

1844 Valley View Road, Boulder, Colorado 80301 • 303/444-5252

Gary h Granberger PO B6x 115 Hawthorne Nevada 89415 702 - 945 - 3827

Patrick Davcey Exploration Manager Parnasse Co Inc 6810 E Camel back Rd Suite 102 Scottsdale Aviz 85251

Dear Mr Darcey:

Enclosed are the geologic report and geologic, grochemical maps of our CM prospect.

hoven Smith requested that I send the data to you because of our inability to contact Tom Frank If
you dersive to visit the property please let me Know at the above phene number in How thomse.

If it is at all possible for Tom Frank to visit the property I would look forward to his visit.

We also have two other prospects in avery preliminary stage which you may be interested in when you find time to contact me.

one property is a low grade Cartinty pe gold

prospect, and the other a high gode gold-copper tactite occurence of longe dimensions.

Thank you for your consideration.

Sincerely Gory h brankeyer



#### SEMIQUANTITATIVE SPECTROGRAPHIC ANALYSIS

PILM NO 206-13
DATE 10-30-73

INSTRUMENT: WADSWORTH MOUNTED, JARRELL-ASH, 1.5 METER, DC ARC EMISSION SPECTROGRAPH Fe, Mg, Ca, Ti, Na, K, Si & AL reported in %, all other elements reported in PPM

| Plate<br>No. | Office No.    | Field No. | Au A | Ag | Cu       | Pb      | Zn   | Mo  | Fe    | w  | Ni  | Co C  | r Cd | As   | Sb   | Mn     | V     | Bi   | Sn    | Zr | В  | Ва    | Ве  | La   | Nb  | Sc    | Sr   | Y   | Ca   | Mg      | Ti    | Na    | K      | Si, | AI     | 0    |      |
|--------------|---------------|-----------|------|----|----------|---------|------|-----|-------|----|-----|-------|------|------|------|--------|-------|------|-------|----|----|-------|-----|------|-----|-------|------|-----|------|---------|-------|-------|--------|-----|--------|------|------|
| 0            | Reference     | 7080      | L3   | 0  | 500      | 1011    | 2000 | 50  | 2,    | 11 | 50  | 30 2  | 21   | 11   | 50   | 200    | 70    | 10   | 10    | 50 | 10 | 1000  | 20  | N    | 1   | 11    | 200  | 11  | 2,   | 2,      | 7     | 3     | 6      | 30, | 7      | 1.1  |      |
| 1            | 35935         | G-5       | 1/1  | V. | 150      | 30      | 11   | 5   | 2,    | N  | 10  | 1/20  |      | 11   | 11   | 300    |       | 11   | 1     | 70 |    | 2000  | 1   | 11   | 11  | 11    | Zm   | 11  | 5    | .3      | 3     | 15    | 0      | 30, | 8      | 1    |      |
| 2            | 35936         | G 10      | NI   | 1  | 150      | 20      | 11   | 11: | 7     | 1  | 10  | 1/2   | 201  | 11   | 1    | 20     | j.    | 11   | 11    | 50 |    | 2000  |     | 11   | 11  | 11    | 120  | 11  | 5.   | ,2      | 7     | 1     | 7      | 30  | 8,     | 1    | 14.7 |
| 3            | 35931         | G 11      | 1/1  | 5  | 3000     | 20      | 11   | N   | 1.5   | 11 | 10  | 1/2   | 0 1/ | 1/2  | 1    | 20     | 0 /20 | 11   | 11    | 50 |    | 2000  |     | 11   | 11  | 1/    | 1000 | 1/  | 5    | 3       | , 2   | 3,    | 2      | 3,  | 8,     | .1   |      |
| 4            | 35938         | G12       | 11   | 2  | 300      | 20      | N    | 11  | 1.    | 11 | 10  | 1/2   | 0 1/ | 11   | 1    | 120    | 0 100 | 11   | 1     | 50 |    | 2000  |     | 1/   | 1/  | 1/    | im   | 11  | 7    | 3       | 2     | 7     | 7      | 3)  | 8      | 1    |      |
|              | 35939         | H-1       | 11   | 11 | 20       | 20      | N    | 5   | 15    | Al | 10  | 1/2   | 9 11 | 1    | 1    | 701    | 100   | 11   | 1/    | 20 |    | 2000  |     | 11/  | N/  | 1.1   | 150  | 1/  | 2.   | 3       | 7     | 2     | 7      | 23  | 8.     | 11   |      |
| 6            |               | H-2       | 11   | N  | 20       | 20      | 1/   | N   | 7     | 11 | 10  | 1/3   | 0 11 | 1/1  | A    | 20     | 136   | 11   | 1/1/  | 50 |    | 2000  |     | 8/   | NI  | 11/1/ | im   | 11  | 3,   | 3       | ,2    | 2,    | 7      | 30  | 7      | 1/   |      |
| 7            | 35941         | H-3       | N    | 1  | 60       | 20      | N    | 6   | 2,    | 11 | 10  | 1/ 2  | OAI  | 1/1/ | 11   | 100    | 100   | 11   | 11/   | 50 | 1. | Doga  | 11  | 11   | 11  | 19/1  | KIDO | 11  | ブ    | 1       | 7     | 1     | 11     | 30, | 8,     | 1    |      |
| 8            | 35942         | H-4       | N    | 11 | 50       | 20      | 1/   | 11  | 7     | 1  | 10  | 1/2   | 0 11 | 1/   | 11   | 700    | 100   | A    | N     | 50 | 20 | Im    | 11  | N    | 11  |       | 300  | A   | 1.5  | ,2      | 2     | 3,    | 6      | 30. | 3,     | 1    |      |
| 9            | 35943         | H-10      | 11   | 1  | 70       | 20      | 11   | 5   | 5     | 11 | 10  | 1/2   | 0 1  | 11   | 10   | 200    | 2 100 | 1    | 11    | 20 | 10 | 1500  | Al  | 11   | 11  | 11    | 500  | 2/  | 2.   | ,2      | 7     | 7     | 7      | 30. | クラ     | 1    |      |
| 12           | 35944         | H-11      | 11   | 1  | 150      | 50      | 11   | 5   | 17    | 2  | 10  | 1/3   | 0 10 | 1/1  | 1/1  | 20     | 100   | 1/1  | 11    | 70 |    | 2000  | 2   | 20   | 11  |       | han  | 1   | -    | 12      | 3     | 1     | 3      | 30, | 8      | 11   |      |
| 11           |               | - H-12    | 1/   | 1  | 100      | 20      | 11/  | 1/  | 5     | 11 | 11  | 1/2   | 0 1/ | 1/1  | 1/1  | 200    | 0 10  | 10/  | 1/    | 50 |    | 1500  | 1   | 20   | 11  |       | lins | 1/  | 2)   | 1       | ,2    | 15    | 7      | 30. | 0      | 11   |      |
| 12           | 35946         | I-3       | 1/   | 1/ | 60       | 30      | A/   | 11  | 1,5   | N  | 11) | 1/ 2  | 0 1/ | 1/1/ | 11   | 201    | 1/00  | 11   | 1/1/  | 50 | la | Zma   | 1   | 11   | 11  | 11    | in   | 1/  | 2,   | 1.      | .2    | 7     | 6,     | 30  | 0      | 11   |      |
| 13           | 35947         | I-10      | 1/   | 1/ | 100      | 20      | 10/  | 1/  | 1,5   | 1  | In  | 1/ 2  | 0 1/ | 1/1  | 1/1/ | 201    | 1/00  | Al   | 1/    | 2  | 30 | 200   | 1   | 11   | 1/1 | 1//   | MI   | 1/  | 7,   | ,2      | .7    | 1     | -      | 30, | 0,     | 1    |      |
| 14           | 35948         | 5-9       | 11   | 1/ | 100      | 20      | 11/  | 5   | .5    | 1  | 10  | 1/2   | 2 11 | 11   | 1    | 70     | 2/00  | 10   | 11/   | 50 | -  | bon   | 1   | 1/   | 11  | 11    | 200  | 1/1 | 7    | 17      | 15    | 1     | 7      | 30. | U      | 1)   |      |
| 15           |               | 3-10      | 1    | 1  | -        | 20      | 21   | 11  | .5    | 1  | 10  | 1/ 2  | 0 1  | 11   | M    | 200    | 2 /00 | 1/   | 11    | 50 | _  | inn   | 11/ | 1/   | 11  | 11    | 300  | 11  | 7    | 103     | 12    | 1     | 7      | 31  | 4      | 10   |      |
| 16           | 35950         | 5-11      | 1/1  | 1/ | 60       | 20      | 1    | N   | .2    | N  | 10  | 1/ 2  | 0 11 | 11   | 11   | 100    | 100   | 11   | A     | 50 | 30 | 700   | 11  | A/   | 1/  | 11/11 | 100  | */  | -    | 105     | 115   | 7     | 7      | 37  | 7.     | 1    |      |
| 17           | 35951         | J-12      |      | 1/ | 60       | 50      | 11   | 1   | .5    | 1  | 10  | 7     | DAI  | 11/1 | 13/  | 200    | 100   | 1    | 1/1/  | 50 | 50 | DAN   | al  | 11   | 14  | 1/1/  | loss | //  | 3,   | 1       | ,13   | 7     | 7      | 20  | 7      | 1/   |      |
| 18           | 35952         | K-10      | 1/ 1 | 1/ | 20       | 70      | 11   | 11  | 3     | Al | 10  | 1/2   | 2/1/ | 1/1/ | 1    | 201    | 3 /00 | 10/1 | 1/1/1 | 20 | In | 1000  | 11  | 1/1/ | 11  | 11    | Zn   | 4/  | 1    | 1       | 15    | 7     | 8,     | 20  | 4      | 11   |      |
| 19           | 35953         | K-11      | 1    | 2  | 300      | 50      | 1/1/ | 11  | .5    | 1  | 10  | 1/ 2  | 2 // | 1    | 1    | 201    | 2/00  | 1/1/ | 11    | 50 | 20 | LANA  | 11  | 11   | 11  | 1/1   | 2000 | 11  | 11   | ,7      | ,13   | 2,    | 8      | 31  | 3      | 1    |      |
|              | 35954         | K-12      | W.   |    | 300      | 20      | 1/   | 11  | ,5    | 1  | 10  |       | 21/  | N    | 19   | 33     | 2 100 | 1/1/ | 1/    | 50 | 20 | (CA)  | 111 | A    | 1/  | 11/2/ | 700  | 11  | 2,   | , ,     | ,3    | 1,    | 8      | 20  | 7      | 1/   | 100  |
|              | 35955         | 4-10      | Ay   | 5  | 100      | 20      | 3/   | 11  | 5     | D  | 10  | 1/2   | 0/1/ | 11   | 1    | 30     | 100   | 1/1  | 11    | 57 | 20 | 2000  | 1/  | 100  | 11  | A     | 2270 | 1   | 7    | 1       | 15    | 1,    | 8,     | 20  | 7      | 1/   |      |
|              | 35956         | 4-11      |      |    | 50       | 20      | 11   | 11  | ,5    | 01 | 10  | 1 3   | 2 1/ | 1    | 2/   | 22     | 100   | 1/1  | 1/1/  | 50 | 20 | 1500  | 1   | 1/   | AL  | N     | 20   | 1   | 3,   | 1/      | 15    | 1,    | 7      | 30  | 1,     | 1    |      |
| 23           | 35957         | 1-12      | 1/-  | 7  | 1500     | 20      | 14   | 20  | 7     | N  | 10  | 1/2   | 2 1/ | 1    | 1    | 20     | IN    | 1/1  | 1/1   | -  | 20 | 200   | 11  | 11   | 11  | A     | 700  | 1   | 5.   | ./      | 7     | 1     | 8.     | 20  | 01     | 1    |      |
|              | Lower Detect  |           | 10 0 | -  | 5        | 10      | 200  |     | 0.05% | 50 | 5   | 10 20 | 20   | 200  | 100  | 10     | 10    | 10   | 10    | 10 | 10 | 10    | 2   | 20   | 10  | 5     | 100  | 10  |      | 0.02%   | 0020  | 0.2%  |        | 100 | 0.5%   | 10   |      |
| -            | N - Not detec | cted      |      |    | ted, but | t below |      |     |       |    |     |       |      |      |      | e show |       | 1 10 | 1.0   |    | .0 | 2 312 |     | 20   | 10  | ,     | 100  |     | V.U3 | 0.02 /6 | .001% | 0.276 | U.3 70 | 1%  | U.J 70 | 11/0 | 7.09 |

