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TO G. ADDIE

A PRIMARY AERIAL PHOTO LINEAMENT ANALYSIS ON

THE PHOENIX MINING AREA

by

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## INTRODUCTION

A fundamental lineament analysis of aerial photographs was carried out on an area roughly two miles in diameter surrounding the present Granby operation at Phoenix, B.C. (after Haman, 1962).

This analysis is intended to be little more than a sketch to determine whether any particularly anomalous features are present which could be further studied by a detailed, precise analysis as used by Haman, or whether any peculiar lineation features are suggested which could be brought to light by a more complete analysis

## PROCEDURE

The photographs chosen for the study were taken from the May, 1951 series on Central British Columbia and were numbered as follows; 196-12-4-5&7, 196-12-3-17, 19, & 21, 196-12-2-9, 11, & 13. The scale on the photographs is approximately 1150' per inch.

These photos were all matched and taped together so that the complete area could be studied at once. A heavy plastic sheet was put over this matrix and all lineations were scored on this sheet. This tracing was then easily transferred to a sheet of paper which was used as a work sheet. (See tip sheet on back cover).

The scale of this sheet was reduced by one-half to approximately 2300' per inch giving a lineation composite from which all working diagrams were made.

The first problem was to define the areas where lineations were most dense. This was done by placing a grid marked off in one inch squares over the composite and measuring the total length of all lineations in each square with a forty scale rule. Each total was tabulated over the entire area as shown in

figure two. This matrix was then contoured in intervals of twenty/forty inches, giving the result shown in figure three.

Next an effort was made to determine whether or not a significant east-west or north-south trend existed in the lineations. All lineations lying within an azimuth of 315° to 45° were traced on one sheet and all those with an azimuth of 45° to 135° were traced on another. When curved lines were encountered, the angle of the straight line between their two end points was taken. See figures four and five. At first glance neither direction seems more prominent, however on using the same one inch square grid technique and totaling the length for each square, we find that the east-west direction is more prominent by 16.5%. Density contours were drawn on the matrix of totals for both directions as illustrated in figures six and seven.

Figure eight shows the locations of most of the old mining operations in the area in question. Comparison can be made between this and the other illustrations to detect any economic significance in the lineation anomalies.

#### INTERPRETATION

A logical correspondence between the north-south lineament contours and the contoured composite as well as the east-west contour and the composite is immediately evident on comparison of the sheets. This similarity is only a result of the processing procedure.

There is no similarity however between the contours on the east-west sheet and those on the north-south sheet, (see figures six and seven respectively). This would mean that few or no areas are outstanding in lineations of all directions.

In comparing the old mines or test holes of the area to lineation density we find that they are concentrated usually in a medium density area rather than all in a high or low area. There are a few exceptions on each sheet and there does seem to be a slightly greater tendency for mines to be located at points with more east-west lineations than those of north-south direction.

None of these features are extraordinary, which would indicate that mineralization is not associated with fracturing to any exceptional degree. Neither does a 16.5% increase in east-west lineations over the north-south direction seem great enough to assume that the east-west direction is the more prominent.

There does seem to be however, a slight north-east - south-west trend in general fracturing. This trend is not created by fractures of any one direction, but rather by fractures in general.

### CONCLUSION

The mineral zones in the Phoenix area ( as judged by the locations of old workings) have little or no correspondence to fracture zones of high or low density in any direction. Neither are there any exceptionally prominent or anomalous fracture patterns in the area. With this I would suggest that a more thorough study of the subject would be unnecessary and of little value.

