84-857-14079

7/85

# GEOCHEMICAL/GEOPHYSICAL REPORT

ON

SOIL GEOCHEMISTRY, VLF-EM & MAGNETOMETER SURVEYS
With Geological Mapping

OVER THE

LEADER #3 AND LOOKOUT CLAIMS

ST. MARY LAKE AREA

FORT STEELE MINING DIVISION

BRITISH COLUMBIA

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PROPERTY : 24 km west of Cranbrook, B.C. on Angus Creek.
: 49° 116° NE
: N.T.S. 82F/9E

WRITTEN FOR : MUSTANG RESOURCES INC.
403-750 West Pender Street
Vancouver, B.C., V6C 2T7

WRITTEN BY : David G. Mark, Geophysici
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#403-750 West Pender Stre
Vancouver, B.C., V6C 2T7

DATED : November 18th, 1983

14079

GEOTRONICS SURVEYS LTD.
Engineering & Mining Geophysicists
VANCOUVER, CANADA

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GEOLOGICAL BRANCH
ASSESSMENT REPORT

14,079

## LIST OF ILLUSTRATIONS

## SUMMARY

Soil geochemistry, VLF-EM and magnetometer surveys were carried out over much of the Leader #3 and Lookout Claims during the fall of 1983. The claims are located 24 km west of Cranbrook, British Columbia on Angus Creek to the south of St. Mary Lake and to the east of Perry Creek. Access to much of the property is easily gained by a two-wheel drive vehicle. The terrain consists of moderate to steep slopes forested with light to moderately dense coniferous trees. The purpose of the surveys was to locate probable zones of gold, silver and/or sulphide mineralization both directly and through mapping the structure.

On the Leader #3 Claim, VLF-EM and magnetometer readings were taken every 25 meters on 75-meter separated east-west lines. The data was then reduced, plotted and contoured. The soil samples were dug every 50 m on the same lines, subsequently tested for 5 metals including gold, statistically analyzed, plotted, and contoured.

On the Lookout Claim, soil samples only were taken every 50 m on 150-m separated east-west lines. The same field, lab and data reduction procedures were followed as the for Leader #3 Claim.

Some geological mapping on both claims was done as well.

## CONCLUSIONS

1. The soil survey revealed six anomalous zones on each survey grid. Three on each grid were anomalous in gold, one as high as 130 ppb.

2. The three gold anomalies on the Leader #3 grid could be reflecting the southern extension of the gold mineralization on the Leader/Wellington gold vein.

3. A one-value lead high of 650 ppm occurs on the northern boundary of the Lookout grid.

4. The magnetic survey over the Leader #3 grid was very flat indicating the underlying rock-types to be sediments (or altered intrusives).

5. There was random correlation between VLF-EM conductors and soil geochemistry anomalies.

## RECOMMENDATIONS

1. Continue grids on both claims but only in a reconnaissance fashion on the Leader #3 claim.

2. Continue the soil sampling over the remaining grid. Detail soil sampling should be done around anomalous zones discovered to date.

3. If it is important to map volcanics or intrusives continue the magnetic survey.

4. Continue the VLF-EM survey onto the Lookout grid as well as the remaining Leader #3 grid.

5. Carry out detail geological mapping over the whole property. This is especially important to enable a better interpretation of soil geochemistry and geophysics surveys.

6. An I.P. - resistivity survey should be carried out after the above has been done.

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## INTRODUCTION AND GENERAL REMARKS

This report discusses the survey procedure, compilation of data and the interpretation of VLF-EM, magnetic and soil geochemistry surveys carried out over the Leader #3 and Lookout Claims during the period of October 2nd to 18th, 1983. Some geological mapping was done as well.

The surveys were carried out by Geotronics Surveys Ltd. under the field supervision of Adam Szybinski, geologist, with the aid of Marc Beaupre. A total of 21.4 line km of VLF-EM/magnetic survey were done and a total of 581 soil samples was picked up.

The primary purpose of the VLF-EM and magnetic surveys were to delineate geological structure as an aid in the exploration for gold mineralization with the secondary purpose being to map sulphides. That of the soil sampling was to locate gold mineralization directly. Besides gold, the samples were tested for lead, zinc, silver and copper.

The surveys were done on the verbal recommendation of L. Sookochoff, P.Eng., consulting geological engineer to Mustang Resources Inc.

## PROPERTY AND OWNERSHIP

The property consists of two 18-unit claims staked within the Fort Steele Mining Division as shown on Sheet 2 and as described below:

| Claim Name | No. Units | Record No. | Expiry Date |
|---|---|---|---|
| Leader #3 | 18 | 1835 | July 12, 1984 |
| Lookout | 18 | 1916 | Aug. 29, 1984 |
| | 36 | | |

The expiry date shown does not take into account the surveys under discussion as being accepted for assessment credits.

The Leader #3 Claim was staked over the property to the north by approximately 500 m to ensure no fractions are present.

The two claims are owned by Mustang Resources Inc. of Vancouver, British Columbia.

## LOCATION AND ACCESS

The property is located 24 km west of Cranbrook on Angus Creek and 7.5 km S30°E of St. Mary Lake.

The geographical coordinates are 49°32'N latitude and 116°07'W longitude.

Access is easily gained by travelling north from Cranbrook on Highway #95A to Marysville, thence, 15 km along an all weather road to the west running along the St. Mary River. A main logging road crosses the St. Mary River to the south and east to Angus Creek Road.

## PHYSIOGRAPHY

The property lies to the west of the Rocky Mountain trench within the Purcell Mountains which are physiographic divisions of the Columbia Mountain System. The terrain consists of moderate to steep partially logged slopes throughout most of the property. It lies across a hilly north-trending ridge with the elevation increasing from the east to the west.

Elevations vary from about 1,580 meters a.s.l. where Angus Creek intersects the northern boundary of the property to 2,255 meters a.s.l. on the southern boundary of the Lookout Claim to give an elevation difference of 675 meters.

The main water sources would be Angus Creek as well as some westerly-flowing tributaries of Angus Creek.

The forest cover consists of fir, spruce and hemlock(?) and varies from closely growing, immature stands to more widely spaced, mature stands.

## HISTORY OF PREVIOUS WORK

The history of the area goes back to the 1880's when prospectors working the Perry Creek placers discovered the showing now covered by the Leader A Claim. Little ore has been shipped from the property, even though assays have run as high as 4.8 oz/ton Au and 6.8 oz/ton Ag. There are also high values in lead, zinc and copper.

There is no previous work that has been carried out on the Lookout and Leader #3 Claims since they were staked.

## GEOLOGY

The following is quoted from L. Sookochoff's 1983 Geological Evaluation report on the adjoining Leader A Claim:

"The general geological setting of the area is of the Proterozoic Lower Purcell Group which is divided into three Formations. In the Hellroaring Creek - Angus Creek - Perry Creek area the Creston and Kitchener Formation predominate and are lenticularly northeasterly trending, commonly in a fault contact and bounded to the north and south by the Aldridge Formation.

"The basal Aldridge Formation - the oldest formation known to occur in the area - is composed mainly of grey to brownish grey, rusty weathering argillite and argillaceous quartzite.

"The Creston Formation is transitional from the Aldridge Formation and embraces that succession of greyish argillaceous quartzites which is included between the dark rusty weathering, argillaceous quartzites of the lower Aldridge Formation and the thin bedded, calcerous rocks of the upper Kitchener Formation. In general, the Creston Formation consists of argillaceous quartzites, purer quartzites and argillites whose beds average about one foot in thickness. Narrow beds, pods, and lenses of calcerous rocks occur in the upper part of the formation. These are more numerous toward the top of the Creston and where they are abundant, the strata are considered to belong to the overlying Kitchener Formation.