REMARKS .

KEYPUNCH CODE ANALYST.

W. A. BOWES & ASSOCIATES P. O. BOX 160, Steamboat Spgs. Colorado 80477

#### SEMIQUANTITATIVE SPECTROGRAPHIC ANALYSIS

DATE 10-31-73

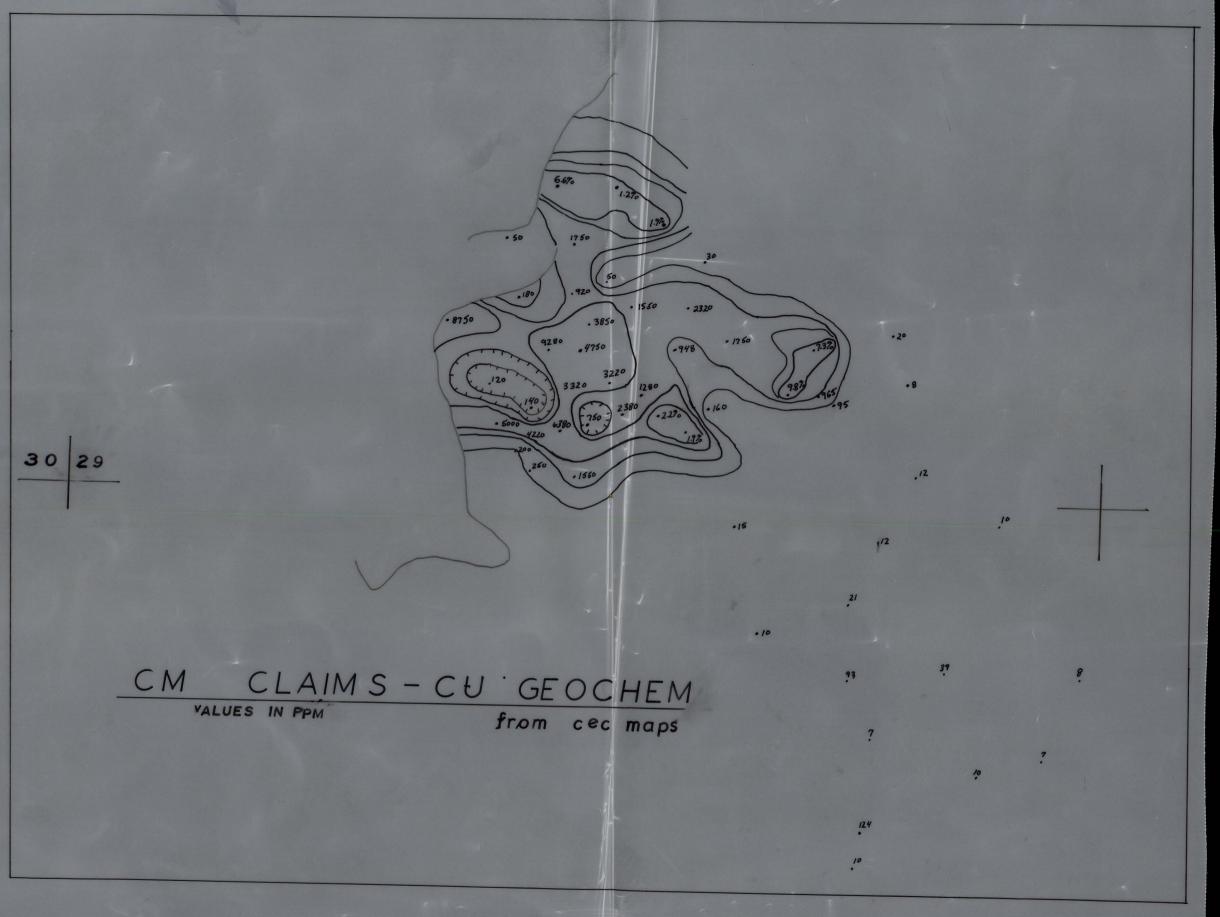
INSTRUMENT: WADSWORTH MOUNTED, JARRELL-ASH, 1.5 METER, DC ARC EMISSION SPECTROGRAPH Fe, Mg, Ca, Ti, Na, K, Si & AL reported in %, all other elements reported in PPM

