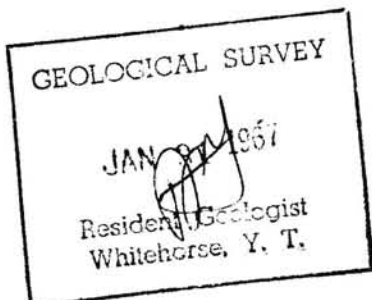


GLENLYON MINES LTD.
TEE, KLIK AND BUN CLAIMS
105-L-10, 62°40'N, 134°45'W
Whitehorse N.D., Y.T.

Report on
AIRBORNE GEOPHYSICAL SURVEY
AND GEOLOGICAL AND GEOCHEMICAL FOLLOW-UP
April 1 - November 30, 1966

by

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Accepted as construction work
under Section 24(4), Taxon Quartz
Mining Act.

[Signature]
COMMISSIONER OF YUKON

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1. INTRODUCTION

In early 1966, Glenlyon Mines acquired a 156-claim block staked in January and February of that year in the Detour Lake area, 85 miles NW of Ross River, Y.T.

An airborne geophysical survey was started at the end of April 1966 and subsequent exploration has added an additional 123 claims to the original holdings.

On October 4th, 1966, the writer submitted a report on the results of the summer's work on the property.

The present report is a summary of the work carried out on the original 156 claims, and has been prepared to accompany the application for a certificate of work on these claims.

This report deals with the airborne geophysical survey carried out over the 156 claims and immediately adjacent ground and the follow-up work on these claims, which consisted of linecutting and of geological and geochemical reconnaissance.

A subsequent report will deal with work carried out on ground staked essentially as a result of the airborne data after completion of the survey.

2. PROPERTY

This report deals with that part of the Glenlyon ground covered by the following claims:

<u>Claims</u>	<u>Grant Numbers</u>	<u>Date Recorded</u>
Tee 1 - 56	97580 - 97635	January 10, 1966
Klik 1 - 48	97636 - 97683	January 10, 1966
Bun 1 - 52	99682 - 99733	February 17, 1966

These claims are all adjoining and located on claim sheet 103-L-10. They are centered on Detour Lake, 85 air miles NW of Ross River, at Latitude 62°40'N and Longitude 134°45'W. (Fig. 1)

Detour Lake lies 138 air miles due North of Whitehorse and 60 air miles due East of Kelly River Crossing and of the Carmacks-Maye Road.

During the summer of 1966, the property has been serviced by float equipped Beaver aircraft from Whitehorse.

3. HISTORY

No significant previous development in the area is known to the writer. Some placer mining and prospecting has been carried out on Harvey Creek, South of the Tintina Fault, and a copper showing has been reported on this creek.

General prospecting is said to have turned up very promising copper-bearing float many years ago, but the writer has been unable to obtain factual confirmation of these rumours. These discoveries are alleged to have been made by a trapper-pro prospector who lived in a cabin some 3 miles Northwest of Detour Lake.

An examination of some old trenches South of the Gleniyon claims and staked by third parties as the Kay Group, about on the probable trace of the Tintina Fault, did not reveal anything of significant interest.

More recently, Gleniyon staked a number of claims in early 1966; other interests staked 128 claims along their North boundary.

Conwest Explorations staked about 400 claims just across the Pelly River to the Northwest of Gleniyon Mines in the early summer of 1966, and are conducting a substantial exploration project in the area.

4. REGIONAL GEOLOGY

1. Stratigraphy

The Detour Lake claims cover a part of a schist-conglomerate assemblage unique on the Gleniyon 1" = 4 mile geology sheet (103-L), where it is identified as unit 20.

A similar unit has been mapped on the Tay River sheet, adjoining the Gleniyon sheet on the East. On the former map-sheet, it is identified as unit 9, and has its greatest development in the Rose Mountain area, Southwest of the Faro deposit (Fig. 1).

In both the Detour Lake and the Rose Mountain areas, there is a strong development of coarse conglomerate, which, to the best of the writer's knowledge, is unique to these areas.

Near Rose Mountain, the pebbles in the conglomerate are a mixture of chert, quartzite, limestone and abundant andesite. At Detour Lake, the same type of coarse pebbles occur, but a white and grey quartzite pebble predominates, forming from 60 - 80 percent of the pebble mass.

The size of the pebbles varies from $\frac{1}{4}$ " to 1'.

This particular conglomerate unit overlies quartzites and schists on the Tay River sheet; the whole unit has originally been considered to be later than the volcanics of unit 8, but it is now thought to be the probable equivalent of unit 7. The latter is the productive schist-unit in the Anvil Range in which the massive sulphide bodies occur.

Unit 7 consists of an assemblage of chlorite-sericite-graphite schists with limey and quartzose beds.

Unit 8 is a volcanic unit consisting of schistose andesites and basalts with minor sediments.

On the Gleniyon sheet, there is a volcanic unit 19 of a character very similar to the Tay River unit 8, but originally considered to be of a later age (CIV, Carboniferous-Permian, (Fig. 1)).

On map 30-1963, a 1" = 30 mile map issued by the G.S.C., and showing age-correlations in the Y.T. and the N.W.T., and from which figure 1 of this report has been derived, the age distinction between the volcanic units of the Tay River sheet (8) and of the Gleniyon sheet (19), has been maintained.

On the Tay River sheet, these volcanics have been classified as of Mississippian and/or later age.

Field evidence suggests that these units (8 and 19) are probably one and the same.

These considerations lead to the conclusion that the Detour Lake and the Rose Mountain schists underlying the conglomerate may be parts of the same belt, and that this belt is probably the equivalent of the productive unit 7, underlying the volcanics.

An additional feature of interest, characteristic of unit 7 and 8, is the presence of ultrabasic bodies, the importance of which increases as these units are followed to the Southeast from Ross River.

The ultrabasics are usually serpentized and accompanied by significant positive magnetic anomalies. They are frequently associated with ferruginous siliceous dolomites, which sometimes carry significant amounts of mariposite. The exact spatial relationship between these two rock formations is not known.

Ferruginous dolomites are present on Gleniyon's claims North of Detour Lake, but it is too early to say whether or not they are of the type associated with serpentized ultrabasics. Some serpentized rock was found associated with sericite schists.

In summary, the Gleniyon holdings cover a belt of schists and conglomerate thought to be the equivalent of part of the ore-bearing schist belt in the Anvil Range.

2. Structure

The main structural feature of the area is the Tintina Fault. This is believed to be a transcurrent fault with a 250 mile righthand lateral displacement (G.S.C. paper 63-2, page 37). This concept, although not yet considered proven, is based on sound evidence.

A reconstruction of the geological map before this movement took place, brings the Klondike gold-bearing schist belt as far South and to the West of the Anvil Range zinc-lead-copper schist belt. The actual movement may have extended from the late Paleozoic into the Tertiary, the oldest formations showing the largest offset.

This type of transcurrent fault is usually very straight, and indeed the Tintina Trench can be traced as a relatively narrow and deep valley from a point North of Watson Lake to the Alaska boundary North of Dawson City and beyond.

In the Detour Lake area however, this alignment has been disturbed and it has so far not been possible to pinpoint the location of the Tintina Fault, which is shown on figure 1 in the position recorded by the G.S.C.

In this area there is undoubtedly post-Tintina movement, but any attempt to formulate a rational hypothesis would be premature.

Problems of the age of the granite intrusions and of the "Tertiary" basalts require more specific solutions before the nature of the disturbance of the Tintina Fault can be considered.

