

018005

PROPERTY FILE

1037036-038-07

Engineering Report For:

GS

GOLD STAR MINES LTD. N.P.L.

BY:  **GEO-X SURVEYS** Ltd.

103 I/9W

103 I,J - 36, 37, 38

November 27, 1967

The Directors,
Gold Star Mines Ltd. (N.P.L.),
789 West Pender Street,
Vancouver, B.C.

Dear Sirs:

In compliance with your request, the engineering report on the property of Gold Star Mines Ltd. (N.P.L.), situated near Terrace, B.C., is completed and is appended.

After attending the directors meeting of November 27, 1967, I understand that New Gold Star Mines Ltd. (N.P.L.), will acquire all the issued shares, assets and liabilities of Gold Star Mines Ltd., which in turn owns outright the 84 contiguous Gold Star and Eastern Star claims.

The following summarizes the information presented in the report:

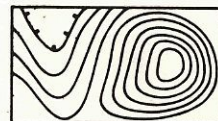
Copper King, Nugget

The claims cover two old properties which were developed by short adits, pits and trenches in the early 1900's, primarily in search for gold. Present claims are centered in Hankin Creek valley, a steep, V-shaped, well forested valley in the Nass Mountain Range. The majority of geophysical, geological and geochemical work completed to date has been on eight claims located on the southeast flank of Kitselas Mountain, between Hankin Creek and the 3,000 foot level.

The 1967 summer-fall exploration programme located a total of 17 copper showings. The main showing named the shear zone prospect contains disseminated bornite and chalcopryrite in a sheared and altered andesite. A chip sample over 10 feet of this zone averaged 0.75% Cu.

Geochemical surveys outlined two geochemical molybdenum soil anomalies and five copper anomalies in overburdened areas. These anomalies and several showings require further investigation.

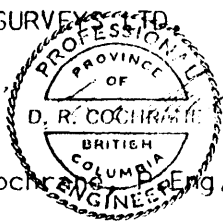
.....continued



The recommended programme consists of road and camp construction, trenching, extension of the line control grid, additional geo-chemical soil and stream sediment sampling, and a reserve for diamond drilling. The estimated cost of the entire programme is \$110,000.00.

Yours truly,

GEO-X SURVEYS LTD.



D.R. Cochran, P. Eng.

DRC:MS

Encl.



REPORT ON THE
GOLD STAR AND EASTERN STAR CLAIMS

NEAR TERRACE, B.C.
OMINECA MINING DIVISION

On Behalf of:
GOLD STAR MINES LTD.

By:

D.R. Cochrane, P.Eng.

November 20th, 1967
Vancouver, B.C.



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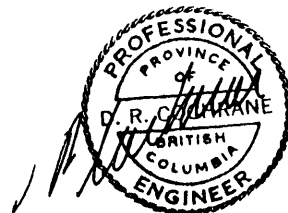
SUMMARY and CONCLUSIONS:

Gold Star Mines Ltd., owns a contiguous group of 84 claims situated a few miles north of Terrace, B.C. The property is centered on Hankin Creek, in a deeply incised, heavily forested valley in the Nass Mountain Range. Claims are accessible on foot, via a trail leading from the CNR rail line along the Skeena River, or by helicopter from Terrace. Present claims include old workings, primarily developed for gold, and described in early Minister of Mines Reports.

An airborne magnetometer survey was completed on the property in April, 1967, and prospecting and sampling was conducted in May and June. Commencing in early July and continuing to late August, 1967 an exploration programme consisting primarily of linecutting, geochemical survey and limited trenching was completed.

The claim groups are underlain mainly by two rock types - a series of intermediate volcanics intruded by acidic dykes, sills and small plugs.

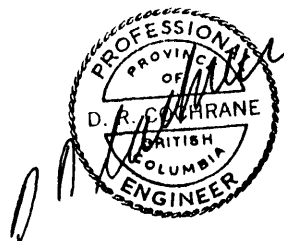
Three classes of mineral occurrences are present - narrow quartz veins carrying chalcophyrite, bornite and pyrite; chalcophyrite and bornite in faults and shear zones; and chalcophyrite and molybdenite



in relatively unaltered andesite and granodiorite.

Geochemical surveys outlined two molybdenum soil anomalies and five copper soil anomalies. These anomalies occur in areas covered by overburden, and entirely within 8 claims which have been investigated out of the total 84 claims.

A programme to (a) further investigate and assess the anomalies, and (b) systematically explore the remainder of the claim group, is recommended. Proposed work to consist of trenching, sampling, diamond drilling and additional linecutting, geochemical sampling and prospecting. The estimated cost of the programme is \$110,000.00.

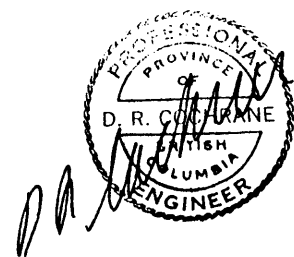


INTRODUCTION:

Gold Star Mines Ltd. owns outright, 44 Gold Star claims and 40 Eastern Star claims, situated a few miles northeast of the town of Terrace, B.C. Since March, 1967 the company, under the author's supervision, has conducted an exploration programme on the claims. It has consisted primarily of geochemical soil sampling, geological surveys and trenching. This report describes the work done, the results and recommendations and cost estimate for an additional exploration programme. It is based on personal visits and surveys by the author between June 20th and 25th; August 28th to 31st; and October 29th and 30th, 1967.