"The Creston Formation is host to gold quartz veins on Perry Creek, a northeasterly flowing tributary of the St. Mary River with the confluence 13 km northwest of Cranbrook. The deposits occur in the argillaceous quartzites which are well bedded in beds "2 inches to 2 feet" in thickness, the latter separated by thin beds of meta-argillites.

"The deposits occur as true fissure veins averaging about "8 feet" with some as wide as "20 feet". They can be traced for long distances along strike. The gold values occur as native in the outcrops and with pyrite at depth.

"The Kitchener Formation consists predominantly of impure, magnesium limestone, argillite and calcerous quartzite. Limestone and calcerous rocks compose the bulk of the formation and serve to distinguish it from the underlying formations. The upper part is generally argillaceous. Due to the formation containing easily deformed rocks, great stretches of it have been altered to chlorite and talc-carbonate schist.

"Stocks and/or plugs of Mesozoic intrusive rocks are indicated throughout the area.

## STRUCTURE

"The general structure of the area is of a broad, northerly striking anticline exposing the core of the Proterozoic rocks with younger rocks to the west and east. The regional St. Mary's fault trends east northeast to the north of the property area and creates a fault contact with the Aldridge and younger formations.

"Faults extending from the south generally terminate or trend into the St. Mary's fault and commonly indicate contacts between the Creston and Kitchener formations.

"One of the fault contacts referred to as the Sawmill Creek Fault determines a Creston-Kitchener Formation contact which trends through the Leader A Claim. The St. Mary's fault is within two km north.

## PROPERTY GEOLOGY

"The Sawmill fault with a north northeast strike and which is a fault contact for the Creston-Kitchener Formations is covered by the Leader A Claim, however is northwest and north of the workings. A small stock of porphyritic granite intrudes the sediments immediately north of the workings. The granite contains large idiomorphic crystals of orthoclase in an isometric ground mass of plagioclase, quartz and hornblende.

"The workings which consist of a dozen or more open cuts, a shaft 55 feet deep with short drifts at the bottom and an adit 127 feet long, are on a mineralized quartz vein which follows a strong fissure with varying strike from nearly north-south to north 30 - 35. The dip varies from 68 to 80 east. South of the adit, which is located 850 feet south of and 135 feet below the most northerly and highest workings and 650 feet south of the shaft, the overburden masks the vein continuity to the lowest workings. To the north of the adit the fissure is occupied by a continuous quartz vein varying from about one to two feet wide and averaging one and one-half feet.

## MINERALIZATION

"The vein varies from a few inches to three feet wide and can be traced along a length of 2,000 feet.

"The vein is composed of white, banded quartz containing galena, pyrite and locally chalcopyrite with tungsten reported in the adit.

"On the hanging wall of the vein is up to one foot of gouge with an adjacent several feet of a sheared, brownish-weathering, quartz-carbonate rock. The foot-wall rocks are grey to greenish grey, quartzitic sediments which are locally banded parallel with the strike of the vein-fissure.

"The enclosing rocks are moderately metamorphosed thus masking their original texture. The metamorphism is attributed to a stock-shaped body of granite outcropping 200 feet or more below the vein exposures."

There is much evidence that the Leaders #3 and Lookout Claims are located on an extension of the same geology as the Leader 'A' Claim.

## VLF-EM SURVEY

### (A) Instrumentation and Theory

A VLF-EM receiver, Model 27, manufactured by Sabre Electronic Instruments Ltd. of Burnaby, B.C. was used for the VLF-EM survey. This instrument is designed to measure the electromagnetic component of the very low frequency field (VLF-EM), which for these surveys is transmitted at 24.8 KHz from Seattle, Washington.

In all electromagnetic prospecting, a transmitter produces an alternating magnetic field (primary) by a strong alternating current usually through a coil of wire. If a conductive mass such as a sulphide body is within this magnetic field, a secondary alternating current is induced within it which in turn induces a secondary magnetic field that distorts the primary magnetic field. It is this distortion that the EM receiver measures. The VLF-EM uses a frequency range from 16 to 24 KHz, whereas most EM instruments use frequencies ranging from a few hundred to a few thousand Hz. Because of its relatively high frequency, the VLF-EM can pick up bodies of a much lower conductivity and therefore is more susceptible to clay beds, electrolyte-filling fault or shear zones and porous horizons, graphite, carbonaceous sediments, lithological contacts as well as sulphide bodies of too low a conductivity for other EM methods to pick up. Consequently the VLF-EM has additional uses in mapping structure and in picking up sulphide bodies of too low a conductivity for conventional EM methods and too small for induced polarization. (In places it can be used instead of I.P.). However, its susceptibility to lower conductive bodies results in a number of anomalies, many of them difficult to explain and, thus, VLF-EM preferably should not be interpreted without a good geological knowledge of the property and/or other geophysical and geochemical surveys.

## (B) Field Procedure

The survey over the Leader #3 grid consisted of 9.2 line km of VLF-EM survey over the western side of the Leader #3 Claim. This grid was done in a detail manner in order to determine the possibility of the Leader/Wellington gold zone striking onto the Leader 3 claim.

The base line was placed in the center of the Leader #3 Claim on a bearing of true north. It was extended for 1,500 m being well flagged with florescent orange survey flagging. The cross lines were run perpendicular to the base line at a 75 m spacing with the instrument readings taken at a 25 m interval facing towards the transmitter at Seattle.

## (C) Compilation of Data

The VLF-EM field results were plotted on Sheet 4 at a scale of 1:2,500. They were then reduced by applying the Fraser-filter and the filtered results subsequently plotted on the same sheet. The filtered data was plotted between actual reading stations. The positive dip-angle readings were then contoured at an interval of 4°.

The Fraser-filter is essentially a 4-point difference operator, which transforms zero crossings into peaks, and a low pass smoothing operator which induces the inherent high frequency noise in the data. Therefore, the noisy, non-contourable data are transformed into less noisy, contourable data. Another advantage of this filter is that a conductor that does not show up as a crossover on the unfiltered data quite often shows up on the filtered data.

## MAGNETOMETER SURVEY

### (A) Instrumentation and Theory

The magnetic survey was carried out with a model MP-2 proton precession magnetometer, manufactured by Scintrex Limited of Concord, Ontario. This instrument reads out directly in gammas to an accuracy of $\pm 1$ gamma, over a range of 20,000 - 100,000 gammas. The operating temperature range is -35° to +50° C, and its gradient tolerance is up to 5,000 gammas per meter.

Only two commonly occuring minerals are strongly magnetic, magnetite and pyrrhotite; magnetic surveys are therefore used to detect the presence of these minerals in varying concentrations. Magnetics is also useful as a reconnaissance tool for mapping geologic lithology and structure since different rock types have different background amounts of magnetite and/or pyrrhotite.

### (B) Field Procedure

The magnetic survey was carried out using the existing grid on the Leader #3 Claim.

Readings of the Earth's total magnetic field were taken at 25 m stations along the 21 east-west lines.

The diurnal variation was monitored in the field by the closed loop method to enable the variation to be removed from the raw data prior to plotting.

### (C) Compilation of Data

The total magnetic field values were plotted on Sheet 5 at a scale of 1:2,500 and contoured at a 20-gamma interval.