LINEATION COMPOSITE

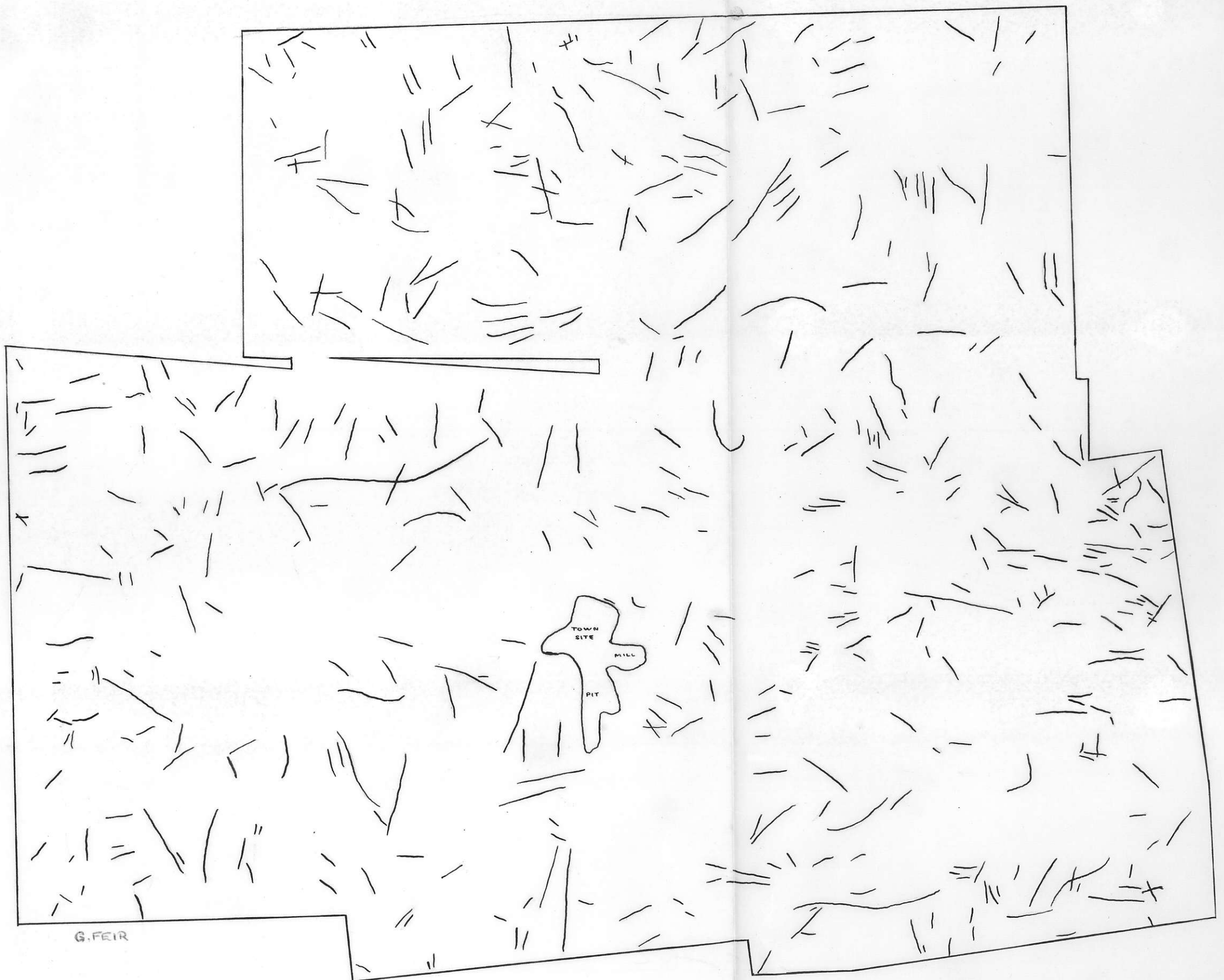


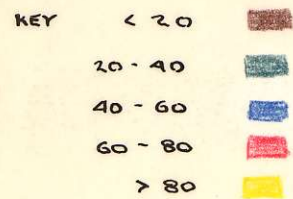
FIGURE 1



FIGURE 2

LINEAMENT DENSITY IN 40th's OF AN INCH PER SQ. INCH





SCALE - 1" = .458 mi

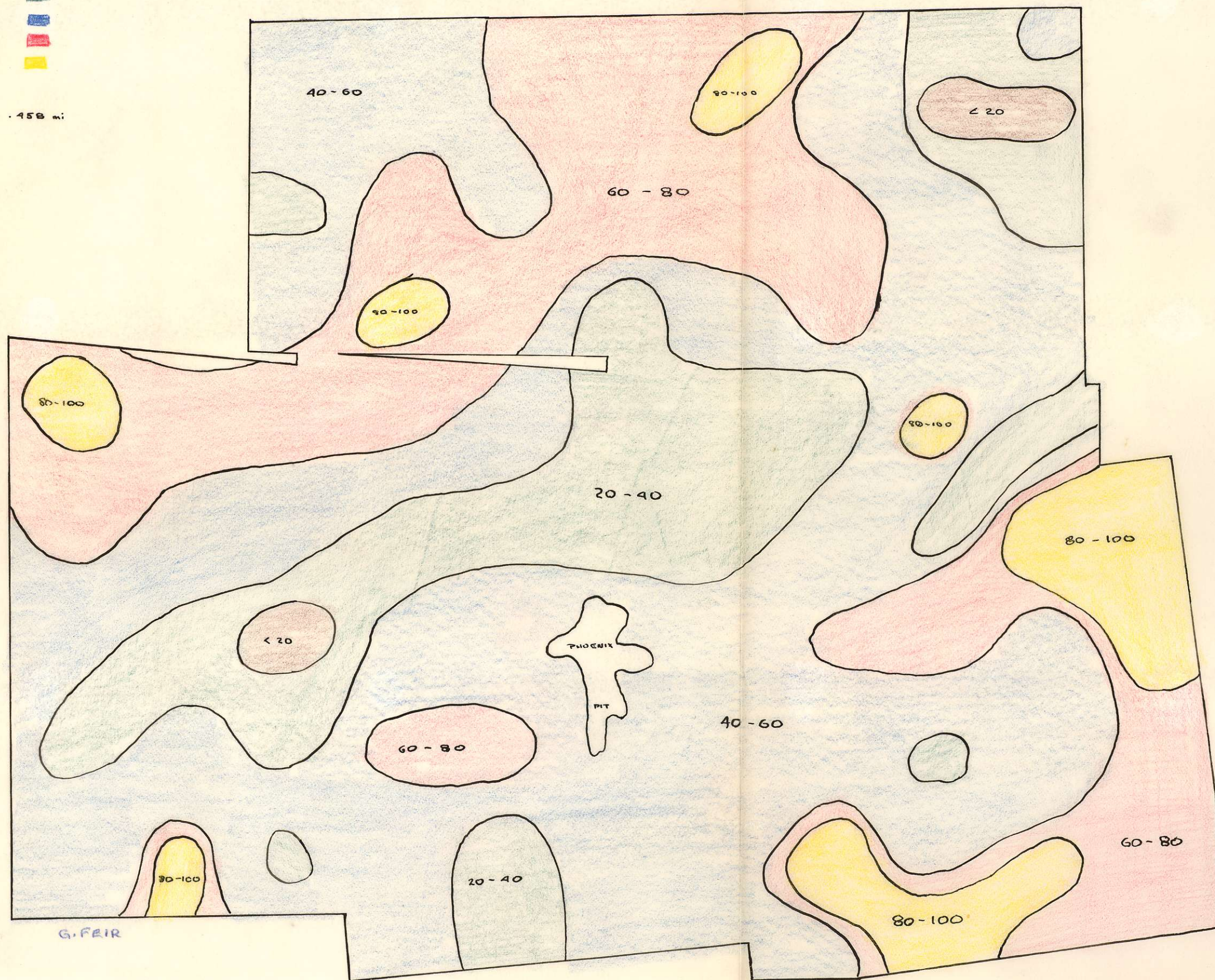


FIGURE 3 LINEAMENT DENSITY CONTOURS IN 40th's IN. PER SQ. IN.



TOT = 2146



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FIGURE 4

LINEATIONS WITH AZIMUTH  $45^{\circ} - 135^{\circ}$  (E-W)



TOT = 1793



FIGURE 5

LINEATIONS WITH AZIMUTH 315° - 45° (N-S)