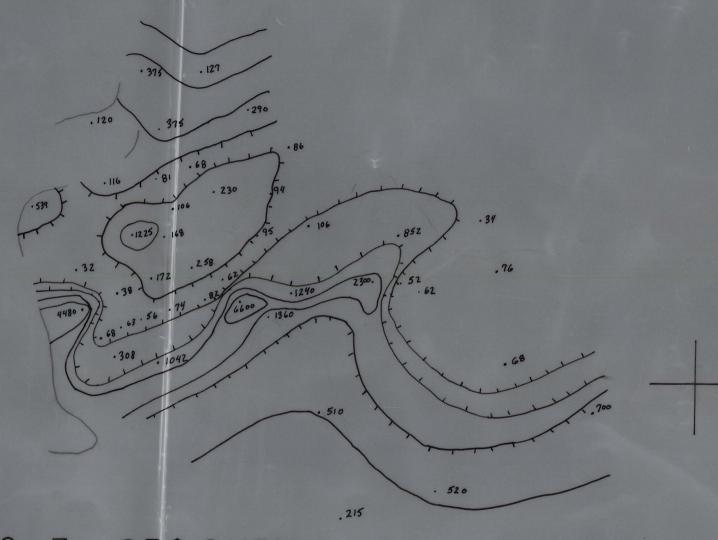
| No.          | Office No.  | Field No.  |    |     |      | Pb   | Zn   | Мо  | Fe    | w  | Ni | Со  | Cr  | Cd   | As   | Sb  | Mn  | V        | Bi | Sn  | Zr | В    | Ba         | Ве | La  | Nb    | Sc    | Sr  | Y   | Ca   | Mg       | Ti    | Na   | K    | Si,  | AI   | P  | 3    |
|--------------|-------------|------------|----|-----|------|------|------|-----|-------|----|----|-----|-----|------|------|-----|-----|----------|----|-----|----|------|------------|----|-----|-------|-------|-----|-----|------|----------|-------|------|------|------|------|----|------|
| 0            | Reference   | 7080       | 2  | 30  | 800  | iom  | 2000 | 100 |       | U  | 50 | 30  | 150 | N    | 11   | 500 | 200 | 100      | 10 | 11  | 50 | 10   | 2000       | 20 | N   | L     | 11    | 200 | 11  | 2,   | 2,       | ,1    | 3,   | 6,   | 30,  | 8,   | .1 |      |
| 1            | 35958       |            |    |     | 12   |      |      | 15  |       | N  | 10 | 11  | 50  | 11   | 11   |     | 200 |          | 11 | 11  |    |      | 1500       |    | 4 6 | 11    | 11    | 700 | 11  | 3,   | ,05      | .2    | 1    | 7,   | 30,  | 5,   | 1  |      |
|              | 35959       | M-11       | 11 | 1   | 100  | 20   | 11   | 11  | 1,    | N  | 10 | 11  | 30  | 11   | 11   | 11  | 200 | Inn      | A  | 11/ | 50 |      | 1500       | 11 | 11  | 11    | 11    | 500 | 11/ | 3,   | 1,1      | .2    | 1    | 8    | 30,  | 6,   | ./ |      |
| remaining or | 35960       | M-12       | 11 | 2   | 800  |      | 11/  | 11  | 17    | S  | 20 | 11  | 50  | 11   | VII  | 11  | 300 | 100      | A  | 11  |    | 50   | loon       | 11 | 11  | 11    | 11    | 300 | 11  | 3,   | 1        | 7     | 1    | 8,   | 30,  | 3,   | ./ |      |
|              | 35961       | N-10       | A  | ,5  |      | 4.40 | 1/   | 11  | 15    | 2  | In | 11  | 20  | 11   | 1/1/ | 11  | 200 | 101      | 11 | 11  | 50 | 30   | 500        | 11 | 11  | 11    | 1/    | 700 | 11  | 5.   | 1/       | 12    | 1.   |      | 30,  | 7    | 1/ |      |
|              | 35962       | N-11       | 11 | 1   | 150  | 20   | 11/  | 1/1 | 5     | 11 | 10 | 6:4 | 20  | 11   | 1/1  | 1/  | 200 | 70       | 11 | 1/  |    |      | 2m         | 11 | Al  | 11    | 1     | Vm  | M   | 5,   | ./       | 12    | 1.5  | 8,   |      | 8,   | 1  |      |
|              | 35963       |            | A  | 1   | 100  | 20   | 11   | 11  | 1,5   | 2  | 10 | 11  | 20  | 1/   | 1/1/ | 1/  | 300 | 150      | 11 | 1   | 50 |      | No at Said | 1  | Al  | AI    | A     | 500 | 1   | 1.5  | ,5       | 13    |      |      | 30.  | 8    | 11 |      |
| 7            | 35964       | 0-10       | N  | ,5  | 30   | 10   | 1/   | 11  | ,2    | 2  | 10 | 10/ | 20  | AI   | 1/1  | 11  | 150 |          | 1  | 1/  | 50 |      | 15an       | 11 | 11  | 2/    | A     | 500 | N   | 2,   | 11       | Z     | 1    | 8.   | 30,  | 8.   | 1  | 7    |
| 8            |             | -          | -  | -   |      | -    | 10   | -   | -     | _  | -  | -   | _   | -    | 11   | -   |     | -        | -  | -   | -  | -    | -          | -  | 1   | ~     | -     | -   | -   | -    | -        | -     | -    | -    | _    | -    | 1  |      |
| 9            |             |            | 1  |     |      |      |      |     |       |    |    |     |     | 10 2 |      |     |     | $\vdash$ |    |     |    |      |            |    |     |       |       |     |     |      |          |       |      |      |      |      |    |      |
| 10           |             |            |    |     |      |      |      |     |       |    |    |     |     |      |      |     |     |          |    |     |    |      |            |    |     |       |       |     |     |      |          |       |      |      |      |      |    |      |
| 11           |             |            |    |     | 44.6 |      |      |     |       |    |    |     |     |      |      |     |     | $\vdash$ |    |     |    |      |            |    |     |       | i cai |     |     |      | $\vdash$ |       |      | i.   |      |      | 7  |      |
| 12           |             |            |    |     | - 25 |      |      |     |       |    |    |     |     | -    |      |     | 1   | 1        |    |     |    |      |            |    |     |       |       |     |     |      | -        |       |      |      |      |      |    |      |
| 13           |             | 180 3      |    |     |      |      |      |     |       |    |    |     |     |      |      | -   |     | 1        |    |     |    |      |            |    |     |       |       |     | 14  |      |          | _     |      |      |      |      |    | 2010 |
| 14           |             |            |    |     |      |      |      |     |       |    |    |     |     |      |      |     |     | -        |    |     |    |      |            |    |     |       | 18    |     |     |      |          |       |      |      |      |      |    |      |
| 15           |             |            |    |     |      |      |      |     |       |    |    |     |     |      |      |     |     | $\vdash$ |    |     |    |      |            |    |     |       |       |     |     |      | -        | -     |      |      |      |      |    | ,    |
| 16           |             |            |    |     |      |      |      |     |       |    |    |     |     |      |      |     |     | +        | -  |     |    |      |            |    |     |       |       |     |     |      |          | -     |      |      |      |      |    |      |
| 17           |             |            |    |     |      |      |      |     |       |    |    |     |     |      |      |     |     | -        |    |     |    |      |            |    |     |       |       |     |     |      | -        |       |      |      |      |      |    |      |
| 18           |             |            |    | 7   |      |      |      |     |       |    |    |     |     |      |      |     |     | 1        |    |     |    |      |            | _  |     | -     |       |     |     |      | -        |       |      |      |      |      |    |      |
| 19           | · · · · · · |            |    |     |      |      | -    |     |       |    |    |     |     |      |      |     |     | +-       | -  |     |    |      |            |    |     |       |       |     |     | -    | -        | -     |      |      |      |      |    |      |
| 20           |             |            |    |     |      | 1    |      | -   |       |    |    |     |     |      |      |     |     | -        | -  |     |    |      |            |    |     | . , . |       |     | -   |      | -        | -     |      |      |      |      |    |      |
| 21           |             |            |    |     |      | -    |      |     |       |    |    |     |     |      |      |     |     | +        |    |     |    |      |            | 1  |     |       |       | -   |     |      | -        |       |      |      |      |      |    |      |
| 22           |             |            |    |     |      |      |      | -   |       |    |    |     |     |      |      |     |     | -        |    |     |    |      |            | -  |     |       |       |     |     |      | -        |       |      |      |      |      |    |      |
| 23           |             |            |    |     |      |      |      | 1   |       | -  |    |     |     |      |      |     |     | -        |    |     |    | - 50 |            |    |     |       |       |     |     |      | -        |       |      |      |      |      |    |      |
|              | Lower Detec | tion Limit | 10 | 0.5 | 5    | 10   | 200  | 5   | 0.05% | 50 | 5  | 10  | 20  | 20   | 200  | 100 | 10  | 10       | 10 | 10- | 10 | 10   | 10         | 2  | 20  | 10    | 5     | 100 | 10  | 0.05 | 0.02%    | 0019/ | 0.2% | 0.5% | 1 94 | 0.5% | 19 |      |