This problem is akin to the one concerning the relationship between the Tintina Fault and the Rocky Mountain "Fault" in the Watson Lake area, where there is a marked offset between the two, probably related to a Northeast trending basement structure.

In the Detour Lake area, the Tintina Fault appears to curve Westward, and this interpretation is supported by the airborne magnetic maps 105-L-1 to 16 recently issued by the G.S.C. at a scale of 1" = 1 mile.

These considerations suggest that the Detour Lake area is close to a zone of maximum crustal fracturing at the intersections of two important structural trends, which is a characteristic of many ore-bearing districts.

3. SUMMARY

The Detour Lake area exhibits a rock sequence which is the same as the one Southwest of the Faro Creek-Vangorda Creek area. Coarse conglomerates occur uniquely in these two belts, overlying a schist formation which is now considered to be the equivalent of the productive unit 7.

Structurally, a cross-disturbance affects the Tintina Fault in the Detour Lake area, indicating an area of maximum fracturing.

In view of these two features alone, the Detour Lake is considered one of above average potential which warrants careful prospecting. Recent mineral discoveries made on Gleniyon ground have added appreciably to the attractiveness of this favorable area.

5. AIRBORNE GEOPHYSICAL SURVEY

A combined magnetic and electromagnetic survey using Lockwood Survey Corporation's helicopter-borne equipment was chosen as the most rapid and economical tool for preliminary exploration of Gleniyon's 156 claim group and immediately surrounding area.

This method will detect formations that are electrically conductive, and subsequent work can then be concentrated over and near these zones, by using geochemical and geophysical reconnaissance methods.

This method of initial reconnaissance is particularly suited to areas without a well defined drainage pattern along which stream silt sampling could provide complete initial reconnaissance. It is also the best tool for areas with relatively deep overburden and few outcrops.

Both these conditions prevail on most of Gleniyon's ground.

The Lockwood method uses a single frequency of 4000 cps to generate a primary electromagnetic field. The transmitter loop is carried in a fiberglass bird and is oriented with the loop axis parallel to the direction of flight. A receiving loop is located 30' away in the other end of the bird; the loops are coaxial.

The bird is suspended at the end of a 70' cable and is towed by a helicopter at an elevation of 100' above the ground.

A magnetometer of the Gulf Mark III type, also located in the bird, measures the total intensity of the magnetic field.

Recorders and a positioning camera are carried on the helicopter and are handled by an operator who indicates to the pilot the planned course plotted on 1" = 1320' airphotographs and who marks fiducial points on the recorder's strips.

In general, the flight lines are laid out at right angles to the strike of the formations and at distances varying from 600' to 1500' apart.

If a conductive body in the ground is crossed by the helicopter carrying this equipment, the primary electromagnetic field creates eddy currents in this conductor which cause the generation of a secondary electromagnetic field. This secondary field is generally of the same frequency as the primary field but out-of-phase with it; it is detected by the receiver loop in the bird.

As a variation in the distance between the transmitter and the receiver coils will create a strong in-phase response, both coils are in a fixed position in the relatively rigid bird. This will eliminate false responses. Increasing out-of-phase responses will be obtained over bodies of low to medium conductivity; as the conductivity increases beyond the medium range, the out-of-phase response falls off again.

In-phase responses are increasingly stronger as the conductivity rises from poor to very high.

The strength of the response is measured in parts per million. For the above-cited reasons, the ratio of the in-phase to the out-of-phase responses is less than one for bodies of poor to medium conductivity and increases rapidly as the conductivity varies from medium to high.

The response is also a function of the size of the conducting body and of the distance from the bird to it.

The maximum distance at which a highly conductive body of large size will give a response is still somewhat unknown, but appears to be about 300' between the bird and the top of the conducting body.

Various geological bodies are electrical conductors and geological conductors are manifold and of greatly varying size, shape and conductivity, the latter often being a function of the internal texture of the conductor.

Some examples of conducting bodies are:

- Massive pyrrhotite
- Massive pyrite
- Disseminated pyrrhotite and/or pyrite
- Graphitic schists
- Talc schists, especially when wet
- Chlorite-(serpentine) schists
- Wet overburden in swamp
- Lake-bottom deposits
- Wet shears

Due to their schistose nature, graphitic schists may be excellent conductors if the individual graphite flakes form a conductive layer.

Massive sulphide bodies with 10 - 20% interstitial quartz may be excellent conductors if the main sulphide is pyrrhotite and if the individual grains of sulphide have large contact areas.

Their conductivity drops off rapidly if the main sulphide is pyrite and if the individual iron sulphide grains are isolated by interstitial non-conductors like silica or sphalerite.

For these reasons, a combined magnetic - electromagnetic airborne survey is essentially a geological mapping tool, especially so as the amount of magnetite in rock is even more of a geological variable than conductivity.

The reliability of the method is principally a function of the elevation above ground that can be maintained. Correlation of responses on adjacent lines flown at different elevations, due to weather or topographical conditions, may not be satisfactory. This happens if the survey is flown with too light a helicopter.

Providing the bird is flown at a steady elevation above the ground, interpretation of airborne data is largely a function of the geological conditions.

Different geological environments will lead to different appraisals of quantitatively very similar airborne geophysical responses.

In general, experience has shown that long conductors (several thousand feet or several miles) with relatively low ratios of 1 or less are likely to be of a formational nature, like graphitic schists. Smaller conductors of better than 1, or preferably 2, ratios may represent near-surface sulphide occurrences.

In certain areas, coincidence of magnetic and electromagnetic highs is critical because of an association of sulphides and magnetite. Most magnetic highs are however a reflection of increased magnetite content of the underlying rock formations, and high magnetic readings may have no more than a very indirect relationship to unusual sulphide concentrations in any given area.

Other geological factors complicating a qualitative interpretation are, for example, the frequent association of graphite and sulphide bodies or the presence of sulphide deposits the mass of which is buried beyond the range of the electromagnetic field but that do have a small near-surface expression.

An airborne geophysical survey should therefore be considered as a mapping tool enabling the exploration effort to be directed towards limited portions of the area flown and further ground work in restricted areas should use methods like geological mapping, geochemical reconnaissance, ground EM and gravity to assess conductors or magnetic highs detected by airborne methods.

6. GLENLYON AIRBORNE SURVEY

A total of 210 line-miles were flown with the Lockwood helicopter-borne combined electromagnetic and magnetic equipment between April 27th, 1966 and May 6th, 1966 (Fig. 2).

Of this survey, 170 line-miles are applicable to the 156-claim group under discussion and to the immediately adjoining area. Flight lines were spaced initially at 1320', with fill-in lines at 660' and the lines were laid out at a right angle to the anticipated overall strike of the formations.

As is usual in such surveys, lines were flown beyond the property boundaries for two reasons:

- (1) to position the helicopter on the correct line after the turnaround.
- (2) to delineate magnetic and conductive zones sufficiently to determine whether significant folds or changes of anomaly-intensity occur near or at the property boundaries.

The tapes were examined in the field, which led to the decision to fly additional fill-in lines at 660' and to stake additional ground.

Subsequently, a preliminary data reduction was prepared by Exploration Geophysics (Yukon) Ltd. The discovery of several electrically conductive zones of interest led to the decision to evaluate the conductive zones by reconnaissance geological mapping and soil sampling, but to postpone a further detailed data-reduction of the magnetic profiles until the ground-reconnaissance work has provided a better insight into the prevailing geological conditions.

A. Flying conditions

The survey crew was based at Drury Lake, 35 miles South of Detour Lake, where a camp was temporarily rented from an organization who had conducted an airborne survey in another part of the area.