## SOIL GEOCHEMISTRY

### (A) Survey Procedure

The samples were picked up at 50-meter centers on the same east-west lines as that for the magnetic survey. They were dug with a D-handled shovel at about a 15- to 20-cm depth. The horizon sampled was B. Samples were placed in brown, wet-strength, paper bags (gussett bags) with the sample number marked thereon.

Soil sampling with some geological mapping was also carried out on the Lookout grid picking up samples at 50 m centers on 150 m separated east-west lines.

### (B) Testing Procedure

All samples were tested by Chemex Labs Ltd. of North Vancouver, B.C. The sample is first thoroughly dried and then pulverized in a ring pulverizer. It was then rolled on a rolling sheet to homogenize it.

For the gold analysis, 10 grams of the sample was then fire-assayed with standard techniques. 2 mg of silver was then then added to collect the gold. The lead button from the fire assay was then cupelled and the silver-gold prill was dissolved in aqua regia. It was next analyzed by the atomic absorption technique to a detection limit of 5 parts per billion (ppb).

For the silver, lead and zinc a measured amount of the sifted material was put into a test tube with subsequent measured additions of perchloric acid and nitric acid. The mixture was next heated for a certain length of time. The parts per million (ppm) metal was then measured by atomic absorption.

(C) Treatment of Data

The values in ppm copper, lead and zinc were grouped into equal logarithmic intervals. The cumulative frequency for each interval was then calculated and then plotted against the correlating interval to obtain a logarithmic cumulative frequency graph.

The mean background value for each metal is taken at the 50% level. The sub-anomalous threshold value, (a term used by the writer to denote the minimum value that is not considered anomalous but still important as an indicator of mineralization) is taken at one standard deviation from the mean background value which is at the 16% level. The anomalous threshold value is two standard deviations away at the 2 1/2% level.

The gold and silver geochemistry data were not analyzed with a cumulative frequency graph due to the way the data were distributed. Rather, the statistical parameters for these two metals were "eye-balled."

As a result of the above, the statistical parameters for each metal are shown in the following table with the sheet number that the geochemistry values for each of the metals were plotted on. The maps are drawn at a scale of 1:2,500.

| Metal | Au | Ag | Pb | Zn | Cu |
|---|---|---|---|---|---|
| Sheet number Leader #3 | 6 | 7 | 8 | 9 | 10 |
| Sheet number - Lookout | 13 | 14 | 15 | 16 | 17 |
| Mean background value | <5 | 0.10 | 5 | 91 | 16 |
| Sub-anomalous threshold value | 8 | 0.15 | 9 | 117 | 24 |
| Anomalous threshold value | 12 | 0.25 | 15 | 154 | 34 |

All values are in ppm, except for gold which is in ppb.

## DISCUSSION OF RESULTS

### I. LEADER #3 GRID

A compilation map, Sheet 11, at a scale of 1:2,500, has been drawn of the anomalous soil geochemistry results for all 5 metals.

#### (A) Geological Mapping (Sheet 3)

The geology was not mapped in detail but only to give a quick overview.

The property is crossed by a series of faults striking north-westerly and cut by a series of east-west-striking faults. On the hanging wall on the east side of the property are sediments of the Kitchener Formation. On the foot-wall are green and grey argillites and quartzites.

The only mineralization was two small zones of pyritization discovered at the south end of the property.

## (B) VLF-EM Survey

The major cause of VLF-EM anomalies, as a rule, are geologic structures such as fault, shear and breccia zones. It is therefore logical to interpret VLF-EM anomalies to likely be caused by these structural zones. Of course, sulphides may also be a causative source. But in the writer's experience, when VLF-EM anomalies correlate with sulphide mineralization, the anomalies are usually reflecting the structure associated with the mineralization rather than the mineralization itself.

The major trend of the VLF-EM anomalies, as seen on Sheet 4, are northerly. Considering the VLF-EM anomalies are likely reflecting structure, the major strike of structure on this property is concluded to be in this direction.

There is some variation in intensity from one VLF-EM anomaly to the next. This is not only due to the conductivity of a causative source, but also the direction it strikes relative to the direction to the transmitter. In other words, those conductors lying closer to the same direction as the direction to the transmitter (S55W in this case), can be picked up easier than those that are lying at a greater angle. Depending upon its conductivity, a conductor may not be picked up at all if it is at too great an angle. However, on this particular survey are some VLF-EM conductors that have strong intensity and yet are at a low optimum direction to Seattle. This is therefore an indication of the causative source being a strong conductor.

The survey has produced interesting results throughout the property, particularly the VLF-EM highs. These highs are of greater economic interest since they may be reflecting sulphides, fracturing and/or alteration any of which could be associated with gold mineralization. The highs often are at points of intersection of two or three conductors striking in two or three different directions. If the conductors are in fact geological structures, then the points of intersection become amenable to mineralizing fluids. Some of these highs do correlate with intersecting faults as mapped by Szybinski.

There was some correlation between the VLF-EM highs and faults as mapped by Szybinski.

### (C) Magnetics

The magnetic range of the survey area is only 175 gammas varying from a low of 57,915 gammas to a high of 58,090 gammas. This is a very small range and is a reflection of the underlying sedimentary bedrock.

There is no correlation between the rock units as mapped by Szybinski and the magnetic field. There is some correlation between magnetic lows and the mapped faults.

### (D) Soil Geochemistry

The soil anomalies considered to be worthy of further discussion total 6 and have been labelled by the upper case letters A to F. There are no anomalous silver results.

Zone A is anomalous in all four metals (gold, lead, zinc and copper) with gold being the strongest at 130 ppb. The zinc values within this zone are only sub-anomalous.

ZONE B is anomalous in gold, lead and copper.

ZONE C is anomalous in gold and lead and occurs at the intersection of two faults.

<u>ZONES D, E and F</u> are anomalous in lead, zinc and copper, but no gold. There is a strong indication that these zones are actually one zone striking in a N30°W direction. However, copper anomalies F and B could also be the same zone which strikes northerly and then northwesterly.

<u>Zones A, B and C</u> are the only ones containing anomalous gold values. These are small separate anomalies but could reflect the southern extension of the Wellington vein.

There is only a random correlation between the soil geochemistry results and VLF-EM conductors.

None of the soil anomalies are very large or contain very high values except for gold anomaly A. However, they are all worth further checking, especially considering the sample interval of 50 m.

## II LOOKOUT GRID

This grid was not finished due to snow cover.

### (A) Geology

There is a predominant trend of northwest faulting within the southwest corner. Faulting is also predominant in a northerly to northeasterly direction.

Three small bodies of moyie intrusive diorite were noted within the grid area.

## (B) Soil Geochemistry

On this grid, six of the anomalous zones have been labelled by upper case letters A to F for the purpose of further discussion. The sampling is done on a 50 m by 150 m grid. Therefore, the contouring is very elongated in a northerly direction.

Anomalous Zones A, B and C are all gold anomalies with direct or side-by-side correlation with lead and zinc. There is no gold correlation with copper or silver.

Zone D is anomalous in silver, lead, zinc and copper and zone E is anomalous in lead, zinc and copper. Zone F contains an extremely high value in lead (650 ppm) correlating with a minor value in silver.

Respectfully submitted,
GEOTRONICS SURVEYS LTD.

David G. Mark,
Geophysicist

November 18, 1983

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Minister of Mines Reports

1915 - p. 113

1932 - p. 162

1950 - p. 155

## GEOPHYSICIST'S CERTIFICATE

I, DAVID G. MARK, of the City of Vancouver, in the Province of British Columbia, do hereby certify:

That I am a Consulting Geophysicist of Geotronics Surveys Ltd., with offices located at #403-750 West Pender Street, Vancouver, British Columbia.