LOCATION and ACCESS:

The property is centered on Hankin (formerly Phillips) Creek, a southeastwardly flowing tributary of the Skeena River, in the Nass Mountain range. It is six air miles northeast of the town of Terrace in northwestern B.C. Claims are accessible by trail by proceeding northeast from Terrace, seven miles along the CNR railway on the north side of the Skeena River, and two miles up Hankin Creek, on an old trail, to the campsite. A heliport has been constructed near the campsite and provides easy access by helicopter from the Terrace airport. (See Fig.1 - Location Map)



CLAIMS and OWNERSHIP:

The property consists of 84 contiguous, full-sized located claims situated in the Hankin Creek valley, Omenica M.D., and owned outright by Gold Star Mines Ltd. (NPL), registered office at 789 West Pender Street, Vancouver, B.C.

The following table summarizes pertinent claim data:

<u>Claim Name:</u>	<u>Record No.:</u>	<u>Ann. Date:</u>	<u>Group:</u>
Gold Star 8-19 incl.	39993-40004 incl.	Jun,7	A
Gold Star 2, 3	33395-33396	Sept. 27	B
Gold Star 6, 7	33399-33400	Sept. 27	B
Gold Star 41-54 incl.	49251-49264		B
Eastern Star 8-19 incl.	to be assigned		B
Eastern Star 36-39 incl.	to be assigned		B
Gold Star	33393	Sept. 27	C
Gold Star 1	33394	Sept. 27	C
Gold Star 4, 5	33397, 33398	Sept. 27	C
Gold Star 30-37 incl.	44413-44430 incl.	Sept. 2	C
Gold Star 38, 39	44497, 44498	Sept. 14	C
Eastern Star	to be assigned		C
Eastern Star 1-7 incl.	To be assigned		C
Eastern Star 20-35 incl.	to be assigned		C

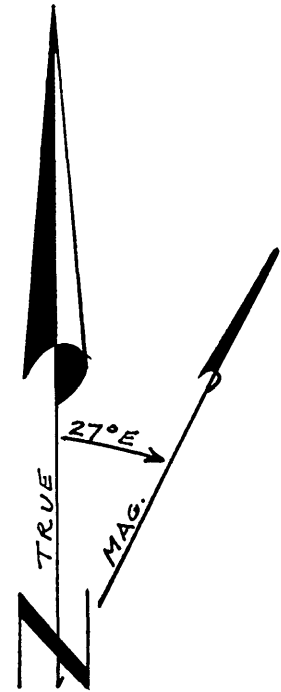


EASTERN STAR GROUP

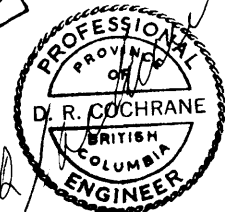
34	35
32	33
30	31
28	29
26	27
24	25
22	23
20	21

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
38	36	34	32	30	28	26	24	22	20	18	16	14	12	10	8	6	4	2
39	37	35	33	31	29	27	25	23	21	19	17	15	13	11	9	7	5	3
54	52	50	48	46	44	42	40	38	36	34	32	30	28	26	24	22	20	18
43	41	39	37	35	33	31	29	27	25	23	21	19	17	15	13	11	9	7
45	43	41	39	37	35	33	31	29	27	25	23	21	19	17	15	13	11	9
47	45	43	41	39	37	35	33	31	29	27	25	23	21	19	17	15	13	11
48	46	44	42	40	38	36	34	32	30	28	26	24	22	20	18	16	14	12

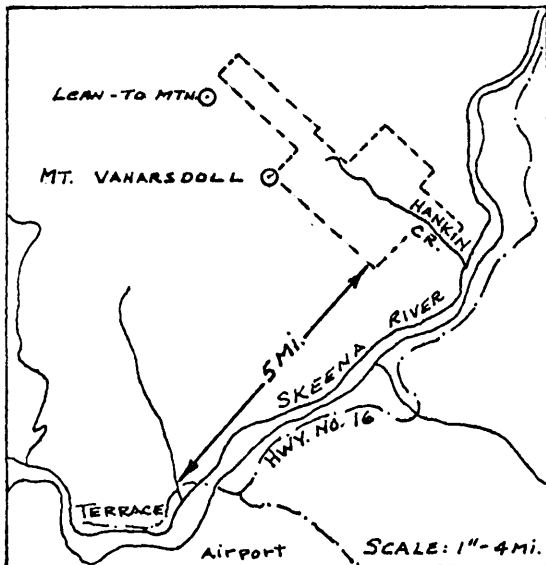
GOLD STAR GROUP



SCALE: 1" = 5000'



Hankin Creek



GOLD STAR MINES LTD. (N.P.L.)
 LOCATION & CLAIM MAP
 OF THE
 GOLD STAR & EASTERN STAR GROUPS
 TERRACE B.C.
 OMINECA M.D.
 FIGURE 1

GEO-X SURVEYS LTD.
 627 HORNBY ST.
 VANCOUVER B.C.

