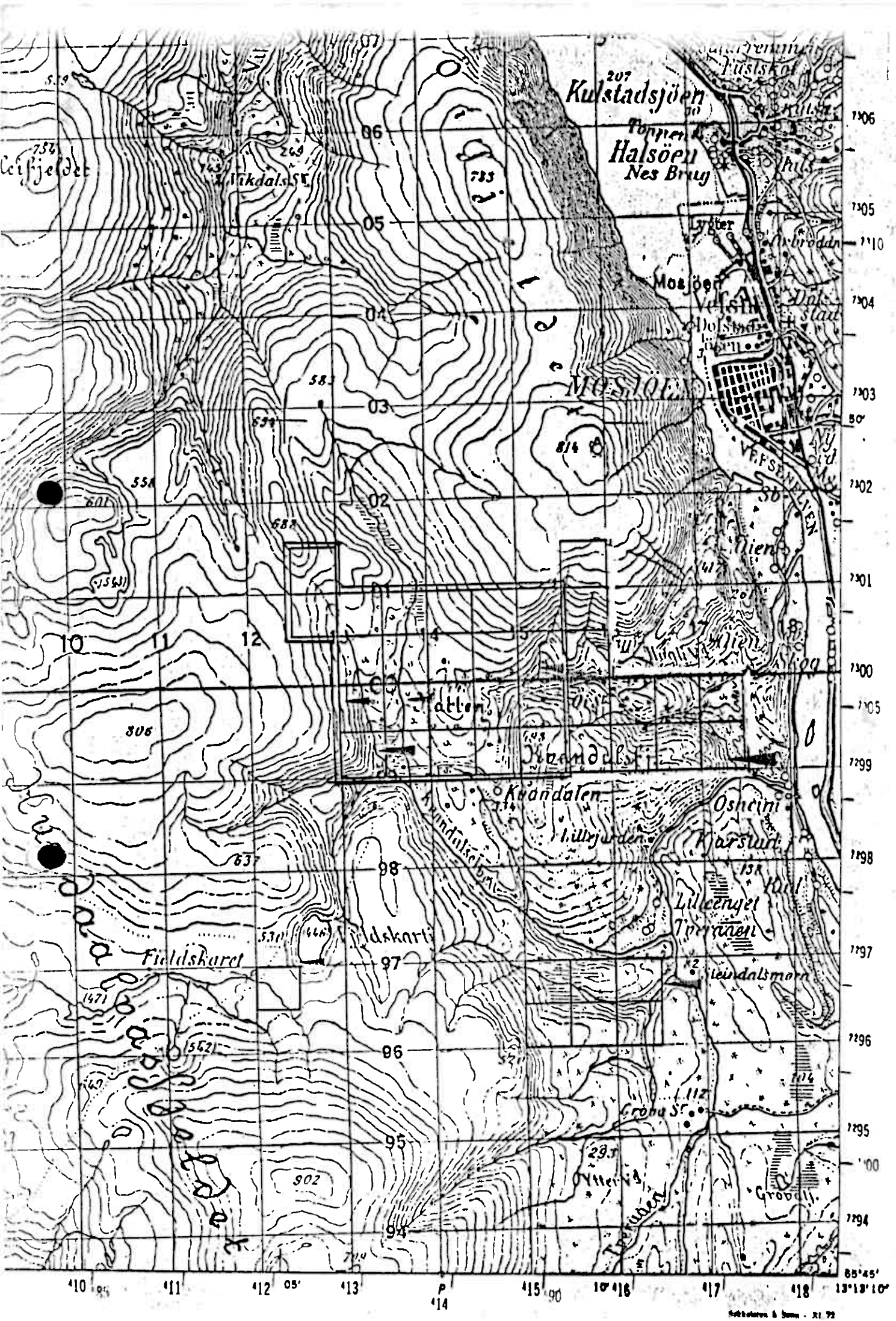
Overburden:

Field Comments: NO OUTCROP IN STREAMBED. BOULDERS OF GRANITE AND MICASCHIST.

Access: NOT FAR FROM ROAD

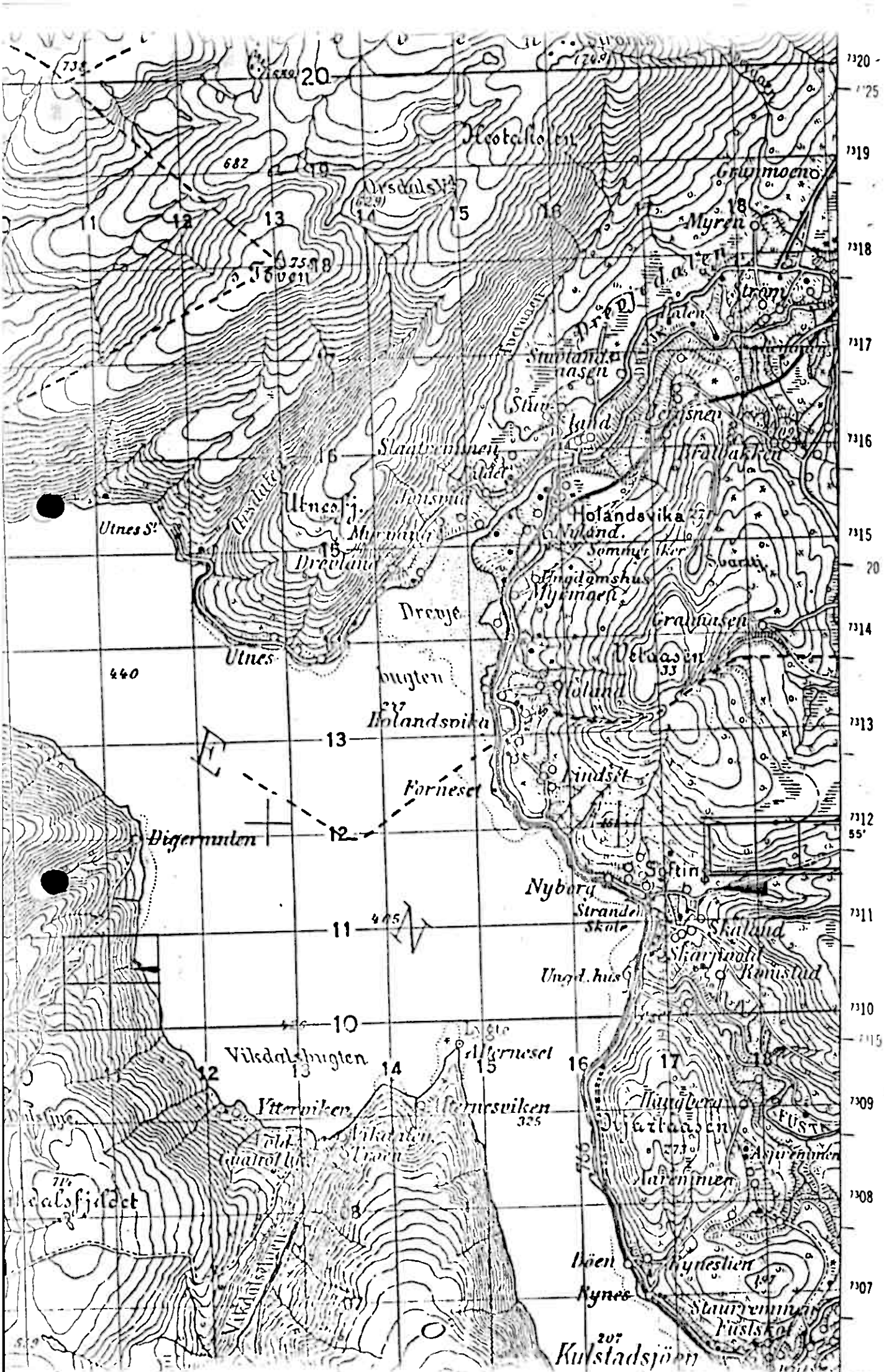
Photogeology:

Est No. Follow up Samples 40 Time Requ'd 3 Team Days



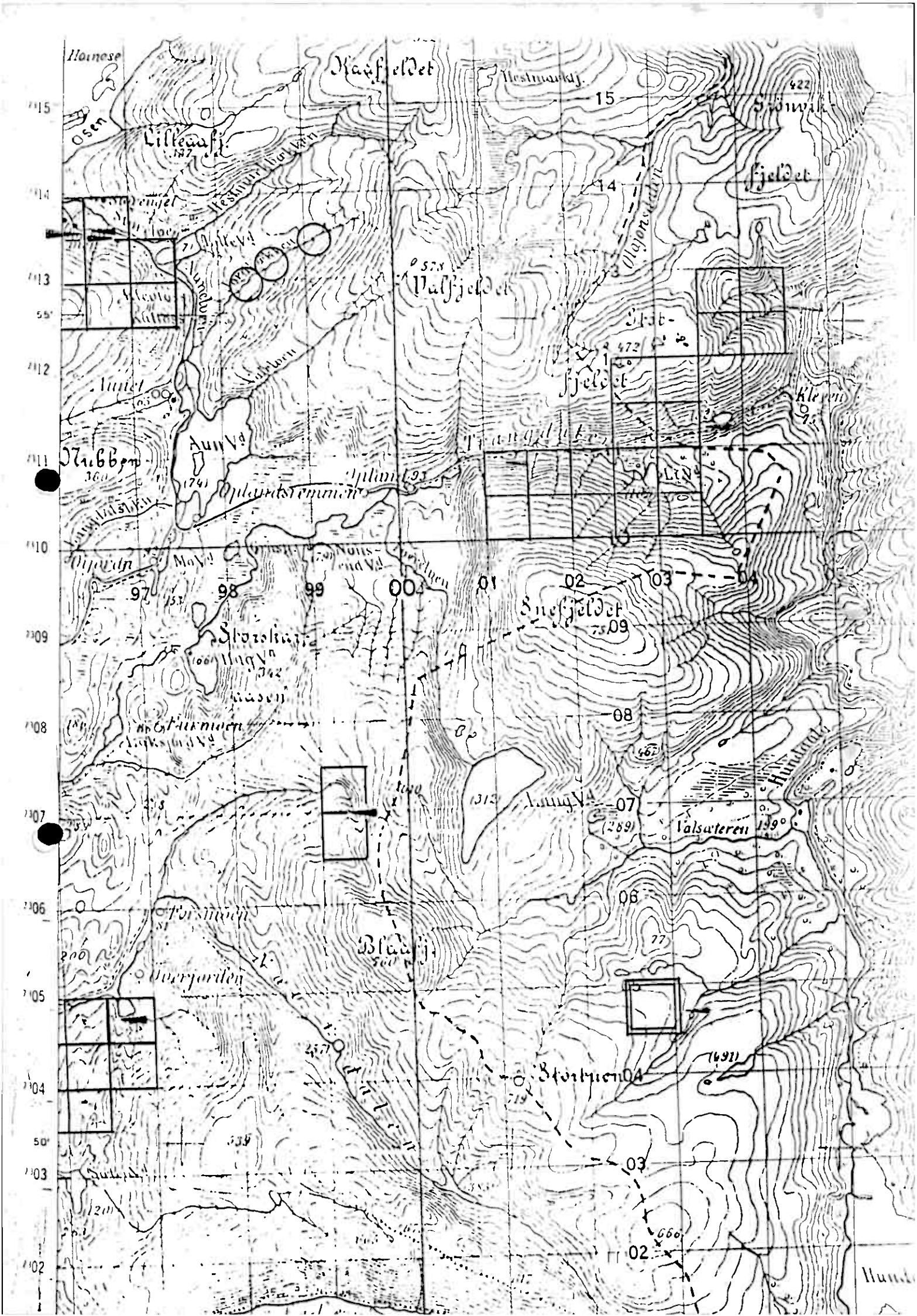
CLAIM DETAILS

Est No. Follow up Samples	10	Time Requ'd	1	Team Days
.....				



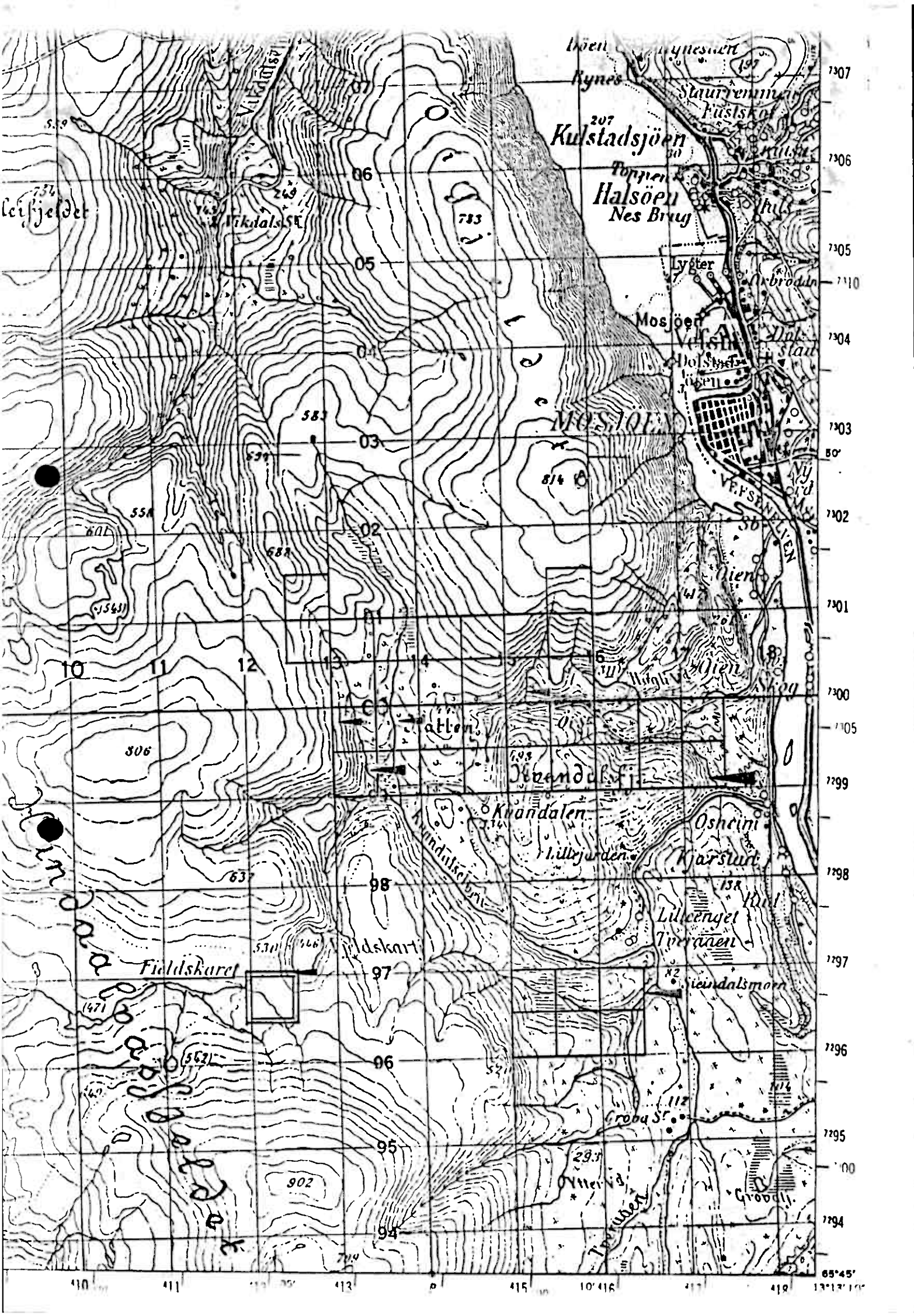
CLAIM DETAILS

Est No.	Follow up Samples	10	Time Requ'd	1	Team Days
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CLAIM DETAILS

Est No. Follow up Samples	10	Time Requ'd	1	Team Days
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CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1826 I MOSJØEN		

Claim Name HESTAKSLEN No 159 Area 1,5 km² Appl.date 9.2.83

Stream Length 1,5 km Drainage Area 1,5 km² Av. Topog. STEEP

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
970009	23	2	16	31	58	1		
970008	-	2	18	15	68	<1		

Regional Geology: MICASCHIST

Overburden:

Field Comments: BEDROCK, MICASCHIST

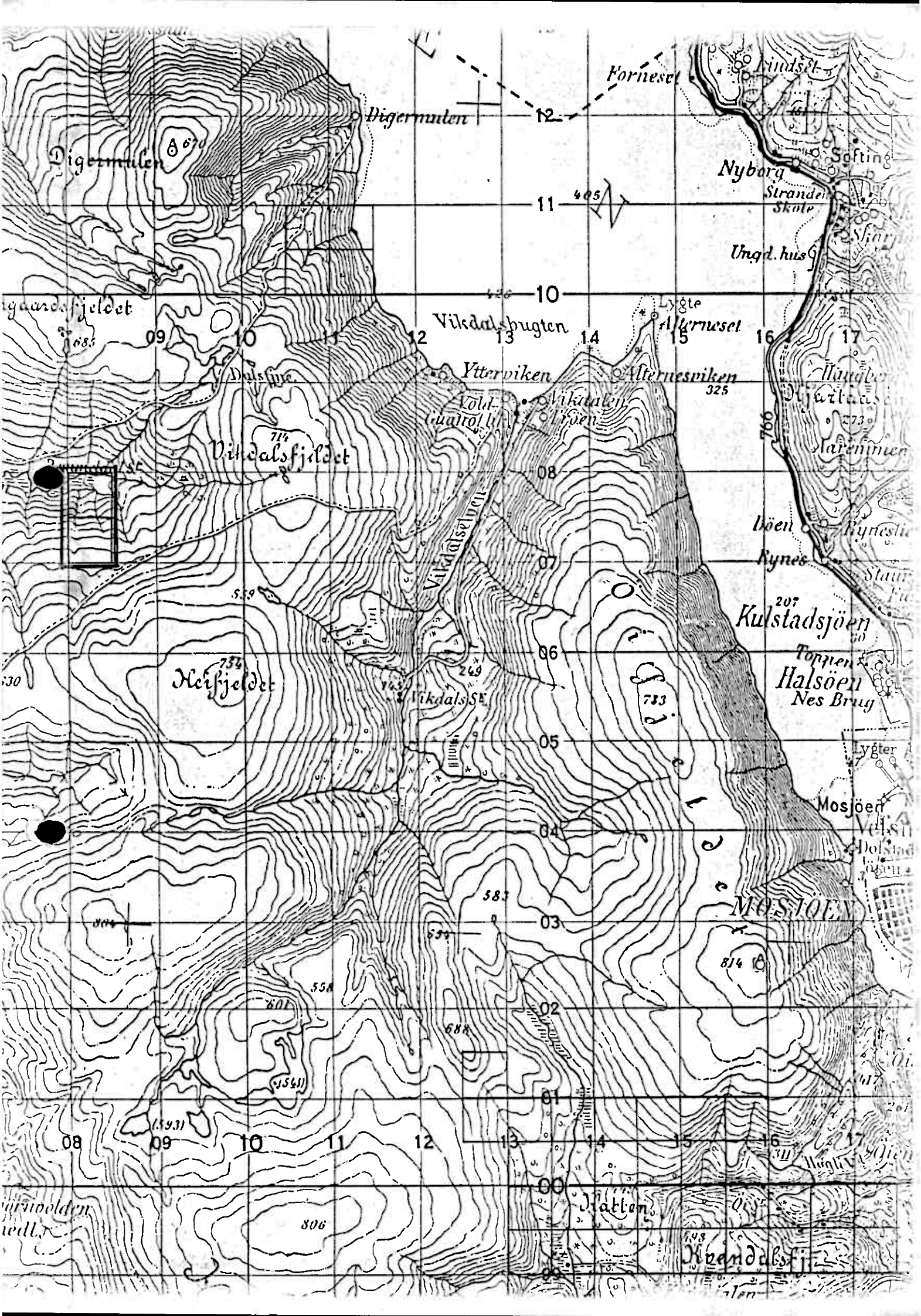
Access: 1,5 km WALK FROM ROAD

Photogeology:

Est No. Follow up Samples 10

Time Requ'd	1	Team Days
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Map Sheet Drevja

The majority of anomalies concentrate along the margins of the northern tip of Reinsfjellet and are comparable to the geological situation on map sheet Grane to the south.

Tungsten anomalies occur more frequently, reaching 185ppm in stream sediment! Strong Au anomalies also occur around the gabbroic intrusion forming Vardefjellet and the granitic dome at Hellfjellet.

The metasediments bordering these intrusives consist of marbles, dolomites, amphibolites, quartzites and micaschists. In these metasediments there occur alpine-type ultramafics, indicating deep-seated tectonically active structures. Three occurrences of magnetite may well be related to magnetite-chromite rich ultramafics.

MAP SHEET: 1926 IV DREVJA

CLAIM NAME	NO.	AREA KM ²	AU PPB	PATHFINDER ELS.	OVERBURDEN	GEOLOGY	STRUCTURES
FORSMO	162	2.25	58,6	0	+	+	0
STRAUMAN	140	0.75	188	-	+	+	
KJØNNÅSEN IV	146	0.75	160	+As +W	+	+	+
ALMDALEN A	122	8.5	9,24, 25,36 148	0	0	0	+
KJØNNÅSEN II	86	1.0	8,94,28 8,40	0	0	0	+
" I	85	1.0	55	+As +Zn	0	0	+
" III	124 0.75	35 0.75	+Zn	0	0	0	
ALMDALEN B	123	0.5	22	-	0	+	0
REINFJELLET	126	1.0	80,13	0	+	+	+
HERRINGBOTN	125	1.0	16	0	+	+	-
HØGREMMEN	147	.0	116	0	+	+	+
MJAVATNET	141	4.25	69	0	0	0	-
STORVIK	118	0.25	36	0	+	0	-
BJØRKNES	117	1.75	345,22	0	0	+	0
ROKÅSEN	134	0.5	84	+As +W	0	+	0
UTGARD	103	1.0	45	+W	0	+	-
ALSGARDEN	102	0.5	35	0	0	+	+
ÅBOSJORDA	119	0.25	170	0	0	0	-
MARKABYGDA	120	1.0	43	0	0	+	0
REINFJELL	79	1.0	35	0	0	0	+
JAMTFJELLDALSTJ.	71	1.0	6	0	0	0	+
HERRING	121	1.5	245	0	0	0	+

HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1926 IV DREVJA	B 014	

Claim Name FORSMO No ..162.. Area ..2,25. km² Appl.date .09.02.83.

Stream Length 2,5 km Drainage Area ..2,5. km² Av. Topog. GENTLE-STEEP.....

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
970013	58	2	17	11	41	3		
1800250		<1	20	8	57	2		
1800251		<1	4	17	22	<1		
180292		<1	5	7	29	5		
180288		1	11	19	32	<1		
180287		<1	13	12	26	<1		
180294	6	<1	4	7	56	1		

Regional Geology: GRANODIORITE WITH SURROUNDING MICASCHIST AND MARBLES

Overburden:

Field Comments: (970013) BOULDERS OF GRANITE IN STREAMBED

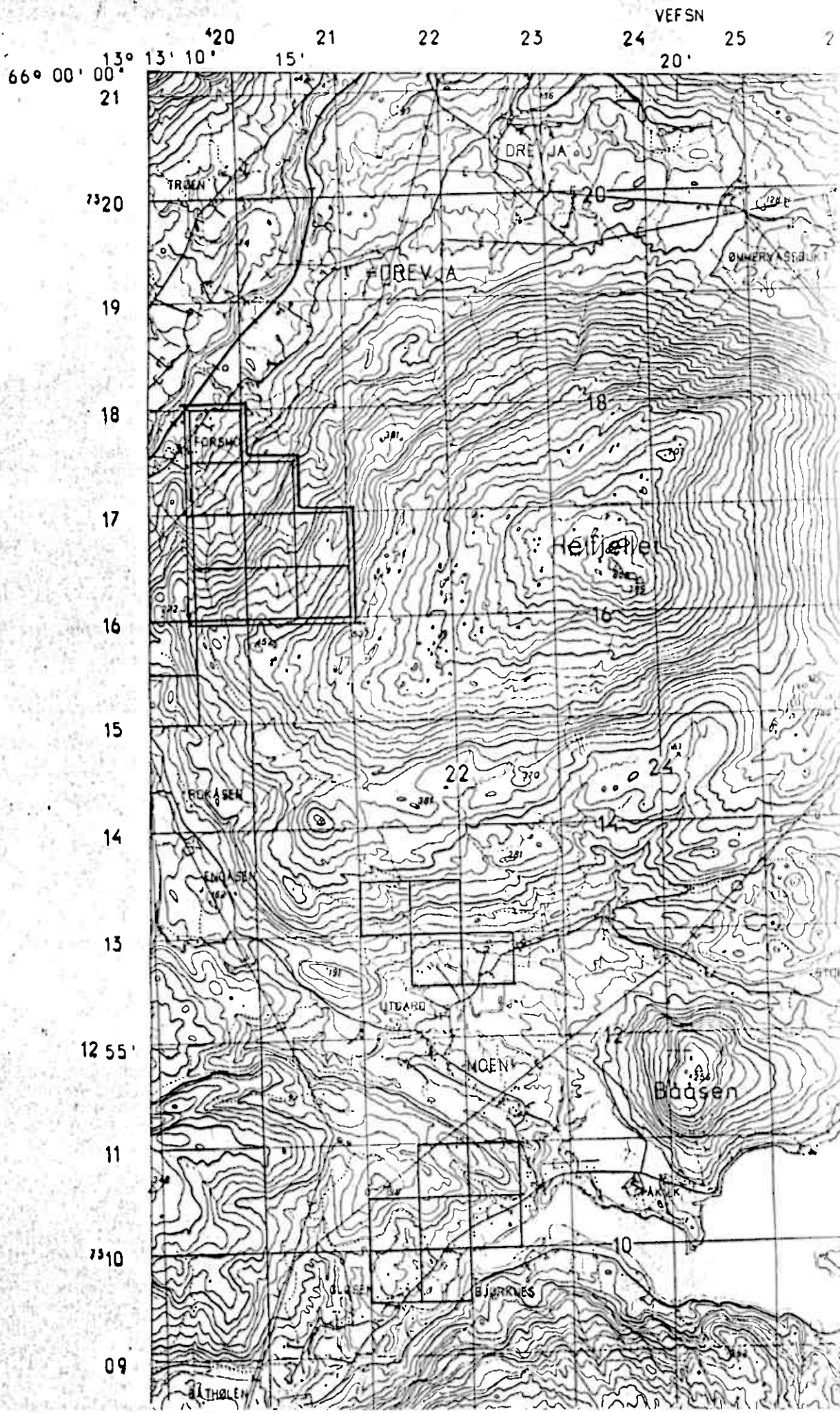
Access: WALK FROM ROAD

Photogeology:

Est No. Follow up Samples 20-30

Time Requ'd 2-3 Team Days

NORGE - NORWAY 1:50000



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1926 IV DREVJA	B016	DP 185 II

Claim Name STRAUMAN No 140 Area 0,75 km² Appl.date 24/1-83

Stream Length 0,75 km Drainage Area 2 km² Av. Topog. STEEP

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
180268	188	<1	12	4	32	<1		
180273		<1	8	5	30	1		

Regional Geology: MICA SCHISTS AND GNEISSES. THIN MARBLE SEQUENCE NEARBY.

Overburden:

Field Comments: BEDROCK: GARNET BEARING MICAGNEISS. STREAM NOT ON RIGHT PLACE ON MAP.

Access:

Photogeology:

Est No. Follow up Samples 10

Time Requ'd 1 Team Days

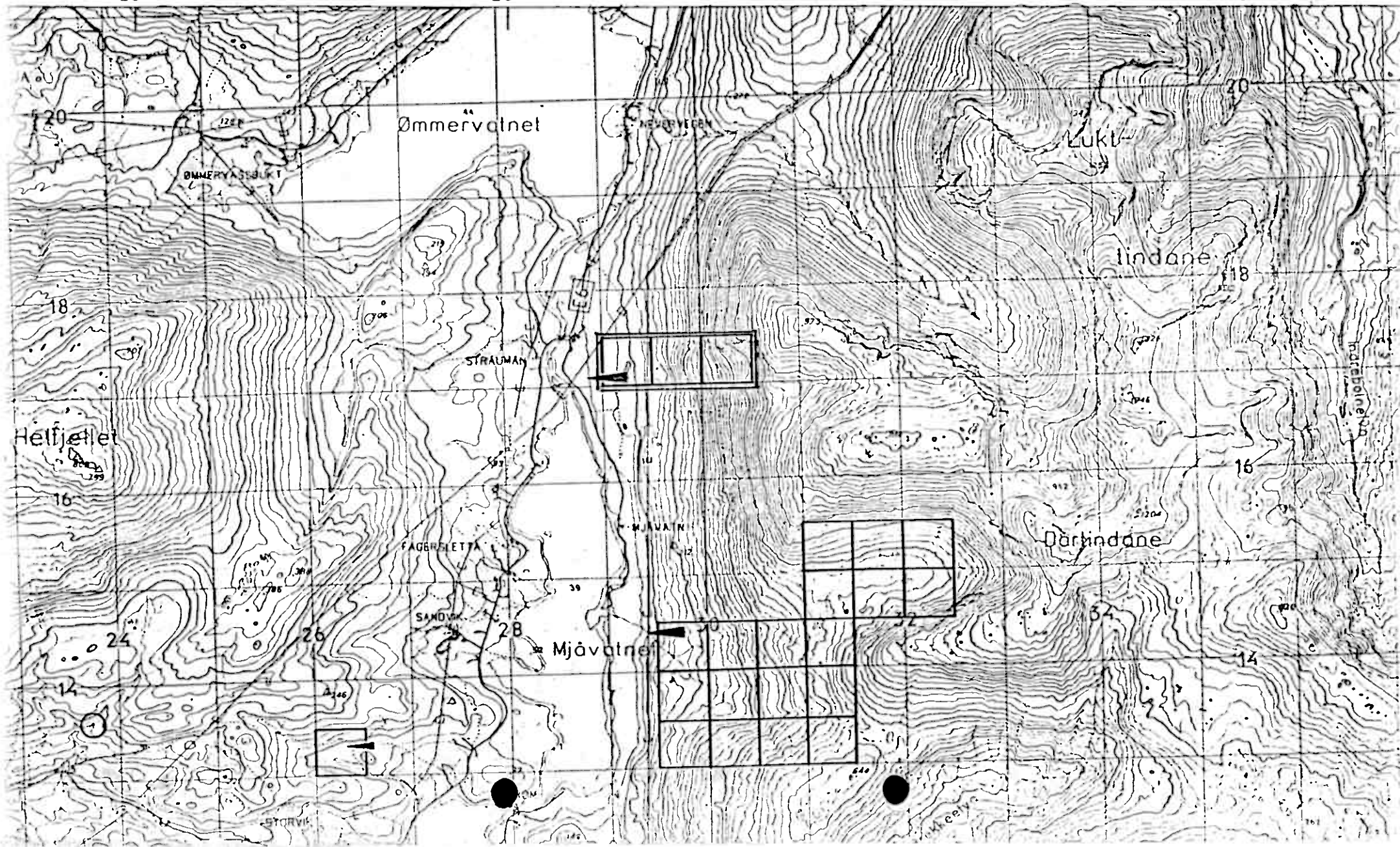
000

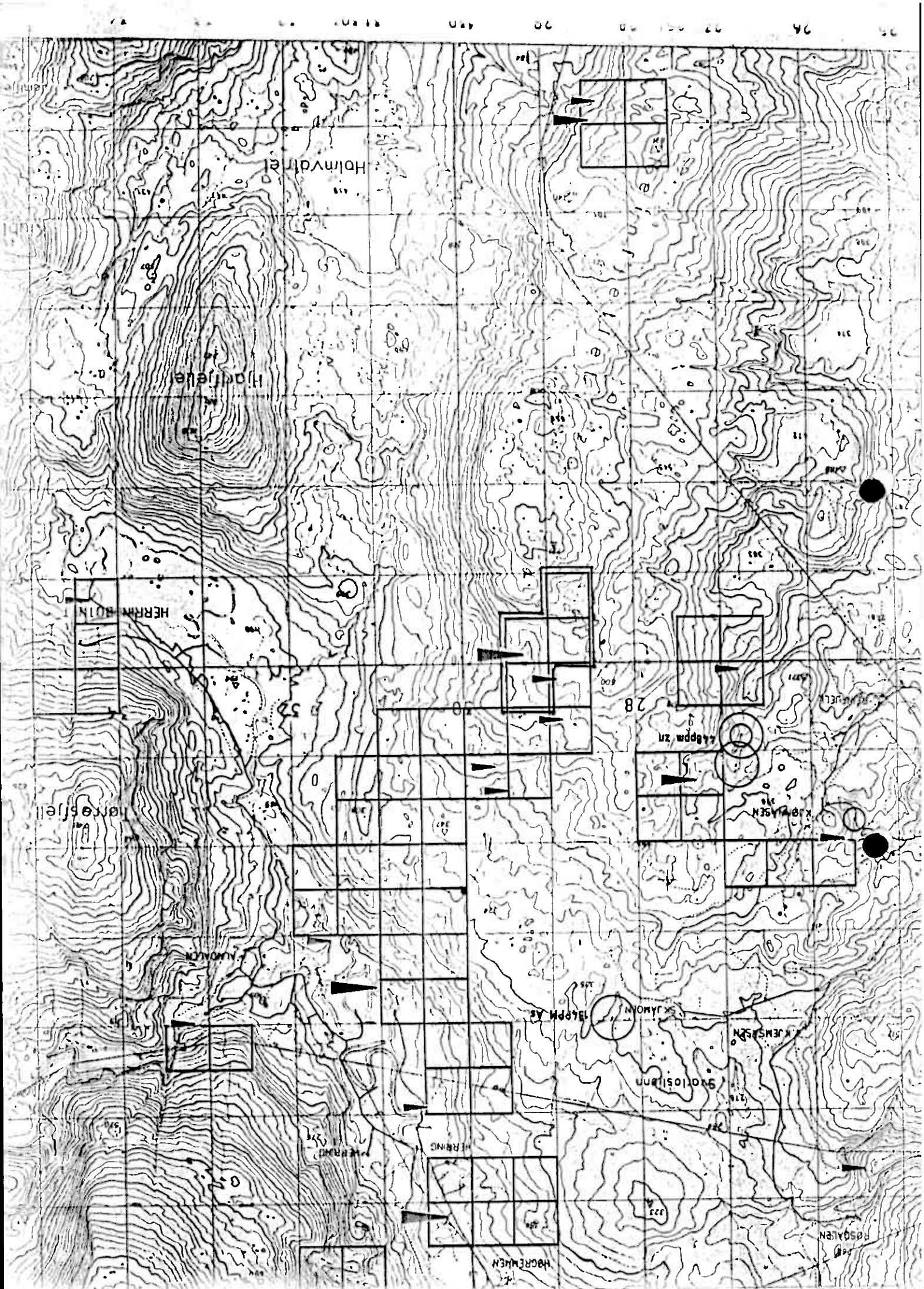
DREVJA

VEFSN

NORDLAND FYLKE

24 25 26 27 28 29 30 31 32 33 34 35 36 37
20' 25' 30' 35'





HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1926 IV DREVJA	D 018	DP 183 IV, 182 II

Claim Name ALMDALEN 'A' No 122 Area 8,5 km² Appl.date 4.1.83

Stream Length 12 km Drainage Area 10 km² Av. Topog MOD TO STEEP
40-520 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
030156		<1	15	11	66	<1		
030157	9	<1	4	10	28	<1		
030158	24	<1	5	14	27	<1		
030159		<1	7	12	28	<1		
030168		<1	6	15	31	<1		
030169		<1	5	14	19	<1		
030171		4	12	17	95	<1		
180183		<1	12	13	64	<1		
180184		<1	7	5	22	<1		
180185	25/14	<1	12	12	48	<1		
180200		7	21	12	91	<1		
180202		2	17	23	108	<1		
180203		<1	21	52	48	<1		
180204		<1	22	12	60	2		
180210		<1	10	23	65	<1		
180211	36	<1	17	9	23	<1		
180212		<1	26	17	61	<1		
180213	148	<1	8	10	53	<1		

Regional Geology: GRANITE, MARBLE

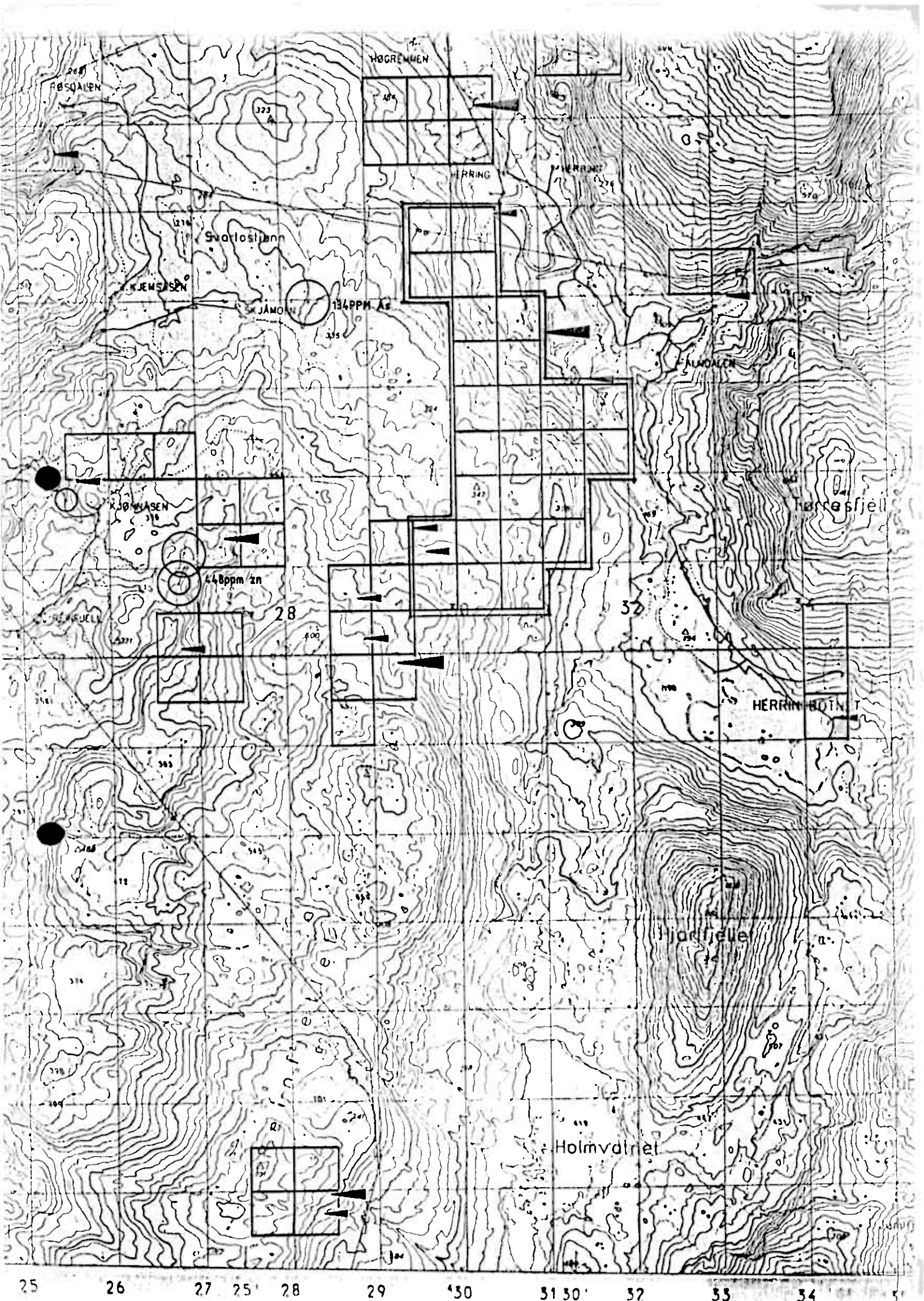
Overburden: ALLUVIUM SOIL

Field Comments:

Access:

Photogeology:

Est No. Follow up Samples 100 Time Requ'd 7 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1926 IV DREVJA	D 018	P 182 IV, Q 182 II

Claim Name KJØNNÅSEN II No 86 Area 1 km² Appl.date 25.11.82

Stream Length 2,5 km Drainage Area 2 km² Av. Topog MODERATE
380-600 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
030156		<1	15	11	66	<1		
030157	9	<1	4	10	28	<1		
030158	24	<1	5	14	27	<1		
030159		<1	7	12	28	<1		
030165		<1	3	8	18	<1		
030166	8	<1	7	16	24	2		
030167	8	<1	6	18	37	1		
180156	44	<1	5	11	66	<1		

Regional Geology: WHITE GRANITE

Overburden: PEAT BOG, SOIL

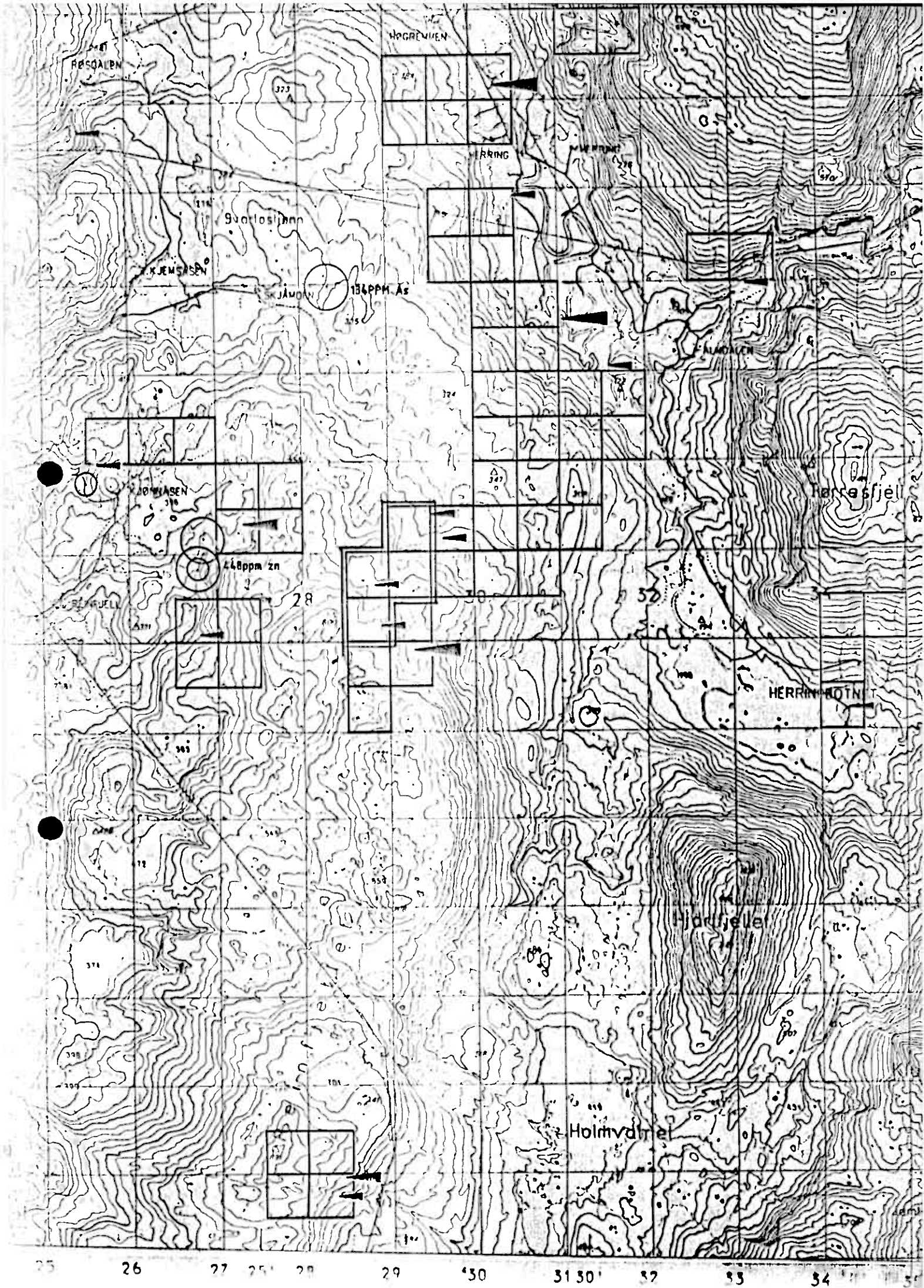
Field Comments: GRANITE PARTIALLY FOLIATED IN PLACES

Access:

Photogeology:

Est No. Follow up Samples 20

Time Requ'd 2 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1926 IV DREVJA	D 017	P 182 IV, Q 182 III

Claim Name KJØNNÅSEN I No 85 Area 1 km² Appl.date 25.11.82

Stream Length 2,5 km Drainage Area 1,5 km² Av. Topog. MOD TO STEEP
350-500 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add.
030149		7	21	16	468	<1	<1	
030150		6	5	7	49	1	<1	
030151	55	<1	6	6	15	1	<1	
030152		2	34	11	42	<1	<1	

Regional Geology: WHITE GRANITE AND MICA SCHIST

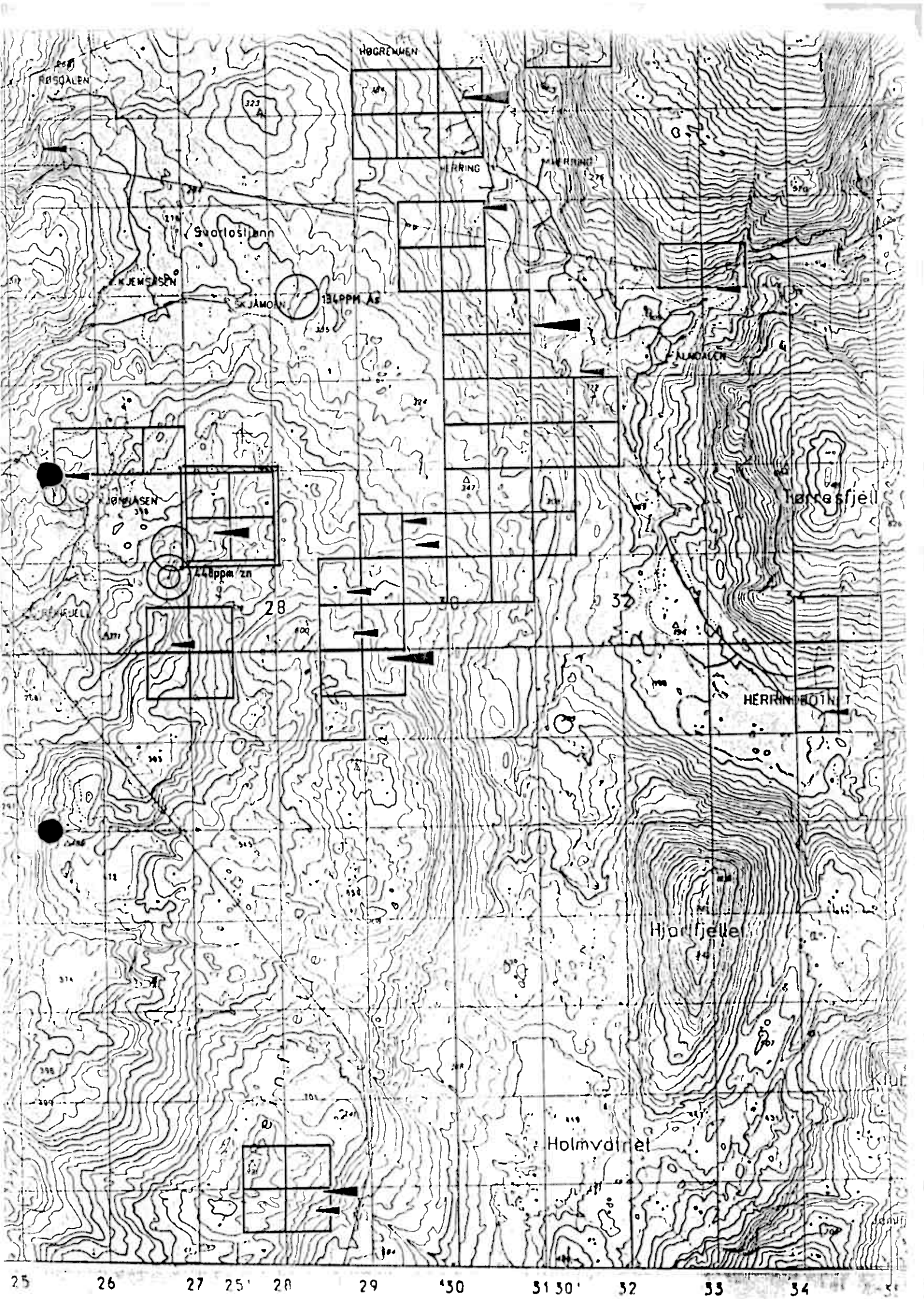
Overburden: PEAT BOG

Field Comments:

Access:

Photogeology:

Est No. Follow up Samples 20 Time Requ'd 2 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1926 IV DREVJA	D 017	D 0 182 IV

Claim Name KJØNNÅSEN III No 124 Area 0,75 km² Appl.date 4.1.83

Stream Length 1,5 km⁶ Drainage Area 1,5 km² Av. Topog. GENTLE 320-440 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
180096		3	26	5	234	<1		
180097	35	<1	18	16	113	<1		
180098		<1	19	7	47	<1		

Regional Geology: WHITE GRANITE AND MICASCHIST

Overburden:

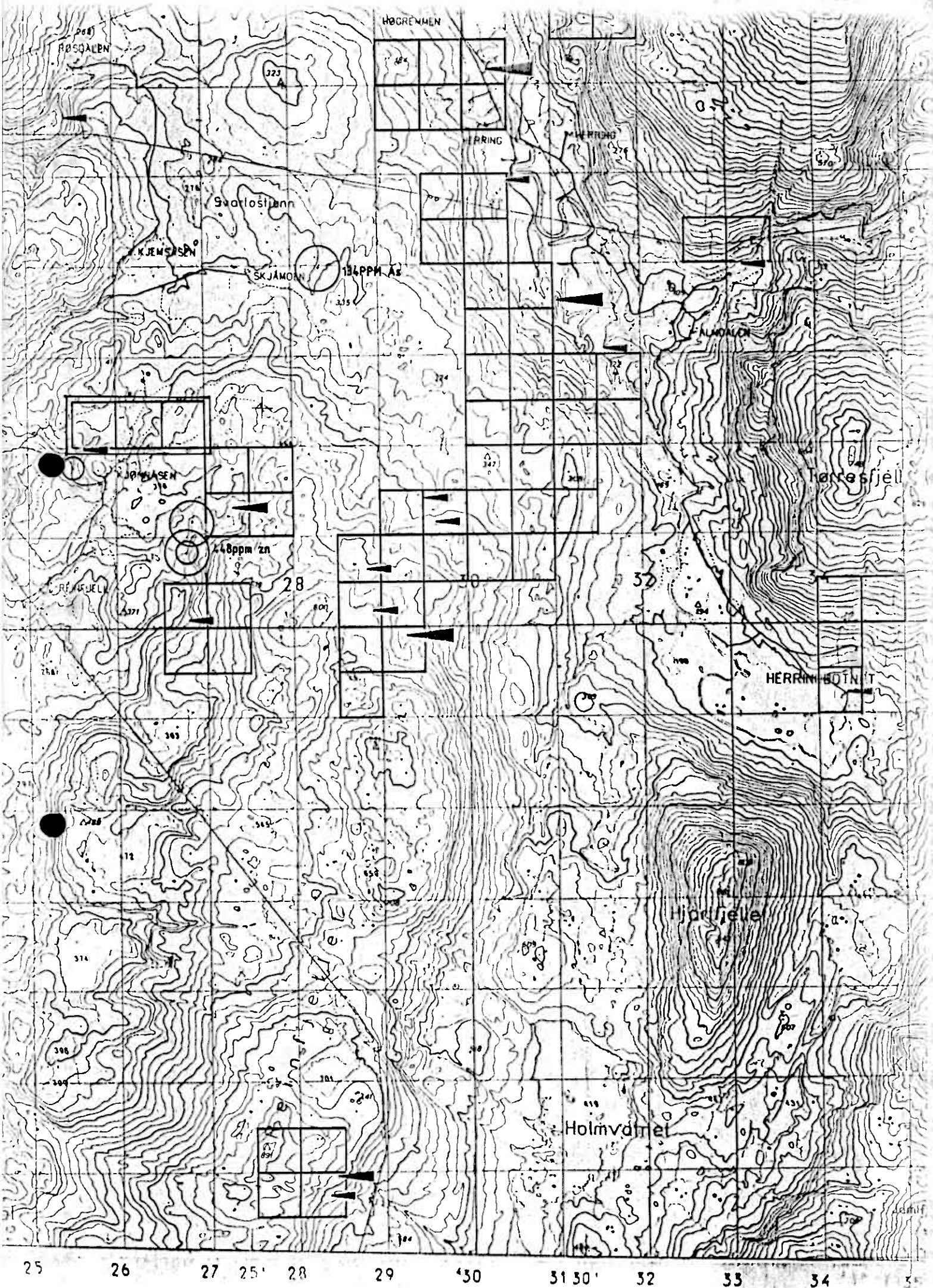
Field Comments: 180096 5 m FROM ROAD

Access:

Photogeology:

Est No. Follow up Samples 20

Time Requ'd 2 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1926 IV DREVJA	D 018	D Q 183 VI

Claim Name ALMDALEN 'B' No 123 Area 0,5 km² Appl.date 4.1.83

Stream Length 0,5 km Drainage Area 0,5 km² Av. Topog. STEEP 160-340 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
180198	22	<1	16	9	43	<1		
180199		<1	33	6	44	<1		
180360		2	18	7	0	<1		

Regional Geology: GRANODIORITE AND MICASCHIST

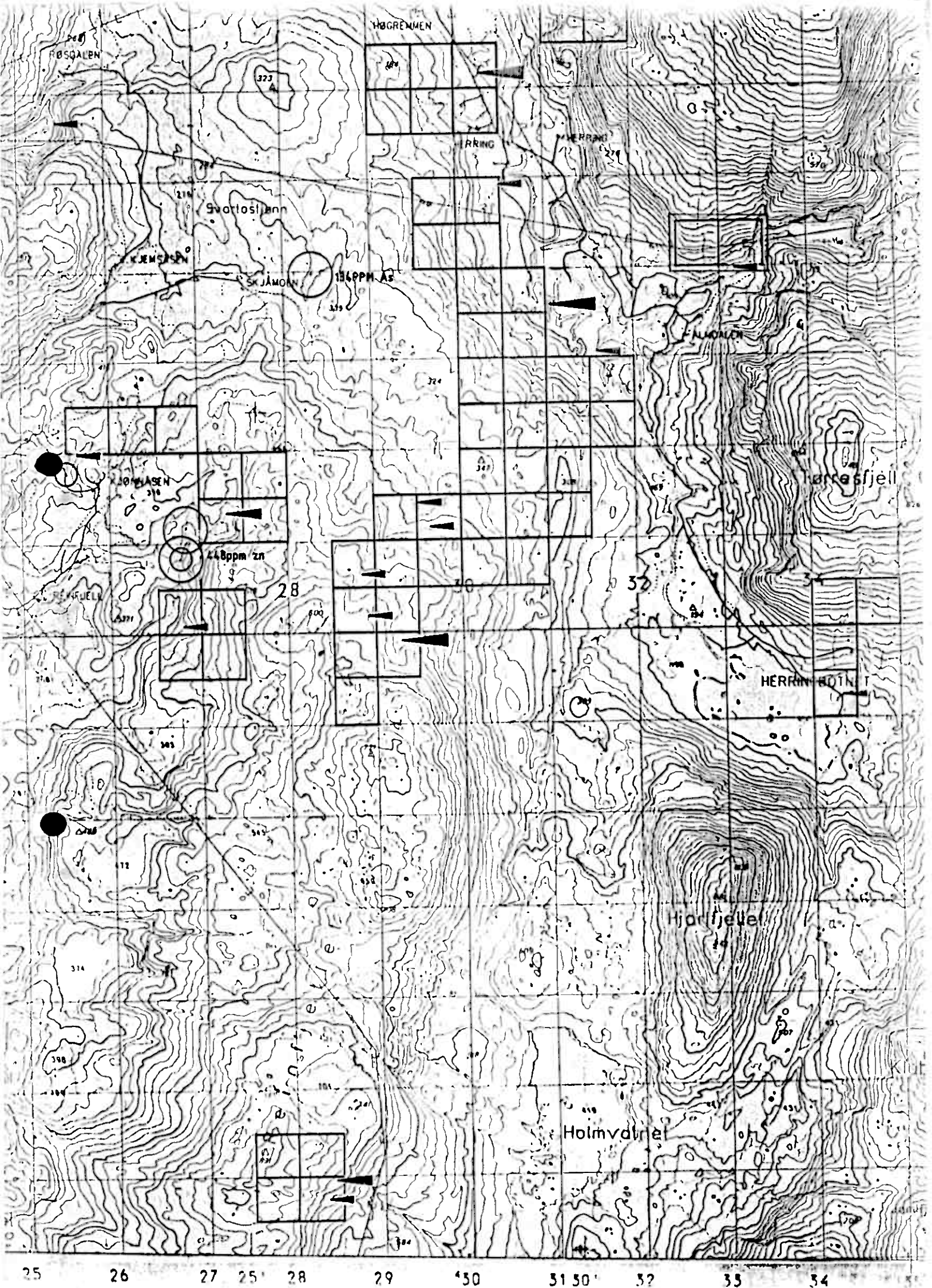
Overburden:

Field Comments: DUPLICATE TAKEN; NO 180199

Access: ?

Photogeology:

Est No. Follow up Samples 10 Time Requ'd 1 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1926 IV DREVJA	E 019	D Q 181 III

Claim Name REINFJELLET No 126 Area 1 km² Appl.date 4.1.83

Stream Length 1 km Drainage Area 1 km² Av. Topog. MODERATE 650-830 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
180138		2	18	18	39,60	<1		
180139	80	2	14	5	134	<1		
180140	13	2	26	14	66	<1		
180141		1	9	30	43	3		
180142		<1	14	20	39	<1		

Regional Geology: GRANITE WITH PEGMATITE VEINS

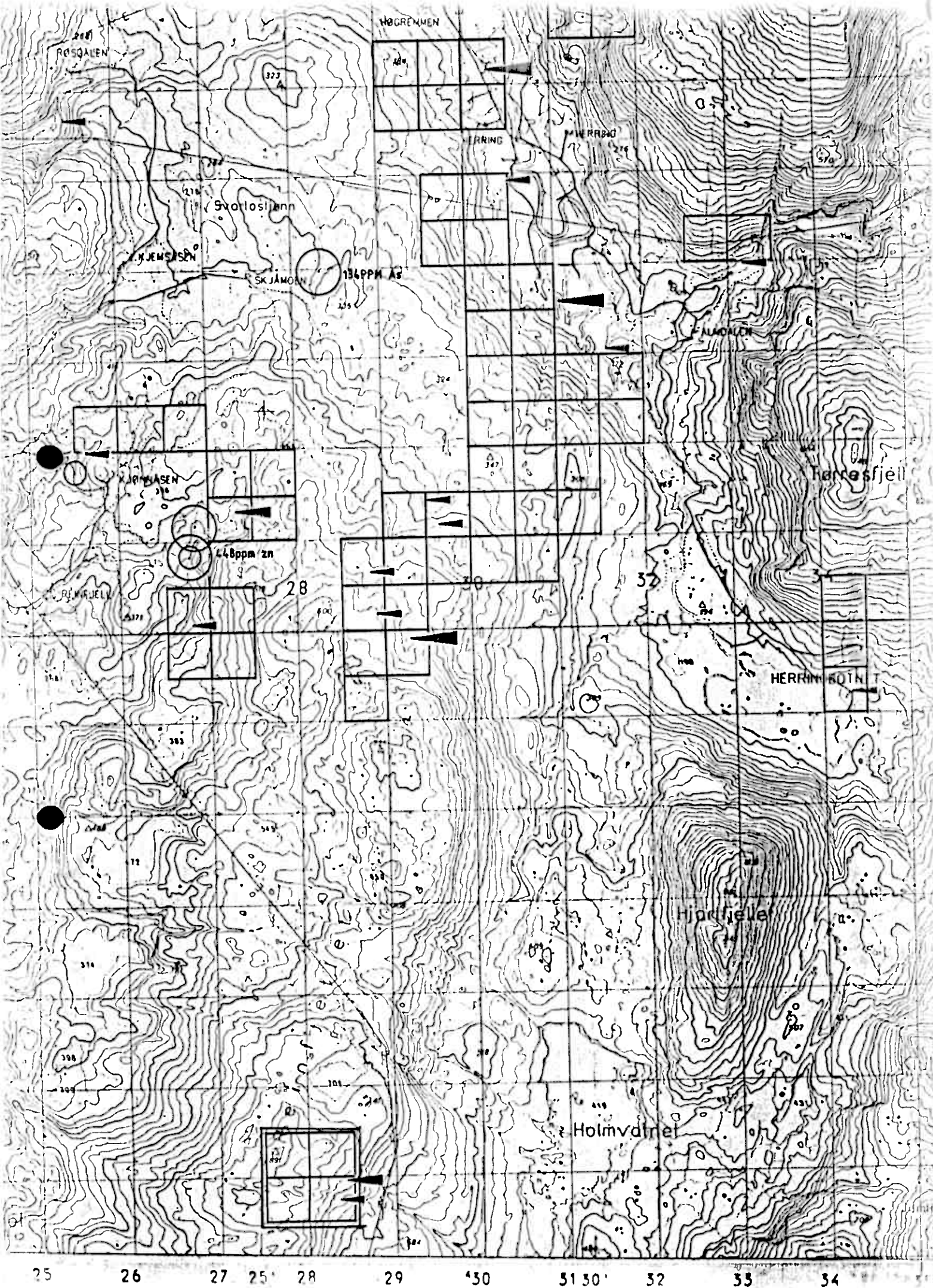
Overburden: BOULDER FIELD

Field Comments: 1 SAMPLE TAKEN JUST BENEATH ICE

Access:

Photogeology:

Est No. Follow up Samples 10 Time Requ'd 1 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1926 IV DREVJA	D 018	DQ 182 IV

Claim NameHERRINGBOTTEN..... No ...125... Area ...1... km² Appl.date ...4.1.83

Stream Length 1,5 km² Drainage Area 1 km² Av. Topog. MOD. STEEP
190-500 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
180192	16	<1	9	7	74	5		
180197		<1	20	13	2	<1		

Regional Geology: MICA GNEISS WITH GRANITE VEINING

Overburden:

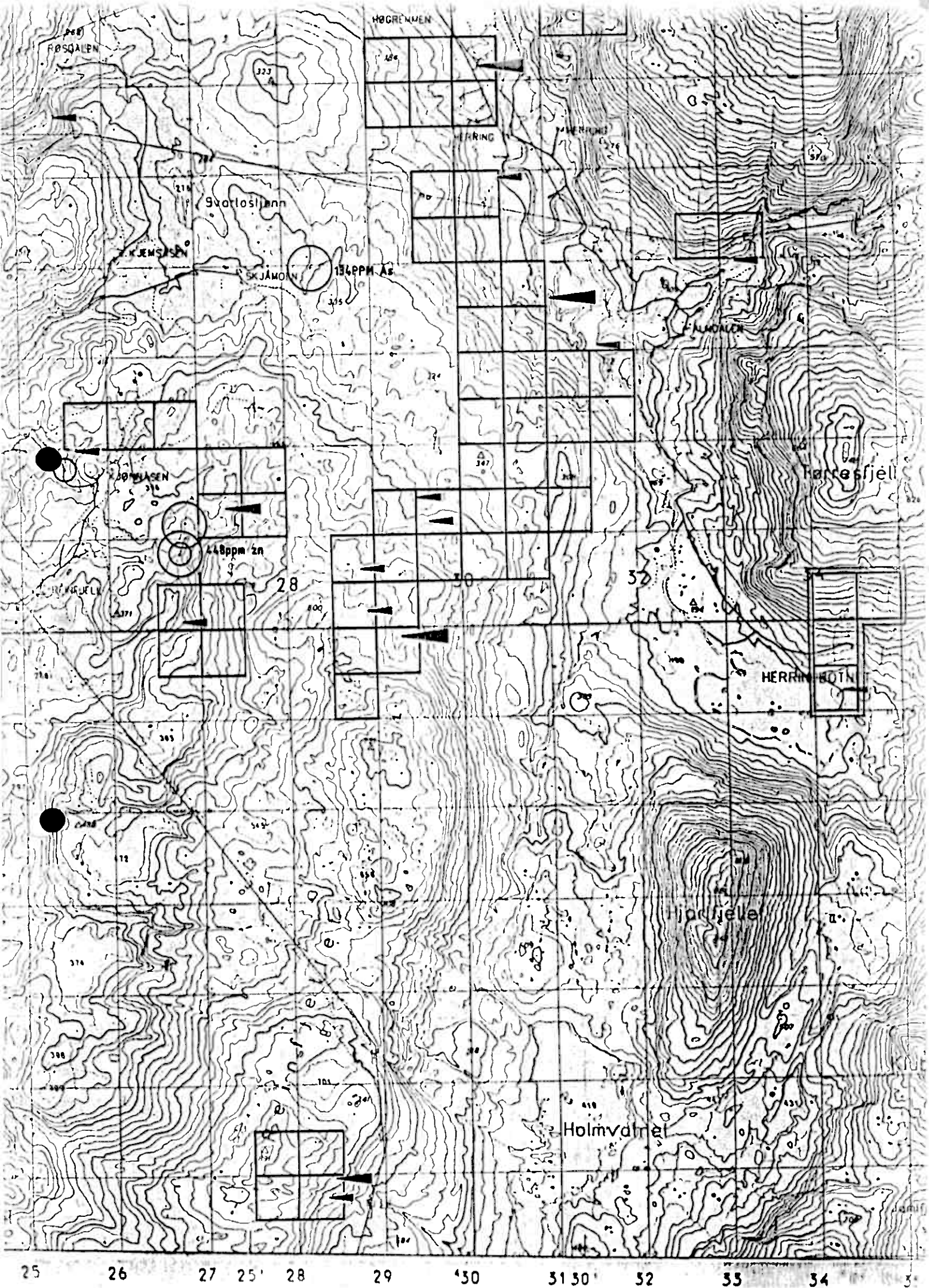
Field Comments: CONTAMINATION OF 180192 - FARM WASTE + ROAD

Access:

Photogeology:

Est No. Follow up Samples 20

Time Requ'd 2 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1926 IV DREVJA	D 018	DP 183 II

Claim Name HØGREMMEN No 147 Area 1 km² Appl.date 24.1.83

Stream Length 1 km Drainage Area 2 km² Av. Topog. MOD/STEEP

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
180361	116	2	16	9	49	<1		

Regional Geology: MICASCHIST - GRANODIORITE, Quartzite - LENSES PRESENT IN MICASCHISTS

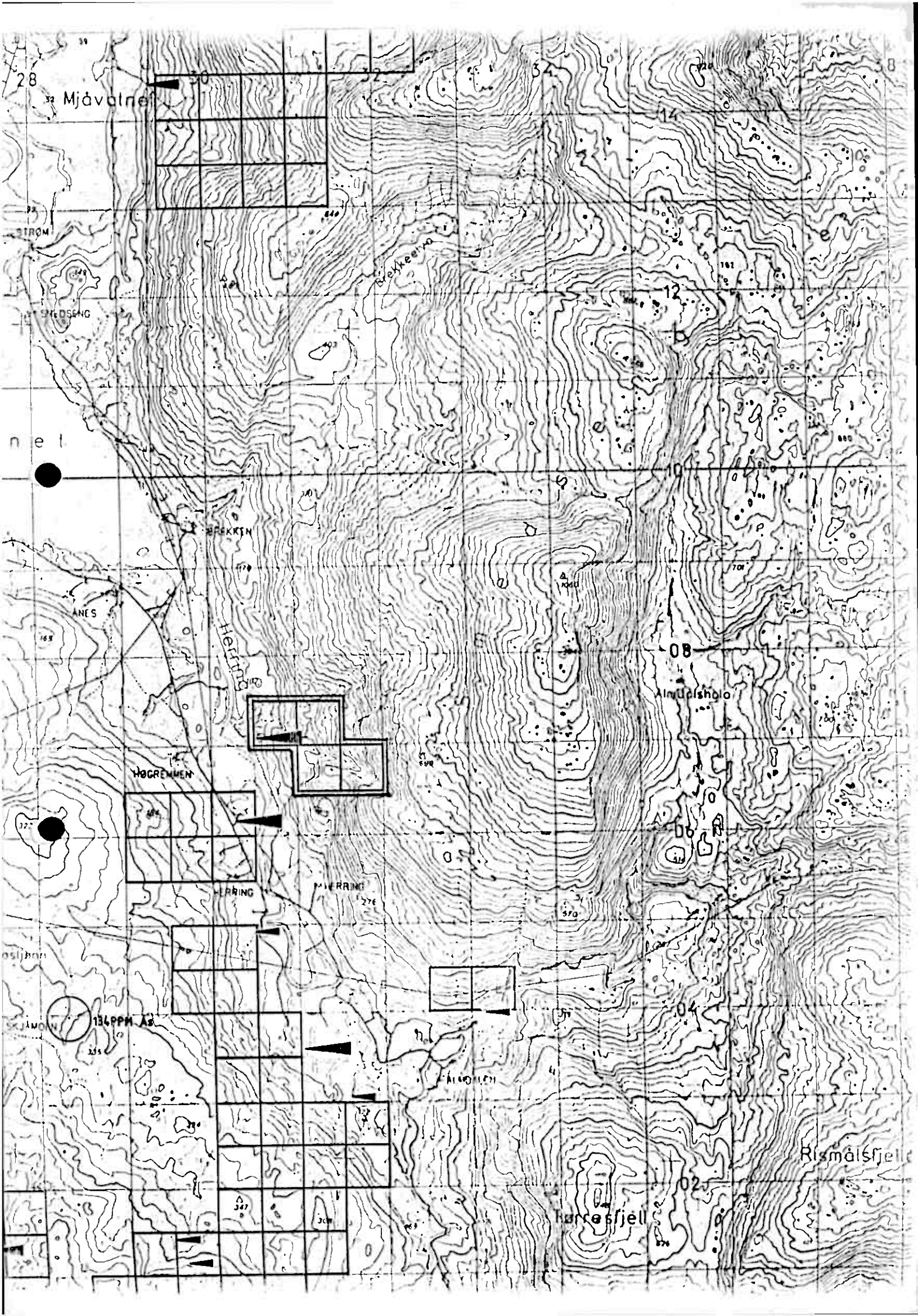
Overburden:

Field Comments: CONTAMINATION POSSIBLE FROM GRAZING AREA

Access:

Photogeology:

Est No. Follow up Samples 10-15 Time Requ'd 1-2 Team Days



CLAIM DETAILS

Est No. Follow up Samples	20-30	Time Requ'd	2-3	Team Days
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DREVJA

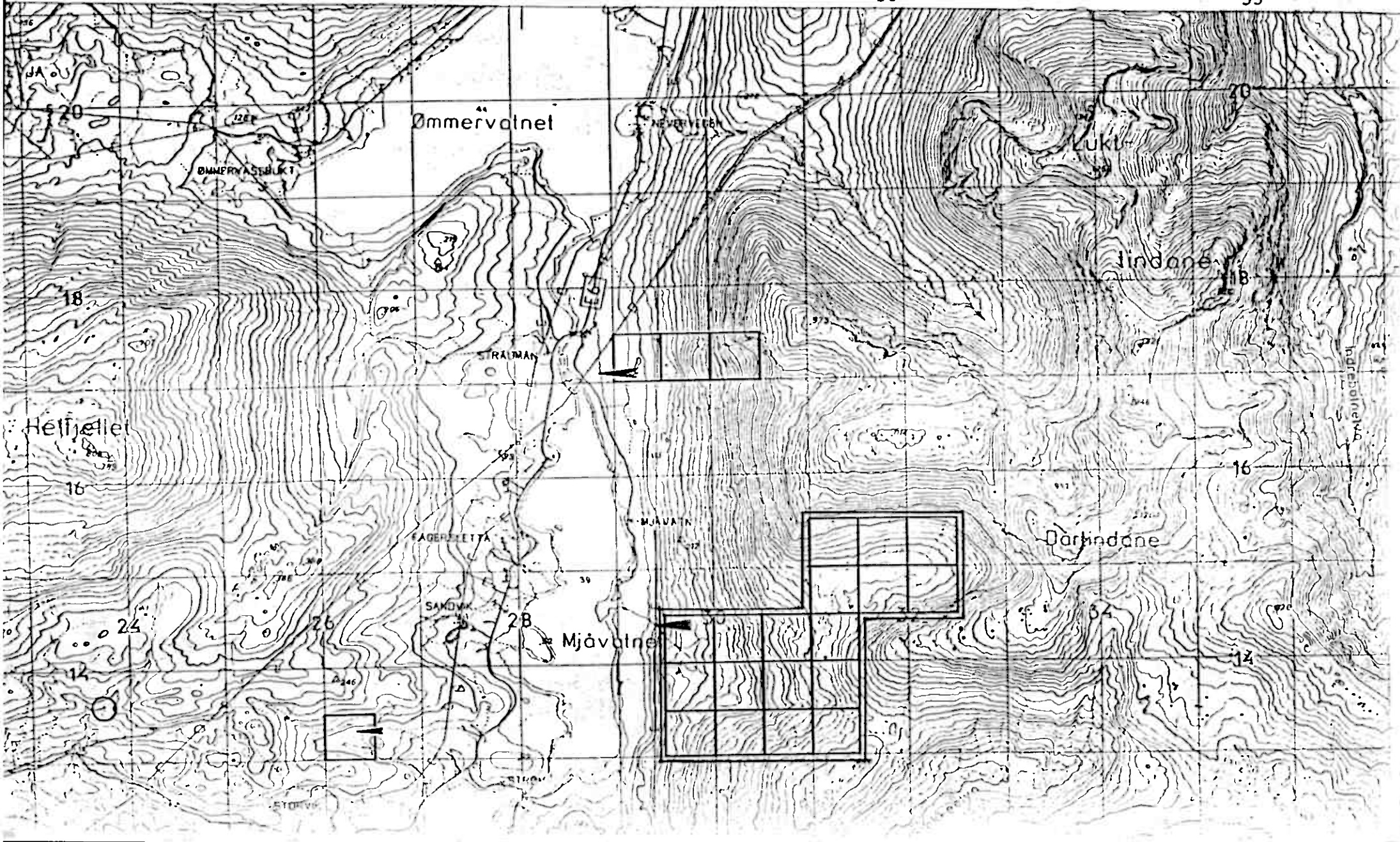
VEFSN

NORDLAND

FYLKE

23 24 25 26 27 28 29 30 31 32 33 34 35 36 37

20' 25' 30' 35'



CLAIM DETAILS

Est No. Follow up Samples 10 Time Requ'd 1 Team Days

0000

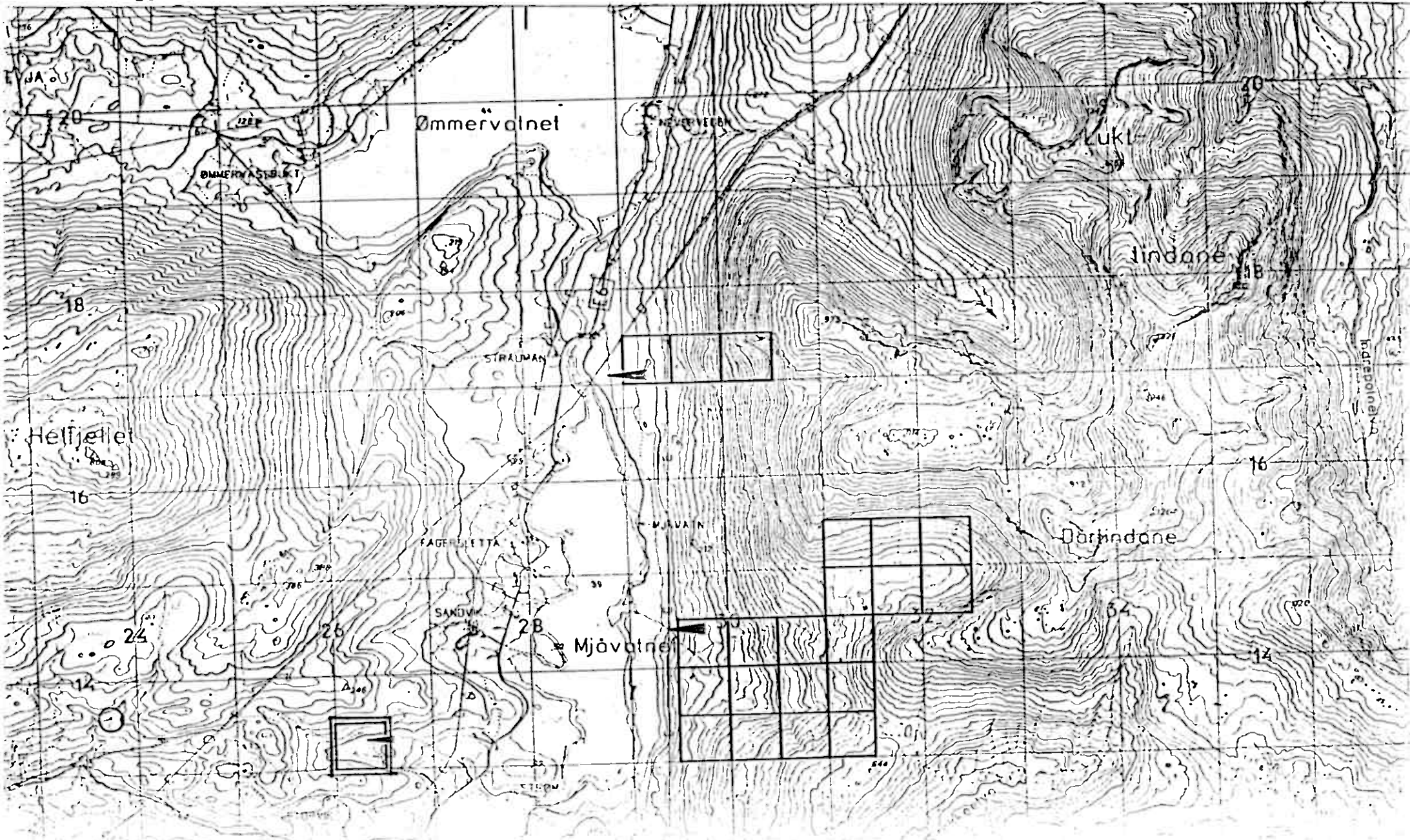
DREVJA

VEFSN

NORDLAND

FYLKE

3 24 25 26 27 28 29 30 31 32 33 34 35 36 37
20' 25' 30' 35'



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1926 IV DREVJA	C 015	DO 185 I,II,III,IV

Claim Name BJØRKNES No. 117 Area 1,75km² Appl.date 4.1.83

Stream Length 3 km Drainage Area 2 km² Av. Topog MODT/STEEP

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
180228	345	<1	12	5	29	1		
180229	22	<1	18	6	45	2		
180233		2	35	12	123,105	<1		

Regional Geology: GABBRO AND METAGABBRO. MARBLE HORIZON AT THE MARGIN OF THIS BASIC INTRUSIVE.