I further certify:

1. I am a graduate of the University of British Columbia (1968) and hold a B.Sc. degree in Geophysics.

2. I have been practising my profession for the past 15 years and have been active in the mining industry for the past 18 years.

3. I am an active member of the Society of Exploration Geophysicists and a member of the European Association for Exploration Geophysicists.

4. This report is compiled from data obtained from VLF-EM, soil geochemistry and magnetometer surveys carried out by Geotronics Surveys Ltd., under the supervision of myself and under the field superivsion of Adam Szybinski from October 2nd to 18th, 1983.

5. The work was done entirely on the verbal recommendations of Laurence Sookochoff, P.Eng., who is the consulting geologist for Mustang Resources Inc.

6. I am President and a shareholder of Mustang Resources Inc. Otherwise, I do not hold any particular interest in the Leader #3 or the Lookout claims, nor will I receive any interest as a result of writing this report.

David G. Mark
Geophysicist

November 18, 1983

## AFFIDAVIT OF EXPENSES

The soil geochemistry and VLF-EM surveys were carried out from August 2nd to 18th, 1983 on the Leader #3 and Lookout Claims, Angus Creek, Fort Steele M.D., B.C. to the value of the following:

**FIELD:**

| | |
|---|---|
| Geologist and geophysics technician | |
| 181.5 hours at $40/hour | $ 7,260 |
| Magnetometer & VLF-EM instrument rental: | |
| Magnetometer, 2 weeks at $125/week | 250 |
| VLF-EM unit, 1 week at $125/week | 125 |
| Truck rental and gas | 1,760 |
| Room and board | 1,655 |
| Survey supplies | 175 |
| | $11,225 |

**LABORATORY:**

| | |
|---|---|
| 581 samples at $12.85/sample (includes ring pulverizing & fire assay for gold with AA finish & normal-type analysis for lead, zinc, silver and copper | 7,466 |

**REPORT:**

| | |
|---|---|
| Geophysicist, 15 hours at $40/hour | $ 600 |
| Geologist, 32 hour at $35/hour | 1,120 |
| Geophysical technician, 20 hours at $25/hour | 500 |
| Drafting and printing | 2,323 |
| Typing, photocopying and compilation | 250 |
| | $ 4,793 |
| Grand Total | $23,484 |

Respectfully submitted,
GEOTRONICS SURVEYS LTD.

David G. Mark, Geophysicist
Manager


GEOTRONICS SURVEYS LTD.

# MUSTANG RESOURCES INC.

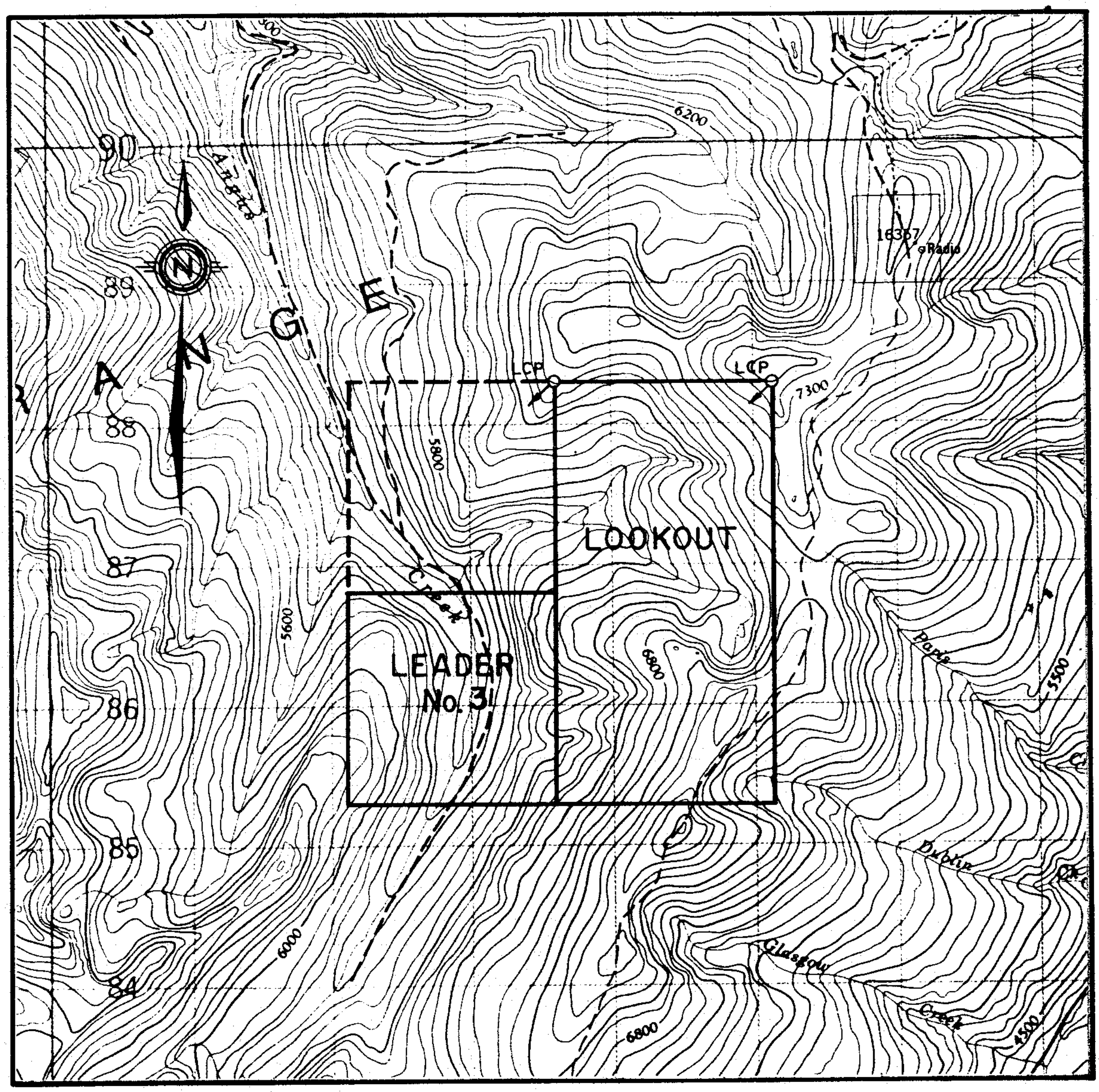
## LEADER No. 3 AND LOOKOUT CLAIMS

ST. MARY LAKE AREA

FORT STEELE MINING DIVISION, B.C.

## LOCATION MAP

| DATE: | SCALE: | NTS: | JOB No. | SHEET No. |
|---|---|---|---|---|
| NOV., 1983 | 1:8,000,000 | 82F/9 | 83-47 | 1 |




GEOTRONICS SURVEYS LTD.

**MUSTANG RESOURCES INC.**

LEADER No. 3 AND LOOKOUT CLAIMS

ST. MARY LAKE AREA

FORT STEELE MINING DIVISION, B.C.