DRAWN BY: D.M.F. DATE: OCT. 20, 1967

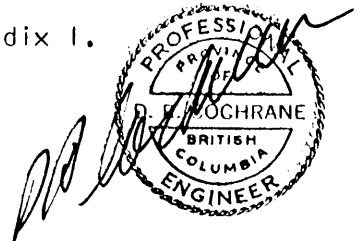
GEOMORPHOLOGY:

The Terrace area lies within the confines of the Coast Mountain Range. It is characterized by high mountain peaks and deeply incised stream valleys. Lean-to Mountain (5065') and Kitselas Mountain (4884') are the highest points in the vicinity and the confluence of Hankin Creek and the Skeena River (900') is the lowest point. Hankin Creek has a moderate gradient, falling 2,000 feet in just over three miles. However, the valley flanks and side streams are steep, with elevation differences of nearly 3,000 feet in less than one mile. Below tree line, between three and four thousand feet, the claims are extensively covered with mature hemlock, with scattered stands of balsam and red cedar.

PREVIOUS WORK:

Considerable prospecting and development work has been done in the Hankin Basin since the early 1900's. The present Gold Star Group covers two old properties on the southwest slope of Kitselas Mountain in the Hankin Creek valley. Both prospects (the Copper King Group and the Nugget Group) were owned and developed in the early 1900's by Pete Bruska and associates and are described in early Minister of Mines Reports (1)* and in G.S.C. Memoirs 205 and 329 (2,3).

* Numbers in parenthesis refer to Bibliography, Appendix I.



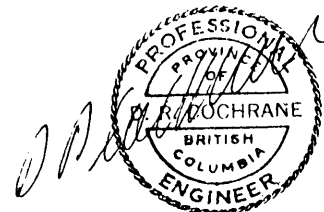
Much of Brusck's work consisted of driving short adits on quartz veins containing copper sulphides, and traces of galena.

On April 4th, 1967, thirty line miles of airborne magnetometer work was completed on the Gold Star Group. Results are discussed in an April, 1967 assessment work report (4).

During 1965 and 1966 prospecting of the area was done by Mr. G. Rolph, Mr. C. Heppner, and Mr. W. Thain, Gold Star Mines Ltd. personnel.

The recent exploration programme on the Eastern Star and Gold Star claims commenced on April 1st, 1967 and continued to August 31st, 1967.

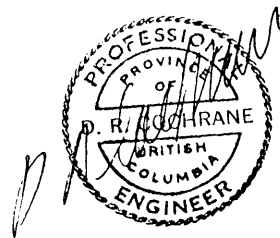
During April, May and the early part of June, Mr. G. Rolph and Mr. C. Heppner prospected, sampled and hand trenched portions of the Gold Star and Gold Star #1 to #5 claims. Between June 20th and 25th, the author and three Gold Star Mines Ltd. personnel conducted preliminary geological, geophysical and geochemical orientation surveys on the property in order to design a suitable surface exploration programme for the area. As a result, a ground control grid was layed out, with a magnetic east-west base line and magnetic north-south cross lines, spaced at 400-foot intervals along the base line and extending 600 feet on both sides of the baseline. The baseline was started in July, a temporary camp was constructed and trenching and blasting by Gold Star personnel was started on the shear zone copper prospect and old adits on #3 Creek and considerable



geochemical stream sediment sampling was completed. Early in August, the remainder of the linecutting and soil sampling was completed by a crew under the direction of Mr. A. Beaudoin. After processing of geological and geochemical information and compilation of data, the author visited the property August 28th to 31st, and several intermediate cross lines were established, others extended and soil samples collected to more accurately define previously located anomalies. The above work is described in an October 2nd, 1967 assessment work report (5).

GEOLOGICAL SETTING:

The Gold Star Group is underlain by two dominant groups of rocks. The oldest sequence is a series of intermediate volcanics including various phases of andesite and andesite feldspar porphyry. They exhibit a diversity of alteration and metamorphism. The volcanic sequence of #6 Creek show signs of migmatization and were therefore classified of quartz-biotite gneisses. In contrast, the sequence on #2 Creek is relatively unmetamorphosed and original structures such as amygdules, crude pillows and flow banding are still recognizable. In general, the andesite porphyry contains subhedral plagioclase phenocrysts up to 3 cm long, but normally 1 - 2 cm long, in a dark, fine-grained matrix. The phenocrysts are largely altered to sericite and sausalurite. At 2,500 feet