REMARKS

CUSTOMER: Parnasse Co. Inc.

KEYPUNCH CODE. ANALYST.





CM CLAIMS-ZN GEOCHEM.

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250.

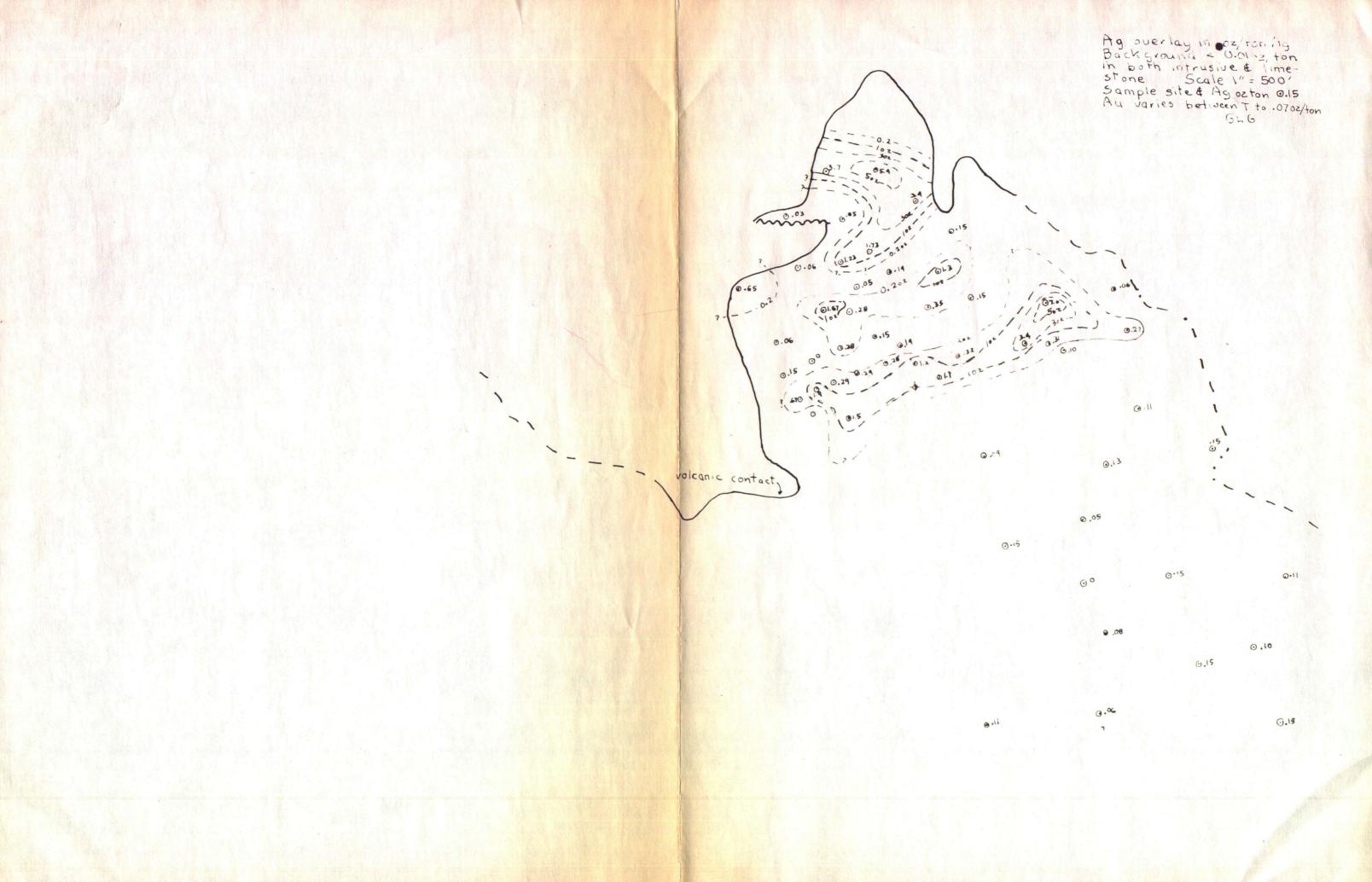
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A PRELIMINARY GEOLOGIC REPORT

ON THE CM PORPHYRY COPPER PROSPECT

AND ADJACENT LIMESTONE REPLACEMENT

SILVER-ZINC MINERALIZATION

Santa Fe Mining District
Mineral County, Nevada

Gary L. Grauberger
May 1973

for

Colorado Energy Corporation 1844 Valley View Road Boulder, Colorado 80303 Martin Oil Service, Inc. Post Office Box 298 Blue Island, Illinois 60406

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| Conner Silver Zinc Overlays          |   |          |

the alteration. The altered limestones which surround the intrusive are between 300 to 1000 feet thick. Within a distance of 300 feet from the intrusive contact numerous scattered tactite and gossan zones occur. Copper values vary between 0.5% to 9.0% and an estimate of average would be 1.0%. A halo of silver-zinc mineralization which varies between 1.0 oz./ton to 7.0 oz./ton silver and 300 to +6000 ppm zinc occurs in a zone between 200 to 400 feet in width and surrounds the exposed intrusive. The silver and zinc are not associated with quartz veins but gossan and tactite zones. The silver-zinc halo overlaps the copper anomaly near its fringes. In most cases, both the silver and especially the zinc values, increase as the copper values decrease.