*CLAIM MAP*

| DATE: | SCALE: | NTS: | JOB No. | SHEET No. |
|---|---|---|---|---|
| NOV., 1983 | 1: 50,000 | 82 F/9 | 83-47 | 2 |

BASELINE
1+00 E
2+00 E
3+00 E
4+00 E
5+00 E
6+00 E
7+00 E
8+00 E
9+00 E
10+00 E
11+00 E
12+00 E
13+00 E
14+00 E
15+00 E
N
30+00 N
28+50 N
27+00 N
25+50 N
24+00 N
22+50 N
21+00 N
19+50 N
18+00 N
16+50 N
15+00 N
13+50 N
12+00 N
DIORITE
DIORITE
DIORITE
LAKE
LEGEND
BEDDING
SCHISTOSITY (inclined, vertical)
JOINT
AXIS OF SMALL FOLD
FAULT (Defined, approximate, assumed)
SCALE IN METRES
M 0 50 100 150 200 M
GEOLOGICAL BRANCH
ASSESSMENT REPORT
14,079
To accompany geochemical & geophysical report by David G. Mark, geophysicist
GEOTRONICS SURVEYS LTD.
MUSTANG RESOURCES INC.
LEADER #3 & LOOKOUT CLAIMS
ST. MARY LAKE AREA
FORT STEELE MINING DIVISION, B.C.
LOOKOUT GRID
GEOLOGY AND TECTONICS
Drawn by A.S.
Date Nov., 1983
Project No. 83-47
N.T.S. 82F/9E
Scale 1:2,500
Sheet No. 12


**GEOLOGICAL BRANCH ASSESSMENT REPORT**

# 14,079

CONTOURS

18.0 ppm

29.0 ppm

STATISTICAL PARAMETERS

| | |
|---|---|
| MEAN BACKGROUND VALUE | 10.0 ppm |
| SUB-ANOMALOUS THRESHOLD VALUE | 18.0 ppm |
| ANOMALOUS THRESHOLD VALUE | 29.0 ppm |

SCALE IN METRES

0 5 10 15 20 25

To accompany geochemical & geophysical report by David G. Mark, geophysicist,

GEOTRONICS SURVEYS LTD.

MUSTANG RESOURCES INC.

LEADER No. 3 AND LOOKOUT CLAIMS

ST. MARY LAKE AREA

FORT STEELE MINING DIVISION, B.C.

LEADER No. 3 GRID

*SOIL GEOCHEMISTRY SURVEY*

*LEAD*

*DATA AND CONTOURS*

| Drawn by | Date | Project No. | N.T.S. | Scale | Sheet No. |
|---|---|---|---|---|---|
| A.S. | NOV., 1983 | 83-47 | 82F / 9E | 1:2500 | 8 |


GEOLOGICAL BRANCH
ASSESSMENT REPORT

14,079

*LEGEND*

- BEDDING
- SCHISTOSITY (inclined, vertical)
- JOINT
- AXIS OF SMALL FOLD
- FAULT ( Defined , approximate, assumed )
- ZONE OF PYRITIZATION

SCALE IN METRES

0 5 10 15 20 25

To accompany geochemical & geophysical report by David G. Mark, geophysicist,

GEOTRONICS SURVEYS LTD.

MUSTANG RESOURCES INC.

LEADER No. 3 AND LOOKOUT CLAIMS

ST. MARY LAKE AREA

FORT STEELE MINING DIVISION, B.C.

LEADER No. 3 GRID

*GEOLOGY AND TECTONICS*

| Drawn by | Date | Project No. | N.T.S. | Scale | Sheet No. |
|---|---|---|---|---|---|
| A.S. | NOV., 1983 | 83 - 47 | 82F / 9E | 1:2500 | 3 |


CONTOURS

CONTOUR INTERVAL - 1 STANDARD DEVIATION

| | |
|---|---|
| (dashed line) | 10 ppm |
| (thin line) | 14.0 ppm |
| (thick line) | 21.0 ppm |

STATISTICAL PARAMETERS

MEAN BACKGROUND VALUE .......... 10.0 ppm

SUB-ANOMALOUS THRESHOLD VALUE ...... 14.0 ppm

ANOMALOUS THRESHOLD VALUE .......... 21.0 ppm

SCALE IN METRES

0 5 10 15 20 25

GEOLOGICAL BRANCH
ASSESSMENT REPORT

14,079

To accompany geochemical [illegible] geophysical report by Da[illegible] Mar[illegible], geophysicist,

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MUSTANG RESOURCES INC.

LEADER No. 3 AND LOOKOUT CLAIMS

ST. MARY LAKE AREA

FORT STEELE MINING DIVISION, B.C.

LEADER No. 3 GRID

SOIL GEOCHEMISTRY SURVEY

COPPER

DATA AND CONTOURS

| Drawn by | Date | Project No. | N.T.S. | Scale | Sheet No. |
|---|---|---|---|---|---|
| A.S. | NOV., 1983 | 83 - 47 | 82F / 9E | 1:2500 | 10 |


GEOLOGICAL BRANCH
ASSESSMENT REPORT

# 14,079

To accompany geochemical & geophysical report by David G. Mark, geophysicist,

CONTOURS

CONTOUR INTERVAL - 1 STANDARD DEVIATION

- - - - ............ 0.15 ppm

—— ............ 0.25 ppm

STATISTICAL PARAMETERS

MEAN BACKGROUND VALUE ............ 0.1 ppm

SUB-ANOMALOUS THRESHOLD VALUE ...... 0.15 ppm

ANOMALOUS THRESHOLD VALUE ............ 0.25 ppm

SCALE IN METRES

0 5 10 15 20 25

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LEADER No. 3 AND LOOKOUT CLAIMS

ST. MARY LAKE AREA

FORT STEELE MINING DIVISION, B.C.