Flying was hampered by a helicopter breakdown after only about 20 line-miles had been flown and by subsequent unsuitable weather conditions. The first lines were flown on April 28, 1966 and the last lines on May 5, 1966.

Topography was found to be fairly suitable for the capacity of the Bell 47G3 used for the survey and elevations above ground were, in general, within the limits of specifications.

Under the generally windy conditions prevailing during the survey, considerable credit is due to the pilot of the helicopter, G.F. Kerr, for flying this survey in crosswinds and at right-angles to the topographical grain of the area.

As claim boundaries were well identified by the location lines, no identifying line-cutting was required previous to the airborne survey.

B. Magnetic results

Several quite sharp anomalies of about 1000 gammas above background were detected and a considerable number of 100 - 200 gamma variations were recorded.

The magnetic results were used as a general guide only and no detailed data reduction for a standard airborne magnetic map was requested from the contractor, Lockwood Survey Corporation.

There were several reasons to postpone this data reduction:

- (1) The G.S.C. was expected to publish an airborne magnetic map of the area, subsequently issued on August 31, 1966.
- (2) Deep overburden in the centre of the valley suggested unreliable correlation of the variable magnetic pattern over the central part of the survey.
- (3) Outcrops on the edge of the valley and the location of various conductive zones suggested that a geological-geochemical follow-up would initially be more fruitful.
- (4) Sufficient data were available on the only near-coincident airborne magnetic-electromagnetic high (on the Sun claims) to identify it and to proceed with ground work.
- (5) The airborne magnetic pattern near the mouth of Harvey Creek is obviously a reflection of magnetite in the overburden.

A review of the data after release of the G.S.C. high-level airborne magnetic maps has since indicated that a more detailed analysis of the magnetic pattern obtained by the low-level Lockwood method will be of value and that the high-level pattern can be used as a good guide in the areas of deep overburden. There is also a suggestion that the

location of several of the conducting zones is related to broad folding indicated by the G.S.C. survey.

A detailed data reduction of the Lockwood magnetic profiles is therefore recommended.

C. Electromagnetic results

Conductive zones on the claims under consideration exhibit in general weak to medium conductivity of the order of 20-50 parts per million. In-phase to out-of-phase ratios vary from less than one to about 3, with some perfect conductivity (out-of-phase = 0) in occasional locations.

Geologically, the conductive zones can be grouped into 4 categories:

(1) Very long conductors along the North boundary of the Tee claims, reflecting most likely the presence of a conductive schistose formation, although no graphitic schists were observed.

Any geochemical base-metal highs along a conductor of this type could reflect the presence of a sulphide body associated with the schists and work is proceeding on this assumption.

(2) Isolated weak to medium conductors with ratios up to 3. A number of these were found, mostly in two NW trending alignments South and Southeast of Detour Lake.

These alignments correspond to pronounced lineaments, well visible on airphotographs of the area and in the rocky hills North of Detour Lake. They are strongly suggestive of significant fracture zones lying on echelon between two or more branches of the more westerly trending Tintina Fault.

This gives significant support to these electromagnetic anomalies, which could reflect the presence of sulphide concentrations lying at a shallow depth along the postulated fracture zones.

These conductors provide therefore excellent targets for geochemical exploration and initial work of this type has provided definite encouragement.

(3) Large weak to medium conductors, with ratios of about one. These are typical lake-bottom reactions, as shown by the conductivity induced by Detour Lake itself. Some of the smaller weak conductors with a low ratio lying near small lakes, may reflect similar conditions under bog-filled lakes.

Analysis of the morphology surrounding the smaller conductors will permit a better assessment; in low-lying ground, a geochemical high over a conductor such as these would have to be strong to assess it as possibly reflecting a base-metal bearing occurrence.

It will be noted that alternate lines over Detour Lake show alternating very weak and weak to medium conductivity. This is related to the fact that the lines with stronger response were flown as fill-in lines under better weather conditions on a different day than those with the weak response. This feature may therefore be attributed to flying somewhat closer to the lake; the ratios remained at about one in most cases.

(4) One near-coincident magnetic-electromagnetic high on the Bun claims is geologically of interest in that it lies just south of the only outcrop of rhyolite found on the property. A geochemical investigation of this conductor by sampling at 100' intervals on 400' picket lines is therefore strongly recommended and preparatory line-cutting has been completed.

D. Summary

Magnetic results of the airborne survey have been used as a guide and are expected to be of additional value when a detailed data reduction is made, using the G.S.C. airborne magnetic maps as a guide. The magnetics have indicated one conductor which is different from all others in that it is located on the flank of a magnetic high. Geological reconnaissance has proven a unique relationship of this conductor to the only occurrence of rhyolite on the property. These associations are geologically favorable and a geochemical investigation of this area is recommended.

Electromagnetic results have indicated a number of isolated conductors lying along pronounced lineaments which are interpreted as an echelon fracture zones between two segments of the Tintina Fault.

These conductors merit therefore detailed geochemical exploration, part of which has been completed with encouraging results.

A number of other conductors are related to bog or lake-bottom effects, but where doubt exists, these conductors should be further investigated on the ground, preferably by geochemical reconnaissance.

7. LINESCUTTING

Using float planes for transportation, camps were successively set up during the summer, starting late in May, on the South shore of Detour Lake, on the Folly River and on the North shore of Detour Lake.

Chained reference lines were cut in a general NNE-SSW direction starting at significant topographical marker-points or at claim posts, as required.

The initial geochemical reconnaissance was carried out on lines approximately parallel to selected flight lines and initial geological reconnaissance was carried out using airphotographs in areas estimated to have a fair proportion of outcrop.

Subsequently, several base-lines were laid out on a ESE-WNW bearing and 400' grids were cut on the basis of either the airborne results alone, as on the Elm near-coincident magnetic-electromagnetic anomaly, or on the basis of a combination of airborne results and geochemical reconnaissance, as on the Klik.

The total line mileage cut on the 156 claims under consideration is 36 miles, consisting of 26 line miles of base-lines and 10 line miles of picket lines.

8. GEOLOGICAL MAPPING

The initial efforts were directed towards obtaining a broad general picture of the rock formations on the property and discovering any occurrences of base-metal sulphides which might be present.

Some more detailed reconnaissance was done in areas which appeared to be of interest, including some trenching by blasting.

It is planned to do detailed geological work along the 400' picket lines in areas where geochemistry has indicated exploration targets; on many parts of the South half of the property, dense alder growth covers areas of light overburden with a good deal of outcrop.

Results of reconnaissance mapping to date are as follows:

A. Lithology: the following formations have been distinguished:

(1) Schists. Many of these are rather slates or thin-bedded to laminated slightly metamorphic argillites. Some members are quartzitic, many are limy, some are black and carbonaceous. Detailed work is

required to determine whether or not the schist formations North and South of the Lake belong to the same stratigraphic unit. To the Northeast, chloritic schists are probably derived from volcanic rocks.

(2) Sericite schists. Various sericitic schists occur. North of the Lake, some serpentinized rock was found associated with these. South of the Lake, sericitization appears to be more widespread; due to the dense growth of alders, detailed work can only be done after line cutting.

(3) Quartzites, dolomites and some limestone are characteristic of the formations North of the Lake. The dolomites are of the ferruginous type. They weather a red chocolate-brown and occur in beds up to over 100' wide. Quartzites become more pronounced towards the Northwest end of the Lake where they appear to form a series about 1000' wide.

(4) The coarse conglomerate is confined to the ridge lying South of the Lake. Pebbles are packed fairly tightly, and vary in size from $\frac{1}{4}$ " to 1'. 60 to 80% of the pebbles consist of a grey quartzite. The remainder consists of argillaceous siltstones, chert, quartz and andesite pebbles, all fairly loosely cemented.