The combined copper-silver-zinc anomaly which trends east-west exceeds 3000 feet in length and varies between 500 to 2000 feet in width. The anomaly coincides with the exposed intrusive and surrounding alteration. In my opinion, the anomaly will continue to the west and north under the late Tertiary volcanic cover and the areal extent of the mineralization may be much more extensive than what is exposed.

I would recommend a close spaced 100-200 foot (Cu, Au, Ag, Mo, Zn) geochemical grid survey over the property, accompanied by ground magnetics and an IP survey. IP may have little value due to the volcanic and limestone sequence. Five drill holes which would test both the Luning formation and the intrusive seem feasible to me based on the present data. The proposed drill hole depths would depend on mineralization and alteration, but 1000 feet is suggested. The proposed drill holes are numbered P1-5 and plotted on the accompanying geologic map.

#### LOCATION

The property is situated in the Gabbs Valley Range, T8N R36E, Sections 19, 28, 29, 30, 31, 32, and 33, Santa Fe Mining District, Mineral County, Nevada. A copy of the claim map filed in Mineral County, Nevada, accompanies this report. The property is 55 miles from Hawthorne, Nevada; 37 miles are paved road and 18 miles are gravel. The last three miles to the property are not suitable for automobile. A four-wheel drive vehicle is needed to traverse the property.

#### OWNERSHIP

The property is held by 64 contiguous unpatented lode mining claims named the CM 1-64. The property was located and recorded in late April and early May of 1973 by Bill Bailey, Geopower Inc., Tucson, Arizona for Colorado Energy Corporation, a subsidiary of Martin Oil Service, Inc.

At present the ownership is divided unequally between two parties.

Martin Oil Service, Inc., Blue Island, Illinois retains a 75% interest and

Colorado Energy Corporation, Boulder, Colorado retains a 25% interest.

# PREVIOUS HISTORY AND PRODUCTION

The property is located near the southeastern border of the Santa Fe
Mining District and is approximately four miles east of the Wall Street and
Mayflower properties which are held by Amax. Numerous other properties are
held, or have been drilled by major corporations within a 10 mile radius of
the CM group. Included in the group of major mining and exploration corporations are: Amax, Banner, Bear Creek, Dennison, Duval, Iso, Noranda, Occidental,
Phelps Dodge, Quintana, and Texas Gulf, Inc., (see aeromagnetic and copper
prospect map).

The district as a whole produced more than \$2,000,000 in copper during World War I (Ross, p. 84). It was discovered in 1879 and exploited for silver, until World War I. Also, small amounts of tungsten, silver, gold, lead, and iron ore have been shipped (Ross, p. 84). The CM property has no recorded production and was negligible if any did occur.

To my knowledge, the CM property has never been drilled and a thorough search of the area failed to disclose any drill holes.

#### GENERAL GEOLOGY

The Gabbs Valley Range is the central part of the S-shaped mountain block that includes the Gillis Range and the Pilot Mountains. The range is approximately 35 miles long.

The southern part of the range is underlain chiefly by the Luning formation, but granitic stocks underlie large areas and the Gabbs, Sunrise and Dunlap formations are also present. Most of the range is covered with intermediate and felsic Tertiary volcanic rocks (Ross, p. 60).

Cenozoic faulting is prominent in the range and trends mostly northwest.

The northwest trending faults are expressions of the Walker Lane linement zone. The southeastern portion of the range is covered by Esmeralda formations but does not appear to be bounded by a frontal fault of large displacement, if any. Stewart Valley, which lies to the east of the Gabbs Valley Range appears to be a sparsely covered pediment where the alluvial cover will not exceed 500 feet. In T7N R36E Section 1, Phelps Dodge drilled a 1100' hole which encountered the Luning formation at 440' below the surface (see aeromagnetic map, core logged by author).

### LOCAL GEOLOGY

# Stratigraphy

The area within the perimeter of the claim block consists of five rock

types. The Triassic Luning formation is basically a limestone and has a few minor shale members. The Cretaceous epoch is represented by a small exposed granodioritic(?) to granitic(?) stock and related sills and dikes. The Tertiary epoch is represented by the Miocene Esmeralda formation which consists of lake bed sediments and water laid tuffs. The Esmeralda formation is capped by late Tertiary welded tuffs, breccias and flows of an andesitic composition. Several exposures of a fine grained, dark green to black, ultrabasic volcanic rock exist on the property and appear to be diabase(?).

The structural features are characterized by several east-west striking anticlines and northeast to northwest trending faults (see geologic map).

The main east-west trending anticline may be genetically related to the granitic intrusion. Aerialphotographic interpretation indicates an eliptical shaped dome which strikes east-west to northwest and extends for approximately two miles. Near the center of the domed area, the stock and the altered Luning are exposed. From the center to the north, west and most of the east, late Tertiary volcanics cover the Luning formation and probable intrusives.

#### Alteration

In the vicinity of the stock an area approximately 3000 feet long and between 500 to 2000 feet wide has suffered minor to intense alteration. The western and northern edge of the alteration, which is also the most intense, is defined by a Tertiary volcanic and Luning limestone contact. Much of the altered and mineralized area is probably concealed by the Tertiary volcanics to the west and north.

The type of alteration in the Luning formation is dependent upon the distance, or its relative position, from the intrusive. The greater the

At a distance of approximately 1000 feet, the Luning limestone has been slightly marblized but retains its dark gray to gray color. Between 500 to 1000 feet the limestone has been marblized but is yellow brown to brown in color. From 300 to 500 feet the limestone has been completely recrystallized to a sugary white marble which has sporadic gossan zones. Between 100 to 300 feet the limestone is white and contains abundant calcite veinlets, sparse quartz veinlets and has been somewhat kaolinized and silicated. From 0 to +100 feet the limestone grades from a silicated epidote-diopside tactite to a garnet tactite. Near the fringes of the alteration halo, bright red hematite occurs in brecciated limestone.

The intrusive's appearance varies between a seemingly fresh fine grained porphyry with visible biotite, to a highly silicified fine grained apalite(?). Quartz-sericite alteration with attendant quartz veinlets is very sporadic and a minor occurence in the exposed stock. Much of the rock has disseminated pyrite and occasional pyrite veinlets. Propylitic and only sparse argillic and phyllic alteration are present. Some potassic alteration may be present, because some of the potassium feldspar appears to be secondary.

The Esmeralda formation and late Tertiary volcanics are unaltered and barren of mineralization.

# Mineralization

Copper-molybdenum and silver-zinc constitute the two different metal assemblages. Gold and lead values are very low. The intrusive is characterized by high copper (1000-6000 ppm) and high molybdenum (100-250 ppm) and negligible amounts of lead, zinc, gold and silver. Although, silver will average 0.20 oz./ton in the mineralized portions of the intrusive.

The adjacent limestones and tactites are sporadically high in copper

#### ABSTRACT

The CM 1-64 lode mining claims are located in T8N R36E Sections 19, 28, 29, 30, 31, 32, and 33, Santa Fe Mining District, Mineral County, Nevada.

The CM claim group covers an intrusive porphyry copper prospect that appears to be surrounded by a silver-zinc halo in altered limestones.

Within the claim group a N650W trending linement is intersected by a N250E trending linement. Aeromagnetics, aerialphotographic interpretation and ground reconnaissance confirm the intersection. At the axis of intersection a window of altered Triassic Luning limestone surrounds an intrusive stock(?) that is granitic in composition. The intrusive appears to have formed an eliptically shaped anticlinal dome which trends approximately east-west and exceeds  $l_2^1$  miles in length. Except for an area approximately 3/4 mile long and  $l_2^2$  mile wide the dome has been covered by late Tertiary unaltered andesitic volcanics.