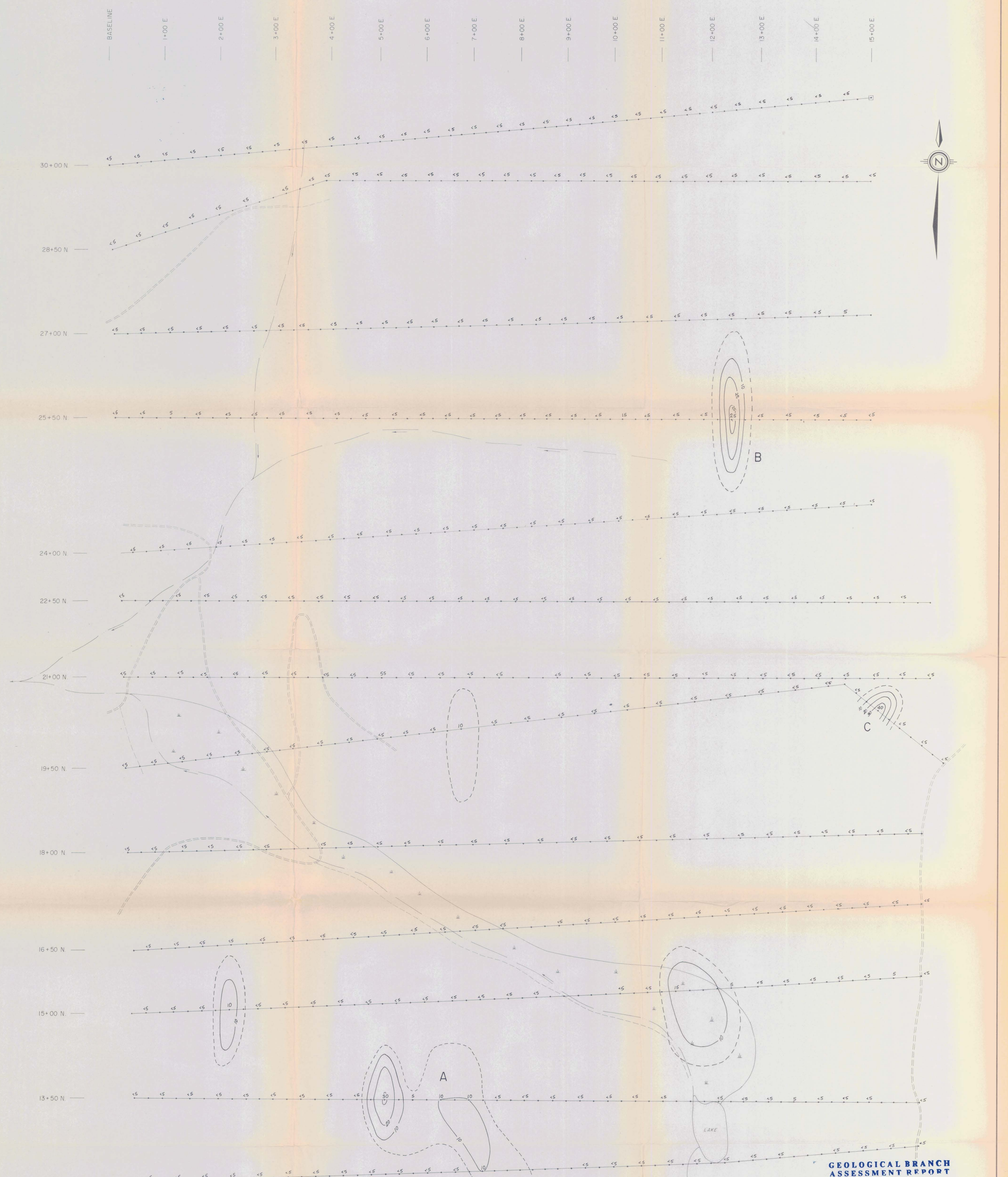
LEADER No. 3 GRID

SOIL GEOCHEMISTRY SURVEY

SILVER

DATA AND CONTOURS

| Drawn by: | Date: | Project No.: | N.T.S.: | Scale: | Sheet No.: |
|---|---|---|---|---|---|
| A.S. | NOV., 1983 | 83-47 | 82F/9E | 1:2500 | 7 |




GEOLOGICAL BRANCH
ASSESSMENT REPORT

14,079

CONTOURS

CONTOUR INTERVAL - 1 STANDARD DEVIATION

8 ppb

10, 20, 30 ppb

STATISTICAL PARAMETERS

| | |
|---|---|
| MEAN BACKGROUND VALUE | 5 ppb |
| SUB-ANOMALOUS THRESHOLD VALUE | 8 ppb |
| ANOMALOUS THRESHOLD VALUE | 10 ppb |

SCALE IN METRES

M 0 50 100 150 200 M

To accompany geochemical & geophysical report by David G. Mark, geophysicist

GEOTRONICS SURVEYS LTD.

MUSTANG RESOURCES INC.

LEADER #3 & LOOKOUT CLAIMS
ST. MARY LAKE AREA
FORT STEELE MINING DIVISION, B.C.

*LOOKOUT GRID*
*SOIL GEOCHEMISTRY SURVEY*

*GOLD*

*DATA AND CONTOURS*

| Drawn by: | Date: | Project No. | N.T.S. | Scale: | Sheet No. |
|---|---|---|---|---|---|
| A.S. | Nov., 1983 | 83-47 | 82F/9E | 1:2,500 | 13 |


BASELINE
1+00 E
2+00 E
3+00 E
4+00 E
5+00 E
6+00 E
7+00 E
8+00 E
9+00 E
10+00 E
11+00 E
12+00 E
13+00 E
14+00 E
15+00 E
30+00 N
28+50 N
27+00 N
25+50 N
24+00 N
22+50 N
21+00 N
19+50 N
18+00 N
16+50 N
15+00 N
13+50 N
12+00 N
F
D
N
LAKE
CONTOURS
CONTOUR INTERVAL - 1 STANDARD DEVIATION
0.15 ppm
0.25 ppm
STATISTICAL PARAMETERS
MEAN BACKGROUND VALUE 0.1 ppm
SUB-ANOMALOUS THRESHOLD VALUE 0.15 ppm
ANOMALOUS THRESHOLD VALUE 0.25 ppm
SCALE IN METRES
M 0 50 100 150 200 M
GEOLOGICAL BRANCH
ASSESSMENT REPORT
14,079
To accompany geochemical & geophysical report by David G. Mark, geophysicist
GEOTRONICS SURVEYS LTD.
MUSTANG RESOURCES INC.
LEADER #3 & LOOKOUT CLAIMS
ST. MARY LAKE AREA
FORT STEELE MINING DIVISION, B.C.
LOOKOUT GRID
SOIL GEOCHEMISTRY SURVEY
SILVER
DATA AND CONTOURS
Drawn by: A.S.
Date: Nov., 1983
Project No. 83-47
N.T.S. 82F/9E
Scale 1:2,500
Sheet No. 14




To accompany geochemical & geophysical report by David G. Mark, geophysicist;

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LEADER No. 3 AND LOOKOUT CLAIMS
ST. MARY LAKE AREA
FORT STEELE MINING DIVISION, B.C.

LEADER No. 3 GRID

*SOIL GEOCHEMISTRY SURVEY*

*ZINC*

*DATA AND CONTOURS*

| Drawn by | Date | Project No. | N.T.S. | Scale | Sheet No. |
|---|---|---|---|---|---|
| A.S. | NOV., 1983 | 83 - 47 | 82F / 9E | 1:2500 | 9 |

CONTOURS

CONTOUR INTERVAL - 1 STANDARD DEVIATION

............... 72.0 ppm

............... 94.0 ppm

STATISTICAL PARAMETERS

MEAN BACKGROUND VALUE .................. 53.0 ppm

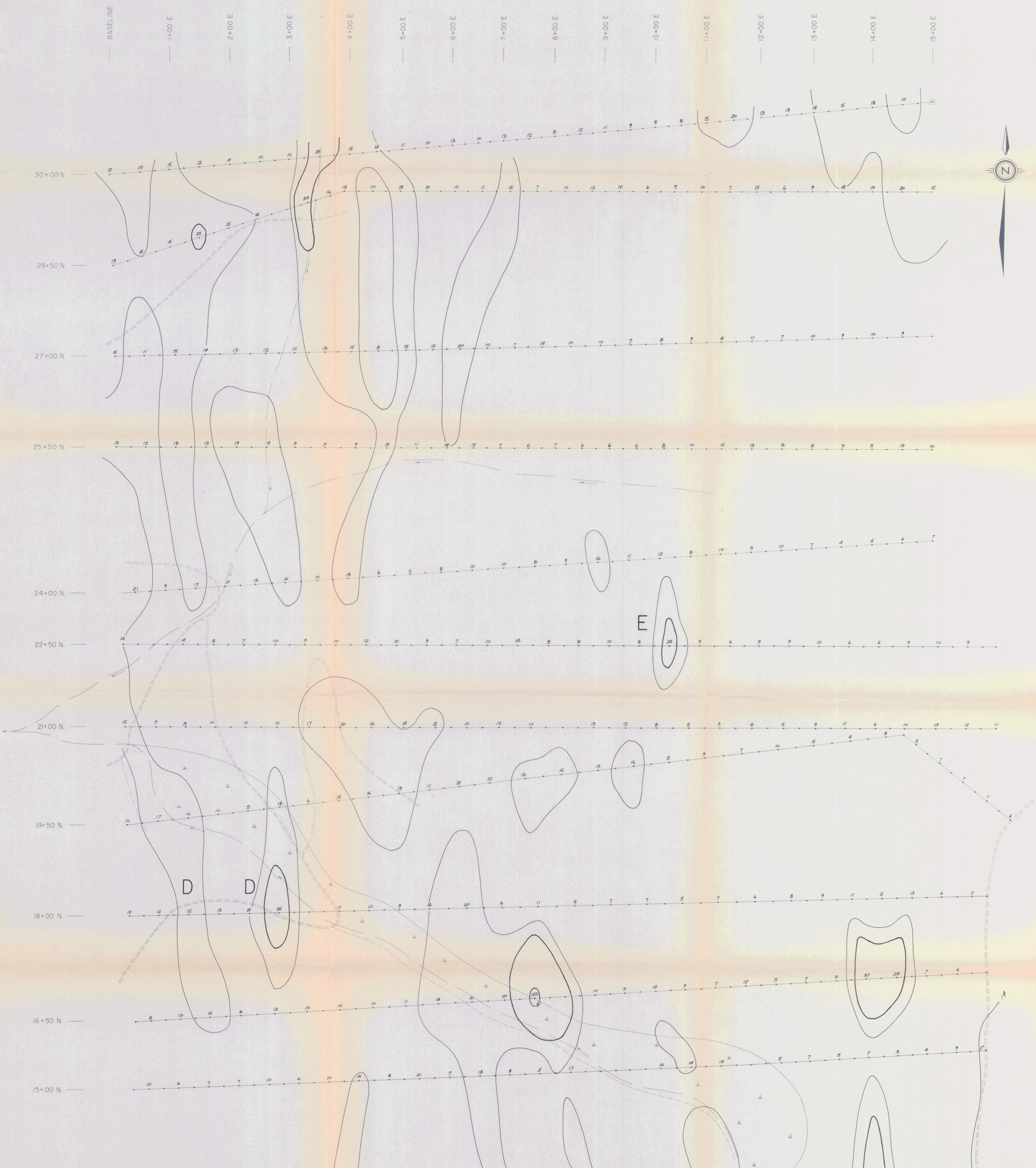
SUB-ANOMALOUS THRESHOLD VALUE ....... 72.0 ppm