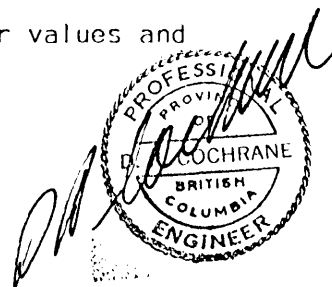


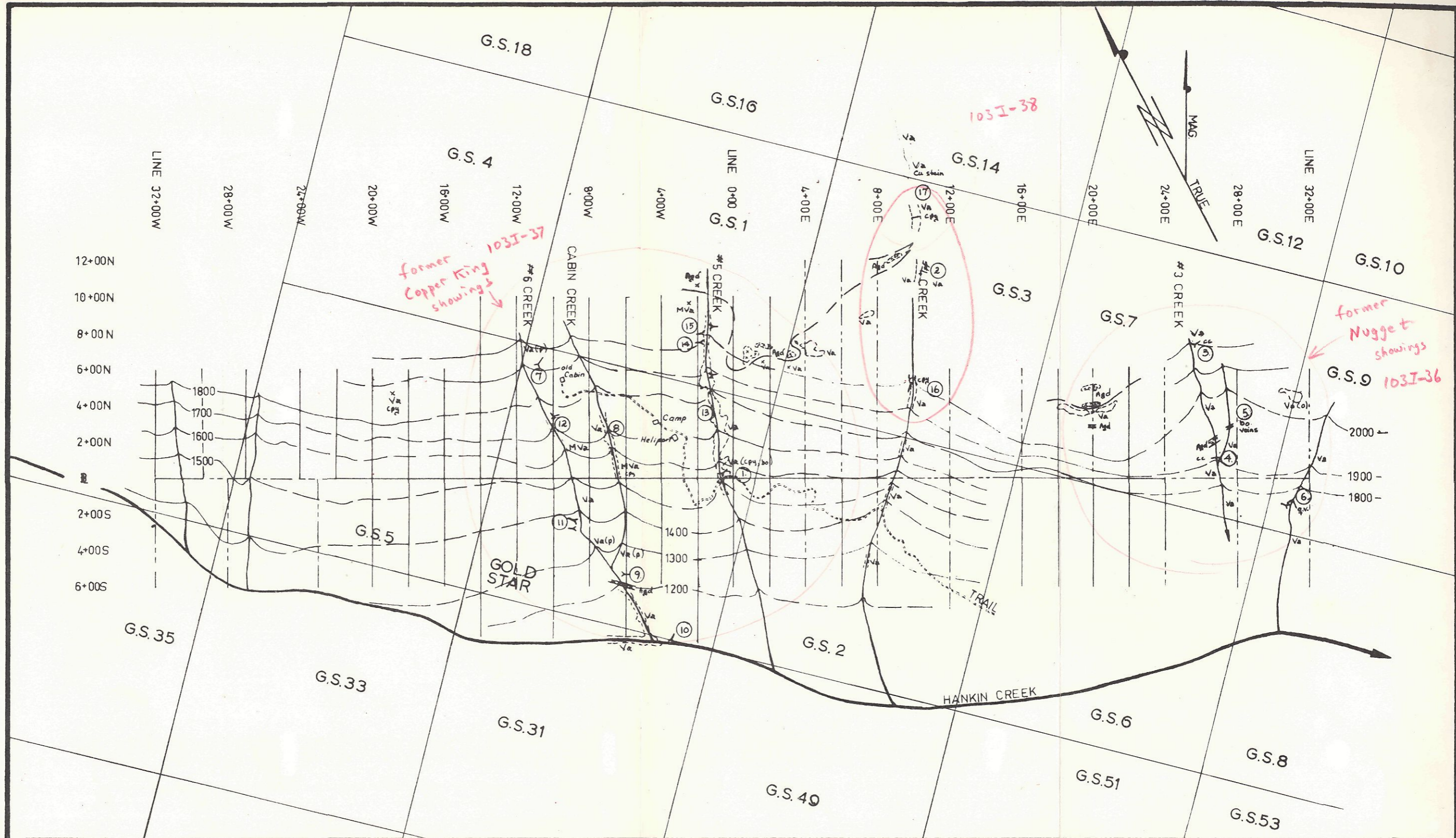
elevation between No.'s 3 and 4 Creeks, and the rock contains considerable fine-grained euhedral magnetite. Fairly fresh andesite porphyry was observed near the confluence of #6 and Cabin Creeks. It is sheared and silicified at the junction of the main trail and #5 Creek, in and about the shear zone copper prospect.

The second dominant rock group is a medium-grained grey-pink biotite granodiorite with several related phases. The granodiorite can be observed at the confluence of Hankin Creek and #6 Creek, and between #5 and #4 Creeks, above 2,500 feet. Normally the granodiorite contains minor disseminated magnetite and minor accessory minerals such as apatite. The granodiorite is gneissic near its contact with the andesites, and quite fine grained occasionally in porphyritic dykes and sills. Cobbles of granodiorite float containing disseminated chalcopyrite is prevalent on #4 Creek.

ECONOMIC GEOLOGY:

Three classes of mineral occurrences were investigated on the Gold Star Group. The first class are narrow quartz veins which, in general, contain blebs of chalcopyrite, pyrite or bornite and occasionally chalcocite. Minor galena or specular hematite is sometimes associated. Characteristically, the quartz veins contain patchy, low to moderate gold values, low silver values and moderate to high copper values.





LEGEND

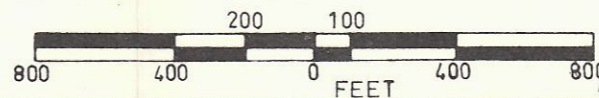
- AGd - Grey bitite granodiorite, sometimes gneissic (MGd)
- Va - Andesite, Va(o) indicates medium grained andesite. Sometimes inclusion of tuff (Vtf) and breccia (Vbx). Sometimes gneissic (MVa)
- Va(p) - Andesite feldspar porphyry
- - - - - adit
- - - - - geological contact

- vein - g.v.-quartz vein
- bo.-bornite
- cpy-chalcopryrite
- cc -chalcocite
- py -pyrite



GOLD STAR MINES LTD. N.P.L.