< 10  
 10 - 20  
 20 - 30  
 30 - 40  
 40 - 50  
 > 50

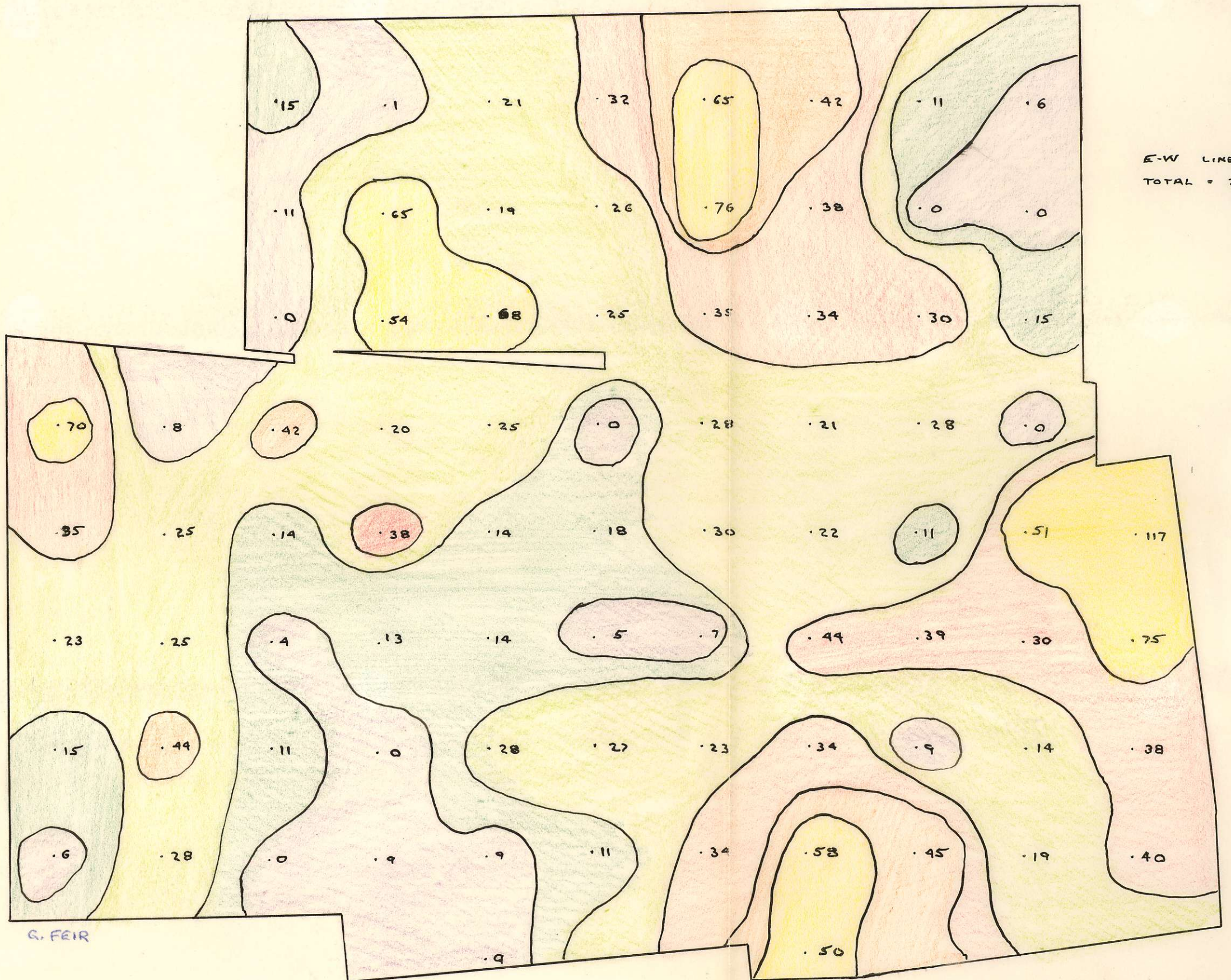


FIGURE 6

DENSITY CONTOURS FOR E-W LINEATIONS



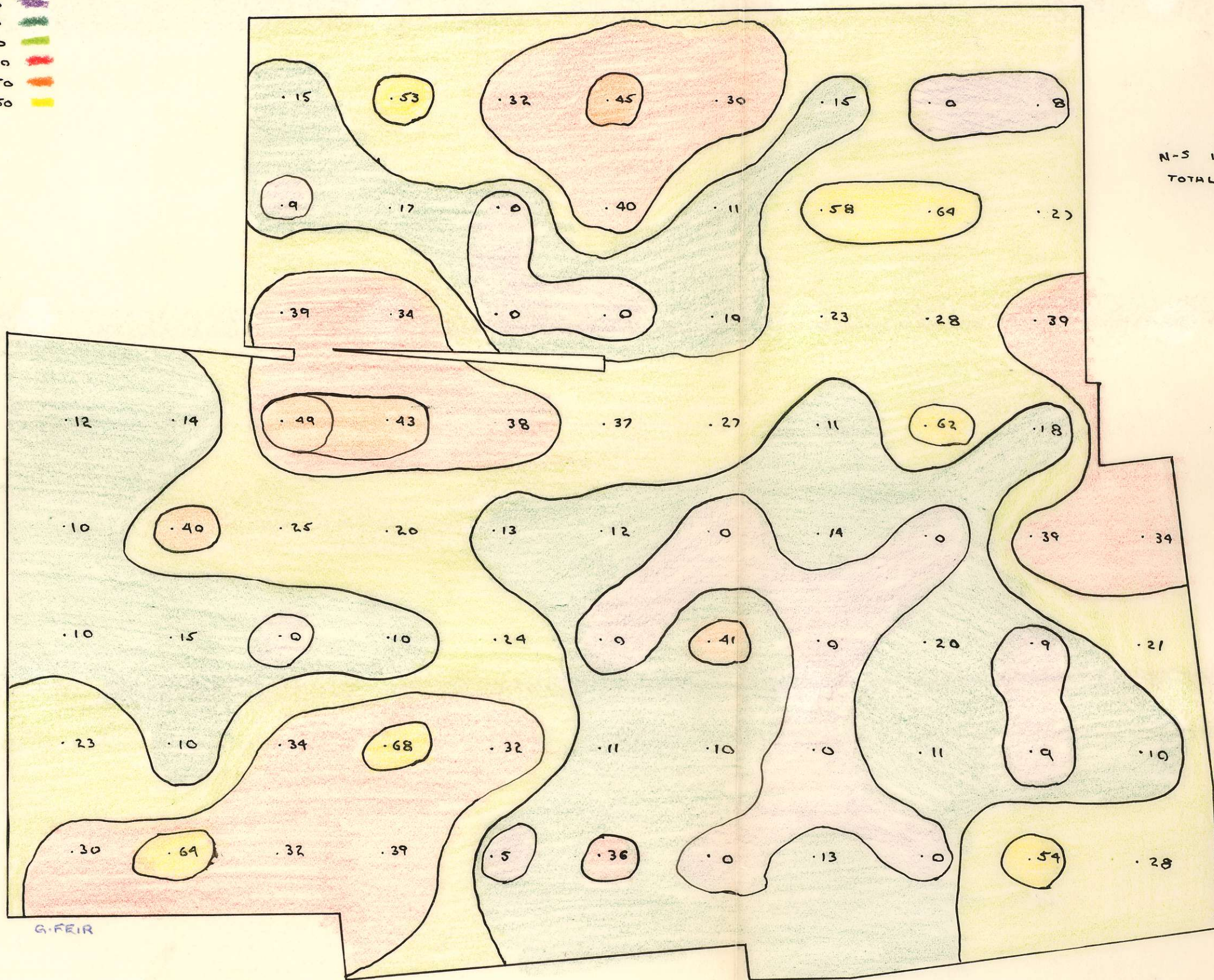
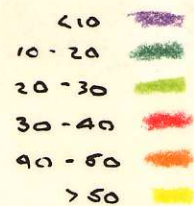


FIGURE 7

DENSITY CONTOURS FOR N-S LINEATIONS



# INDEX TO MINING CLAIMS

- |                 |                      |
|-----------------|----------------------|
| (1) Gilt Edge   | (12) Bald Eagle      |
| (2) Last Chance | (13) War Eagle       |
| (3) Lake        | (14) Monarch         |
| (4) Bay         | (15) Bank of England |
| (5) Skylark     | (16) Rawhide         |
| (6) Crescent    | (17) Gold Drop       |
| (7) Brooklyn    | (18) Curlew          |
| (8) Idaho       | (19) Snowshoe        |
| (9) Stemwinder  | (20) Yellow Jacket   |
| (10) Red Rock   | (21) Marshall        |
| (11) Grey Eagle | (22) Winnipeg        |
|                 | (23) Golden Crown    |