The intrusive is a fine grained porphyry which appears to be hypabysal in nature. Propylitic alteration is and only sparse argillic and phyllic alteration can be observed. The mineralized intrusive has been intensely silicified and sparsely sericitized. Except for leached areas and small barren areas, disseminated chalcopyrite, pyrite and copper oxides are ubiquitous in the exposed intrusive.

Geochemical samples on the intrusive vary between 120 ppm to 6380 ppm copper; 2000 ppm copper would be a conservative average. Molybdenum varies between four to 250 ppm and negligible amounts of lead, zinc, gold, and silver were detected.

In the adjacent Triassic Luning limestones, alteration varies from tactite near the intrusive to mild marblization and bleaching at the periphery of

(+10,000 ppm), high in zinc (300 to +6000 ppm) and fairly high in silver (.02 oz./ton to 7 oz./ton). Values in gold vary between T to .069 oz./ton. Lead values are negligible and no sample exceeded 75 ppm.

In the intrusive the copper occurs in the form of disseminated chalcopyrite and copper oxides and attendant minor malachite staining. No visible
molybdenum except in one instance, was observed. No lead, zinc, silver, or
gold minerals were observed. Pyrite occurs as minor disseminations, (less
than 1%) except for a few, (more than 3%) occurences. The copper does not
appear to have been leached to any extent, except for one isolated gossan
zone in the intrusive.

In the adjacent tactite and gossan zones copper occurs as disseminated chalcopyrite and abundant malachite and azurite seams. Gossan zones occur in and near the tactite zones, therefore, some copper mobilization has occured. Minor amounts of yellow zinc oxides were observed in the tactites and gossan zones. No gold, nor silver minerals were seen.

In the white bleached marbles many sporadic copper oxide (malachite and azurite) occurences were noted. No lead, zinc nor gold, silver minerals could be determined. In the yellow brown to brown marble, limonite and ruby red hematite(?) specks were observed and may contain the minor silver, gold, and zinc mineralization.

#### GEOCHEMISTRY

The background values for the following rocks are as follows:

| Intri | usive Granite(?) | Luning Limestone |             |  |  |  |  |  |  |
|-------|------------------|------------------|-------------|--|--|--|--|--|--|
| Cu    | 10 ppm           | Cu               | 10 ppm      |  |  |  |  |  |  |
| Mo    | 2 ppm            | Mo               | 1 ppm       |  |  |  |  |  |  |
| Au    | 003 oz./ton      | Au               | 003 oz./ton |  |  |  |  |  |  |
| Ag    | 01 oz./ton       | Ag               | 01 oz./ton  |  |  |  |  |  |  |
| Zn    | 50 ppm           | Zn               | 20 ppm      |  |  |  |  |  |  |
| Ph    | 20 npm           | Pb               | -5 ppm      |  |  |  |  |  |  |

Sixty-six samples were collected and all samples were outcrop rockchip samples. An area of approximately 20 feet in diameter was sampled around the sample site. Each sample weighed between five and ten pounds. Seventeen samples were taken on intrusive outcrops, ten samples in tactite zones, 36 samples in the Luning limestone and three in ultrabasic volcanics (diabase?). The sample sites are plotted by number on the geologic map.

The samples were not taken in a systematic grid, but average approximately 250 feet apart in the intrusive and surrounding altered Luning formation. Samples were taken at distances of approximately 1000 feet apart in the slightly altered and unaltered areas. Each sample site on the ground is marked by a flagged wooden lath with the sample number, prefixed by the letter "J", and with the date of sampling. The sample numbers vary between J25-J115 and are not consecutive. The reason for this is because other properties were being sampled at the same time.

A high copper anomaly that exceeds +1000 ppm can be contoured. The known dimensions of the east-west striking anomaly are approximately 2200 feet in length and varies between 500 to 1800 feet in width (see Cu overlay). To the north and west, the anomaly terminates only because of late Tertiary volcanic cover. Much higher copper values exist within the 1000 ppm contour. Plus 3000 ppm and plus 1% copper values have been contoured (see Cu overlay). Molybdenum values in the intrusive vary between four ppm to 250 ppm and are not definitive. Except for a few isolated incidents, gold and silver values are very low (less than .30 oz./ton Ag, less than .005 oz./ton Au), within the high copper contours. The copper, molybdenum anomaly coincides with the exposed intrusive and adjacent tactites and gossan zones.

A definitive silver-zinc halo seems to surround the east-west trending copper anomaly (see Ag and Zn overlays). Gold is negligible and values vary

between Trace to .07 oz./ton. The known silver-zinc halo varies between 200 to 400 feet in width. The values in silver are contoured at .02 oz./ton, 1 oz./ton, 3 oz./ton and 5 oz./ton. Near the outer fringes of the halo the values rapidly dissipate from +1 oz./ton Ag to less than .20 oz./ton Ag (see Ag overlay). All the high silver values occur in the altered Luning limestone and are associated with gossan and tactite zones. The zinc anomalies overlap the silver anomalies, but are much more extensive in length and width (see Zn overlay). Many of the high zinc values (+500 ppm) occur in seemingly slightly altered limestones. The zinc forms a very definitive halo around the copper anomaly and may be a very good geochemical guide for the unexposed mineralized intrusive rocks and limestones. The high zinc values which occur south of the copper anomalies are quite interesting because the copper values are very low and the limestones are unaltered or slightly altered.

It is interesting to note that the intrusive silver and zinc values are negligible with copper values high. Yet, the high values in silver and zinc in the altered Luning limestone, tactite and gossan zones, also carry high copper values (+5000 ppm). The silver values were totally unexpected and hard to believe, therefore I ran complete rechecks on all high silver values at the Mineral County Assay Office. I also had the pulps checked for Au, Ag, Mo, Cu, Pb, and Zn at Rocky Mountain Geochemical Inc., in Reno. All assay rechecks were in close agreement and I am confident of results for copper, molybdenum, gold, silver, lead and zinc.

The combined copper, silver, zinc anomaly strikes east-west and exceeds 3000 feet in length and varies between 500 to 2000 feet in width. Table No. 1 which lists the sample number, rock type and assay results is presented for reference.

| Sample<br>No. | Rock Type   | Au<br>Oz./ton | Ag<br>Oz./ton | Cu ppm | Mo ppm | РЬ ррт | Zn ppm |
|---------------|-------------|---------------|---------------|--------|--------|--------|--------|
| J64           | Gossan      | T             | 0.06          | 124    | DR     | 20     | 10     |
| J65           | Intv sill?  | T             | 0.19          | 10     | DR     | nil    | 66     |
| J66           | Intv sill?  | T             | 0.11          | 380    | 98     | T      | 84     |
| J71           | Intv        | Т             | 0.21          | 750    | 4      | Ni1    | 74     |
| J72           | Alt lmst    | T             | 1.50          | 1550   | DR     | Nil    | 1042   |
| J73           | Alt lmst    | T             | 0.09          | 250    | DR     | 30     | 308    |
| J74           | Intv        | 7             | 0.29          | 6380   | -1     | 25     | 56     |
| J75           | Intv        | T             | 1.9           | 4220   | 160    | Nil    | 63     |
| J76           | Alt lmst    | Т             | 0.15          | 5000   | 4      | 25     | 4480   |
| J77           | Intv        | T             | 0.67          | 200    | 250    | Nil.   | 68     |
| J78           | Intv        | T             | 0.06          | 120    | 4      | Ni1    | 32     |
| J79           | Intv        | T             | N11           | 140    | 4      | Nil    | 38     |
| J80           | Gossan      | 0.005         | 11.67         | 4280   | DR     | 7      | 1225   |
| J81           | Alt lmst wh | T             | 0.06          | 180    | Nil    | 30     | 116    |
| J82           | Alt Lmst wh | T             | 0.03          | 50     | DR     | 30     | 120    |
| J <b>83</b>   | Tactite     | 0.02          | 5.45          | 1.2%   | 4      | NII    | 127    |
| J84           | S1 Alt lmst | τ             | 0.15          | 30     | DR     | 60     | 86     |
| J85           | Intv        | T             | 1.31          | 2320   | 6      | 1      | 94     |
| J86           | Intv        | Ť             | 0.14          | 1550   | 13     | Nil    | 230    |
| J87           | Intv(?)     | 7             | 1.72          | 50     | 77     | τ.     | 68     |
| J88           | Alt lmst    | 7             | 0.05          | 3850   | DR     | 50     | 106    |
| J89           | Tactite     | 0.005         | 1.23          | 920    | 2      | ทาา    | 81     |
| J90           | Gossan      | 1             | σ             | 4250   | 18     | OR     | DR     |
| J91           | Gossan      | 1             | 0.26          | 3320   | DR     | DR     | DR     |
| J92           | Gossan      | T .           | Ť             | 7035   | DR     | DR     | DR     |
| J93           | Intv        | Ţ             | 0.03          | 320    | 24     | DR     | DR     |