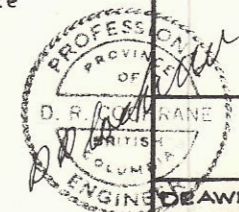
EXISTING CUT LINES
 LINES TO CUT FOR DETAIL



GOLD STAR MINES LTD.

GEOLOGY

GEO-X SURVEYS LTD.
 G27 HORNBY ST.
 VANCOUVER 1, B.C.



DRAWN: B.A.C.	DATE: Sept. 1/67	PROJ. NO 1013
CKD: ORC	DATE: Sept 1	FIG. 2
REVISED:	DATE:	

The second class of occurrences are those associated with faults and shear zones. They are often more or less silicified, altered, and contain disseminated and fracture filling pyrite, chalcopyrite, bornite or chalcocite.

The third class of metallic mineral occurrences are those with very little alteration or silicification and containing disseminated chalcopyrite. The host rock is either massive andesite andesite porphyry, or grandiorite. Many of the copper occurrences are close to, or associated with, dykes or small stocks of grandiorite.

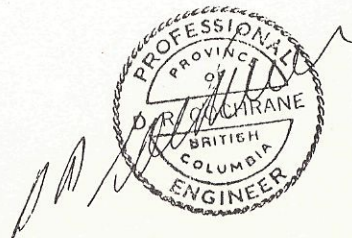
A total of 17 showings were located and geologically investigated on the property. The most important are discussed below:

1. "Shear Zone" copper prospect. Located at the junction of the main trail and #5 Creek. A small adit and rock bluff shows a sheared and altered andesite porphyry which contains patches of disseminated bornite in an area approximately 12 feet wide and of undetermined length. Outside the shearing, in the creek bottom, massive andesite and andesite porphyry contains minor disseminated chalcopyrite.

former
Copper
King
103 I-37

2. On #4 Creek at elevation 2,380 feet. In the creek bed and on canyon bluffs, a medium grained andesite contains copper stain and disseminated chalcopyrite. A chipped channel sample over 18 feet ran 0.12% copper.

103I-38



3. On the northwest fork of #3 Creek at elevation 2,350 feet. A six foot deep, partially caved adit exposes a fault zone striking 60° (*) and dipping 60° north, and is intersected by a series of almost horizontal, one-inch wide quartz veins. Some excellent specimens of disseminated chalcocite and bornite are observable near the fault.

←
103 I-36
↓

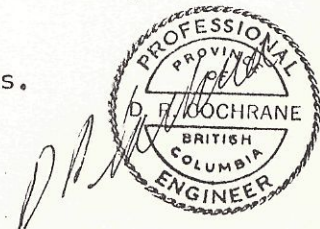
4. At the "Y" in #3 Creek at elevation 2,050 feet. Several narrow, almost flat lying, quartz veins occur in the creek bottom. The veins contain blebs of chalcocite. A narrow (12-foot thick) fine grained granodiorite sill is exposed just above the veins.

GEOCHEMISTRY:

Two related geochemical surveys were conducted on the Gold Star and Eastern Star claims.

Geochemical stream sediment samples were collected at 400-foot intervals along Hankin Creek and it's tributaries. The samples were analyzed for copper, molybdenum and lead. The results showed that the Hankin Creek basin contained relatively high concentrations of copper, moderate concentrations of molybdenum and moderately low concentrations of lead in stream sediments. The arithmetic average copper content of 62 samples was 92 parts per million (PPM), the maximum was 500 ppm and minimum 7ppm. Several drainage areas that have not yet been thoroughly investigated

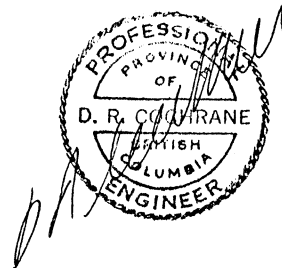
*Note: The geological strikes are given as true azimuths. The magnetic declination used was 29° east.