(5) Tuff and rhyolite. Tuffs may be more widespread than observed so far, particularly amongst the sericitic and chloritic schists.

Rhyolites occur in a narrow band along the Northeast foot of the conglomerate ridge. They are unusual in this area and their presence could have an economic significance; they border a sharp magnetic high with a conductive zone on its flank.

(6) Andesites. Andesite dykes or flows occur along the Felly River striking in to the Northeast portion of Glenlyon's ground and can again be recognized on the hillside; occasionally a coarse grained diorite-gabbro type has been observed but no obviously large masses of these have been found in place.

(7) Alterations. South of the Lake, the relation between sericitic schists and the more slaty formations could not yet be established. Where observed by the writer, the sericitization appeared to be of a metamorphic rather than of a hydrothermal type, but this is by no means certain.

On the Northwest portion of the ground, there are intensely cleaved fine grained, limy dolomites, heavily stained by dark brown iron oxides along cleavage and joint planes.

In the small creek one mile and a half Southeast of Detour Lake an irregularly quartzified and pyritized 2½' wide limestone bed in schists in an area of folding and minor faulting carries minor chalcopyrite; it is exposed for a length of about 100' and assayed 0.3% Cu.

(8) Mineralization. In summary there is no conclusive evidence of widespread alteration of a definite hydrothermal type. However, both the sericite schist area South of the Lake and the chlorite schists in the East portion of the property may be related to alteration of this type. The abundant iron staining in the Northwest part of the claims is of a type similar to that often found in rusty halos around centres of mineralization.

It is in these three areas that minor chalcopyrite has been found in the course of claim-surveying, usually as occasional spotting in chloritic rock. One of the areas has a good geochemical anomaly (No. 1) and in the chlorite schist area, initial soil-sampling results have given some high copper values (geochemical area No. 2).

As can be seen on figure 3 these areas also exhibit some interesting conductors, and the showing found in the small creek near the peak of geochemical anomaly No. 1 is located close to a significant isolated EM anomaly.

B. Structure

The bedding Northeast of the Lake strikes predominately from N30°W to N80°W. Dips are from 30° - 80° SW, but steep NE dips also occur.

South of the Lake, strikes observed by the writer are WNW in the conglomerate; in the schists to the South strikes vary from E-W to N30°E; dips observed varied from 30°SE to 70°W, suggesting significant folding.

Dragfolds have been observed in the area North of the Lake; one good attitude measured showed a strike of N40°W, dip 40°SW, with a reversed dragfold with a 1' amplitude plunging about 5° due West.

These observations are very much in line with the G.S.C. aeromagnetic results, which suggest a broad fold with local crumples.

Air-photogeology adds considerably to the geological picture.

The main photo-lineaments lie parallel to the direction of the main valley in a WNW direction, but strong lineaments are also

visible on the higher ridges to the North of Detour Lake, trending NW to NE to E-S in a belt corresponding closely to the low magnetic area outlined by the 3200 gamma contour on the G.S.C. aeromagnetic map.

The main lineament can be followed for about 8 miles, crossing the lake and gradually curving into what may be the Tintina Fault.

These lineaments are interpreted as an echelon fracture zones between two main branches of the Tintina Fault. Geochemical work has suggested that they may be of economic significance.

C. Showings

An outcrop of sericite schist was opened up by blasting following the finding of some pyrite and chalcopyrite. This was found to be local; the writer took sample 8090 in the face over a length of 6', consisting of sericite schist with some fine sulphide dust.

The creek showing exhibits a washed and quartzified 2 1/2' wide blue limestone bed with blobs of pyrite and minor chalcopyrite, exposed for a length of 100'. The writer took one representative chip sample across two lines about 30' apart on this showing as sample 8091; strike E-W, dip 30°N.

Results were as follows, as assayed by the Whitehorse Assay Office:

	<u>% Cu</u>	<u>% Zn</u>	<u>oz/t Ag</u>	<u>Remarks</u>
8090	tr	tr	.24	unusual silver
8091	.30	tr	.20	significant copper

Minor occurrences of chalcopyrite in chlorite rocks with quartz and calcite veining have been observed on both the NE and the NW portions of the property.

Although non-commercial, the creek showing demonstrates the presence of bedding-controlled copper mineralization.

D. SUMMARY

The association of sericite and chlorite schists and lesser amounts of quartzite and minor limestone with volcanic schists, ferruginous dolomites and probably serpentines is a favorable one. The suggested minor folding related to broader folds and strong cross faulting or fracturing at a significant angle to the Tintina Fault direction constitutes

another favorable set of conditions for the occurrence of significant base-metal deposits.

Minor showings suggest strongly that the area is higher in copper than average; a bedded non-commercial pyrite-chalcopyrite showing proves the presence of the looked-for type of mineralization. These considerations have received strong support in work performed on Glenlyon's adjacent claims, to be discussed in a separate report.

9. SOIL SAMPLING RESULTS

A. General Reconnaissance

The initial policy consisted of reconnaissance type soil sampling without line cutting in areas where interesting conducting zones had been located by the airborne work, and in some test areas without conductors.

The purpose of this phase was to acquire background information and to find any unusual high values for follow-up.

Samples were taken as much as possible by auger, at a depth of 18". Two factors were found to interfere with this work: small areas of patchy permafrost could not be properly sampled and volcanic ash occurred occasionally in quite substantial layers or pockets in places up to several feet thick.

Tests over heavily overburdened areas showed insignificant values, and taking all factors into consideration, the following background values were arrived at:

Zinc 0 - 50 ppm
Copper 0 - 25 ppm
Lead 0 - 20 ppm

No effort was made at this stage to obtain vertical profiles in the various soil types; it was found, however, that volcanic ash showed consistently low to nil values, as is usually the case elsewhere.

B. Reconnaissance SE of Detour Lake

Started on 4 lines (346 to 376), the initial reconnaissance showed a weak but definite trend in a NNW - SSE direction, entirely independent from topography and crossing a long depression considered to be a glacial meltwater drainage channel.

An additional 3 lines, (386 to 406) were then sampled, confirming this trend and showing the highest values near topographical highs where the overburden was found to be probably only a few feet thick.

A contoured interpretation of the results is shown on figures 4, 5 and 6.

Peak values are: Cu 186 ppm, Zn 440 ppm, Pb 84 ppm.

By this time, it had become evident that the trend of the above background values corresponded closely to the trend of several conductive zones and in addition followed one of the NW-SE lineaments.

Also, in the Creek further to the SSE, a showing carrying pyrite and chalcopyrite in a 2½' wide limestone bed was discovered. (Figure 2).

This reconnaissance anomaly was therefore considered to be significant and was followed up by linecutting and more detailed sampling on picket lines 400' apart.

C. Detailed Soil Sampling

The results of this survey have been plotted on figures 7, 8 and 9.

The position of this survey in relation to the reconnaissance is shown on the previous figures 4 - 6.

The detailed soil sampling confirmed and extended the information gained from the reconnaissance, although peak values were lower (Zinc 190 ppm, Copper 115 ppm and Lead 46 ppm).

Once again, the better values were found on the higher ground, with little evidence except for zinc, of concentrations in drainage depressions.

The results of this survey are interpreted by the writer as an indication of unusually high copper content in the rocks near the anomalies. In the writer's opinion, the values are too low to assume that a body with economical values has an outcrop in the peak areas, but they suggest that the underlying formations may be part of a halo around a much higher grade buried concentration.