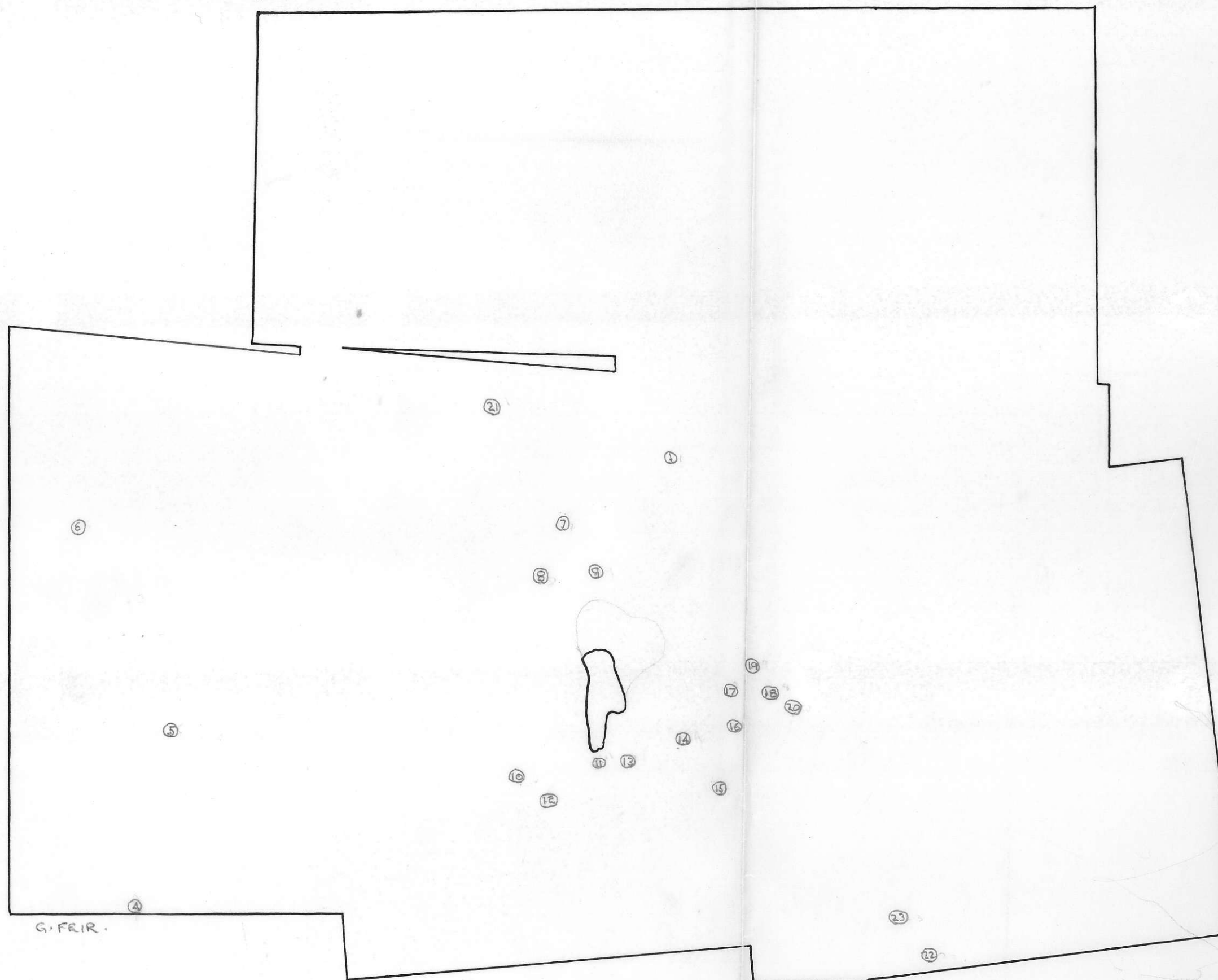


FIGURE 8

LOCATIONS OF OLD MINING OPERATIONS

↓ FIELD NO ↓