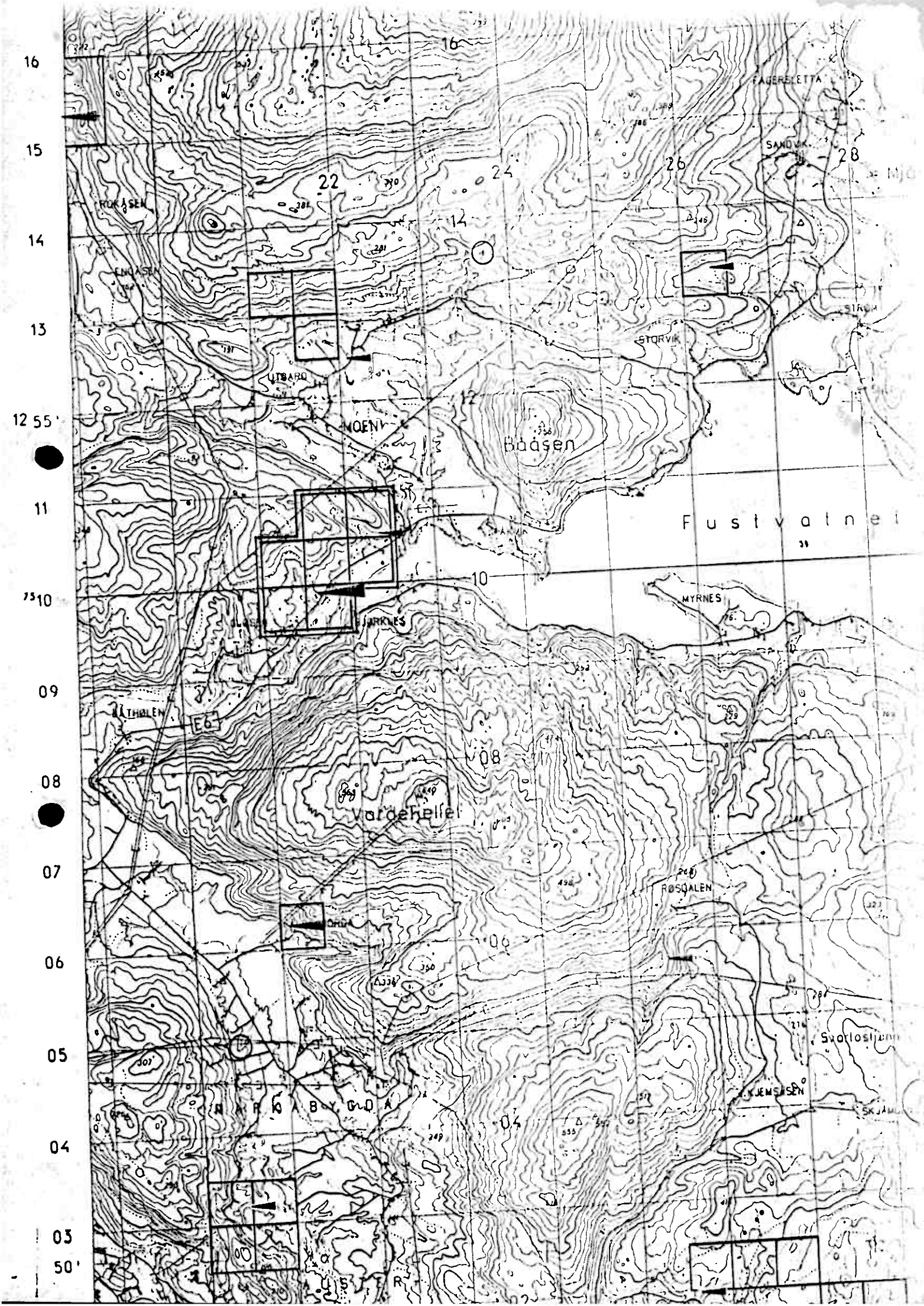
Overburden: CLAY

Field Comments: POSSIBLE AGRICULTURAL CONTAMINATION

Access:

Photogeology:

Est No. Follow up Samples 30 Time Requ'd 3 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1926 IV DREVJA		DO 185 III

Claim Name ROKASEN No 134 Area 0,5 km² Appl.date 12.1.83

Stream Length 1 km Drainage Area 1 km² Av. Topog. GENTLE

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
180249	84	7	13	5	31	<1		
180248 !		21	24	12	87	8		

Regional Geology: GRANODIORITIC INTRUSION MARGINED BY MICASCHISTS AND MARBLE LENSES

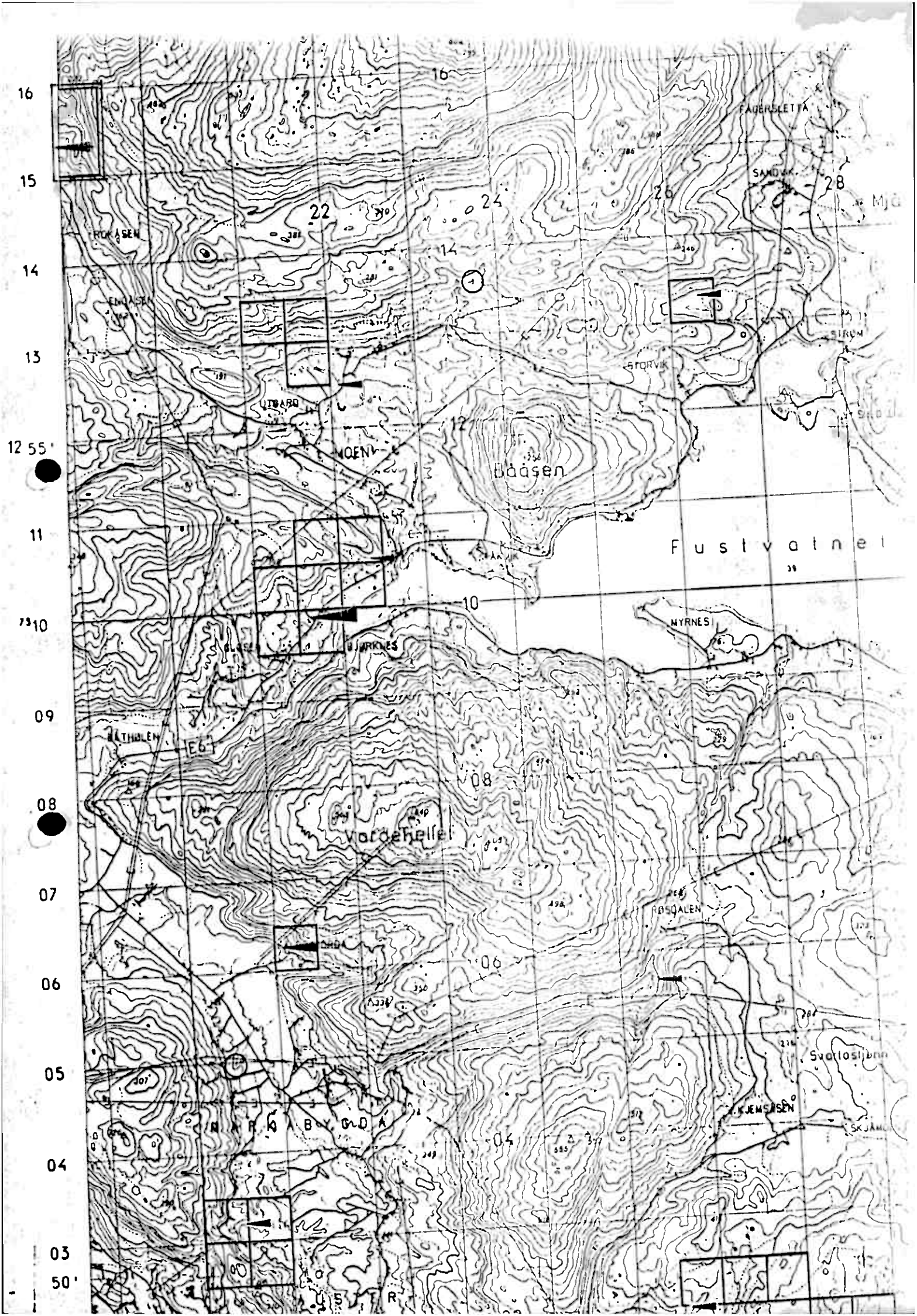
Overburden:

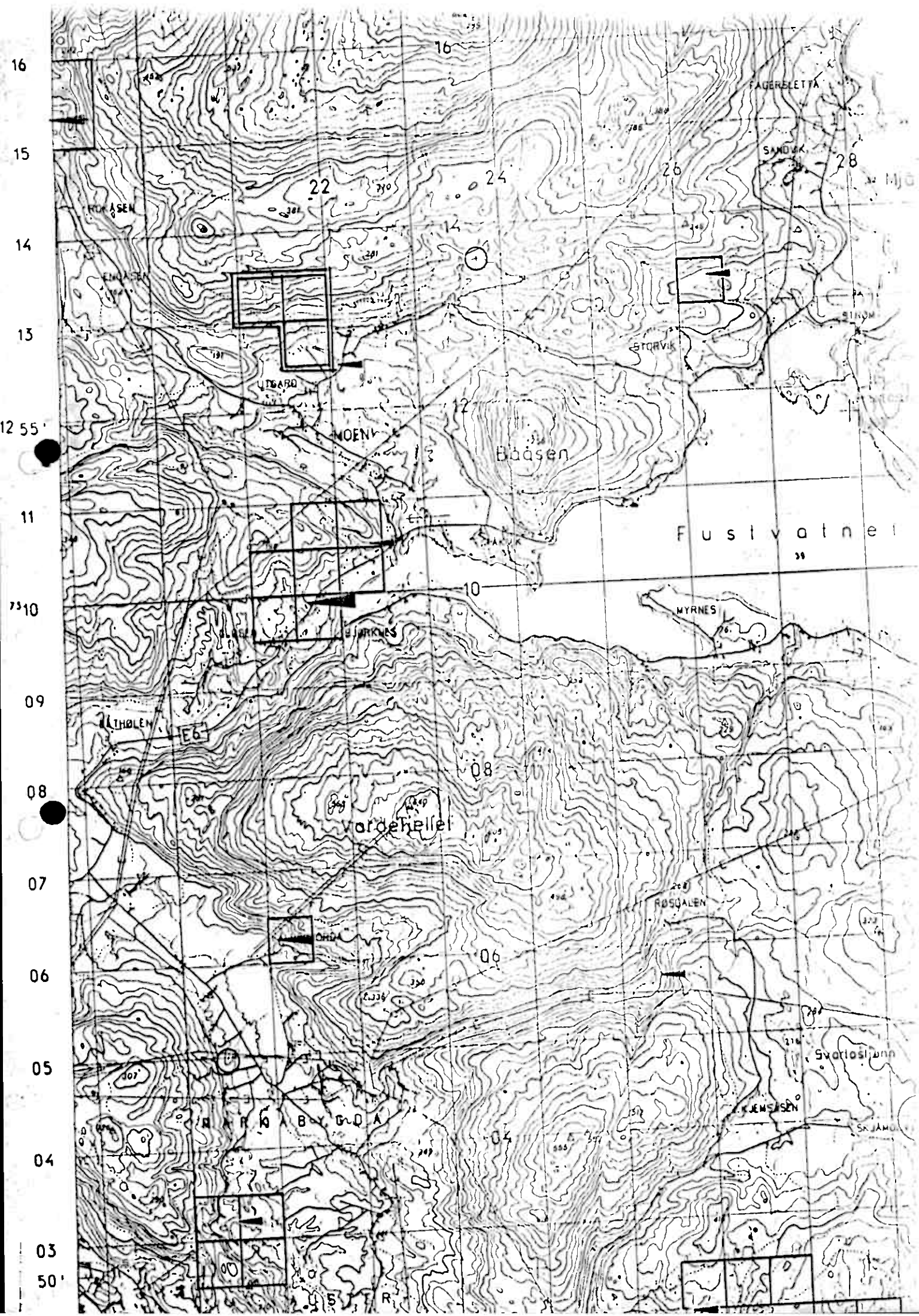
Field Comments: POSSIBLE CONT. FROM ROAD

Access:

Photogeology:

Est No. Follow up Samples 10	Time Requ'd 1 Team Days
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HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1826 IV DREVJA	E 019	DO 181 I, III

Claim NameALSGARDEN..... No 102 Area 0,5 km² Appl.date 17.12.82

Stream Length 0,75 km Drainage Area 0,5 km² Av. Topog. STEEP 20-320 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
110092	35	<1	17	19	65	<1		

Regional Geology: MICASCHIST AND GRANODIORITE

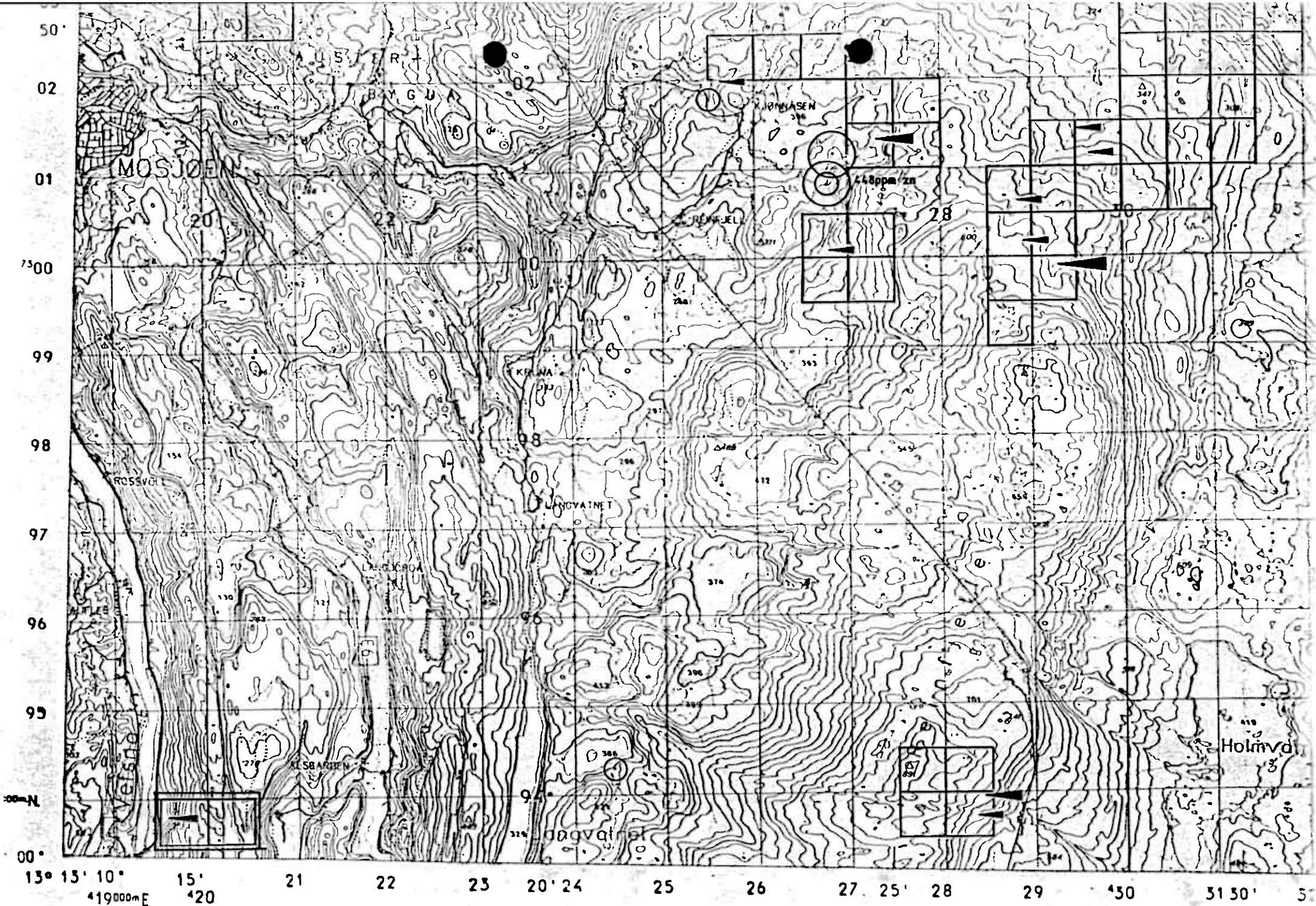
Overburden:

Field Comments: NO OUTCROP IN STREAMBED

Access:

Photogeology:

Est No. Follow up Samples 10 Time Requ'd 1 Team Days



Målstock, Scale 1-50 000

HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1926 IV DREVJA	D 015	D0 183 I

Claim Name ÅBOSJORDA No 119 Area 0,25 km² Appl.date 4.1.83

Stream Length 0,25 km Drainage Area 0,5 km² Av. Topog STEEP 80-280 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
180225	170	<1	48	4	22	<1		

Regional Geology: GLACIAL COVER

Overburden: GLACIAL MATERIAL

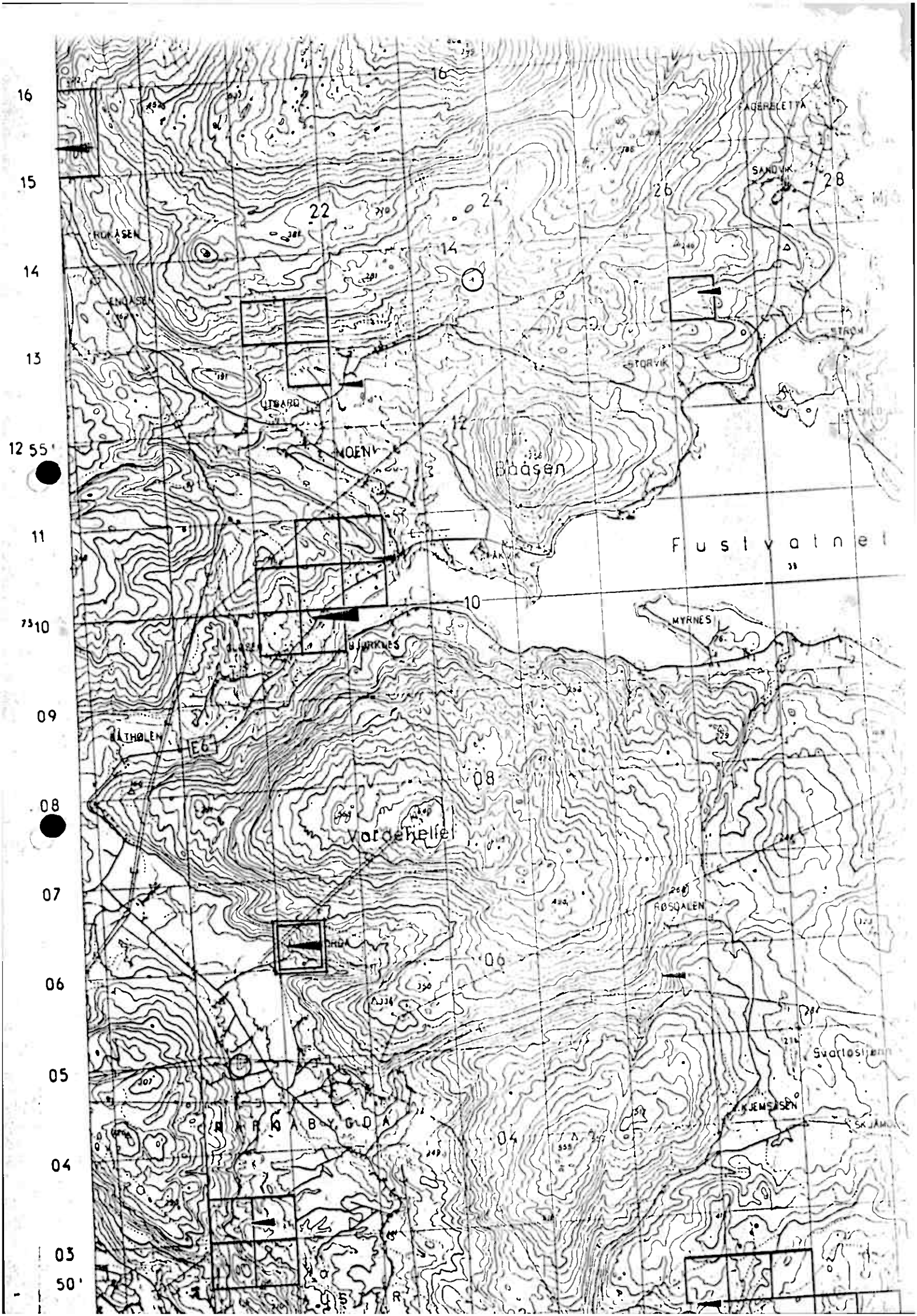
Field Comments:

Access:

Photogeology:

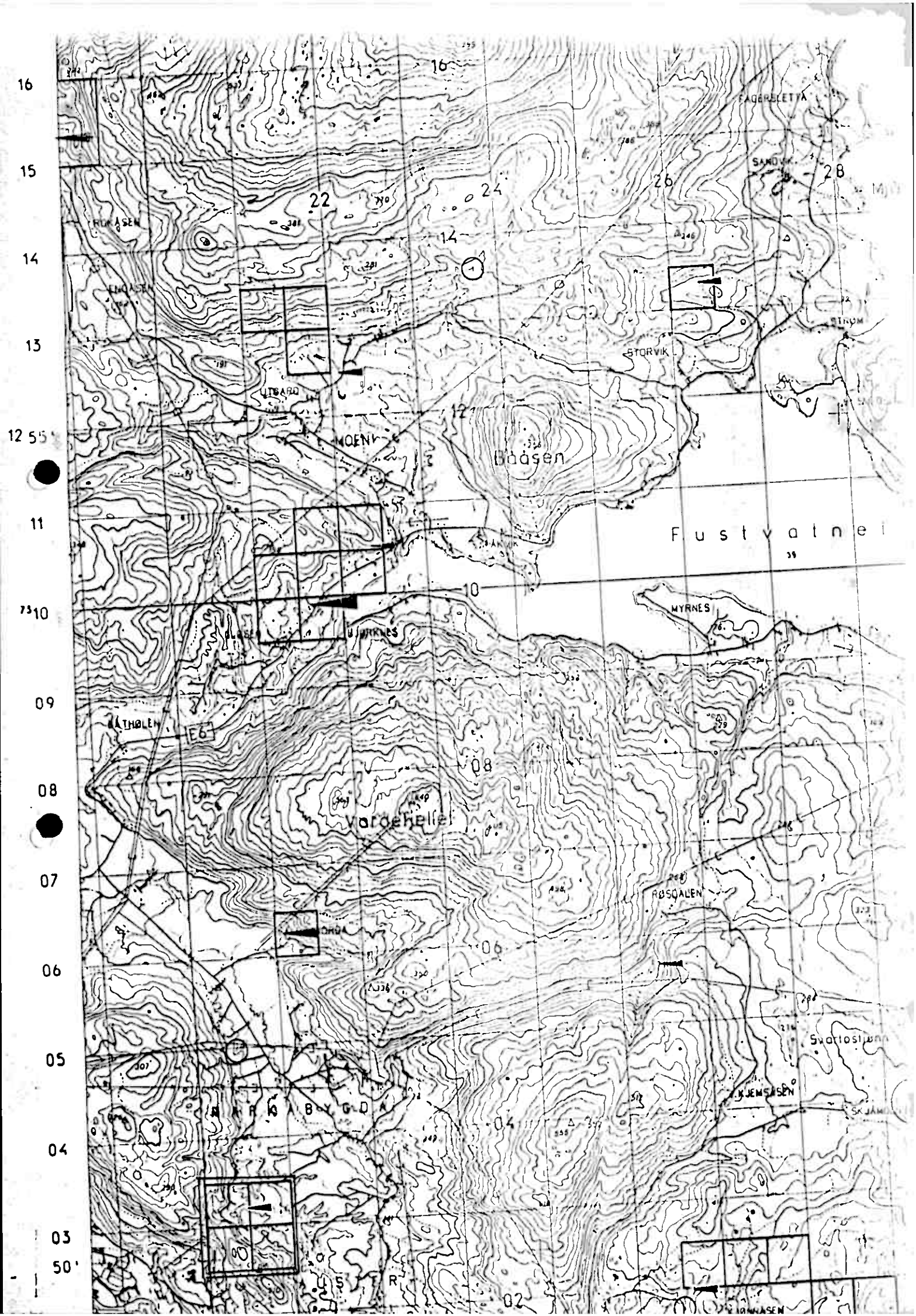
Est No. Follow up Samples 10

Time Requ'd 1 Team Days



CLAIM DETAILS

Est No. Follow up Samples 10 Time Requ'd 1 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1926 IV DREVJA	D 018	DQ 181 III

Claim Name REINFJELL No ... 79 ... Area 1 km² Appl. date 24.11.82

Stream Length 2,5 km Drainage Area 1,5 km² Av. Topog. MOD TO STEEP
300-600 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
030145	35	<1	9	6	40	2		
030146		<1	7	9	20	3		
030147		<1	8	7	20	2		
030148		4	10	10	23	3		
030153		3	12	16	33	<1		

Regional Geology: WHITE GRANITE

Overburden:

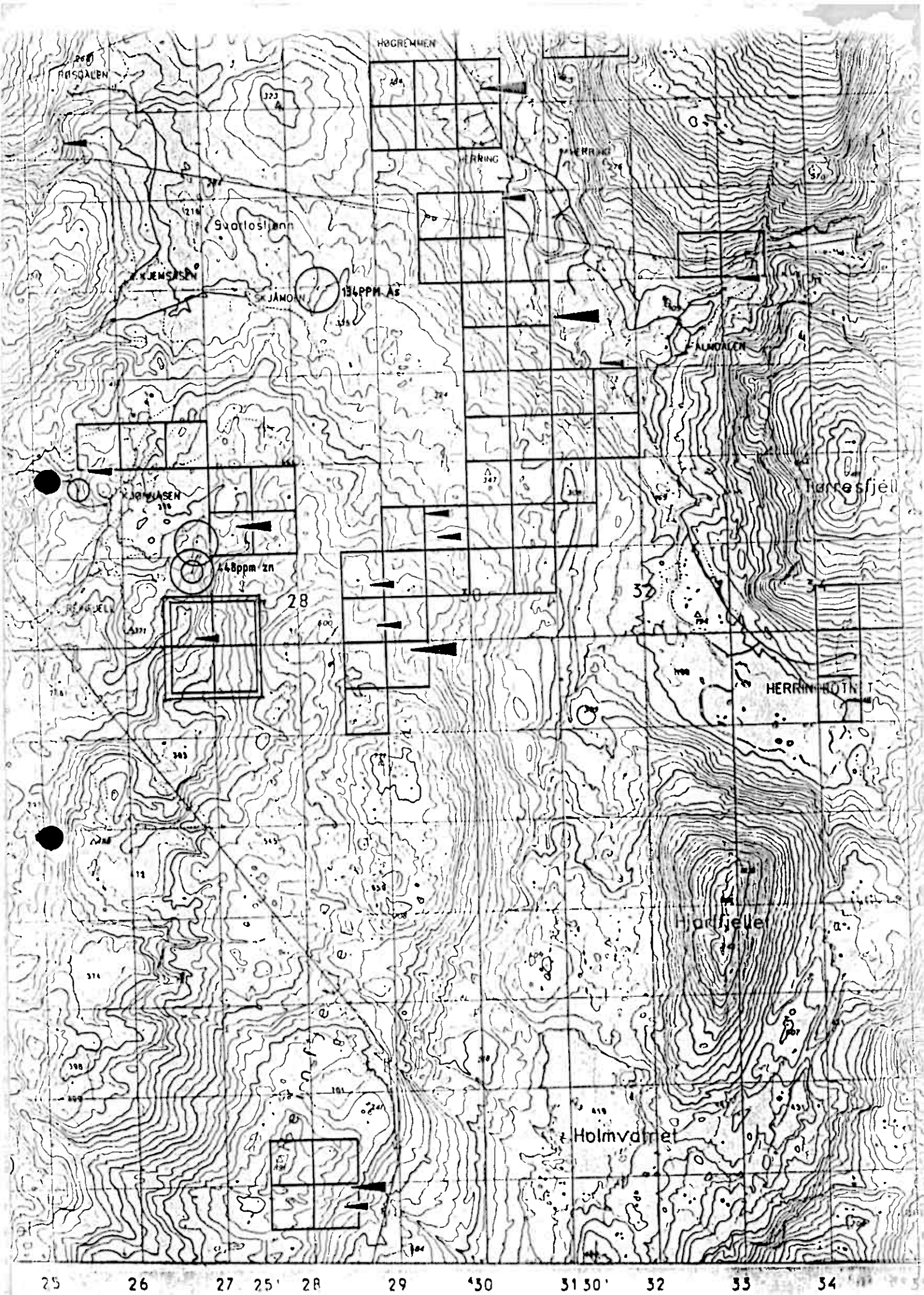
Field Comments:

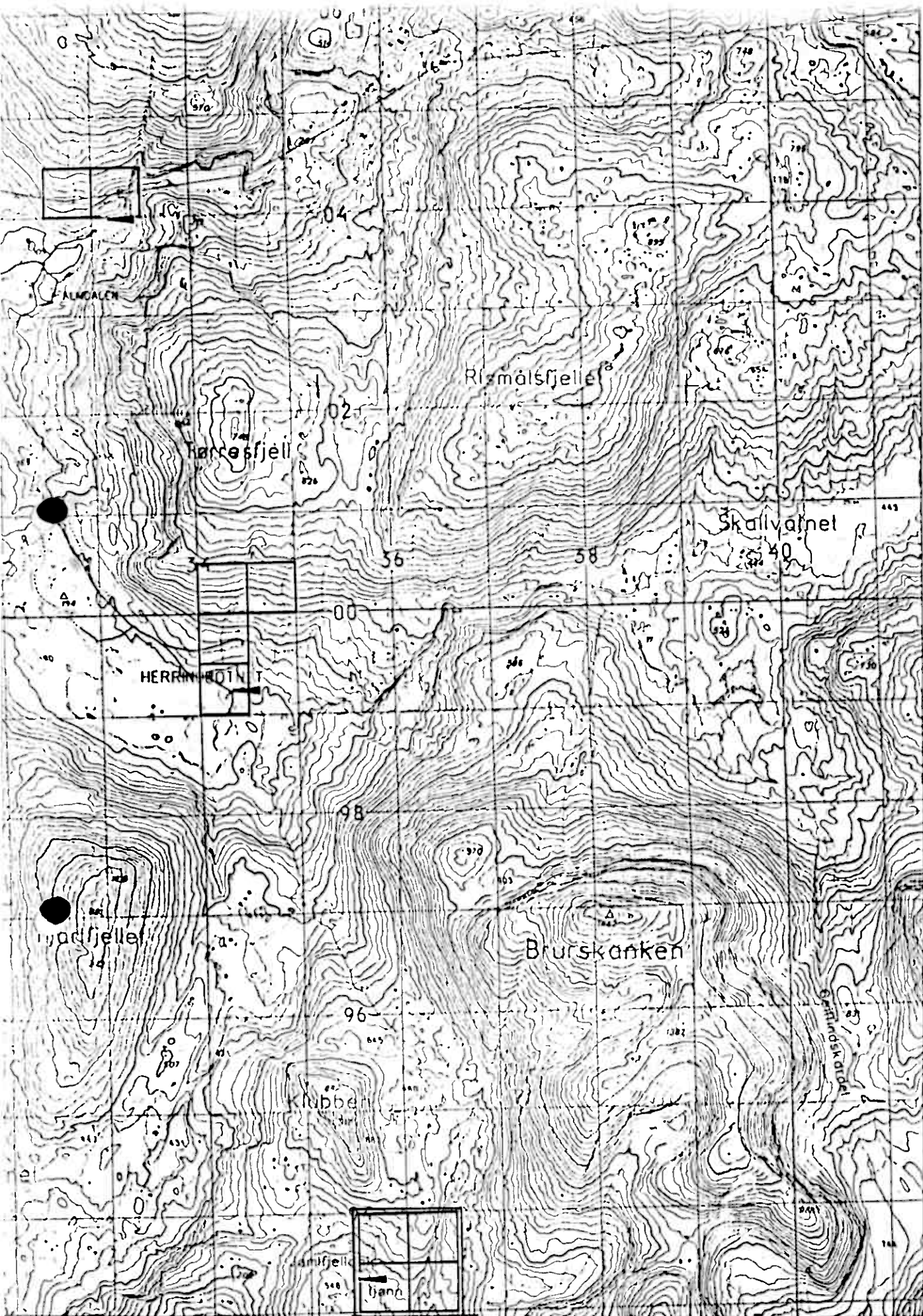
Access:

Photogeology:

Est No. Follow up Samples 20

Time Requ'd 2 Team Days





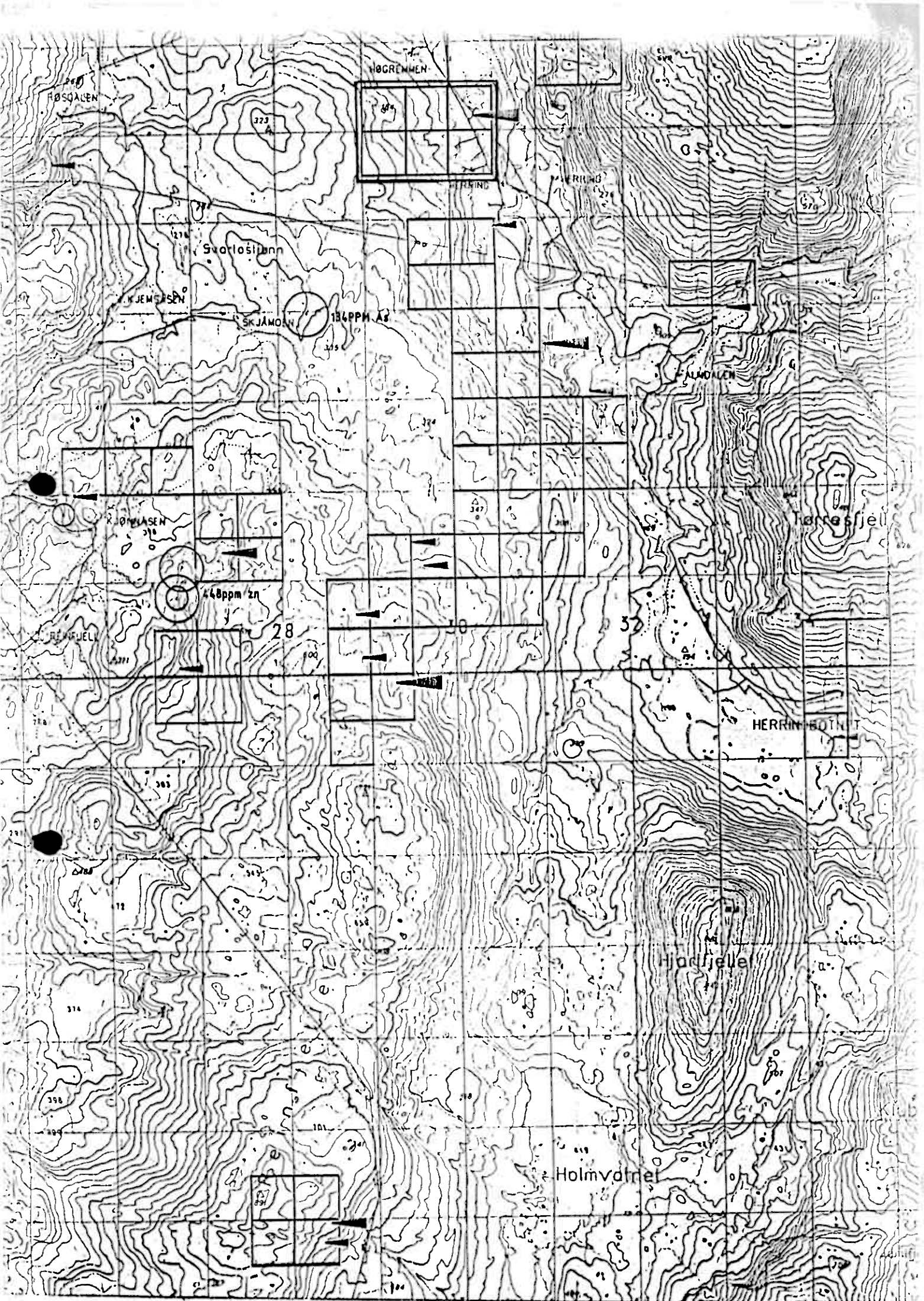
05
04
03
02
01
00
99
98
97
96
95
94
93
65° 45'

32 33 34 35 36 37 38 40 40 13° 43' 10'



CLAIM DETAILS

Est No. Follow up Samples	25	Time Requ'd	2	Team Days
.....				



VEVELSTAD

Map Sheet Vevelstad

The relations between stream sediment anomalies on this map sheet are complex and three different interpretations are proposed:

- i) Two strong Au anomalies at the eastern shore of Visten-fjord appear to be connected with the Kolsvik-Husvik lineament composed of a strongly foliated sequence of metasediments.
- ii) Anomalies at Kilviken and further south around Nilslitinden are confined to tectonised marble sequences with associated Pb-Zn mineralization. These Au anomalies are regionally associated with anomalous W, Pb, Zn and As concentrations. This marble sequence is believed to represent an extension of the Husvik mineralized marble.
- iii) Gold anomalies around Åndalsvågen might be connected with the basic intrusive forming Andalsshatten, where vein-type molybdenite occurrences are reported.

MAP SHEET: 1826 III VEVELSTAD

CLAIM NAME	NO.	AREA KM ²	Au PPB	PATHFINDER ELS.	OVERBURDEN	GEOLOGY	STRUCTURES
ALMOSEN	21	6.5	199,191	+As +W	+	+	+
NEDRE KVANLIVTN	23	0.5	191	+As	+	+	0
KILVIKEN	22	0.5	3,37	0	+	+	+
HOIHOLM	61	1.25	43	+W	+	+	0
STORMARKEN	158	1.25	18	+As +W	+	+	+
ANDALSVÄGEN B	55	1.0	341	+As +W	+	+	0
" A	54	2.0	60	+W	+	+	0
JOVATNET	2	1.5		+As	+	strong steam aureole	0

HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1826 III VEVELSTAD 1826 II EITERA	F013 STEREO F012, F014	DK 179 I, III

Claim Name ALMOSEN No 21 Area 6,5 km² Appl.date 15.10.02

Stream Length 11 km² Drainage Area 9 km² Av. Topog. STEEP 0-690 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. AG	Add. Sb	Add. Bi
160040	199	<1	18	12	73	8	<1	<1	<1
160041	191	4	20	10	53	2	<1	<1	<1

Regional Geology: GRANODIORITE/GRANITE, PORPHYRITIC TOURMALINE. GRANITE, MICA SCHIST/GNEISS.

Overburden: ALLUVIAL

Field Comments:

Access: BOAT

Photogeology: NB AREA CONTINUES INTO G-SERIES. SUSPICIOUS SERPENTINITE CENTRAL PART.

Est No. Follow up Samples 100

Time Requ'd 7 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1826 III VEVELSTAD	F013 STEREO F012, F014	DK 180 III

Claim Name NEDRE KVANLIVATN No 23 Area 0,5 km² Appl.date 15.10.82

Stream Length 0,5 km² Drainage Area 0,25 km² Av. Topog. MODERATE
260-480 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add. Sb	Add. b
160041	191	4	20	10	53	3	<1	<1	<1

Regional Geology: MICA SCHIST/GNEISS, TOURMALINE BEARING PORPHYRITIC GRANITE.

Overburden: ALLUVIAL

Field Comments:

Access: BOAT + 5 km WALK - HELICOPTER

Photogeology:

Est No. Follow up Samples 5 Time Requ'd 1 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1826 III VEVELSTAD	F012 STEREO F011, F013	DJ 179 I, II

Claim Name KILVIKEN No 22 Area 0,5 km² Appl.date 15.10.82

Stream Length 0,5 km² Drainage Area 0,5 km² Av. Topog. MODERATE 0-150 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add. Sb
160028	3/37	<1	18/16/17/14/18/16	5/6/5/6/7/6	23/21/20/20/23/21	3	<1/<1/<1/<1/<1/<1	<1
160029								

Regional Geology: GRANITE/GRANODIORITE, MARBLES.

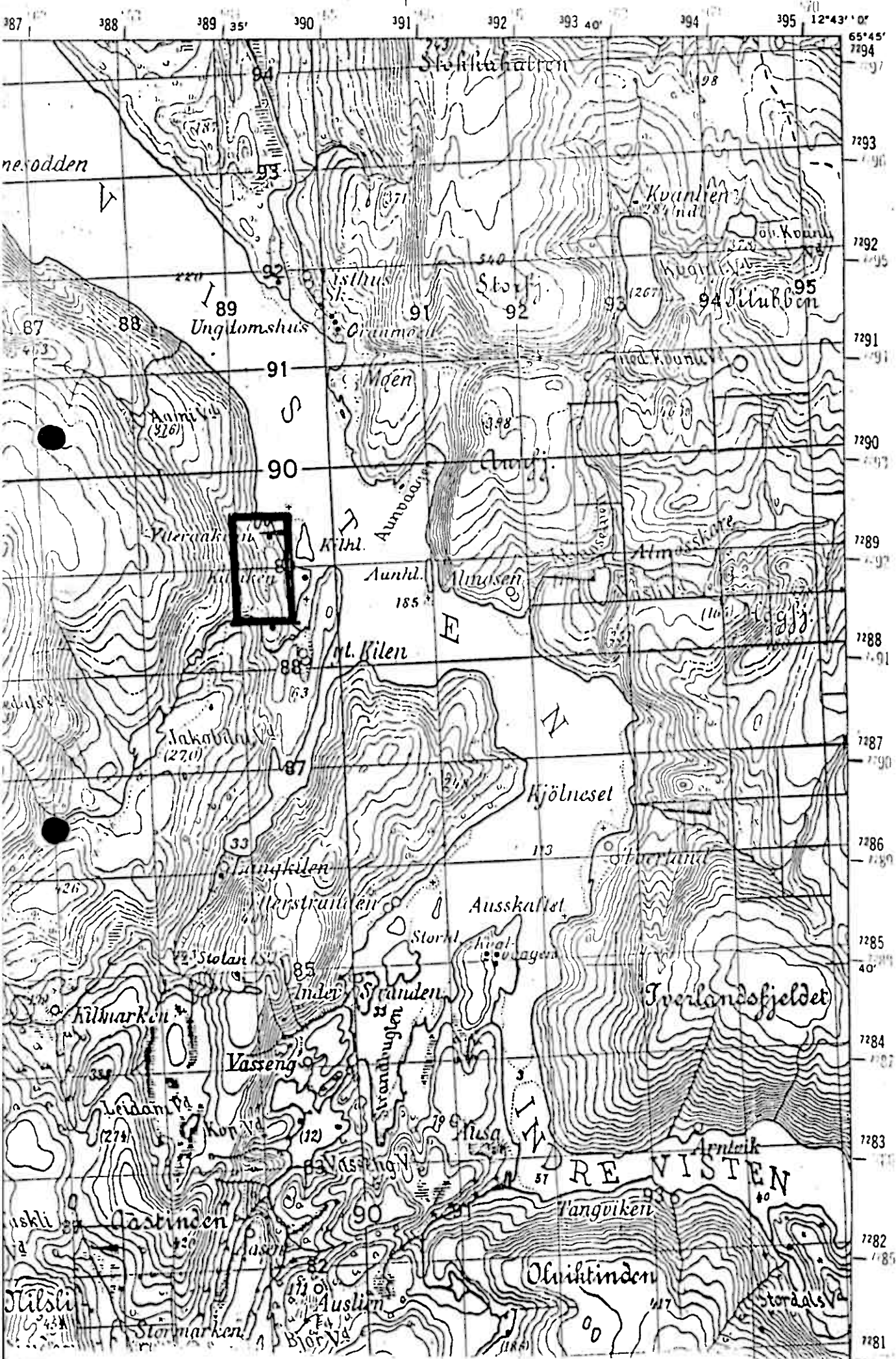
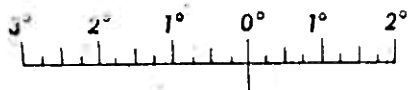
Overburden: ALLUVIUM

Field Comments:

Access: BOAT

Photogeology: ORTHOGONAL FRACTURE PATTERN OF GRANITOIDS IRREGULAR SHAPED RAFTS OF METASEDS WITH VEGETATION COVER → MARBLES

Est No. Follow up Samples 5 Time Requ'd 1 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1826 III VEVELSTAD	G010 STEREO G009 G011	DH 178 I

Claim Name HØIHOLM No 61 Area 1,25 km² Appl.date 3.11.82.

Stream Length 2,5 km² Drainage Area 1,5 km² Av. Topog. STEEP 0-800 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Acid.
200030		<1	12	12	39	5	<1	
200031		<1	12	9	29	1	<1	
200032	43	<1	16	8	27	11	<1	

Regional Geology: GRANODIORITE

Overburden:

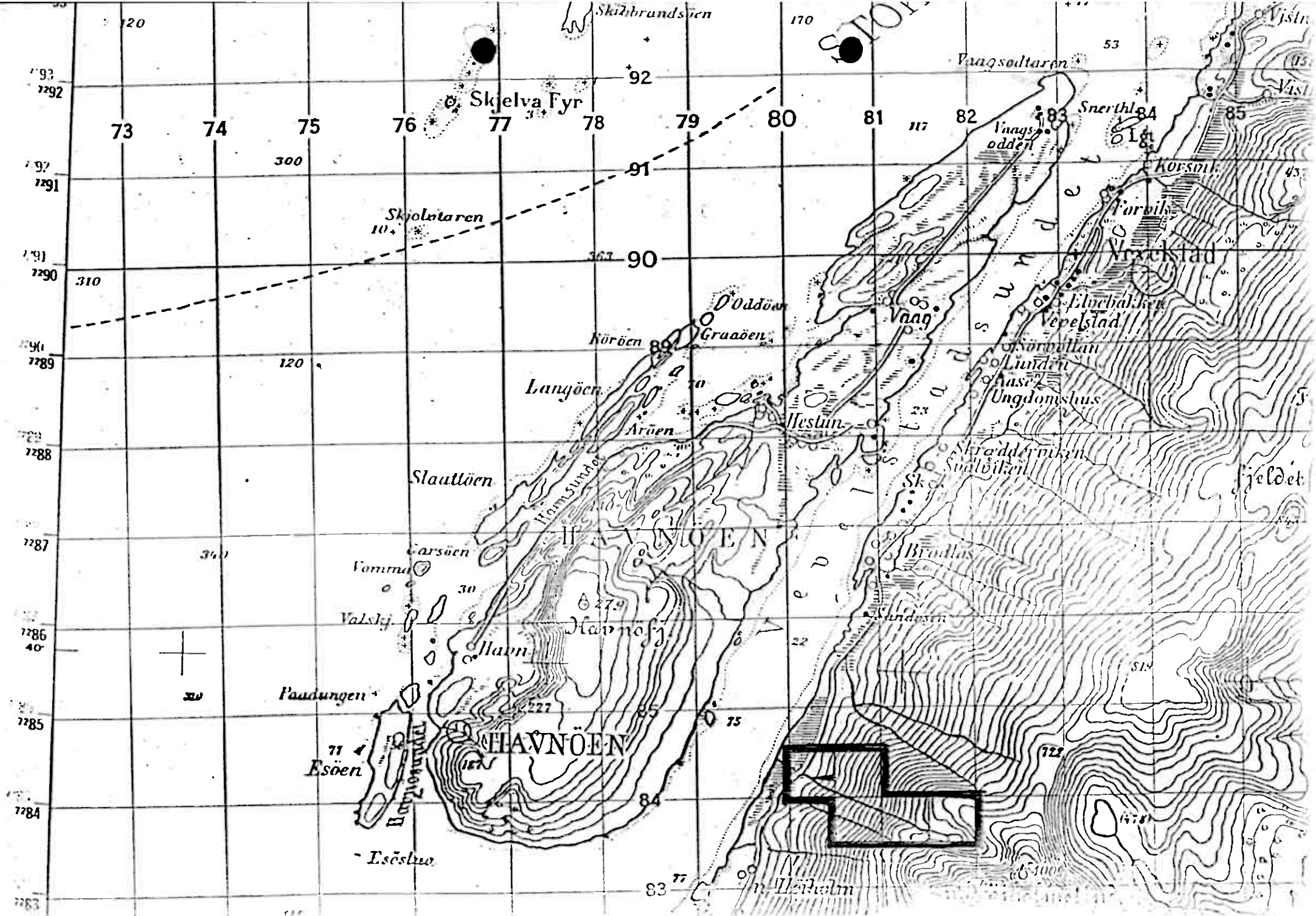
Field Comments: CONTAMINATION?

Access: ROAD

Photogeology: MOST STRUCTURES DOTTED ACTUALLY REPRESENT VEINS + DYKES

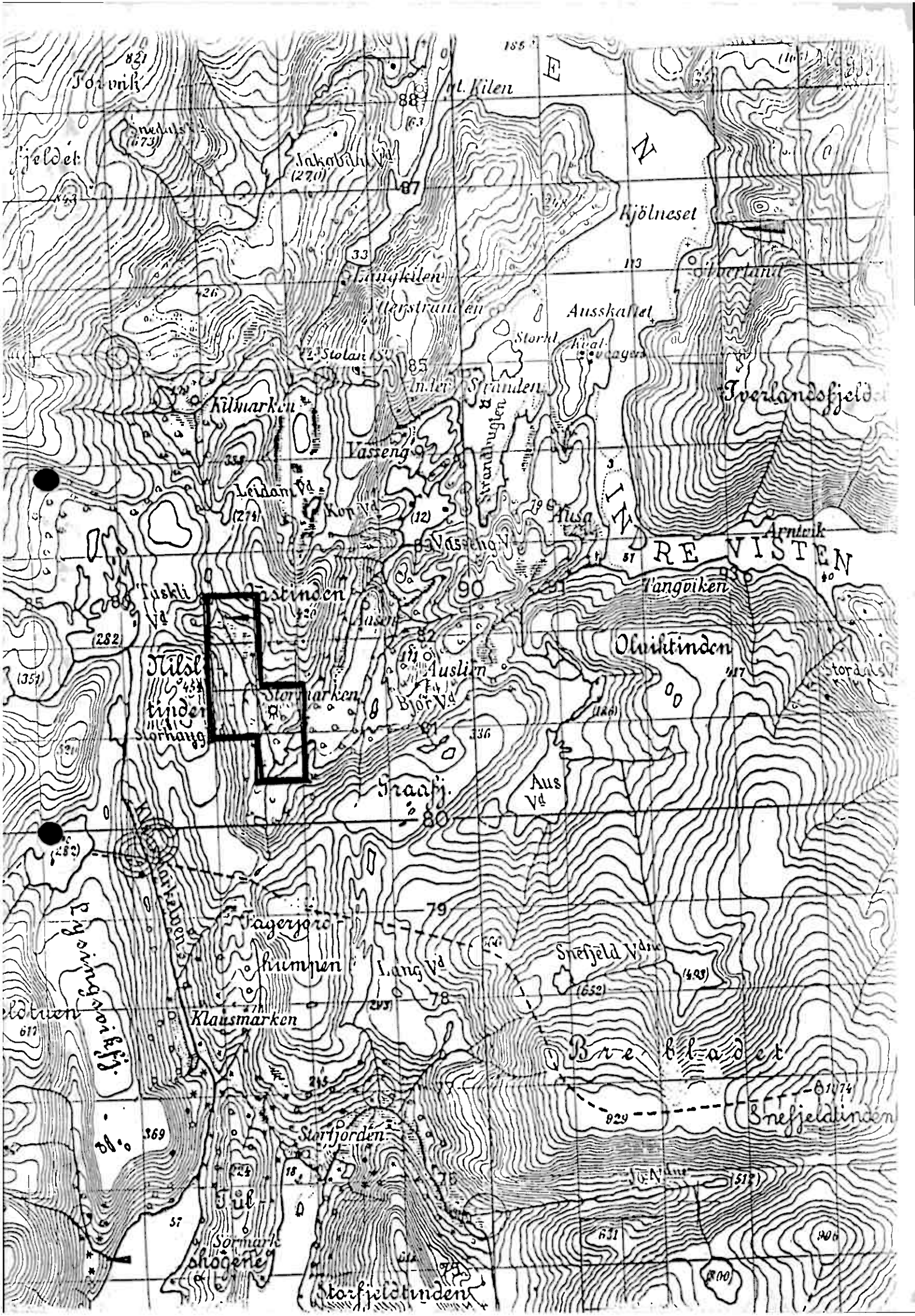
Est No. Follow up Samples 20

Time Requ'd 2 Team Days



CLAIM DETAILS

Est No. Follow up Samples 10 Time Requ'd 1 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1826 III VEVELSTAD	H010, STEREO H009, H011	DH 177 II, IV, H 176 I

Claim Name ANDALSVÅGEN 'B' No 55 Area 1 km² Appl. date 3.11.82

Stream Length 2,5 km² Drainage Area 1 km² Av. Topog. MOD/STEEP
0-570 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add.
170025		2	9/9	17/20	33/36	6	<1/<1	
200025	341	3	21	26	53	8	<1	
200026		2	12	18	33	2	<1	

Regional Geology: GRANITE, NEARBY GABBRO/ULTRAMAFIC BODY.

Overburden: ALLUVIUM

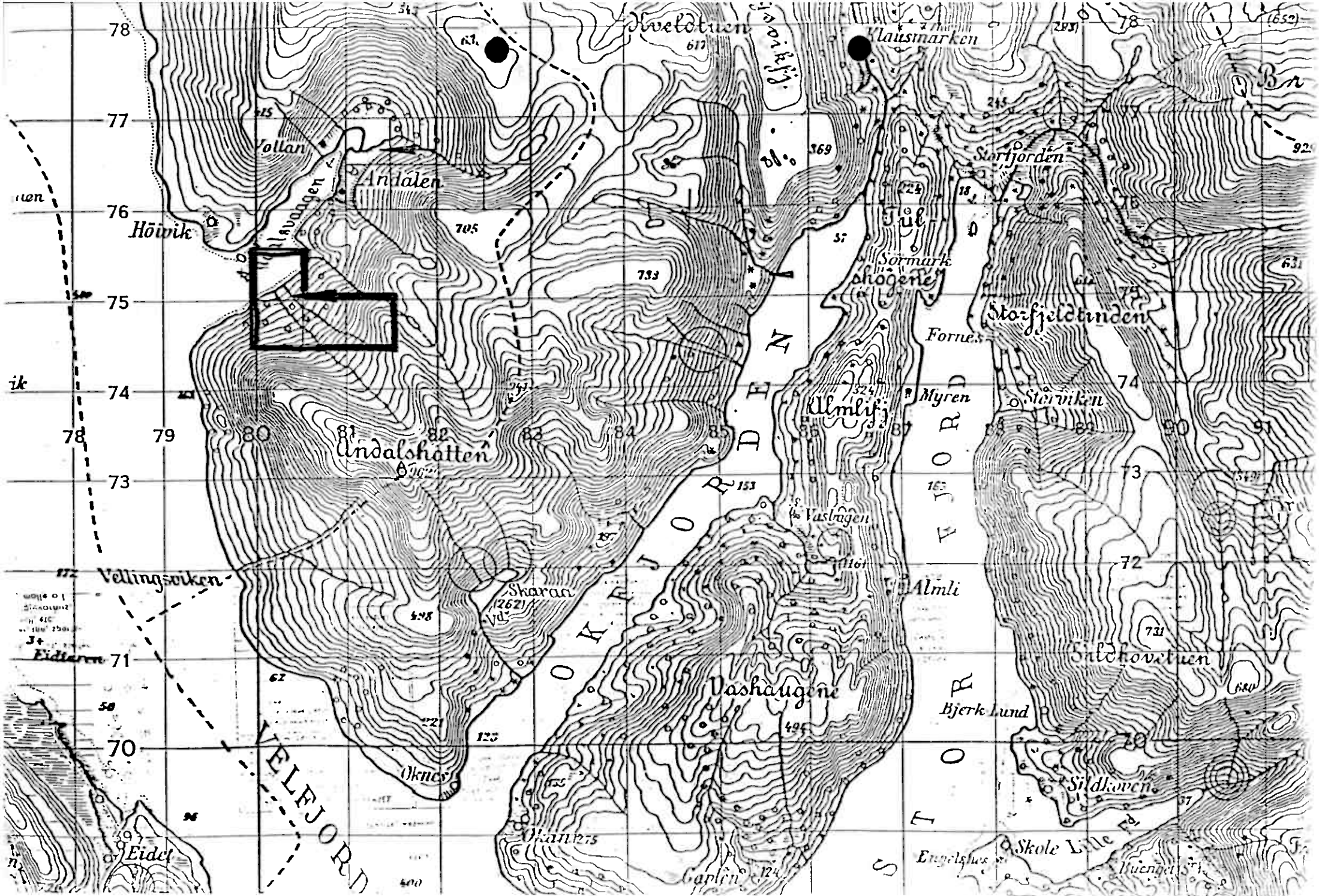
Field Comments:

Access: BOAT

Photogeology: 3 CLEARLY DIFFERENT ROCK TYPES. 1. LIGHT GREY VEINS, INTRUSIVES
2. DARK VEGETATED INVADED GABBROS? GOOD STRUCTURAL CONTROL. ROCK FOLIATION NOT
OBSERVED.

Est No. Follow up Samples 30

Time Requ'd 2 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1826 III VEVELSTAD	H010 STEREO H009 + H011	ØH 177 III, IV, 176I

Claim Name ANDALSVÄGEN 'A' No 54 Area 2 km² Appl.date 3.11.82

Stream Length 2 km² Drainage Area 2 km² Av. Topog MOD. STEEP
0-700 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add.
170026		<1	6/7	4/3	26/24	4	<1/<1	
170027		<1	8/10/9	2/2/1	32/31/26	2	<1/<1/<1	
200027	60	<1	14	6	37	7	<1	
200028		<1	14/15	8/8	35/37	3	<1/<1	

Regional Geology: PORPHYRITIC GRANITE - RAFTS OF METASEDIMENTS IN GRANITE.
NEARBY GABBRO/ULTRAMAFIC BODY.

Overburden: TILL + ALLUVIAL

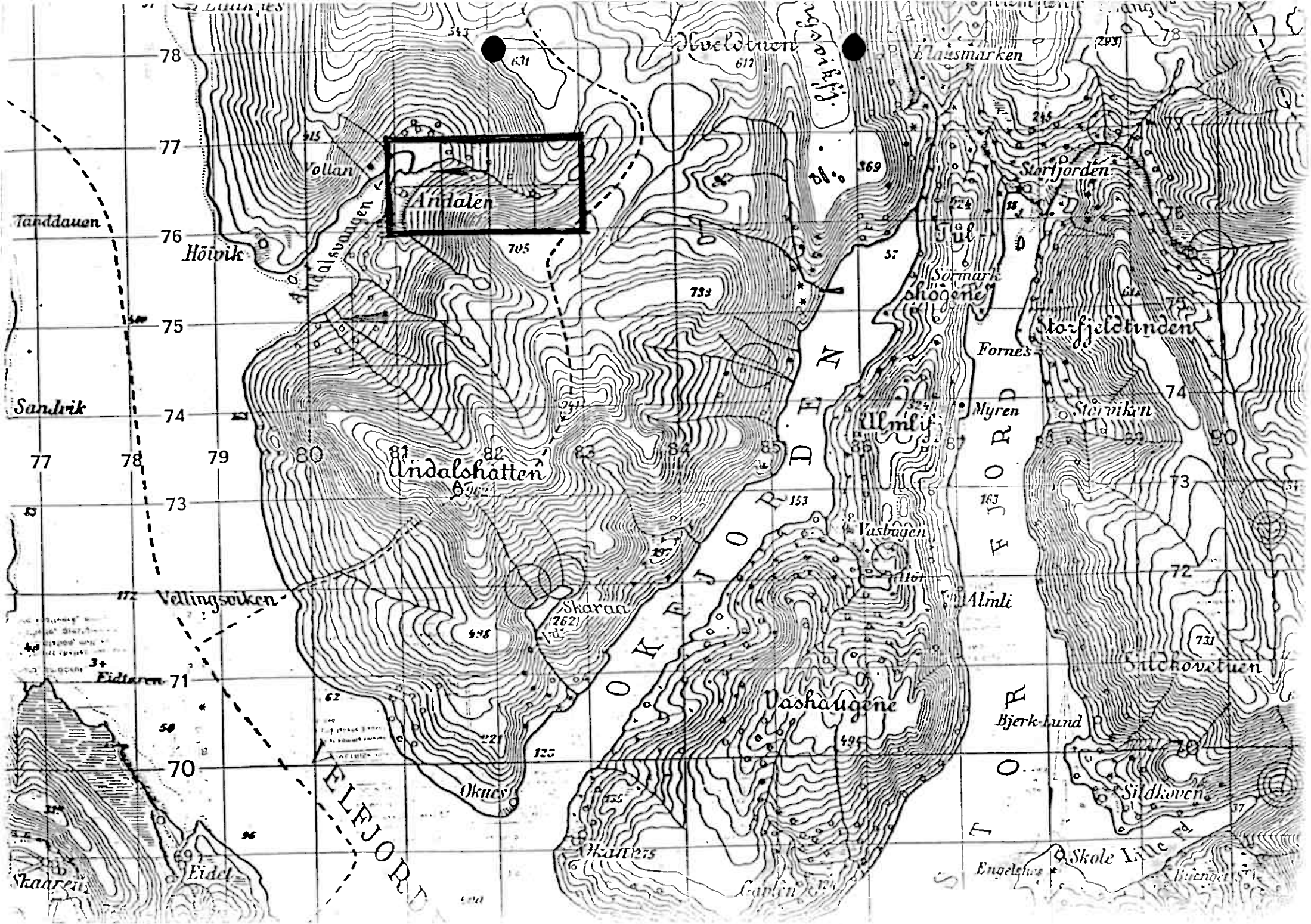
Field Comments:

Access: BOAT

Photogeology: DTO: CLAIM No 55

Est No. Follow up Samples 20

Time Requ'd 2 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1826 III VEVELSTAD	H013 STEREO H012, H014	

Claim Name JOVATNET No 2 Area 1,5 km² Appl. date 11.8.82

Stream Length 0 km² Drainage Area 0 km² Av. Topog. MOD. STEEP
450-870 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add. Sb	Add. Mn
160131 200038		5	9 12/13	33 51/54	92 54/58	<1	<1 <1/<1	<1	<1

Regional Geology: GRANODIORITE, STRONG STILBITE + PYRITE ALTERATION SHEARED AMPHIBOLITES, METASEDs IN MAIN VALLEY.

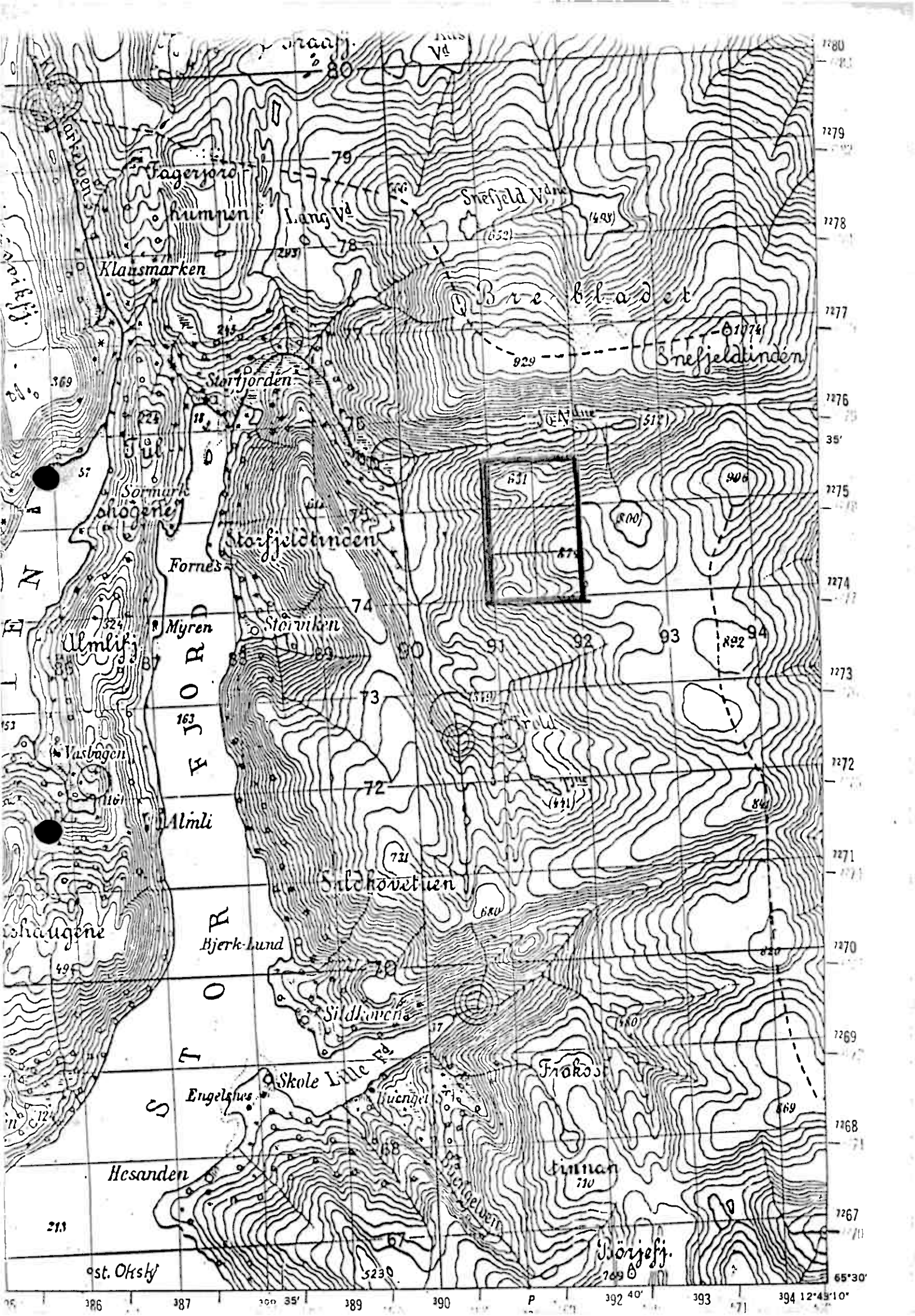
Overburden:

Field Comments: STILBITE

Access: BOAT + 6 km WALK, HELICOPTER

Photogeology:

Est No. Follow up Samples Time Requ'd Team Days



EITERA

Map Sheet Eiterå

On this map sheet the strongest geochemical pattern on a regional scale can be observed. The eastern contact of the Bindal massif shows As anomalies over the whole map sheet. Few Au anomalies are associated with this belt of As anomalies.

In addition, the Eiterådalen metasedimentary sequence due east of the contact described above hosts further Au and As anomalies.

The central part of the intrusive, uniformly mapped previously as granodiorite, was also found to contain Au and As anomalies, the latter anomalies seem to be confined to a major lineament which extends from Lakselvatn in the west to Vestfjell in the east.

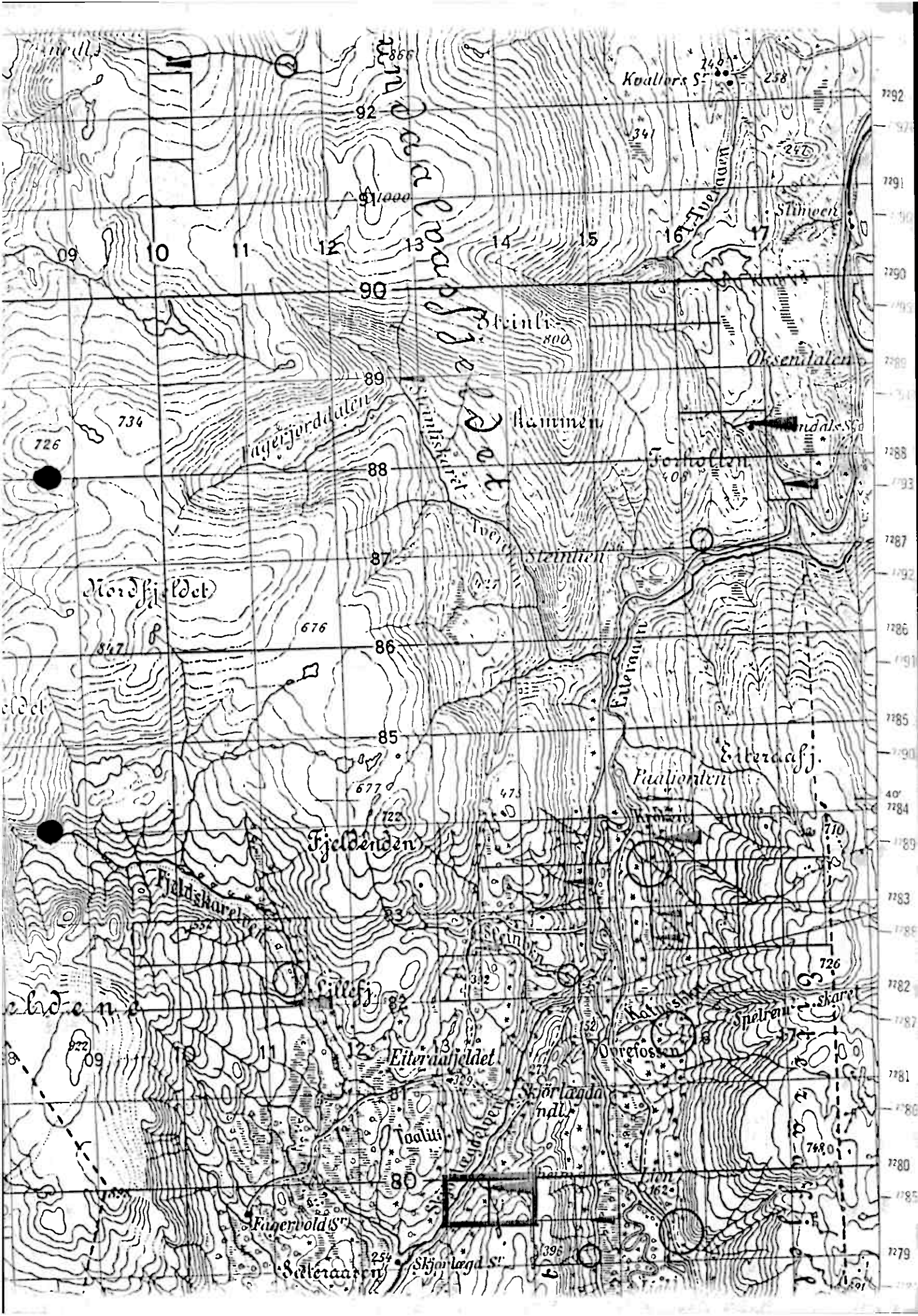
During last years reconnaissance it became apparent that even the central part of the massif is not entirely built up of granodiorite, but also of micaschists and alpinotype ultramafics, again indicating a tectonically active regime.

MAP SHEET: 1826 II EITERA

CLAIM NAME	NO.	AREA KM ²	Au PPB	PATHFINDER ELS.	OVERBURDEN	GEOLOGY	STRUCTURES
FORHOLTEN	89	2.5	74,107	+W	+	+	0
VIST-TINDERNE	35	0.75	37,12,33	+AS +W	+	+	0
VESTFJELDENE	32	3.75	5,19,7,4	+As	+	+	+
TAALITI	165	0.5	196	REGIONAL As ANOM.	0	0	
STEINBEKKEN	112	1.0	41	-	-	0	0
KROKEN	101	2.25	41,9,318	+As	0	0	+
FORHOLTEN B	113	1.75	107	+W	+	+	+
EITERÅEN	58	1.0	137	-	+	+	
GRANHEIM	90	1.0	33	+Cu	+	0	
SAETERSKARET	33	1.25	4	+As	+	0	0
FJELLSKARELVEN	62	2.0	138	+W	+	+	0
STORVASAASEN	164	0.5	31	+As	+	+	-
NEDRE VISTVATN	34	2.0	12,1	+As	+	+	+
N: VESTERELVEN	28	1.5	9	-	+	+	+
RUBBEN	29	96	-	+	+	0	
RUNDTJERNET	30	0.75	40	+As	+	+	-
SØRVASDALEN	142	0.75	29	+W	+	0	+
FJELLDENDEN	91	1.5	43	-	0	+	0
S: VESTERDALSELV	31	1.0	4,3,25	+W +Zn	+	+	
REMFJELDET	27	1.0	30	-	+	0	+
FALDFOSSEN	59	0.5	27	0	+	+	0

CLAIM DETAILS

Est No. Follow up Samples	10	Time Requ'd	1	Team Days
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CLAIM DETAILS

Stream Length 1.5 km² Drainage Area 1.5 km² Av. Topog. MOD. STEEP
300-430 m

Time Requ'd	2	Team Days
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HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1826 II EITERA		DN 178 II

Claim Name KROKEN No 101 Area 2,25km² Appl.date 17-12-82

Stream Length 4 km² Drainage Area 2,5 km² Av. Topog. STEEP 130-720 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
110185	41	<1	14	8	56	<1		
110186	9	<1	22	8	61	<1		
110187		7	32	10	43	<1		
110188	318	<1	18	13	34	1		

Regional Geology: MICASCHIST - GRANODIORITE

Overburden:

Field Comments: (188) BOULDERS OF MICASCHIST IN STREAMBED. (185) NO OUTCROP IN STREAMBED.

Access: BY ROAD

Photogeology:

Est No. Follow up Samples 40 Time Requ'd 3 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1826 II EITERÅ		DN 180 II, IV

Claim Name FORHALTEN 'B' No ... 113 ... Area ... 1.75 km² Appl. date 04.01.83 ..