ANOMALOUS THRESHOLD VALUE ............ 94.0 ppm

SCALE IN METRES

0 5 10 15 20 25

BASELINE
1+00 E
2+00 E
3+00 E
4+00 E
5+00 E
6+00 E
7+00 E
8+00 E
9+00 E
10+00 E
11+00 E
12+00 E
13+00 E
14+00 E
15+00 E
30+00 N
28+50 N
27+00 N
25+50 N
24+00 N
22+50 N
21+00 N
19+50 N
18+00 N
16+50 N
15+00 N
13+50 N
12+00 N
N
F
B
E
C
D
A
LAKE
LEGEND
ANOMALOUS GOLD CONTOURS............ 10 ppb
ANOMALOUS ZINC CONTOURS............ 94.0 ppm
ANOMALOUS LEAD CONTOURS............ 29.0 ppm
ANOMALOUS COPPER CONTOURS............ 21.0 ppm
ANOMALOUS SILVER CONTOURS............ 0.25 ppm
SCALE IN METRES
M 0 50 100 150 200 M
GEOLOGICAL BRANCH
ASSESSMENT REPORT
14,079
To accompany geochemical & geophysical report by David G. Mark, geophysicist
GEOTRONICS SURVEYS LTD.
MUSTANG RESOURCES INC.
LEADER #3 & LOOKOUT CLAIMS
ST. MARY LAKE AREA
FORT STEELE MINING DIVISION, B.C.
LOOKOUT GRID
SOIL GEOCHEMISTRY SURVEY
COMPILATION MAP
Drawn by: A.S.
Date: Nov., 1983
Project No.: 83-47
N.T.S.: 82F/9E
Scale: 1:2,500
Sheet No.: 18




CONTOURS

CONTOUR INTERVAL - 1 STANDARD DEVIATION

14.0 ppm

21.0, 40.0, 65.0 ppm

STATISTICAL PARAMETERS

MEAN BACKGROUND VALUE ........ 10.0 ppm

SUB-ANOMALOUS THRESHOLD VALUE ........ 14.0 ppm

ANOMALOUS THRESHOLD VALUE ........ 21.0 ppm

SCALE IN METRES

0 50 100 150 200 M

GEOLOGICAL BRANCH
ASSESSMENT REPORT

14,079

To accompany geochemical & geophysical report by David G. Mark, geophysicist

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MUSTANG RESOURCES INC.

LEADER #3 & LOOKOUT CLAIMS
ST. MARY LAKE AREA
FORT STEELE MINING DIVISION, B.C.

*LOOKOUT GRID*
*SOIL GEOCHEMISTRY SURVEY*

*COPPER*

*DATA AND CONTOURS*

| Drawn by: | Date: | Project No.: | N.T.S.: | Scale: | Sheet No.: |
|---|---|---|---|---|---|
| A.S. | Nov., 1983 | 83-47 | 82F/9E | 1:2,500 | 17 |


GEOLOGICAL BRANCH
ASSESSMENT REPORT

14,079

To accompany geochemical & geo... report by Dav... G. M... physicist.

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LEADER No. 3 AND LOOKOUT CLAIMS

ST. MARY LAKE AREA

FORT STEELE MINING DIVISION, B.C.

LEADER No. 3 GRID

MAGNETOMETER SURVEY

DATA AND CONTOURS

| Drawn by | Date | Project No. | N.T.S. | Scale | Sheet No. |
|---|---|---|---|---|---|
| A.S. | NOV., 1983 | 83-47 | 82F/9E | 1:2500 | 5 |

CONTOURS

20 gammas

SCALE IN METRES

0 5 10 15 20 25


**GEOLOGICAL BRANCH ASSESSMENT REPORT**

**14,079**

To accompany geochemical & geophysical report by David G. Mark, geophysicist,

GEOTRONICS SURVEYS LTD.

MUSTANG RESOURCES INC.

