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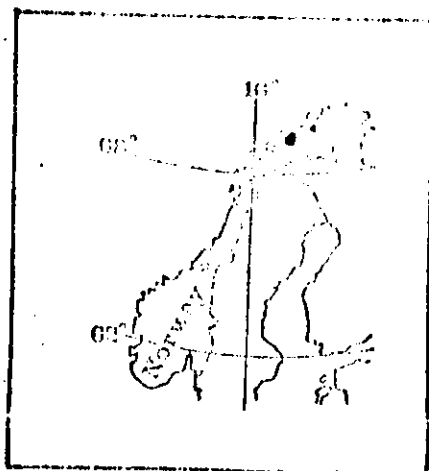
A/S SULFIDMALM

PROJECT 905-22

REPORT ON A STREAM SEDIMENT
SURVEY IN THE LYNGEN PENINSULAR,
1974.

BY

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Report Nr. 333/74/22

Introduction.

In 1973 A/S Sulfidmalm carried out a 2-month reconnaissance appraisal of the mineral potential of the West Finnmark and North Troms gabbro provinces (A/S Sulfidmalm Reports 279/73/22, 292/73/22, 293/73/22). As a result of this reconnaissance it was decided to concentrate follow-up work on the Lyngen gabbro body (Fig.1). Field work in 1974 consisted of geological and boulder prospecting investigations in areas identified during the 1973 field season, together with stream sediment coverage of the Lyngen Peninsula. The results of the stream sediment survey plus limited follow-up are presented in this report.

Method.

The Lyngen gabbro forms the rugged mountainous core of the Lyngen Peninsula. Streams are fast flowing and sampling conditions difficult. Samples were collected at pre-selected locations, at intervals of approximately 750 m along major streams and tributaries using NGU-style wet sieves. The sample interval used was based on orientation study carried out in 1973. Four 2-man sampling teams collected 290 samples during the six day survey. Samples were analysed in Vancouver for Cu, Ni, Co, Zn and Pb.

Results.

Stream sediment data are plotted in figs. 2 (a,b) and 3 (a,b). Data from the 1973 orientation study are also plotted. Inspection of the data indicates that areas underlain by the Lyngen gabbro and the surrounding High Grade metamorphic Complex and regional metasediments have a similar spread of Ni, Cu and Co stream sediment values. Zn values are generally low, but show some enhancement over the metasediments. Pb values are low and are not discussed further. In interpreting the data a single set of threshold values was used, with the following critical levels.

	Cu	Ni	Co	Zn	Pb
Background	<55	<45	<20	<50	<25
Possibly anomalous	55-75	45-65	20-30	50-70	25-35
Probably anomalous	75-150	65-100	30-50	70-100	>35
Anomalous	>150	>100	>50	>100	
Maximum value	365	350	78	340	65

Stream sediment anomalies and follow-up results.

The 1973 orientation sampling included a number of catchments already identified as "promising" by the reconnaissance block prospecting program and a major part of the 1974 field program was concentrated on following-up these areas. As the results of this follow-up work are presented separately (Report 334/74/22) only a brief summary will be given here. Shorter field examinations were made in other anomalous catchments revealed by the 1973 survey. The results of the 1974 stream sediment sampling programme were received shortly before the close of the field season. Follow-up examinations were made in the three catchments showing the highest copper values.

The main geochemical and geological features of the anomalous catchment are summarized below together with conclusions from field examinations. The anomalies are listed in order of apparent significance. Anomalies based on 1973 sampling are indicated by asterisks.

A. Kvalvikdalen* (fig. 3).

Max values: 288 ppm Cu, 350 ppm Ni, 54 ppm Co, 40 ppm Zn. The copper anomaly is more widespread than that for nickel and cobalt, some tributary streams showing highly anomalous Cu values, with background Ni and Co.

Results of follow-up in this area are discussed in report 334/22/74. Based on this work it is concluded that the stream sediment copper values indicate widespread but small-scale non-economic copper mineralization in the Kvalviksdal area.

Anomalous Ni and Co values are probably derived from the large Bredalsfjellet serpentinite.

B. Lyngsdalen - Veidalen * (fig. 3).

Max. values: 158 ppm Cu, 96 ppm Ni, 78 ppm Co, 54 ppm Zn.

Results of follow-up in Upper Veidalen are presented in report 334/22/74. Based on this work it seems most probable that Cu, Ni, and Co anomalies in the upper reaches of Veidalen are a reflection of slightly enhanced metal contents in an interlayered gabbro-dunite-pyroxenite cumulate phase recognised at the base of the gabbro complex in this locality.

Anomalous Cu values are also present in the tributaries of lower Lyngsdalen. These drain over High-grade Metamorphic complex rocks, and are not influenced by the gabbro. Mapping in Lower Lyngsdalen located pyritic horizons within the High Grade Complex metamorphics and it is probable that these are sufficient to account for stream sediment anomalies in the lower tributaries.

C. Steindalen (Fig. 3).

Maximum values: 275 ppm Cu, 105 ppm Ni, 65 ppm Co, 89 ppm Zn.

Field examination failed to reveal an explanation for the Steindalen anomaly. The main anomaly occurs beneath a cirque lake with good exposures in the Cirque walls, showing gabbro faulted against micaceous schists. There was no evidence of mineralization or ultramafic rocks in the gabbro exposure.

The Steindalen anomaly is ca. 2 km south-east of the Upper Veidalen anomaly, and possibly indicates a similar basal gabbro environment in the inaccessible mountain-ridges between the two drainages. The lower order Elvevollldalen anomaly (max. values 129 ppm Cu, 101 ppm Ni, 32 ppm Co, 151 ppm Zn) may indicate a southward continuation of this feature.