Stream Length 2 km² Drainage Area 2 km² Av. Topog. STEEP 200-820 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
110172	107	<1	24	19	115	7		

Regional Geology: GRANODIORITE

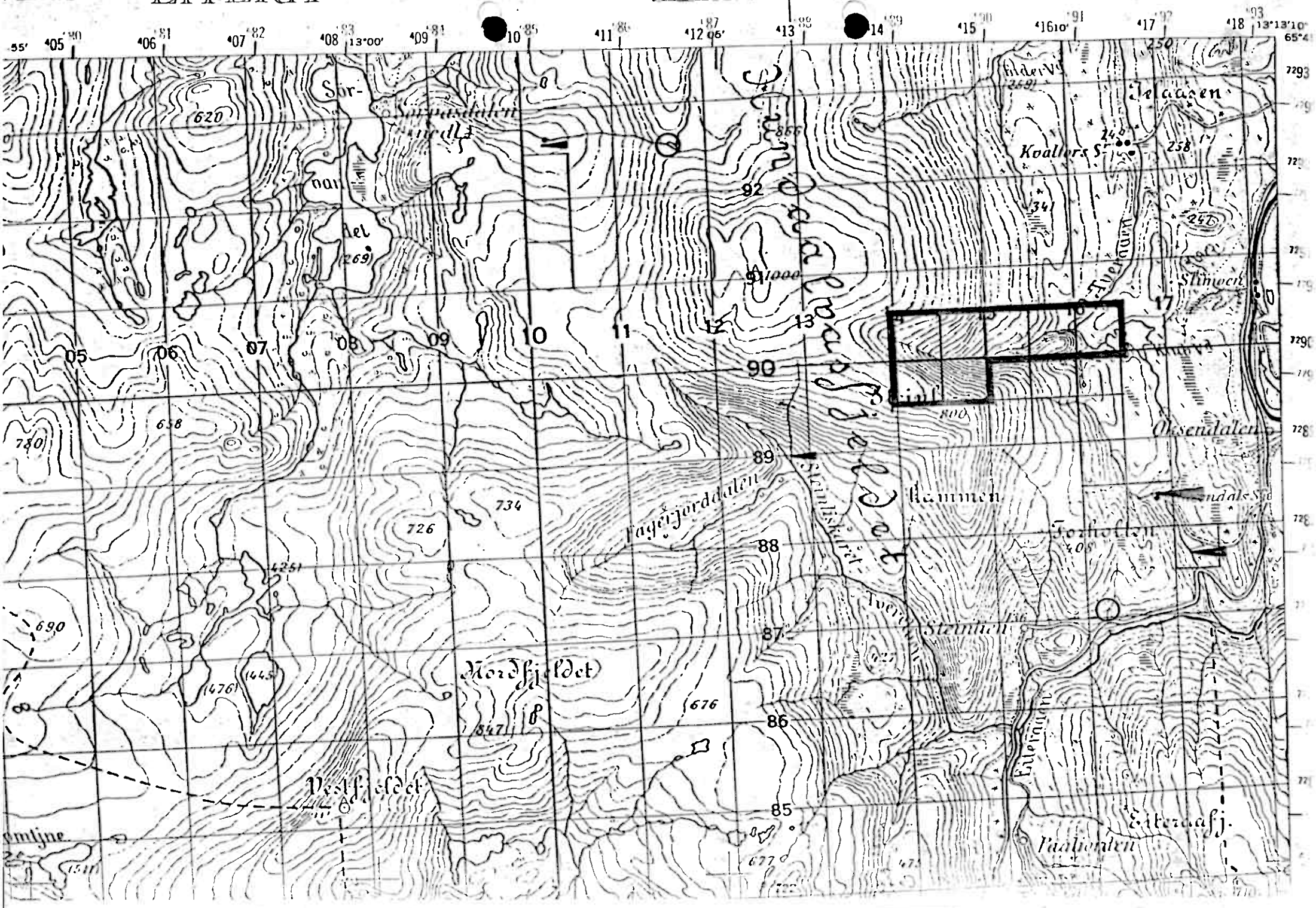
Overburden:

Field Comments: MARBLE IN STREAMBED

Access: BY ROAD

Photogeology:

Est No. Follow up Samples 20 Time Requ'd 2 Team Days



CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1826 II EITERÅ		DN 179 I, II, III, IV

Claim Name FORHOLTEN No 89 Area 2,5 km² Appl.date 15.12.82

Stream Length 3 km² Drainage Area 3 km² Av. Topog. MOD TO STEEP
.....
180-680 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
050263	74	2	29	7	67	36		
110171		<1	18	9	58	<1		
110172	107	<1	23	13	74	7		

Regional Geology: GRANODIORITE + MICASCHIST

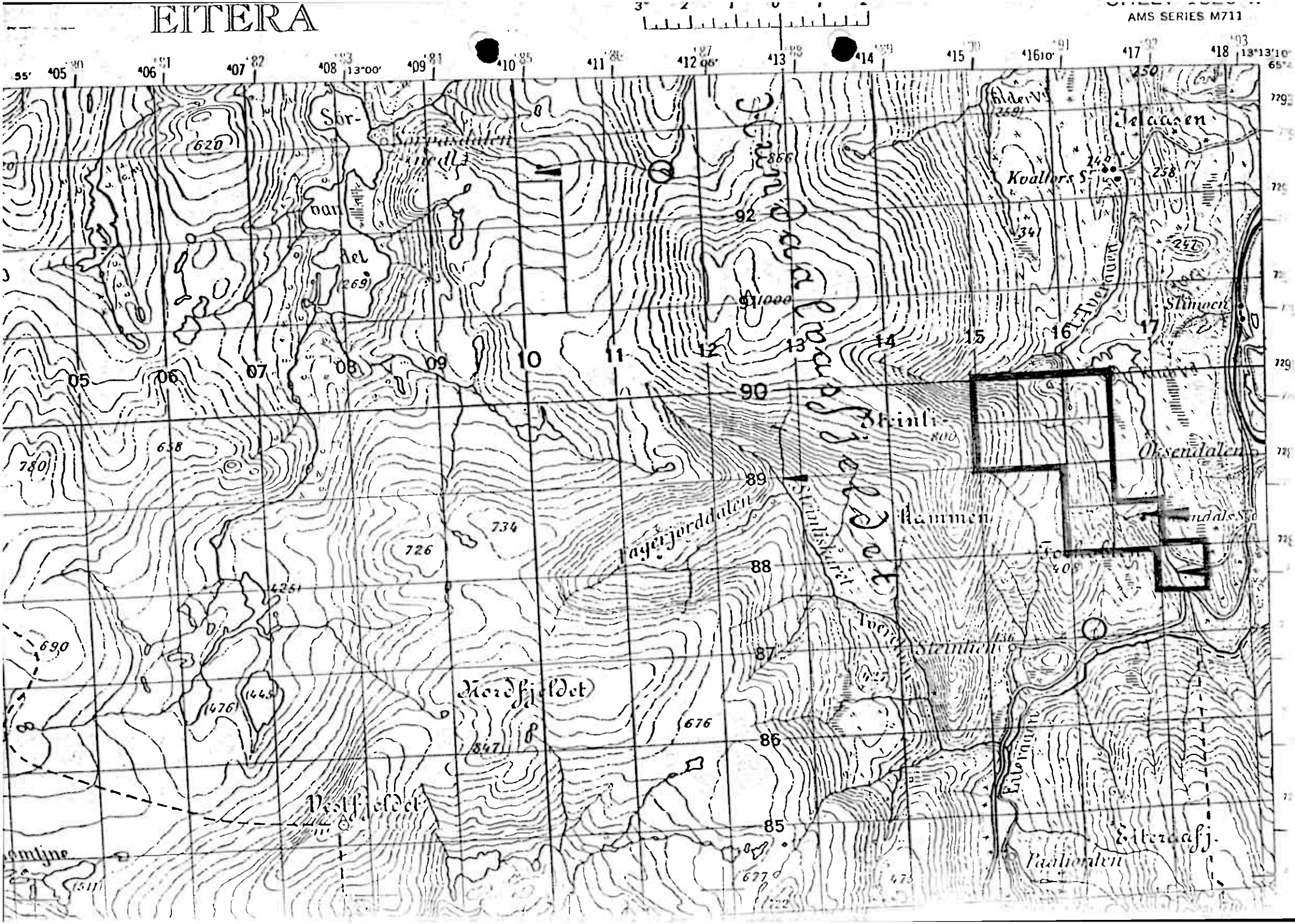
Overburden:

Field Comments: SAMPLE TAKEN NEAR THE ROAD 200-300 m FROM THE ROAD/JUNCTION.

Access: BY ROAD

Photogeology:

Est No. Follow up Samples	30	Time Requ'd	2	Team Days
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HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1826 II EITERÅ		DM 176 II

Claim Name VIST-TINDERNE No 35 Area 0,75 km² Appl.date 28.10.82

Stream Length 0,75 km² Drainage Area 0,5 km² Av. Topog. STEEP

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add. Sb	Mo
010029	37	22	24	64	56	<1	<1	<1	<1
010030	12/33	2	14/13	35/33	70/59	1	<1/<1	<1	<1
010031		<1	14	47	47	5			

Regional Geology: MICA SCHISTS/GNEISSES

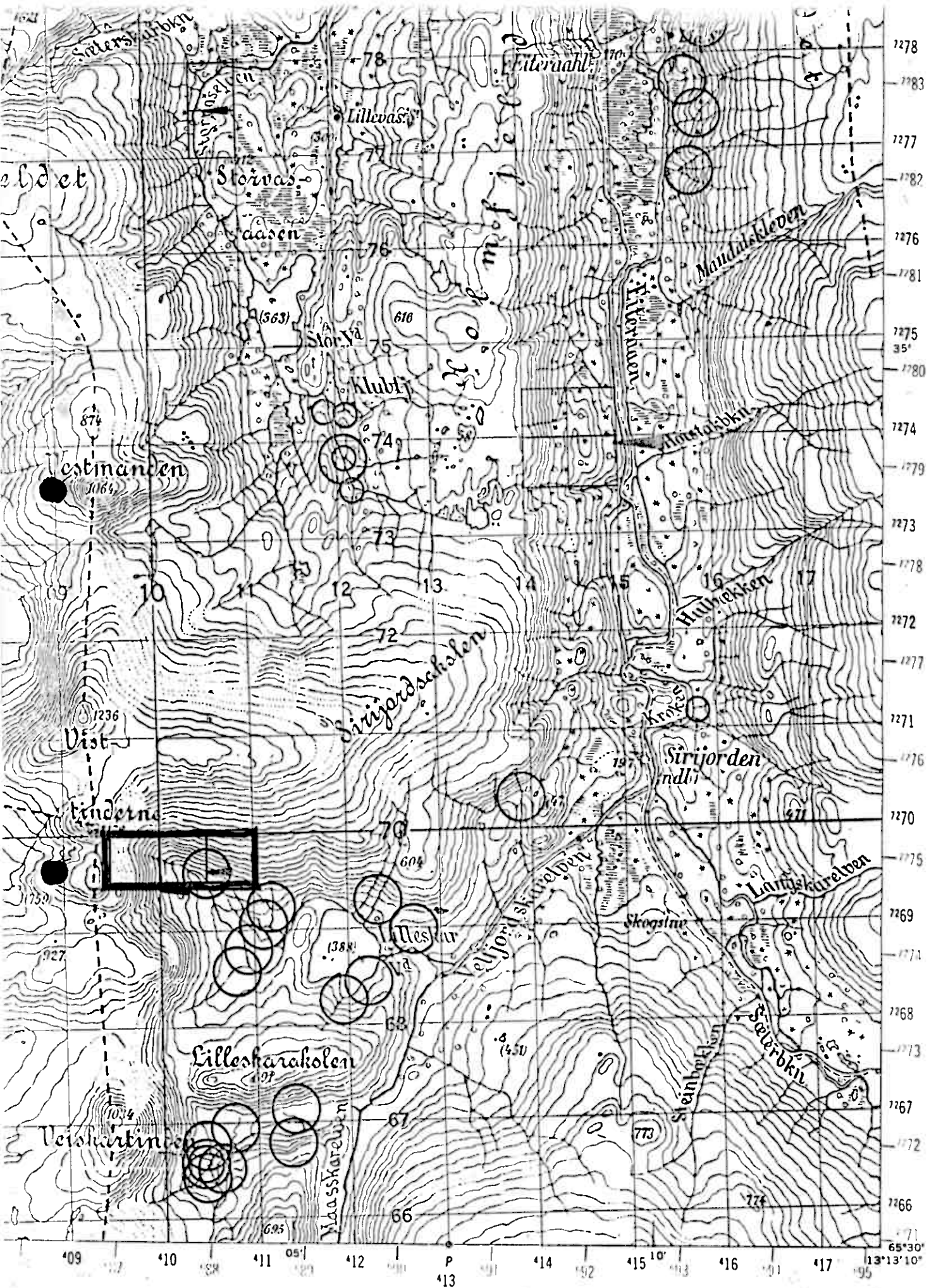
Overburden:

Field Comments:

Access: HELICOPTER

Photogeology:

Est No. Follow up Samples 8 Time Requ'd 1 Team Days



TRYKT I NORGES GEOGRAFISKE OPPMÅLING 12-80.

INDEX TO ADJOINING SHEETS

12-80

CLAIM DETAILS

	M 711	Aerial Photos	0ko.kart
Claim Location:	1826 II EITERÄ		DM 176 IV

Claim Name EITERAEN No 58 Area 1 km² Appl.date 03.11.82

Stream Length 0,75 km² Drainage Area 0,75 km² Av. Topog. MOD. STEEP 110-540 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add.
210236		<1	22	8	69	1	<1	
210237	137	<1	29	14	118	<1	<1	

Regional Geology: GRANODIORITE + MICASCHIST

Overburden:

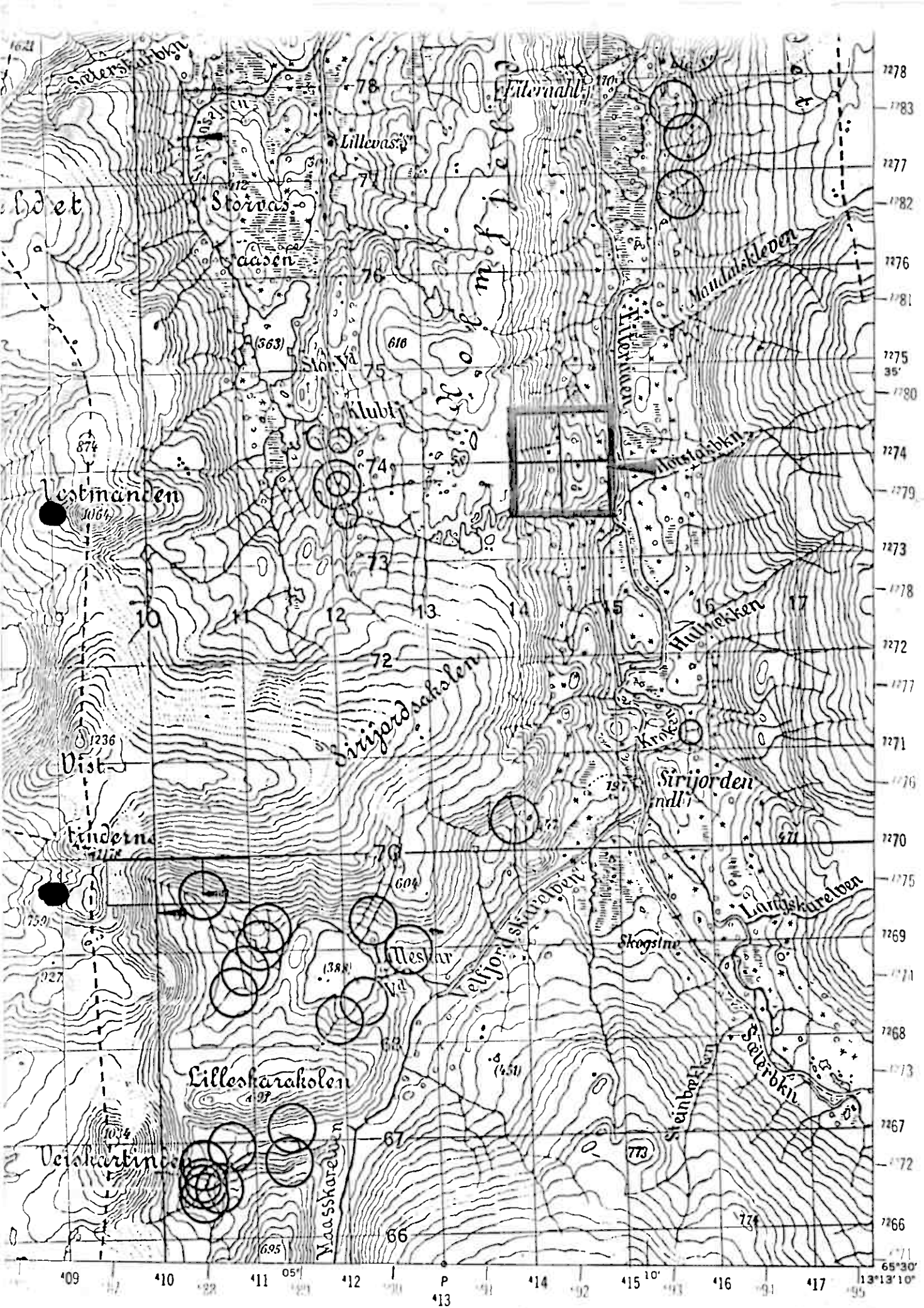
Field Comments: MARBLE (WHITE COARSE GRAINED). BOULDERS OF MICA GNEISS, GRANITE,
STREAM NOT ON MAP.

Access: ROAD

Photogeology:

Est No. Follow up Samples 10

Time Requ'd	1	Team Days
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3 Miles

1000 Meters
Feet

INDEX TO ADJOINING SHEETS

INDEX TO ADJOINING SHEETS

TRYKT I NORGES GEOGRAFISKE OPPMÅLING 12-80.

HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1826 II EITERA		DN 177 I, III

Claim Name GRANHEIM No 90 Area 1 km² Appl.date 15.12.82

Stream Length 0,5 km² Drainage Area 1 km² Av. Topog. MOD - STEEP

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
050275		<1	31	11	61	<1		
050276		<1	49	16	60	<1		
050277		NO RESULTS RECEIVED						
050278	33	<1	48	9	55	<1		
050279		<1	105/44	13	60	<1		

Regional Geology: GRANODIORITE & MICASCHIST

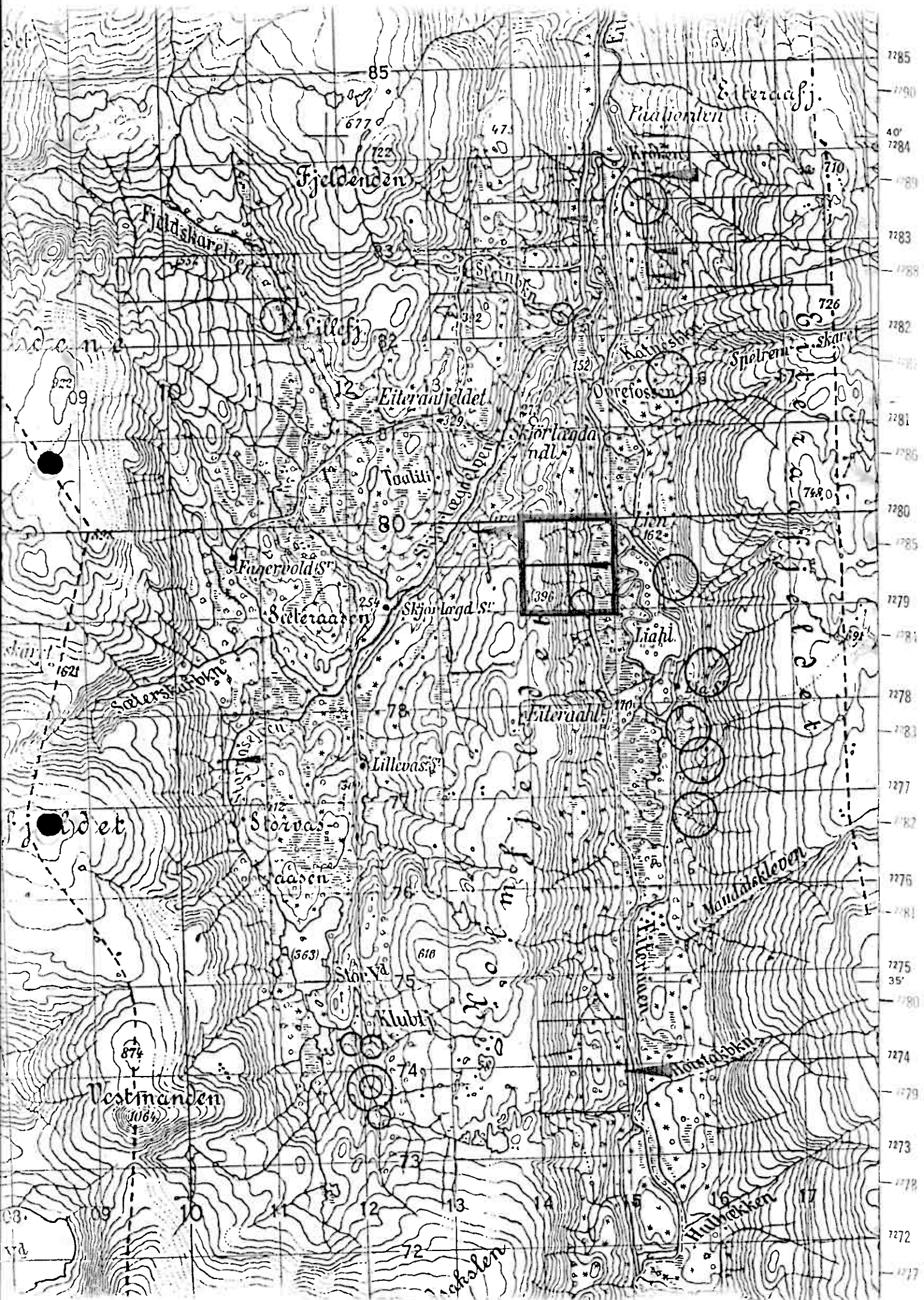
Overburden:

Field Comments: THE RIVER IS DRY IN SUMMER. THE ROAD CROSSES THE RIVER
1700 m FROM SKJORLEGDELVEN.

Access: BY ROAD

Photogeology:

Est No. Follow up Samples 10 Time Requ'd 1 Team Days



CLAIM DETAILS

Claim Name SÅTERSKARET No. 33 Area 1,25 km² Appl. date 28.10.82

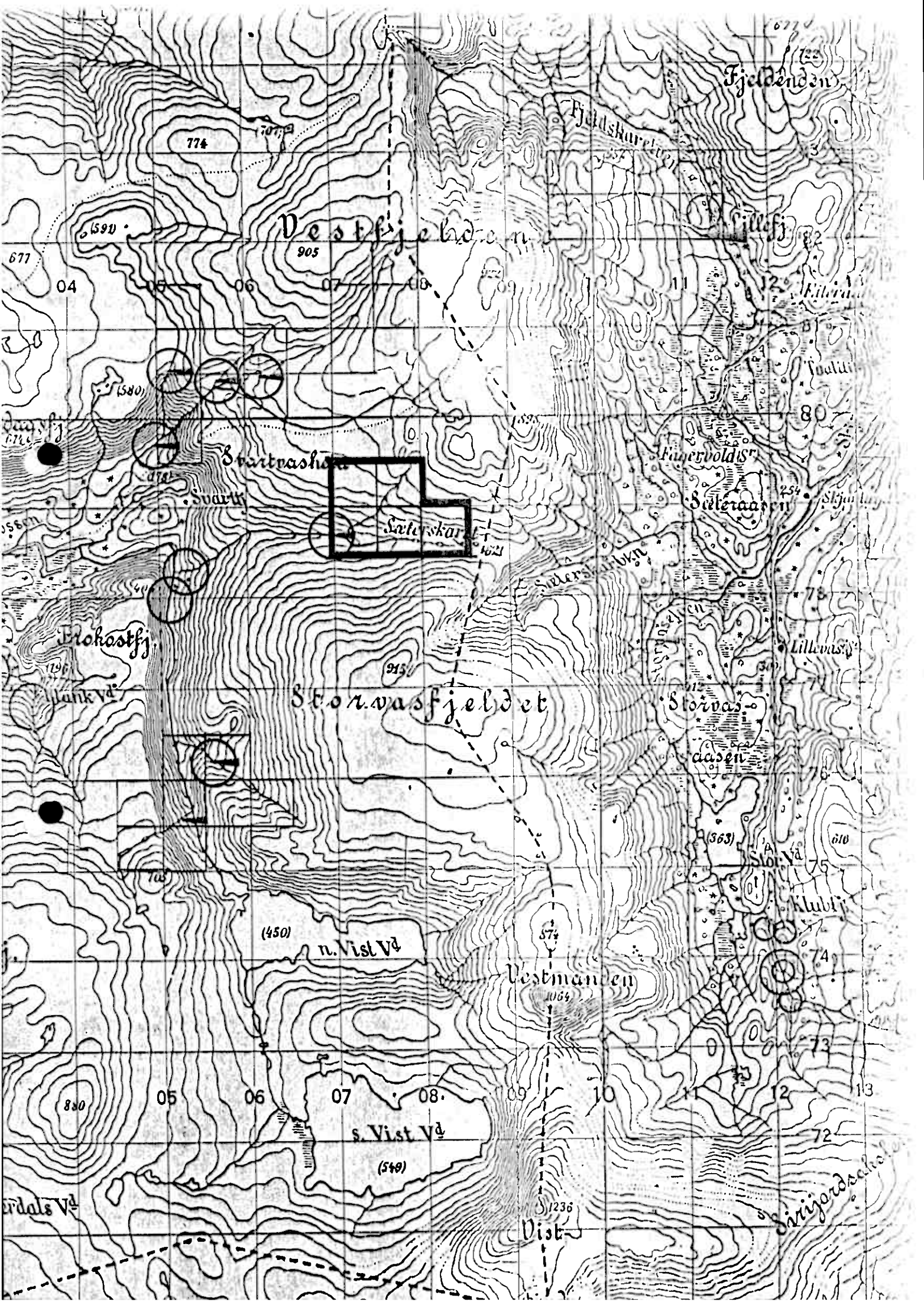
Stream Length 1 km² Drainage Area 1 km² Av. Topog. MODERATE 570-750 m

Regional Geology: MICA SCHIST, GRANODIORITE

Field Comments:

Photogeology:

Time Requ'd	1	Team Days
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HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1826 II EITERA		DM 178 II, N 178 I

Claim Name FJELLSKARELVEN No .62.... Area ...2... km² Appl.date ..16.11.82..

Stream Length 3,5 km² Drainage Area 2 km² Av. Topog. MODERATE 320-720 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
170147	138	<1	14	30	48	9		
170148		<1	17	21	56	12		
170149		<1	18	13	68	3		
170150		<1	12	30	44	3		
170151		<1	14	20	70	6		

Regional Geology: GRANODIORITE, MICASCHISTS AND MARBLES.

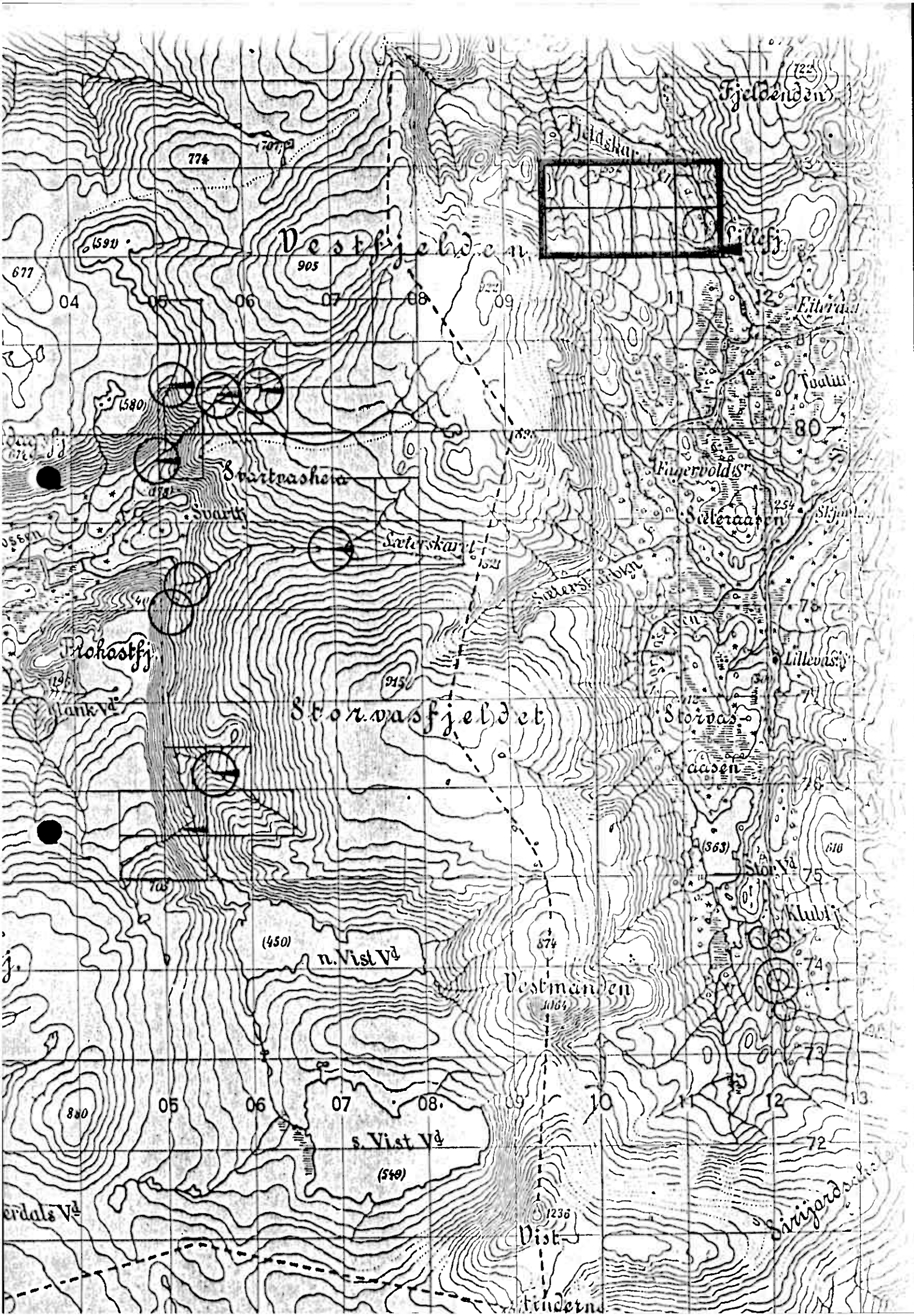
Overburden: ALLUVIAL STREAM SEDIMENTS

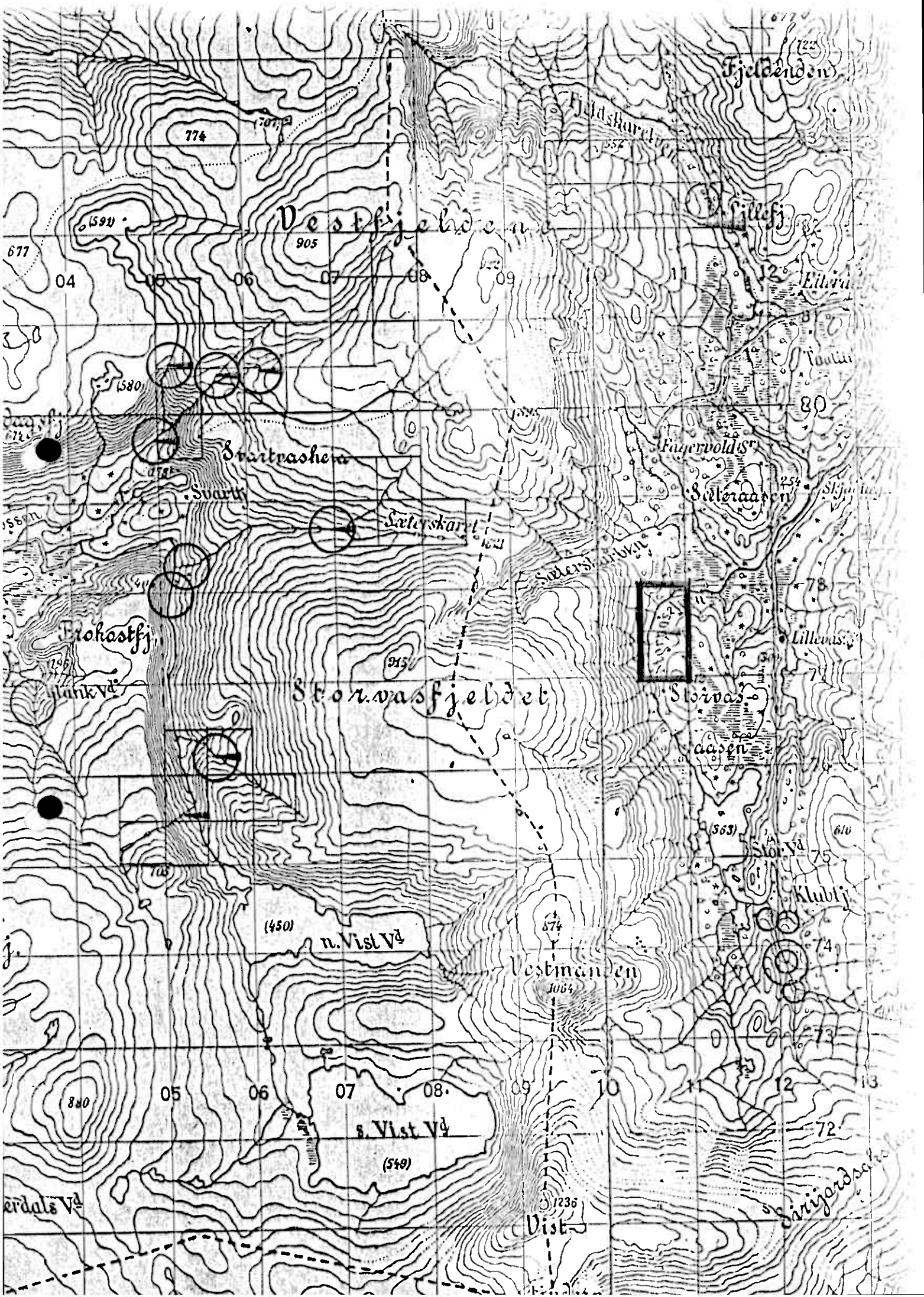
Field Comments: CONTAMINATION UNLIKELY. (148) COBBLES OF GRANODIORITE, MARBLES AND MICASCHISTS.

Access: 3 km FROM ROAD. HELICOPTER.

Photogeology:

Est No. Follow up Samples 30 Time Requ'd 2 Team Days





HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1826 II EITERÅ		DL 177 III

Claim Name NEDRE VISTVATN No 34 Area 2 km² Appl. date 28.10.82

Stream Length 4 km² Drainage Area 2 km² Av. Topog. STEEP 200-700 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add. Sb	Add. Mo
010025	12	23	16	53	60	<1	<1	<1	<1
010026	1	3	3/4	12/13	35/45	<1	<1/<1	<1	<1

Regional Geology: GRANODIORITE WITH STILBIITE ALTERATION

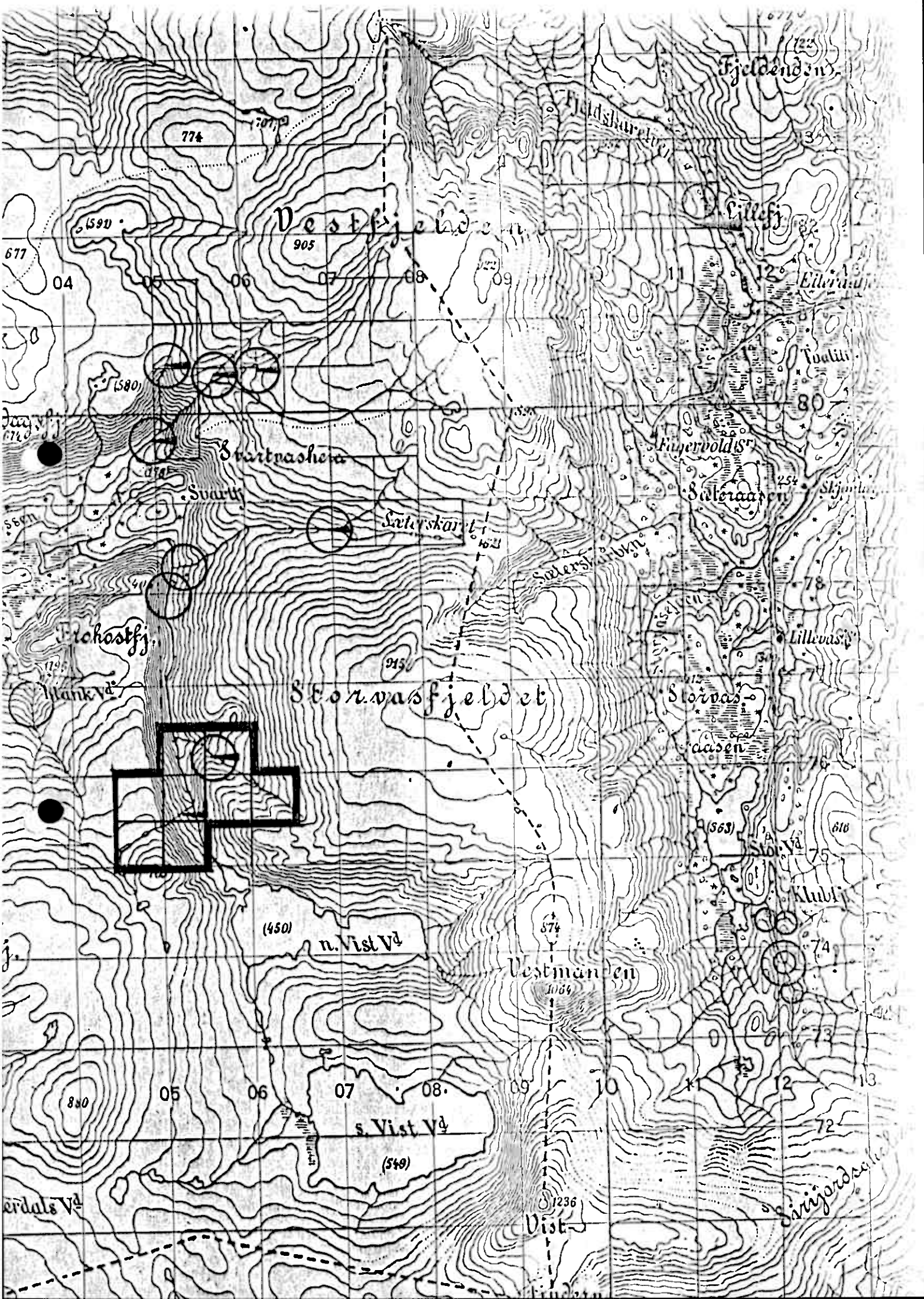
Overburden:

Field Comments:

Access: HELICOPTER

Photogeology:

Est No. Follow up Samples 30 Time Requ'd 2 Team Days



CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1826 II EITERA		DK 175 II

Claim Name N. VESTERELVEN No 28 Area 1,5 km² Appl.date 28.10.82

Stream Length 2 km² Drainage Area 1.25 km² Av. Topog. MOD/STEEP

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add. Sb	Add. Hg
01004	9	1	19	26	114	2	<1	<1	<1

Regional Geology: CONTACT BETWEEN MICA GNEISS AND DIORITE

Overburden:

Field Comments: SKARN MINERALS

Access: HELICOPTER

Photogeology:

Est No. Follow up Samples	20	Time Requ'd	2	Team Days
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HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1826 II EITERÅ		DK 176 II

Claim Name RUBBEN No 29 Area ... 1 ... km² Appl. date 28.10.82.

Stream Length 1 km² Drainage Area 0,5 km² Av. Topog. STEEP 60-720 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add. Sb	Add. Mo
090010		2	17/15	17/17	61/57	1	<1/<1	<1	<1
090011	96	<1/1	12/14	12/15	42/44	2/3	<1/<1	<1/	<1/
090012		<1	12	7	38	3	<1	<1	<1
090013		<1	16	16	105	<1	<1	<1	<1
090014		<1	7	3	19	<1	<1	<1	<1

Regional Geology: MICA SCHISTS/GNEISSES

Overburden: ALLUVIAL, SOIL

Field Comments:

Access: BOAT + 5 km WALK, HELICOPTER

Photogeology:

Est No. Follow up Samples 10

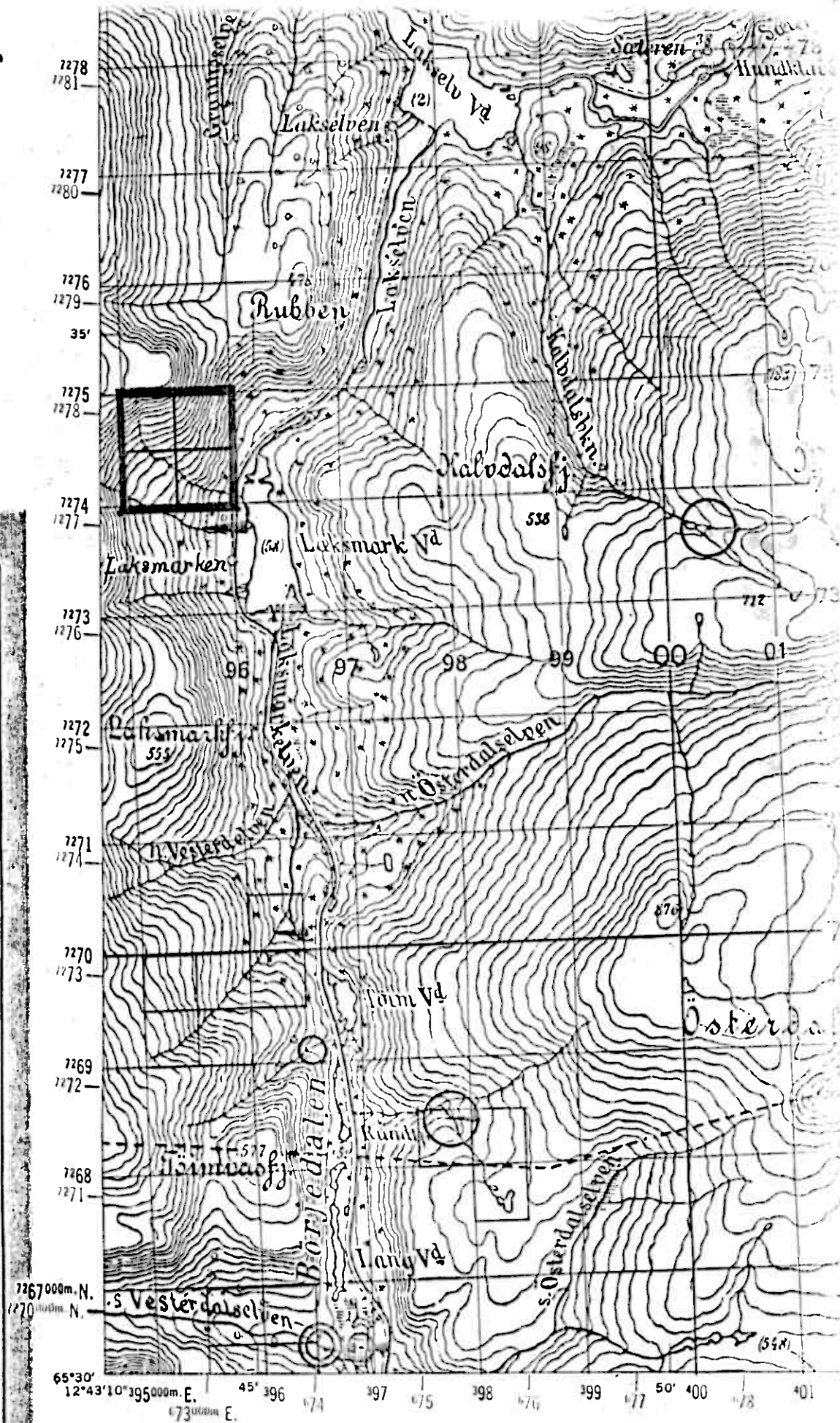
Time Requ'd 1 Team Days

BP NORGE a.s. MINERALS
HELGELAND PROJECT 1982

ANOMALY AND
TERRACE COMPILATION

EXPLANATION

Au Anor
Au Anor



AMS M711
First Edition-AMS

Prepared by the Army Map Service (PV), Corps of Engineers, U. S. Army, Washington, D. C. Mosaicked in 1952 from Norge 1:50,000, Norges Geografiske Oppmåling, Sheets 117 and 118, 1944. Planimetric detail partially revised.

LEGEND-TEKNTYDING

HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1826 II EITERA		DK 175 IV

Claim Name RUNDJERNET No 30 Area 0,75 km² Appl.date 28.10.82

Stream Length 1 km² Drainage Area 0,5 km² Av. Topog. MODERATE 270-480 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add. Sb	Add. Mo
010001		<1	16	39	85	<1	<1	<1	<1
010002	40	13	41	43	65	<1	<1	<1	<1

Regional Geology: GRANODIORITE, MARBLE

Overburden:

Field Comments: CONTAMINATION FROM WOODEN POLE POWER LINE UP STREAM.

Access: HELICOPTER

Photogeology:

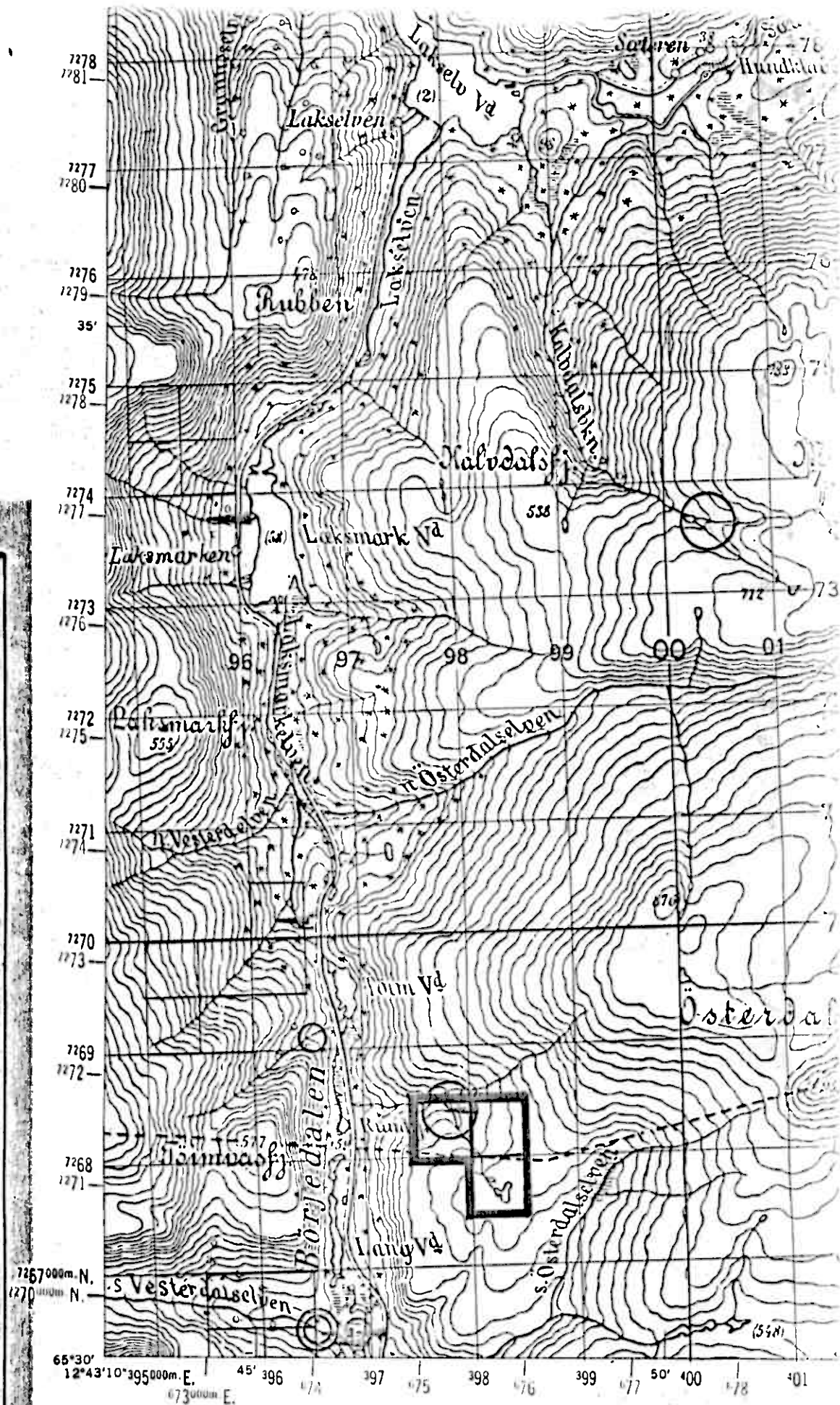
Est No. Follow up Samples 10

Time Requ'd 1 Team Days

BP NORGE a.s. MINERALS
HELGELAND PROJECT 1982

EXPLANATION

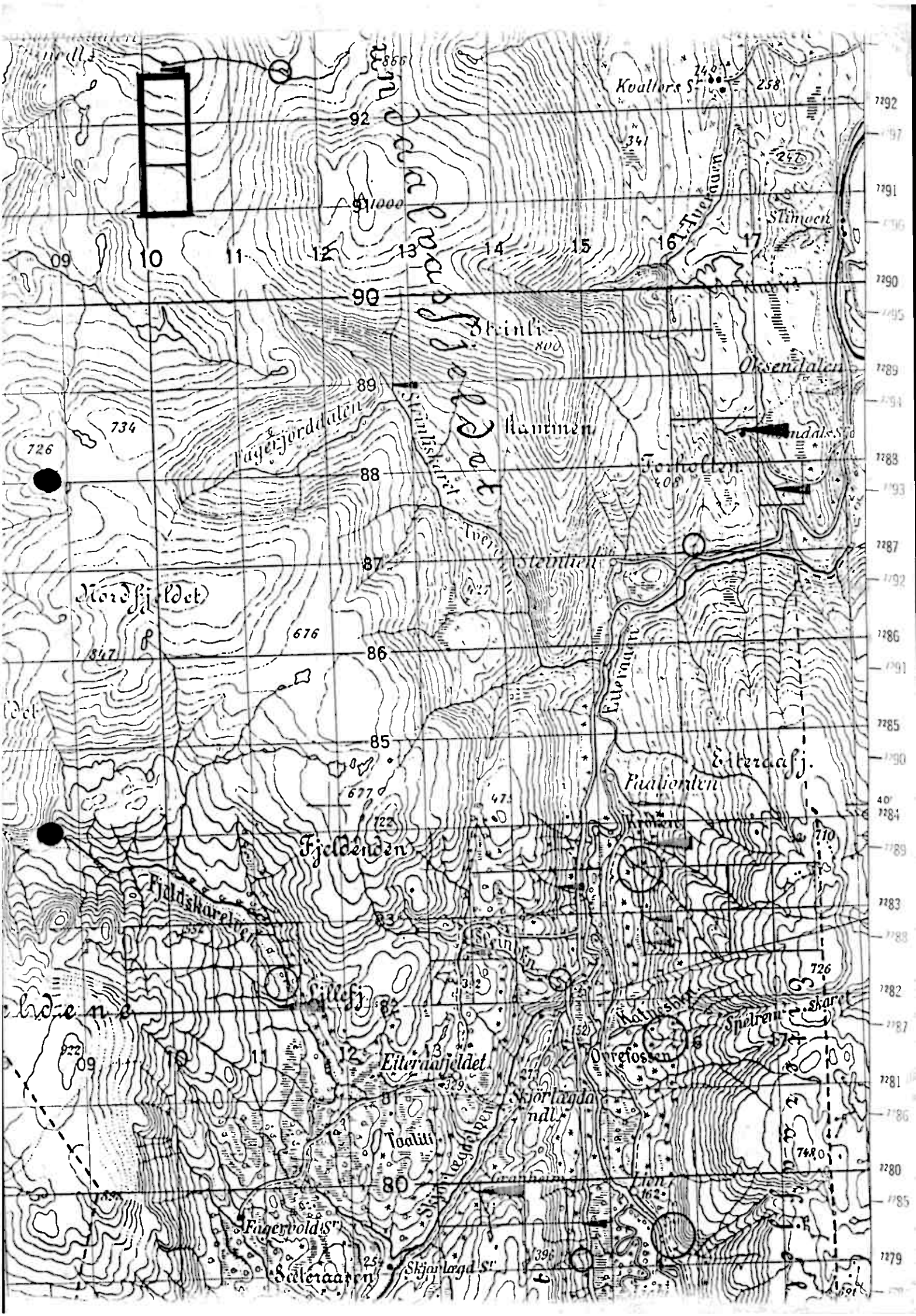
▲ Au Anort
▲ Au Anort



AMS M711
First Edition-AMS

Prepared by the Army Map Service (PV), Corps of Engineers, U. S. Army, Washington, D. C. Mosaicked in 1952 from Norge 1:50,000, Norges Geografiske Oppmåling, Sheets 17 and 18, 1944. Planimetric detail partially revised.

LEGEND TEKNTYDING



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1826 II EITERÅ		DL 178 IV, M 178 III

Claim Name VESTFJELDENE No 32 Area 3,75 km² Appl.date 28.10.82

Stream Length 7 km² Drainage Area 5 km² Av. Topog. STEEP/MOD
260-900 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add. Sb	Add. Mo
010021	5	18	8/7	38/13	151/56	<1	<1/<1	<1	<1
010022	19	21	12/15	14/18	37/46	4	<1/<1	<1	<1
010023	7	5	18/11	15/11	45/34	<1	<1/<1	<1	<1
010024	4	8	3/3	19/20	52/48	<1	<1/<1	<1	<1

Regional Geology: GRANODIORITE, GRANITE

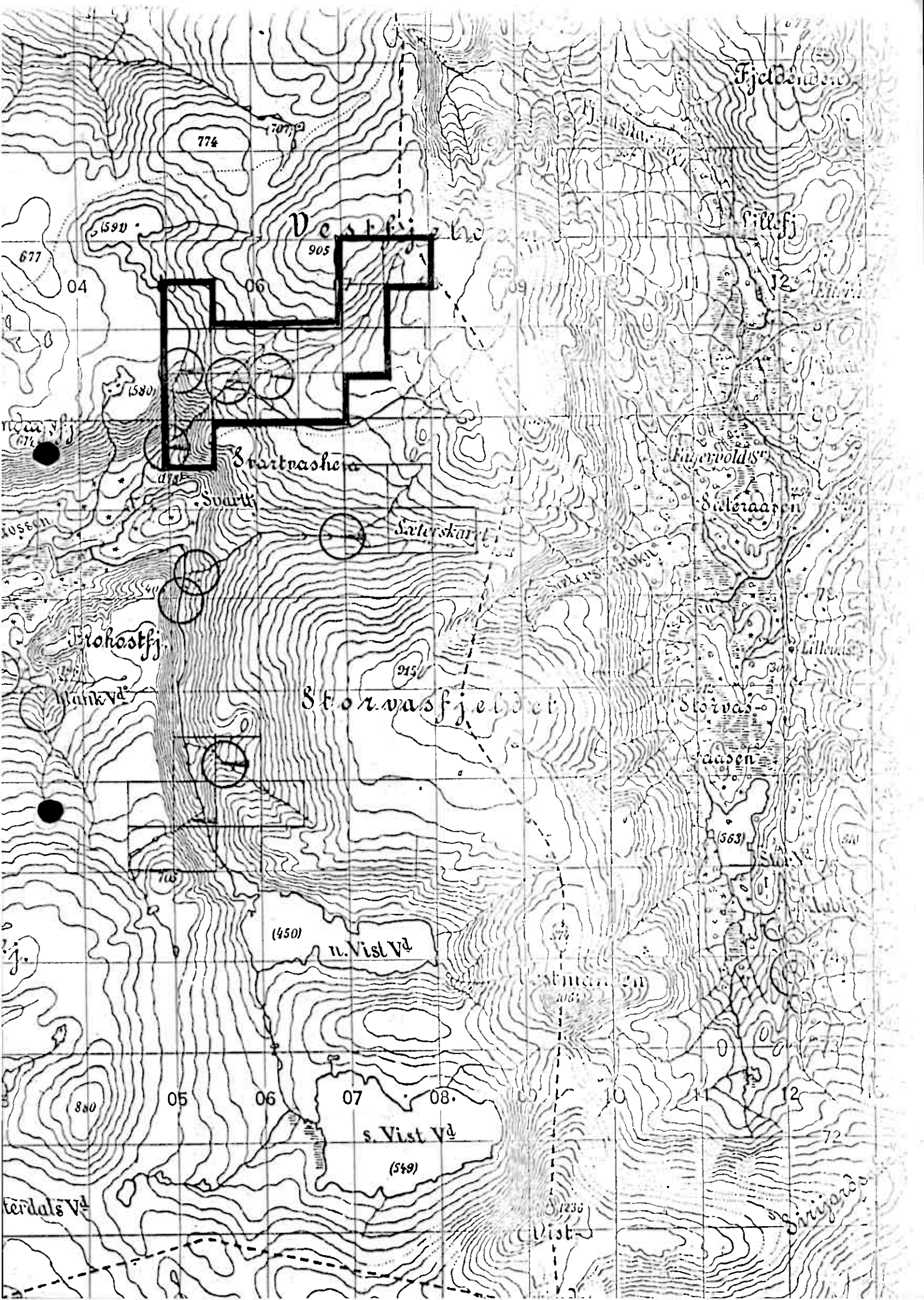
Overburden:

Field Comments: STILBITE (STEAM AUREOLE ALTN.)

Access: HELICOPTER

Photogeology:

Est No. Follow up Samples 50 Time Requ'd 5 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1826 II EITERA		DN 178 I

Claim Name ... FJELLDENDEN No . 91 ... Area ... 1,5 km² Appl. date ... 15.12.82

Stream Length 2,5 km² Drainage Area 2 km² Av. Topog. MOD TO STEEP
190-550 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
050269		<1	38	34	112	<1		
050270	43	<1	23	13	127	<1		
050271		<1	27	27	97	<1		

Regional Geology: GRANODIORITE + MICASCHIST

Overburden:

Field Comments: (270) THE ROAD CROSSES THE RIVER 5,9 km FROM THE JUNCTION BY
SAMPLE NO 050263.

Access: BY ROAD

Photogeology:

Est No. Follow up Samples 20 Time Requ'd 2 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1826 II EITERÅ 1825 I TOSBOTN		

Claim Name S. VESTERDALSELVEN No 31 Area 1 km² Appl.date 28.10.82

Stream Length 1,5 km² Drainage Area 1 km² Av. Topog. MODERATE 140-300 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add. Sb	Add. Mo
040124		<1	10	17	48	7	<1	<1	<1
040125	4	<1	20	45	151	2	<1	<1	<1
040126	3	<1	20	39	203	4	<1	<1	<1
040127		<1	25	49	189	<1	<1	<1	<1
040128	25	<1	23	39	185	<1	<1	<1	<1
040129		1	22	78	206	11	<1	<1	<1

Regional Geology: GRANITE, MICA SCHIST, MARBLE.

Overburden: ALLUVIUM, SOIL

Field Comments:

Access: HELICOPTER

Photogeology:

Est No. Follow up Samples 15 Time Requ'd 1 Team Days

TEENIE COMPIATION

Au Anoi
Au Anoi



LEGEND—TEIKNTYDING

HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1826 II EITERÅ		DK 178 IV, 177 II Øl 178 I, III

Claim Name REMFJELDET No 27 Area 1 km² Appl.date 28.10.82

Stream Length 4 km² Drainage Area 2 km² Av. Topog. MODERATE

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add. Sb	Mo
090025	30	<1	5/6/6/6	5/5/5/4	24/25/ 24/27	<1	<1/<1/ <1/<1	<1	<1
090026		<1	3	4	14	<1	<1	<1	<1

Regional Geology: GRANODIORITE

Overburden: SOIL

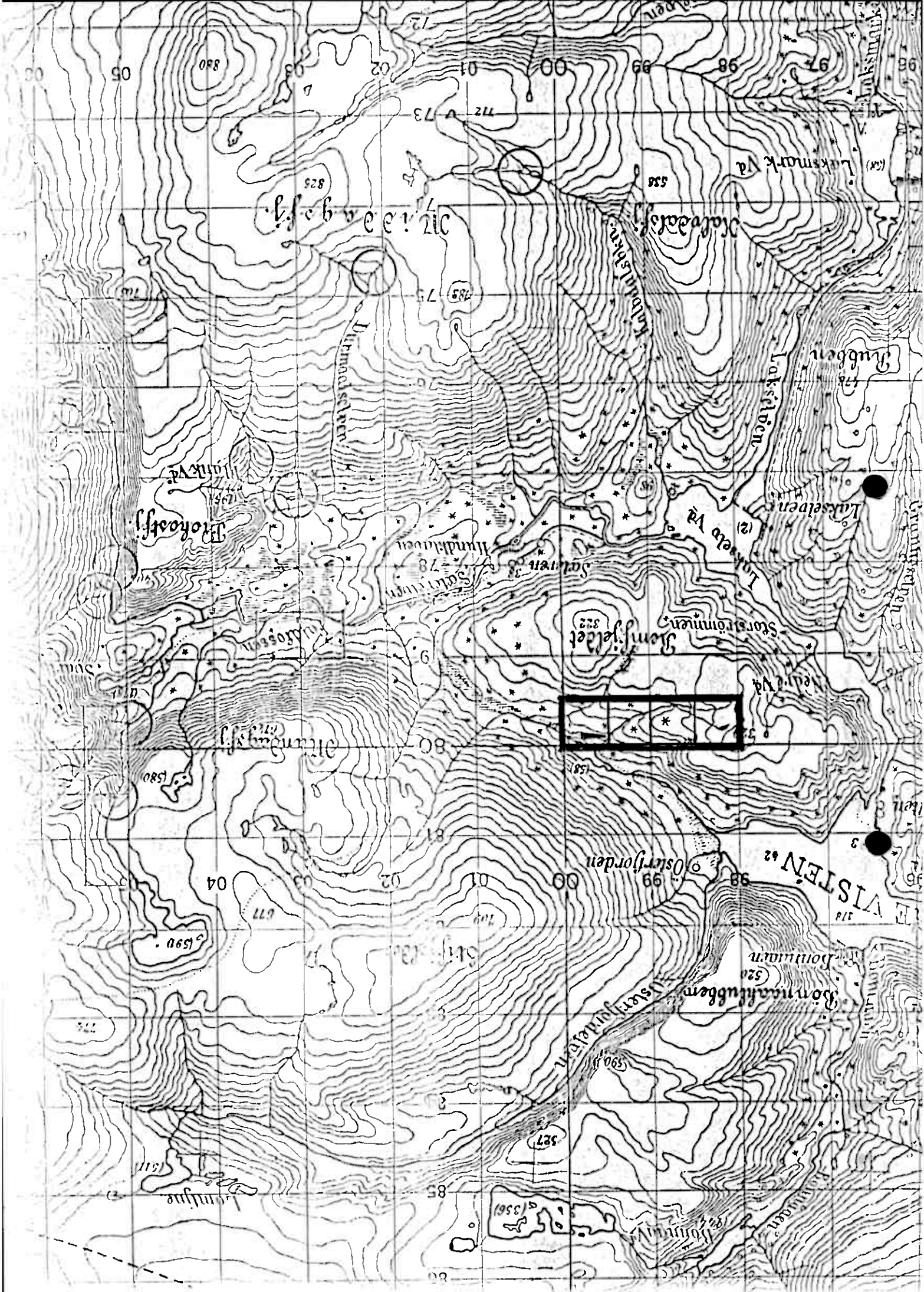
Field Comments:

Access: BOAT + 1 km WALK + HELICOPTER

Photogeology:

Est No. Follow up Samples 25

Time Requ'd 2 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1826 II EITERÅ		DL 177 IV

Claim Name FALDFOSSEN No ..59... Area ...0,5 km² Appl.date ..03.11.82

Stream Length ...0,5 km² Drainage Area ...0,5 km² Av. Topog. GENTLE 90-170 m.

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add. Sb Mo
090018		2	12	10	51	4	<1	<1 <1
090019	27	<1	15	5	39	2	<1	<1 <1

Regional Geology: GRANODIORITE + MICASCHIST

Overburden:

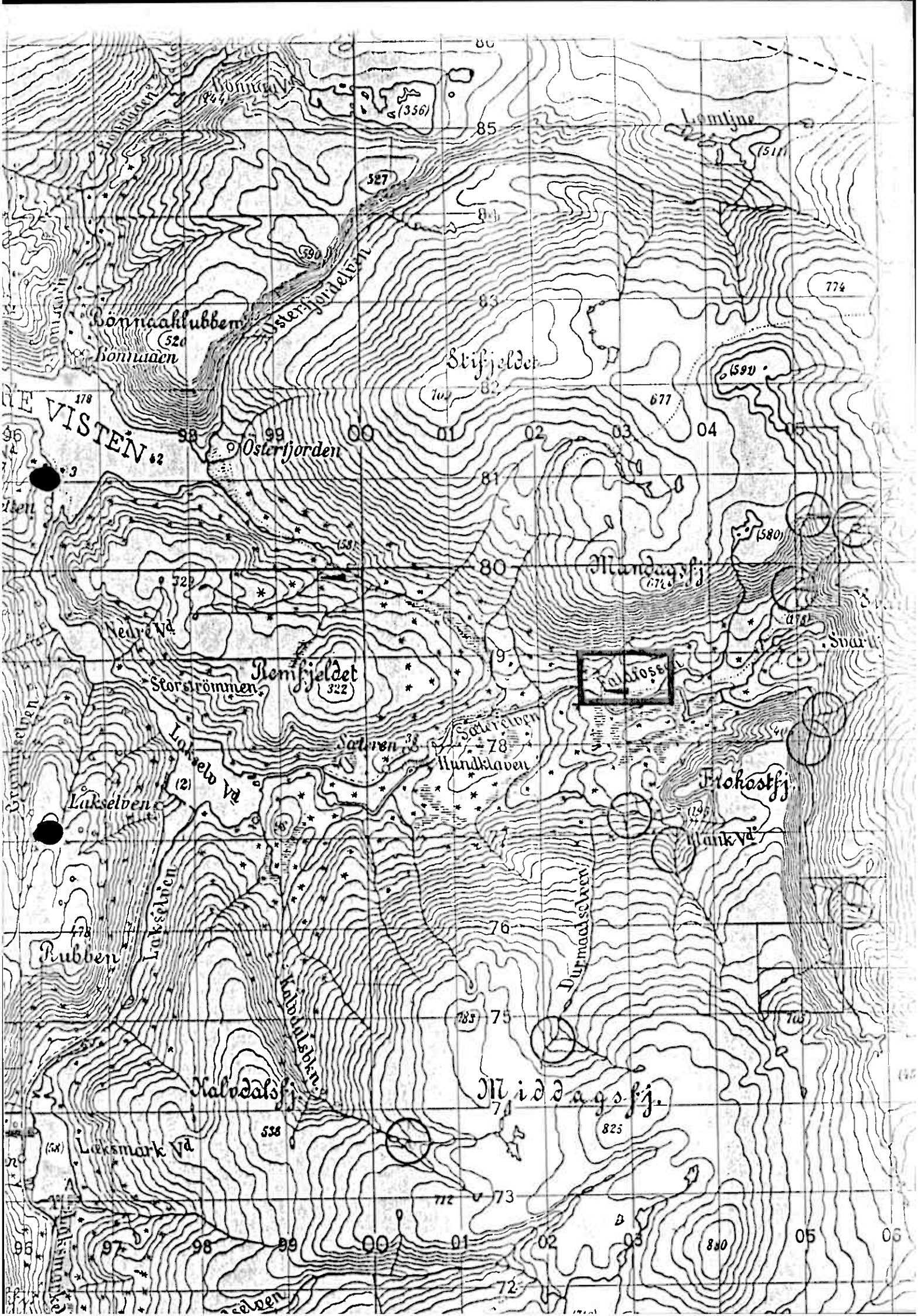
Field Comments: ALLUVIAL SEDIMENTS. GRANODIORITE OUTCROP 500 m UPSTREAM.

Access: BOAT + 5 km WALK. HELICOPTER.

Photogeology:

Est No. Follow up Samples 5

Time Requ'd 1 Team Days



CRANE

Map Sheet Grane

Gold anomalies concentrate around the margins of the Reinsfjellet granite (dated at $550 \text{ m.y.} \pm 21$), but As anomalies extend up to 2kms from the margin into the centre-parts of the intrusive.

The granodiorite is bordered by micaschists and marbles- a metasedimentary successsion which hosts Pb-Zn-W mineralization in the north.east of Ravatn. These occurrences are interpreted as high-temperature reaction skarns.

Thecorrelation between Au and As is generally strong.

Although amphibolites occur within the metasediments around the Reinfjellet granite, published geological maps lack their recording.

The micaschists and gneisses are frequently veined by granitic dykes.

A cluster of As anomalies south of Svartvatn coincides wiht a fluvio-glacial deposit of about 3x4 kms. However, Au anomalies become apparent as soon as terrain lacking heavy overburden is entered, upstream of the main valley, on the eastern border of Reinfjellet.

Apparently As anomalies are transported further downstream than corresponding Au anomalies.

MAP SHEET: 1926111 GRANE

CLAIM NAME	NO.	AREA KM ²	AU PPB	PATHFINDER ELS.	OVERBURDEN	GEOLOGY	STRUCTURES
STORMOEN	161	2.0	47	0	+	+	
LIA II	99	0.75	30	-	0	0	+
LIA I	98	0.5	18	+Zn	0	+	0
FINNSÅSEN	97	0.5	94	-	0	0	0
LANGVATNET II	96	1.5	84	0	+	0	0
LANGVATNET I	95	1.0	126	0	+	0	
KVALFORS	94	1.0	25	-	+	0	-
JAMTFJELLDAL IV	93	2.25	219	+As +Zn	+	0	0
" III	92	0.25	43	0	0	0	+
" II	78	0.75	83	0	+	0	+
" I	77	1.5	41.2	0	0	+	+
RAVATNA II	76	1.5	22	+As +W	+	0	0
" I	75	1.25	11,63	+W	0	+	0
LAKSFORS II	74	0.25	157	+As +W	+	+	+
" I	73	4.5	4,26,121	+As +W	0	+	+
			57,6				
SØRSVARTVATN C	69	6.0	181,2	+W	+	0	+
" B	68	2.75	25	+As	+	0	0
STABFORSMOEN	20	5.5	142	-	+	+	
FELLINGFORS	19	4.25	101,37	0	+	+	+
			27				
RAUVATNET	17	3.0	65	0	+	+	+
VESTERELVA	88	1.0	48	+As	0	0	0
SØR-SVARTVATN H	87	2.75	225,8	+As	0	0	0
			233				
VARDEHAUGEN	84	2.5	9,338	-	-	+	0

CLAIM NAME	NO.	AREA KM ²	AU PPB	PATHFINDER ELS.	OVERBURDEN	GEOLOGY	STRUCTURES
SØRSVARTVATN G	83	7.25	202,39	+As	-	0	0
" F	82	0.5	80	+As +W	0	0	0
" E	81	1.0	120	-	0	+	+
" D	80	0.5	27	+W	0	0	+
SVEBATT	129	0.5	54	+As	+	+	
LAKSFORS	100	0.75	35	+As+Zn	+	+	-
SVARTVATNET	18	3.75	94,25	+As +Zn	0	+	0
			14,178				
EITERÅSEN II	128	0.5	220	+As +W	+	+	

HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1926 III GRANE		

Claim Name STORMOEN No 161 Area 2 km² Appl.date 9.2.83

Stream Length 2 km² Drainage Area 2,5 km² Av. Topog. MOD/STEEP

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Arch.
180435	47	4	17	13	53	2		

Regional Geology: MARBLE + MICASCHIST

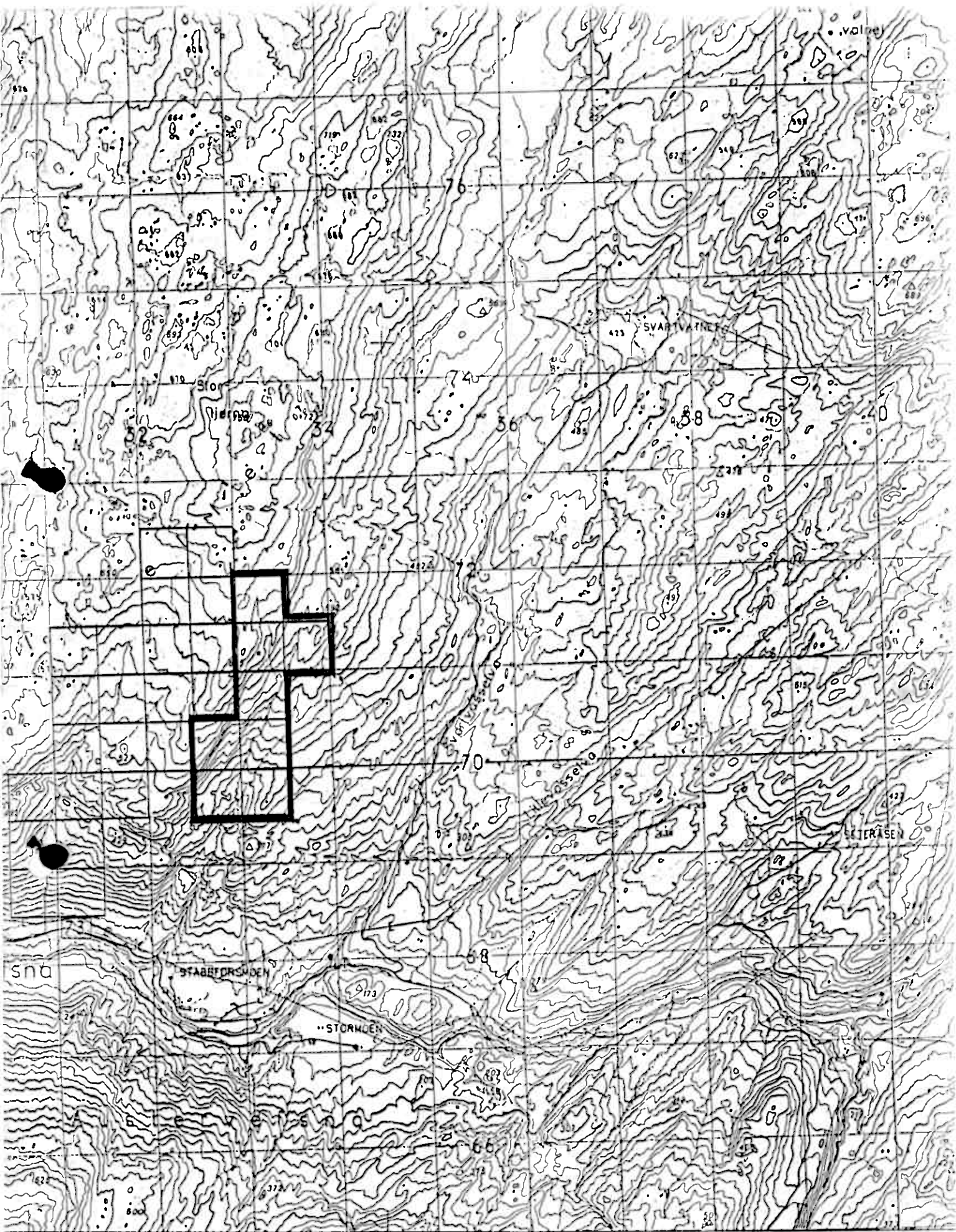
Overburden:

Field Comments: COLOUR: CREAM, SAMPLE TAKEN 50 m FROM JUNCTION.