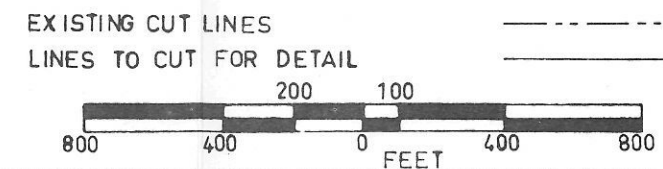
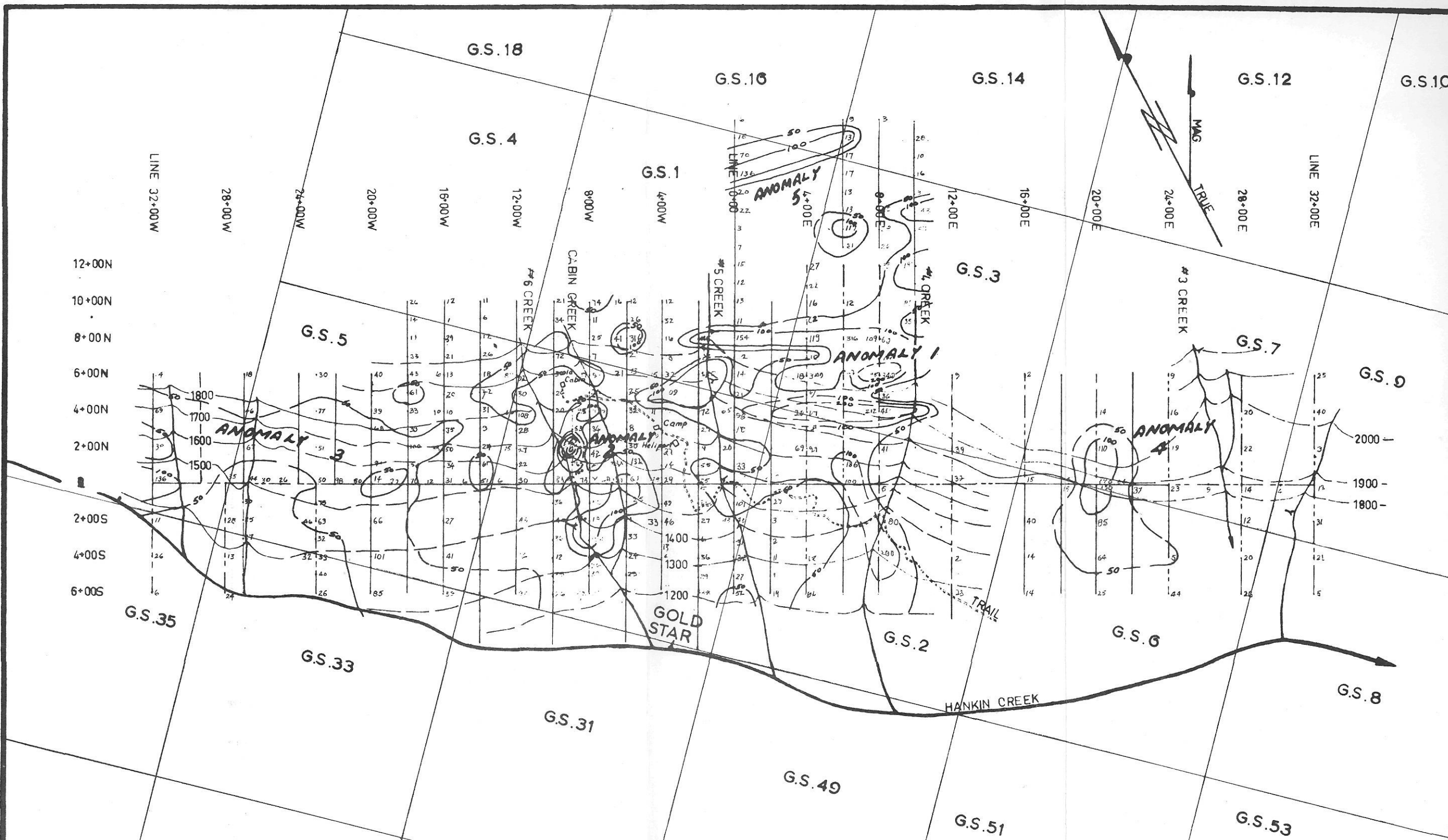


contain anomalous copper values, and others, anomalous molybdenum values.

Geochemical soil samples were collected on a ground control grid totalling approximately 9.5 line miles. Over 450 samples were collected and analyzed for Cu and Mo. Both A and upper B horizon samples were collected because of the clayey nature of the soil, and poor B horizon development. The copper threshold is 60 ppm and molybdenum threshold 6 ppm.

Two weak molybdenum soil anomalies were encountered. Anomaly Mo-1 is situated in and around the heliport and is a zone roughly 300 feet wide and 600 feet long, containing values between 14 and 70 ppm Mo. Five copper soil anomalies were outlined, and anomaly Cu-1 is roughly 1,000 feet long, 200 feet wide and contains values between 109 and 340 ppm Cu. One of the highest samples reported is 515 ppm Cu in anomaly Cu-2.