The presence of pronounced lineaments, of significant EM anomalies and of folding in the nearby rocks, and especially the presence,

on strike, of a pyrite-chalcopyrite showing in limestone, all suggest that the area with the geochemical highs, especially the copper and lead ones, is a very good exploration target. This target warrants further investigation by deep-penetration electromagnetic methods. If for instance, a significant IP anomaly were obtained in this area, the geological environment and the geochemical highs would provide considerable support for good odds of success.

D. Other Areal Work

Reconnaissance soil sampling has been carried out on adjacent claims, also owned by Glenlyon Mines, but not included in the area covered by this report.

A subsequent report will be issued on these other claims, but soil sampling has provided valuable comparative information.

For instance, to the NE of the present claims, a geochemical anomaly under quite similar conditions has been discovered on a wooded gentle hill, near a comparable lineament. Peak values in this anomaly are very significant with Copper 420 ppm, Zinc 1860 ppm and lead 52 ppm.

This particular anomaly occurs in shallow overburden (estimated at 5' - 15') over very similar schists associated with chlorite schists of probable volcanic origin. Stratigraphically these schists appear to lie perhaps a 1000' - 2000' away from siliceous ferrodolomites assaying about 0.15% copper over an exposed width of about 40' in locations about 1500' apart.

Again, significant folding has been noted in exposures a short distance away from this particular anomaly.

It is therefore concluded that the approach using reconnaissance and detailed soil sampling on the claims under consideration, is a valid one, and that any significant copper anomaly supported by eminently favorable geological features fully warrants further follow-up.

10. PERSONNEL AND COSTS

Statements regarding the personnel having worked on the claims and the expenditures that have been incurred will be submitted in separate documents by Glenlyon Mines Ltd.

11. SUMMARY AND RECOMMENDATIONS

The work completed to date by Glenlyon Mines on the Tee, Klik and Bun claims has shown that a number of electromagnetic anomalies of a type often associated with sulphide bodies buried at a depth of up to 200', occur on the property. Several of these anomalies lie along pronounced lineaments.

Rock formations are of a schistose type comparable to the type occurring in the Vangorda Creek area, and may be their stratigraphic equivalent.

Geochemical anomalies with significant values in copper and zinc, as well as lead, occur near these lineaments and near some of the electromagnetic anomalies, and in those areas where reconnaissance has been carried out with sufficient detail, significant folding is indicated near these anomalies.

As a result, a program for a total cost of \$230,000 has been recommended on the total of Glenlyon's 279 claims in the area.

This program, the details of which are being worked out, consists of geological mapping, further geochemical prospecting, line-cutting and geophysical surveying for about half the above amount, the rest being reserved for core drilling.

On the basis of presently available information, the writer fully expects that at least one drill target will be present on the claims under consideration.

It is therefore suggested that about half the total expenditure provided for the total of 279 claims will be applicable to the three blocks discussed in this report.

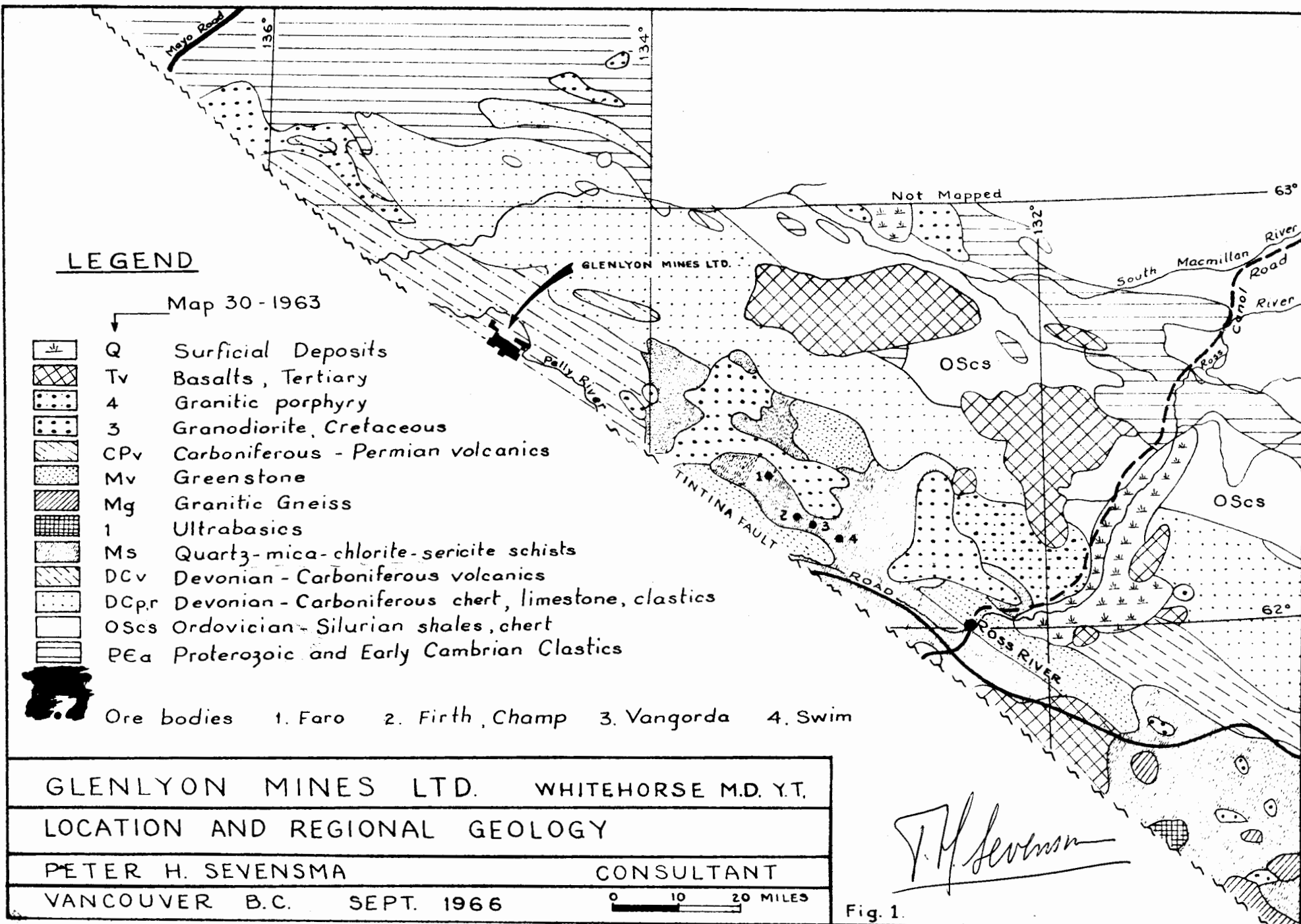
In summary, the Tee, Klik and Bun claims cover a belt of rocks where economic deposits of copper-zinc with minor lead may be present and an expenditure of from \$100,000 to \$115,000 is recommended for these claims, with approximately half allocated for surface exploration and the remainder for core drilling.

Respectfully submitted,




F.H. Severson, Ph.D., P. Eng.

January 9, 1967



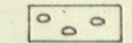

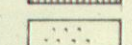
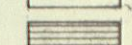

FLIGHT LINES 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 FLIGHT LINES

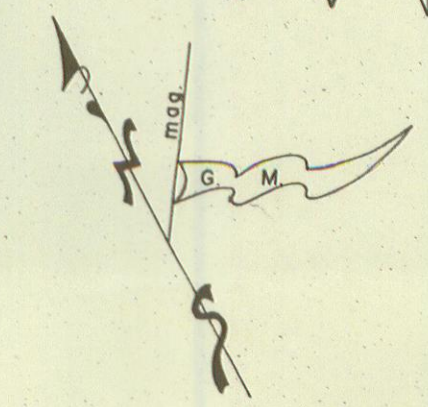
FLIGHT DIRECTION


Note: Lines on which direction is not indicated were not flown.