Access: 1,5 km FROM ROAD 73

Photogeology:

Est No. Follow up Samples 30 Time Requ'd 2 Team Days



30' 31 32 33 34 35' 35 36 37 38 40' 39 40 13°

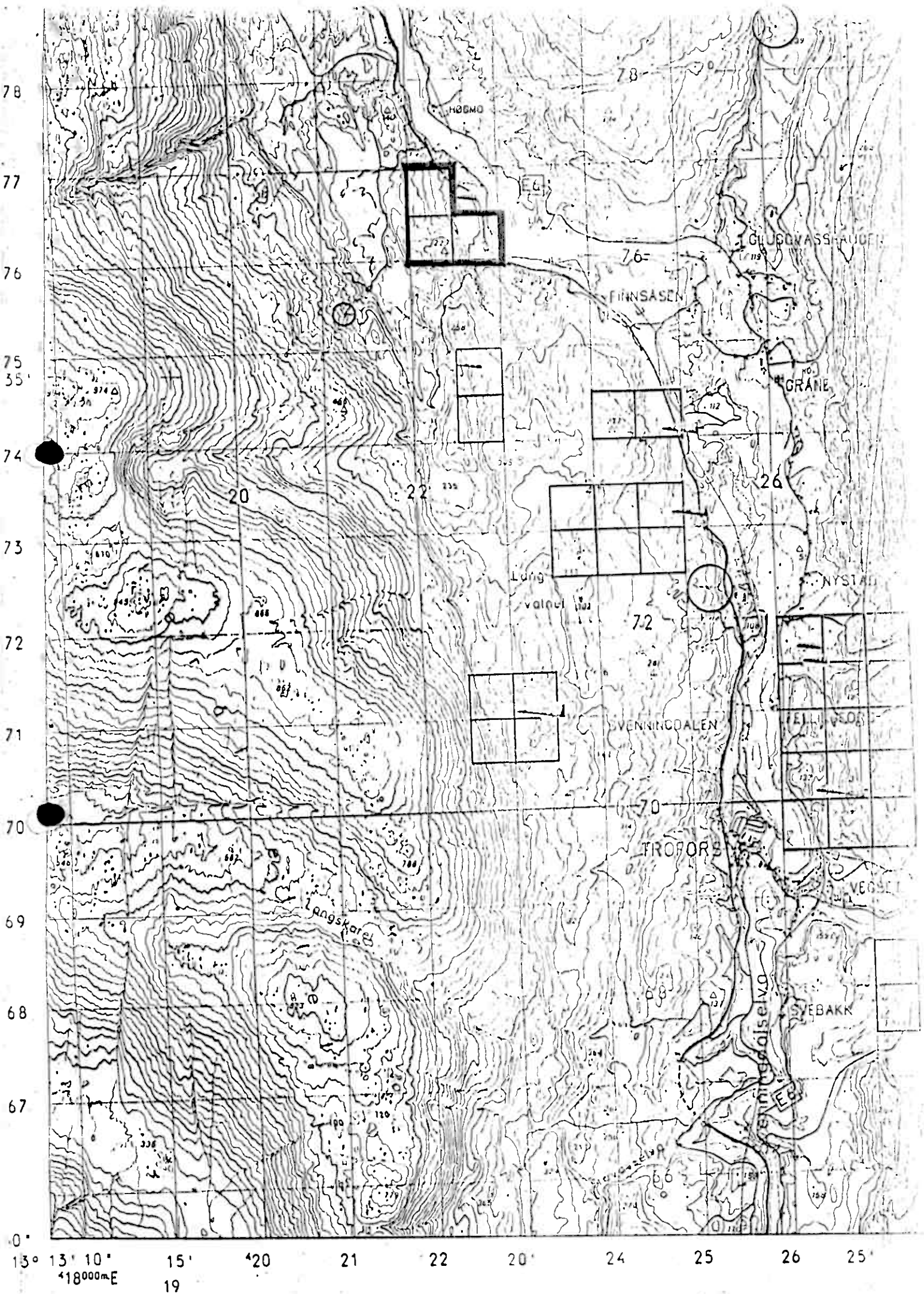
GRANE

4 5 Kilometers
4000 5000 Yards

TRYKT I NORGES GEOGRAFISKE OPPMÅLING
ETTERTRYKK ULOVLIG. NGO HAR ALL RETT ETTER LOV OM ÅNDS

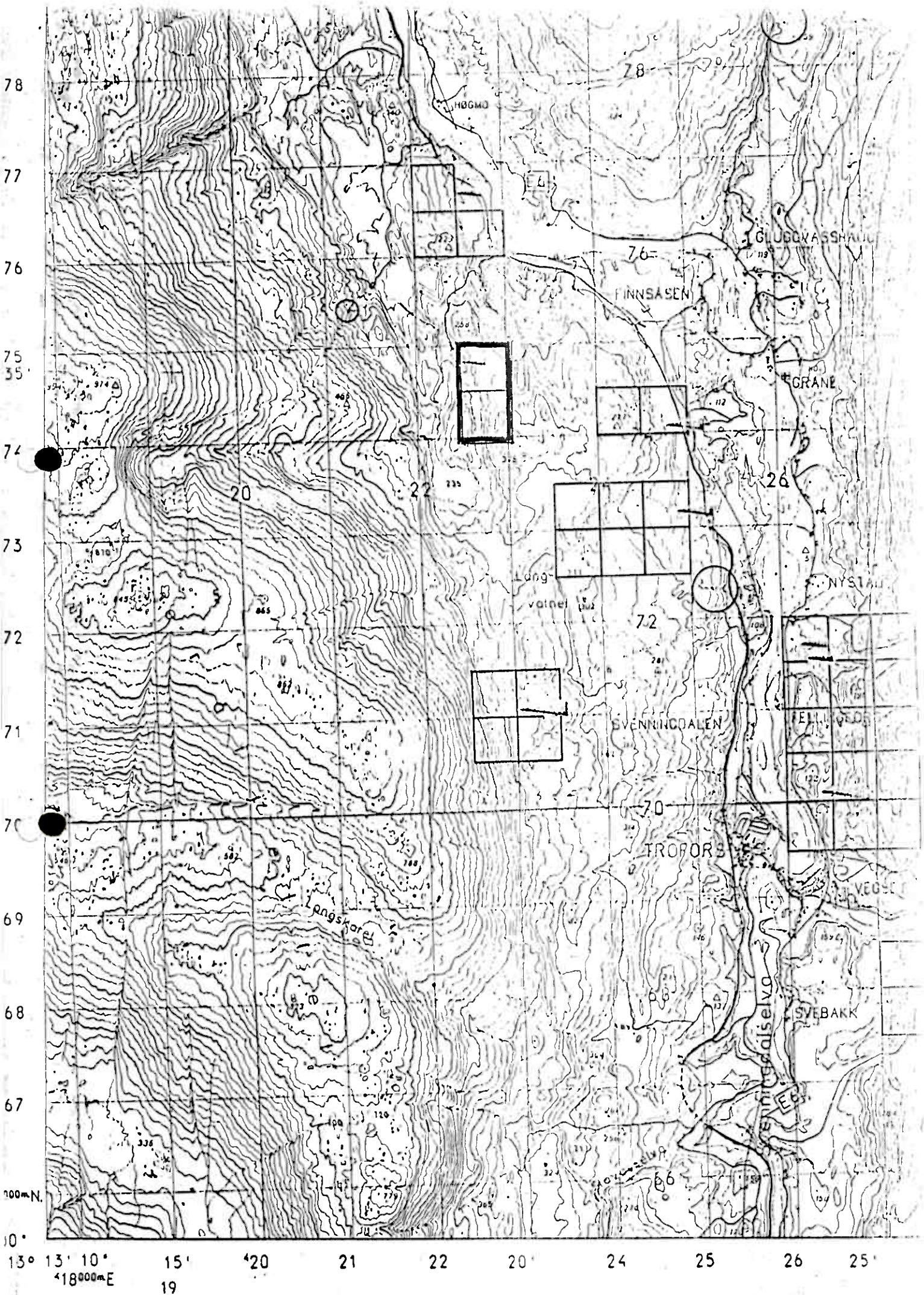
CLAIM DETAILS

Time Requ'd	1	Team Days
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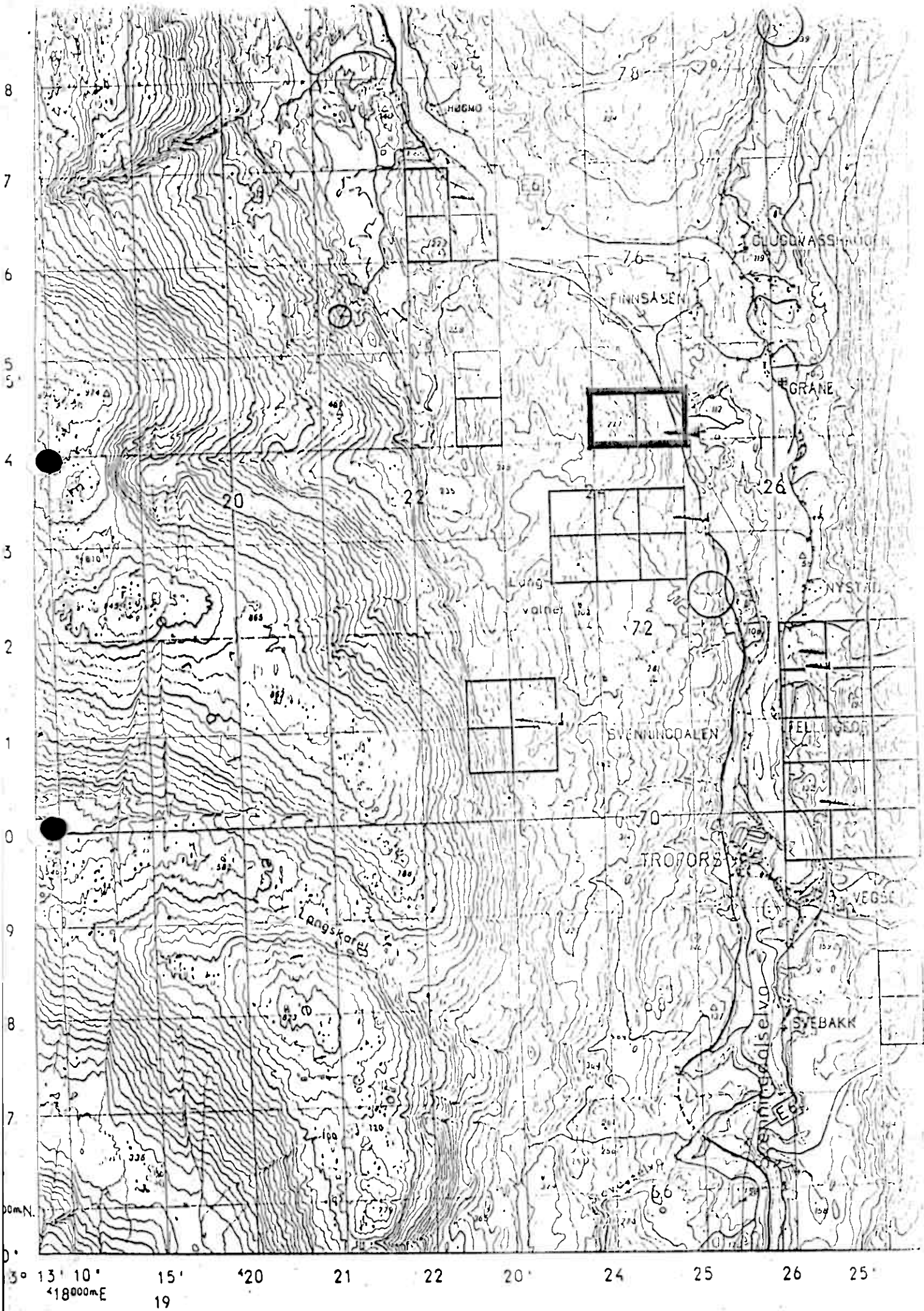
CLAIM DETAILS

Time Requ'd	1	Team Days
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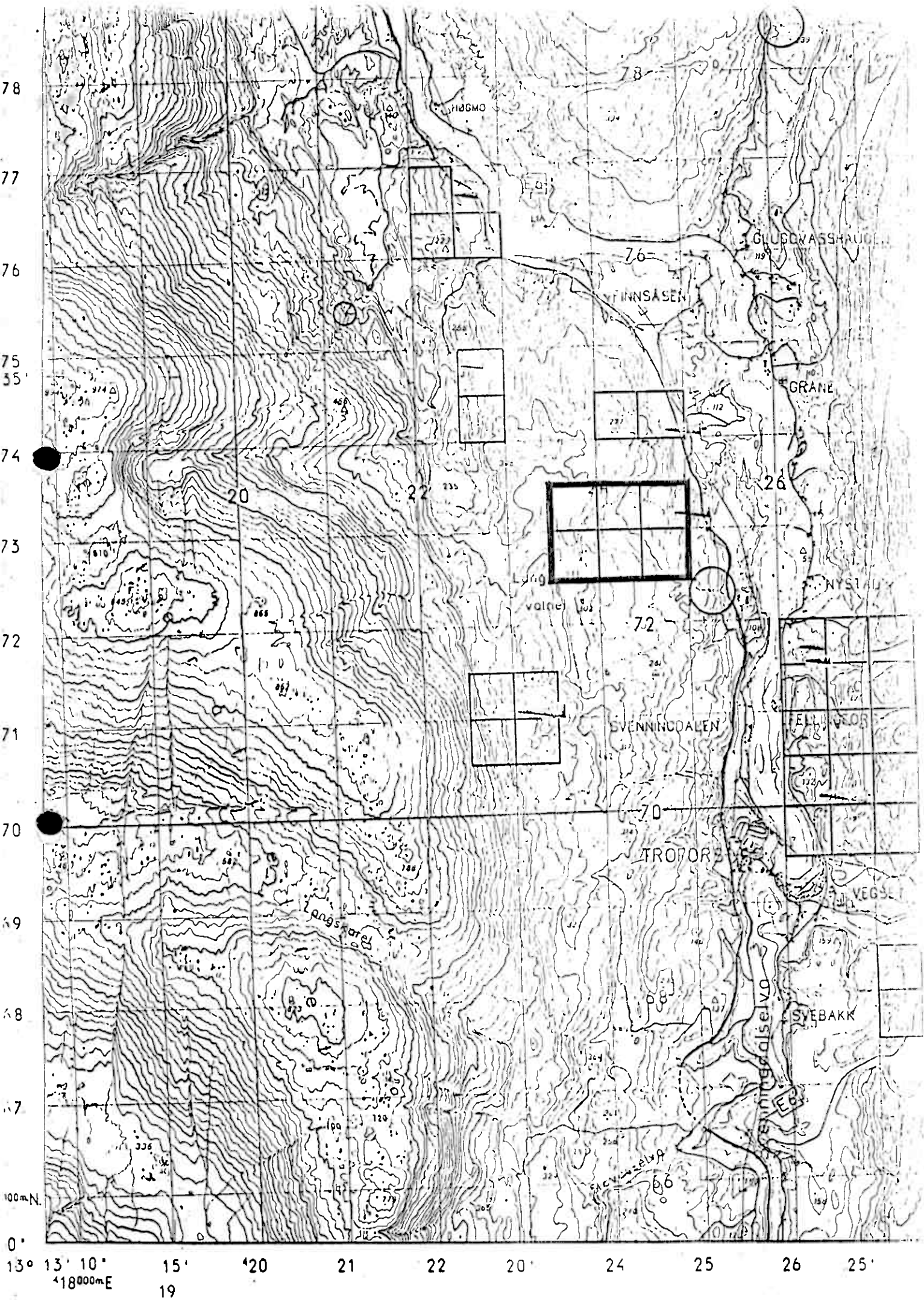
CLAIM DETAILS

Est No. Follow up Samples 10 Time Requ'd 1 Team Days



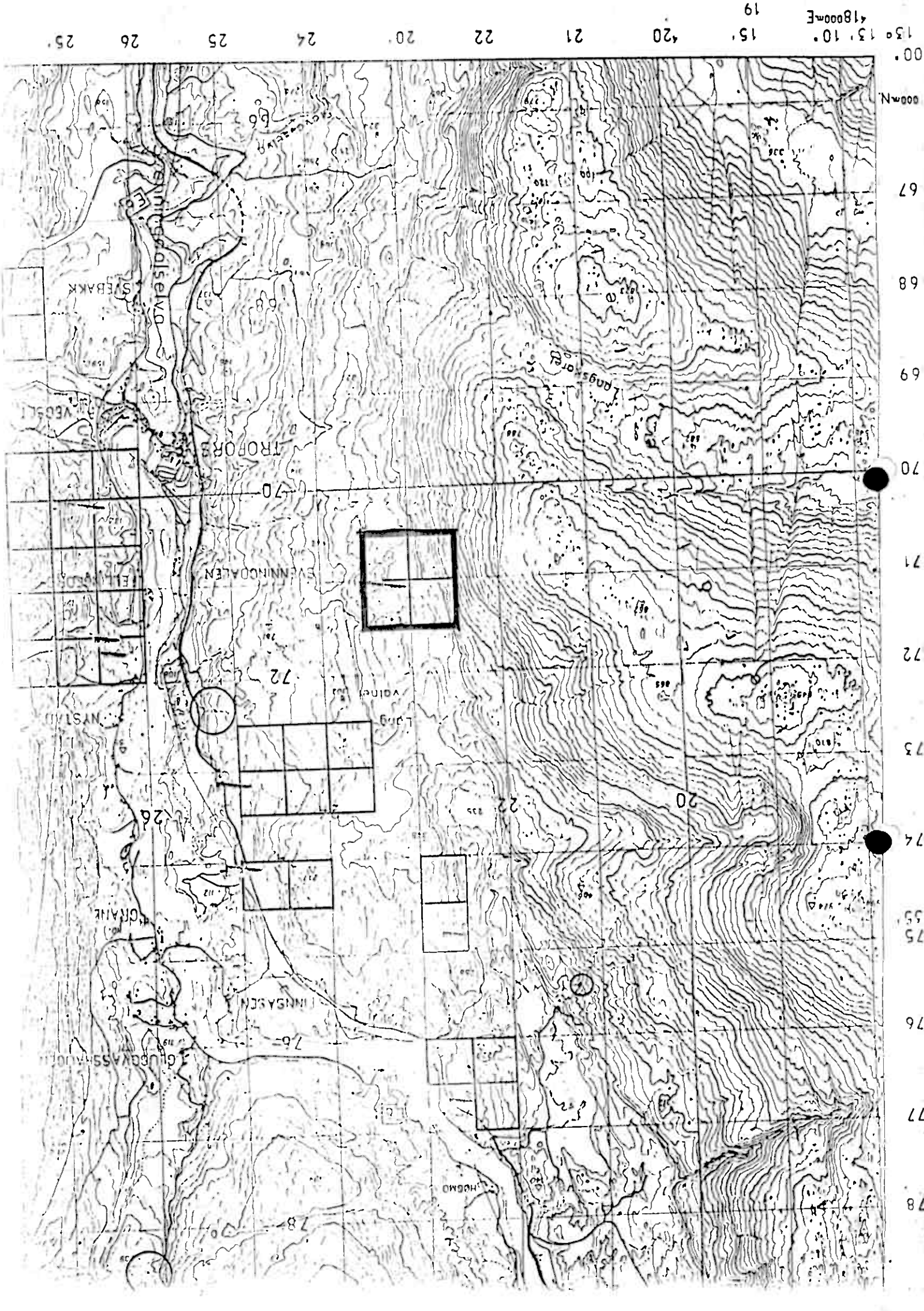
CLAIM DETAILS

Time Requ'd 1 Team Days



CLAIM DETAILS

Est No. Follow up Samples	10	Time Requ'd	1	Team Days
.....				



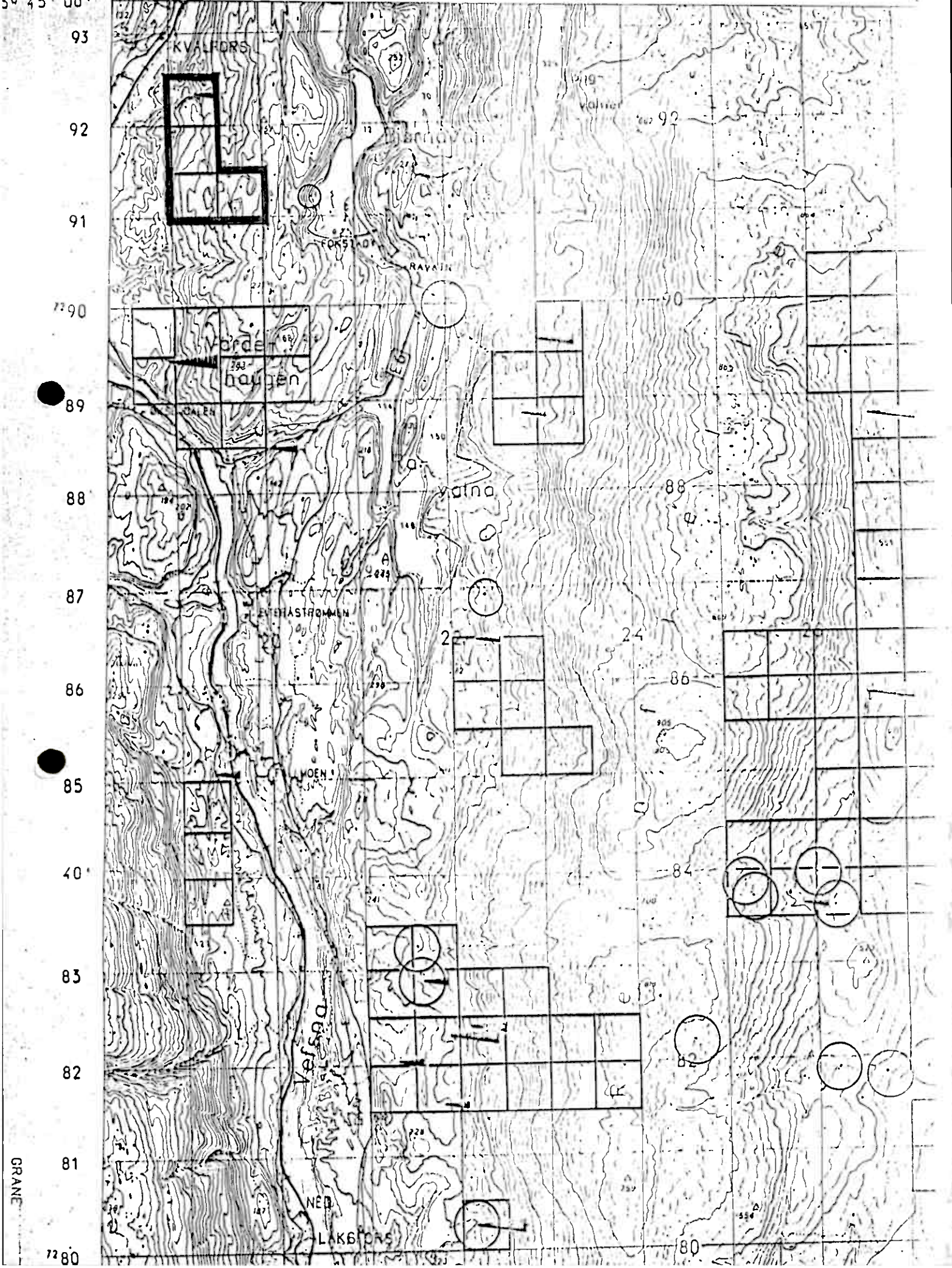
0000N
67
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15° 13' 10" E 18000m
19
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25

CLAIM DETAILS

Time Requ'd 1 Team Days

13° 13' 10" 15' 21 22 23 24 25 26 27
5° 45' 00'

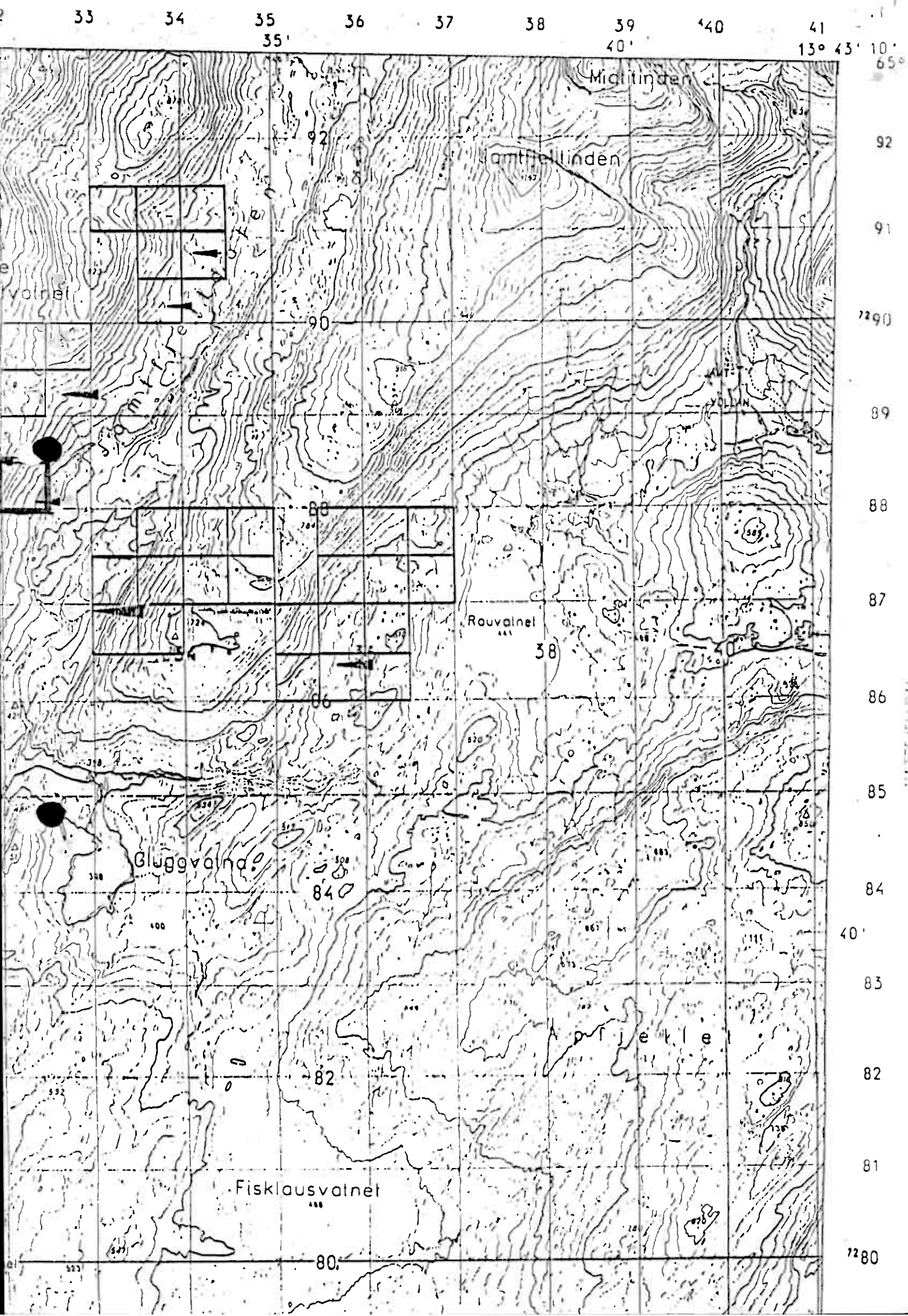


CLAIM DETAILS

Time Requ'd 2 Team Days

CLAIM DETAILS

Est No. Follow up Samples 10 Time Requ'd 1 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1926 III GRANE		Q 180 I

Claim Name JAMTFJELDALEN II No 78 Area 0,75 km² Appl.date 24/11

Stream Length km Drainage Area km² Av. Topog MOD, STEEP
600-780 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add.
050191	83	<1	16	29	37	4	<1	

Regional Geology: GRANODIORITE

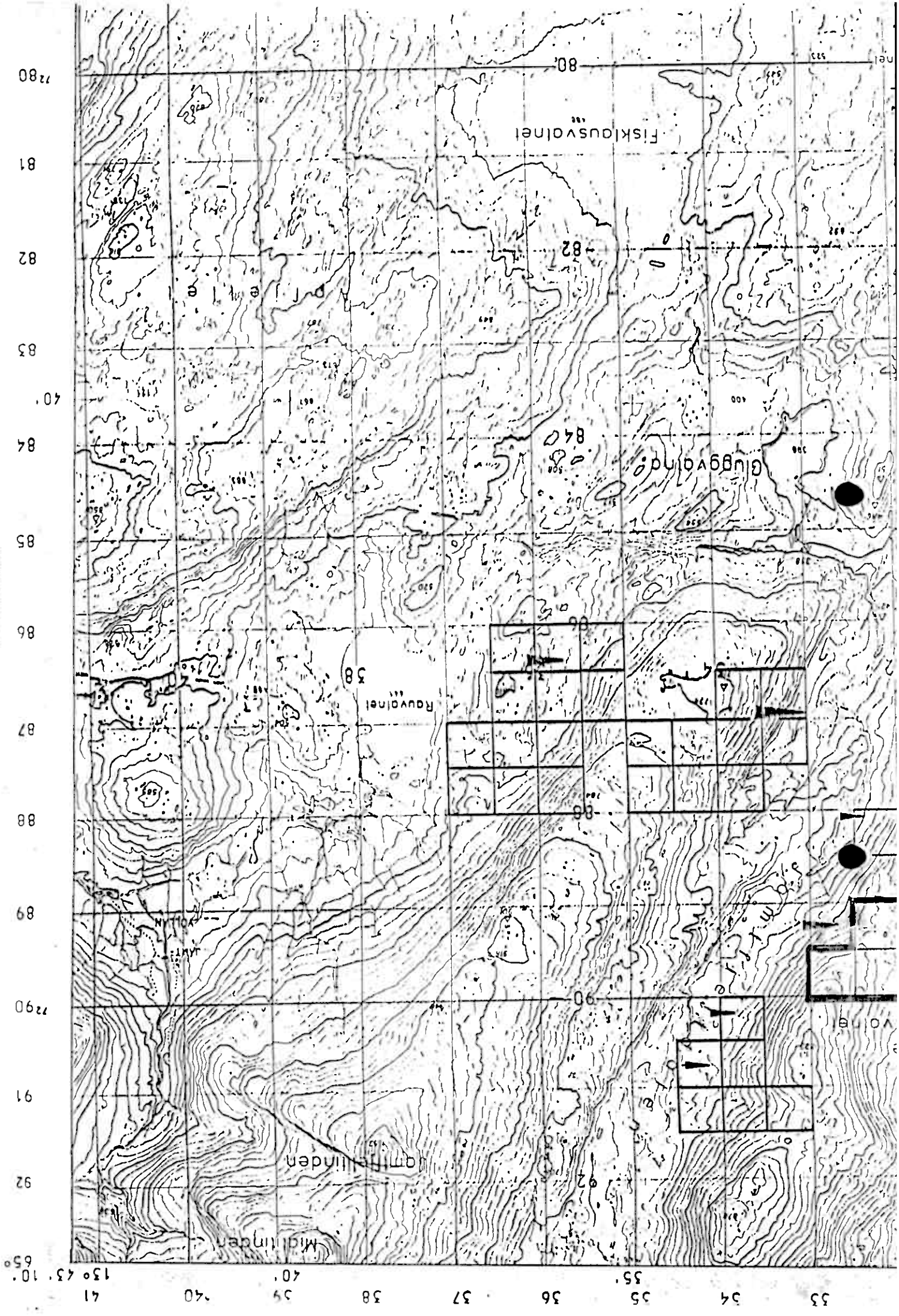
Overburden:

Field Comments: GRANITE

Access:

Photogeology:

Est No. Follow up Samples 10 Time Requ'd 1 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1926 III GRANE		Q 180 I

Claim Name JAMTFJELLDALEN I No 77 Area 1,5 km² Appl.date 24/11

Stream Length 2,5 km² Drainage Area 1,5 km² Av. Topog MOD, STEEP
540-800 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add.
050188		<1	17	16	45	<1	<1	
050189	41	<1	15	14	32	3	<1	
050190	2	<1	13	15	31	3	<1	

Regional Geology: MICASCHIST OUTSIDE GRANODIORITE

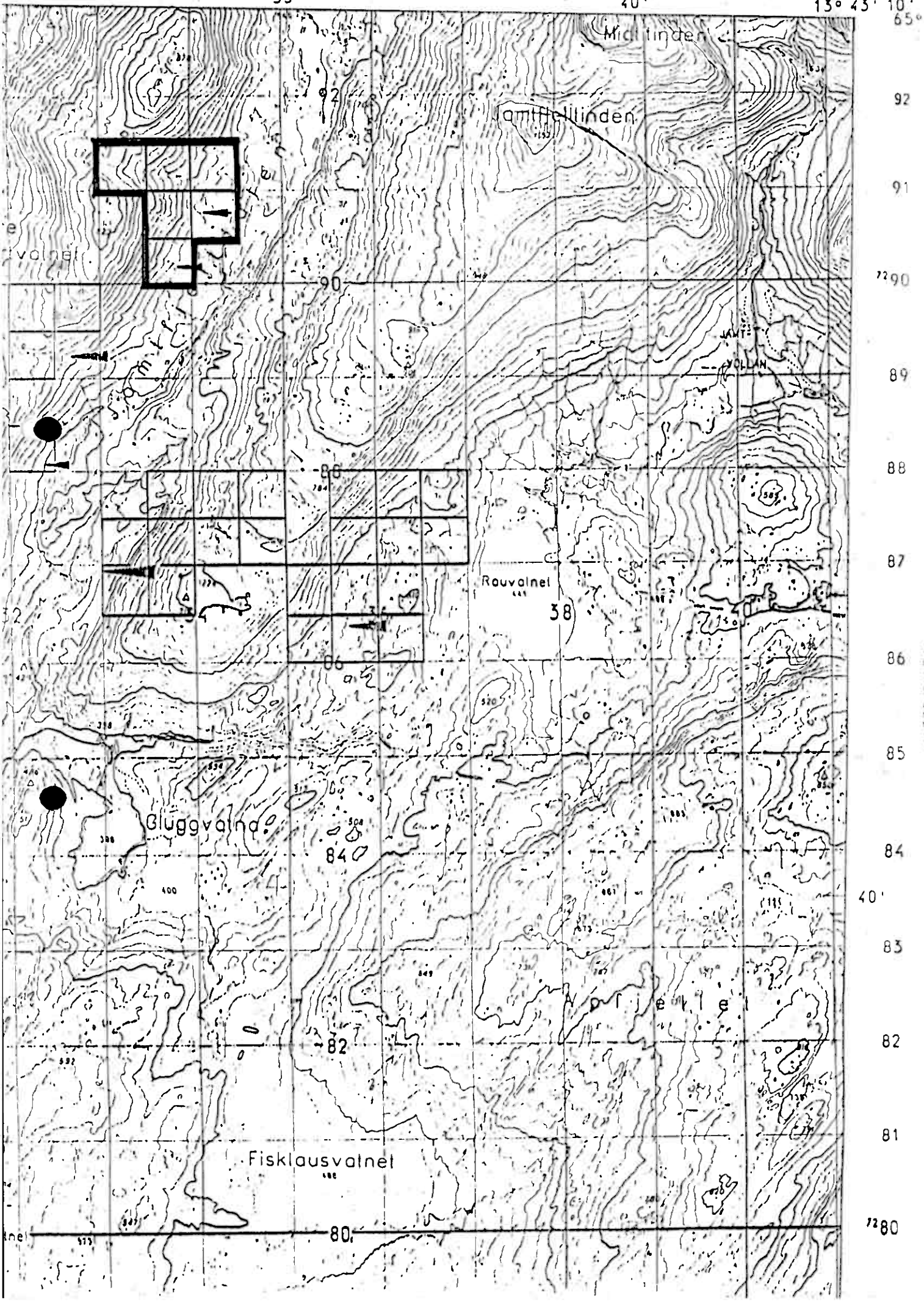
Overburden:

Field Comments: NO OUTCROP. BOULDERS OF GRANITE AND METAGNEISS

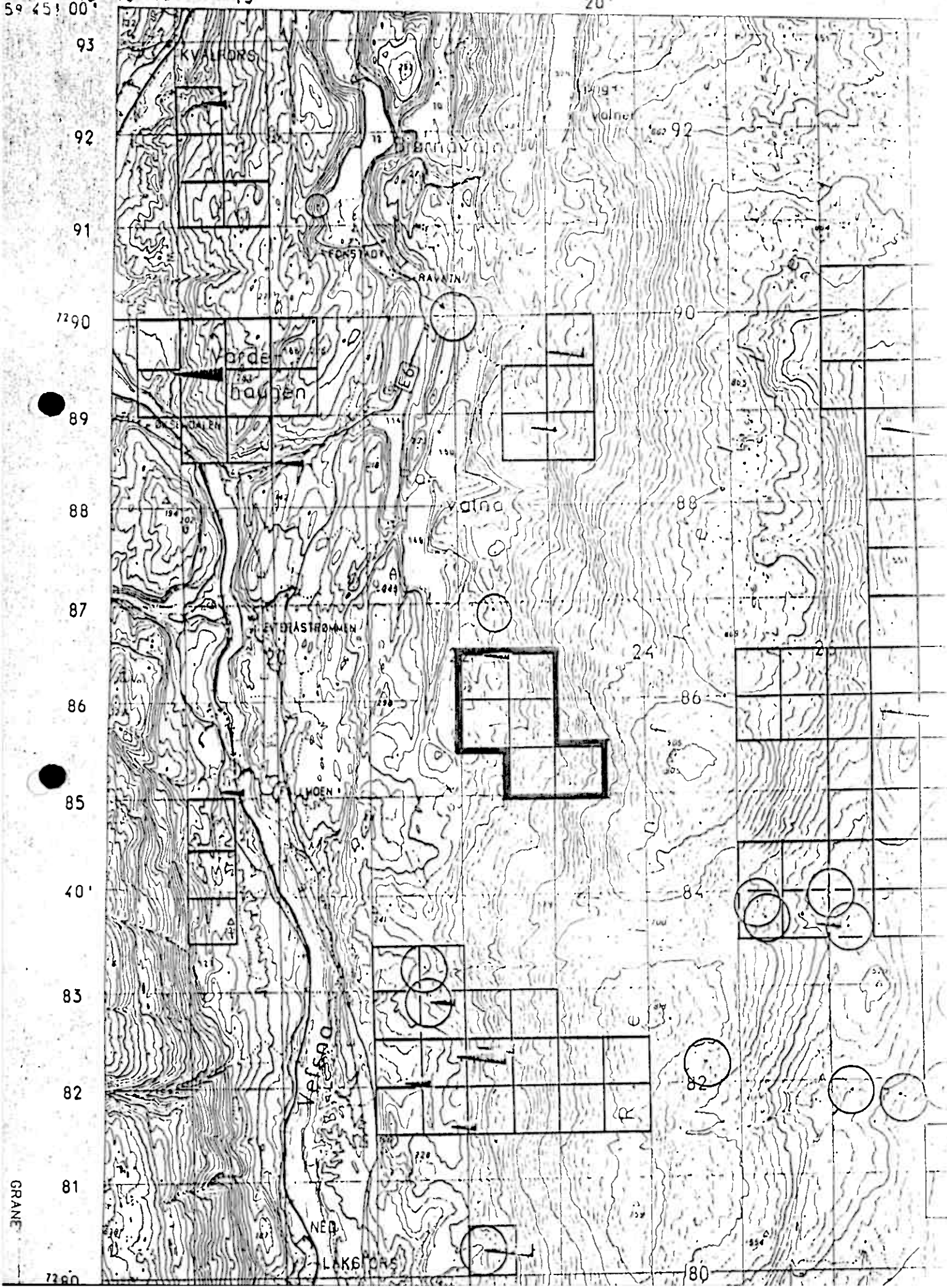
Access:

Photogeology:

Est No. Follow up Samples 20 Time Requ'd 2 Team Days



19 20 21 22 23 24 25 26 27
59° 45' 00" 13° 13' 10" 15' 20'



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	0ko.kart
Claim Location:	1926 III GRANE		P 178 I, III

Claim Name RAVATNA I No 75 Area 1.25 km² Appl.date 23/11

Stream Length 1,5 km² Drainage Area 1,5 km² Av. Topog MOD/STEEP

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Att.
030120	11	<1	6	6	28	5		
030121	63	<1	4	7	41	5		
030122		<1	7	6	28	1		

Regional Geology: GRANODIORITE - MICASCHIST

Overburden:

Field Comments: SAMPLEPOINT 30-40 METERS BELOW CONTACT BETWEEN GRANITE AND METAGNEISS

Access:

Photogeology:

Est No. Follow up Samples	15	Time Requ'd	1	Team Days
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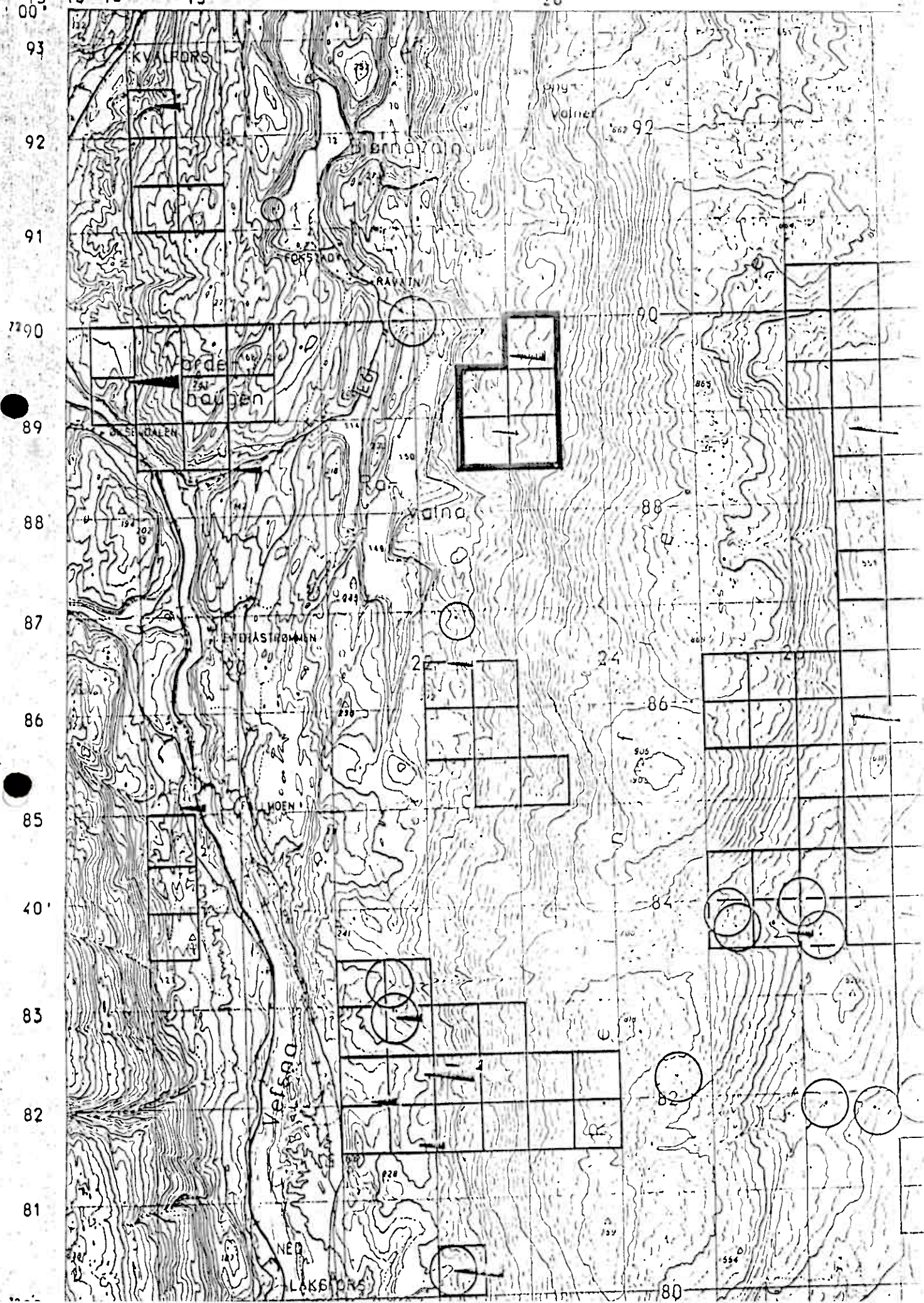
27

10.

155

20

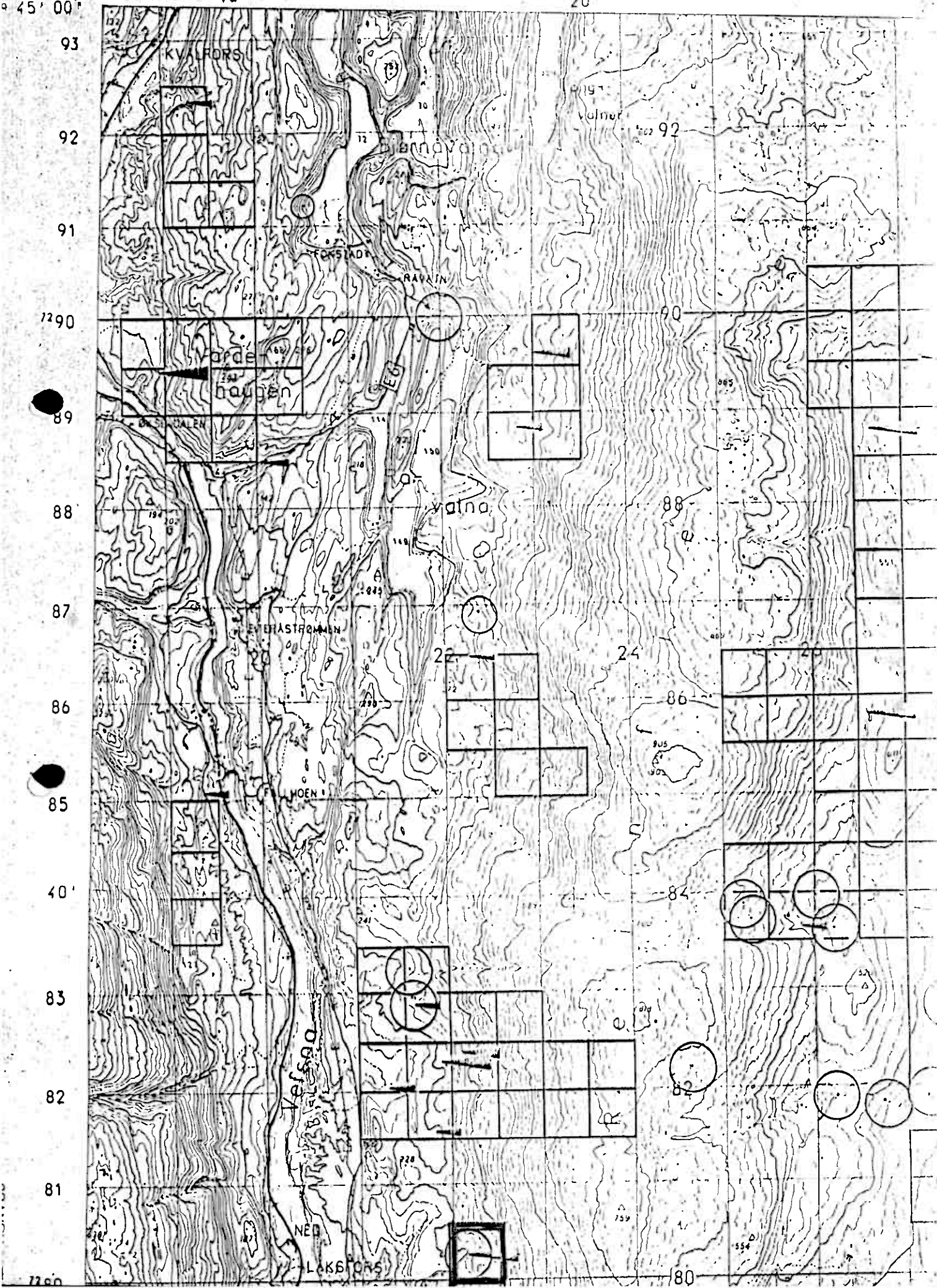
45:00



CLAIM DETAILS

Est No. Follow up Samples 10 Time Requ'd 1 Team Days

20



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1926 III GRANE		P 177 I,III

Claim Name LAKSFORS I No 73 Area 4,5 km² Appl.date 23/11

Stream Length ..3.... km² Drainage Area ...5.... km² Av. Topog. STEEP. 170-800 m...

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
030103		<1	6	6	21	4		
030104	4	<1	3	4	12	2		
030105	26	<1	6	6	24	4		
030106		<1	13	8	36	2		
030107	121	<1	30	11	55	<1		
030108	57	<1	22	9	38	<1		
030109		<1	17	10	37	<1		
030110	6	6	8	11	33	<1		
030111		138	6	5	26	5		

Regional Geology: GRANODIORITE AND MARBLE

Overburden:

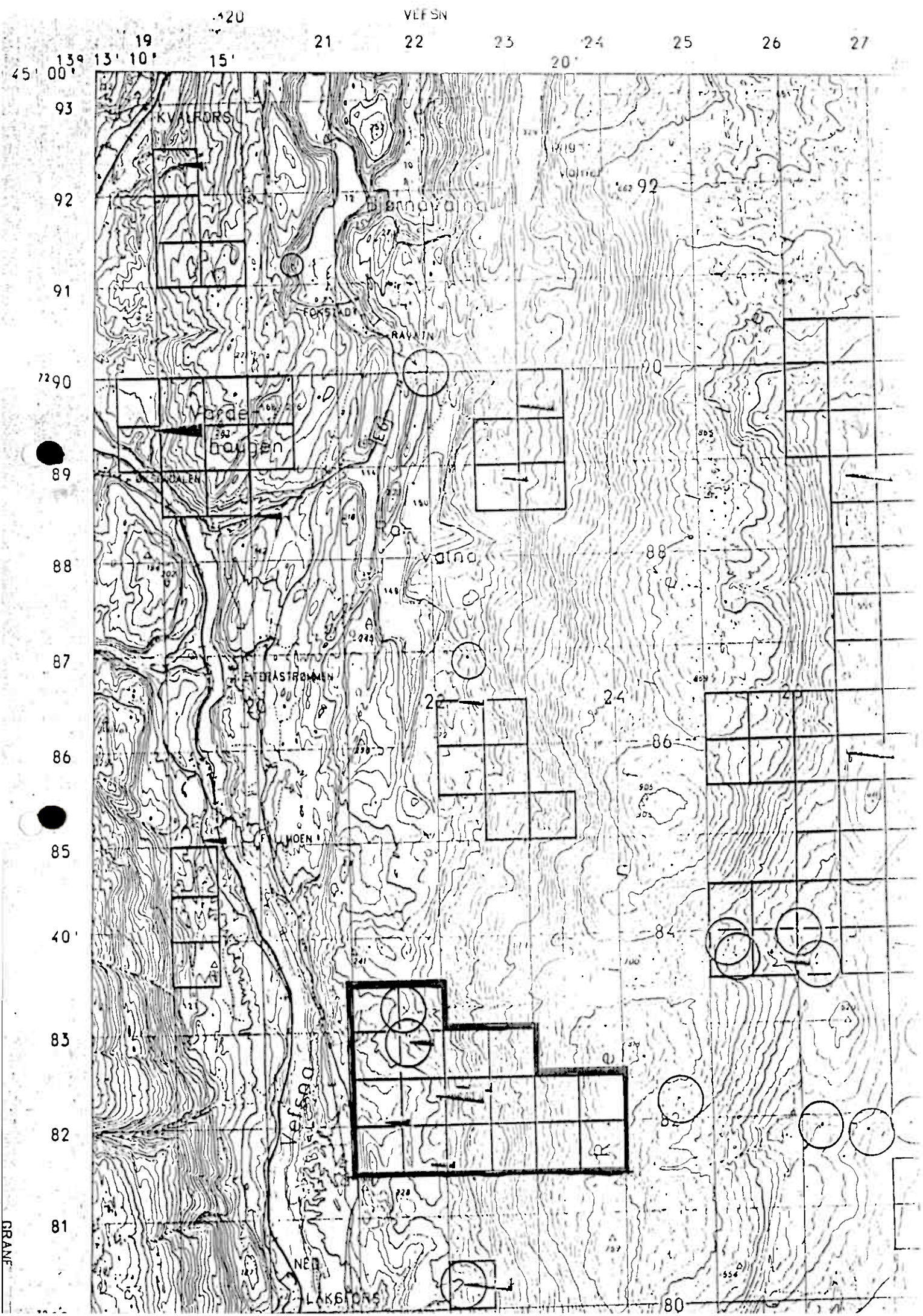
Field Comments: NO OUTCROP IN STREAMBED. STREAM IS LOCATED NEAR CONTACT BETWEEN MICASCHIST AND GRANITE.

Access:

Photogeology:

Est No. Follow up Samples 30

Time Requ'd 3 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1926 III GRANE		P 179 I,II

Claim Name SØRSVARTVATNET C No 69 Area 6 km² Appl.date 18/11

Stream Length 6 km Drainage Area 8 km² Av. Topog MOD TO STEEP

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add.
050129		<1	17	12	46	<1	<1	
050130		<1	11	17	38	1	<1	
050131		<1	20	17	55	2	<1	
050132		<1	13	13	54	3	<1	
050133		<1	22	15	46	1	<1	
050134	181	<1	27	16	73	<1	<1	
050135		<1	13	9	48	34	<1	
050136		<1	18	13	36	<1	<1	
050137		<1	13	21	46	1	<1	
050138		<1	12	15	60	11	<1	
050139	2	<1	20	13	72	<1	<1	
050140		<1	14	23	60	2	<1	
050141		<1	13	16	32	4	<1	

Regional Geology: GRANODIORITE

Overburden:

Field Comments: WHITE GRANITE. (139) OUTCROP OF MICASCHIST NEAR STREAM BED.

Access:

Photogeology:

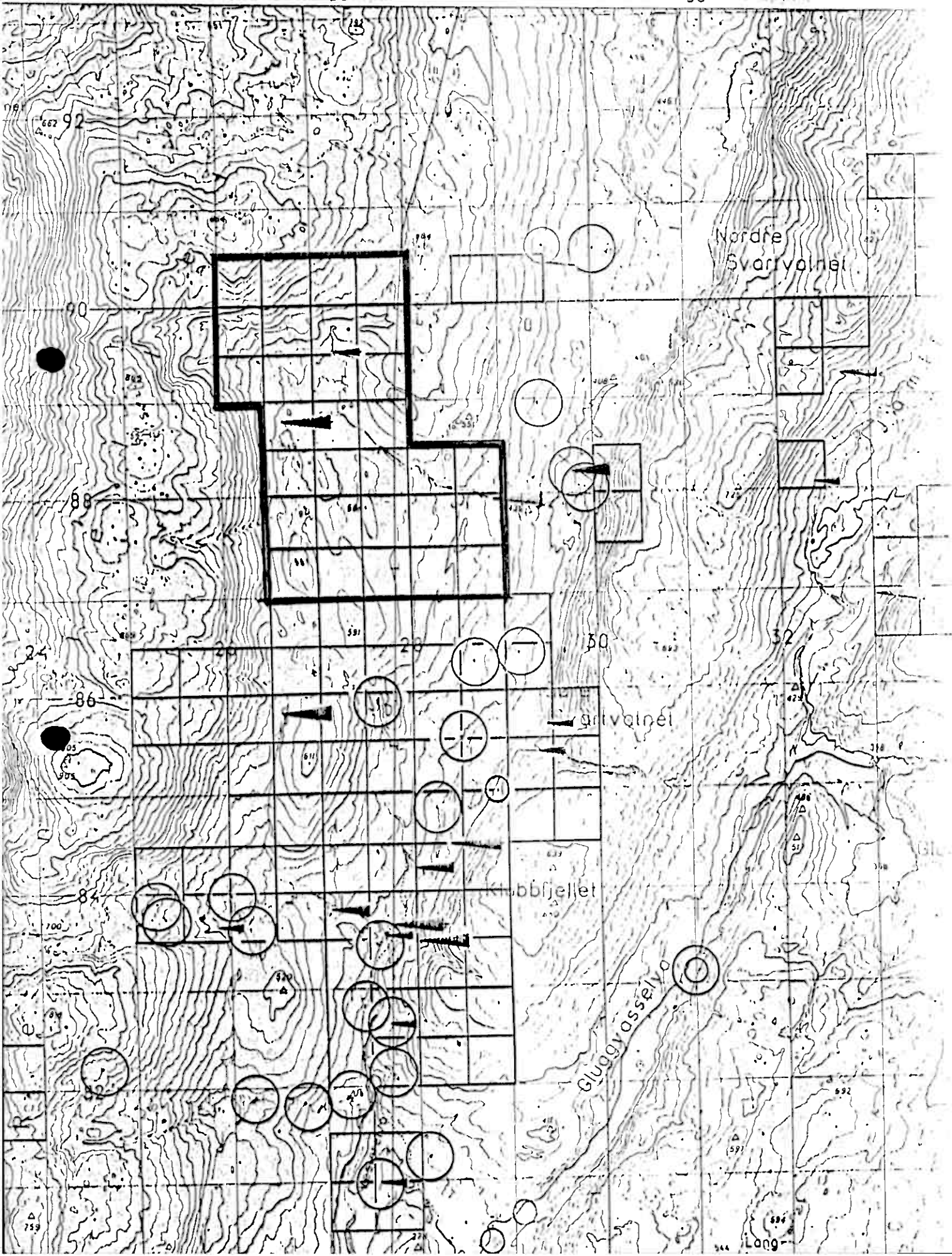
Est No. Follow up Samples 50

Time Requ'd 4 Team Days

GRANE

NORDLAND FYLKE

24 25 26 27 28 29 30 31 32 33



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1926 III GRANE		DP 179 IV

Claim Name SØRSVARTVATNET B No 68 Area 2,75 km² Appl.date 16/11

Stream Length 3,5 km Drainage Area 3 km² Av. Topog MODERATE

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Ar. Sb	Ar. Bi
030062		17	19	10	51	<1	<1	<1	<1
030063		4	30	9	74	<1	<1	<1	<1
030064		19	12	9	59	<1	<1	<1	<1
030065		81	15	15	70	<1	<1	<1	<1
030066		75	18	24	63	<1	<1	<1	<1
030067		64	23	26	98	2	<1	<1	<1
030068		4	25	9	40	<1	<1	<1	<1
030069	25	4	35	14	42	<1	<1	<1	<1

Regional Geology: GRANODIORITE

Overburden:

Field Comments: GNEISS AND MICA SCHISTS WITH GARNET MARBLE BOULDERS IN STREAMBED.

Access:

Photogeology:

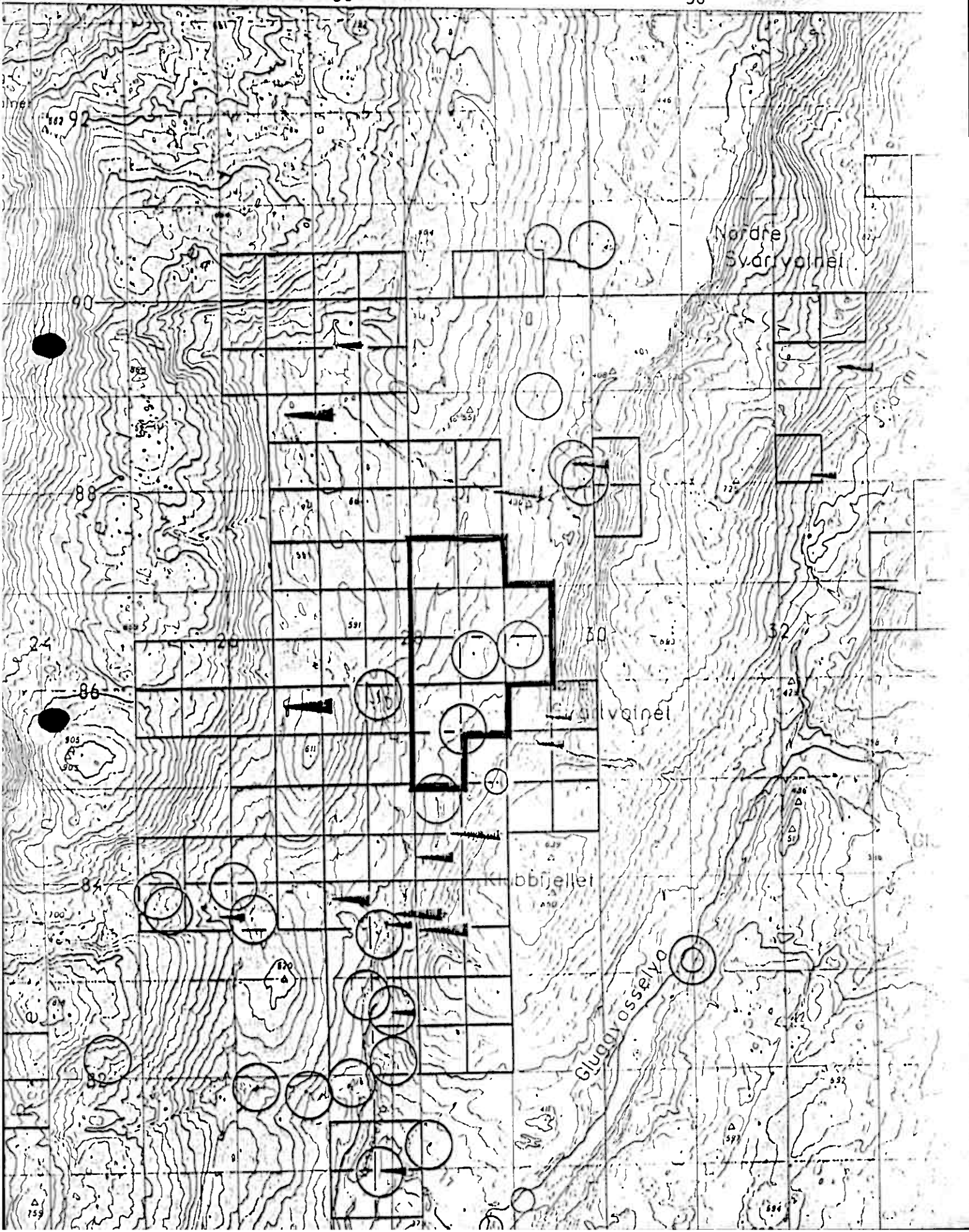
Est No. Follow up Samples 40

Time Requ'd 3 Team Days

GRANE

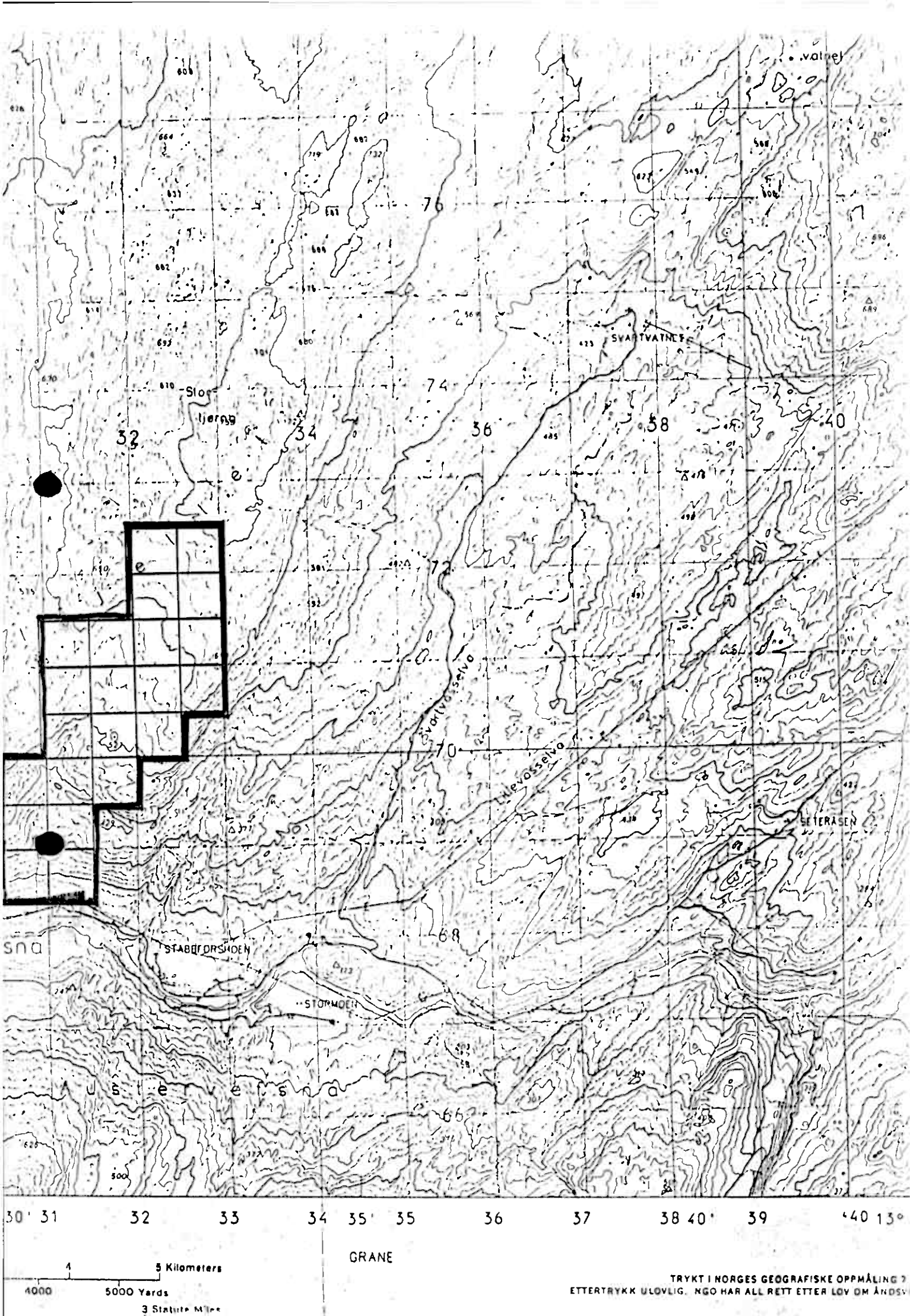
NORDLAND FYLKE

24 25 26 27 28 29 30 31 32 33



CLAIM DETAILS

Est No. Follow up Samples 70 Time Requ'd 7 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1926 III GRANE		D P 175 I

Claim Name FELLINGFORS No 19 Area 4,25 km² Appl.date 12/10

Stream Length 4 km² Drainage Area 3,5 km² Av. Topog. MOD. STEEP
50-330 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add. Sb Mo
030030	101	<1	15/14/10/12	4/4/2/3	31/23/16/22	2	<1/<1/ <1/<1	<1 <1
030031	37	3	17	2	29	3	<1	<1 <1
030032	27	<1	12/12/14	3/3/4	20/18/21	<1	<1/<1/<1	<1 <1

Regional Geology: GRANITE

Overburden: TILL

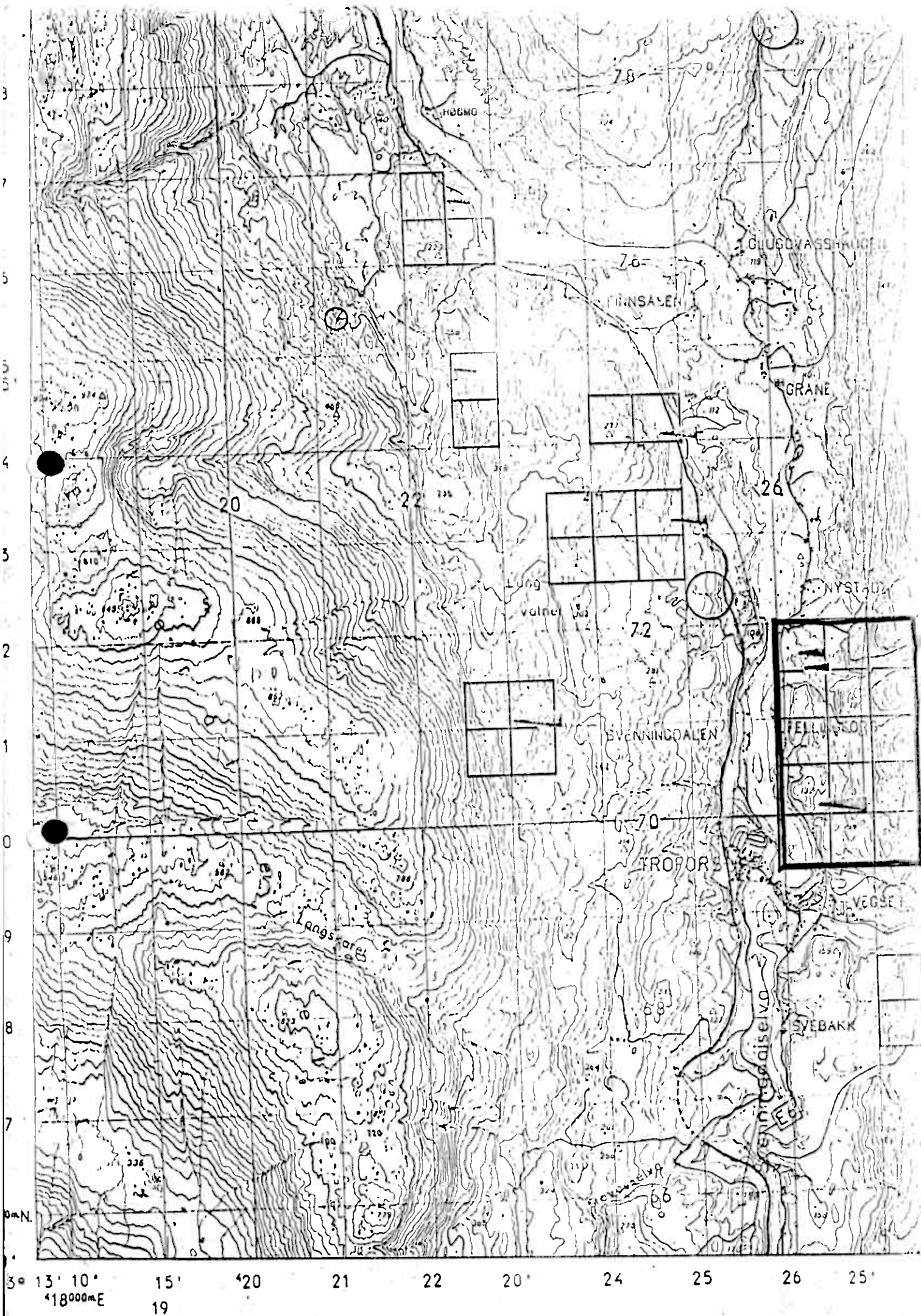
Field Comments:

Access: ROAD

Photogeology:

Est No. Follow up Samples 40

Time Requ'd 4 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1926 III GRANE		D Q 179 II, IV

Claim Name RAUVATNET No 17 Area 3 km² Appl.date 12/10

Stream Length 3 km² Drainage Area 4 km² Av. Topog. MOD/STEEP
460-780 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add. Sb	Add. Mo
030055		2	18/17	8/8	82/74	2	<1/<1	<1	<1
030056		2	12/33	4/12	21/70	1	<1/<1	<1	<1
030057	65	<1	8	5	39	5	<1	<1	<1
030058		1	17	8	77	<1	<1	<1	<1

Regional Geology: MARBLE, MICA SCHIST/GNEISS, GRANITE VEINS

Overburden: SOIL, TALUS, PEAT-BOG

Field Comments:

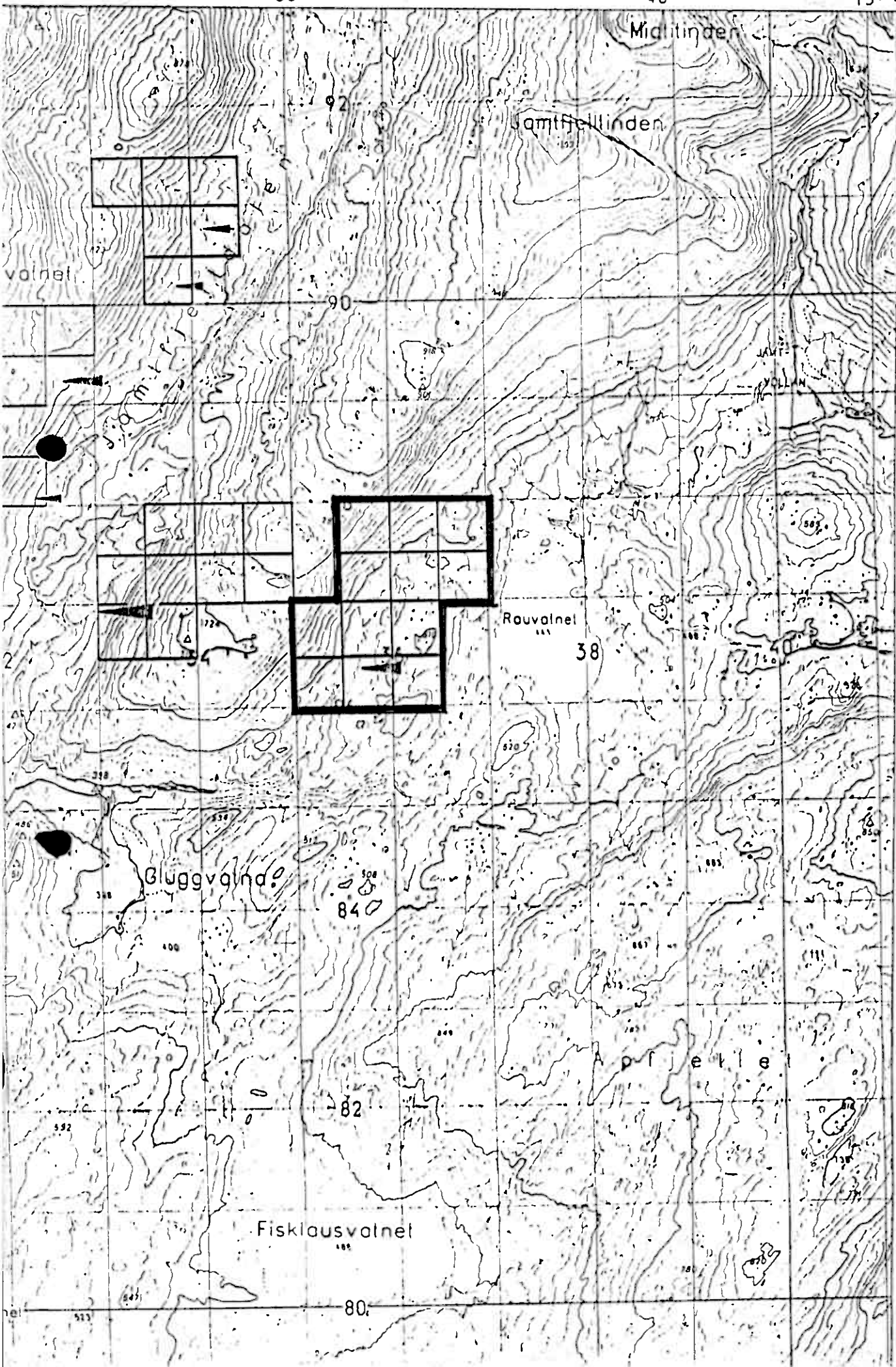
Access: ROAD. 3 KM WALK-HELICOPTER

Photogeology:

Est No. Follow up Samples 30

Time Requ'd 3 Team Days

33 34 35 36 37 38 39 40 41
35' 40' 13° 43' 10' 65°



92
91
90
89
88
87
86
85
84
40'
83
82
81
80

NATTEHJUL

HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1926 III GRANE		P 177 I, III

Claim Name VESTERELVA No 88 Area 1 km² Appl.date 25/11

Stream Length 2 km Drainage Area 2 km² Av. Topog GENTLE 280-340 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
110020		<1	18	9	98	<1		
110028		4	20	7	52	<1		
110029		28	32	5	55	<1		
110030	48	18	13	2	37	<1		

Regional Geology: GRANODIORITE

Overburden:

Field Comments: NO OUTCROPS IN STREAMBED

Access:

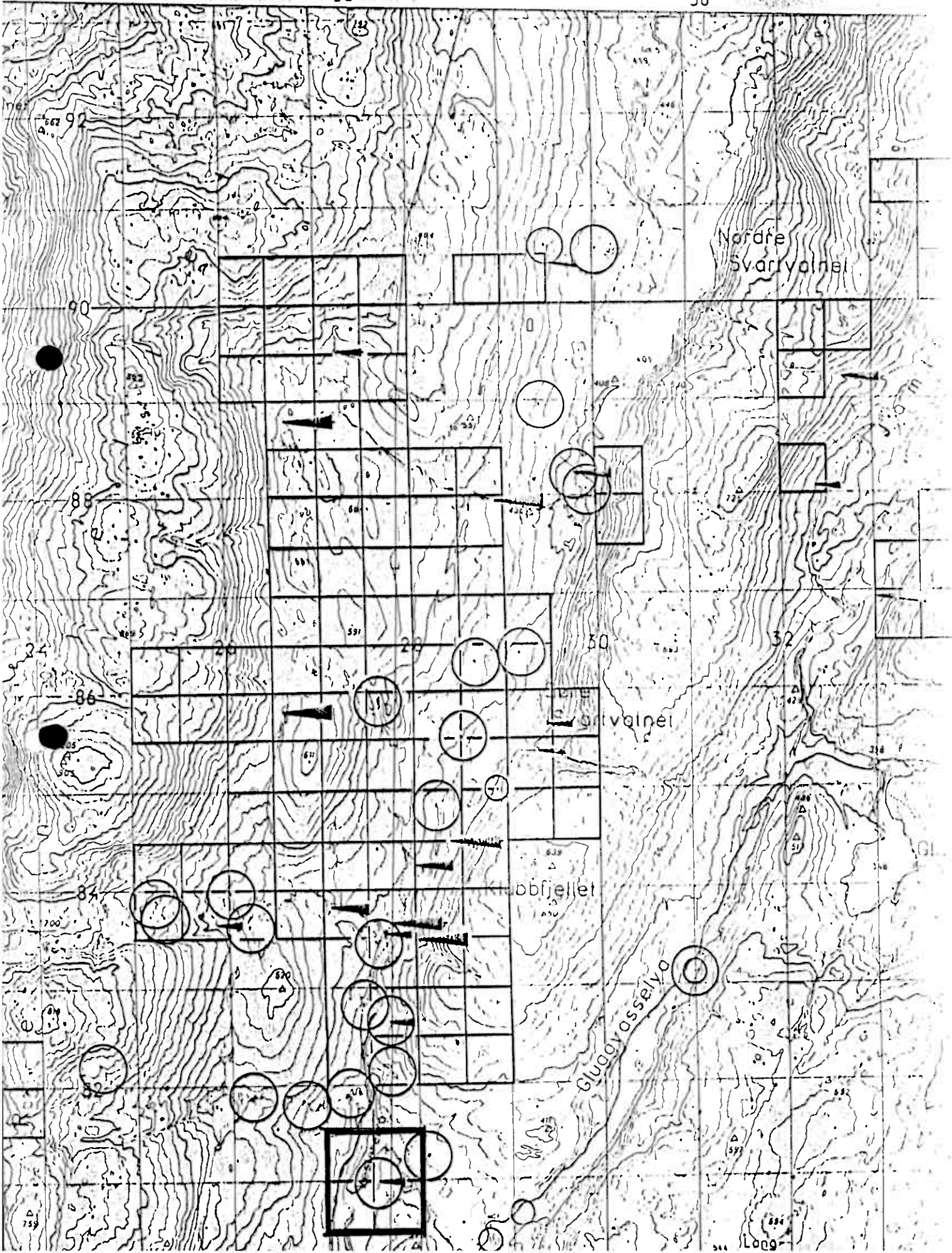
Photogeology:

Est No. Follow up Samples 15 Time Requ'd 1 Team Days

GRANE

NORDLAND FYLKE

24 25 26 27 28 29 30 31 32 33



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1926 III GRANE		D O 180 III, 179 I

Claim Name VARDEHAUGEN No 84 Area 2,5 km² Appl.date 25/11

Stream Length 2 km Drainage Area 2 km² Av. Topog. MOD. STEEP
20-280 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Acid.
110005	9	<1	13	13	46	<1	<1	
110006	389	<1	15	10	33	<1	<1	

Regional Geology: MARBLE, MICA SCHIST, GRANITE

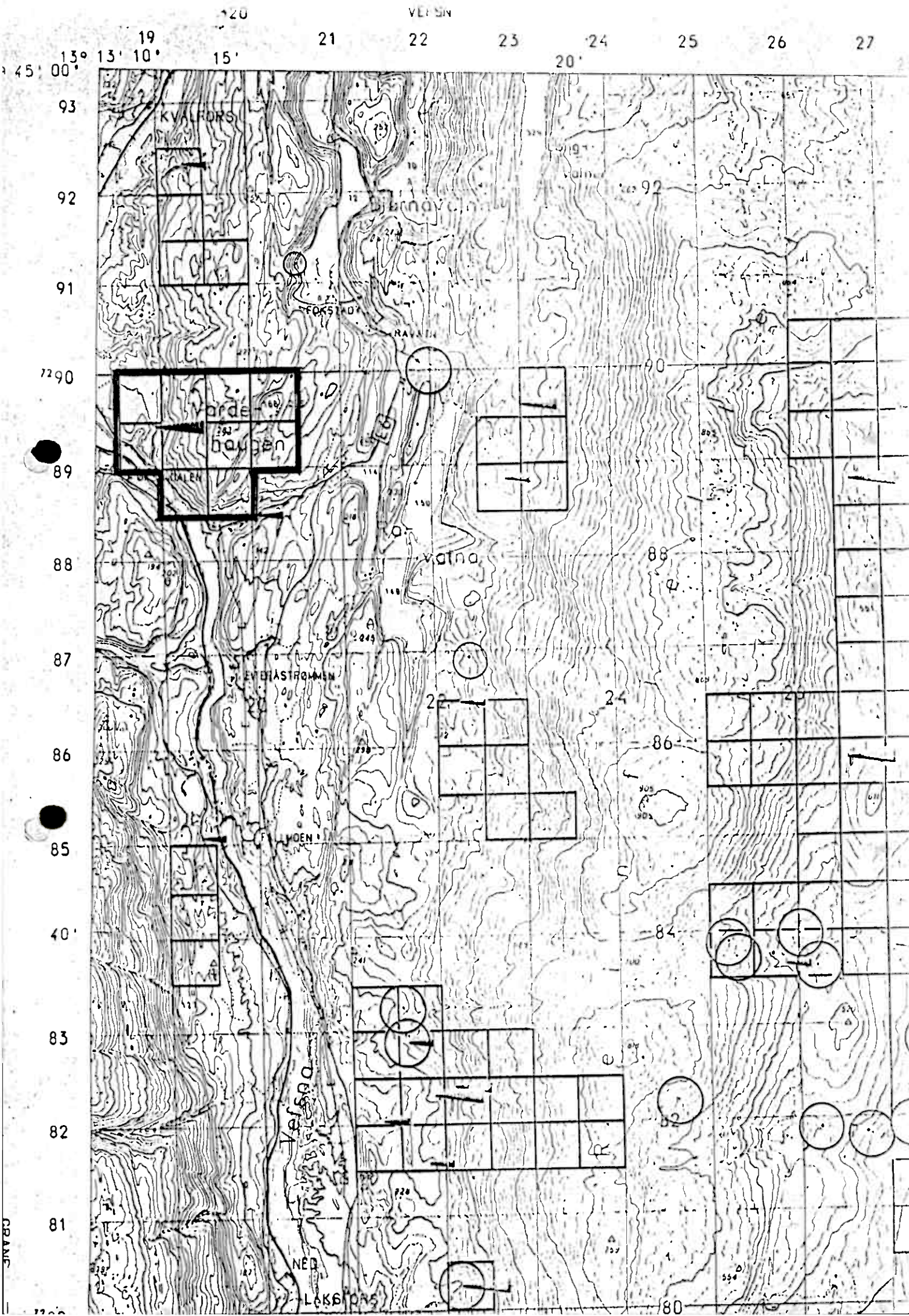
Overburden: FLUVIOGLACIAL CLAY

Field Comments:

Access:

Photogeology:

Est No. Follow up Samples 25 Time Requ'd 2 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1926 III GRANE		P 177 I, III

Claim Name SØRSVARTVATN H No .. 87 Area 2,75 km² Appl.date 25/11.