Table No. 1

DR = Did not run

|                               |                               |               |                    |                                    |                |  | 277                              |
|-------------------------------|-------------------------------|---------------|--------------------|------------------------------------|----------------|--|----------------------------------|
| Sample<br>No.                 | Rock Type                     | Au<br>Oz./ton | Ag<br>Oz./ton      | Cu ppm                             | No ppn         | Pt. ppm  | Zn ppm                           |
| Back-<br>ground               | Intrusive (Intv)              | -0.005        | -0.01              | 10                                 | 2              | 20   | 50                               |
| Back-<br>ground               | Limestone (Lmst)              | -0.005        | -0.01              | 10                                 | 1              | -5   | 20                               |
| J25                           | Br Imst                       | T             | 0.06               | 20                                 | Nil            | 25   | 34                               |
| J26                           | Rd bl lmst                    | T             | 0.27               | 8                                  | DR             | 25   | 76                               |
| J27                           | Wh marble                     | T             | 0.10               | 95                                 | DR             | 30   | 62                               |
| J28                           | Intv? dike                    | T             | 0.31               | 965                                | DR             | Nil  | 52                               |
| J29                           | Gossan                        | 0.069         | 3.44               | 9.85%                              | DR.            | 50   | 2300                             |
| J30                           | Gy bl marble                  | ť             | 0.32               | 160                                | DR             | 25   | 1240                             |
| J31                           | Gossan                        | 0.015         | 1.13               | 1.98%                              | DR             | Nil  | 1360                             |
| J32                           | Tactite                       | T             | 1.20               | 2.25%                              | DR             | . T  | 6660                             |
| J33                           | Intv                          | T             | 0.14               | 1280                               | 180            | 25   | 62                               |
| J34                           | Intv                          | T             | 0.26               | 2380                               | 102            | Nil  | 82                               |
| J35                           | Intv                          | 1             | 0.30               | 3320                               | 210            | 27   | 172                              |
| J36                           | Tactite                       | 0.005         | 0.28               | 4750                               | DR             | 25   | 168                              |
| J37                           | Alt lmst                      | T             | 0.15               | 3220                               | DR             | Nil  | 258                              |
| J38                           | Intv leached                  | <b>T</b>      | 0.35               | 948                                | 126            | 75   | 95                               |
| J39                           | Alt lmst                      | Т             | 0.15               | 1750                               | DR             | Ni,1   | 106                              |
| J40                           | Gossan                        | - 0.01        | 7.05               | 7.35%                              | DR             | N11  | 852                              |
| J43                           | Alt lmst                      | 0.005         | 3.42               | 1.9%                               | DR             | , Nil  | 290                              |
| J44                           | Tactite                       | 0.02          | 3.7                | 6.62%                              | DR             | Ni1  | 375                              |
| J45                           | Alt lmst                      | T             | 0.05               | 1750                               | DR             | N11  | 375                              |
| J46                           | Gossan                        | 1             | 0.65               | 8750                               | DR             | 50   | 535                              |
| J63                           | Red lmst                      | T             | 0.11               | 12                                 | DR             | 50   | 68                               |
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| Sample<br>No. | Rock Type                  | Λu<br>Oz./ton | Ag<br>Oz./ton | Cu ppm | Mo ppm | Pb ppm | Zn ppm |
|---------------|----------------------------|---------------|---------------|--------|--------|--------|--------|
| J96           | SI Alt Imst                | T             | 0.11          | 8      | DR.    | Nil    | 250    |
| J97           | SI Alt lest                | T             | 0.10          | 7      | DR     | Nil    | 200    |
| J98           | Diabase?                   | 0.005         | 0.14          | 71     | DR     | Nil    | 460    |
| J99           | Alt Imst                   | T             | 0.15          | 10     | DR     | Nil    | 700    |
| J100          | SI Alt Imst                | T             | 0.15          | 29     | DR     | T      | 360    |
| J101          | SI Alt lmst                | T             | 0.05          | 21     | DR     | Nil    | 520    |
| J102          | S1 Alt lmst                | Т             | 0.13          | 12     | DR .   | 10     | 1100   |
| J103          | S1 Alt lmst                | T             | 0.04          | 15     | DR     | Nil    | 510    |
| J104          | S1 Silicified<br>Limestone | T             | 0.15          | 10     | DR     | Nil    | 215    |
| J105          | Alt lmst                   | T             | T             | 93     | DR     | Nil    | 320    |
| J106          | S1 Alt lmst                | T             | 0.14          | 10     | DR     | DR     | DR     |
| J107          | Alt lmst red               | T             | 0.15          | 10     | DR     | DR     | DR     |
| J108          | Unalt 1mst                 | Т             | 0.09          | 9      | DR     | DR     | DR     |
| J109          | Lmst Breccia r             | ed T          | 0.13          | 11     | DR     | DR     | DR     |
| J110          | S1 Alt lmst                | T             | 0.10          | 15     | DR     | DR     | DR     |
| JIII          | Diabase?                   | T             | 0.14          | 13     | DR     | DR     | DR     |
| J112          | Diabase?                   | T             | 0.15          | 27     | DR     | Nil    | 25     |
| J113          | SI Alt lmst                | T             | 0.15          | 10     | DR     | Nil    | 185    |
| J114          | Unalt lmst                 | T             | 0.08          | 7      | DR     | Nil    | 210    |
| J115          | Lmst breccia r             | ed T          | 0.12          | 41     | DR     | 50     | 70     |

# AEROMAGNETIC DATA

In the area of interest, aeromagnetic maps (GP751-752 and USGS aeromagnetic Nevada sheets #11, 12, 16, 17) define a N65W striking linement which is intersected by a N25E striking linement (see aeromagnetic map). This intersection is also defined at the surface by the radical change of strike and dip of the

Luning formation. The N65W trending zone can be traced in excess of 30 miles and the intersection N25E trending linement exceeds six miles in length. The area of finite intersection is covered by the CM 1-64 claim group (see aeromagnetic map).

There is a relief of 300 gammas within the perimeter of the claim block. The copper bearing stock occurs on the 2700 gamma contour between the 2900 gamma high and 2600 gamma low. The exposed stock also occurs near the center of intersection expressed by the aeromagnetic data. It is interesting to note that except for strike, the aeromagnetic intersection is almost identical to the intersection at Anaconda's porphyry copper pit near Yerington, Nevada.

The reader may draw his own conclusions, but it is my opinion that the aeromagnetic data enhances the attractiveness of the prospect.

# CONCLUSIONS

Within the CM claim block a northwest-northeast linement intersection coincides with intrusion, doming of adjacent limestones, alteration and mineralization. Mineralization consists of two types: copper, molybdenum and silver, zinc and negligible amounts of lead and gold.