LITHOLOGIC UNITS

- Conglomerate 
 - Rhyolite 
 - Quartzite 
 - Argillites, Phyllite, & Calcareous schist 
 - Sericite schist (locally serpentinized) ferrodolomite - a diagnostic unit 
- Basic volcanics and/or intrusives were observed adjacent to the map area.
- S = Showings; pyrite, chalcopyrite, etc. (see text)



J.P. Stevens

RECONNAISSANCE GEOLOGY & LANDFORM MAP

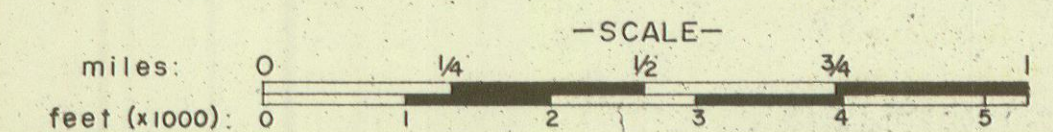
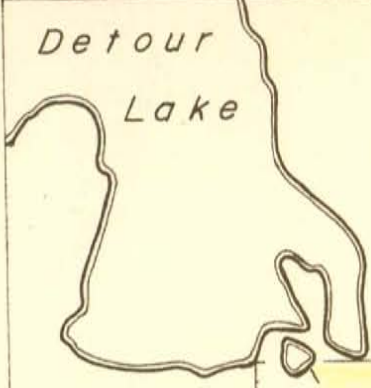


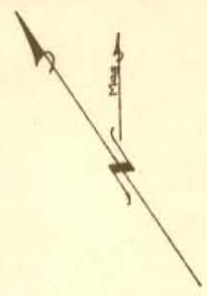
FIG. 3

GLENLYON MINES LTD.
 AIRBORNE GEOPHYSICAL SURVEY
 Whitehorse M.D. 105 L-10
 P.H. Sevensma Consultants Ltd.
 715-850 W. Hastings, Vancouver, B.C. - Dec. 1966



— LEGEND —

- < 50 parts per million
- ≥ 50 p.p.m. < 100 p.p.m.
- ≥ 100 p.p.m. < 150 p.p.m.
- ≥ 150 p.p.m.



Baseline E

10+00S

20+00S

40+00S

50+00S

60+00S

70+00S

Baseline F

slough
insufficient
data

Outline of area covered
by detailed survey

L-37 G

L-38 G

L-39 G

L-40 G

L-34 G

L-35 G

L-36 G

ZINC PLOT

FIG. 4

GLENLYON MINES LTD.

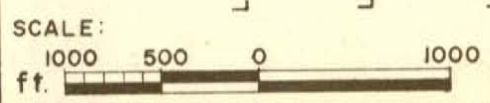
Reconnaissance Geochemical Sampling

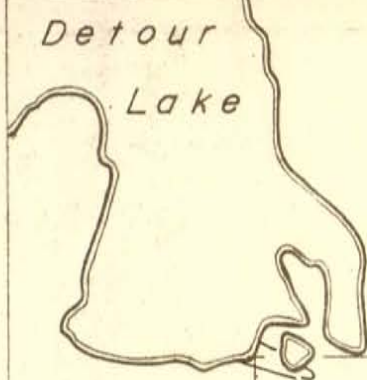
Whitehorse M.D.

105 L-10

P.H. Sevensma Consultants Ltd.

715-850 W. Hastings, Vancouver, B.C. Jan. 1967





- LEGEND -

- < 25 parts per million
- ≥ 25 ppm. < 50 p.p.m.
- ≥ 50 p.p.m. < 100 p.p.m.
- ≥ 100 p.p.m.



Baseline E

10+00S

20+00S

40+00S

50+00S

60+00S

70+00S

Baseline F

slough

Insufficient data

Outline of area covered by detailed survey

L-37 G

L-38 G

L-39 G

L-40 G

L-34 G

L-35 G

L-36 G

J.H. Johnson

COPPER PLOT

FIG. 5

GLENLYON MINES LTD.

Reconnaissance Geochemical Sampling

Whitehorse M.D.