Stream Length .. 2 km Drainage Area km² Av. Topog: .. STEEP .. 300-620 m.

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add.
030082		<1	22	6	51	<1	<1	
030083	225	<1	12	4	36	<1	<1	
030084		2	17	10	61	<1	<1	
110007		14	16	16	61	<1	<1	
110008	8	3	22	8	58	<1	<1	
110009	233	<1	11	15	65	<1	<1	
110010		5	28	8	72	<1	<1	
110018		4	16	12	101	<1	<1	
110019		7	18	9	72	<1	<1	

Regional Geology: GRANODIORITE

Overburden:

Field Comments: BOULDERS OF GRANITE AND MICA SCHIST IN STREAMBED

Access:

Photogeology:

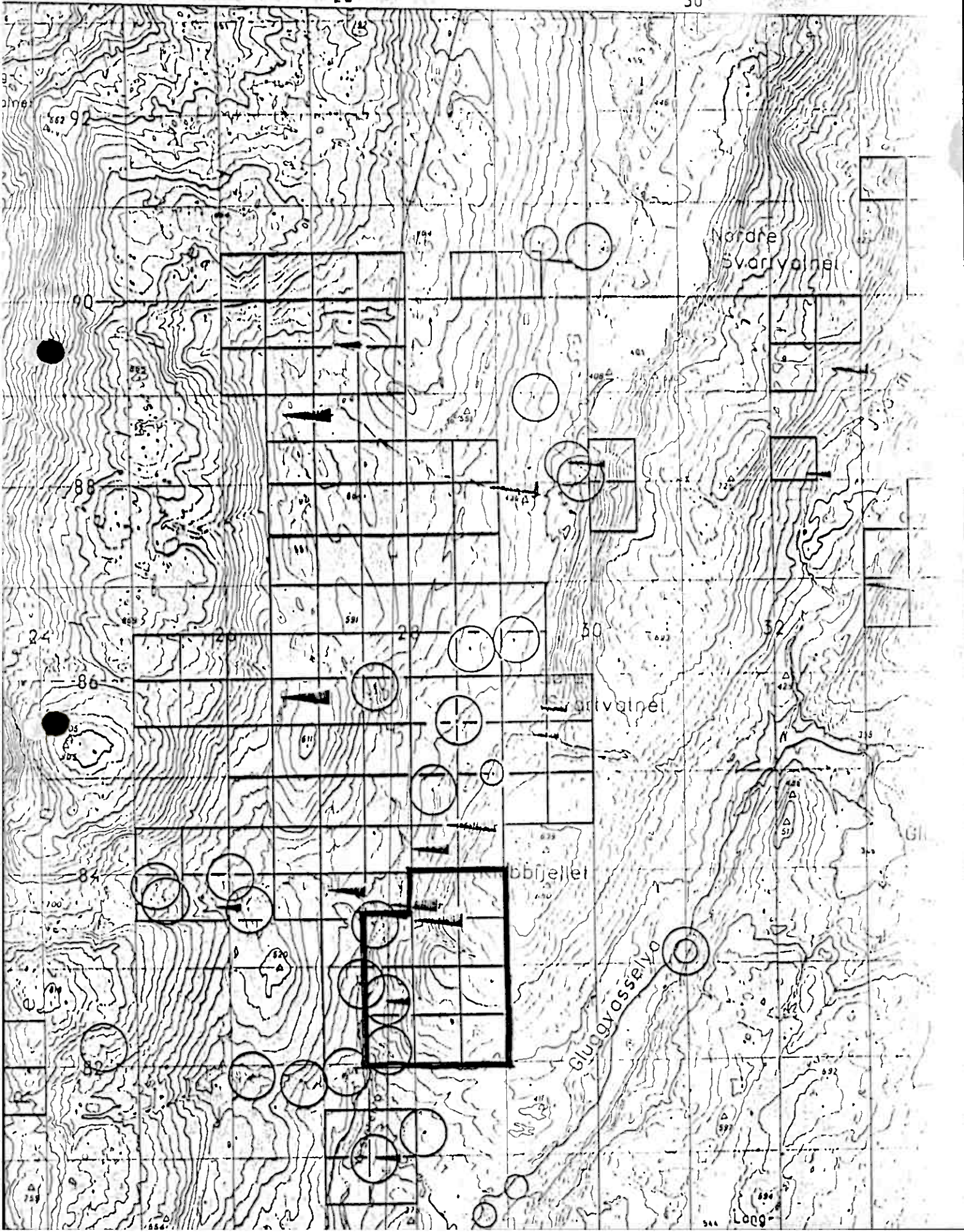
Est No. Follow up Samples 30

Time Requ'd 3 Team Days

GRANE

NORDLAND FYLKE

24 25 26 27 28 29 30 31 32 33



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1926 III GRANE		P 178 II, IV

Claim Name SØRSVARTVATN G No 83 Area 7,25 km² Appl.date 24/11.

Stream Length 12 km Drainage Area 9 km² Av. Topog. MOD/STEEP
380-850 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add.
030082		<1	22	6	51	1	<1	
030083		<1	10	5	40	<1	<1	
030084		2	17	10	61	<1	<1	
030085		3	24	15	85	2	<1	
030086		<1	31	8	61	1	<1	
030087		<1	26	14	69	1	<1	
030088		<1	46	13	71	2	<1	
030089	202	<1	28	14	77	2	<1	
030090		<1	18	13	52	2	<1	
030091		7	20	11	88	2	<1	
110009		<1	22	15	65	<1	<1	
110010		5	26	10	65	<1	<1	
110012		3	30	11	48	<1	<1	
110013		<1	17	12	40	<1	<1	
110014		10	21	9	65	<1	<1	
110015		6	14	21	38	<1	<1	
110016	39	<1	<9	15	49	1	<1	
110017		8	23	11	63	<1	<1	

Regional Geology:

GRANODIORITE

Overburden:

Field Comments: NO OUTCROP IN STREAMBED

Access:

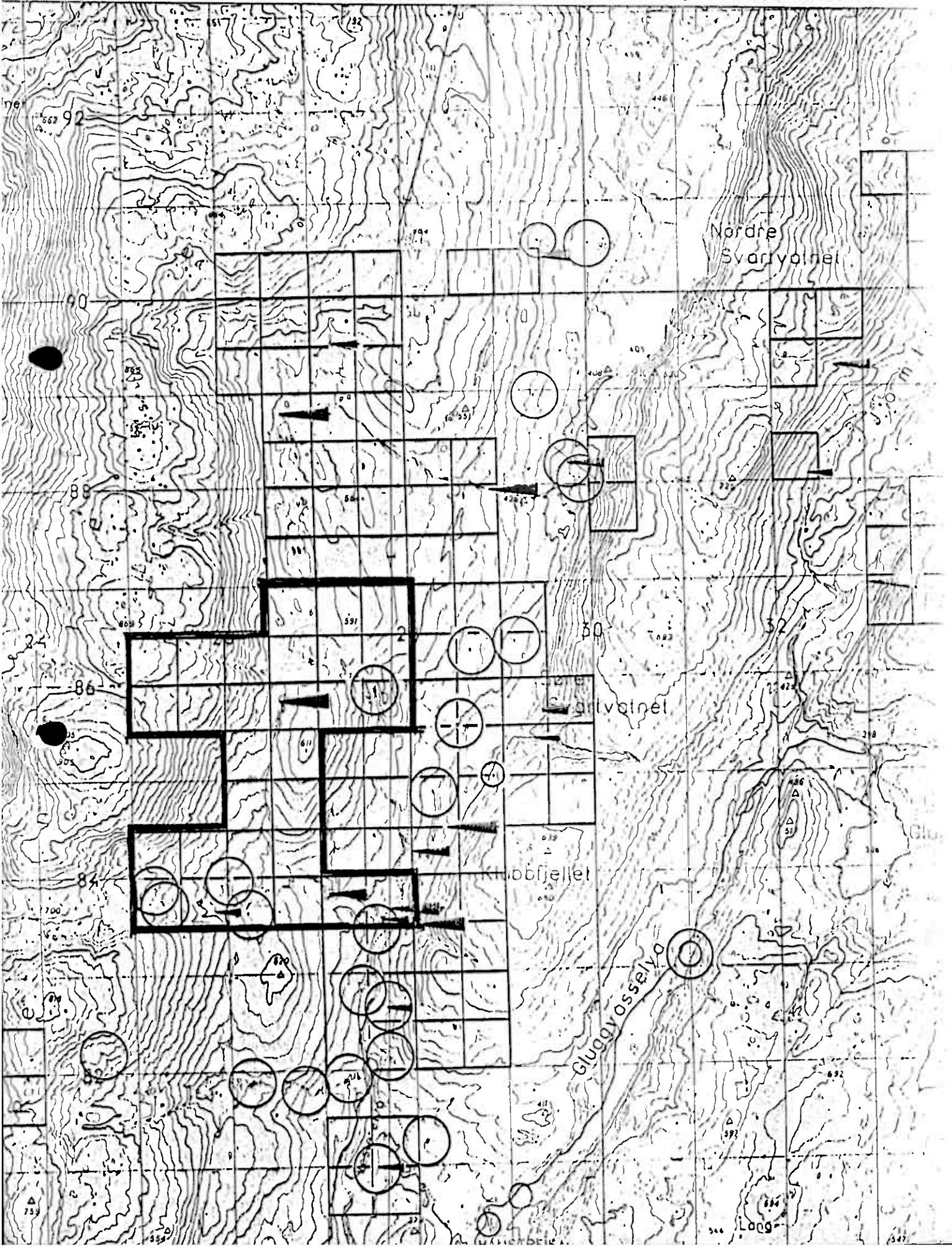
Photogeology:

Est No. Follow up Samples 100 Time Requ'd 7 Team Days

GRANE

NORDLAND FYLKE

24 25 26 27 28 29 30 31 32 33



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1926 III GRANE		P 178 I, III

Claim Name SØRSVARTVATNET F No 82 Area 0,5 km² Appl.date 24/11

Stream Length 0,75 km² Drainage Area 0,5 km² Av. Topog. STEEP 400-600 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
030134	80	5	14	13	60	1		
030135		<1	12	10	55	2		
030136		<1	17	10	100	5		
030137		<1	15	21	43	<1		
030142		12	13	13	81	9		
030143		66	33	31	130	<1		
030144		<1	15	10	69	<1		

Regional Geology: GRANODIORITE

Overburden:

Field Comments: WHITE GRANITE

Access:

Photogeology:

Est No. Follow up Samples 10

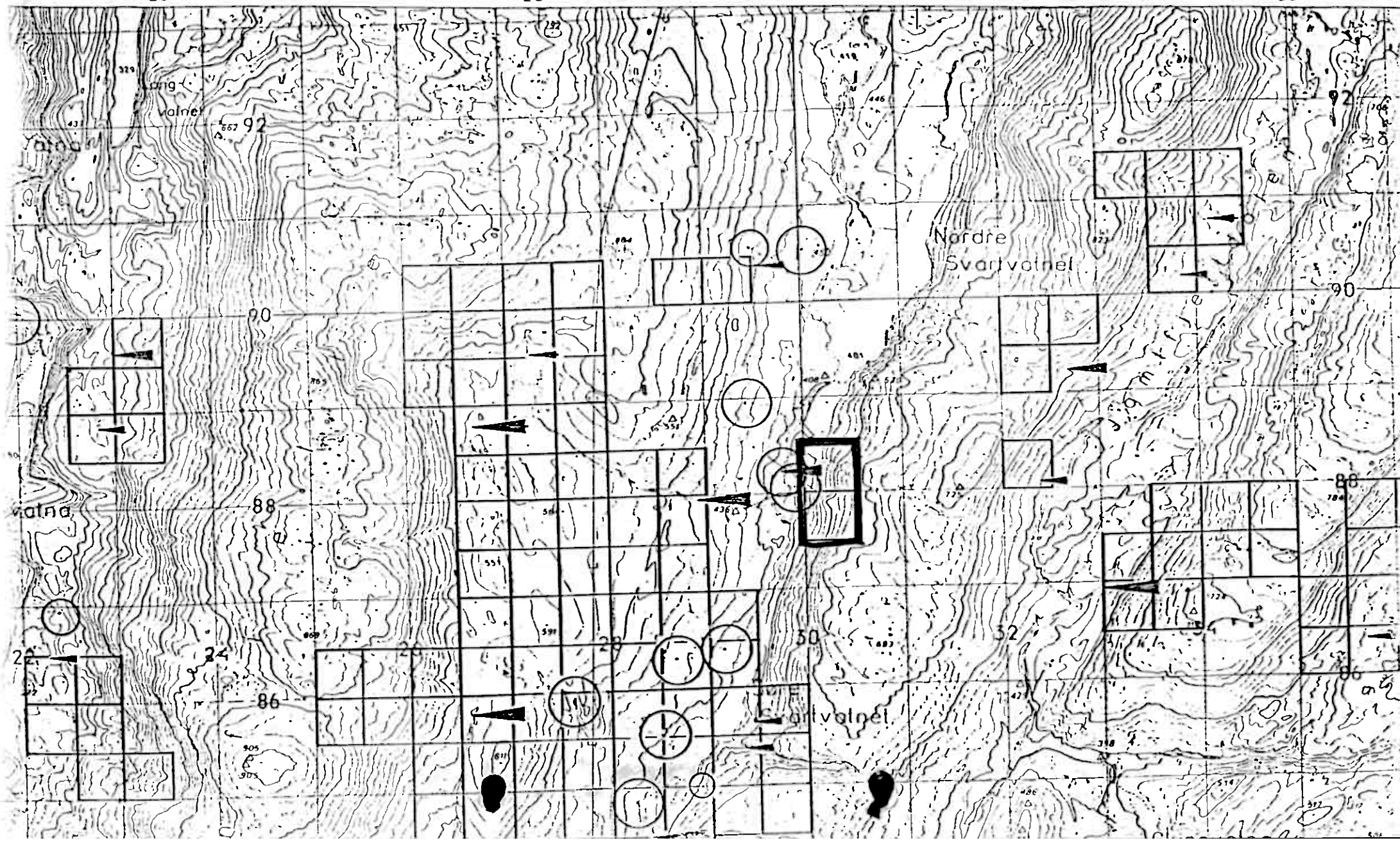
Time Requ'd 1 Team Days

SN

NORDLAND FYLKE

GRANE

23	24	25	26	27	28	29	30	31	32	33	34	35	36
	20'				25'				30'			35'	



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1926 III GRANE		P 178 II, IV

Claim Name SØRSVARTVATN E No 81 Area 1 km² Appl.date 24/11

Stream Length 1 km¹ Drainage Area 1 km² Av. Topog. MODERATE
460-560 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add.
030130		<1	8	9	29	<1	<1	
030131		1	23	7	44	<1	<1	
030132		<1	6	7	22	2	<1	
030133	120	<1	13	7	64	3	<1	

Regional Geology: GRANODIORITE, MARBLE HORIZON IN CLOSE VICINITY

Overburden:

Field Comments: METAGNEISS

Access:

Photogeology:

Est No. Follow up Samples 10

Time Requ'd 1 Team Days

50000

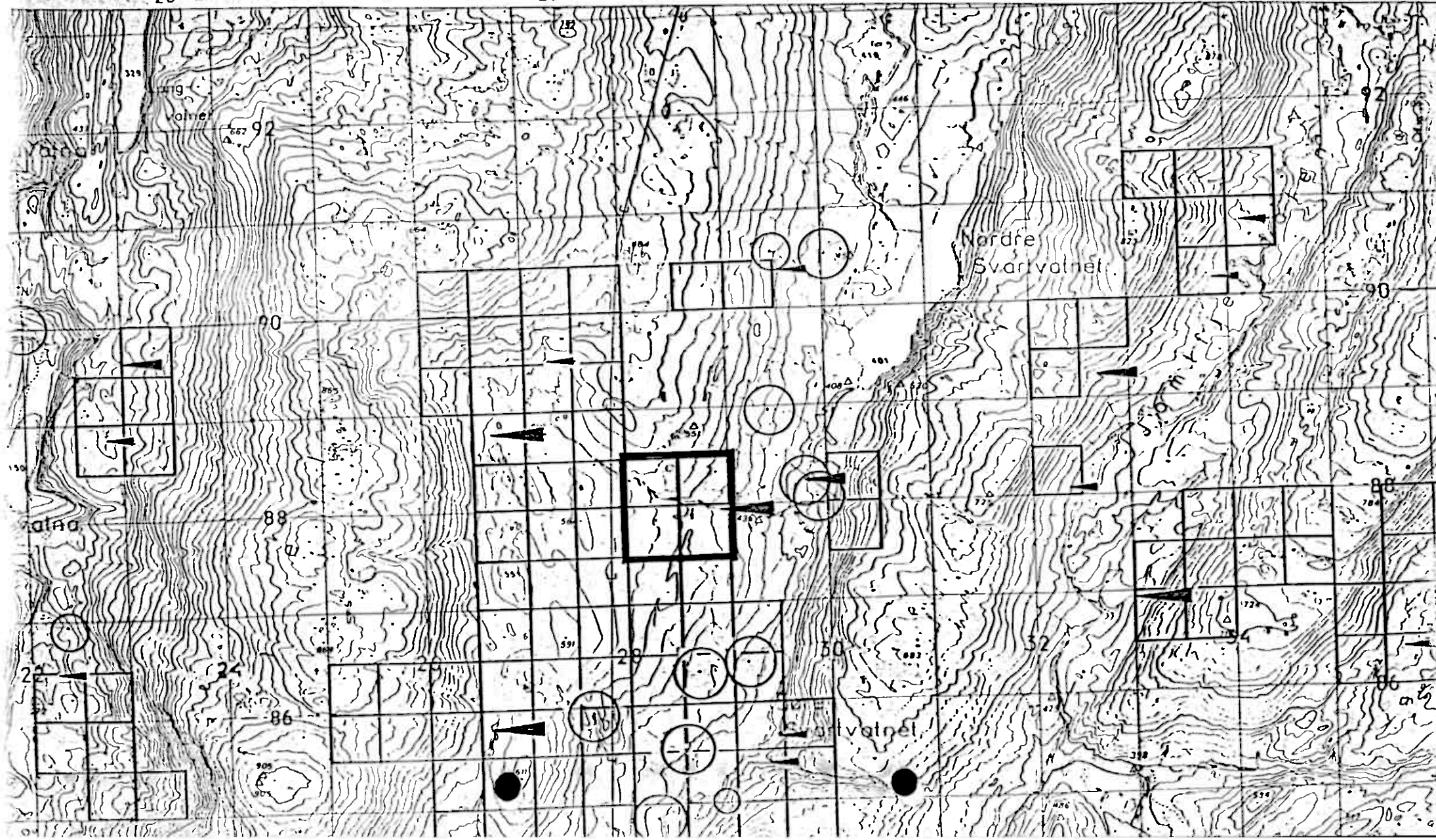
GRANE

FSN

NORDLAND FYLKE

GRANE

2 23 24 25 26 27 28 29 30 31 32 33 34 35 36
20' 25' 30' 35'



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1926 III GRANE		P 178 II, IV

Claim Name SØRSVARTVATN D No 80 Area 0,5 km² Appl.date 24/11

Stream Length 0,5 km Drainage Area 0,5 km² Av. Topog. MODERATE
460-640 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
030123		<1	21	14	77	10		
030124	27	<1	21	16	64	<1		
030125		<1	6	8	23	<1		

Regional Geology: GRANODIORITE

Overburden:

Field Comments: METAGNEISS AND MICA SCHIST

Access:

Photogeology:

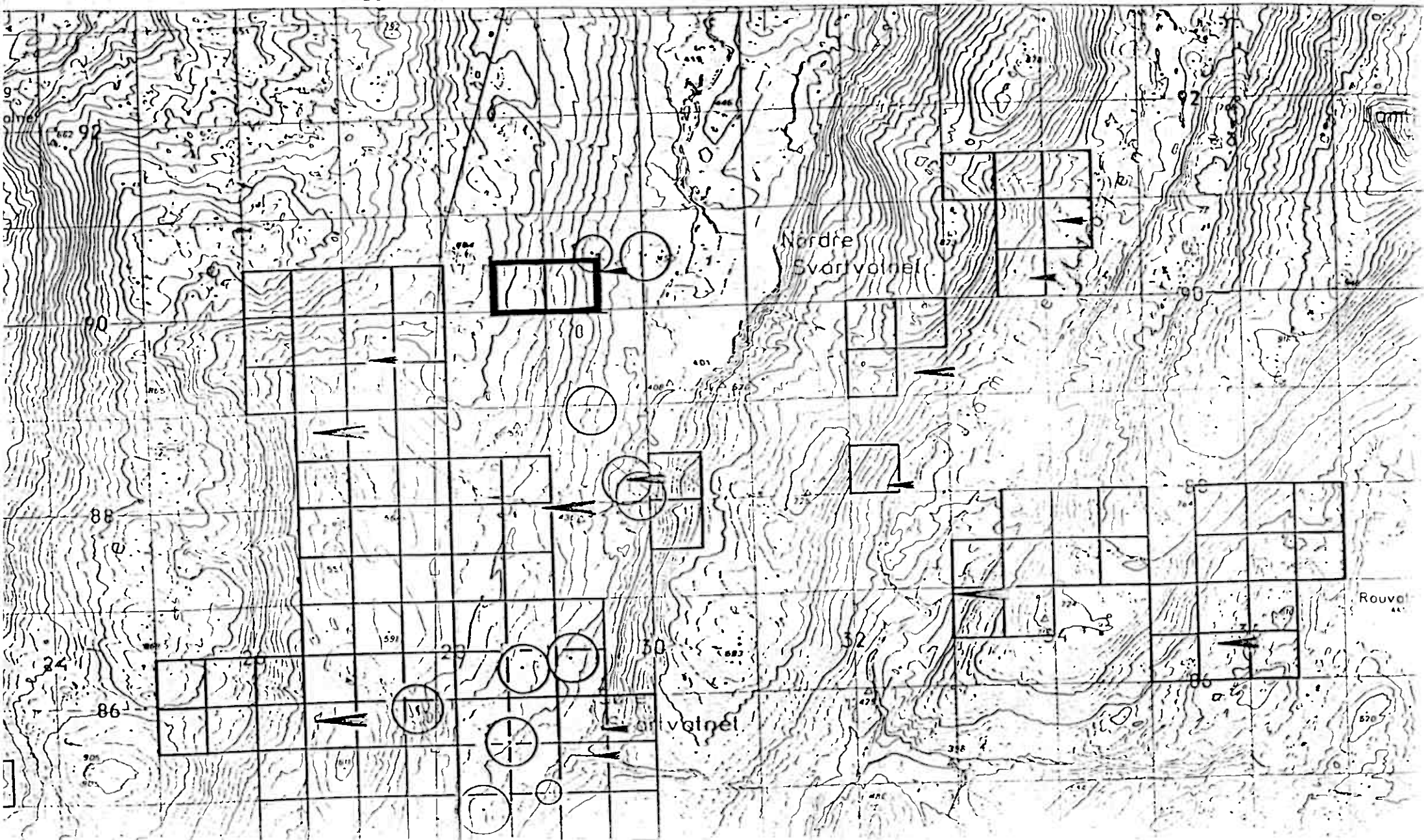
Est No. Follow up Samples 5 Time Requ'd 1 Team Days

GRANE

NORDLAND FYLKE

GRANE

24 25 26 27 28 29 30 31 32 33 34 35 36 37 38
25' 30' 35'



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	oko.kart
Claim Location:	1926 III GRANE		

Claim Name SVEBAKK No 129 Area 0,5 km² Appl.date 12/1-83

Stream Length 1 km Drainage Area 1.5 km² Av. Topog. MOD.

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
110283	54	6	21	6	42	<1		

Regional Geology: MICASCHIST

Overburden:

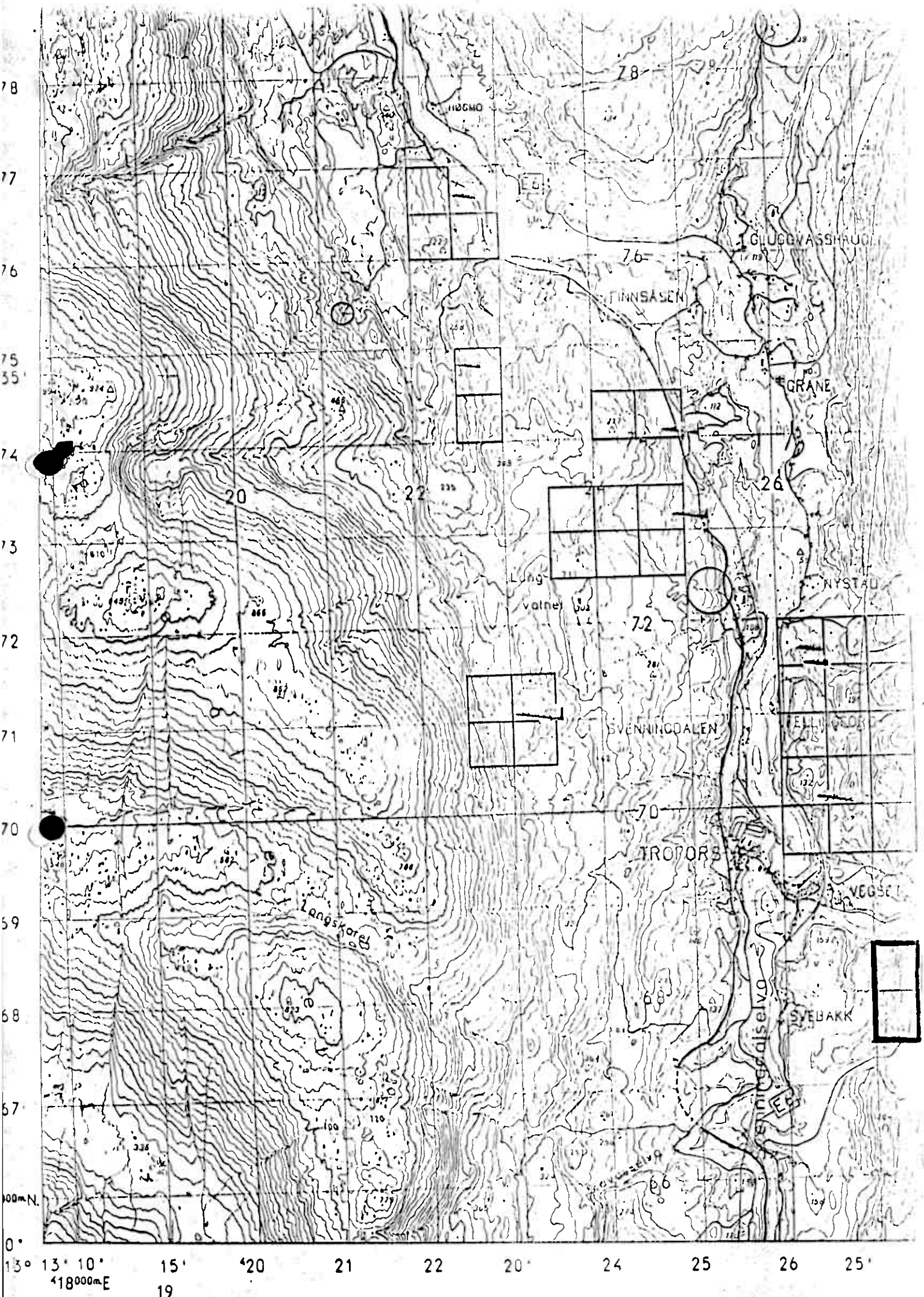
Field Comments:

Access:

Photogeology:

Est No. Follow up Samples . . . 10

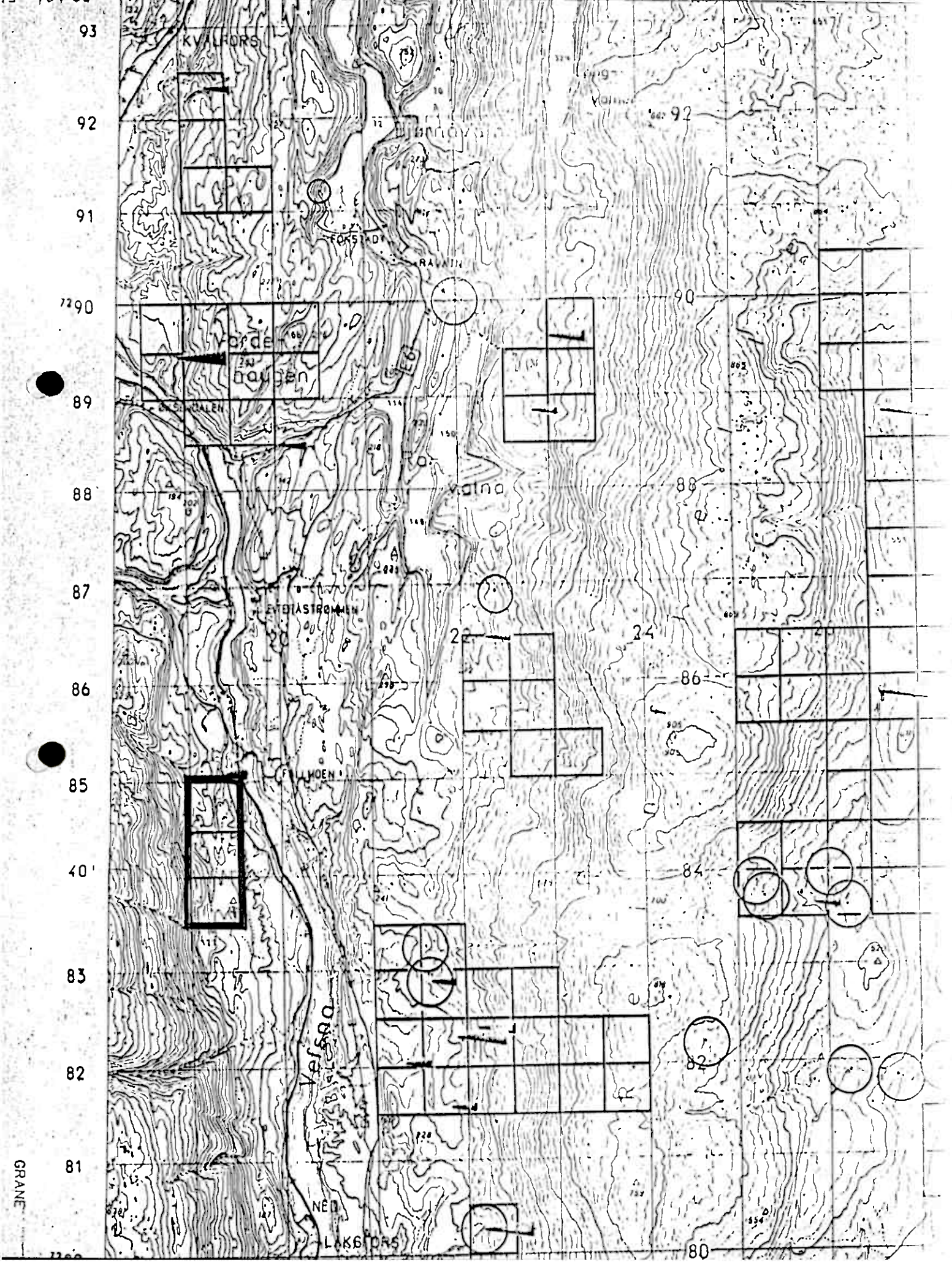
Time Requ'd	Team Days
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CLAIM DETAILS

Time Requ'd 1 Team Days

520 VEF SN
19 21 22 23 24 25 26 27
13° 13' 10" 15' 20'



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1926 III GRANE		

Claim Name SVARTVATNET No ..18... Area 3.75 km² Appl.date 12/10.

Stream Length 3 km Drainage Area 4.5 km² Av. Topog. MOD/STEEP
360-620 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add. Sb	Add. Mn
030061	17/94	2	29/27	8/7	135/138	<1	<1/<1	<1	<1
030062		17	19/19	10/10	51/94	<1	<1/<1	<1	<1
030063		4	30/27	9/9	74/63	<1	<1/<1	<1	<1
030064		19	12/15	9/8	59/61	<1	<1/<1	<1	<1
030069	25	<1	35	14	42	<1	<1	<1	<1
030070	14	<1	18	10	56	<1	<1	<1	<1
030071		4	50/46/53	19/17/21	49/61/54	<1	<1/<1/<1	<1	<1
030072	80/178	2	21/19	24/24	63/61	<1	<1/<1	<1	<1

Regional Geology: MARBLES, MICA SCHIST/GNEISSES, GRANITE

Overburden: SOIL, TALUS, LACUSTRINE SAND/SILT

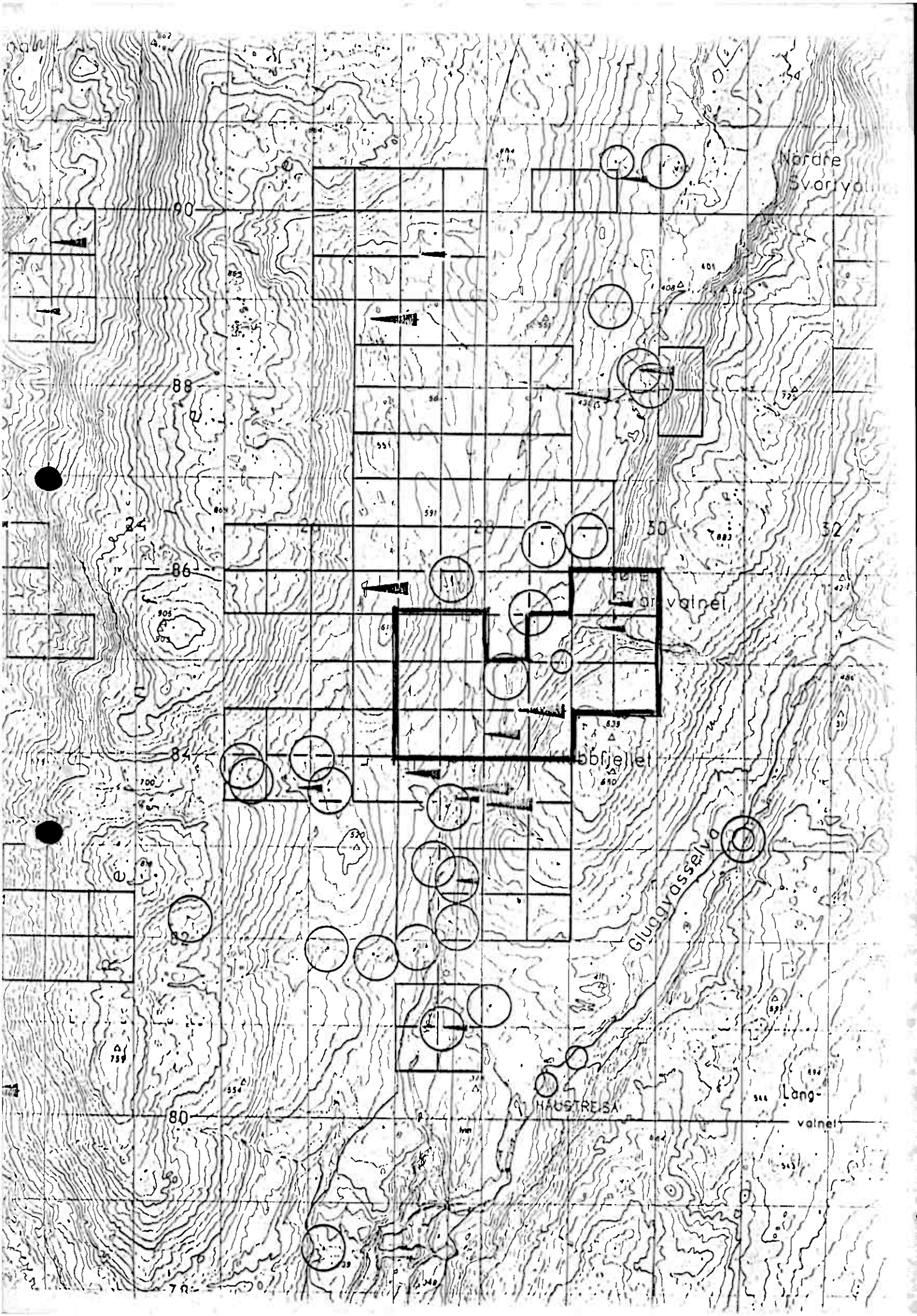
Field Comments: POSS. LAKE SEDIMENT CONTAMINATION

Access: HELICOPTER

Photogeology:

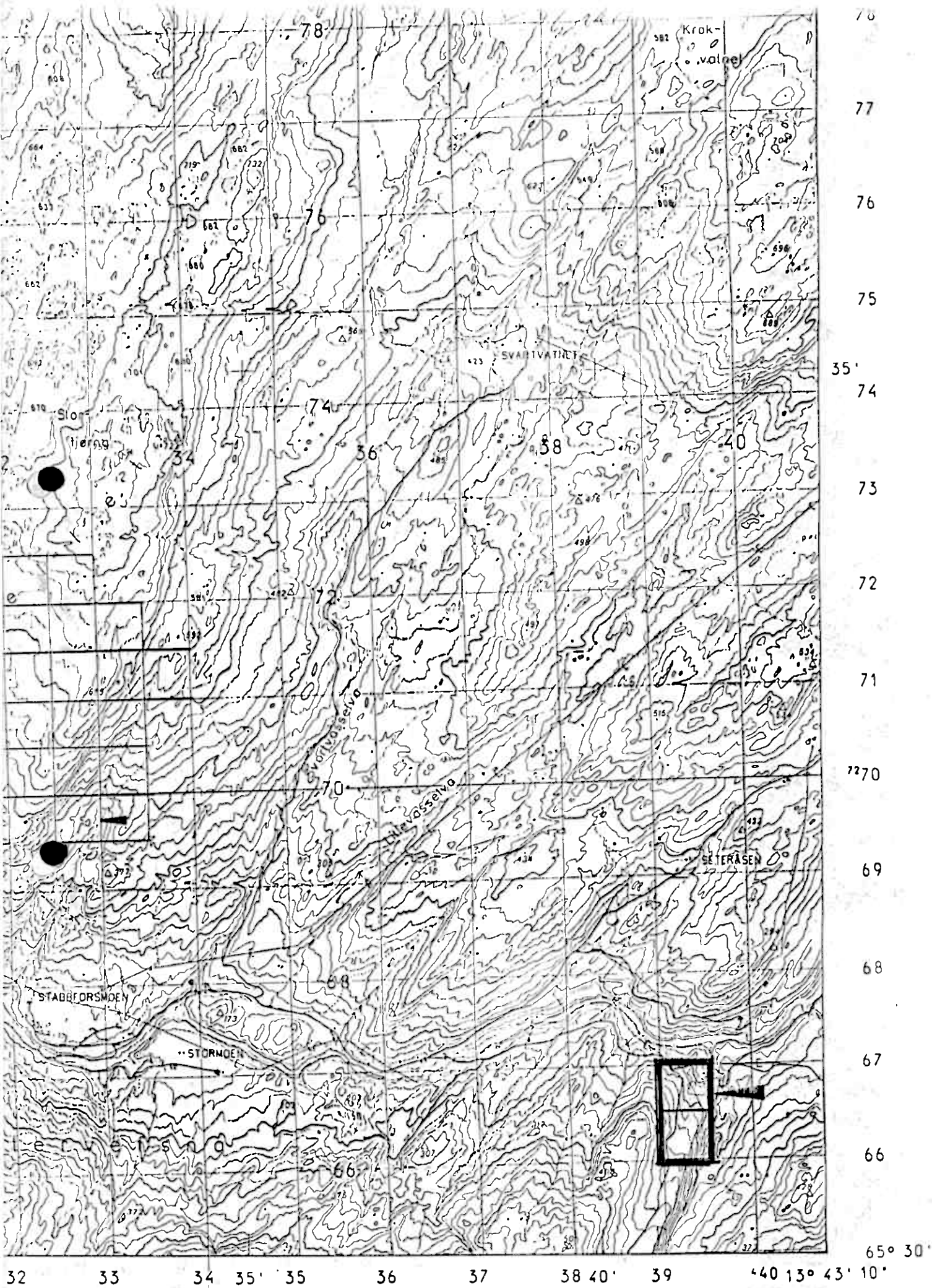
Est No. Follow up Samples 30

Time Requ'd 3 Team Days



CLAIM DETAILS

Time Requ'd 3 Team Days

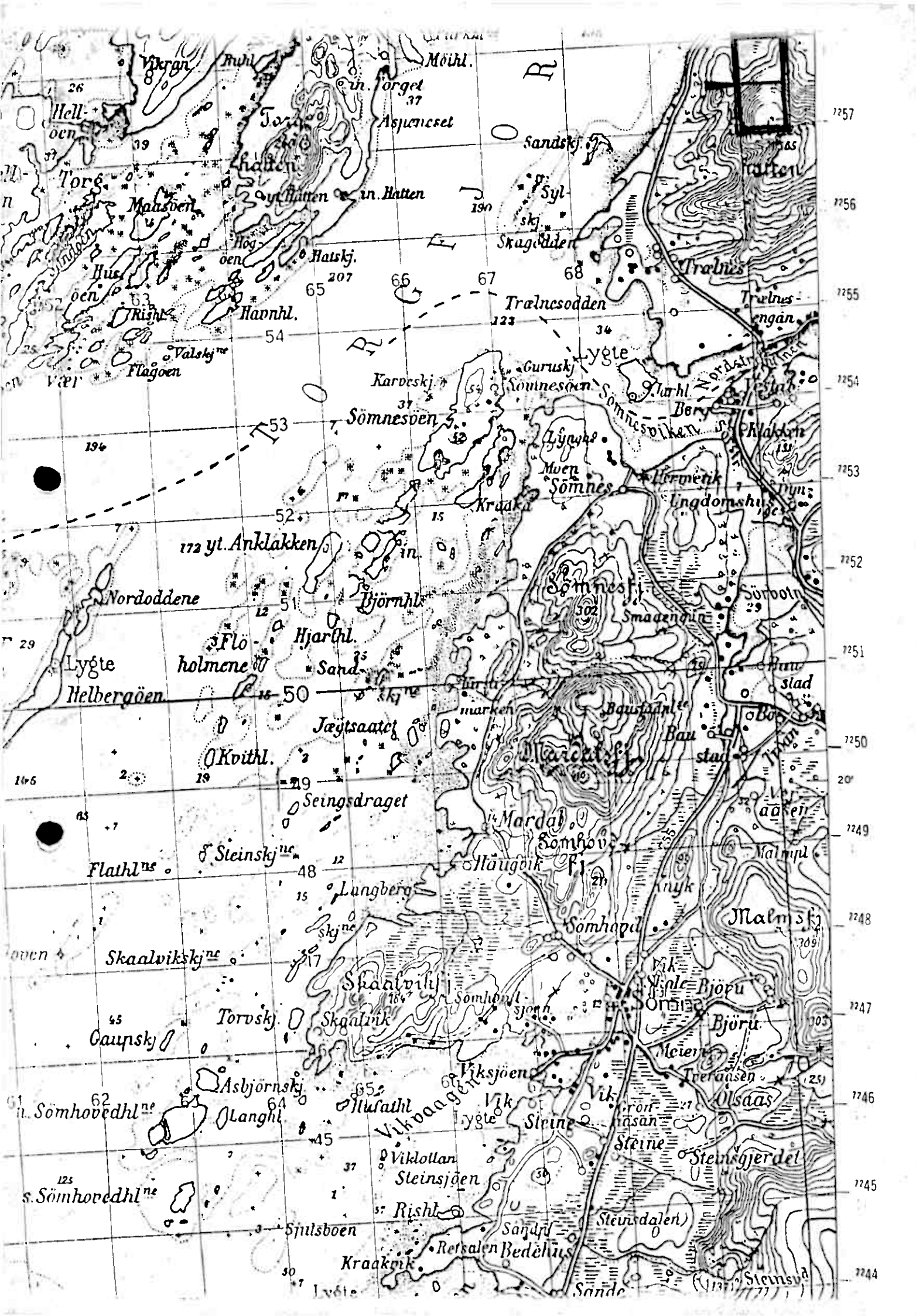


5 Kilometers

GRANE

CLAIM DETAILS

Est No. Follow up Samples	10	Time Requ'd	1	Team Days
.....				



VELF JORD

Map Sheet Velfjord

Gold anomalies are concentrated in the south east of the map sheet, where metavolcanic amphibolitic lithologies are drained.

The Skomovik granite in the north west shows generally elevated As concentrations which are not associated with detectable Au.

Few Au-As anomalies are confined to the margins of this granite.

The three Velfjord intrusions of monzodioritic composition show similar concentrations of As in stream sediments to the Skomovik granite.

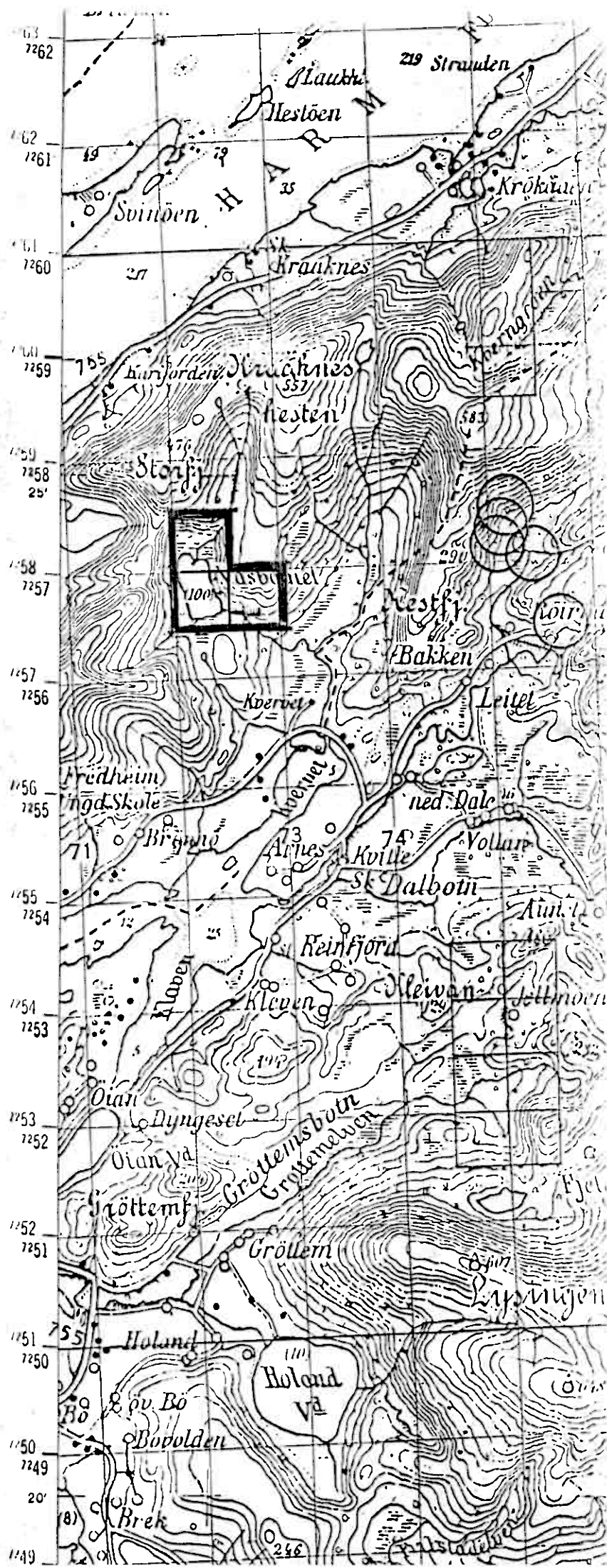
The marble horizons which extend to the north, to Kilviken and Husvik, and to the south into the Søbergslien alteration could not be sampled adequately due to thick drift and lack of active sediment.

MAP SHEET: 1825 IV VELFJORD

CLAIM NAME	NO.	AREA KM ²	Au PPB	PATHFINDER ELS.	OVERBURDEN	GEOLOGY	STRUCTURES
BORDVIK	57	1.0	114	+As +W	+	+	-
SØRENSKOGSVAND	49	0.75	1-4	0	0	+	-
SKARET	15	1.0	64	+As +W	+	+	-
SKOMOVIKEN	4	5.0	2	+As +W	+	+	0
VASBOTNET	148	0.75	21,18	+As	-	0	
KVAERNGROEN	150	1.0	5	0	-	0	-
RAAKHALLEN	43	1.25	8	-	-	0	0
SKOMOVIKEN B	44	0.5	2	+As	0	0	+
GRØNDALEN	45	2.0	41	-	+	+	-
MANSLIEN	46	0.25	2-11	-	+	+	-
HATTEN	47	1.5	166	-	+	+	0
MARKAFJELL	48	0.5	53	+As	+	+	0
JELLEMOEN	14	2.0	29	+W	+	+	0
DØNNESLI	16	0.5	Rock spl anom.	-	+	+	0
RUGÅS	3	1.5	Skarn minzn.	-	0	+	0
NORDFJELLMARKA	1	2.25	Qtz vein + sulphs	+As +W	0	+	0

CLAIM DETAILS

Est No. Follow up Samples	10	Time Requ'd	1	Team Days
.....				



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1825 IV VELFJORD		DG 173 I, II, III

Claim Name KVAERNGROEN No 150 Area 1 km² Appl.date 24.1.83

Stream Length 2,5 km² Drainage Area 3,5 km² Av. Topog. MOD/STEEP

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
210044	5	<1	22	10	84	2		

Regional Geology: MICASCHIST - GRANODIORITE

Overburden:

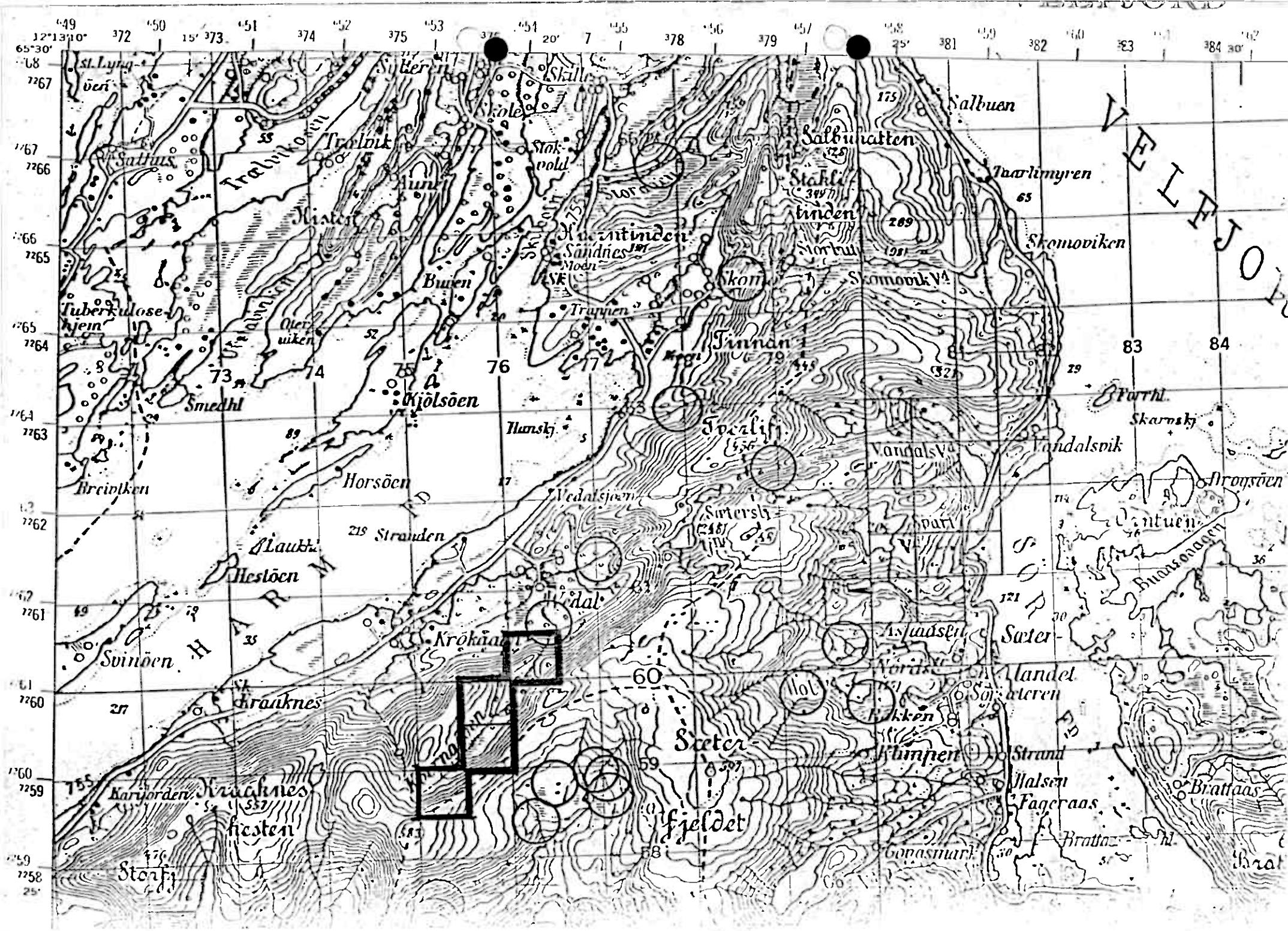
Field Comments: SAMPLE FROM SEVERAL POINTS FROM THE BANK

Access:

Photogeology:

Est No. Follow up Samples 10

Time Requ'd 1 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1825 IV VELFJORD		DH 172 I, III

Claim Name BORDVIK No 57 Area 1 km² Appl.date 03.11.82

Stream Length 1 km² Drainage Area 1 km² Av. Topog. MOD/STEEP 40-420 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add.
190044		9	46	20	38	2	<1	
190045		4	22	19	125	3	<1	
190046		<1	12	12	52	2	<1	
190047	114	6	20	7	108	4	<1	

Regional Geology: MICASCHIST/GRANODIORITE - MARBLE GABBRO IN VICINITY

Overburden: TALUS

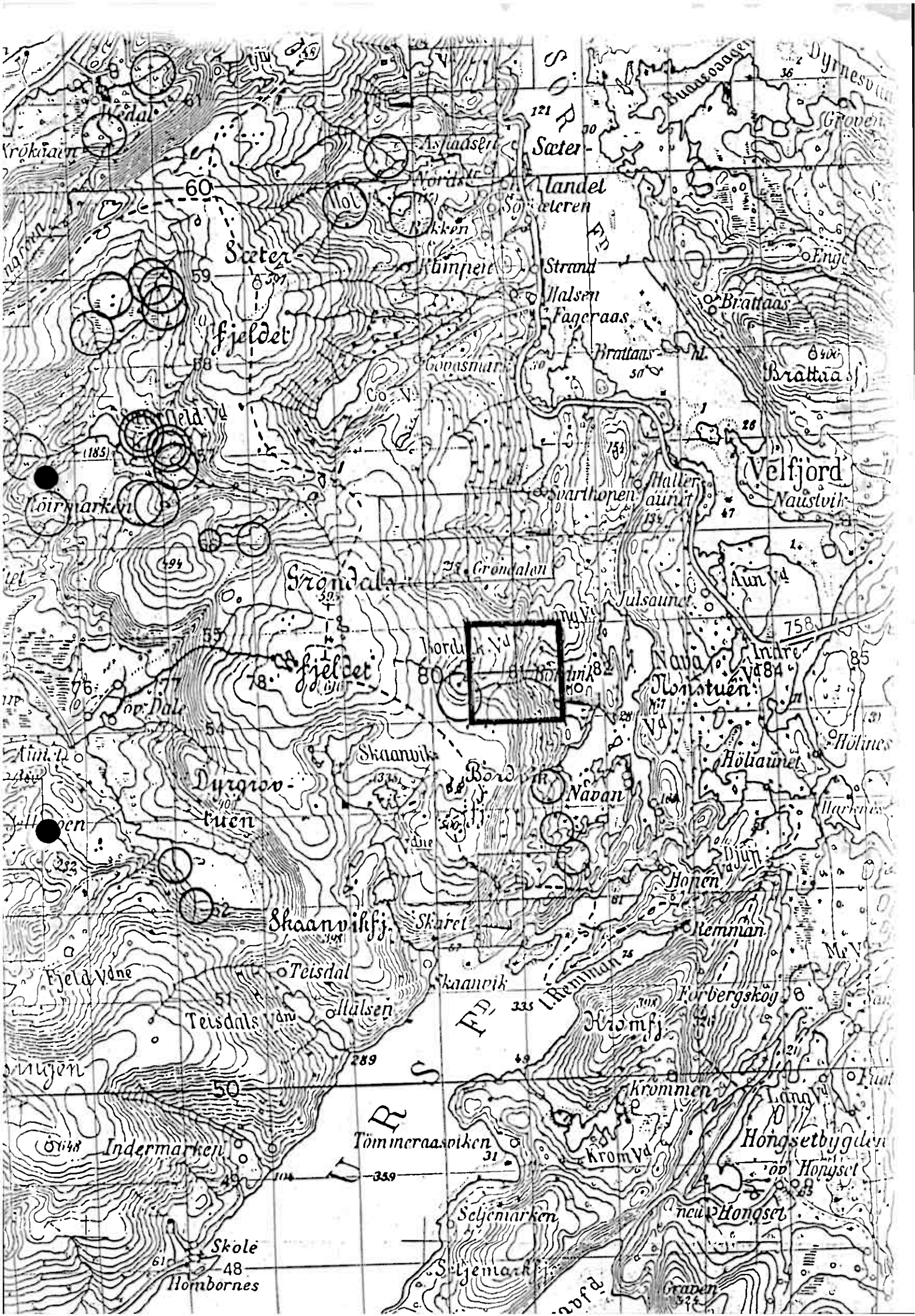
Field Comments:

Access: ROAD

Photogeology:

Est No. Follow up Samples 10

Time Requ'd 1 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1825 IV VELFJORD		DK 169 I, III

Claim Name SØRENSKOGVAND No 49 Area 0,75 km² Appl.date 03.11.82

Stream Length 0,5 km² Drainage Area 1 km² Av. Topog. MODERATE 30-200 m.

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add. Sb	Add. Mo
040090	1/4	<1	7/6/6	7/7/8	26/31/32	<1	<1/<1/<1	<1	<1
040091		2	20	7	46	<1	<1	<1	<1
040092	1	<1	14	10	52	4	<1	<1	<1
040093	1/2	1	11/14	13/12	58/58	<1	<1/<1	<1	<1
040094		<1	54	11	51	<1	<1	<1	<1
040095	3/1	2	11/10	10/10	44/45	<1	<1/<1	<1	<1

Regional Geology: MARBLES, MICA SCHIST, AMPHIBOLITE

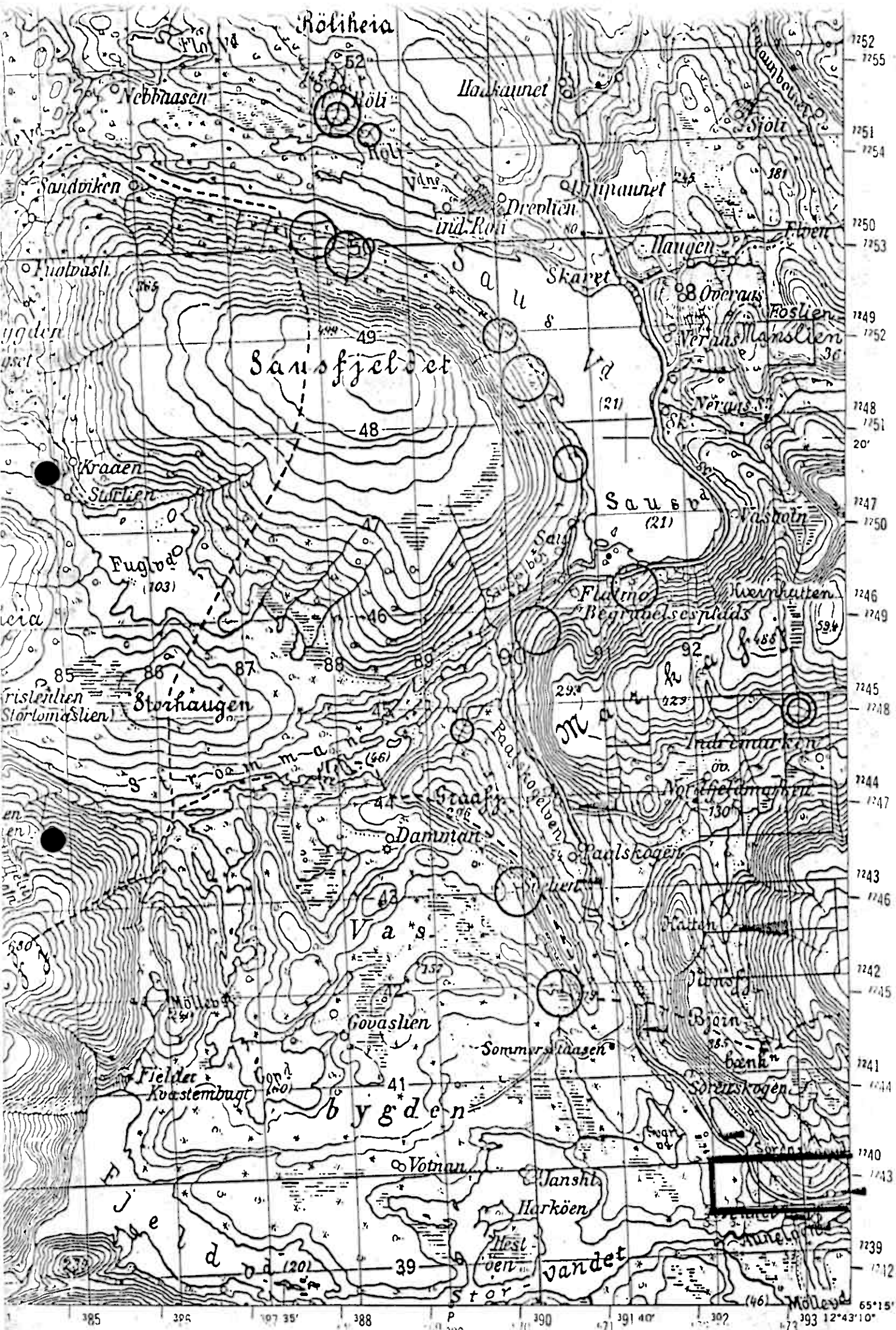
Overburden: SOIL + ALLUVIUM

Field Comments:

Access: ROAD

Photogeology:

Est No. Follow up Samples 5 Time Requ'd 1 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1825 IV VELFJORD		DJ 173 II, IV

Claim Name RAAKHALLEN No 43 Area 1,25 km² Appl. date 29.10.82.