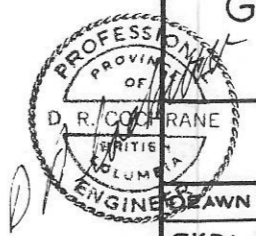
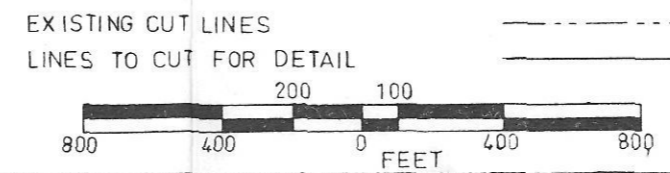
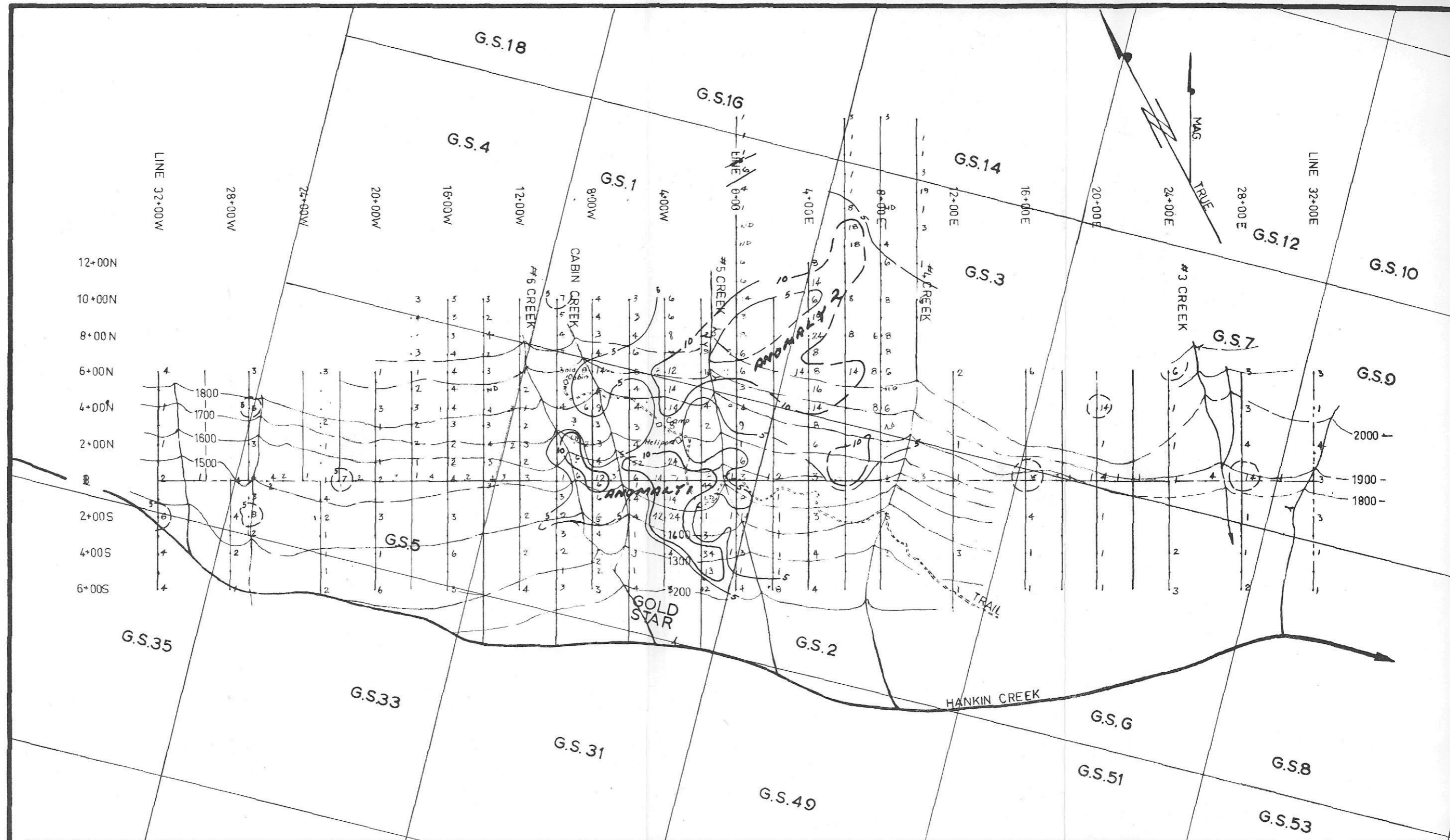




GOLD STAR MINES LTD.
 GEOCHEMICAL SOIL SAMPLING
 COPPER PPM
 'B' HORIZON

GEO X SURVEYS LTD.
 627 HORNBY ST.
 VANCOUVER 1, B.C.

DRAWN: B.A.C.	DATE: Sept. 1/67	PROJ. NO. 1013
CKD: ORC	DATE: Sept 1/67	FIG. 3
REVISED:	DATE:	



GOLD STAR MINES LTD.		
GEOCHEMICAL SOIL SAMPLING MOLYBDENUM-PPM B HORIZON		
GEO-X SURVEYS LTD. 627 HORNBY ST. VANCOUVER 1, B.C.		
DRAWN: B.R.C.	DATE: Sept. 11/67	PROJ. No. 1013
CKD: D.R.C.	DATE: Sept 1	FIG. 4
REVISED:	DATE:	

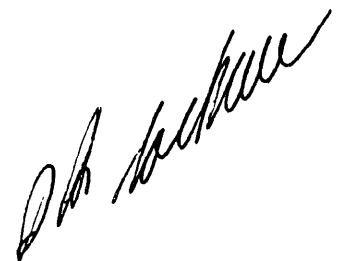
RECOMMENDATIONS:

Exploration work to date has located 17 copper occurrences on the property, two molybdenum soil anomalies, and five copper soil anomalies. These areas require further investigation. Previous work has been restricted almost entirely to 8 claims of the 84 claim group, and geochemical stream sediment sampling indicates high copper zones on other claims of the property.

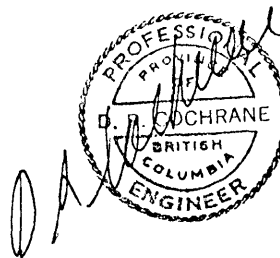
Two exploration procedures are in order: (a) detailed investigation of anomalies and showings already located, and (b) exploration of the remainder of the claim block by similar methods as those previously employed.