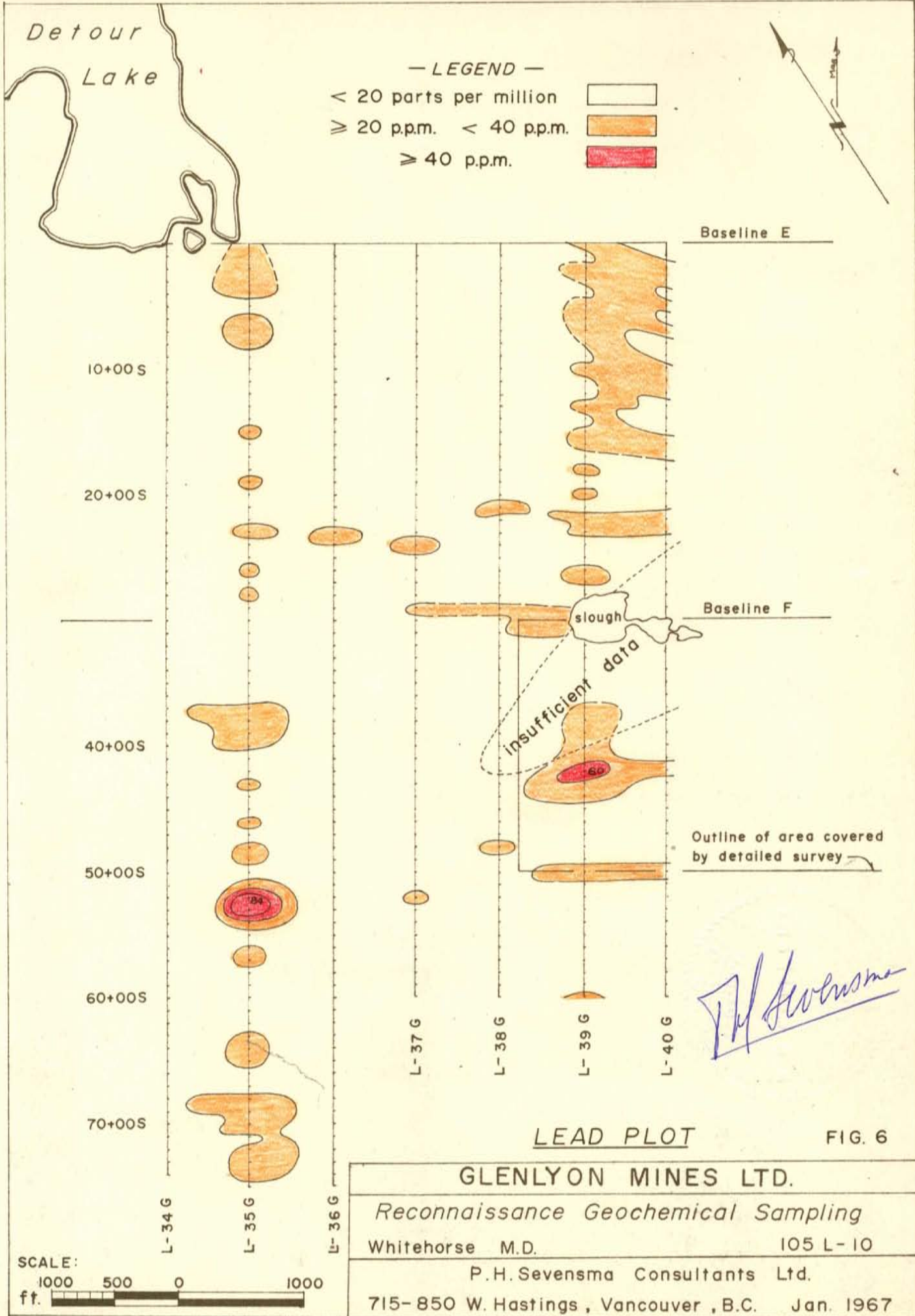
105 L-10

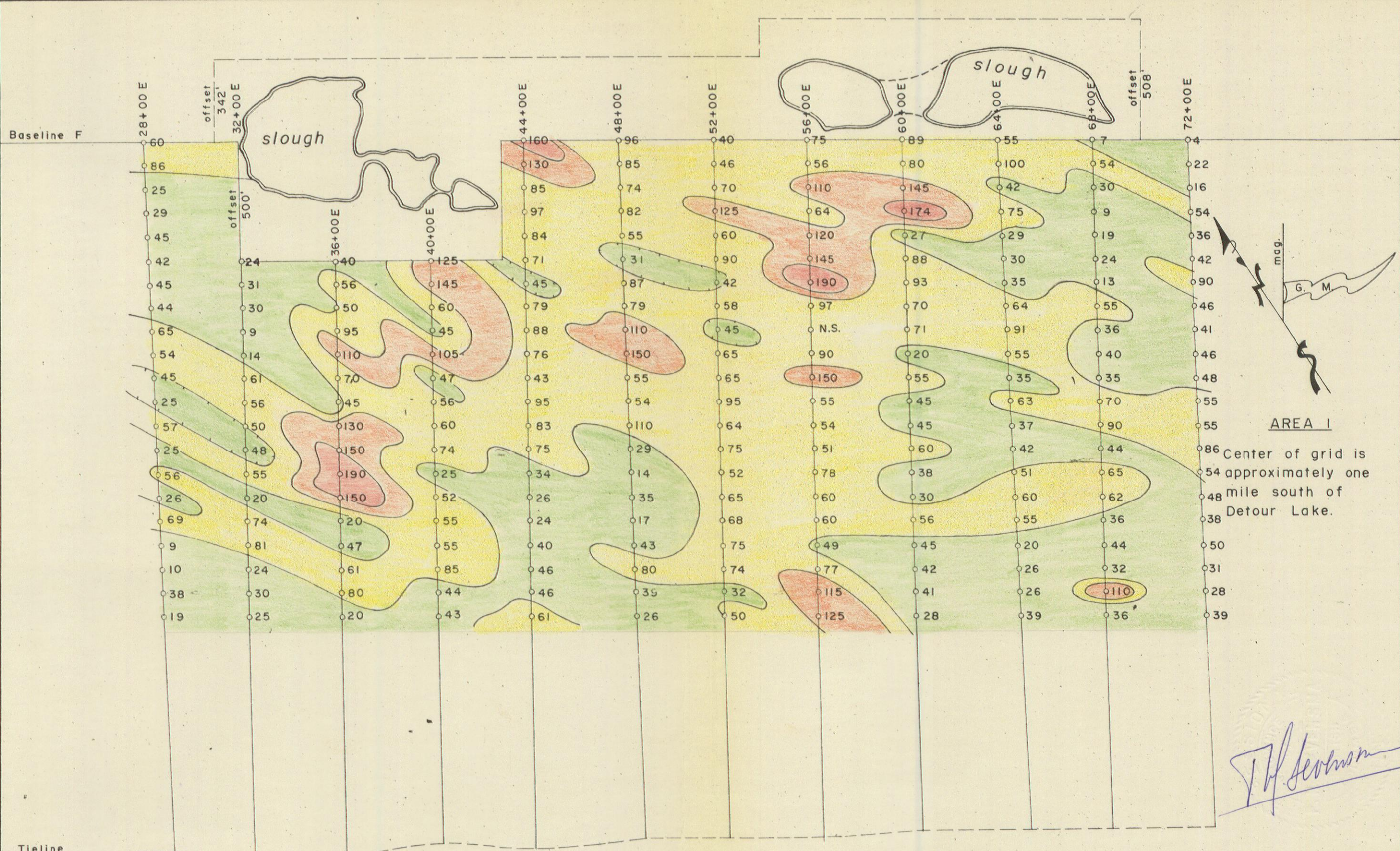
P.H. Sevensma Consultants Ltd.

715-850 W. Hastings, Vancouver, B.C. Jan. 1967

SCALE:







AREA 1

Center of grid is approximately one mile south of Detour Lake.

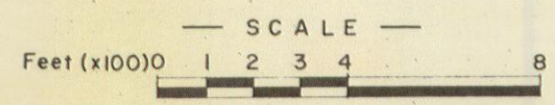
J.H. Sevensma

÷ LEGEND ÷

- < 50 parts per million
- ≥ 50 p.p.m. < 100 p.p.m.
- ≥ 100 p.p.m. < 150 p.p.m.
- ≥ 150 p.p.m.