D. Fastdalen ^{*} (fig. 2).

Maximum values: 335 ppm Cu, 126 ppm Ni, 51 ppm Co, 64 ppm Zn. Anomalous values are essentially restricted to tributary streams draining the western valley slope of Fastdalen.

Field investigations showed that the anomalous tributaries drain a complex of interlayered gabbro and ultramafic cumulates, analagous to that found in the Upper Veidalen area. The ultramafic cumulates include pyroxenites and dunites, serpentinized to vaying degrees. This complex rests on a major thrust zone separating the gabbro unit from the underlying autochthonous metasediments, here represented by graphitic phyllites. The cumulate complex is overlain by relatively fresh gabbro.

Apart from very occassional specks of pyrite and/or pyrrhotite the ultramafic and gabbroic rocks are free of sulphide minerals. Concentrations of magnetite were found, particularly in serpentinites. Despite the good exposure on the west valley side no gossan indications were found and it seems probable that the Fastdalen stream sediment anomaly reflects enhanced Ni, Cu and Co contents in the ultramafic-cumulate phase of the gabbro.

Low order anomalous Cu values also occur in Tyttebærdalen, the southward extension of the former Fastdalen glacial valley. These may represent a dispersion tail from the Fastdalen anomaly or may reflect the pyritic shear-zones present around Brevatn. Samples collected in 1973 showed these to contain 0.10% to 0.19% Cu.

E. Rypedalen - Lysvatnet (fig. 3).

Maximum values: 174 ppm Cu, 90 ppm Ni, 57 ppm Co, 55 ppm Zn.

Anomalous values are confined to the main Rypedalen valley and the headwaters of the stream above Lysvatnet. If these anomalous drainage pattern are related to one another, this would suggest a source area in the region of Piggtind. Low-order anomalous Cu values in the headwaters of a stream draing the N.W slopes of Piggtind tend to support this view.

The anomalous area is entirely within the gabbro, although close to the western thrust contact. No obvious source for the anomaly was found during the course of a one day investigation of the main Rypedalen valley. An extensive serpentinite body was found on the west side of the valley, but tributaries draining over this have background metal values. This serpentinite carries occasional specks of pyrrhotite.

F. Russelvdalen (fig. 2).

Maximum values: 142 ppm Cu, 97 ppm Ni, 32 ppm Co, 81 ppm Zn.

The anomaly proper is confined to three streams forming the headwaters of Russelvdalen. Field investigation showed that this area is underlain by a sequence of inter-layered gabbroic and ultramafic cumulates, similar to those found at Upper Veidalen and Fastdalen. No sulphide minerals were found during the relatively short period spent at this locality.

G. Ellendalen (fig. 3).

Maximum values: 140 ppm Cu, 25 ppm Ni, 27 ppm Co, 37 ppm Zn.

The main anomaly is concentrated in the south fork of Ellendalen. Reconnaissance prospecting in 1973 located well mineralized (pyrrhotite) shear zones in this portion of the valley. Picked talus blocks showed low copper values with a maximum of 0.39% Cu. Other block finds in 1973 indicated higher copper values in a more felsic rock type. Field work in 1974 showed this rock type to occur as narrow (0.5-2.0 m) widely spaced mineralized dykes which of themselves are not of economic interest. This weak and widespaced mineralization is probably sufficient to account for the stream sediment Cu values.

H. Øvre Reinelva (fig. 2).

Maximum values: 365 ppm Cu, 82 ppm Ni, 54 ppm Co, 36 ppm Zn.

Anomalous values are concentrated in two tributary streams draining the south side of the valley.

Field investigations showed that anomalous tributaries drain chlorite-quartz schists in the transitional zone between the mylonites of the main thrust zone and the high grade metamorphic rocks of the gabbro aureole. These schists are pyritic and have a distinct rusty weathering colour. 1973 block finds suggest massive pyrite bands also occur within the chlorite-quartz schists, although assays showed low Cu and Ni values (max 0.24% Cu, 0.05% Ni). The pyrite content of the schists plus their rapid weathering to produce abundant limonite is probably sufficient to account for the stream sediment anomaly.

I. Strupskardet (fig. 2).

Maximum values: 163 ppm Cu, 186 ppm Ni, 51 ppm Co, 28 ppm Zn.

This area was followed up in some detail in 1973. Block samples indicated the possibility of weak primary disseminations of pyrrhotite and chalcopyrite in the gabbro. Assays of picked samples gave a maximum of 0.44% Cu, with three out of the five samples assayed having less than 0.2% Cu.

Shear controlled mineralization gave higher Cu assays. No work was done in this area in 1974.

J. Veidalen North (fig. 2).

Maximum values: 90 ppm Cu, 35 ppm Ni, 26 ppm Co, 17 ppm Zn.

No follow-up work was done on this area in 1974. Veidalen is 4 km north of Strupskardet and the anomalous stream sediment copper values could indicate a continuation of enhanced copper contents in the gabbro between these two valleys.

K. Fauldalen (fig. 3).

Maximum values: 90 ppm Cu, 27 ppm Ni, 23 ppm Co.

No follow-up work was done on this area in 1974. 1973's field work resulted in the discovery of a number of gabbro blocks carrying disseminated pyrrhotite. Assays showed maximum values of 0.18% Cu and 0.05% Ni.

Conclusions.

- a) The stream sediment geochemistry results appear to be sensitive to low-grade and widely dispersed mineralization.
- b) Interestingly the small but relatively rich nickel copper showing at Sleelva (fig. 2) (Report 334/22/74) did not give a stream sediment geochemistry response, despite its proximity to a high-level valley.
- c) The basal complex of interlayered gabbroic-ultramafic cumulates gives a characteristic response in the stream sediment data.
- d) The stream sediment data support the choice of areas followed up in 1974. They do not indicate any new areas of high copper mineralization potential.