Stream Length 2,5 km² Drainage Area 1,25 km² Av. Topog. MOD/STEEP
30-750 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add. Sb	Add. Mo
160013		<1	14	4	36	<1	<1	<1	<1
160014	8	<1	16	13	40	<1	<1	<1	<1
160015		<1	15	6	27	<1	<1	<1	<1

Regional Geology: GRANITE + MICASCHIST/GNEISS

Overburden: ALLUVIAL + TILL

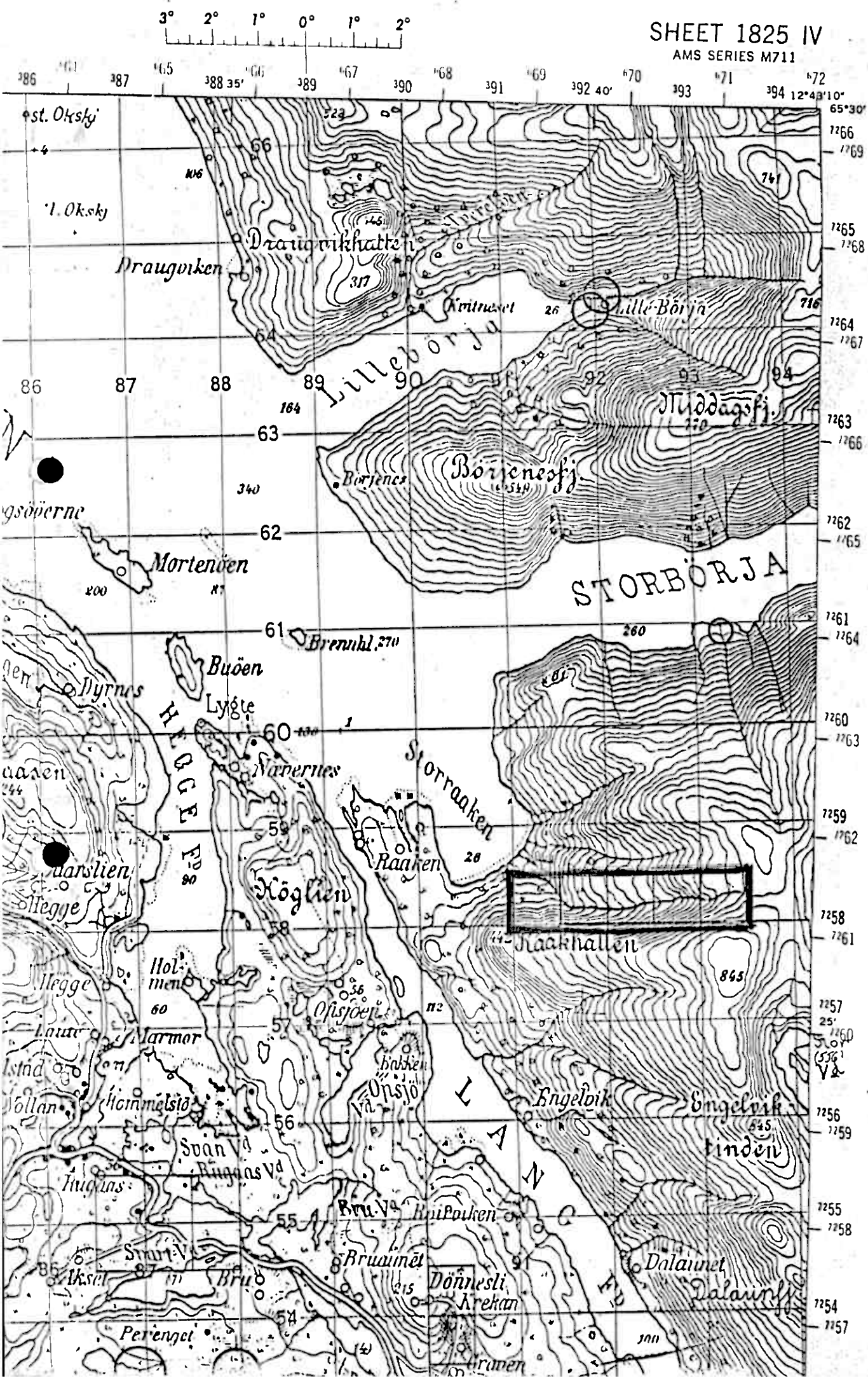
Field Comments:

Access: HELICOPTER, BOAT

Photogeology:

Est No. Follow up Samples 10

Time Requ'd 1 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1825 IV VELFJORD		DH 173 I

Claim Name SKOMOVIKEN 'B' No 44 Area 0,5 km² Appl. date 29.10.82

Stream Length 0,5 km² Drainage Area 0,5 km² Av. Topog. MOD/STEEP
80-360 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add. Sb	Add. Mo
160007	2	<1	7/7/7/8	4/3/4/3	20/19/ 20/19	<1	<1/<1/ <1/<1	<1	<1
170007		27	15	15	102	<1	<1	<1	1
170036		<1	6	7	16	2	<1		

Regional Geology: GRANITE

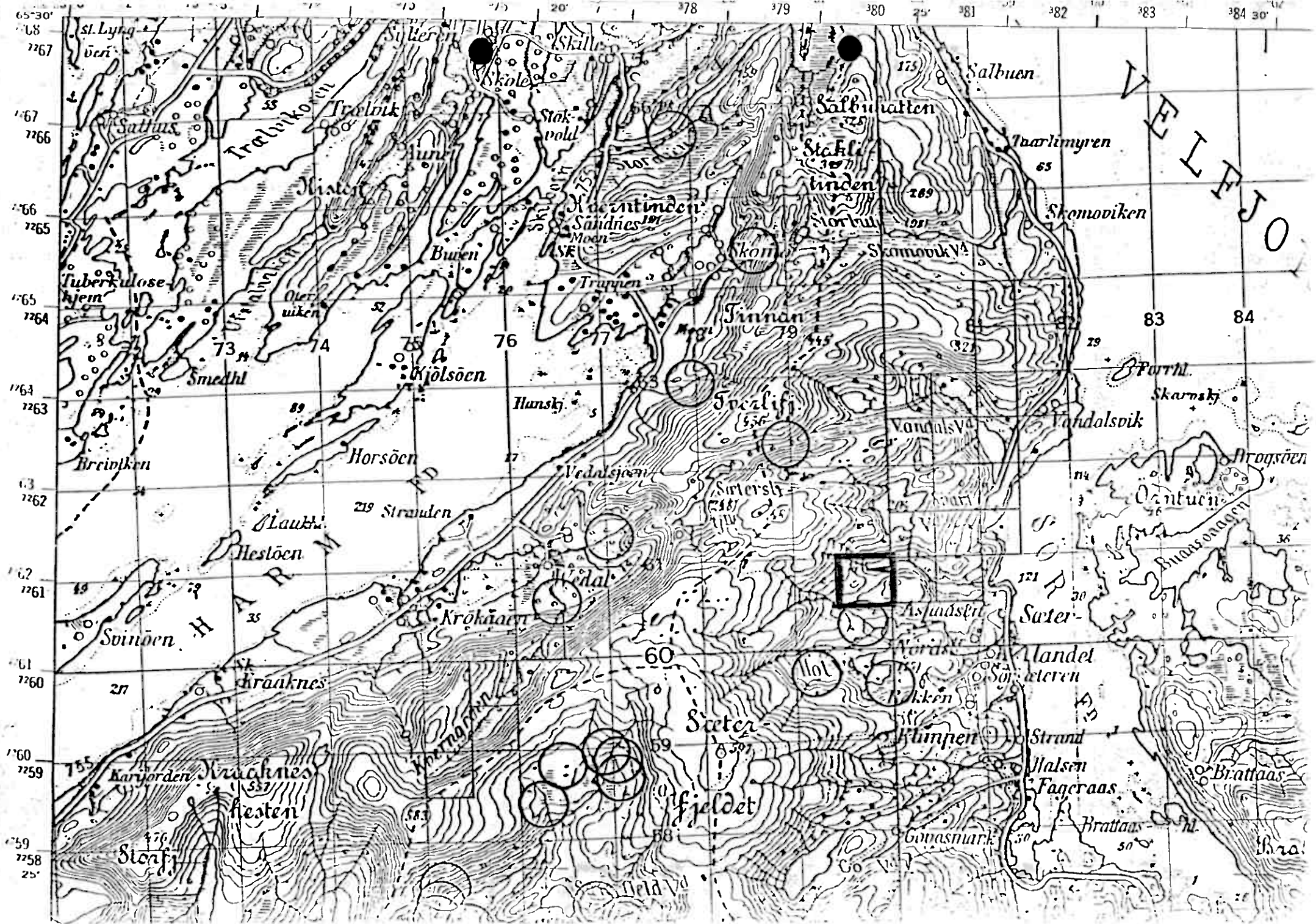
Overburden: LACUSTRINE CLAY, ALLUVIAL, LACUSTRINE SAND + SILT

Field Comments:

Access: 1 km FROM ROAD

Photogeology:

Est No. Follow up Samples 5 Time Requ'd 1 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1825 IV VELFJORD		DH 173 III

Claim Name GRØNDALEN No 45 Area 2 km² Appl.date 29.10.82

Stream Length 3 km² Drainage Area 3 km² Av. Topog.MOD. 20-480 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add. Sb	No
160008		<1	19/20	6/7	44/47	<1	<1/<1	<1	<1
160009		<1	24	6	40	<1	<1	<1	<1
160010	41	<1	27/30	7/7	46/43	<1	<1/<1	<1	<1
160011		<1	21/20	7/9	53/53	<1	<1/<1	<1	<1
190042		<1	23	9	57	2	<1		

Regional Geology: MICA SCHIST GNEISS, MARBLE, GABBRO

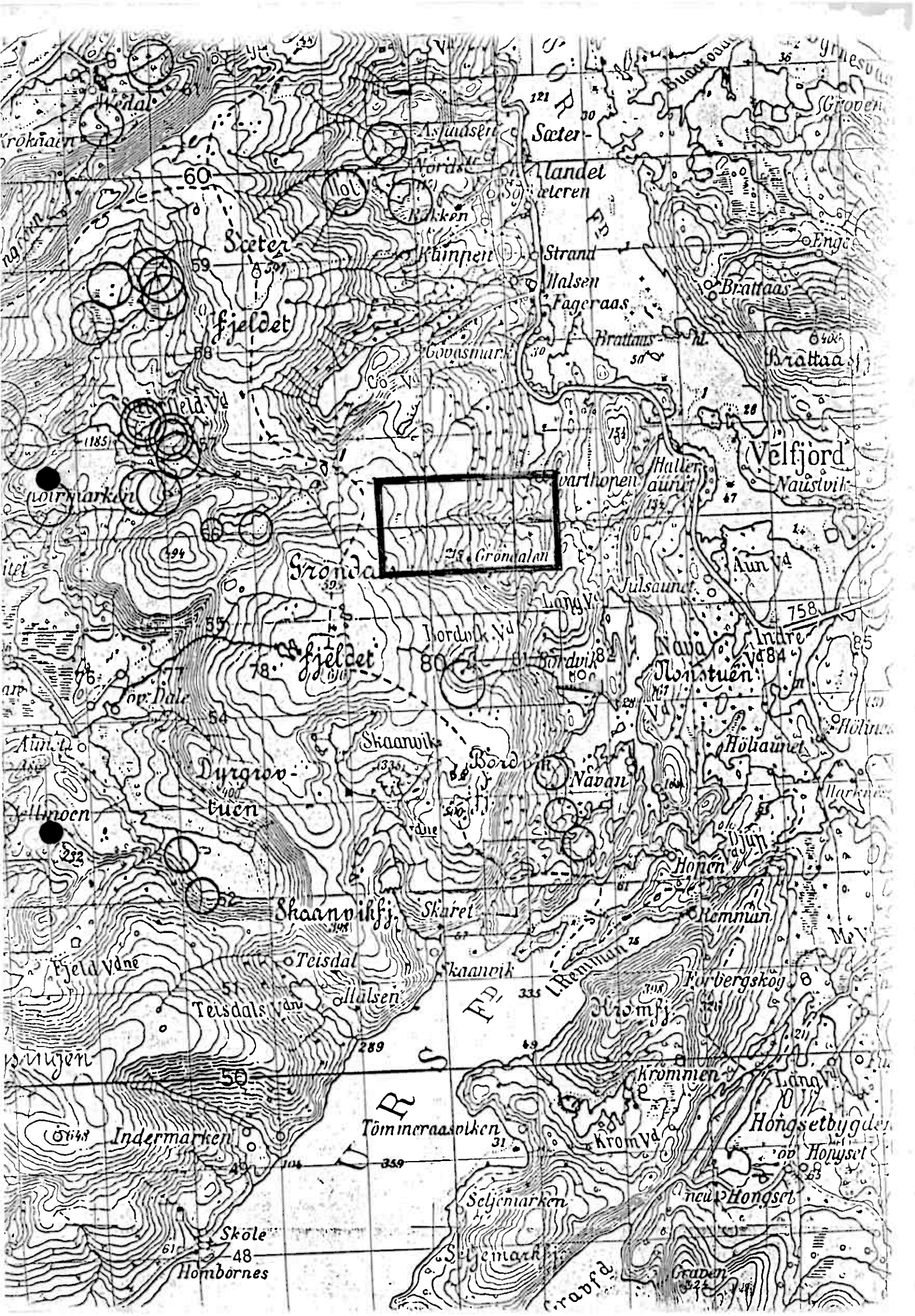
Overburden: ALLUVIAL

Field Comments: SMELLS IN SEDIMENT

Access: 1 km FROM ROAD

Photogeology:

Est No. Follow up Samples 25 Time Requ'd 2 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1825 IV VELFJORD		DK 171 III

Claim Name MANS LIEN No. 46 Area 0,25 km² Appl. date 29.10.82

Stream Length 0,25 km² Drainage Area 0,5 km² Av. Topog. MOD/STEEP
170-360 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add. Sb	Add. Mo
090001	2/11	<1	20/20	5/6	42/44	1	<1/<1	<1	<1

Regional Geology: METASEDIMENTS

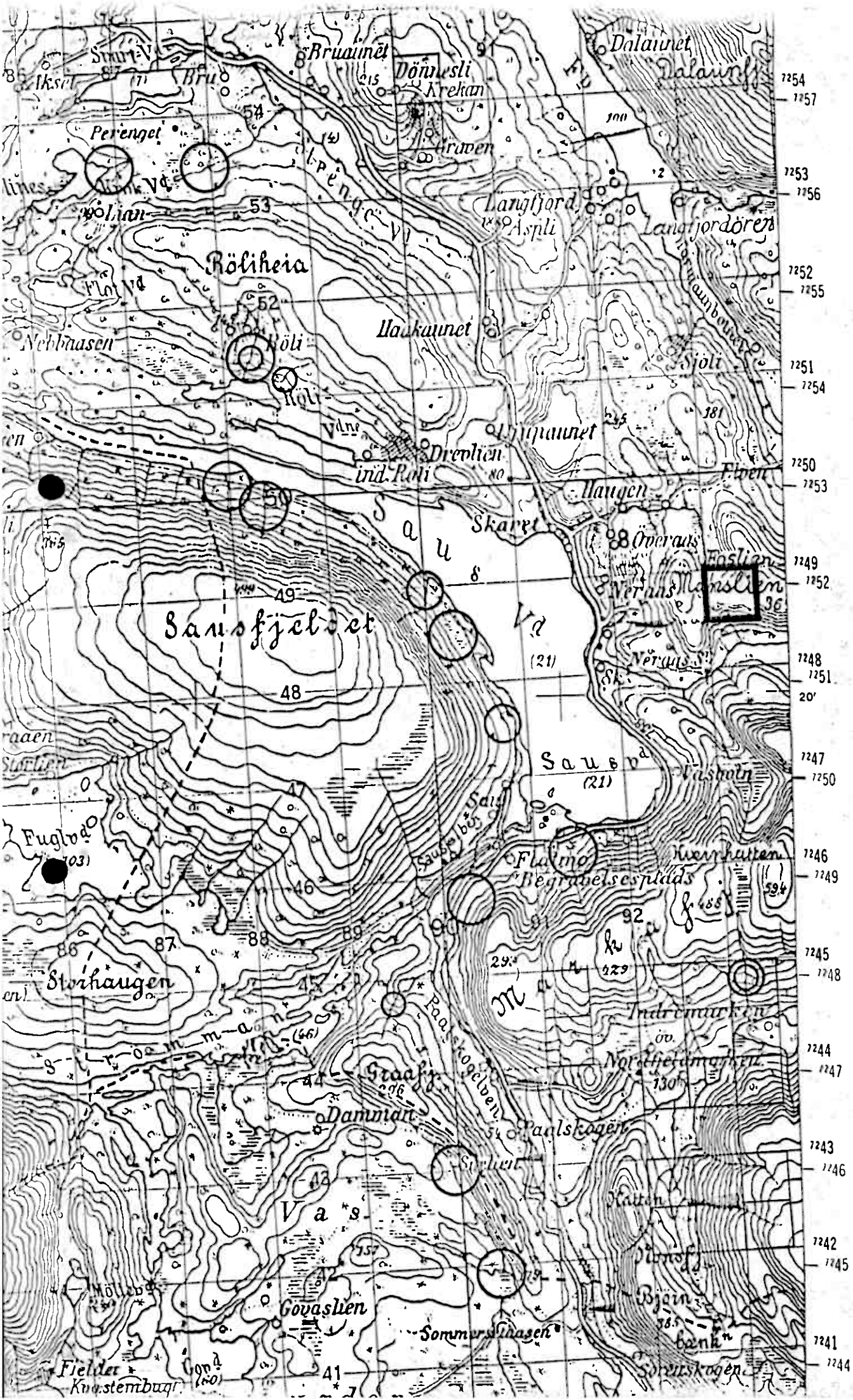
Overburden: SOIL

Field Comments:

Access: 1 km FROM ROAD

Photogeology:

Est No. Follow up Samples 5 Time Requ'd 1 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1825 IV VELFJORD		DK 170 I

Claim Name HATTEN No 47 Area 1,5 km² Appl.date 29.10.82

Stream Length 3 km² Drainage Area 2 km² Av. Topog. STEEP 140-670 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add. Sb	Add. Mo
040074		1	22/22	7/6	35/34	<1	<1/<1	<1	<1
040197									
160080		<1	21/20/20	7/6/8	42/39/40	<1	<1/<1/<1	<1	<1
160081	166	<1	21/17	4/6	36/36	<1	<1/<1	<1	<1
160082		<1	15/16/16	3/3/3	18/17/17	<1	<1/<1/<1	<1	<1
160083		<1	18/18	3/3	25/25	<1	<1/<1	<1	<1

Regional Geology: MICA SCHIST, HORNBLENDE SCHIST, AMPHIBOLITE

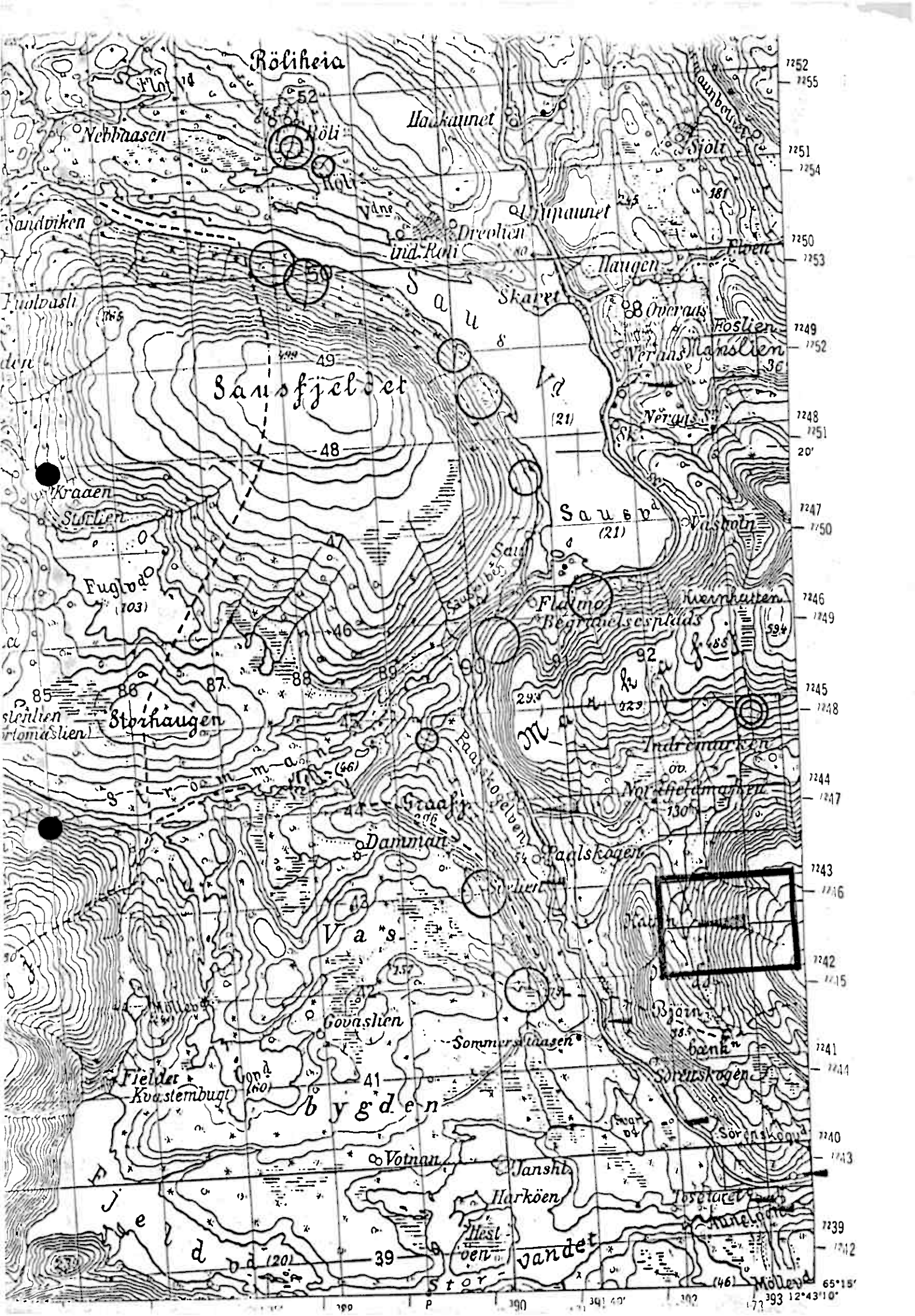
Overburden: ALLUVIAL

Field Comments:

Access: 1 km FROM ROAD

Photogeology:

Est No. Follow up Samples 25 Time Requ'd 2 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1825 IV VELFJORD		DJ 170 II

Claim Name MARKAFJELL No 48 Area 0,5 km² Appl.date 29.10.82

Stream Length 0,75 km² Drainage Area 0,5 km² Av. Topog. MODERATE 160-420 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add. Sb	Add. In
040066	53	3	14/12	11/10	45/48	<1	<1/<1	<1	<1
040067		4	14	11	49	<1	<1	<1	<1
040068		1	17/17/21	2/2/3	9/9/5	<1	<1/<1/<1	<1	<1

Regional Geology: MICA SCHIST + MARBLE

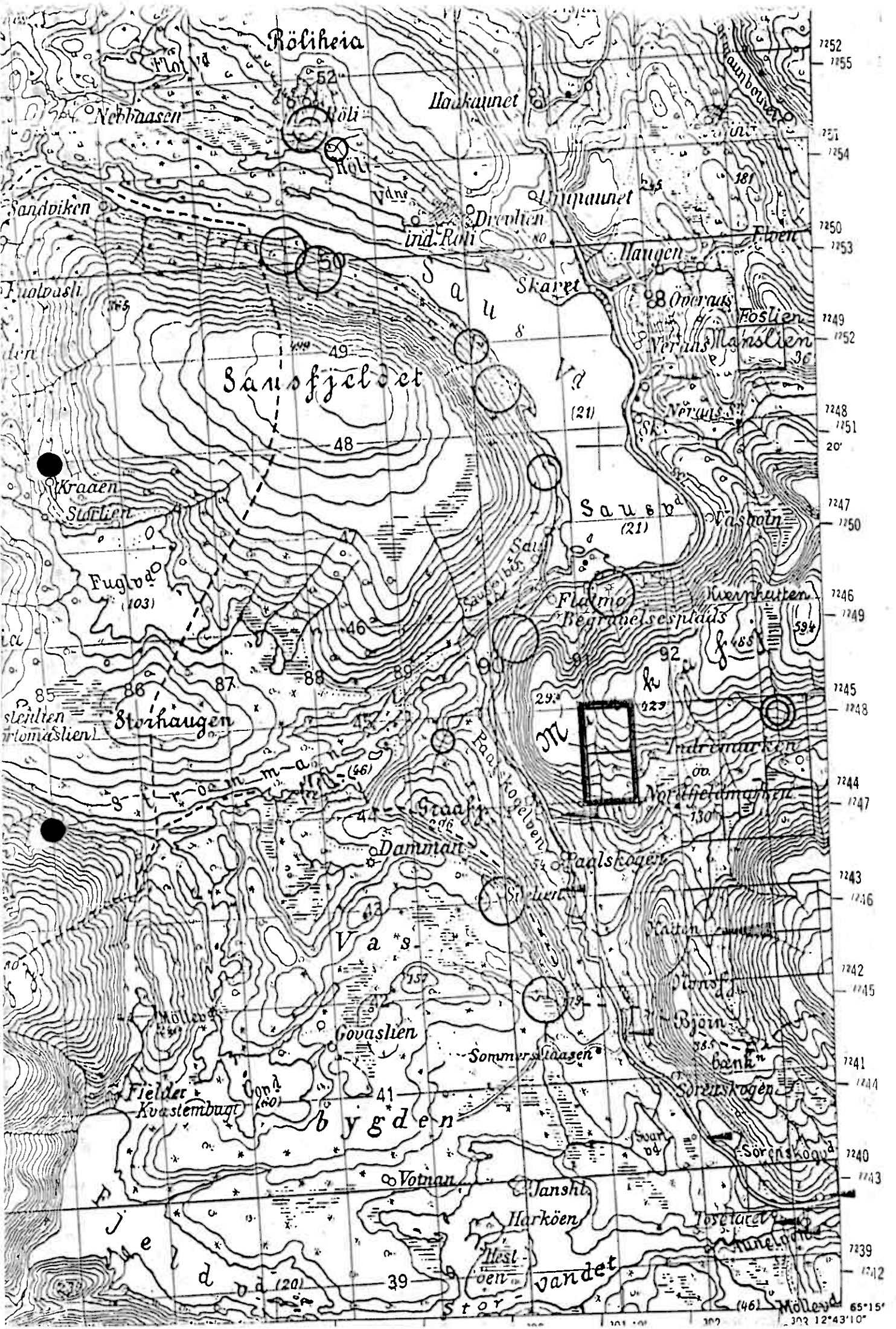
Overburden: SOIL, ALLUVIAL TALUS

Field Comments:

Access: ROAD

Photogeology:

Est No. Follow up Samples 10 Time Requ'd 1 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1825 IV VELFJORD		DG 172 IV

Claim Name JELLEMOEN No 14 Area 2 km² Appl.date 12.10.82

Stream Length 2,5 km² Drainage Area 2,5 km² Av. Topog. MOD/STEEP 50-300 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add. Sb	Add. Bi
140023		<1	16/21	11/12	100/112	4	<1	<1	1
140024		<1	13	4	36	15	<1	<1	2
140025	29	<1	7	2	16	6	<1	<1	<1
140026		<1	7	3	28	18	<1	<1	<1
140027		<1	6	2	15	<1	<1	<1	<1

Regional Geology: GARNET BEARING MICA SCHIST, MARBLE, PORPHYRITIC GRANITE

Overburden: SOIL, PEAT BOG

Field Comments: RUSTY SPOTS ON SURROUNDING CLIFF FACES

Access: ROAD

Photogeology:

Est No. Follow up Samples 25 Time Requ'd 2 Team Days

HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1825 IV VELFJORD		DH 172 III

Claim Name SKARET No 15 Area 1 km² Appl.date 12.10.82

Stream Length 0.75 km² Drainage Area 1 km² Av. Topog. STEEP
0-430 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add. Sb	Add. MO
140006		<1	17	15	110	5	<1	<1	<1
140007	64	<1	18	7	74	2	<1	<1	<1
140008		<1	16/22	6/9	67/81	2	<1/<1	<1	<1
190050		4	26	4	56	11	<1		
190051		4	11	8	26	9	<1		
190052		<1	18	12	85	38	<1		

Regional Geology: MARBLES, MICA SCHIST, GNEISSIC GRANODIORITE

Overburden: TALUS, SÓIL, TILL

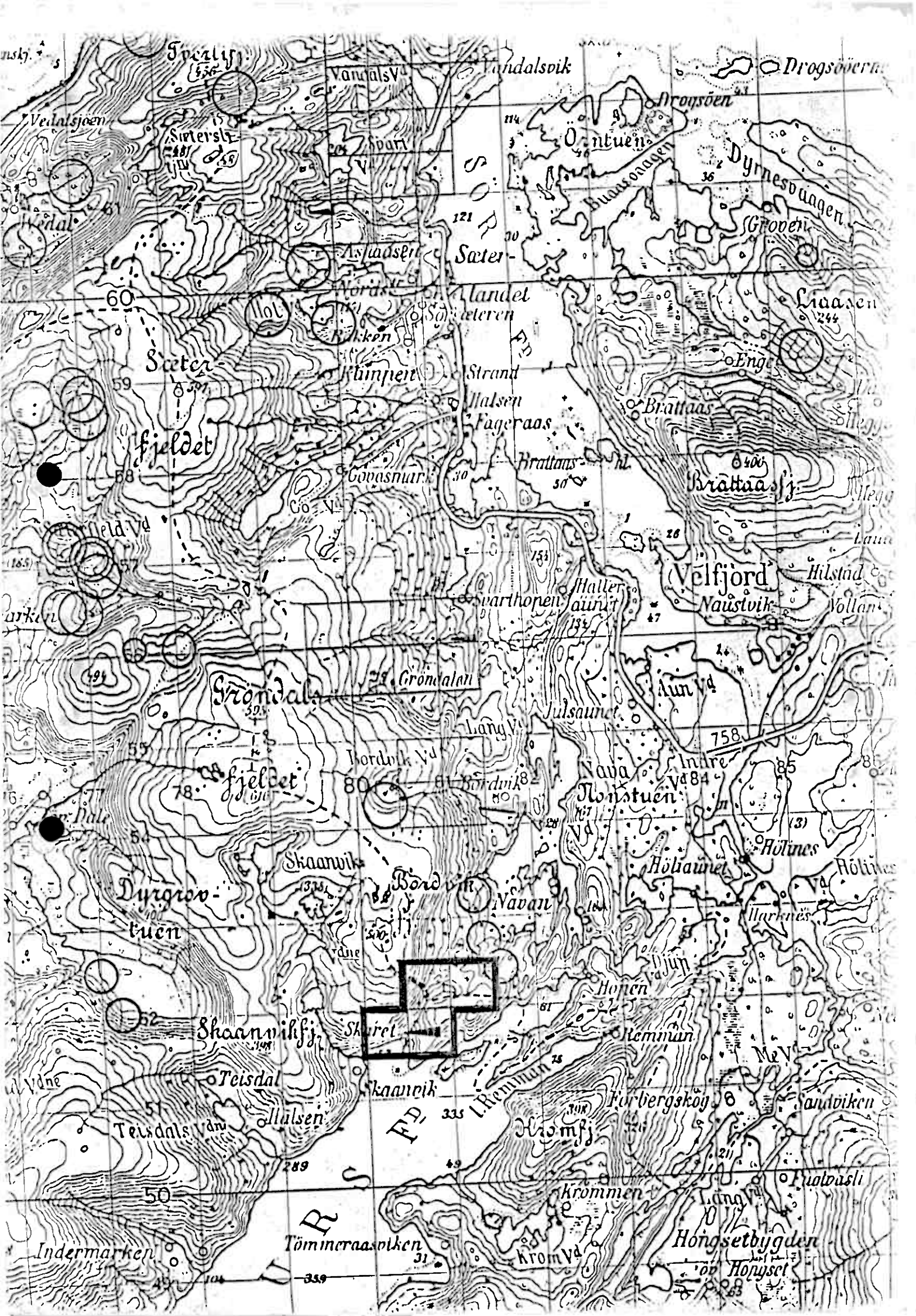
Field Comments:

Access: BOAT

Photogeology:

Est No. Follow up Samples 8

Time Requ'd 1 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1825 IV VELFJORD		DJ 172 II, IV

Claim Name DØNNESLI No 16 Area 0,5 km² Appl.date 12.10.82

Stream Length 1 km² Drainage Area 0,5 km² Av. Topog. MODERATE 90-210 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add. Sb	Add. Mn
040044	=	<1	15/15	9/9	67/57	<1	<1/<1	<1	<1
040045	=	<1	16/15/15	10/10/9	62/70/61	<1	<1/<1/<1	<1	<1

Regional Geology: MONZONITE, MARBLE

Strongly sheared amphibolite with 30ppb Au above detection limit.

Overburden: SOIL, TALUS

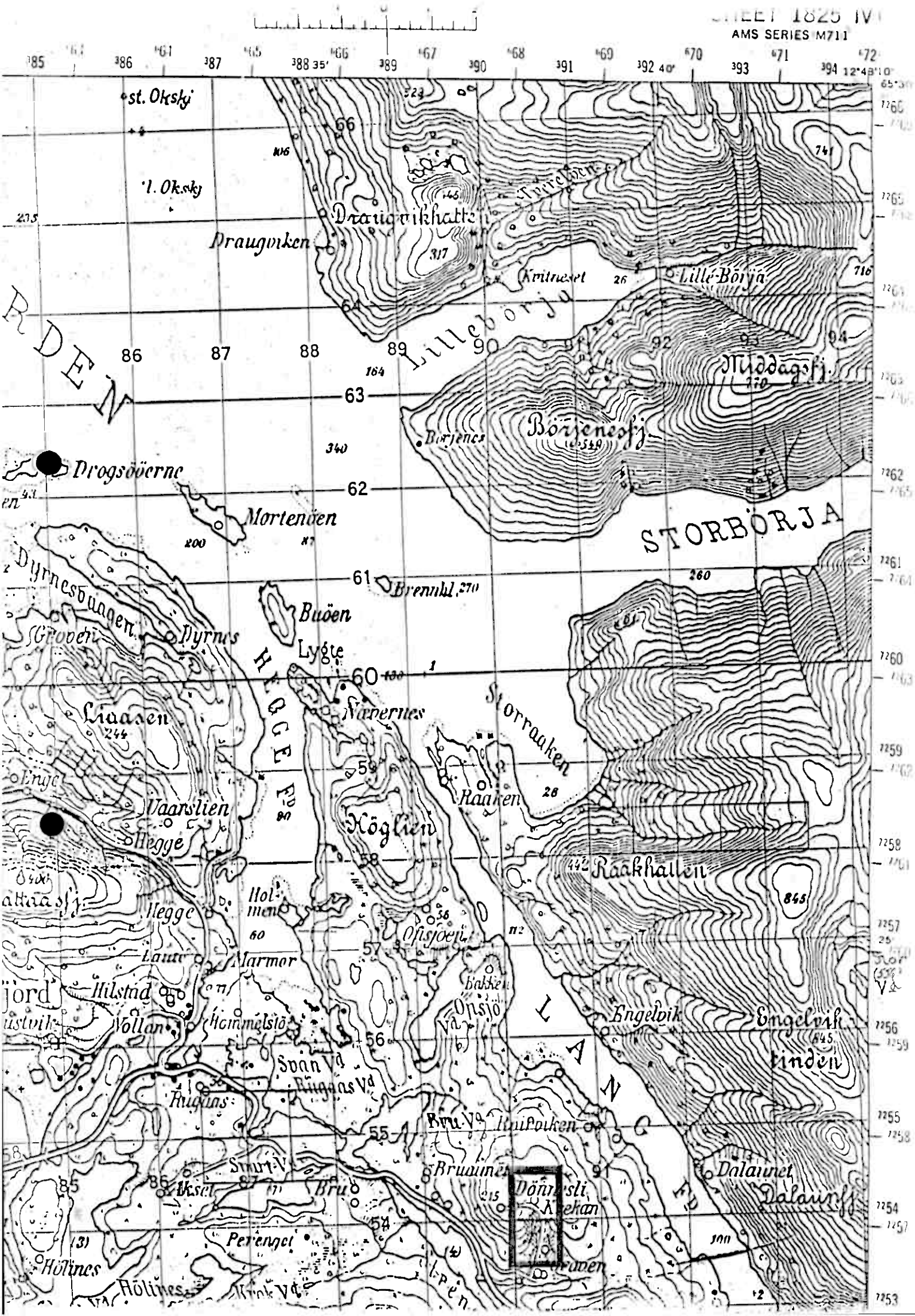
Field Comments:

Access: ROAD

Photogeology:

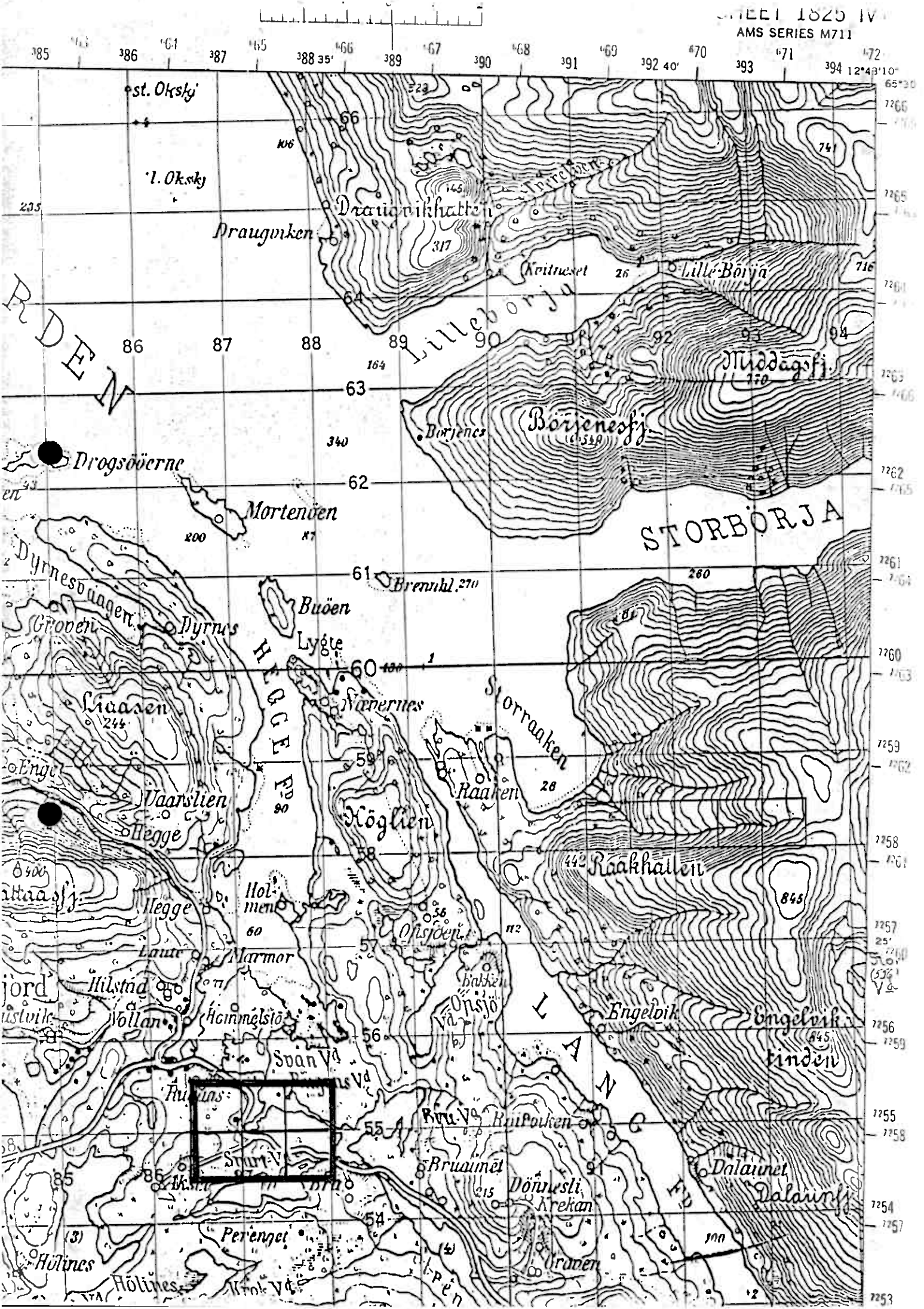
Est No. Follow up Samples 10

Time Requ'd 1 Team Days



CLAIM DETAILS

Est No. Follow up Samples	Time Requ'd Team Days
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HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1825 IV VELFJORD		

Claim Name NORDFJELDMARKA No 1 Area 2,25 km² Appl.date 11.08.82

Stream Length 3 km² Drainage Area 3 km² Av. Topog. MODERATE 120-420 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add. Sb	Mo
040068		1	17/17/21	2/2/3	9/9/5	<1	<1/<1/<	<1	<1
040069		2	25/24	11/9	39/32	<1	<1/<1	<1	<1
040070		<1	13/14	6/5	18/17	<1	<1/<1	<1	<1
040071		4	17	6	40	<1	<1	<1	<1
040072		4	19	9	51	<1	<1	<1	<1
040073		3	7/8	7/7	26/22	<1	<1/<1	<1	<1
040195		<1	20	5	45	3			
040196		<1	22	8	72	2			
040197		3	23	7	63	2			
040198		<1	19	10	79	2			
040199		<1	19	9	65	2			
140184		<1	117/113	13/13	82/31	10	<1/<1	<1	<1
140185		<1	23/24	5/3	38/24	<1	<1/<1	<1	<1
160083		<1	18/18	3/3	25/25	<1	<1/<1	<1	<1

Regional Geology: MICA SCHIST, MARBLE, GRANODIORITE, MARBLE, AMPHIBOLE SCHISTS, BASIC INTRUSIVES.

Overburden:

Field Comments: RUSTY & ALTERED MICA SCHIST

Access: 1½ km FROM ROAD

Photogeology:

Est No. Follow up Samples Time Requ'd Team Days

HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1825 IV VELFJORD		

Claim Name SKOMOVIKEN No 4 Area 5 km² Appl.date 06.09.82

Stream Length 5,5 km² Drainage Area 8,5 km² Av. Topog.MODERATE 0-330 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add. Sb	Add. Mo
160001		<1	6	12	32	8	<1	<1	<1
160002		<1	11	6	46	<1	<1	<1	<1
160003		<1	3/4	3/3	14/17	<1	<1/<1	<1	<1
160004		<1	34	10	34	<1	<1	<1	<1
160005		36	16/16	31/31	102/101	2	<1/<1	<1	<1
160006		1	8/6	14/11	23/18	2	<1/<1	<1	<1
160007	2	<1	7/7/7/8	4/3/4/3	20/19/20 /19	<1	<1/<1/ <1/<1	<1	<1
170003		3	6	6	33	3	<1	<1	<1
170007		27	15	15	102	<1	<1	<1	1
170008		3	3/5	6/6	23/25	<1	<1/<1	<1	<1
170010		3	7	4	37	<1	<1	<1	<1
170036			6	7	16		<1		

Regional Geology: GRANITE/MICASCHIST/GNEISS

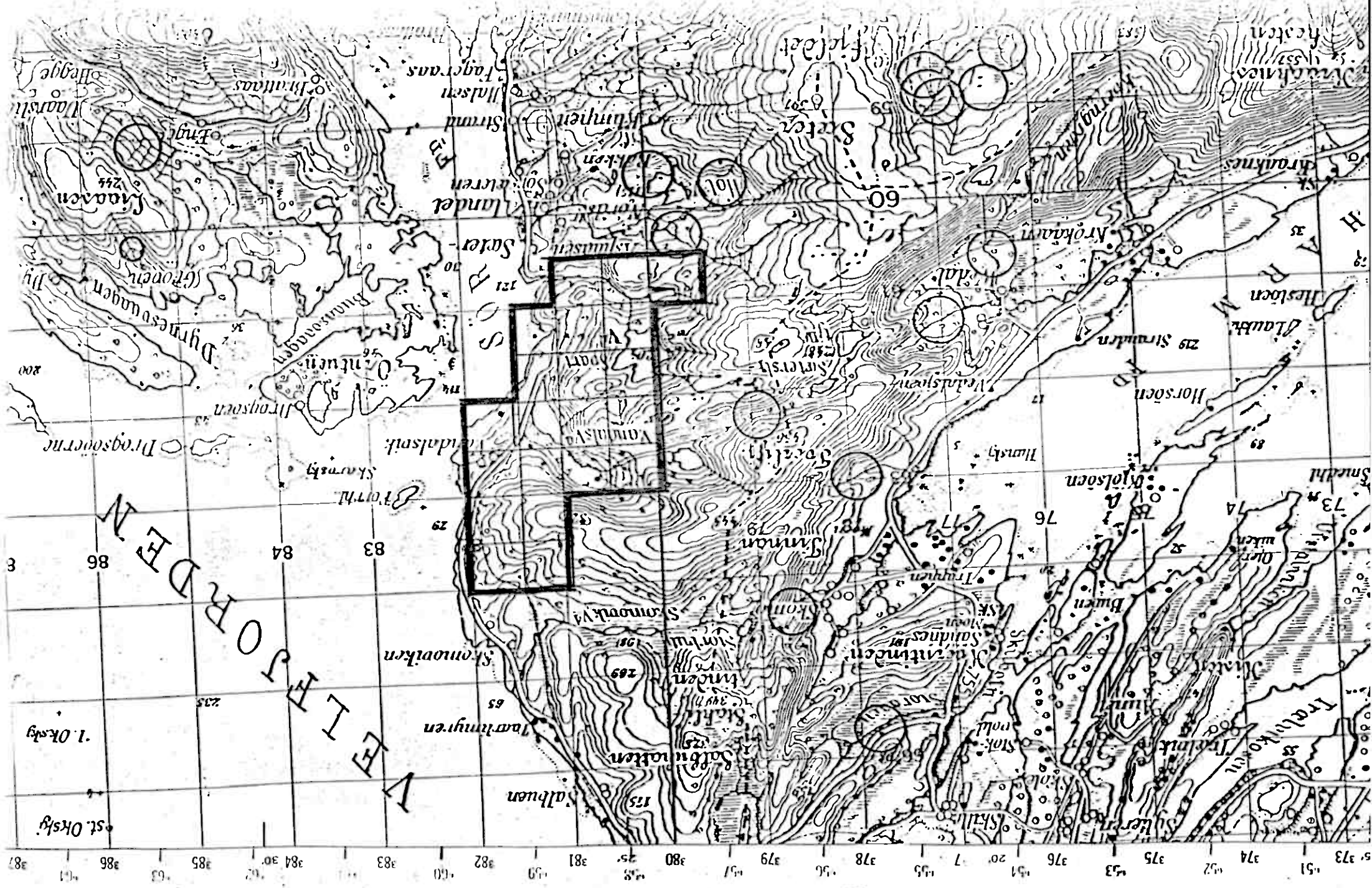
Overburden: OUTWASH, SOIL, ALLUVIUM, TALUS, LAKE SEDIMENT

Field Comments:

Access: BY ROAD

Photogeology:

Est No. Follow up Samples 20 Time Requ'd 2 Team Days



TOSBOTN

Map Sheet Tosbotn

The most obvious correlation between stream sediment anomalies and regional geological features occurs along the Kolsvik-Husvik lineament. This strong lineament zone consists of metasediments (mainly marbles and amphibolites) which exhibit a strong N-S foliation. This sequence is bordered by micaschists which are partly intensely veined, and granodiorite further to the north.

Gold anomalies along the lineament are associated with W, Pb, Zn and As anomalies.

The margin of the granodiorite to the micaschists north of Tosenfjord is characterised by W and base-metal anomalies whereas the calc-silicate gneisses around Vesterfjell are anomalous with respect to As and Au.

MAP SHEET: 1825 II TOSBOTN

CLAIM NAME	NO.	AREA KM ²	Au PPB	PATHFINDER ELS.	OVERBURDEN	GEOLOGY	STRUCTURES
KALKLAVDALEN	13	0.5	6	-	+	+	+
TETTINGELVEN	24	4.0	11-1	+As +W +Zn	+	+	+
STORBØRJA	25	4.5	11-3	+W +Zn	+	+	+
STORELVEN	60	0.25	20	+As +W	+	+	+
FEITSKARET	139	3.75	24	0	+	0	
BREIVASSELVEN	26	1.5	2	+W	+	+	+
TOSEN III	66	1.5	7,4	+As +W	0	+	0
" II	65	1.5	6	+As +W	+	+	0
" IV	67	1.5	6	-	-	0	0
" I	64	0.5	2,6,1	+W	+	0	-
FJELDSTUEN	163	0.5	236	0	0	0	

HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1825 I TOSBOTN		DL 169 I, II

Claim Name KALKLAVDALEN No 13 Area 0,5 km² Appl.date 12.10.82

Stream Length 1 km Drainage Area 0,25 km² Av. Topog. STEEP 0-750 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add. Sb	Add. Mo
140029		<1	12	5	30	<1	<1	<1	<1
140030	6	<1	8	4	19	2	<1	<1	<1
140031		<1	9	4	17	1	<1	<1	<1

Regional Geology: MICA SCHIST/GNEISS, GRANITE

Overburden: TALUS, SOIL

Field Comments:

Access: BOAT

Photogeology:

Est No. Follow up Samples 10

Time Requ'd 1 Team Days

HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1825 I TOSBOTN		DK 173 II, IV

Claim Name TETTINGELVEN No 24 Area 4,0 km² Appl.date 15.10.82

Stream Length 15 km Drainage Area 14 km² Av. Topog. MOD/STEEP
30-670 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Acid. Sb	Acid. Mo
040132	11/9	<1/<1	17/16/13	12/11/10	93/79/77	<1/<1	<1/<1/<1	<1/	<1/
040133		<1	13	12	98	3	<1	<1	<1
040134		<1	14	23	119	24	<1	<1	<1
040139		1	12	10	66	<1	<1	<1	<1
040140	2	2	16	16	122	<1	<1	<1	<1
040141		<1	17	17	150	<1	<1	<1	<1
040142	6	35	22	18	88	<1	<1	<1	<1
040143	2	19	16	19	81	6	<1	<1	<1
040144		2	29	39	161	<1	<1	<1	<1
040145		1	21	23	145	<1	<1	<1	<1
040146	3	<1	34	32	90	<1	<1	<1	<1
040147		<1	21	21	93	19	<1	<1	<1
040148		<1	18	21	136	69	<1	<1	<1
040149		<1	14	29	86	5	<1	<1	<1
040150		<1	30	41	279	4	<1	<1	<1
040151		<1	24	33	283	3	<1	<1	<1

Regional Geology:

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Overburden:

Field Comments:

Access:

Photogeology:

Est No. Follow up Samples

Time Requ'd Team Days

HELGELAND PROJECT 1982

CLAIM DETAILS

Claim Location:	M 711	Aerial Photos	Øko.kart

Claim Name No Area km² Appl.date

Stream Length km Drainage Area km² Av. Topog.

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Archi. Sb	II
040152	2	<1	16	39	246	28	<1	<1	<1
040153	1	<1	15	15	171	4	<1	<1	<1
040154		<1	18	17	103	18	<1	<1	<1
040155		<1	17	30	186	8	<1	<1	<1
160018		<1	18	9	58	2	<1	<1	<1
140174		<1	8	27	160	20	<1	<1	<1
140175		<1	9	31	59	12	<1	<1	<1
200011			21	12	112		<1		

Regional Geology: MARBLE, CALC.SILICATE GNEISS, GNEISS, MICA SCHIST GNEISS, DIORITIC GNEISS, GRANODIORITE.

Overburden: SOIL, TALUS, ALLUVIUM.

Field Comments: GRANODIORITIC VEINING. RUST ZONES.

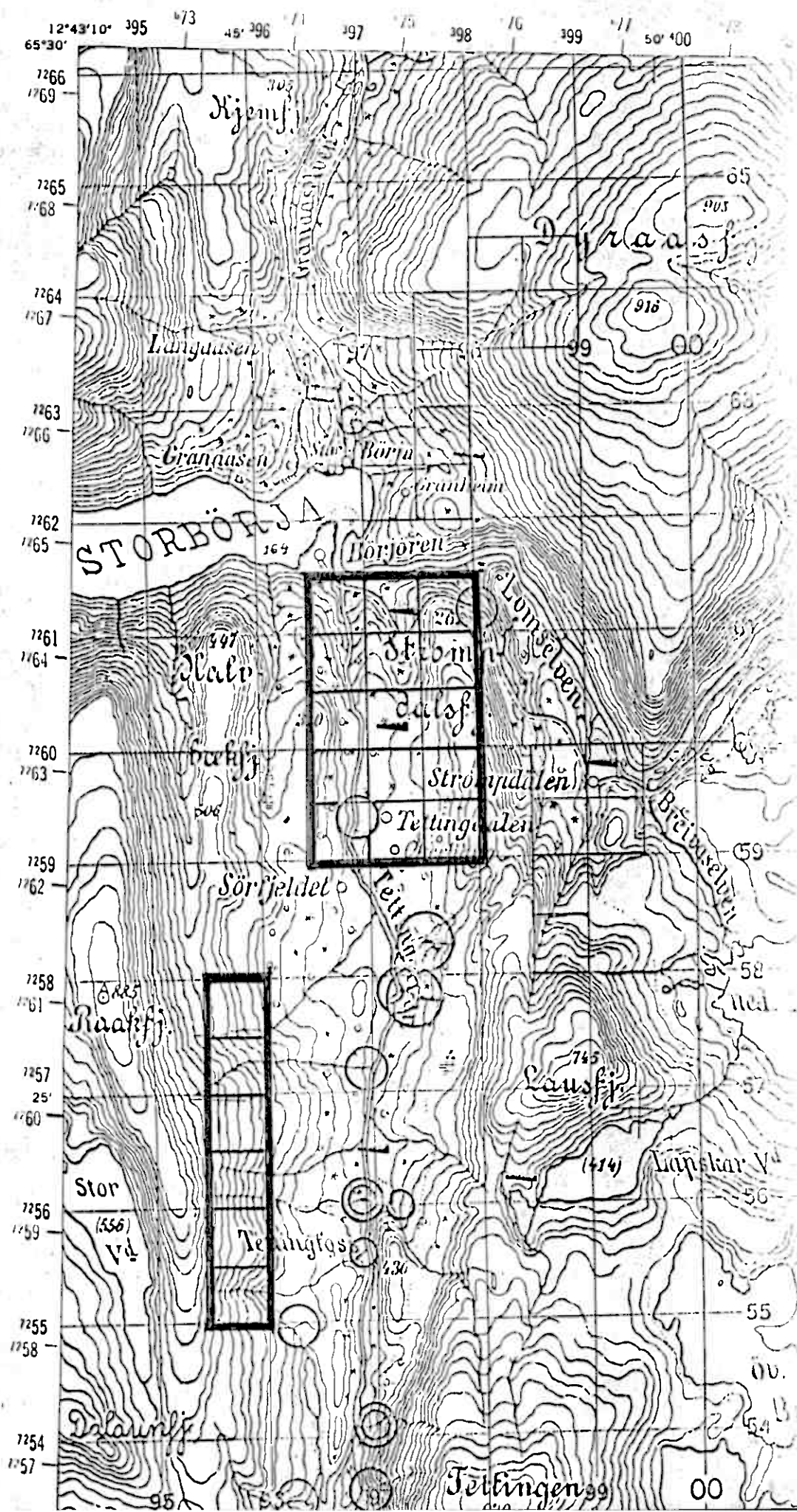
Access: BOAT

Photogeology:

Est No. Follow up Samples 40

Time Requ'd 3 Team Days

FIRST E



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1825 I TOSBOTN		DK 174 II, IV, L 174 I, III

Claim Name STORBØRJA No 25 Area 4,5 km² Appl.date 15.10.82

Stream Length 8 km Drainage Area 5 km² Av. Topog. STEEP 0-820 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Sb	Arct. Th
040109		<1	6/7/6	6/6/5	19/18/19	<1	<1/<1/<1	<1	<1
040110		<1	15	27	86	6	<1	<1	<1
040111		1	20	40	180	<1	<1	<1	<1
040112		<1	9	15	73	2	<1	<1	<1
040113	4	<1	9	14	69	<1	<1	<1	<1
040114	11	2	9/11	15/18	47/54	1	<1/<1	<1	<1
040115		<1	14	14	85	8	<1	<1	<1
040116		<1	11	11	38	7	<1	<1	<1
040117		<1	15	16	105	2	<1	<1	<1
040118		<1	14	15	108	1	<1	<1	<1
040119		<1	20	13	80	<1	<1	<1	<1
040120		<1	17	8	80	<1	<1	<1	<1
040121	10	<1	9/10	9/11	41/49	<1	<1/<1	<1	<1
040122	8	<1	14	21	212	<1	<1	<1	<1
040123	6	<1	22/20	31/27	122/140	8	<1/<1	<1	<1
040131		1	26	46	185	7	<1	<1	<1

Regional Geology:

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Overburden:

Field Comments:

Access:

Photogeology:

Est No. Follow up Samples

Time Requ'd Team Days

HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:			

Claim Name No Area km² Appl.date

Stream Length km Drainage Area km² Av. Topog.

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add. Sb
040156	3	<1	13	19	38	3	<1	<1
040157		2	9	35	25	<1	<1	<1
160019		<1	8/8/6/5	5/5/6/6	21/24/23/	4	<1/<1/	<1
200012			14	8	23 63		<1/<1/	<1

Regional Geology: MICA SCHIST/GNEISS, MARBLE, GRANITE/GRANODIORITE.

Overburden: SOIL TILL, ALLUVIUM, TALUS:

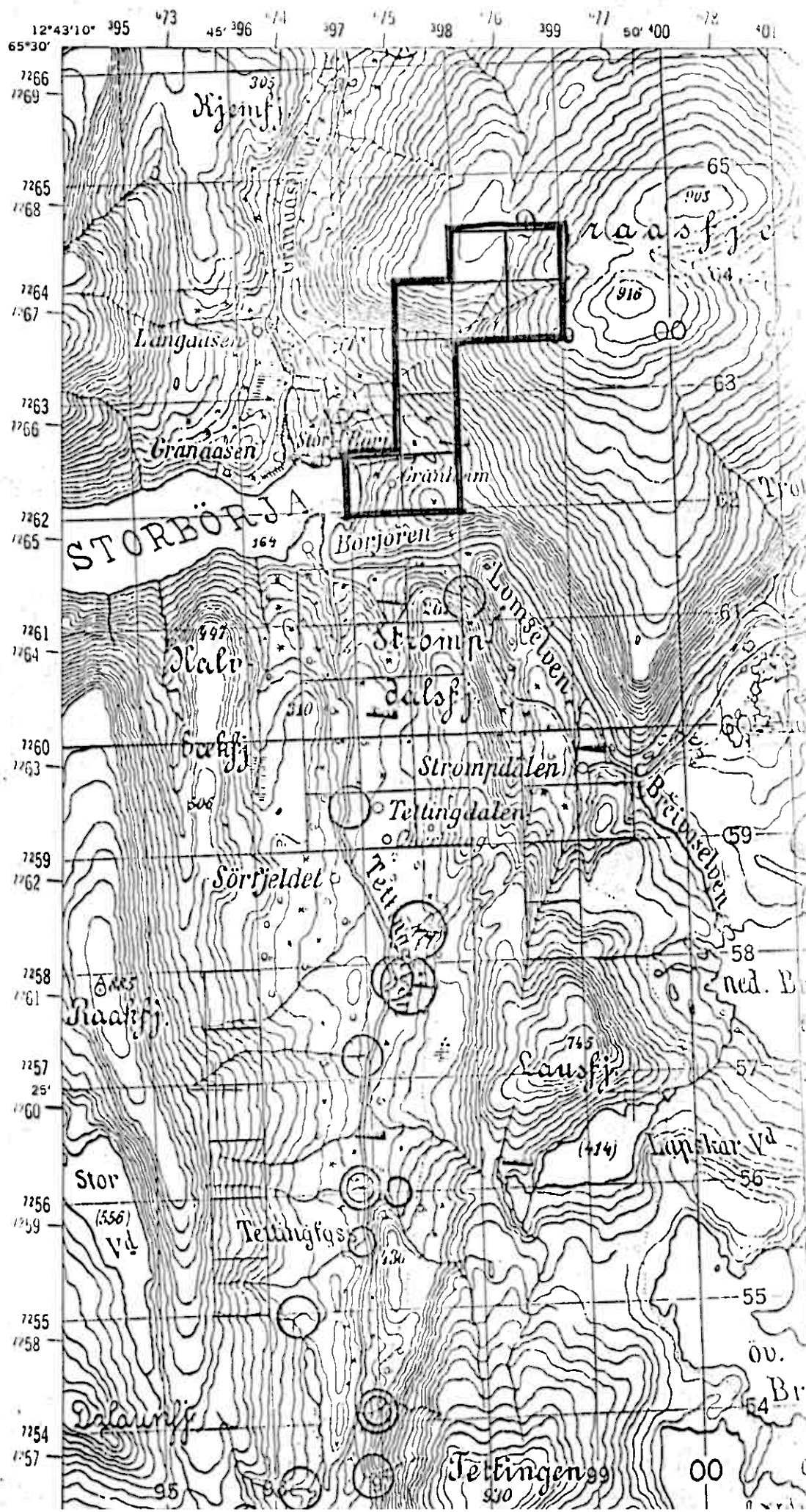
Field Comments:

Access: BOAT

Photogeology:

Est No. Follow up Samples 40 Time Requ'd 3 Team Days

FIRST EDITION



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1825 I TOSBOTN		DM 171 III

Claim Name STORELVEN No 60 Area 0,25 km² Appl.date 3.11.82

Stream Length 0,5 km Drainage Area 0,25 km² Av. Topog. MODERATE 20-200 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add.
190038	20	9	17	6	35	11	<1	

Regional Geology: GRANODIORITE/MICASCHIST

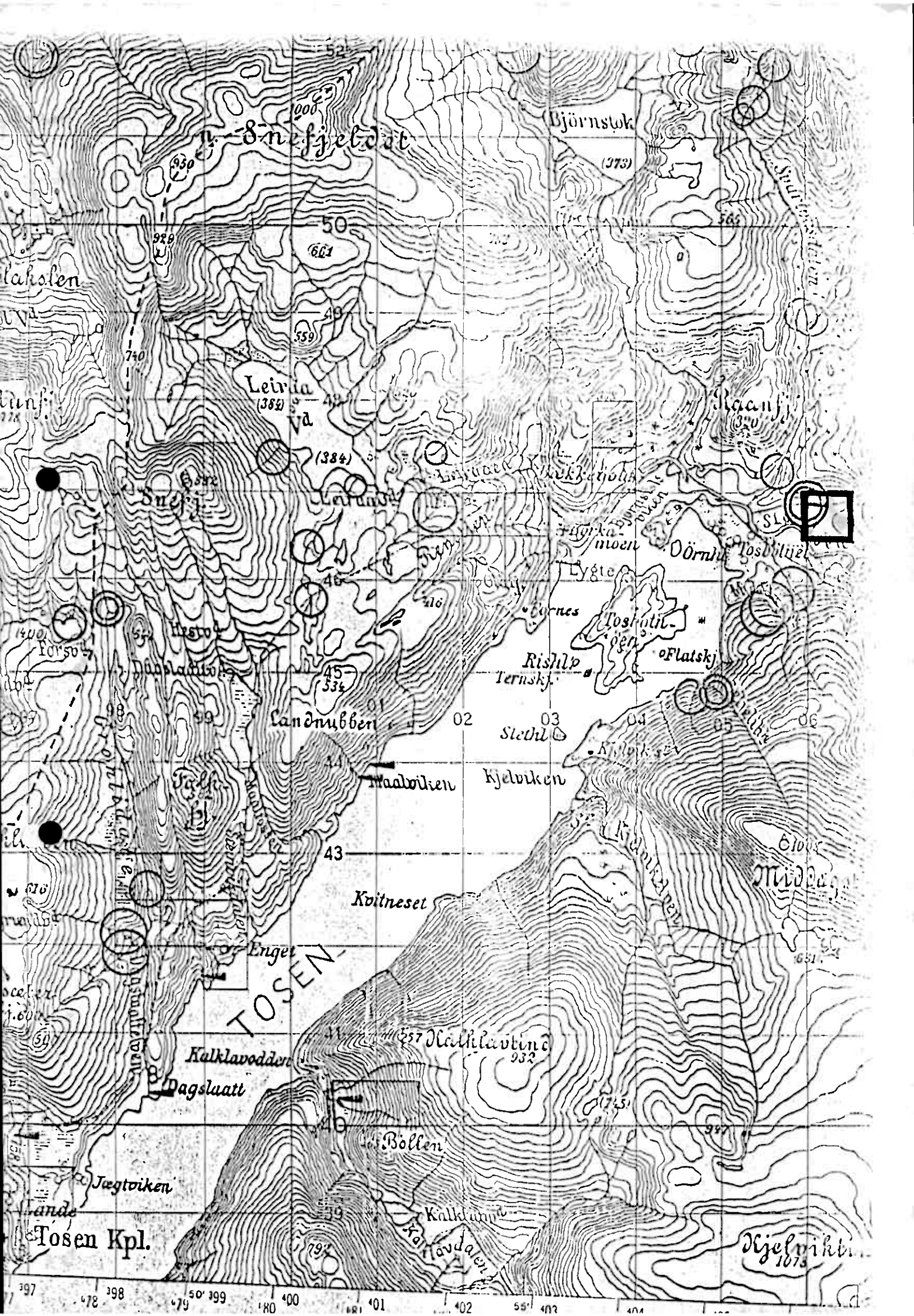
Overburden: ALLUVIUM - STREAM DEPOSIT

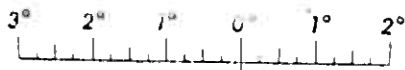
Field Comments:

Access: ROAD

Photogeology:

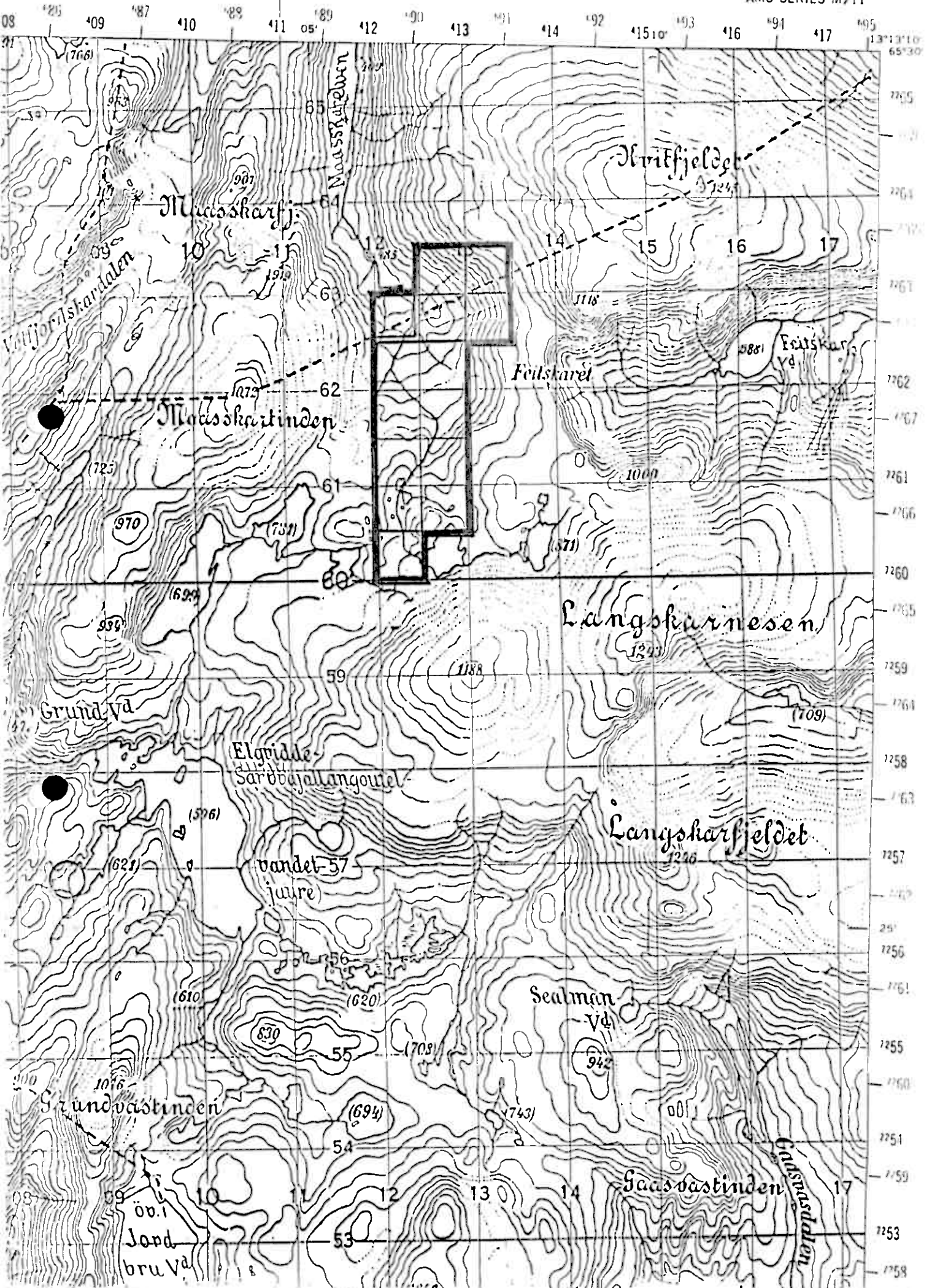
Est No. Follow up Samples 5 Time Requ'd 1 Team Days





SHEET 1825 I

AMS SERIES M711



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1825 I TOSBOTN		DL 173 I, III

Claim Name BREIVASSELVEN No. 26 Area 1,5 km² Appl. date 15.10.82

Stream Length 2,5 km Drainage Area 1,5 km² Av. Topog. MOD/STEEP
50-520 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add. Sb	Add. H
040136	2	<1	21	11	73	3	<1	<1	<1
040137		<1	17	39	67	1	<1	<1	<1
040138		2	21	17	97	6	<1	<1	<1

Regional Geology: MARBLE, GRANODIORITE, VEINED PEGMATITE + GRANODIORITE.

Overburden: ALLUVIUM, SOIL.

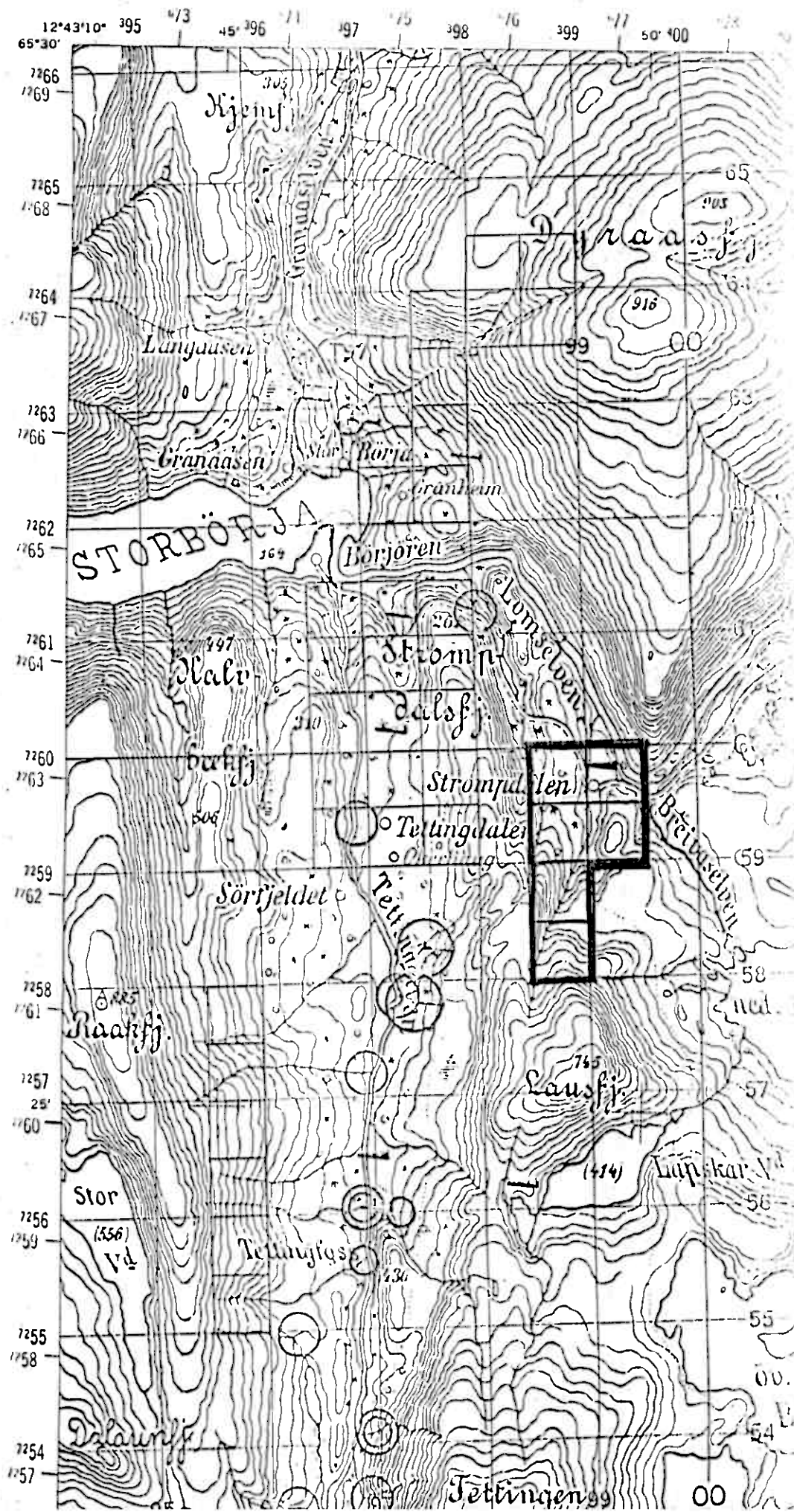
Field Comments: SULPHIDES PRESENT IN FRACTURES

Access: BOAT + 4 km WALK, HELICOPTER

Photogeology:

Est No. Follow up Samples 20 Time Requ'd 2 Team Days

FIRST :



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1825 I TOSBOTN		DK 169 II, IV L 169 I, L 170 II, III L 171 IV
Claim Name	TOSEN III	No 66	Area 1,5 km ² Appl.date 16.11.82

Stream Length 3 km Drainage Area 1,5 km² Av. Topog. STEEP 0-390 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
040105	7	<1	9	8	37	<1		
040106	4	<1	19	23	16	<1		
140243		<1	17	37	40	1		
140244		9	20	34	30	4		
140249		<1	10	13	23	<1		
170109		<1	10	10	41	3		

Regional Geology: (105) GRANODIORITE

Overburden: ALLUVIUM

Field Comments: (106) NO OUTCROP IN STREAM

Access: BOAT

Photogeology:

Est No. Follow up Samples 20

Time Requ'd 2 Team Days

HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1825 I TOSBOTN		DK 169 II, IV L 169 I, L 170 II, III L 171 IV

Claim Name TOSEN II No 65 Area 1,5 km² Appl.date 16.11.82

Stream Length .3..... km Drainage Area ..2..... km² Av. Topog. MOD..STEEP.....
20-420 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
040102	6	<1	21	16	132	<1		
160085		4	19	24	150	15		
160086		6	8	16	40	3		
160087		12	9	13	29	3		
160088		<1	8	5	37	7		

Regional Geology: MICASCHIST, QUARTZ-DIORITE DYKES COMMON

Overburden: TALUS

Field Comments:

Access: BOAT

Photogeology:

Est No. Follow up Samples 20

Time Requ'd 2 Team Days

CLAIM DETAILS

Claim Name JOSEN, IV No 67 Area .. 5 km² Appl.date 16.11.82

Stream Length 1 km Drainage Area 0,5 km² Av. Topog. MOD/STEEP
0-350 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
040108	6	<1	9	12	48	<1		

Regional Geology: QUARTZ-FELDSPAR GNEISS + GRANODIORITE + MICASCHIST

Overburden:

Field Comments: NO OUTCROP IN STREAM

Access:

Photogeology:

Est No. Follow up Samples 10

Time Requ'd	1	Team Days
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HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1825 I TOSBOTN		DK 169 II, IV L 169 I, 170 II, III L 171 IV

Claim Name TOSEN I No 64 Area 0,5 km² Appl.date 16.11.82

Stream Length km' Drainage Area km² Av. Topog. MOD/STEEP
0-330 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
040096		<1	17	12	75	<1		
040098	2	1	44	15	56	5		
040099	6	<1	16	14	125	<1		
040100	1	<1	14	14	53	<1		

Regional Geology: (99) QUARTZ_FELDSPAR GNEISS IN STREAMBED

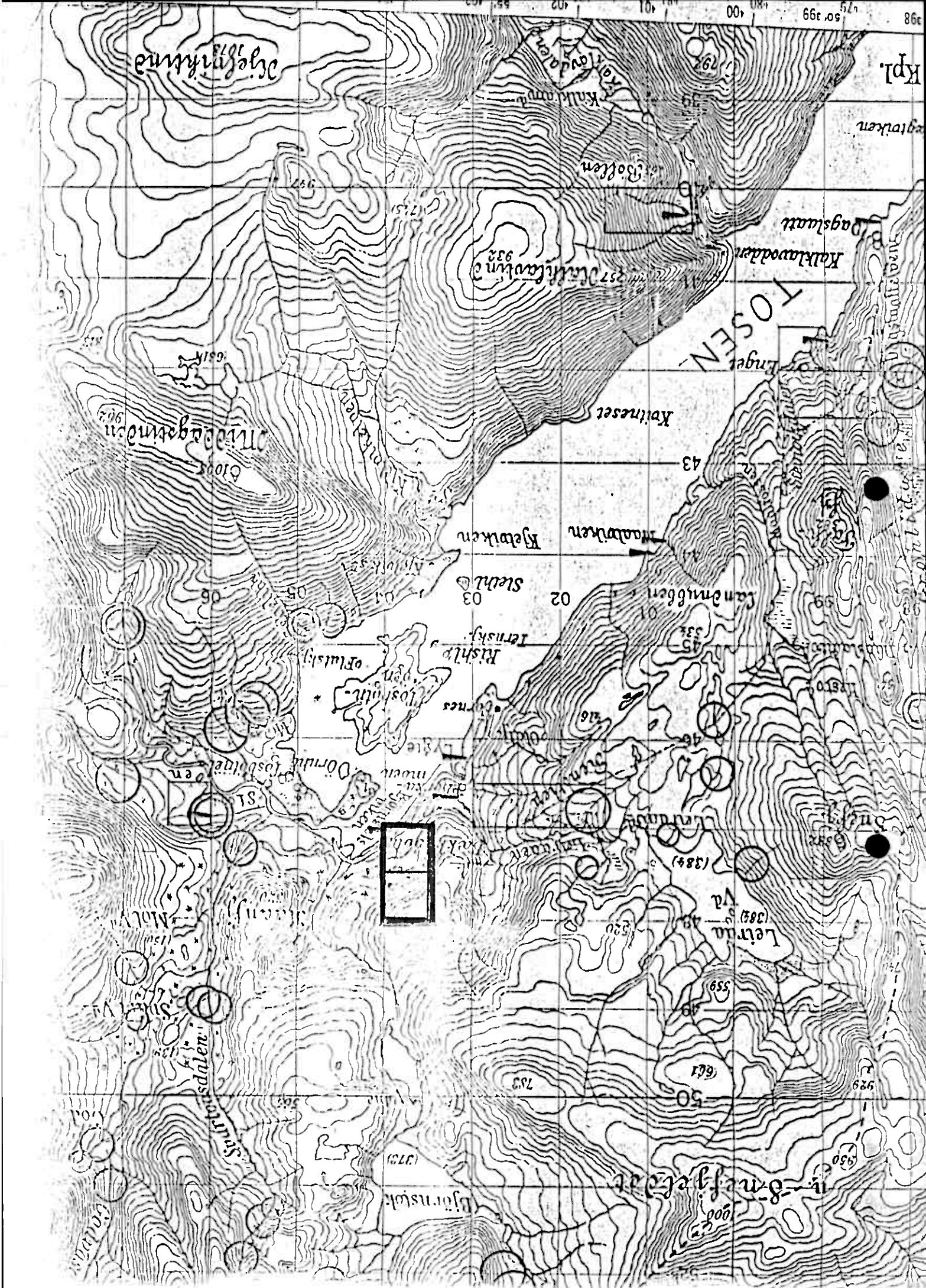
Overburden: ALLUVIUM - STREAM DEPOSIT

Field Comments: (096) NO OUTCROPS IN VICINITY OF STREAM

Access: BY ROAD

Photogeology:

Est No. Follow up Samples 10 Time Requ'd 1 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1825 I TOSBOTN		

Claim Name FJELDSTUEN No 163 Area 0,5 km² Appl.date 9.2.83

Stream Length 0,5 km Drainage Area 0,5 km² Av. Topog. MODERATE

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
970023	236	<1	11	19	46	2		
970025		4	16	16	45	2		
970022		<1	14	27	54	2		
110212		<1	11	11	42	<1		

Regional Geology: MICASCHIST - CALC SILICATE GNEISSES

Overburden: PEAT BOG

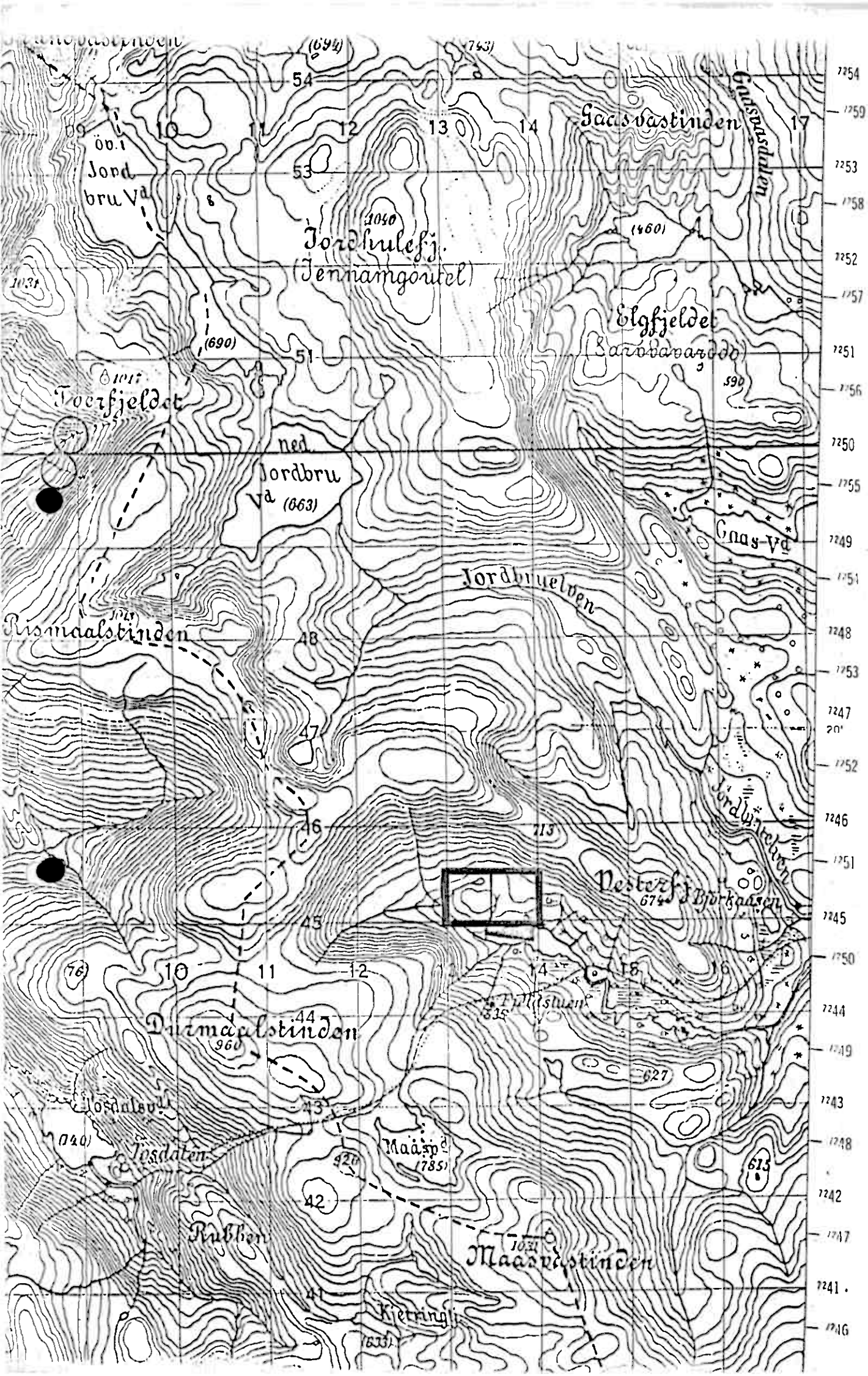
Field Comments: GNEISS OUTCROPS NEARBY BOGGY STREAMBED

Access: HELICOPTER

Photogeology:

Est No. Follow up Samples 10

Time Requ'd 1 Team Days



Map Sheet Svenningdal

Gold anomalies are generally combined with As, but a W association can be observed on a regional scale.

The geology of anomalous drainage systems consists predominantly of intensely veined micaschists and marbles.

Granitic intrusions are elongated in a N-S direction and their intrusion appears to be controlled by the regional foliation of the host gneisses and schists.

Granites as such are not frequently exposed but intense veining throughout the cover rocks indicates a favourable level of erosion.