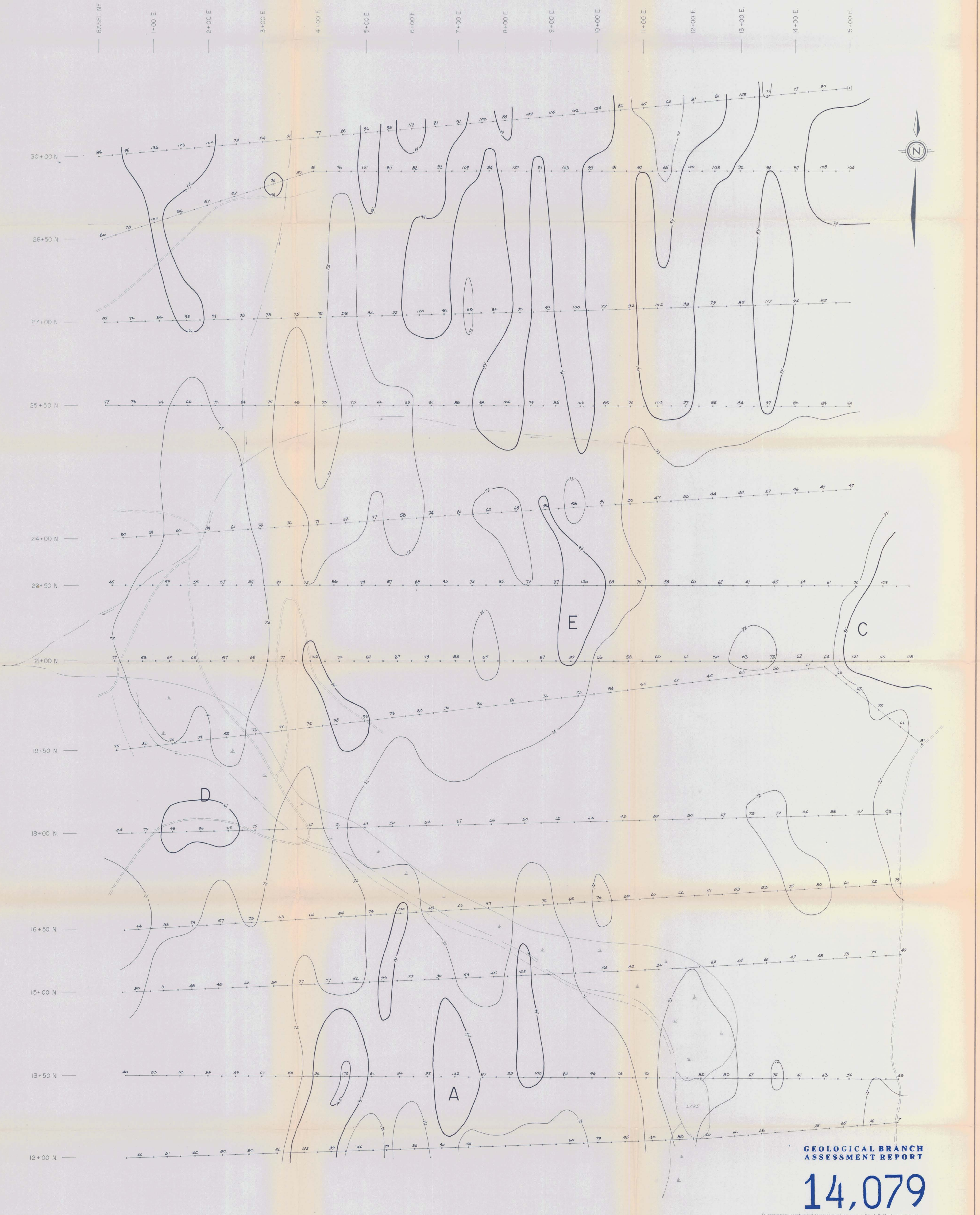
LEADER No. 3 AND LOOKOUT CLAIMS
ST. MARY LAKE AREA
FORT STEELE MINING DIVISION, B.C.

LEADER No. 3 GRID

*VLF-EM SURVEY*
*FRASER FILTERED*
*DATA AND CONTOURS*

| Drawn by | Date | Project No. | N.T.S. | Scale | Sheet No. |
|---|---|---|---|---|---|
| A.S. | NOV., 1983 | 83 - 47 | 82F / 9E | 1:2500 | 4 |


BASELINE
1+00 E
2+00 E
3+00 E
4+00 E
5+00 E
6+00 E
7+00 E
8+00 E
9+00 E
10+00 E
11+00 E
12+00 E
13+00 E
14+00 E
15+00 E
30+00 N
28+50 N
27+00 N
25+50 N
24+00 N
22+50 N
21+00 N
19+50 N
18+00 N
16+50 N
15+00 N
13+50 N
12+00 N
F
E
C
D
A
LAKE
GEOLOGICAL BRANCH
ASSESSMENT REPORT
14,079
To accompany geochemical & geophysical report by David G. Mark, geophysicist
CONTOURS
CONTOUR INTERVAL - 1 STANDARD DEVIATION
18.0 ppm
29.0, 66.0, 120.0 ppm
STATISTICAL PARAMETERS
MEAN BACKGROUND VALUE 10.0 ppm
SUB-ANOMALOUS THRESHOLD VALUE 18.0 ppm
ANOMALOUS THRESHOLD VALUE 29.0 ppm
SCALE IN METRES
M 0 50 100 150 200 M
GEOTRONICS SURVEYS LTD.
MUSTANG RESOURCES INC.
LEADER #3 & LOOKOUT CLAIMS
ST. MARY LAKE AREA
FORT STEELE MINING DIVISION, B.C.
LOOKOUT GRID
SOIL GEOCHEMISTRY SURVEY
LEAD
DATA AND CONTOURS
Drawn by: A.S.
Date: Nov., 1983
Project No.: 83-47
N.T.S.: 82F/9E
Scale: 1:2,500
Sheet No.: 15




CONTOURS

CONTOUR INTERVAL - I STANDARD DEVIATION

.............. 72.0 ppm

94.0, 165.0 ppm

STATISTICAL PARAMETERS

MEAN BACKGROUND VALUE .............. 53.0 ppm

SUB-ANOMALOUS THRESHOLD VALUE .... 72.0 ppm

ANOMALOUS THRESHOLD VALUE .......... 94.0 ppm

SCALE IN METRES

M 0 50 100 150 200 M.

GEOLOGICAL BRANCH
ASSESSMENT REPORT

14,079

To accompany geochemical & geophysical report by David G Mark, geophysicist

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MUSTANG RESOURCES INC.

LEADER #3 & LOOKOUT CLAIMS
ST. MARY LAKE AREA
FORT STEELE MINING DIVISION, B.C.

*LOOKOUT GRID*
*SOIL GEOCHEMISTRY SURVEY*

*ZINC*

*DATA AND CONTOURS*

| Drawn by | Date | Project No. | N.T.S. | Scale | Sheet No. |
|---|---|---|---|---|---|
| A.S. | Nov., 1983 | 83-47 | 82F/9E | 1:2,500 | 16 |


GEOLOGICAL BRANCH
ASSESSMENT REPORT

# 14,079

To accompany geochemical & geophysical report by David G. Mark, geophysicist,

<u>LEGEND</u>

ANOMALOUS GOLD CONTOUR............13 ppb

ANOMALOUS ZINC CONTOUR............94.0 ppm

ANOMALOUS LEAD CONTOUR............29.0 ppm

ANOMALOUS COPPER CONTOUR............21.0 ppm

SCALE IN METRES

0 5 10 15 20 25

GEOTRONICS SURVEYS LTD.

MUSTANG RESOURCES INC.

LEADER No. 3 AND LOOKOUT CLAIMS

ST. MARY LAKE AREA

FORT STEELE MINING DIVISION, B.C.

<u>LEADER No. 3 GRID</u>

*SOIL GEOCHEMISTRY SURVEY*

## *COMPILATION MAP*

| Drawn by | Date | Project No. | N.T.S. | Scale | Sheet No. |
|---|---|---|---|---|---|
| A. S. | NOV., 1983 | 83 - 47 | 82F / 9E | 1:2500 | 11 |




CONTOURS

CONTOUR INTERVAL - I STANDARD DEVIATION

............... <8 ppb

............... 13, 23, 35, 50, 75, 110 ppb

STATISTICAL PARAMETERS

MEAN BACKGROUND VALUE ..................... < 5 ppb

SUB-ANOMALOUS THRESHOLD VALUE ....... < 8 ppb

ANOMALOUS THRESHOLD VALUE .............. 13 ppb

SCALE IN METRES

0 5 10 15 20 25

To accompany geochemical & geophysical report by David G. Mark, geophysicist,

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MUSTANG RESOURCES INC.

LEADER No. 3 AND LOOKOUT CLAIMS

ST. MARY LAKE AREA

FORT STEELE MINING DIVISION, B.C.

LEADER No. 3 GRID

*SOIL GEOCHEMISTRY SURVEY*

*GOLD*

*DATA AND CONTOURS*

| Drawn by: | Date: | Project No.: | N.T.S. | Scale: | Sheet No.: |
|---|---|---|---|---|---|
| A.S. | NOV., 1983 | 83 - 47 | 82F / 9E | 1:2500 | 6 |