To test the Gold Star - Eastern Star claims for copper and molybdenum metalization, the following programme is recommended:

1. Construct a bulldozer road from the Copper River Ferry to the heliport in order to provide easy access and to mobilize the bulldozer to this general area so trenching can commence.
2. Construct cat road-trenches in and around copper soil anomalies 1, 2, 4 and 5; and molybdenum soil anomalies 1 and 2. (D-7 cat).
3. Trench and blast to bedrock interesting areas that are inaccessible by bulldozer, or to make area accessible for bulldozer.
4. Sample and assay areas containing copper or molybdenum metalization uncovered in the trenching programme.

A handwritten signature in black ink, appearing to read "D.H. Jackson", is written diagonally in the bottom right corner of the page.

5. Diamond drill those areas containing significant copper and molybdenum as may be discovered in the above programme.
6. Extend base line and cross lines (400-foot grid) approximately two claim lengths in all directions (north, south, east and west).
7. Continue the soil sampling programme on lines to be cut.
8. Prospect and collect geochemical stream sediment samples in those areas which will not be covered by proposed grid.
9. Construct a bunkhouse, cookery and small field office on the property.
10. Continual geological investigation and coordination of the programme by Geological or Mining Engineer.



COST ESTIMATE:

The estimated cost of the recommended programme as follows:

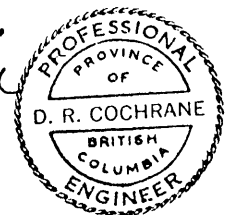
1. Road construction from the Copper River Ferry to the heliport - approximately 5 miles @ \$3,500/mile	\$ 17,500.00
2. Trenching anomalous copper and molybdenum zones - Estimate 300 hours @ \$45/per hour	13,500.00
3. Trenching and blasting (rock work with plugger and powder)	6,500.00
4. Rock Sampling and assaying costs	5,000.00
5. Diamond drill appropriation - 2,000 feet @ \$10/foot	20,000.00
6. Linecutting and extension of present grid - approximately 42 line miles @ \$125/line mile	5,250.00
7. Soil sampling programme, at 200-foot intervals on proposed grid, 42 line miles, plus intermediate, more detailed sampling in areas that prove to be anomalous (allowance of 20% of 42 miles) - total of 50.4 line miles (including analysis for Cu and Mo) @\$135/ line mile	6,804.00
8. Reconnaissance prospecting and geochemical stream sediment sampling additional claims	7,200.00
9. Field camp construction	4,600.00
10. Engineering - Geological services and surveys	8,700.00
11. Transportation and communications	4,500.00
12. Contingencies @ 10%	<u>9,955.40</u>
Total	<u>\$109,509.40</u>
Say	<u><u>\$110,000.00</u></u>

November 20th, 1967
Vancouver, B.C.

Respectfully submitted,

D. R. Cochrane

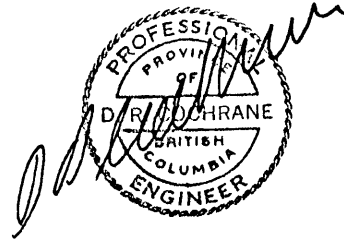
D. R. Cochrane, P.Eng.



APPENDIX I

BIBLIOGRAPHY

- (1) Annual Report of the Minister of Mines, B.C.
191~~4~~ p.142; 1923 p.105; 1928 p.145-146
4
- (2) G.S.C. Memoir 329, Geology of the Terrace Map
Area- 1946 p.86
- (3) G.S.C. Memoir 205, Mineral Resources of the
Terrace Area, 1937
- (4) COCHRANE, D.R., 1967, Airborne Magnetometer
Survey of the Gold Star Group, near Terrace,
B.C., Omenica M.D., April 20, 1967
- (5) COCHRANE, D.R., 1967, Geological and Geochemical
Report on the Gold Star and Eastern Star Claims,
October 2, 1967

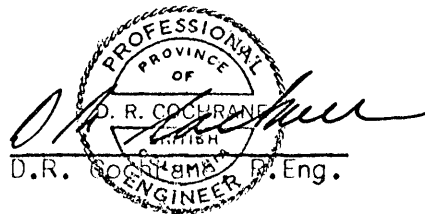


APPENDIX II

CERTIFICATE

I, D.R. Cochrane, of the Municipality of Delta, Province of British Columbia, hereby certify that:

1. I am a geological engineer and reside at 4952 8A Avenue, Ladner, B.C.
2. I am a graduate of the University of Toronto (B.A.Sc.) in 1962, and a graduate of Queen's University (M.Sc.Eng.) in 1964.
3. I have practiced my profession since 1962 while employed with U.S. Steel, Noranda Explorations and Meridian Syndicate.
4. I am a member of the Association of Professional Engineers of British Columbia and also the Association of Professional Engineers of Ontario and Saskatchewan.
5. I have no interest, direct or indirect, in the property or securities of Gold Star Mines Ltd., nor do I expect to receive any such interest.
6. This report is based on personal visits and surveys on the property by the author, between June 20th and 25th, August 28th to 31st, and on October 29th and 30th, 1967.



4952 8A Avenue,
Ladner, B.C.

November 20th, 1967