CLAIM NAME	NO.	AREA KM ²	Au PPB	PATHFINDER ELS.	OVERBURDEN	GEOLOGY	STRUCTURES
BASTADBEKKEN	110	2.0	36	+As +W	+	0	
BAATSBARYGGEN	111	1.0	52	Regional As anom.	0	0	
SVARTTJERN	166	0.75	88	-	+	0	
ROTSTOKMOBEKKEN	109	2.5	36	+As	0	+	0
NONSTINDERNE	130	2.0	89	-	+	+	
GRØNFJELDET	167	0.5	42	+As	0	0	
FIPLINGVATN	127	1.0	163	+As +W	+	0	+

HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1925 IV SVENNINGDAL		DP 170 II, IV Q 170 I, III

Claim Name BAATSBARRYGGEN No 111 Area 1 km² Appl.date 04.01.83

Stream Length 1 km² Drainage Area 1 km² Av. Topog. GENTLE 520-650 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
180025								
180077		<1	17	30	41	<1		
180078		1	17	16	34	<1		
180079	52	<1	16	23	59	<1		

Regional Geology: QUARTZ-FELDSPAR GNEISSES + MICASCHIST

Overburden: PEAT BOG

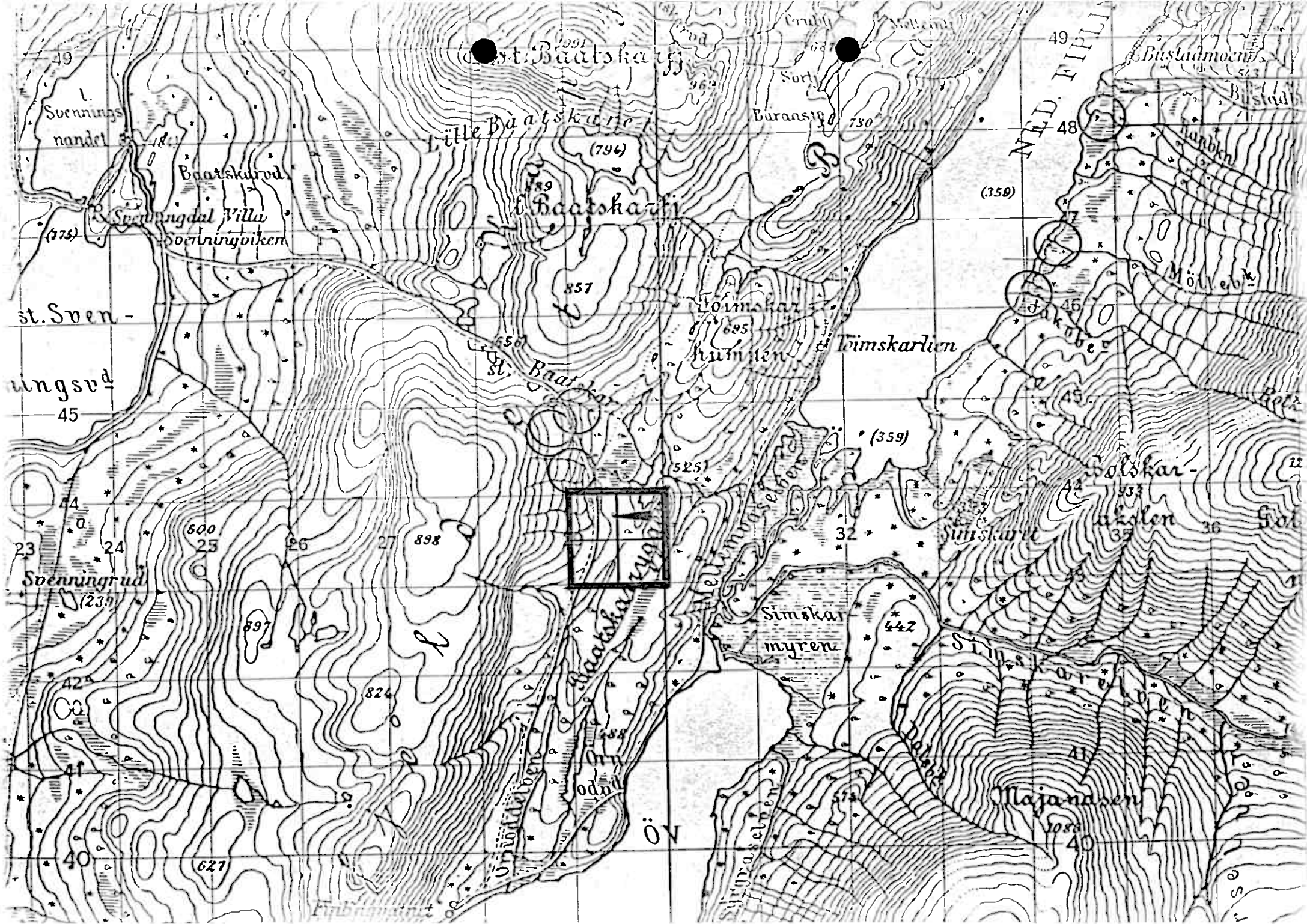
Field Comments: SAMPLE TAKEN 100 m SE FROM WHERE THE STREAM CROSSES THE TRACK

Access: BY ROAD

Photogeology:

Est No. Follow up Samples 10

Time Requ'd 1 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1925 IV SVENNINGDAL		

Claim Name Svarttjern No 166 Area 0,75 km² Appl. date 9.2.83

Stream Length 3 km² Drainage Area 0,75 km² Av. Topog. GENTLE

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
990036	88	<1	16	15	52	3		

Regional Geology: GRANODIORITE
 SAMPLES FURTHER UPSTREAM CAME OUT BLANK (SECTION OF RIVER CLAIMED)

Overburden:

Field Comments:

Access: BY BOAT OR HELICOPTER

Photogeology:

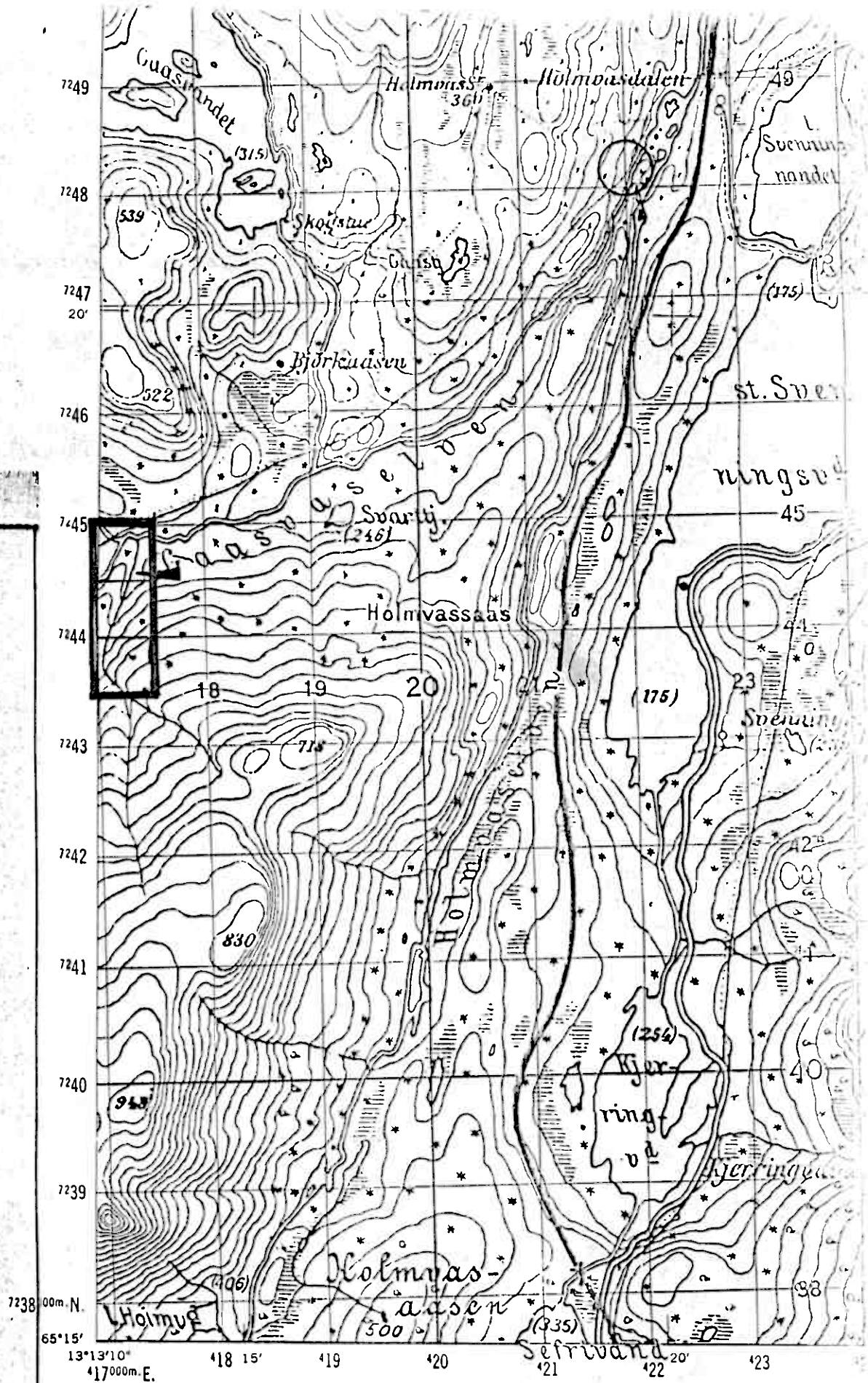
Est No. Follow up Samples 10

Time Requ'd 1 Team Days

BP NORGE a.s. MINERALS HELGELAND PROJECT 1982

ANOMALY AND TEMPERATURE
 COMPILATION

EXPLANATIONS



AMS M711
 First Edition-AMS

Prepared by the Army Map Service (PW), Corps of Engineers, U. S. Army, Washington, D. C. Mosaicked in 1952 from Norge 1:50,000, Norges Geografiske Oppmåling, Sheets J18, and J19, 1942. Planimetric detail partially revised.

LEGEND—TEIKNTYDING

Railroad, double track; Stations; Halt

International boundary with marker

— Au Anomal
 — Au Anomal

HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1925 IV SVENNINGDAL		DQ 171 II, R 171 I, III

Claim Name BUSTADBEKKEN No 110 Area 2 km² Appl.date 04.01.83

Stream Length 4 km² Drainage Area 2,5 km² Av. Topog. STEEP 360-1300 m.

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
180066		5	14	13	48	2		
180067		10	18	20	66	2		
180068	36	2	11	10	36	<1		

Regional Geology: FELDSPAR - MICA GNEISS

Overburden: PEAT BOG

Field Comments: SAMPLE TAKEN 100 m FROM THE MOUND

Access: ROAD

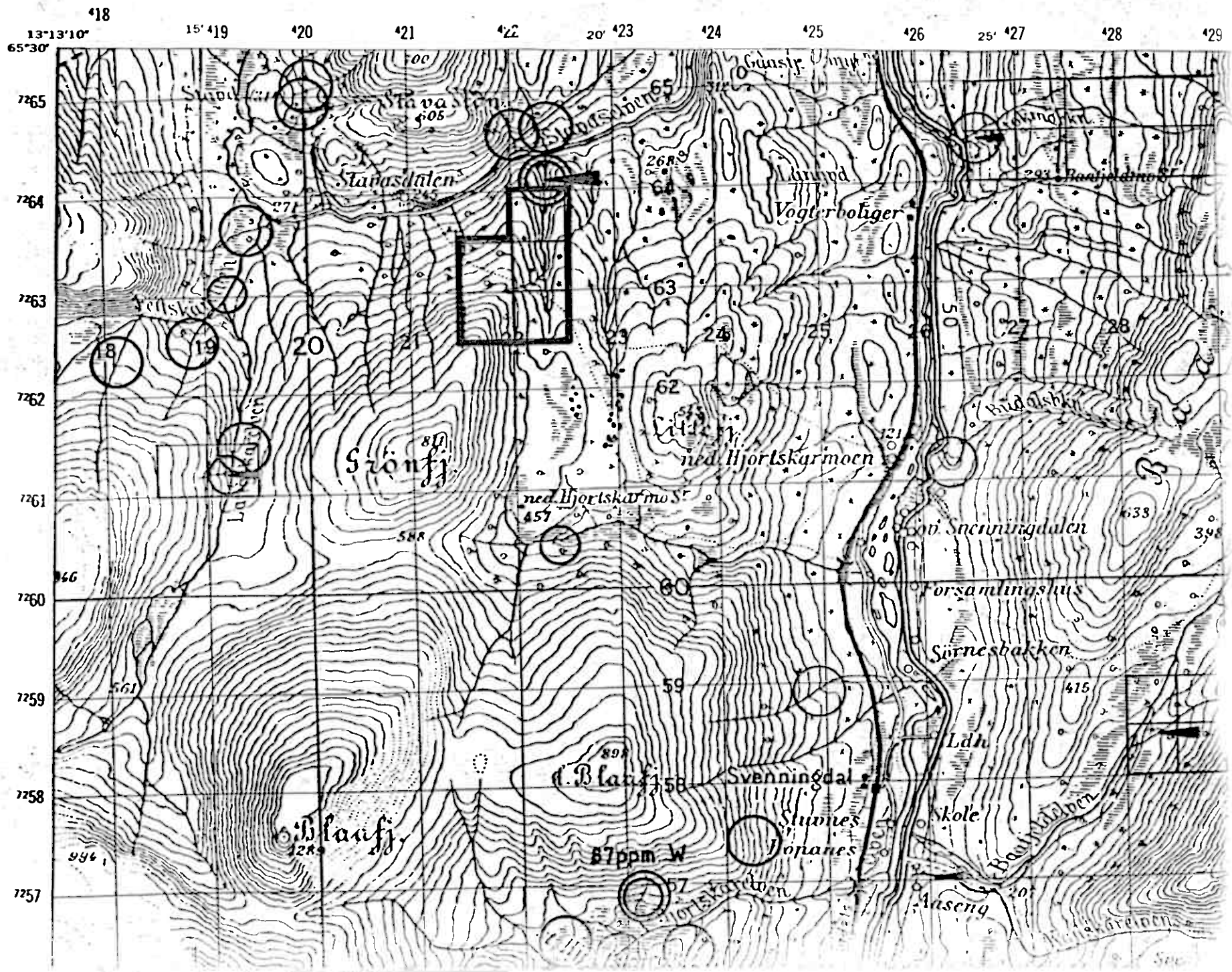
Photogeology:

Est No. Follow up Samples 40

Time Requ'd 3 Team Days

CLAIM DETAILS

Est No. Follow up Samples	20	Time Requ'd	2	Team Days
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HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1925 IV SVENNINGDAL		DP 173 I, II

Claim Name ROTSTOKMOBEKKEN No. 109 Area 2,5 km² Appl. date 04.01.83.

Stream Length 4 km² Drainage Area 2,5 km² Av. Topog. MOD. TO STEEP
90-630 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
180053	36	14	19	15	74	1		

Regional Geology: VARIOUS MICASCHISTS - GRANODIORITE

Overburden:

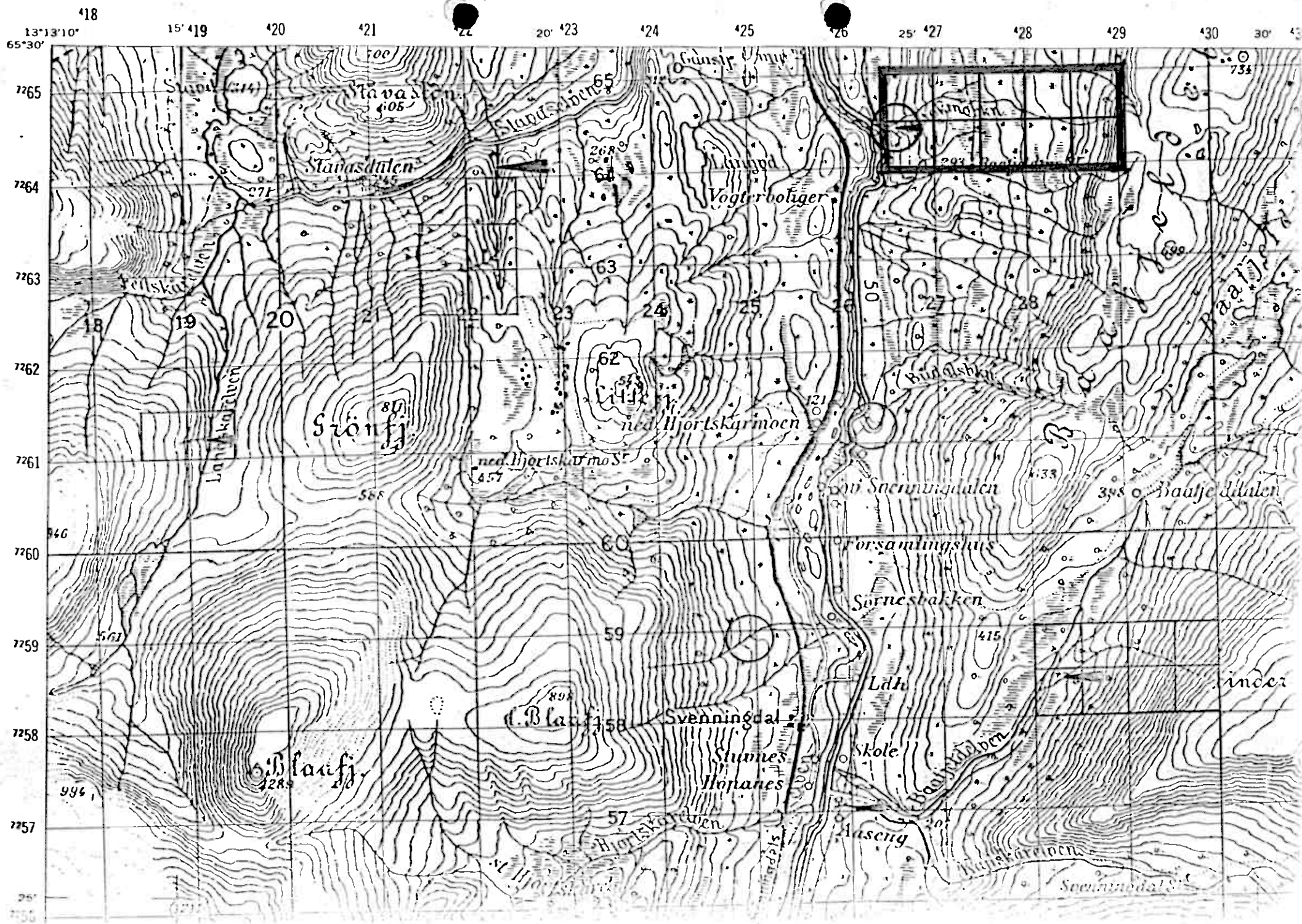
Field Comments: SAMPLE TAKEN 20 m FROM E6 AT THE PARKING AREA

Access: ROAD

Photogeology:

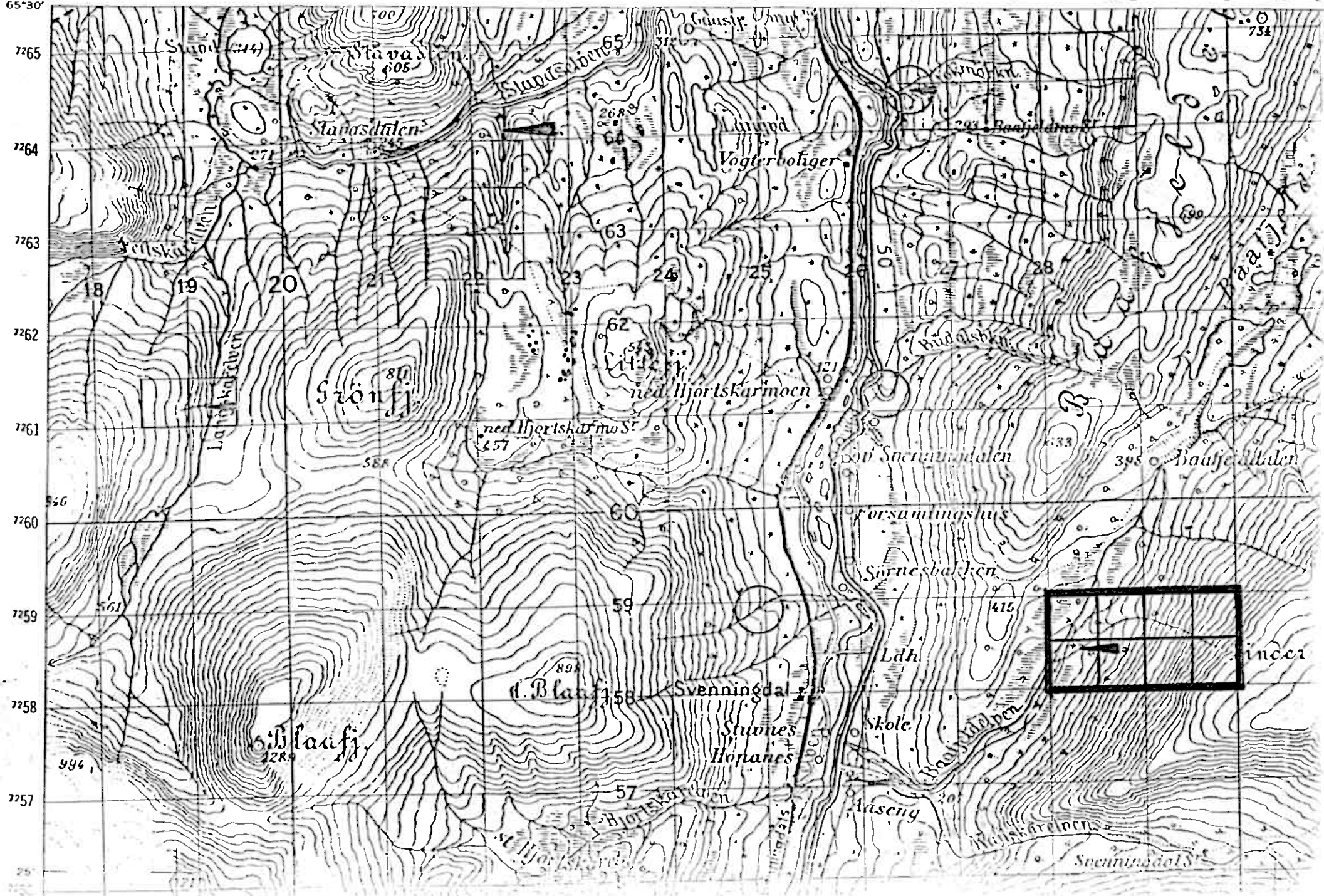
Est No. Follow up Samples 40

Time Requ'd 3 Team Days



CLAIM DETAILS

Est No. Follow up Samples	20	Time Requ'd	2	Team Days
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HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1925 IV SVENNINGDAL		

Claim Name GRØNFJELDET No 167 Area 0,5 km² Appl. date 9.2.83

Stream Length 0,5 km² Drainage Area 0,75 km² Av. Topog. MOD/STEEP

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
990045	42	5	17	25	60	2		

Regional Geology: GRANODIORTIE

Overburden:

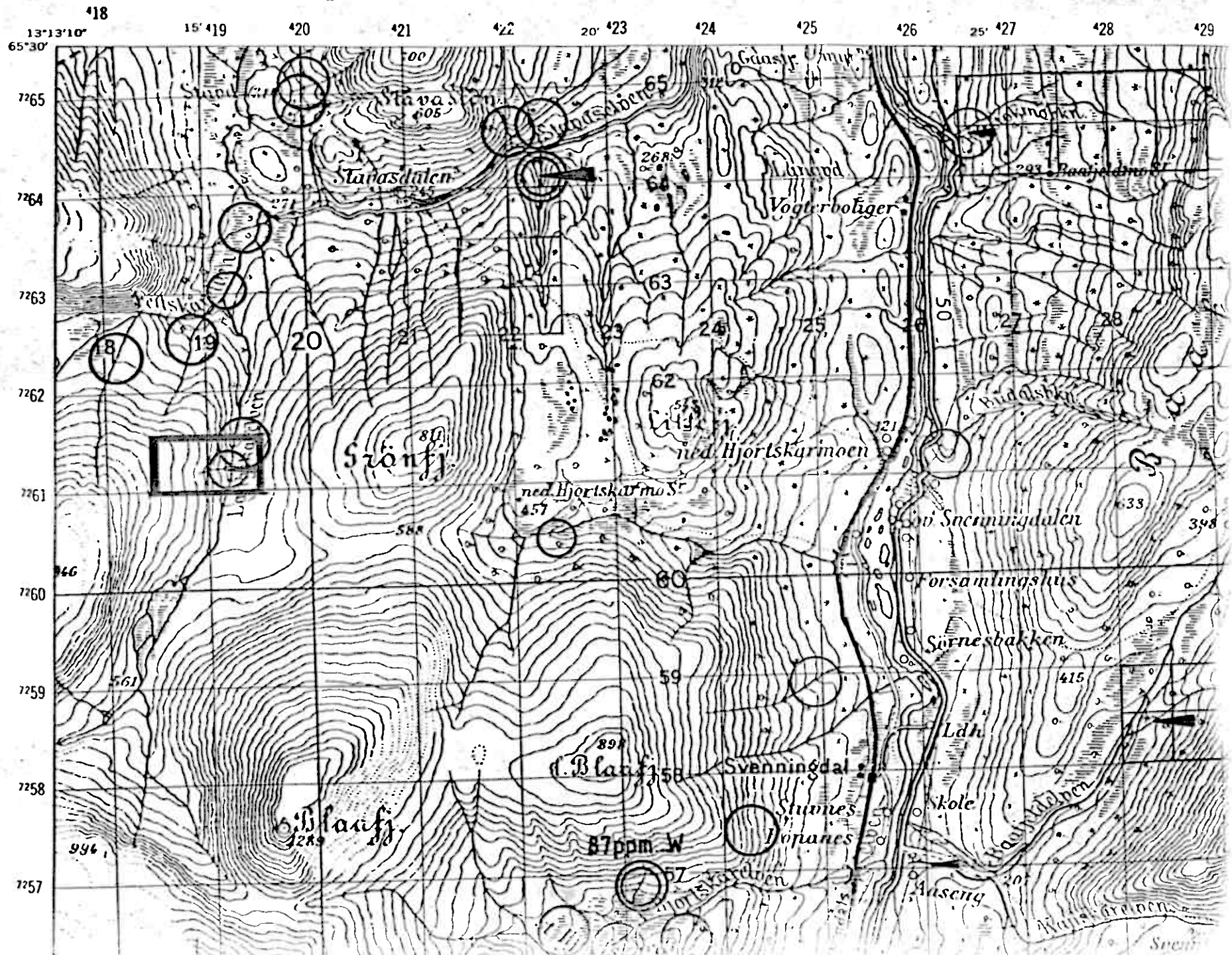
Field Comments: BOULDERS OF MICASCHIST IN STREAMBED

Access: HELICOPTER

Photogeology:

Est No. Follow up Samples 10

Time Requ'd 1 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1925 IV SVENNINGDAL		DP 169 I, III

Claim Name FIPLINGVATN No 127 Area 1.0 km² Appl.date 04.01.83

Stream Length 2 km² Drainage Area 3 km² Av. Topog. MOD/STEEP

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
180007	163	6	21	23	40	3		
180006		9	21	19	89	3		
180008		1	3	2	7	1		
180009		1	20	16	53	2		
180010		<1	20	9	36	1		
180011		3	41	9	57	2		
180012		15	21	16	19	2		

Regional Geology: MICA RICH GNEISS AND CRYSTALLINE GNEISS

Overburden:

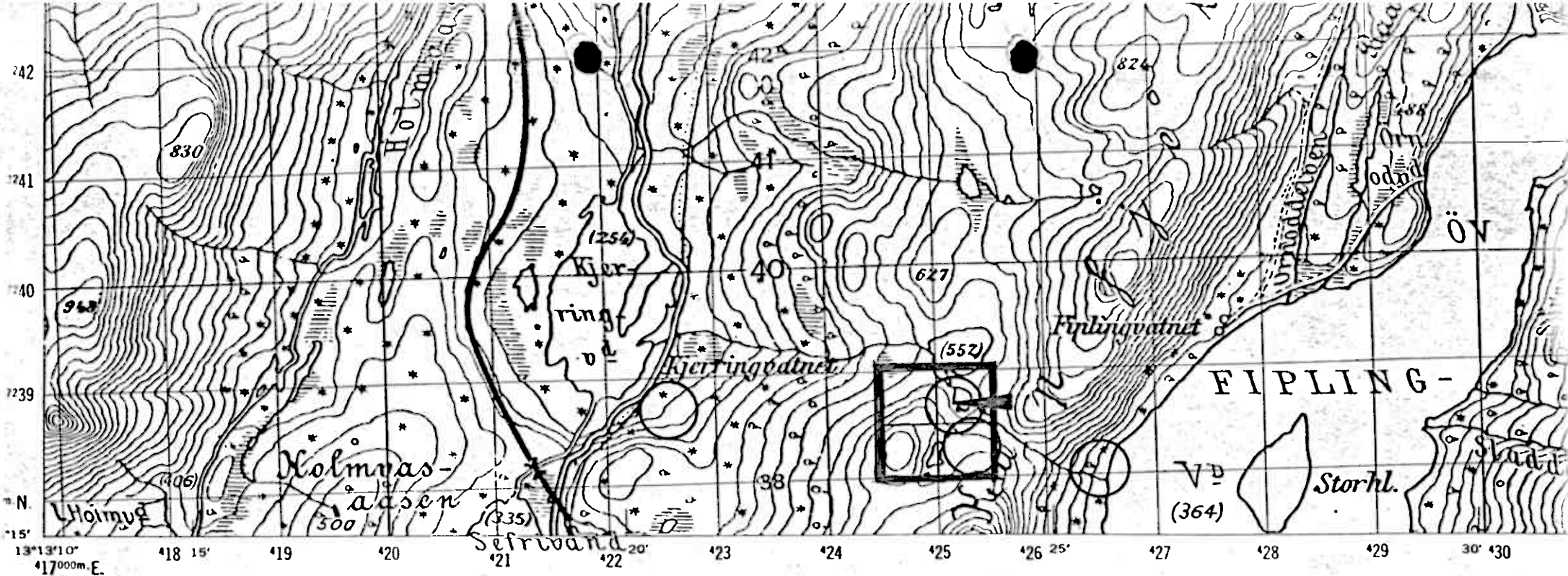
Field Comments: SAMPLE TAKEN AT STREAM MOUND

Access: 2 km FROM ROAD

Photogeology:

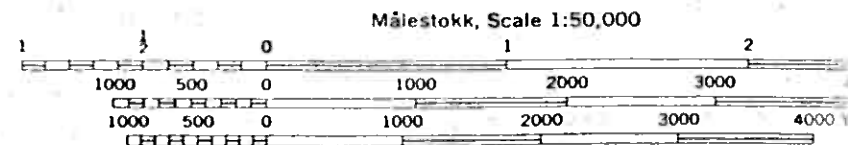
Est No. Follow up Samples 20

Time Requ'd 2 Team Days



AMS M711
First Edition-AMS

Prepared by the Army Map Service (PV), Corps of Engineers, U. S. Army, Washington, D. C. Mosaicked in 1952 from Norge 1:50,000, Norges Geografiske Oppmåling, Sheets J18, and J19, 1942. Planimetric detail partially revised.



EKVIDISTANSE, CONTOUR INTERVAL 30 METERS

TRANSVERSE MERCATOR PROJECTION
HORIZONTAL DATUM: EUROPEAN DATUM

BLACK NUMBERED LINES INDICATE THE 1 000 METER UNIVERSAL TRANSVERSE MERCATOR GRID ZONE 33, INTERNATIONAL SPHEROID

RUTENETT UTM SONE 33, SORTET TALL

THE LAST THREE DIGITS OF THE GRID NUMBERS ARE OMITTED
TALLENE ANGIR KM.

HEIGHTS IN METERS

USERS NOTING ERRORS OR OMISSIONS ON THIS MAP ARE URGED TO MARK HEREON AND FORWARD DIRECTLY TO COMMANDING OFFICER, ARMY MAP SERVICE, WASHINGTON, D. C. MAPS SO FORWARDED WILL BE RETURNED OR REPLACED IF DESIRED.

LEGEND—TEIKNTYDING

International boundary with marker Riksgrense, grenseröys, -merke	+++o+++	Railroad, double track; Stations; Halt Jernveg (tvisspor), stasjon, stoppestad	
Province boundary Fylkesgrense	+++++ + + + +	Railroad, single track; Caretakers house Jernveg (einspor), vaktarhus	
District, town boundary Heradsgrense, bygrense	-----	Railroad, narrow gauge, electric tramway Tertier jernveg, elektrisk sporveg	
Parish boundary Soknegrense		Railroad under construction Jernveg som er i bygging	
Crown lands boundary Statsolmenningsgrense	-----	Streetcar line Trallebane, hestejernveg	
Main road; Route number—Hovudveg, vegnummer	50	Aerial cableway—Togbane (taubanel)	
Secondary road—Bygdeveg	-----	Church; Parish, chapel—Hovudkyrkje, Soknekyrkje, Kapell	
Private road—God privat köyveg	-----	Cemeteries—Kyrkjegard	
Cart road—Kjerrevæg	-----	Factory, power station, etc.; Mill Større fabrikk, drift, kraftverk, mylne o.l.	
Winter road; Track—Vinterveg, Lite synleg stig (fjerdveg)	-----	Brickworks; Small mill; Sawmill Teglverk, Mylne (mølle), kvern; Sag	
Path, distinct—Kløvveg, gangveg, tydeleg tråkko stig	-----	Mine, mining claim; Quarry—Gruve, skjerp, Steinbrøt	
Path with markers—Vardesett stig og blåmerkt skogsveg	-----	Wireless telegraph station—Trådlaus stasjon	
Telephone or telegraph line, Station Telefon-/telegraflinje, stasjon	-----	Airfield, Parade ground—Flyplass, Eksismo	
		Horizontal control points—Trigonometrisk punkt	

RUTETILVISING (KARTREFERENSE) NÆRMESTE 100 m.	SONEGRAD GRID ZONE DESIGNATION: 33W	TO GIVE A STANDARD REFERENCE THIS SHEET TO NEAREST 100 M.
Eksempel: TRIGONOMETRISK PUNKT 1173	100 KM RUTE	SAMPLE POINT: HORIZONTAL CON
km aust km nord	30 B 51,7	1. Locate first VERTICAL grid line to LEFT of point and read LARGE figures labeling the line either in the top or bottom margin, or on the line itself. Estimate tenths from grid line to point.
TRIGONOMETRISK PUNKT 308517	100,000 M. SQUARE IDENTIFICATION	2. Locate first HORIZONTAL grid line below point and read LARGE figures labeling the line.
Mark at komma støytes og at 100 km tallene: 08 små tallene 4 aust og 72 nord 1945 1541 (se mer)	VN	

Map Sheet Leka

Anomalies on Leka are unique in their element associations (Au, Cu, As) and reflect the special geological situation in as much as the metagabbro and the remaining suite of undifferentiated ultramafic rocks are believed to be part of an ophiolite complex.

Reported mineralization of chalcopyrite is confined to the eastern gabbroic part of the island, whereas the strongest Au anomalies detected originate from the ultramafic rock units.

Gold is always associated with As and occasionally with Cu.

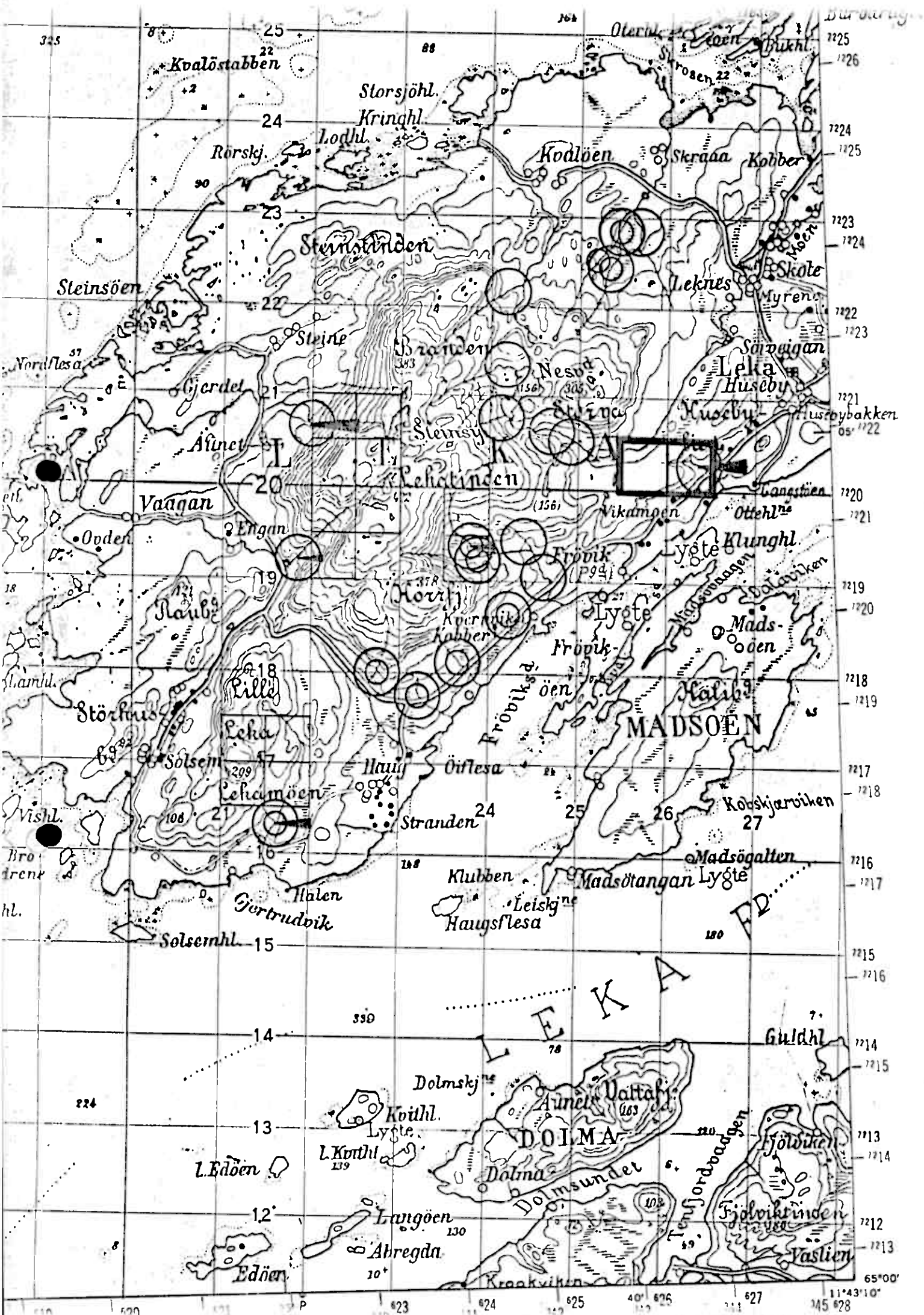
As the reconnaissance sampling was quite detailed already, the follow up of these anomalies is relatively straightforward and will start as early as possible in the season.

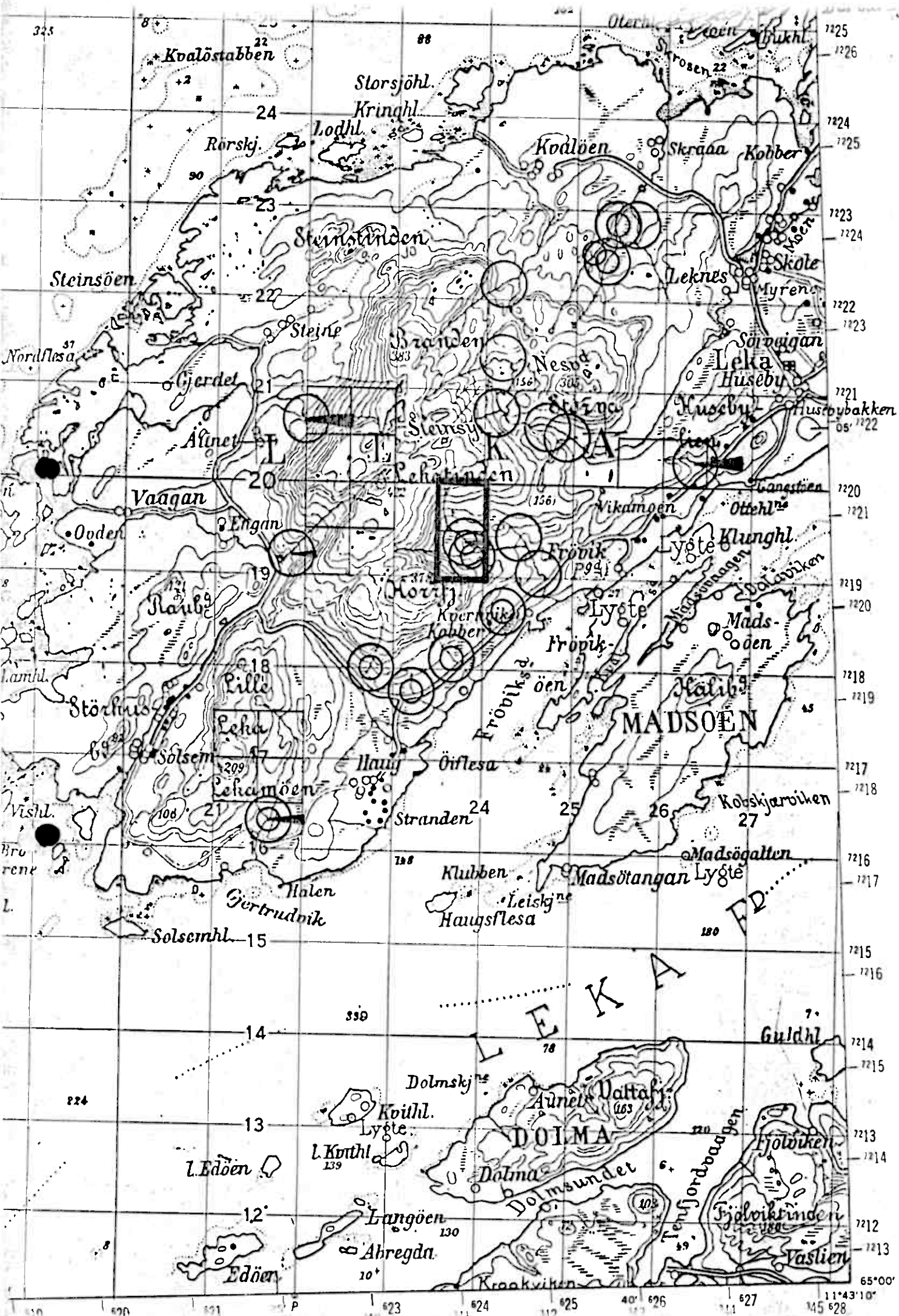
MAP SHEET: 1725 III LEKA

CLAIM NAME	NO.	AREA KM ²	Au PPB	PATHFINDER ELS.	OVERBURDEN	GEOLOGY	STRUCTURES
LEKAMDOEN	156	1.0	50	+As +Cu	0	+	
KEKATINDEN I	157	1.75	494,9	+As +Cu	+	+	
" II	155	0.5	49	+As +Cu	+	+	
HUSEBY	154	0.5	302	+As	+	+	

CLAIM DETAILS

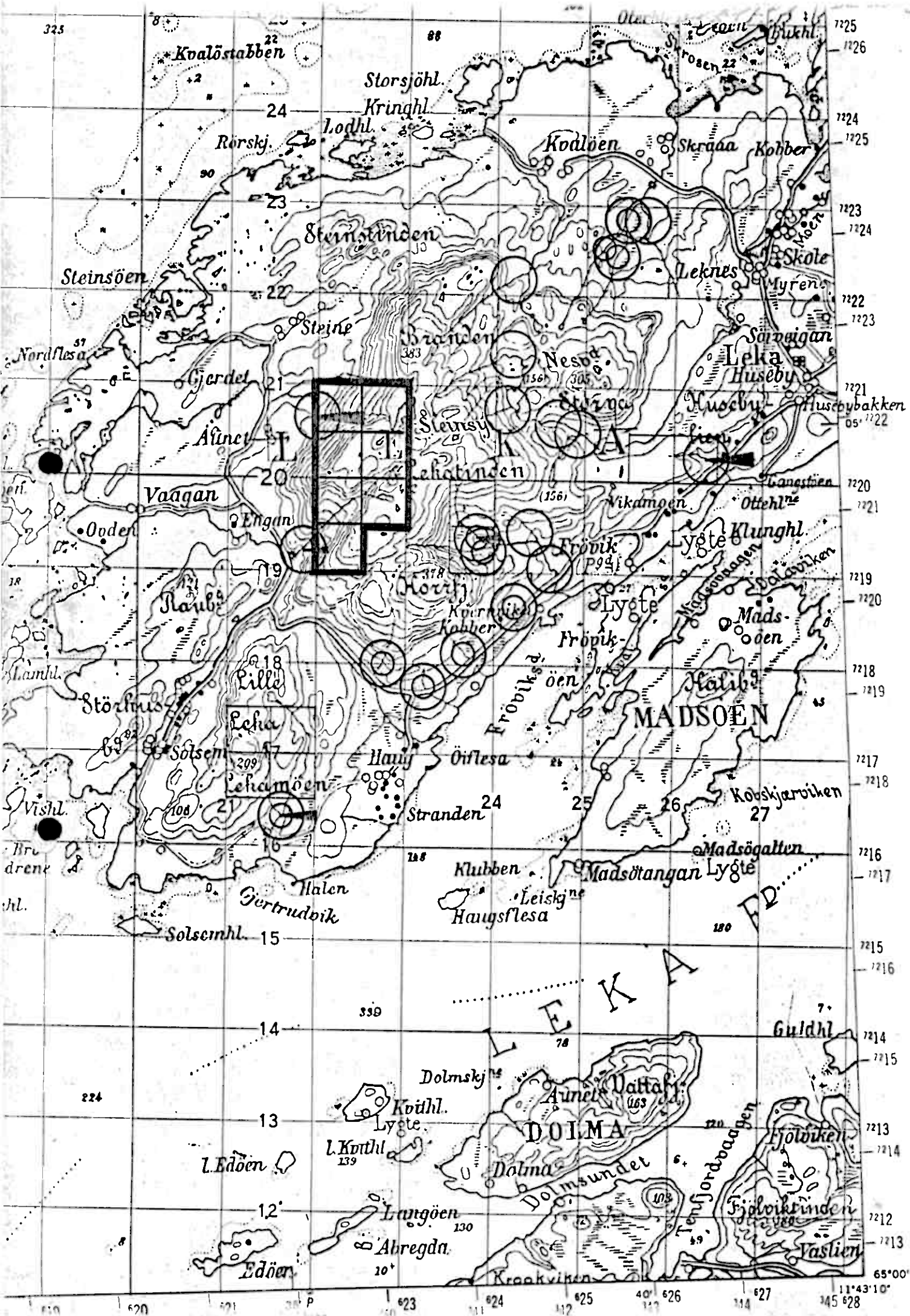
Est No. Follow up Samples	5-10	Time Requ'd	1	Team Days
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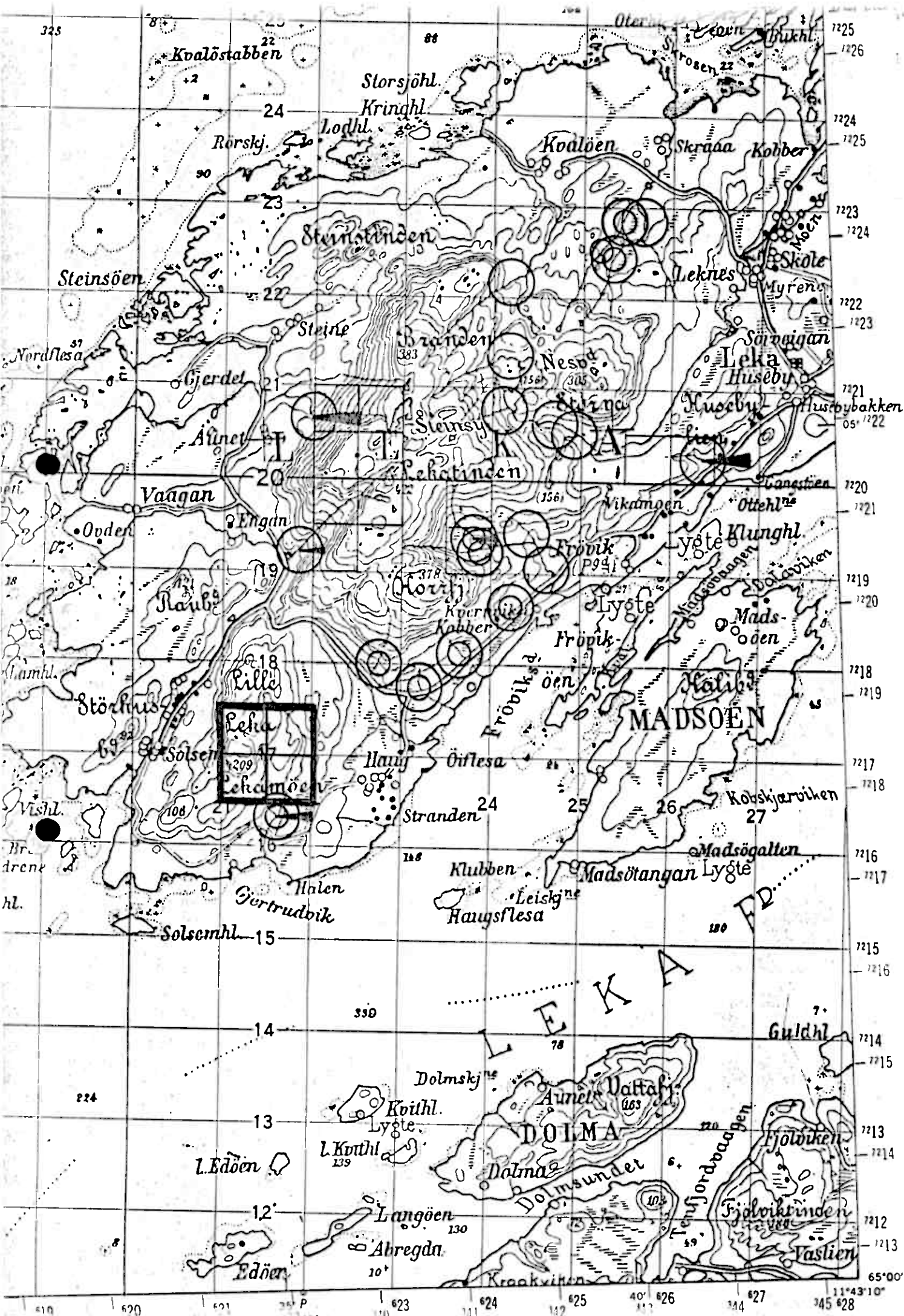




CLAIM DETAILS

Est No. Follow up Samples	10	Time Requ'd	1	Team Days
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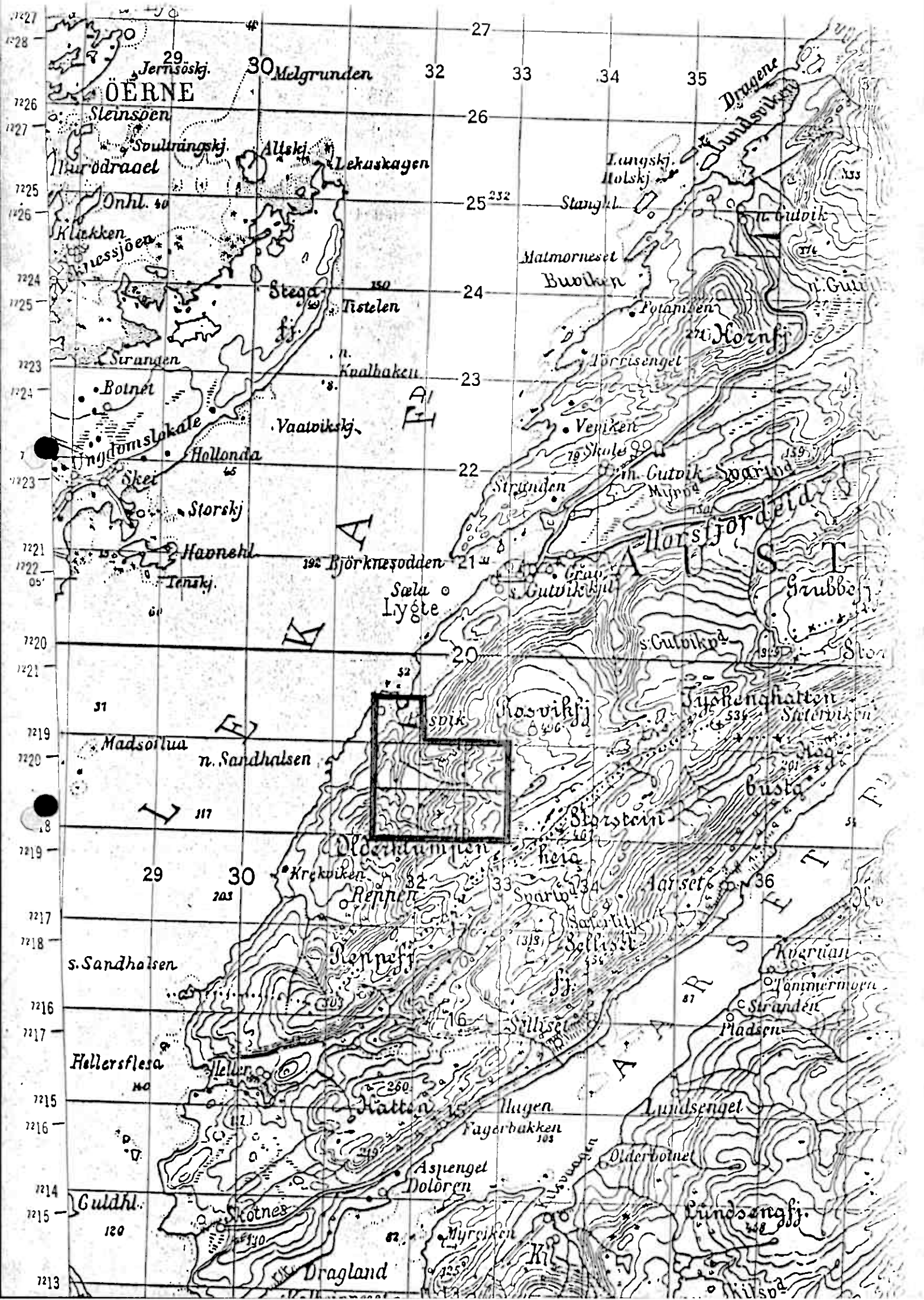


MAP SHEET: 1725 II SOLSTAD

CLAIM NAME	NO.	AREA KM ²	AU PPB	PATHFINDER ELS.	OVERBURDEN	GEOLOGY	STRUCTURES
ROSVIK	151	1.75	10	0	0	+	
GUTVIK	152	0.25	7	+W	0	0	
KVALØEN	50	0.5	149	+W	0	0	

CLAIM DETAILS

Est No. Follow up Samples 15-20 Time Requ'd 2 Team Days





HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1725 II SOLSTAD		

Claim Name GUTVIK No. 152 Area 0.25 km² Appl. date 27.01.83.

Stream Length 1 km Drainage Area 2 km² Av. Topog. GENTLE

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
210076	7	<1	13	7	20	7		

Regional Geology: GRANITE - GNEISS

Overburden: ALLUVIAL DEPOSITS WITH GLACIAL INFLUENCE

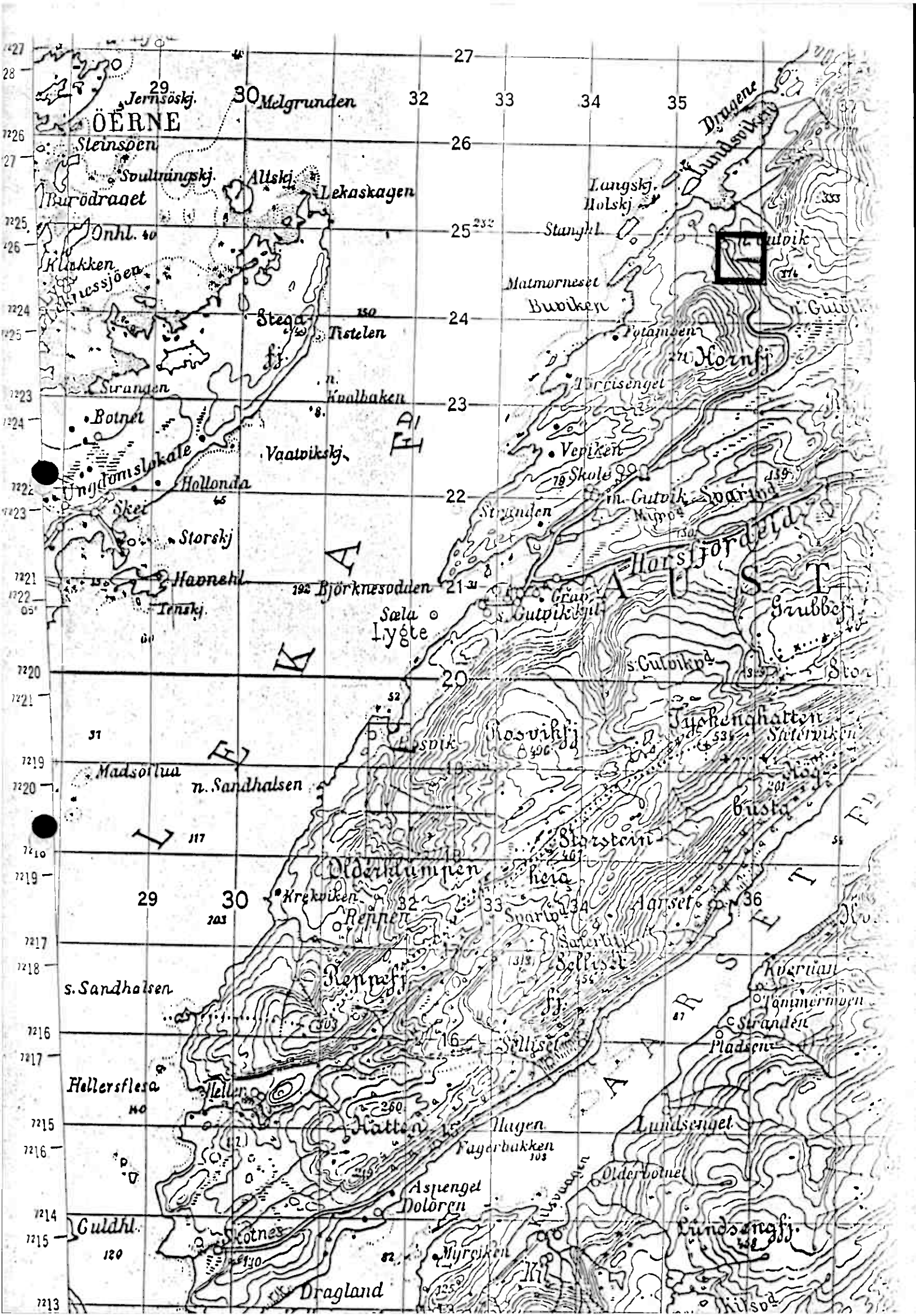
Field Comments: STREAM COMES FROM A LAKE

Access: BY ROAD/POSS. BOAT

Photogeology:

Est No. Follow up Samples 10

Time Requ'd	1	Team Days
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BINDAL

Map Sheet Bindal

Geochemical anomalies are scattered over the entire map sheet, however the majority are confined to the contact zones between granodioritic intrusives and marble horizons.

An outstanding example of this is the Søbørgslien marble horizon, which is shown on the geological map as intensely veined by granitic material. This horizon and the associated strong alteration which could be observed on only a few blocks, due to thick overburden, is clearly anomalous in As and Zn.

The alteration observed (sericite+pyrite) and the intense weathering of marbles under the present climatic conditions has led to an almost complete disintegration of the rock, and it is conceivable that any Au mineralization - most likely confined to fissures and cracks- would be washed out by percolating groundwater. It is proposed to perform test-geophysical surveys (VLF, mag, IP) over the alteration zone to map any possible extension and follow up ground geophysical anomalies by deep overburden sampling.

MAP SHEET: 1825 III BINDAL

CLAIM NAME	NO.	AREA KM ²	Au PPB	PATHFINDER ELS.	OVERBURDEN	GEOLOGY	STRUCTURES
SØBERGSLIEN	5	7.75	-	+As +W +Zn	0	+	
OKSNONGEN	153	0.5	5	-	-	0	
BANGSTAD	39	0.25	32	+As	0	0	
BØKESTAD	36	0.5	92	-	0	0	

HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1825 III BINDAL		DH 166 IV

Claim Name BANGSTAD No 39 Area 0,25 km² Appl.date 29.10.82

Stream Length 0,5 km' Drainage Area 0,5 km² Av. Topog. MODERATE 0-100 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add. Sb	Add. Mo
140046		<1	33	12	51	2	<1	<1	<1
140047	32	5	24/21	6/5	34/37	3	<1/<1	<1	<1

Regional Geology: QUARTZ DIORITE/TRONDHJEMITE

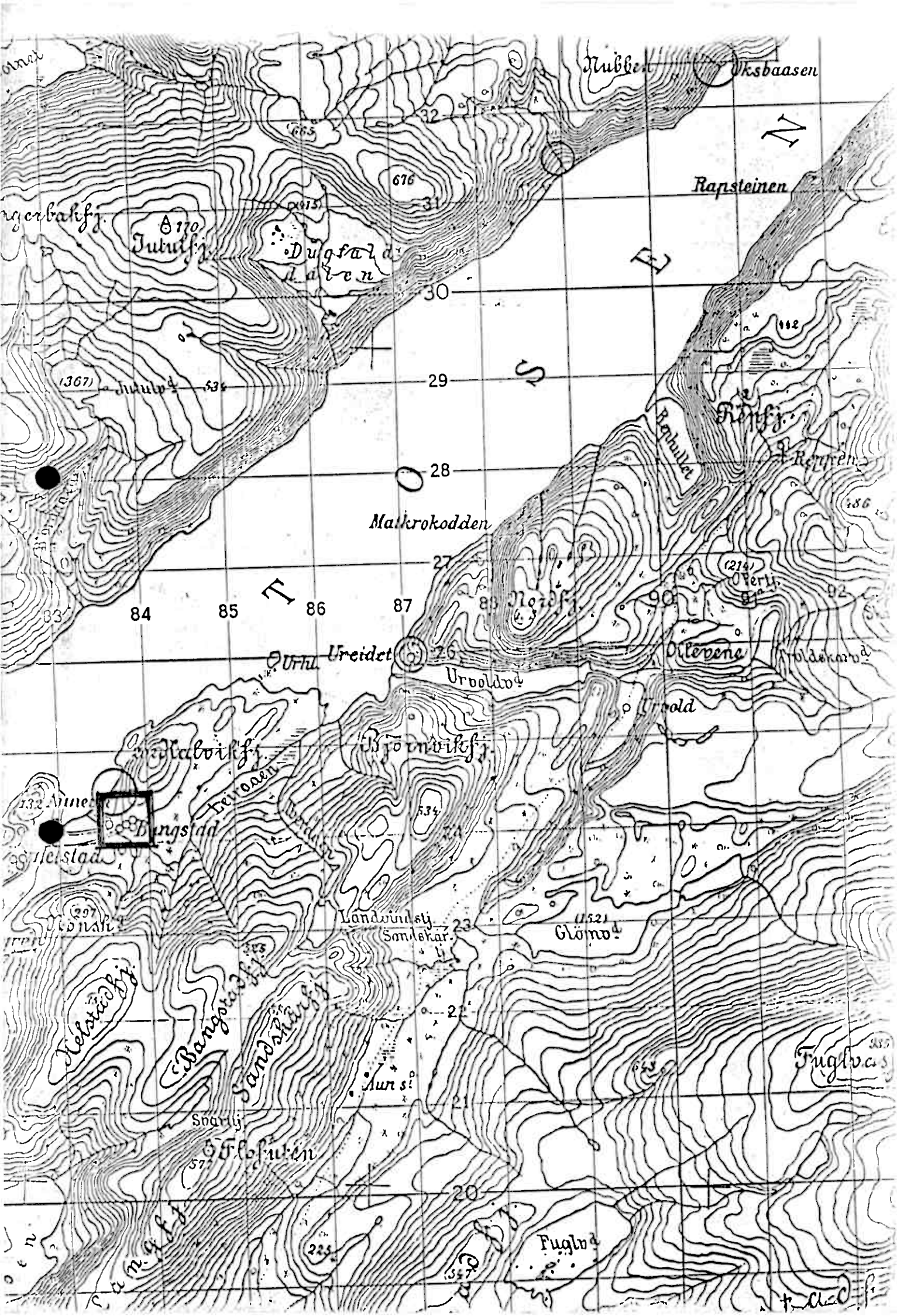
Overburden: SOIL

Field Comments:

Access: ROAD

Photogeology:

Est No. Follow up Samples 10 Time Requ'd 1 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1825 III BINDAL		

Claim Name ...SØBERGSLIEN..... No5... Area 7.75 km² Appl.date ...06.08.
(TOSENFJORD)

Stream Length 12 km Drainage Area 15 km² Av. Topog. MOD-STEEP 0-490 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	As Sb
140055		14	18	38	188	3	<1	<1
140056		27	22	40	110	4	<1	<1
04210		8	10	7	52	4	<1	
04209		8	13	16	114	3	<1	
04208		32	12	16	70	3	<1	
04207		47	20	49	149	6	<1	
04206		33	26	29	150	4	<1	
04205		62	35	50	204	11	<1	
04201		12	20	30	232	4	<1	
04204		6	22	32	236	4	<1	
04202		37	20	49	149	4	<1	
04203		15	11	19	150	7	<1	

Regional Geology: MARBLE, DARK METASEDIMENTS, GRANODIORITE

Overburden: SOIL

Field Comments:

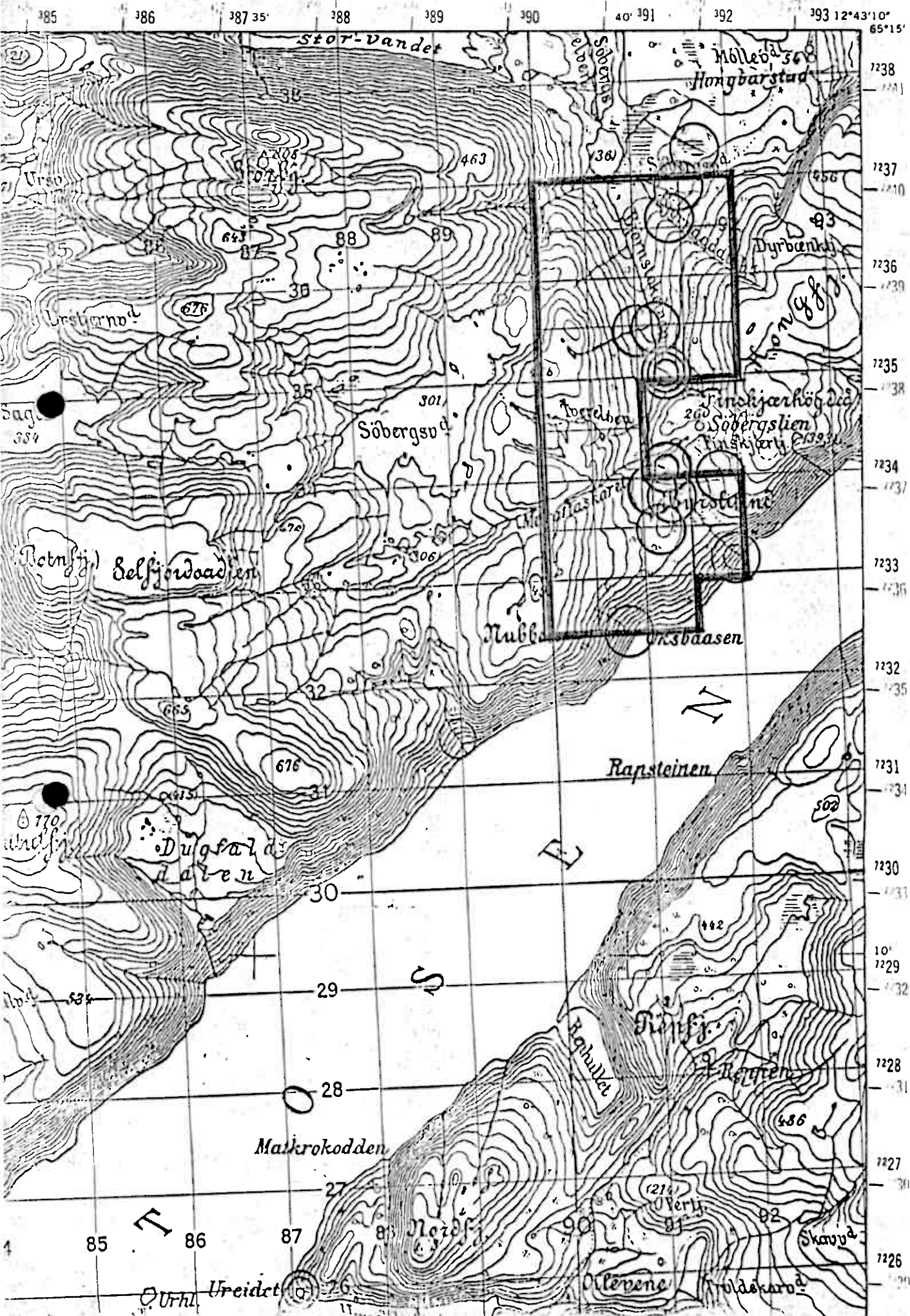
Access: 3 km FROM ROAD, BOAT, HELICOPTER

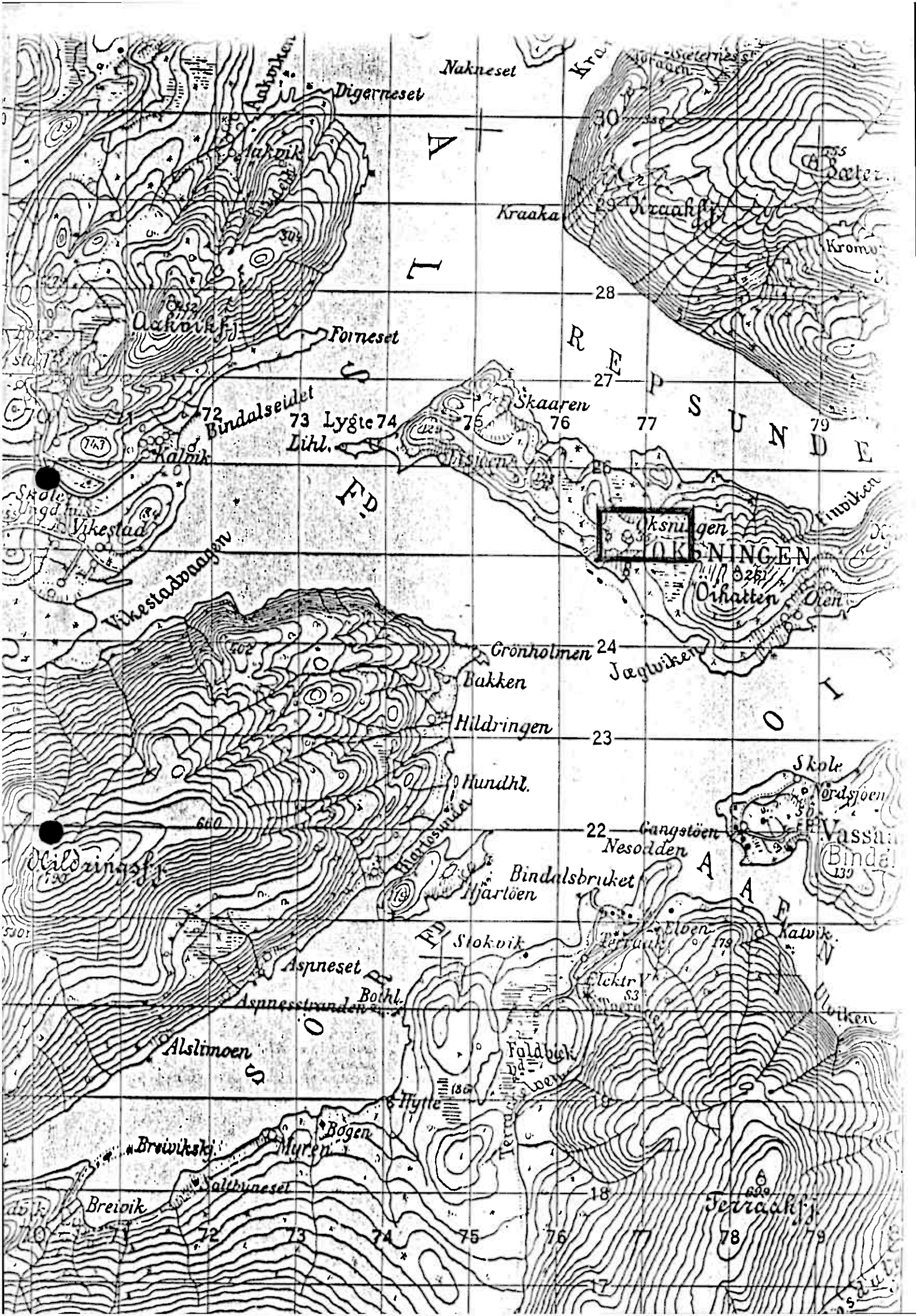
Photogeology:

Est No. Follow up Samples Time Requ'd Team Days

3° 2° 1° 0° 1° 2°

SHEET 1825 III
AMS SERIES M711





HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1825 III BINDAL		DF 166 II

Claim Name BØKESTAD No. 36 Area .. 0,5 .. km² Appl. date .. 29.10.82 ..

Stream Length 0,5 km² Drainage Area 0,5 km² Av. Topog. MODERATE
70-220 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add. Ag	Add. Sb	Add. Mo
160090	92	<1	11	8	35	<1	<1	<1	<1

Regional Geology: GRANITE, MICASCHIST/GNEISS

Overburden: ALLUVIUM

Field Comments:

Access: ROAD

Photogeology:

Est No. Follow up Samples 10 Time Requ'd 1 Team Days



Map Sheet Majaklumpen

Sampling was confined to the northern and eastern parts of this sheet. The anomaly of Finheir in the n. west corner is significant as the Au occurrence- currently investigated by A/S Sulfidmalm-at Kvitdalstind some 3kms upstream was clearly detected by our sampling as a combined As-Au anomaly.

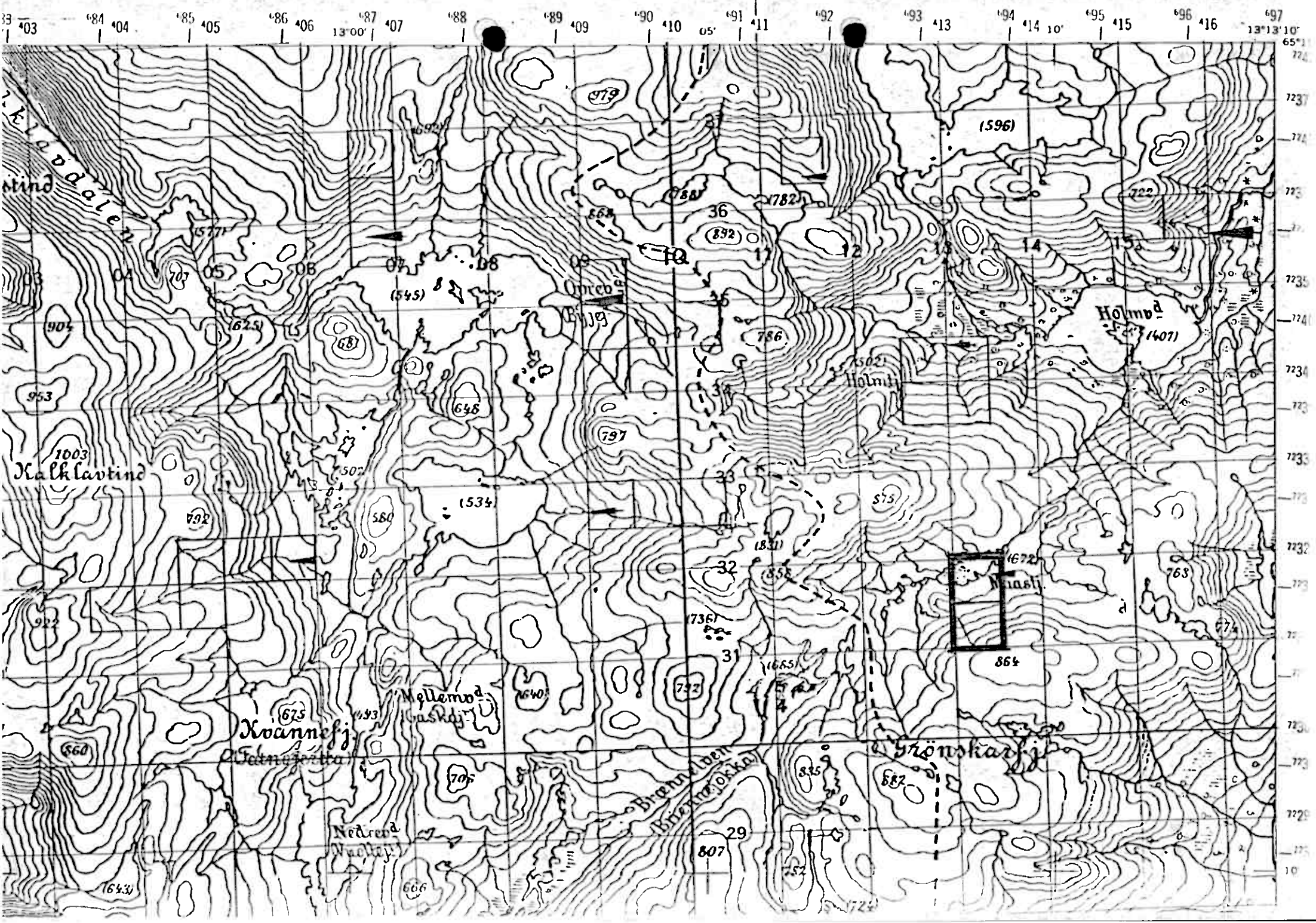
The occurrence mentioned above is associated with veined micaschists, hosting marbles and amphibolites.

The remaining anomalies are of Au-As association, occurring along the margins of multiple intrusions and their host micaschists. However, the presence of metasediments in this central part of the Bindal massif cannot be excluded as published geological maps of the area are simplified.