ZINC PLOT

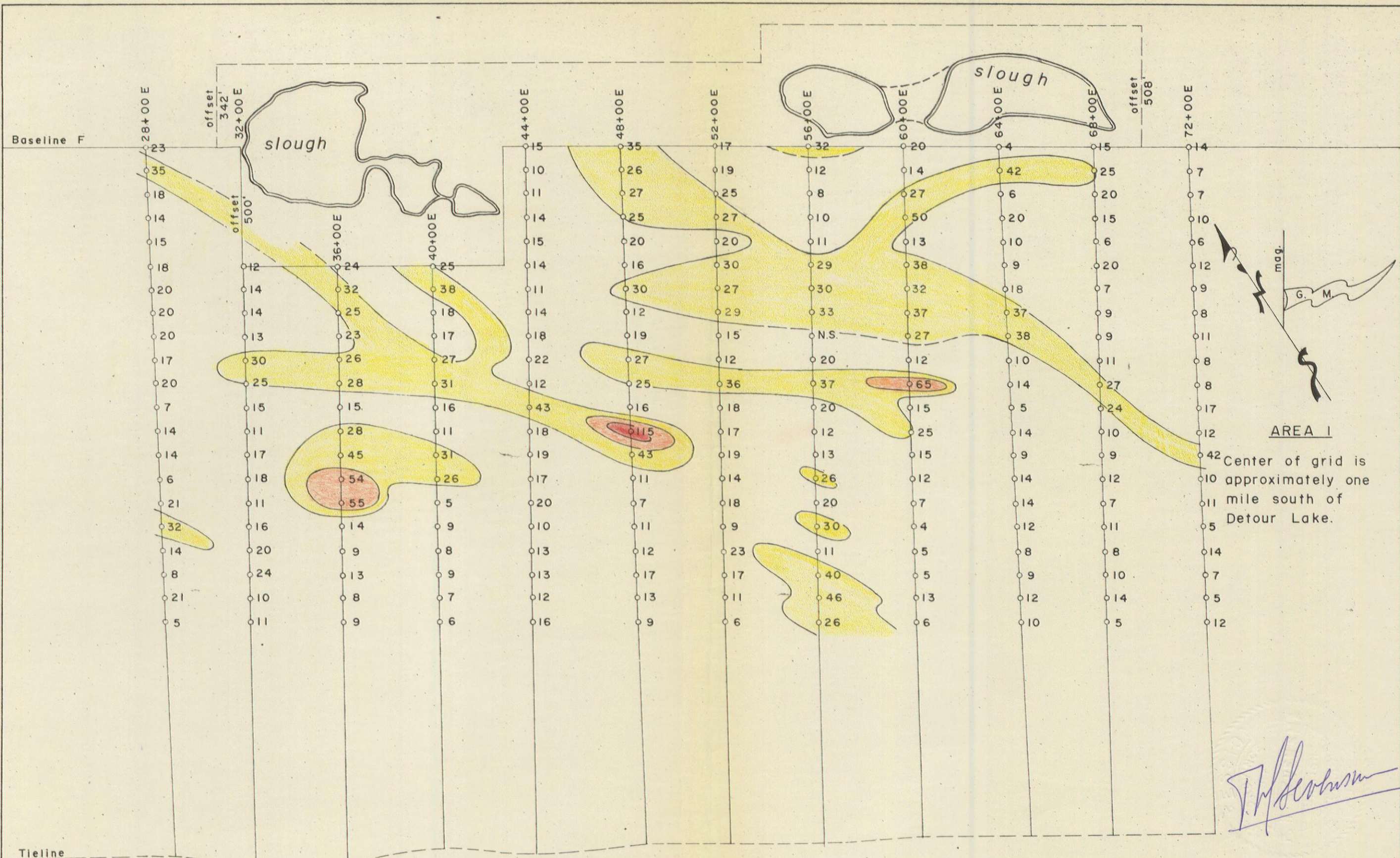
FIG. 7



GLENLYON MINES LTD.	
SOIL SAMPLING GRID	
Whitehorse M.D.	105 L-10
P.H. Sevensma Consultants Ltd.	
715-850 W. Hastings, Vancouver, B.C. - Jan. 1967	

Baseline F

Tieline



— LEGEND —

< 25 parts per. million

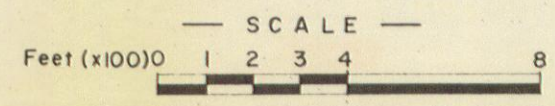
≥ 25 p.p.m. < 50 p.p.m.

≥ 50 p.p.m. < 100 p.p.m.

≥ 100 p.p.m.

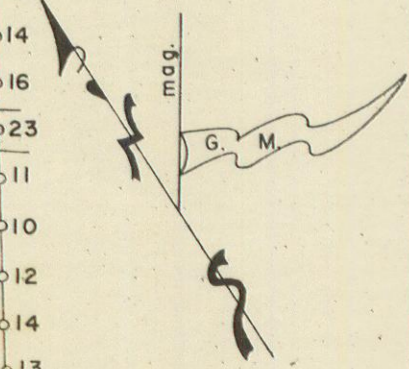
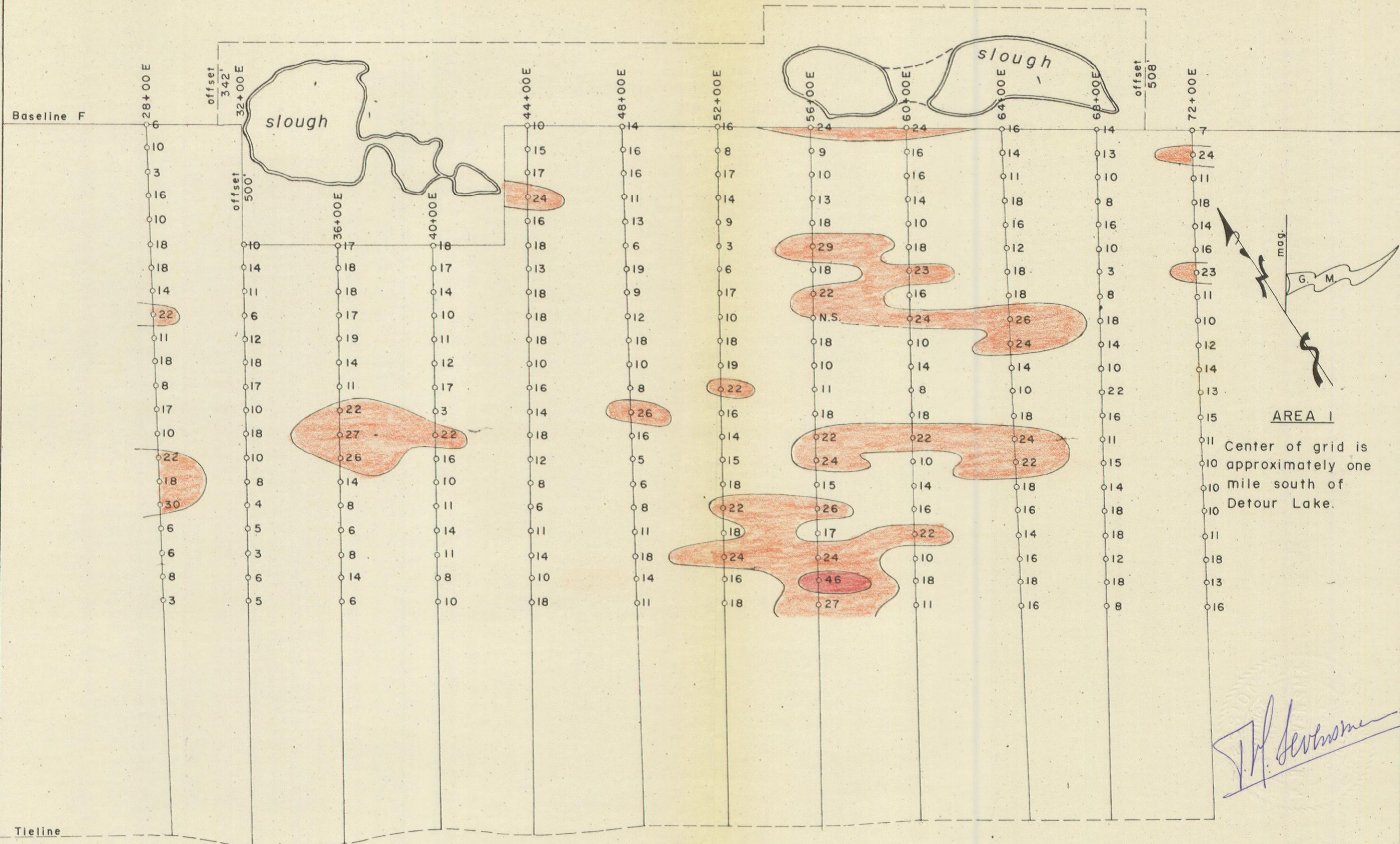
COPPER PLOT

FIG. 8



GLENLYON MINES LTD.	
SOIL SAMPLING GRID	
Whitehorse M.D.	105 L-10
P.H. Sevensma Consultants Ltd.	
715-850 W. Hastings, Vancouver, B.C. - Jan. 1967	

P.H. Sevensma



AREA I

Center of grid is approximately one mile south of Detour Lake.

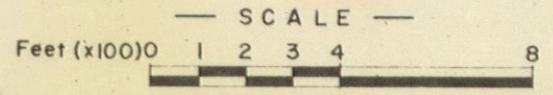
P.H. Sevensma

— LEGEND —

- < 20 parts per million
- ≥ 20 p.p.m. < 40 p.p.m.
- ≥ 40 parts per million

LEAD PLOT

FIG. 9



GLENLYON MINES LTD.	
<i>SOIL SAMPLING GRID</i>	
Whitehorse M.D.	105 L-10
P.H. Sevensma Consultants Ltd.	
715-850 W. Hastings, Vancouver, B.C. - Jan. 1967.	

Baseline F

Tieline