CLAIM NAME	NO.	AREA KM ²	Au PPB	PATHFINDER ELS.	OVERBURDEN	GEOLOGY	STRUCTURES
MAASTJERN	143	0.5	17	-	+	+	
HOLMVATN	144	0.5	159	+As	+	+	
HOLMTJERN II	115	1.0	2	0	+	+	
" I	114	0.25	7	+W	+	+	0
KALKLAVDALEN I	134	1.5	4	0	+	0	
" II	137	0.75	9	+As	+	+	+
" III	136	1.25	68	+As +W	+	+	+
" IV	135	0.75	83	+As +W	+	+	+

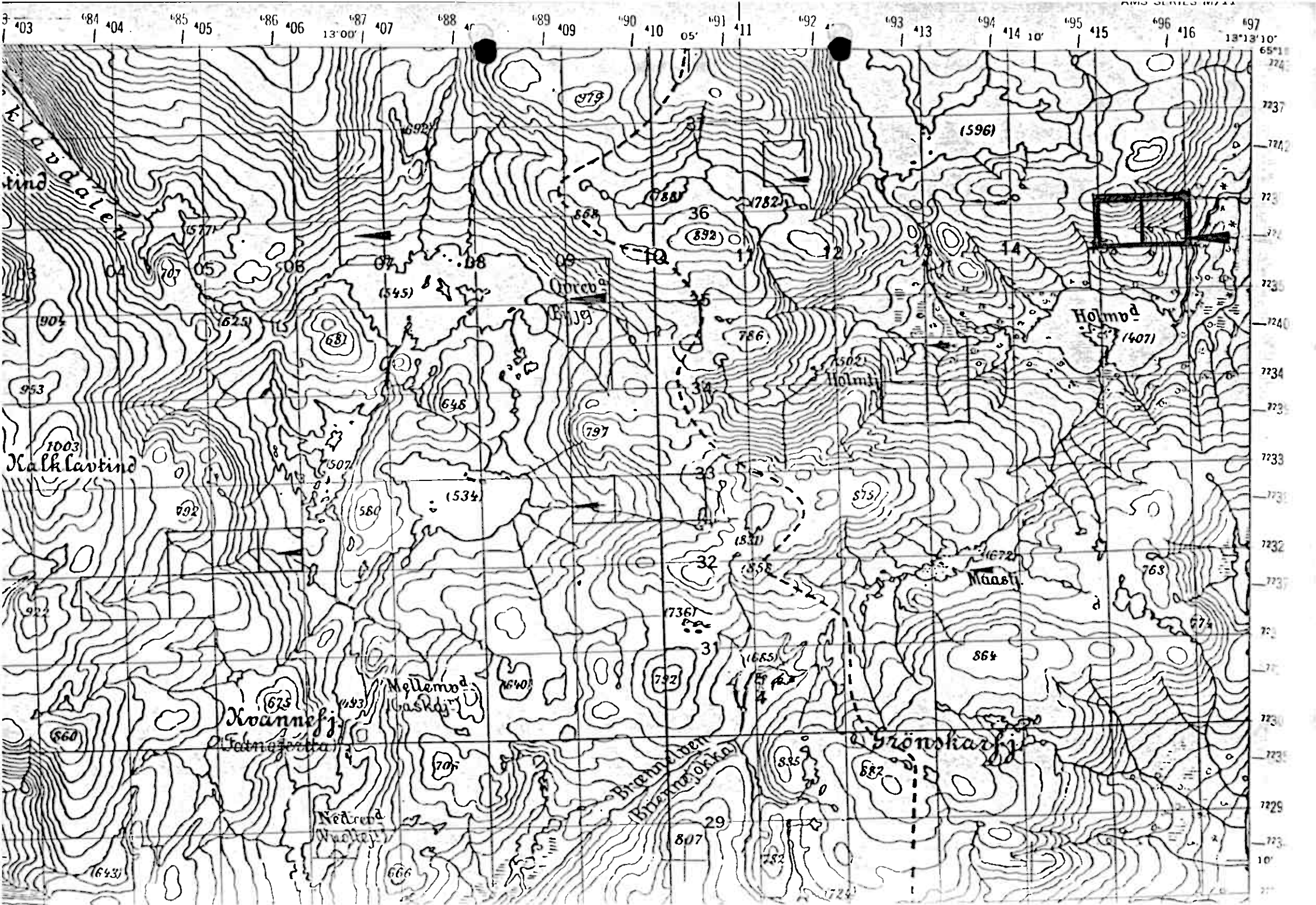
CLAIM DETAILS

Time Requ'd 1 Team Days



CLAIM DETAILS

Est No. Follow up Samples	10	Time Requ'd	1	Team Days
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HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1825 II MAJAKLUMPEN		DN 168 III

Claim Name HOLMTJERN 2 No 115 Area 1 km² Appl.date 04.01.83

Stream Length 1.5 km² Drainage Area 1 km² Av. Topog. MODERATE 400-650 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
110150		<1	9	14	59	<1		
110151		<1	17	22	80	<1		
110152		<1	24	54	137	1		
110153		<1	15	21	52	1		
110154	2	<1	13	33	62	2		
110155		<1	21	21	59	4		
110159		6	16	36	81	<1		
110160		<1	16	24	44	<1		

Regional Geology: GRANODIORITE + MICASCHIST

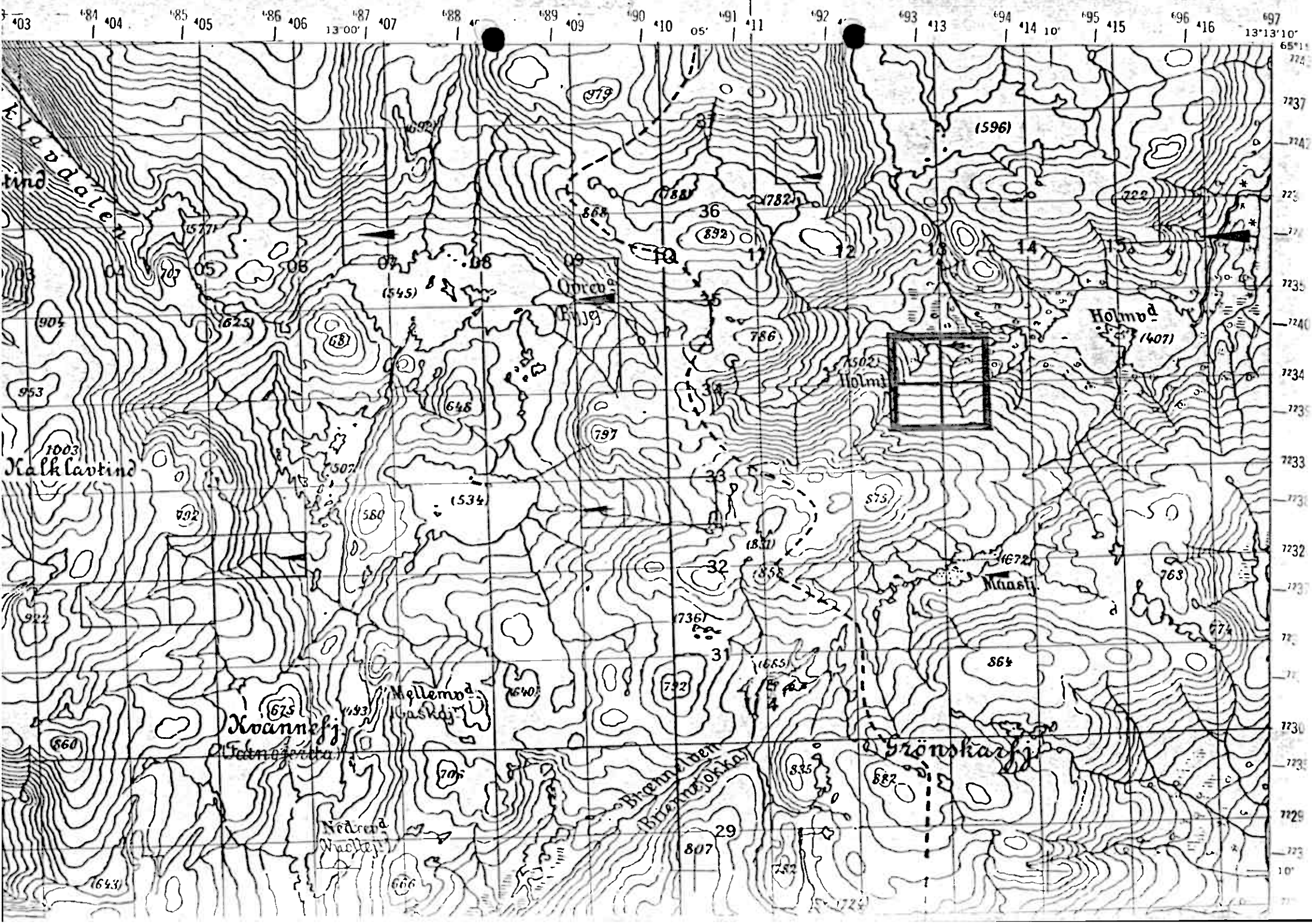
Overburden:

Field Comments: BEDROCK: GRANITE

Access: HELICOPTER

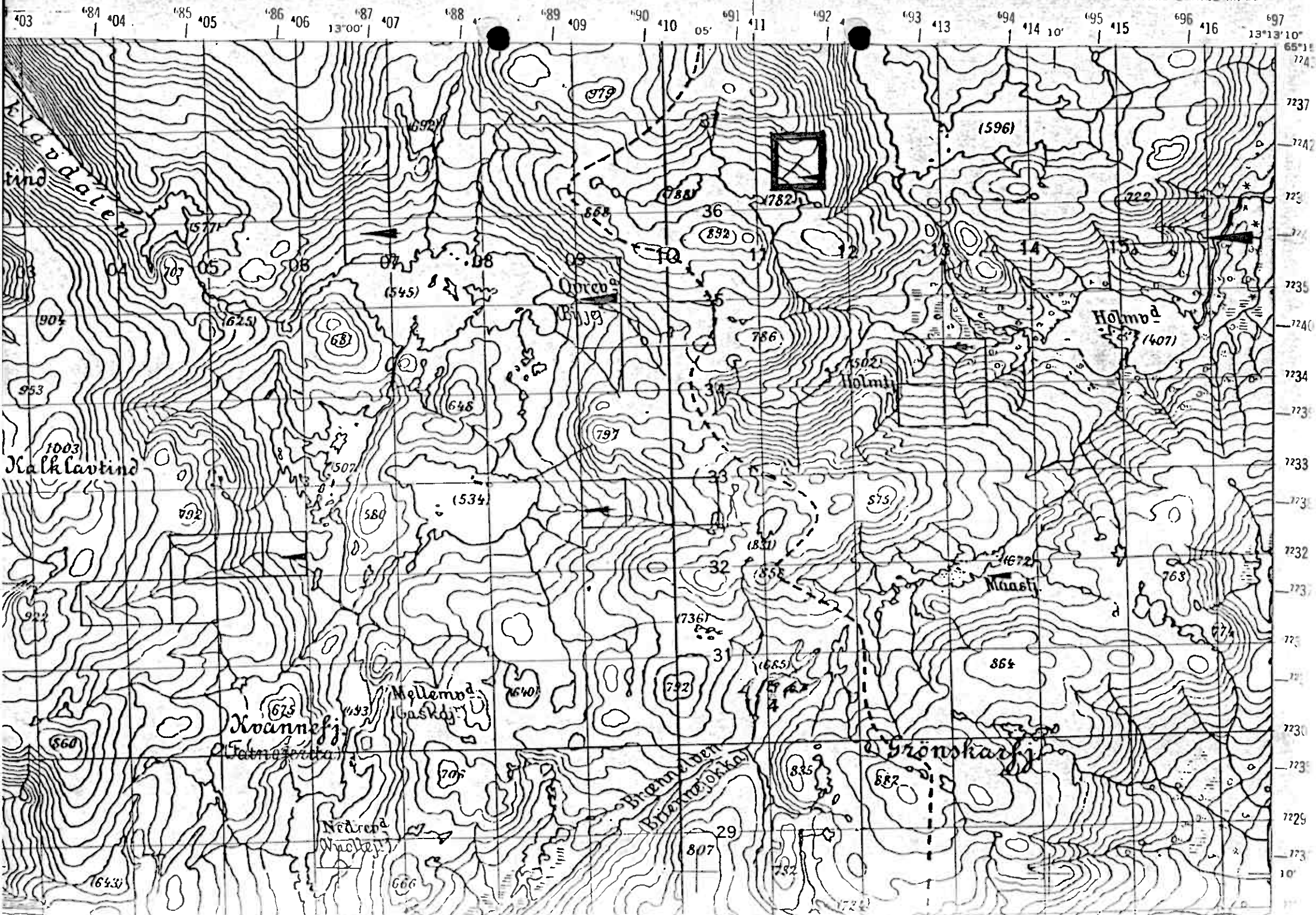
Photogeology:

Est No. Follow up Samples 15 Time Requ'd 1 Team Days



CLAIM DETAILS

Est No. Follow up Samples	10	Time Requ'd	1	Team Days
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HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1825 II MAJAKLUMPEN		DM 168 III

Claim Name KALKLAVDALEN I No 132 Area 1,5 km² Appl.date 12.01.83

Stream Length 2,5 km² Drainage Area 6 km² Av. Topog. GENTLE

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
110347	4	<1	5	14	22	3		

Regional Geology: GRANODIORITE

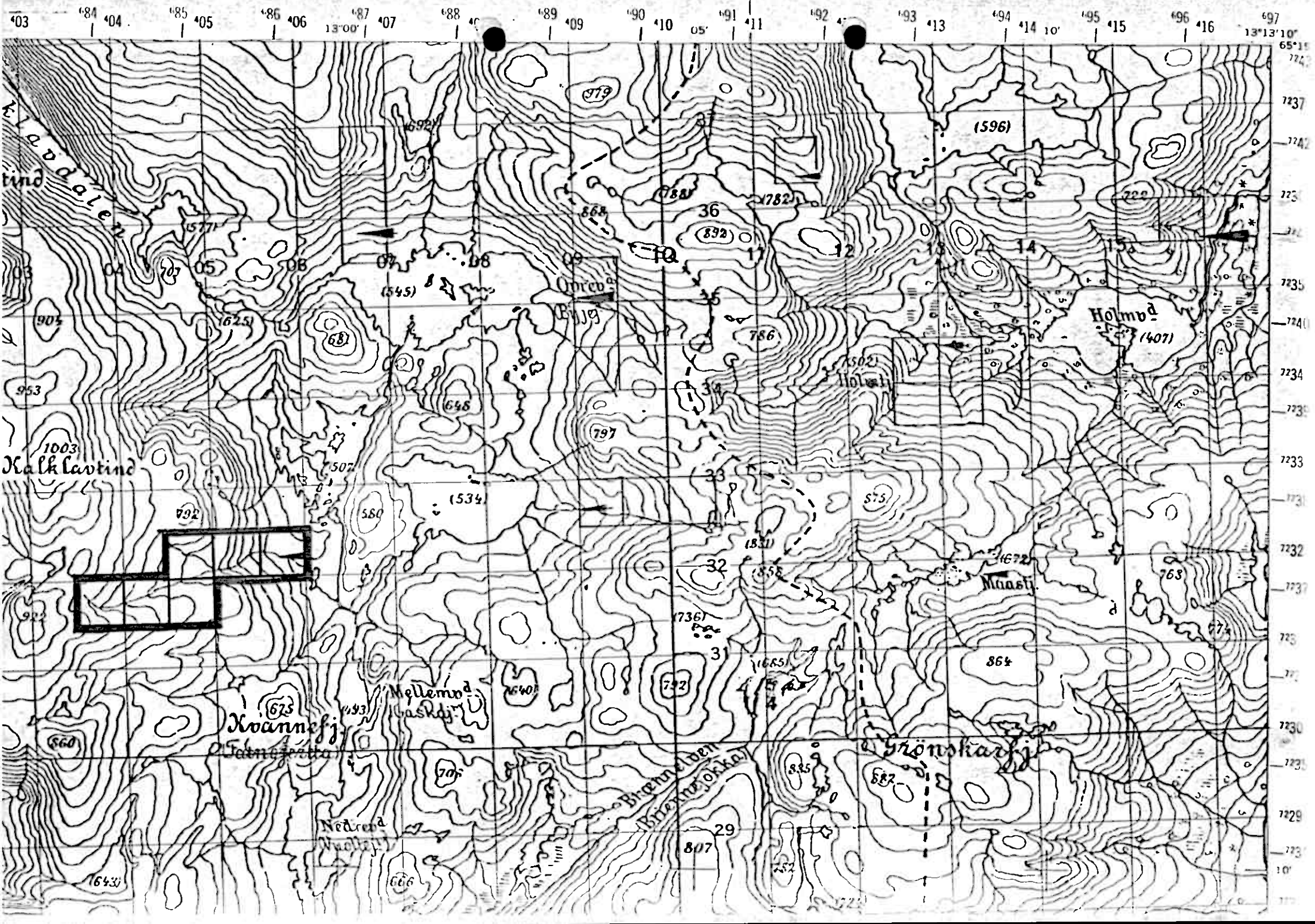
Overburden:

Field Comments: GRANODIORITE

Access: HELICOPTER

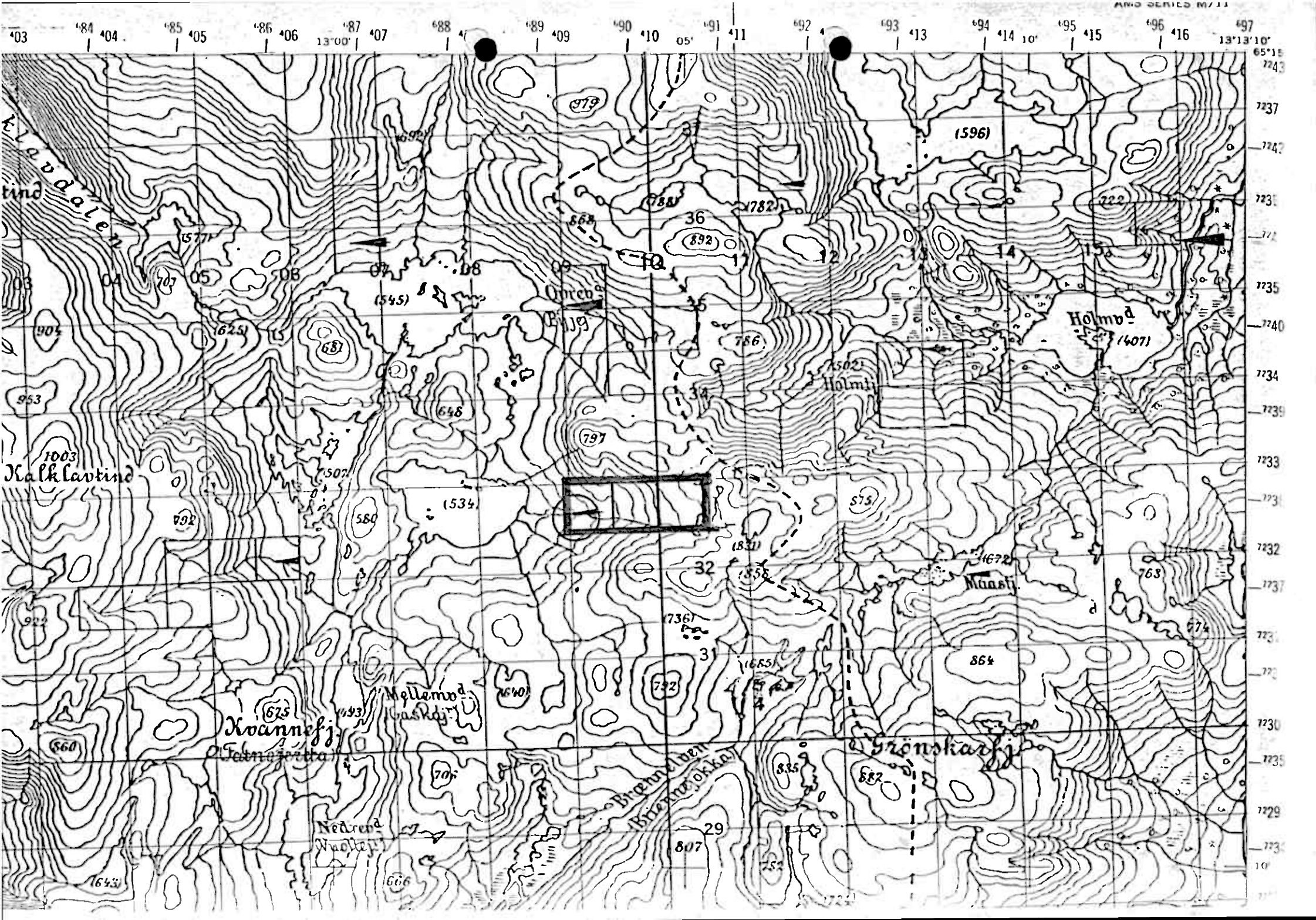
Photogeology:

Est No. Follow up Samples : 20 Time Requ'd 2 Team Days



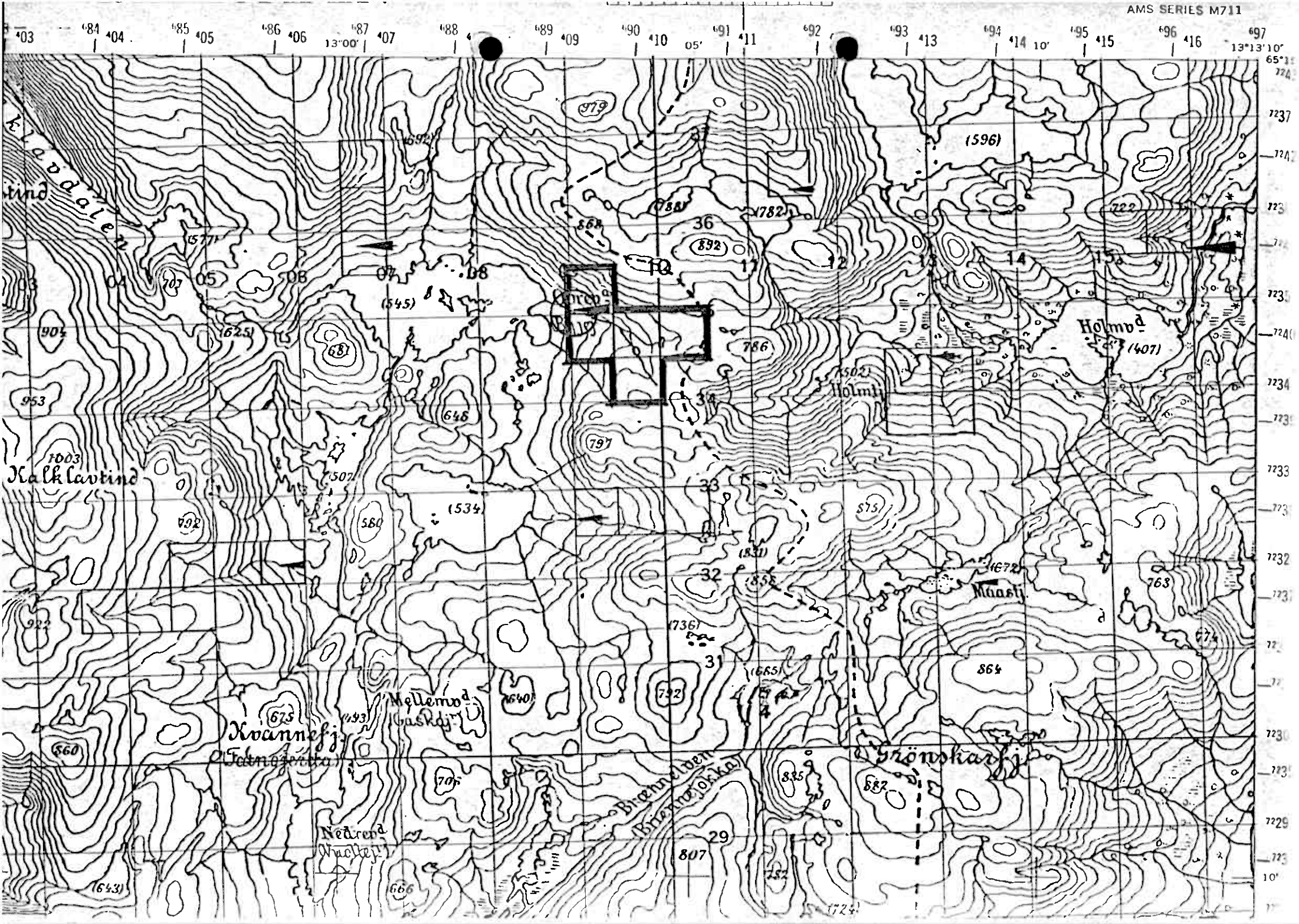
CLAIM DETAILS

Est No. Follow up Samples	20	Time Requ'd	2	Team Days
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CLAIM DETAILS

Est No. Follow up Samples	20	Time Requ'd	2	Team Days
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HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	0ko.kart
Claim Location:	1825 II MAJAKLUMPEN		DM 169 III, 168 I

Claim Name KALKLAVDALEN II No 135 Area 0,75 km² Appl.date 12.01.83

Stream Length 1.5 km² Drainage Area 2 km² Av. Topog. STEEP

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
110357	83	3	13	25	55	9		

Regional Geology: GRANODIORITE - MICASCHIST

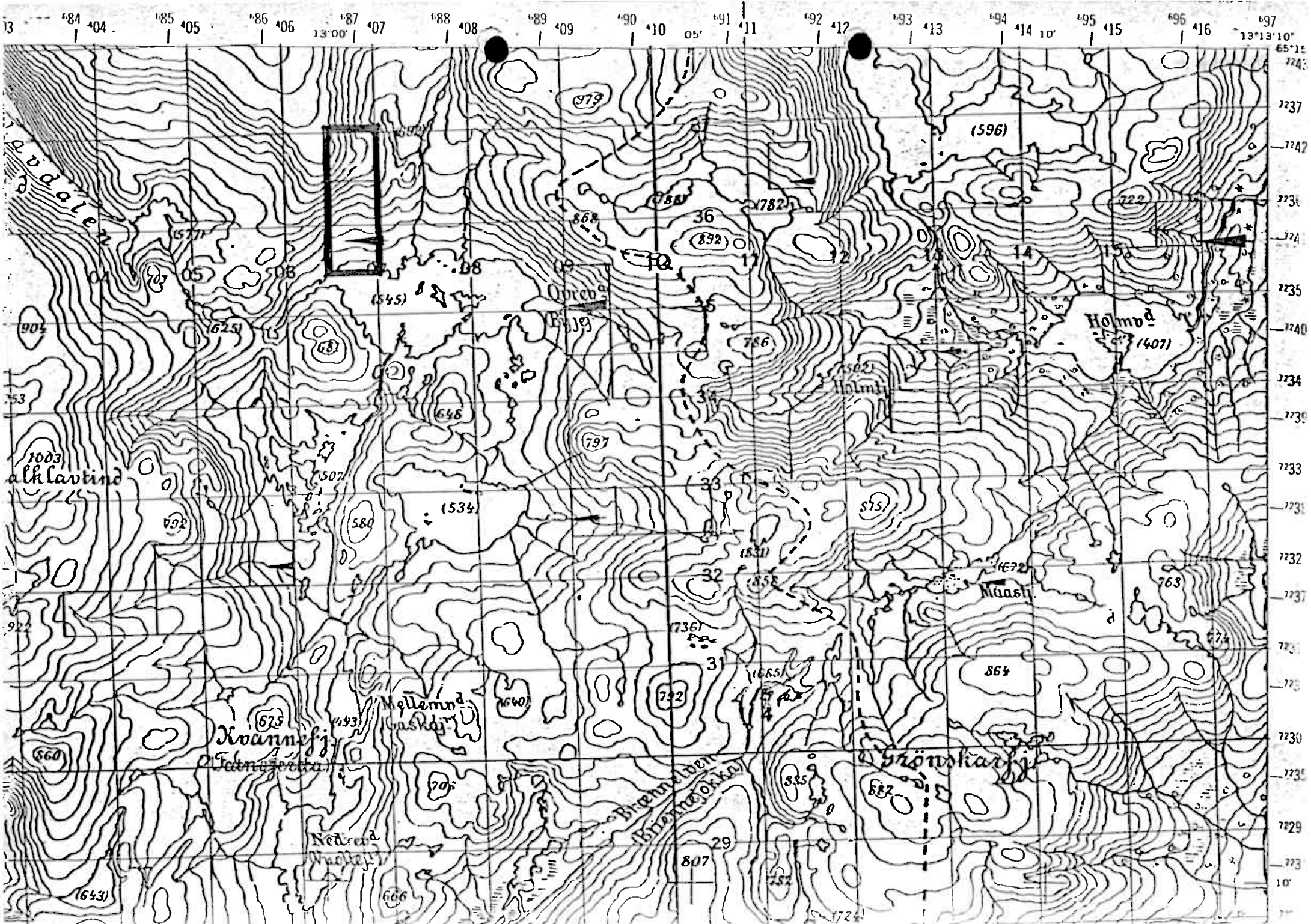
Overburden:

Field Comments: GRANODIORITE, SAMPLEPOINT TAKEN NEAR CONTACT MICASCHIST - GRANODIORITE.

Access: HELICOPTER

Photogeology:

Est No. Follow up Samples 15 Time Requ'd 2 Team Days



Map Sheet Majavatn

Arsenic anomalies are predominantly associated with amphibolites or marbles. The host for these metasediments are- as on map sheet Mosjøen- micaschists with intense veining in the vicinity of granitic intrusives.

In the south of the map sheet, around Steinfjellet, an aplitic variety of the quartz-dioritic intrusions is mapped. The aplitic nature of this intrusive and the intense veining in the surrounding micaschists might indicate a low level of erosion and a small regional stream sampling programme is proposed for the 1983 field season.

MAP SHEET: 1925 III MAJAVATN

CLAIM NAME	NO.	AREA KM ²	Au PPB	PATHFINDER ELS.	OVERBURDEN	GEOLOGY	STRUCTURES
MELLINGEN	132	0.7	54	-	-	+	
SØR-STEINVATNET	72	2.75	18	-	-	+	
TOMASVATN	63	1.5	27	-	-	0	
TOMASVATN B	70	1.0	39	-	0	0	
DUNFJELDET	133	0.5	36	+As	0	0	

HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1925 III MAJAVATN		ØØ 167 I

Claim Name DUNFJELDET No 133 Area 0.5 km² Appl. date 12.1.83

Stream Length 0.6 km² Drainage Area 1.5 km² Av. Topog. MODERATE

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
110315	36	12				<1		
050226		<1	14	9	50	5		
050227		<1	14	8	47	3		

Regional Geology: MICASCHIST

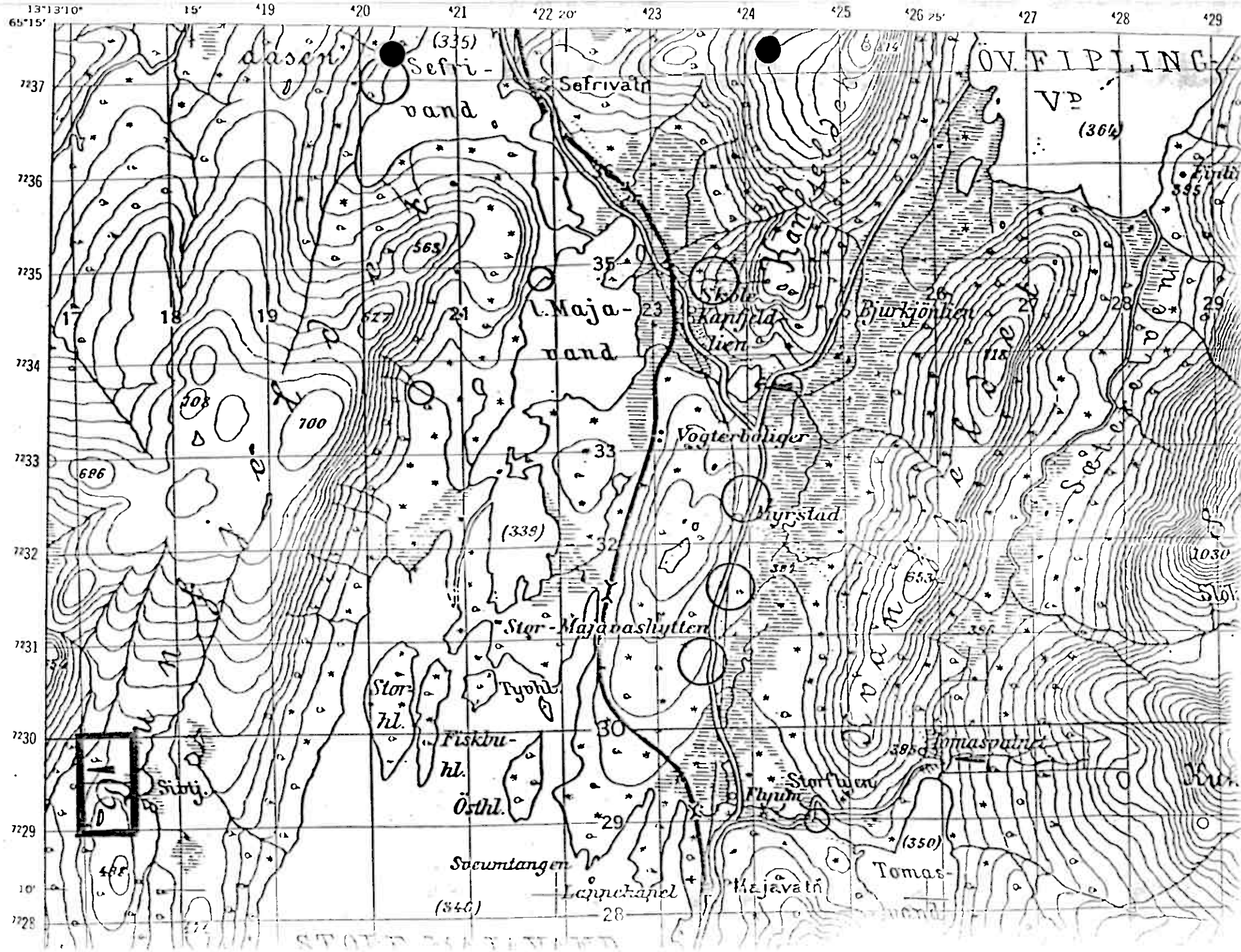
Overburden:

Field Comments: NO OUTCROP NEAR STREAM BED (MICASCHIST). COBBLES OF MICASCHIST AND GRANITE.

Access: HELICOPTER/BOAT

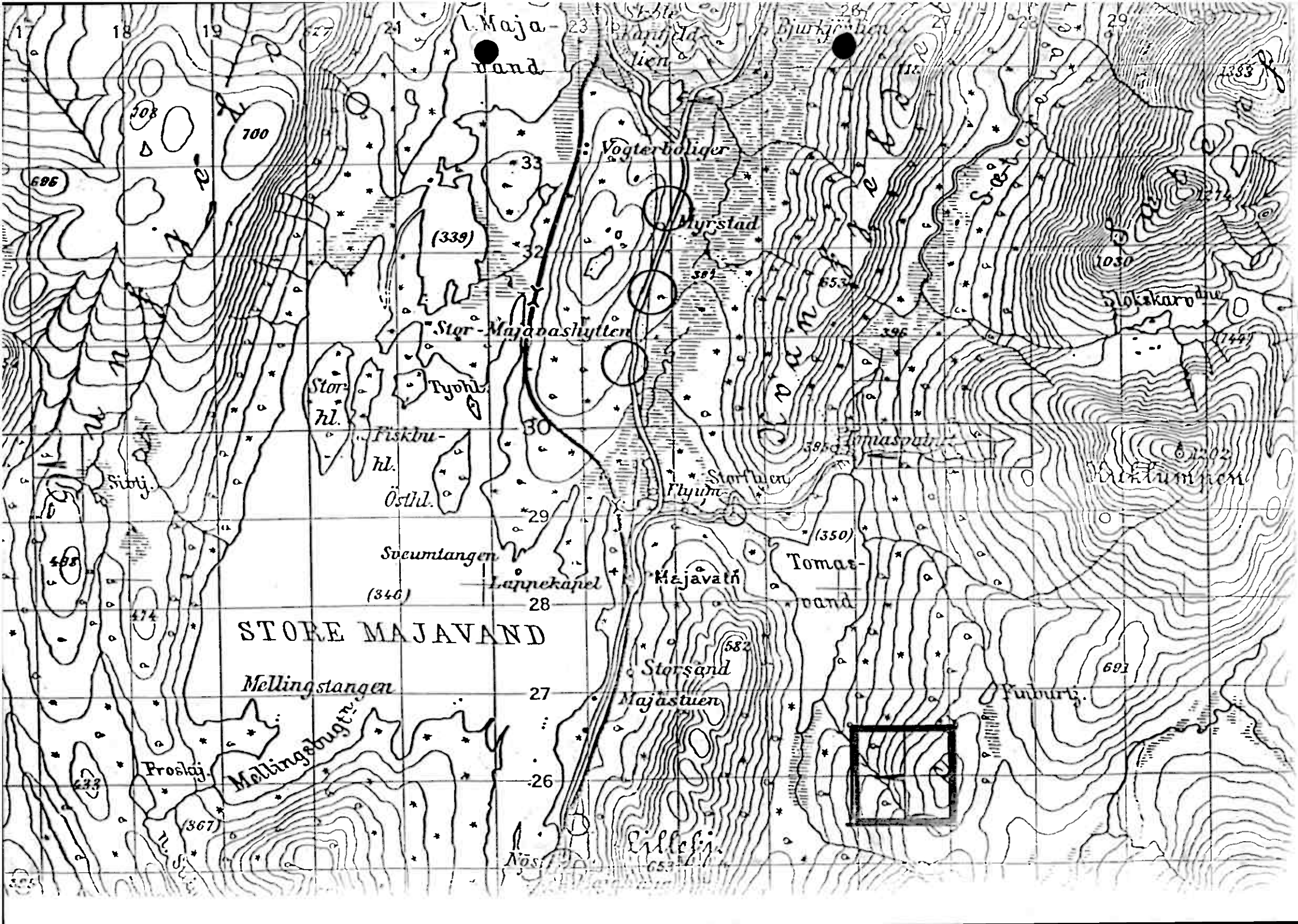
Photogeology:

Est No. Follow up Samples 10 Time Requ'd 1 Team Days



CLAIM DETAILS

Time Requ'd	1	Team Days
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HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1925 III MAJAVATN		DP 167 II

Claim Name TOMASVATN No 63 Area 1,5 km² Appl.date 18.11.82

Stream Length 4 km² Drainage Area 2,5 km² Av. Topog. MODERATE
360-

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
050032		<1	16	18	101	2		
050033	27	1	26	74	102	1		
050034		<1	14	11	54	2		
050035		<1	13	11	54	2		
050036		<1	8	5	32	5		
050037		<1	8	5	41	3		
050038		<1	13	8	55	3		
050039		<1	10	6	66	<1		

Regional Geology: MICASCHIST/QARTZ-FELDSPAR GNEISS/GRANODIORITE

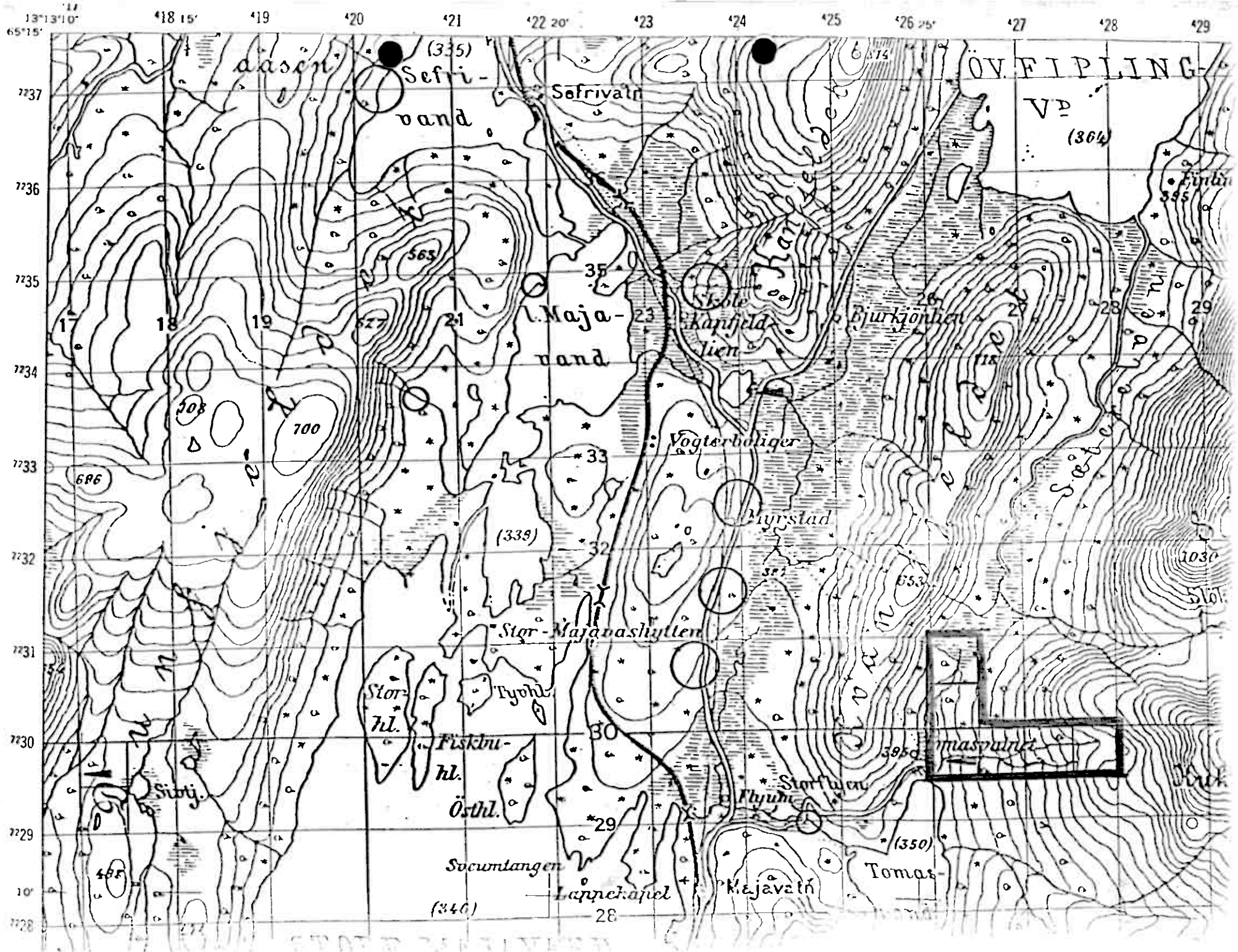
Overburden:

Field Comments: THE SAMPLE IS TAKEN FROM A SAND BAR ON THE SIDE OF THE RIVER.
THIS IS A DUPLICATE OF SAMPLE 32.

Access: BY ROAD

Photogeology:

Est No. Follow up Samples 25 Time Requ'd 2 Team Days



HELGELAND PROJECT 1982

CLAIM DETAILS

	M 711	Aerial Photos	Øko.kart
Claim Location:	1925 III MAJAVATN		

Claim Name SØR-STEINVATNET No 72 Area 2,75 km² Appl.date 18.11.82

Stream Length 2 km² Drainage Area 2,5 km² Av. Topog. MOD/STEEP
360-590 m

Sample No.	Au (ppb)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	W (ppm)	Add.	Add.
050091		<1	21	10	73	<1		
050092	18	<1	17	10	62	1		
050093		<1	17	17	102	2		
050193		<1	2	5	30	1		
050194		<1	6	10	38	<1		

Regional Geology: MARBLE, MICA SCHIST.

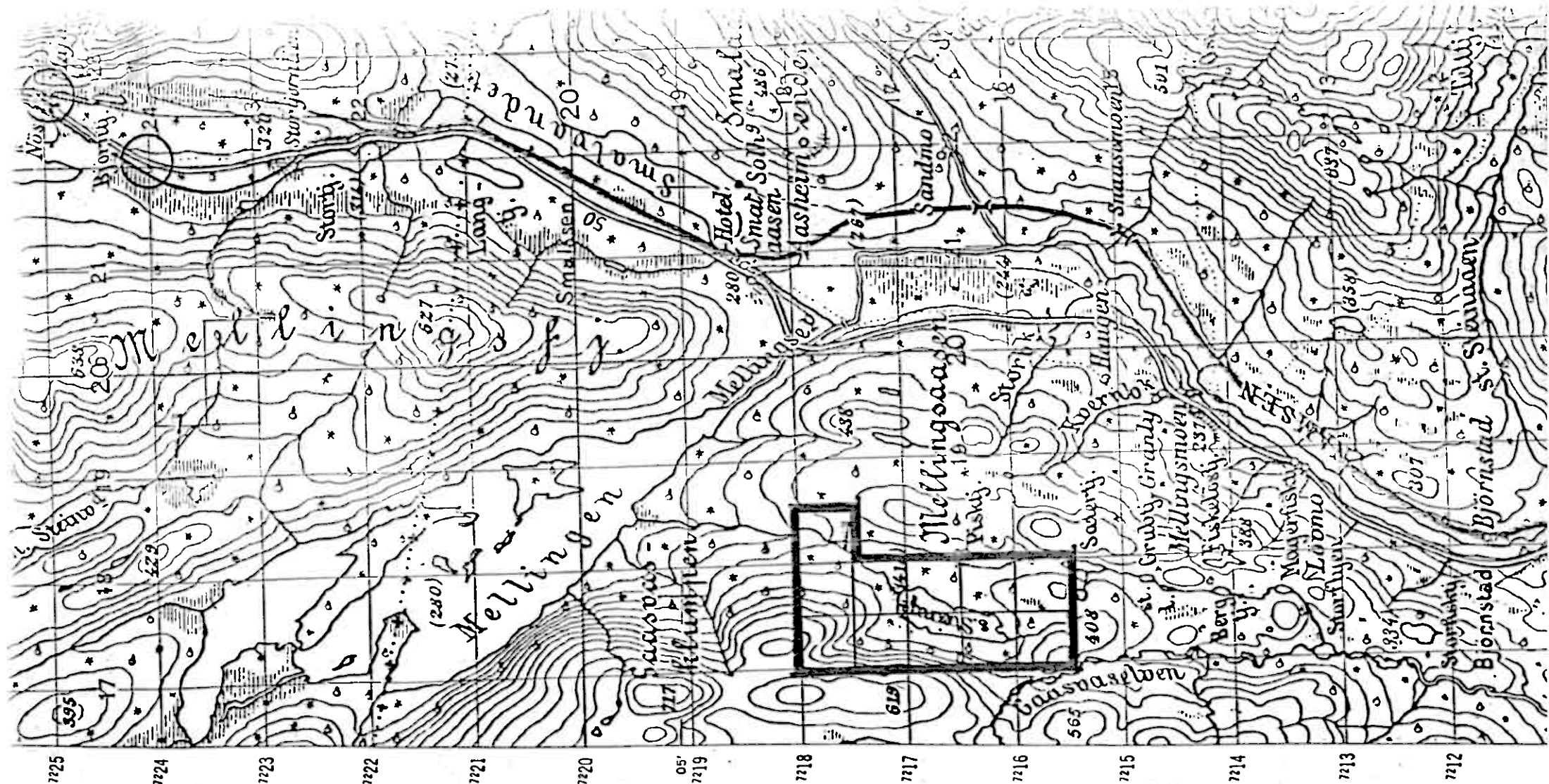
Overburden:

Field Comments: THE SAMPLE IS TAKEN NEXT TO A SMALL ISLAND

Access: WALK FROM ROAD

Photogeology:

Est No. Follow up Samples 15 Time Requ'd 1 Team Days



BP NORGE a.s. MINERALS
HELGELAND PROJECT 1982

● ANOMALY AND TENURE
COMPILATION

X) Budget

The actual costs incurred during 1982 for the Helgeland project appear below:

Item	Proposed Budget	Actual Costs	- Overrun + Underrun
Man Power costs	665.000	703.000	- 38.000
Wages	400.000	446.200	- 46.200
Travel	40.000	45.700	- 5.700
Mileage	52.000	62.500	- 10.500
Fuel, Maintenance	30.000	21.500	+ 8.500
Base camp	30.000	25.300	+ 4.700
Equipment	50.000	76.000	- 26.000
Geochemical analysis	200.000	488.700	- 288.700
Flying, Transportation	300.000	315.200	- 15.200
Landsat	20.000	11.000	+ 9.000
Consumables	100.000	80.600	+ 19.400
Tech. Research	25.000	17.000	+ 8.000
Supervision	20.000		+ 20.000
	1.932.000	2.292.700	- 360.700

It should be noted that the difference between the proposed total budget as it appears here to the total budget of NOK 1.772.000 as stated in the J.V. minutes from the meeting at 25.03.1982 in Oslo is due to an communication error.

The detailed operating budget on page 3 of the minutes states NOK 40.000 for wages (8 samplers) instead of NOK 400.000 as proposed in the meeting.

A budget of 40.000 NOK would allow for 3,3 man/month of one sampler, a figure totally unbalanced with the remaining budget.

The still resulting overexpenditure of NOK 360.700 is to 80% due to higher analytical costs. This is caused by a larger quantity of samples analysed as such and furthermore by the fact that about 30% of the sieved stream sediment samples contained fines in excess of 60 gr. and subsequently had to be split and analysed twice or even more often.

The remaining 20% overrun is caused by slightly higher costs for wages, man-power costs, travel and general transportation.

This reflects the increased efforts of BP-Norge A/S Minerals staff to match the highly competitive situation encountered with Sulfidmalm and Sydvaranger, as competitors were found to initiate regional geochemical surveys similar to ours.

In the following a summary list on the turnaround time of Caleb Brett laboratories on Au-analysis of stream sediment and rock samples is given:

The average shipment time of the samples from Norway to the UK by air freight was 4 days and the average turnaround time on Au-analysis of stream sediment samples was 34 days with 18 days as minimum and 54 days as maximum. Cu, Pb, Zn values were reported together with the Gold results. The analysis of As and W of stream sediment samples took considerably longer time with an average turnaround of 59 days (minimum 23 days, maximum 109 days).

The average turnaround on Au-analysis of rock samples was 55 days, 45 days minimum and 67 days maximum.

Analysis turnover sed. samples:

Batch no.	Date of Despatch	Date of Arrival	Au, Pb, Zn-	Days	As, W-res.	Days
			res., Date		Date	
	1982	1982	1982		1982	
820001	17.08	23.08	09.09	23	09.09	23
820002	25.08	27.08	21.09	28	22.09	29
820003	26.08	01.09	14.09	19	05.10	40
820004	06.09	10.09	29.09	23	25.10	49
820005	08.09	13.09	07.10	30	29.10	52
820006	13.09	17.09	07.10	24	01.11	49
820008	20.09	23.09	08.10	18	19.10	29
820009	23.09	28.09	18.10	25	24.11	62
820011	04.10	07.10	08.11	35	10.12	67
820012	08.10	11.10	09.11	30	13.12	62
					1983	
820013	13.10	21.10	13.11	46	13.01	109
820015	22.10	27.10	06.12	42	17.01	84
820016	22.10	27.10	24.11	34	13.01	84
820017	01.11	09.11	08.12	37	24.01	84
			1983			
820019	19.11	23.11	05.01	47		
820020	19.11	25.11	11.01	54		
820021	09.12	16.12	21.01	44		
820022	09.12	16.12	25.01	48		
			1983			
820023	21.12	04.01				

Analysis turnover rock samples:

Batch no.	Date of Despatch	Date of Arrival	Res. Date	Days
	1982	1982	1982	
820007	17.09	21.09	08.11	52
820010	28.09	01.10	03.12	67
820016	22.10	27.10	06.12	45
820020	19.11	25.11	25.01	67
820014	13.10	21.10	06.12	54
820018	01.11	09.11	16.12	
	1983	1983		
820027	10.01	17.01		
820028	10.01	17.01		

Appendix IV

As - W STANDARDS

As	BATCH NO	BLANKS	W	BATCH NO	BLANKS
	4	1, <1, 2, 3, 10		4	<1, <1, <1, <1,
	5	<1, <1		5	1, 1
	6	2, 5, 3		6	<1, <1, <1
	7			7	
	8	<1, <1		8	1, 3
	9	<1, <1, <1		9	2, 6, 5
	10			10	5, 1, 1, 2, 1, 2,
					2, 2
	11	8 BLANKS-ALL <1		11	6 BLANKS-ALL <1
	12	6 BLANKS-ALL <1		12	
	13			13	
	14			14	
	15			15	
	16	3 BLANKS-TWO		16	3 BLANKS-ALL <1
	17	<1, 2		17	
	18			18	
	19			19	
	20			20	
	21			21	
	22			22	

Zn STANDARDS

BATCH NO.	STD 1	STD 2	Alligator ridge STD	BLANKS	REMARK
1					
2					
3					
4	470,435	504,551		17,15,12,13,16	
5	444,444	472,553,506		16,16	
6	361,385	428,506		14,25,27	
7					
8	400,449,434	464,462,469		13,24	
9	491,418	485,553,532		14,11,14	
10					
11	357,375	482,477,457		13,11,13,15,14 11,10,9	
12	577,583,720	240,220		19,12,15,14,11, 11	
13	500,529,565	694,656,640			
14	533,417,448,457	531,455,480, 543			
15					
16	441,457,445,441	532,987,538		11,13,10	
17	351,168,763	114,34	208,32,409,360, 115	250,71	BLANK + STD prob. mixed up
18					
19	140,2104* 35,526	2660* 665	471*,490*,505* 117,122,126	117,120 7,8	*TOO HIGH CORRECTED
20	120,192	671,666	62,39	47,13,40	

Pb STANDARDS

BATCH NO.	STD 1	STD 2	Alligator ridge STD	BLANKS	REMARK
1					
2					
3					
4	92,87	107,126		3,6,4,4,4	
5	93,89	110,125,114		7,7	
6	77,83	99,121		4,6,9	
7					
8	80,80,85	97,98,100		5,11	
9	96,84	106,119,117		4,4,5	
10					
11	84,94	105,127,122		6,3,4,5,4,4,4,3	
12	71,73,76	73,64		7,6,5,4,6,5	
13	76,84,75	111,98,104			
14	159,182,186,180	216,180,171, 217			TOO HIGH
15					
16	80,83,85,84	113,136,106		5,5,5	
17	89,101,140	171,103	179,116,138,108, 92	5,5,14	
18					
19	26,354*	476*	321*,282*,286*	31,33	*100 HIGH
	6,88	119	80,70,71	7,8	CORRECTED
20	72,88	130,126	93,63	7,6,5	

Cu STANDARDS

BATCH NO.	STD 1	STD 2	Alligator ridge STD	BLANKS	REMARK
1					
2					
3					
4	73,87	107,126		5,6,4,4,4	
5	69,67	66,85,82		5,4	
6	62, 63	68,83		4,5,6	
7					
8	68,71,77	72,66,73		7,8	
9	68,59	66,74,70		4,4,5	
10					
11	63,75	71,82,85		7,4,5,6,6,4,4,5,5	
12	56,62,70	44,44		5,6,5,4,6,5	
13	61,67,63	79,70,76			
14	152,158,166,161	163,132,126,157			TOO HIGH
15					
16	67,70,68,74	86,90,76		6,6,6	
17	87,34,106	31,10	32,11,71,74,33	16,42,18	
18					
19	22,279*	338*	84,94,92	20,20	*TOO HIGH
	5,69	84	21,23,23	5,5	CORRECTED
20	52,58	78,74	22,20	6,5,5	
21					

Au STANDARDS

BATCH NO.	STD 1	STD 2	Alligator ridge STD	BLANKS	REMARK
1					
2					
3					
4	989,252	477,701		4	
5	93,53	332,33,2271			
6	285,1875	343,175			
7					
8	52,54 -*	709,32,217		4245*	BLANK + STD 1 prob. mixed up
9	411	719,1694,119			
10					
11	315,263	1190,60,1818		8 BLANKS-A11 below detec. limit	
12	1430,122			6 BLANKS-A11 below detec. limit	
13	1493,639,389	292,822,1118			
14	1567,339	1013,2226,65, 826			
15					
16	160,296,14,3290	1704,343,670			
17	632,488,56	6482,1387,283	6000,6062,6833, 6941,6617		
18	377	1031,1387,283	4992,4352,4672, 4742		
19	292	1092	5817,5352,5338		
20	533,1512	137,33	4533,3783	3439*	BLANK + STD prob. mixed up
21					

REPORT:

BEDROCK GEOLOGY AND STRUCTURAL RECONNAISSANCE STUDIES
IN THE HELGELAND DISTRICT, NORDLAND 1982.

BY: JON S. PETERSEN. GEOLOGISK INSTITUTT, UNIV. OF OSLO.

SUMMARY AND CONCLUSIONS:

The Helgeland district constitute a complexly deformed, high grade metamorphic crustal segment which was invaded by acid magmas in a prolonged period of time, exceeding the metamorphic and deformational events. The central part is dominated by sillimanite bearing micaceous gneisses with some marble horizons and large granite batholiths, while lime-rich metasediments essentially occur along the marginal parts of the region, both east and west.

No clearly volcanic rocks are reported, and low-grade metamorphic rocks are mainly retrograded schists, which show indications of a former high-grade state. Metasediments and migmatitic supracrustal gneisses however are clearly distinguishable both structurally and lithologically.

The younger intrusions are dominated by granite - qz-diorite intrusions and abundant parallel dike swarms. The igneous suite however also count earlier layered gabbros and younger appinite plugs.

The geological setting of the Helgeland rocks has a remarkable resemblance with the Grampian Highlands zone in Scotland with a Moine-Dalradian-type of structural and lithological division and diachronic development. The younger granites apparently cover the entire time span between these phases.

Mineralizations are few and difficult to trace by field mapping, but heavy py-po disseminations are observed often along major fault- or thrust zones. Only at one locality at Sørbergslie were hydrothermal alterations discovered, which had completely transferred the host Qz-diorite into a white heavily py-disseminated alteration product.

Mineralization and stockwork development in the Skomovik granite was found to be associated with fracturing and shearing during the emplacement of the skomovik thrust, which was recognized along the base of the Skomovik granite. The late origin of qz-tourmaline weins and mineralizations including Pb-Zn occurrences are therefore late events apparently associated with regional thrust/ faulting events.

RECOMMENDATIONS

A working hypothesis is that Au mineralizations are basically related to processes of serpentinization of upper mantle and further mobilization by acid magmatism. Therefore the following approach is currently recommended for the further planning of exploration in the region:

- 1) Detailed geological mapping of areas which show mineralizations or hydrothermal alteration, with special emphasis to their tectonic position and relation to major fracture and thrust zones. This specifically concerns the Skomovik and Sørbergslie occurrences.
- 2) Investigations of the tectonic nature of the serpentinite-bearing horizons in the region, as indicators of deep crustal fractures.
- 3) Examination of major fault zones and tectonic discordances in the region
- 4) Studies in areas with intensive, complex invasion of qz-dioritic dike swarms.
- 5) Examination of geochemically anomalous regions with respect to major geotectonic zones and the above geological features.
- 6) It is also recommended that further geological mapping is carried out on areal photographs enlarged to double scale 1:20.000 in order to secure exact positioning of observations, because the available topographic maps are inadequate and new maps will not be available in the nearest future.

Report on bedrock geology and structural reconnaissance studies in the Helgeland District, summer 1982.

by Jon Steen Petersen. Dept of Geology. Univ. of Oslo.

Geological Field studies were carried out in parts of the Helgeland district, Nordland summer 1982 in two periods of about 3 weeks each. A new reconnaissance geological map was produced on the basis of a photo-geological study of the areas covered by 1:100.000 maps Mosjøen - Velfjord - Bindal, and supplemented by few field checks, partly with the aid of boat and helicopter transportation.

The area is partly covered by geological maps in scale 1:100.000 which have been published rather recently: 1972-74. Unfortunately however, structural informations on these maps are scarce and division between major structural sectors are particularly lacking. Therefore special emphasis on the photogeology reconnaissance was placed on structural data which tend to support such features rather than ^{on} lithological information. Lithological boundaries however were usually clearly traceable on the areal photographs due to extreme exposures, and the application of lithological information from the existing geological maps has made it possible to produce a new geological map which suggest the presence of major structural subdivisions within the so-called Helgeland Nappe, and also contain several important discrepancies compared with the existing, previously published maps.

It must be stressed however that the photo-interpreted maps are meant as supplements to existing maps in order to locate critical areas and as an aid for structural subdivision of the earlier maps, and do not pretend to represent revised geological maps of their own.

The studies however have clearly confirmed the need for a substantial revision of the existing geological maps, and the photogeological maps are hoped to serve as a tool for the further planning of regional structural studies which may assist in the process of locating mineralizations or support the understanding of the distribution of precious-metal occurrences in the region.

MINERALIZATIONS

During the field-period, which was the first of the exploration programme, some major working hypotheses were developed. Elements of these will be discussed briefly here, because they partly served as guide-lines for our interest and analysis of regional structural data.

Firstly, Au is reported from several localities in the Helgeland district, indicating that anomalous Au-concentrations are present in this region. Few clues as to the specific development and characters of these mineralizations however are available, as are information about their possible origin (petrogenetic type)

2) The structural studies revealed that most Au-occurrences are distributed broadly along few major structural lineaments, which roughly follow zones of prominent foliation parallelism in the gneisses and with few fold structures preserved. The occurrences accordingly seem associated with zones of extreme crustal anisotropy, probably also being zones of higher crustal weakness.

3) The areas of mineralization however are also characterized by innumerable, roughly parallel Qz-diorite dikes (veins), which are emplaced along the strike of gneiss-foliation, and apparently somewhat marginal to the large, centrally qz-dioritic and granitic plutons of the region.

4) A number of minor serpentinite bodies, often tectonized and elongated along the foliation plane occur in some of the major lineament structures, which presumably constitute former high-angle thrust-zones that permitted the emplacement of serpentinite from a zone of lithospheric decoupling in the underlying mantle.

Since the process of serpentization of former upper-mantle peridotite-lherzolite is known to associate with a significant depletion of Au in the product (e.g. Boyle, 1979; Mitchell & Keays, 1981), It may appear plausible that the same conduits which allowed tectonic emplacement of the serpentinite, could simultaneously also have conducted solutions enriched in expelled elements from the transformed mantle, such as Au among others. It is possible that these solutions are also considerably enriched in Fe-sulphides, considering that serpentinite is considerably more Mg-rich and sulphide-poor than its parent Lherzolite.

Therefore three possible, main geological features, which may relate to the build up of precious-metal mineralizations are present in the region:

- 1) Evidence of serpentization of the underlying mantle (primary source for Au)
- 2) Major thrust- or fault zones, which may have served as conduits to upper crust (solutions - first enrichment of Au)
which
- 3) Long-standing magmatic activity/has completely invaded the crust (second enrichment of Au and further mobilization)

Consequently, was special emphasis on the structural studies placed on:

- 1) Search for major structural zones which contain serpentinite lenses.
- 2) Search for major structures with evidence of hydrothermal -pneumatolytic activity i.e. tourmaline- pyrite-pyrrhotite-quartz veins or sericite alterations. Heavy py-po impregnation was considered as a secondary indicator.
- 3) search for areas with abundant acid dike-swarm intrusion of variable age.
- 4) possible configurations of megastructures in order to place such together in a regional framework
- 5) Location of internal thrust planes which divide the province in structural subprovinces, in order to distinguish between interesting and uninteresting sectors, once mineral-occurrences have been located.

Since these studies however are just in their initiation, it is premature and clearly unsafe to imply any preference to one of these prospects yet, or, on the other hand, to exclude other not-so-readily apparent possibilities, such as e.g. some association of mineralization with the vast amount of amphibolite-rich rocks or metasedimentary occurrences.

COMPARISON WITH SCOTTISH HIGHLANDS

An interesting general observation which has appeared during the present preliminary geological studies, is the striking resemblance between the Helgeland Nappe rocks in Scandinavia and the Grampian Highland zone in Scotland. Since not only time relationship but also metamorphic^{diachrony} and lithological elements are strikingly similar. It appears that the high-grade migmatites of the region correlates with the Moine-series in Scotland, while the well-bedded lime-rich metasediments in the eastern districts has strong resemblance with Dalradian rocks of SW Scotland. Only by moving even further east in the Scandinavian Caledonides one find rocks which derive from proper Iapethus ocean development, - roughly equivalent to those which occupy SE Scotland (Midland Valley - Southern Uplands and central Eire. Preliminary age determinations of some Nordland granites show that they cover a time span between 550 - 400 Ma, roughly equivalent to that of the later granites in Scotland. Evidence of syn- to late and postkinematic intrusions in Nordland supports this comparison. Also the regional structures of Helgeland, which show eastward vergenz in east and westward vergenz in the western coastal sector is clearly comparable to the structural profile across the Scottish highlands such as the synclinorium structure of SW Grampians in Argyllshire, which is also known to host late Caledonian porphyry-type Cu-mineralizations. The striking mode of emplacement of parallel qz-diorite dikes e.g. in SW Argyllshire (loch Etive - Glen Coe complexes) has clear parallel in the acid dikeswarms of Helgeland. Finally a group of ultra-mafic to mafic hornblende-pyroxenites known as the appinites in Scotland have been discovered during the reconnaissance study this summer in Helgeland, appearing in small clusters exactly as in Scotland.

The remarkable number of analogies between Scotland Highlands and the Helgeland province rocks is hardly fortuitous, but suggest that Helgeland nappe constitute an allochthonous piece of continental crust which is roughly similar to that of the Scottish highlands, and may have been separated by large scale lateral displacements zones during the Caledonian collision, presumably following the well known fault zones of Scotland and the Møre-Fosen shear-zone of western Norway being roughly parallel. (Compare report Petersen, 1981)

GENERAL GEOLOGICAL RELATIONS

The following sections will give a brief description of special features which are of particular interest in the various areas referred to as map sheets Mosjøen, Velfjord and Bindal. Basic geological information is given in earlier published descriptions, and such is not included here but referred to in the respective sections. A few general remarks however are collected below.

Metasediments.

The distribution of certain rocks in the region suggest a basic three-fold division of grouping of main lithologies supported by marked differences in tectonic style.

One suite of rocks constitute a group of clearly meta-sedimentary, lime-rich schists with some quartzite and amphibolite members, which occur mainly along the easternmost border of the region in the Eiterådalen and in Svenningdal towards Majavann. A few occurrences of similarly appearing rocks however are also observed in the westernmost part, particularly in the Langfjord area and around Brønnøysund in the Velfjord district.

The presence of few, slightly deformed conglomerates and a remarkably well developed lamination of these rocks imply a moderate degree of deformation and probably also moderate grade of metamorphism, although possibly kyanite and staurolite-garnet has been reported locally in certain members of these rocks.

Folding is readily apparent due to a strong preference for vegetation to lime-rich units, and deformation as revealed on aerial photographs indicate at least two readily distinguishable fold-phases.

High-Grade Gneisses

The majority of foliated rocks in the region are high-grade metamorphic gneisses with widespread migmatization. The common appearance of sillimanite-garnet assemblages in these rocks indicate upper amphibolite-facies metamorphism and incipient anatexis. Sillimanite is so abundant in some of the biotite gneisses that the rock appear spottet with sillimanite nodules. The biotite gneisses are often banded and commonly interlayered with some marbles, which are usually recrystallized and appear as medium grained, equigranular marble bands. Marbles occur both in these mica-rich gneisses and in the acid gneisses of the region.

The third major rock unit of the region comprise the large number of acidic intrusions. These occur roughly in two manners namely as vast batholithic plutons of equigranular to porphyritic type and as abundant, often parallel dike swarms, which run roughly parallel to the foliation of the host gneisses. Locally however these acid dikes forms a complete network of crosscutting dikes of several generations, some of which are evidently deformed ductually while others are unaffected by deformation. This evidence support a longstanding period of dike intrusion in a minor area. (Fig 1.).

The occasional inclusion ofayeres basic complexes in the later acid intrusions suggest presence of slightly earlier intrusions of basic high-Mg layered gabbros.

Clusters of minor ultramafic plugs are discovered in several areas, often associated with the acid plutons, and their composition and setting clearly has resemblance to the appinite-suite in SW Scotland.



Fig 1. Numerous qz-diorite dikes invade amphibolite-rich gneisses. Tosenfjord. Several generations include ductually deformed and post-kinematic dikes.



Fig 2



Fig 3

Fig 2 Dike swarm of acid dikes
in isoclinally folded sillimanite
gneisses (Elkviddevann)

Fig 3. Isoclinally folded marbles
in sillimanite gneiss. Same loc.

Map-sheet MOSJØEN

The Mosjøen map sheet 1:100.000 geological map is published by NGU 1974 (Nissen, NGU, no 307) including a short description of the lithologies. The adjacent areas west and east only occur as printed maps with attached descriptions, namely Flovær (Gustavson, NGU 1977) and Røssvann (in Mosjøen 1:250.000, Gustavson, NGU 1981) .

Major lithological and structural features of the photographic map include the recognition of several phases of folding along roughly N-S axes in the central western part of the map from Visten fjord and northwards. The lithologies which have suffered this deformation include veined dioritic gneiss, feldspathic biotite gneiss and banded gneisses with marble horizons. Tectonic discordances are occasionally apparent, suggesting the presence of major tectonic displacement zones along this belt. A closed synformal structure with eastward dipping axial-plane in the Vistenfjord area plunge gently towards south and probably links up with another synformal structure in the Stor-Børja area in the southerly Velfjord district.

In the northernmost part of the map, south of the Vefsnfjord, several additional tectonic discordances are apparent from the airphotos, but clearly require further field studies in order to verify their significance.

The central granite massiv of Hundaalsvann-Finknævann is a very homogeneous, equigranular granite-qz-diorite unit with generally few inclusions. A structural complication however is apparent in a small area 3-4 kms east of Hundaalsvann. SW of Finknævann (southern central part of the map) a number of small ultramafic to mafic plugs were discovered during the photo-interpretation and confirmed by subsequent field check. These consist of hornblende-pyroxenite to hornblende-melagabbro (appinite) and constitute a significant feature of this intrusion, and also appear to be a new discovery in the Helgeland district.

The easternmost part of the map is occupied by a belt of clearly metasedimentary rocks which include numerous marble-horizons as well as lime-schists, amphibolites and qz-rich members.

The pattern of structures in these lime-rich metasediments is clearly different from that of the remaining lithologies in the region, and they clearly constitute a supracrustal megaunit of their own.

Metamorphic grade is apparently somewhat lower than that of the banded and migmatized gneisses further west and apparently the latter constitute a possible base for the supracrustal schists and make up the host rock for most intrusions in the region.

Map-sheet VELFJORD.

Velfjord map 1:100.000 is published by NGU 1970 with brief description by Myrland (1970, NGU 274). The adjacent areas west and east of Velfjord are covered by mapsheets Vega (Gustavson, 1975, NGU) and Mosjøen (Gustavson, 1981, NGU 1:250.000), where brief descriptions are attached to the maps.

The Velfjord map covers the central part of the area of our main interest, and therefore a number of significant additional discoveries is related to this map.

A highly significant observation is the discovery of a mylonitized lower boundary to the Skomovik granite in the western part of the map. This is a clear thrust plane and suggest major division between the micaceous schists in the NW'ern part of the map and the migmatitic gneisses in the central portion of the map. Thrust direction was evidently towards NW as revealed by the deflection of the underlying schists against the thrust-border. Likewise, a remarkable retrograde metamorphism has affected the nearest 2-3 kms of the underlying gneisses, although a low angle of the thrust may suggest that only a few hundred meters below the thrust sole were affected (for further details is reffered to report by Almaas, 1982). (Fig 4).

The Velfjord plutons, previously described as syn- to late-kinematic intrusive bodies are believed to have acted as rigid bodies during deformation and thrusting, whereby they became slightly rotated relative to each other and completely wrapped into the highly incompetent marbles, which characteristically border most of these plutons. Metamorphic recrystallization has occurred along the margins, while the interior parts often are fresh and apparently have escaped any metamorphic recrystallization.

The plutons seem to have acted as rigid bodies during deformation and thus constitute megatectonic lenses which have escaped the strong compressional folding found outside this region of structural interference.

The Velfjord Tectonic lens is bordered towards west by the Skomovik thrust and towards east by the Langfjord formation (for further details about this unit see report by Birkeland & Kveen, 1982). The Langfjord formation comprise a group of well preserved metasedimentary schists, which have occasionally preserved primary structures such as gradational borders between lime-stones/marbles and lime-poor schists, as well as moderately deformed polymict conglomerates. Important hornblende schists and amphibole conglomerates are other essential constituents of the Langfjord formation as is the presence of several serpentinite bodies and lenses located along the sole of the Langfjord formation, suggesting the presence of another thrust zone here.

Although clearly too early to state definitively, this formation have a number of lithological elements which bear resemblance to olistostromes or melange-type deposits, although clearly not fully developed as for instance the typical Franciscan melange. This resemblance however may be of significant importance when considering the origin of precious-metal deposits.

Several additional serpentinite lenses occur elsewhere in the district. Particularly in the eastern part is a prominent line of serpentinite lenses which are aligned along the strike of foliation. This row is traceable both north and south of the Velfjord map sheet and clearly constitute a major tectonic zone along the eastern border of the Helgeland nappe.



Fig 4



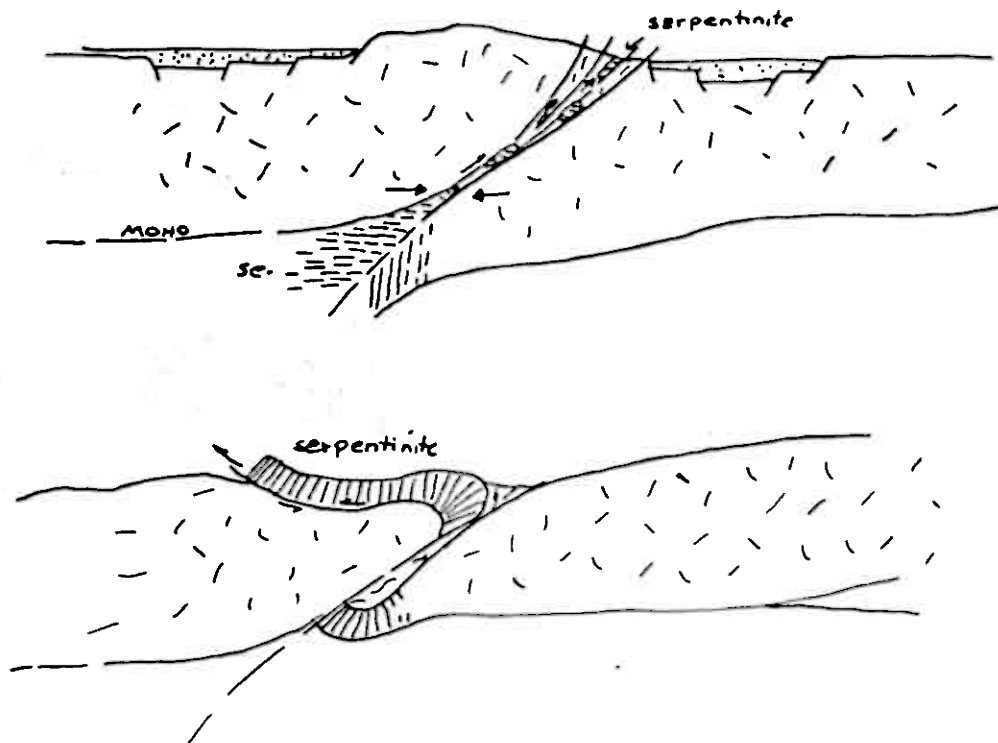
Fig 4 Skomovik granite thrust
upon retrograded micaschists. Seter-
åsen in upper left part.-seen towards
southwest

Fig 5. Conformable serpentinite lenses
in high-grade biotite gneisses. 3kms
east of Tosbotn.

Fig 5

It is interesting that these serpentinites are completely hosted within continental gneisses and metasediments. They are thus fundamentally different from serpentinites which are associated with ophiolite complexes as found e.g. on Leka SW of Velfjord and Bindal map sheets.

The principal difference lies in their lack of associated basaltic rocks^{which} indicate they are derived from hydrated upper mantle without substantial basalt formations. Such transformation of upper mantle is believed to occur above the Benioff-zone, and the resulting "continental" serpentinite may constitute fragments of such transformed mantle which was emplaced into the crust along regional fault-zones as the result of suction forces between the colliding plates (Fig 6 - 7) Their distribution would accordingly be indicative of a collision suture and also the position of possible conduits of solution from the upper mantle.



Principal types of serpentinite emplacements.

Upper figure illustrate the result of continent collision and transfer of highly mobile serpentinite towards the surface as the result of suction forces at the collision site. This serpentinite derives from the overriding plate and need not be associated with basic igneous materials.

Lower figure illustrate serpentinite emplacement as the result of ocean floor obduction in the later stages of a plate convergence. In this case the serpentinite is typically associated with vast amounts of basic igneous materials i.e. an ophiolite sequence, which include substantial parts of the former oceanic floor.

Appendix VII

List of unclaimed anomalies

SAMPLE NO.	AREA/MAP SHEET	Auppb
050062A	1925III MAJAVATN	7
160050	1826I MOSJØEN	171
160091	1825III BINDAL	7
180036	1925IV SVENNINGDAL	6
180209	1926IV DREVJA	33
180294	"	6
180309	1826II EITERA	8
210059	1825III BINDAL	7
210101	1825IV VELFJORD	7
210102	"	57
210133A	1825III BINDAL	48
210138	"	26