It is my opinion that the mineralization may be much more extensive than what is exposed because of the extensive late Tertiary volcanic cover to the west and north of the center of the claim block (see geologic map). My reasons for this opinion are threefold: 1) the aeromagnetic data indicates the above directions; 2) the anticlinal dome is very prominent on the aerial-photographs, and has been confirmed by ground reconnaissance mapping; and 3) mineralization and alteration occur in the Luning formation near the contact of the Luning formation and Tertiary volcanics.

extensive

One of the puzzling aspects of the prospect is lack of propylitic alteration and the sparse ardillic and phyllic alteration of the exposed stock. Most of the intrusive rocks almost look fresh, except for minor to intense silication and sparse seritization. Secondary potassium feldspar may be present. The only interesting observable features of the intrusive rock, are the ubiquitous blebs of disseminated chalcopyrite, pyrite and copper oxides.

Except for a few leached areas, the intrusive rock will consistently surface assay above 1000 ppm copper, and many samples assayed above 3000 ppm copper. In the adjacent exposed tactite and gossan zones assays of +1% copper are not uncommon, but vary in thickness from 10 to 100 feet.

It is emphasized that the silver zinc values are ubiquitous in the gossan and tactite zones and not associated with quartz veins. Although south of the intrusive high zinc values (300-1000 ppm) occur in slightly bleached and iron oxide stained marblized limestone. One factor that should not be overlooked is the geochemical significance of the copper and zinc values in the slightly altered Luning limestone. Personal sampling experience and observation at the CM property, has lead me to believe that any sample in the limestone which exceeds 50 ppm copper and/or 300 ppm zinc, indicates that mineralized intrusive is within 300 feet of the surface. In several instances copper values of plus 150 ppm in limestone were only 100 feet stratigraphically higher than tactite and gossan zones which exceed 1% copper and intrusive outcrops that exceeded 2000 ppm.

In summary, an exposed mineralized area which is approximately 3000 feet long and 500-2000 feet wide is in contact with late Tertiary volcanic cover. Surface structural features and aeromagnetic data indicate a target

that may be much more extensive. From what is now known the prospect certainly deserves further geological, geochemical and geophysical work, accompanied with follow up drilling.

#### RECOMMENDATIONS

In my opinion, the first order of business would be sampling on a closely spaced 100 to 200 foot geochemical grid. The elements, copper, molybdenum, zinc, gold and silver should be assayed. Ground magnetics probably would be helpful, to pinpoint the structure, dimensions and depth of the intrusive(?). IP would be helpful, if the thickness of the limestone and volcanics do not hinder the geophysical methods usefulness.

Five areas at present are especially attractive to me and deserve drill holes. The proposed drill sites are numbered P1-5 on the geologic map and may be considered digitally to be in order of importance (P1 first hole, P2 second hole, etc.). All except No. 2 would test both the limestone and intrusive. Core drilling would be preferable and the core should be assayed every 10 feet for copper, molybdenum, gold, silver, lead and zinc. Drilling depths would be dependent upon mineralization and alteration, but 1000 feet is presently recommended.

#### REFERENCES

Aeromagnetic Data -- U.S.G.S. GP751-752, U.S.G.S. Aeromagnetics of Western Nevada Sheets 11, 12, 16, 17 -- U.S.G.S. Denver, Colorado; also available from Oakman's, Reno, Nevada.

Aerial Photographs -- Knox-Bergman-Shearer Corporation, 1800 Ogden Street, Denver, Colorado -- Color Photographs 1-24000 scale, photo numbers: 2376-7, 2376-8, 2376-9 and 2376-10. Photo #2376-8 was blown up to 1-6000 scale and used for reconnaissance mapping.

Assayers -- Mineral County Assay, Inc.
Mina, Nevada

Mr. Eugene Gates, Assayer

Rocky Mountain Geochemical Corporation Reno, Nevada

M r. Gary M. Fechco, Assayer

Ross, Donald C., 1961, Geology and Mineral Deposits of Mineral County, Nevada, Nevada Bureau of Mines Bulletin #58, Reno, Nevada. 16011.00

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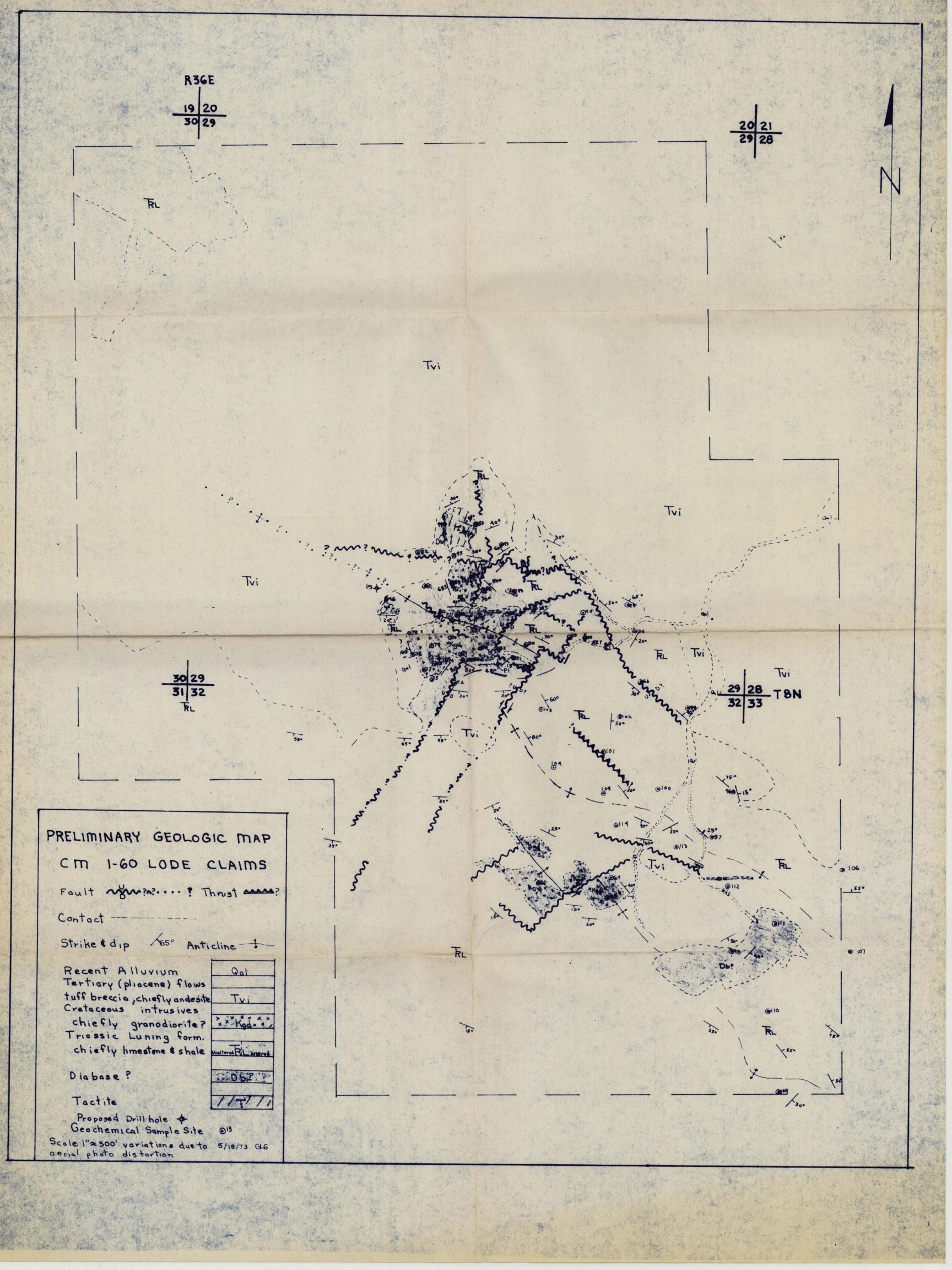
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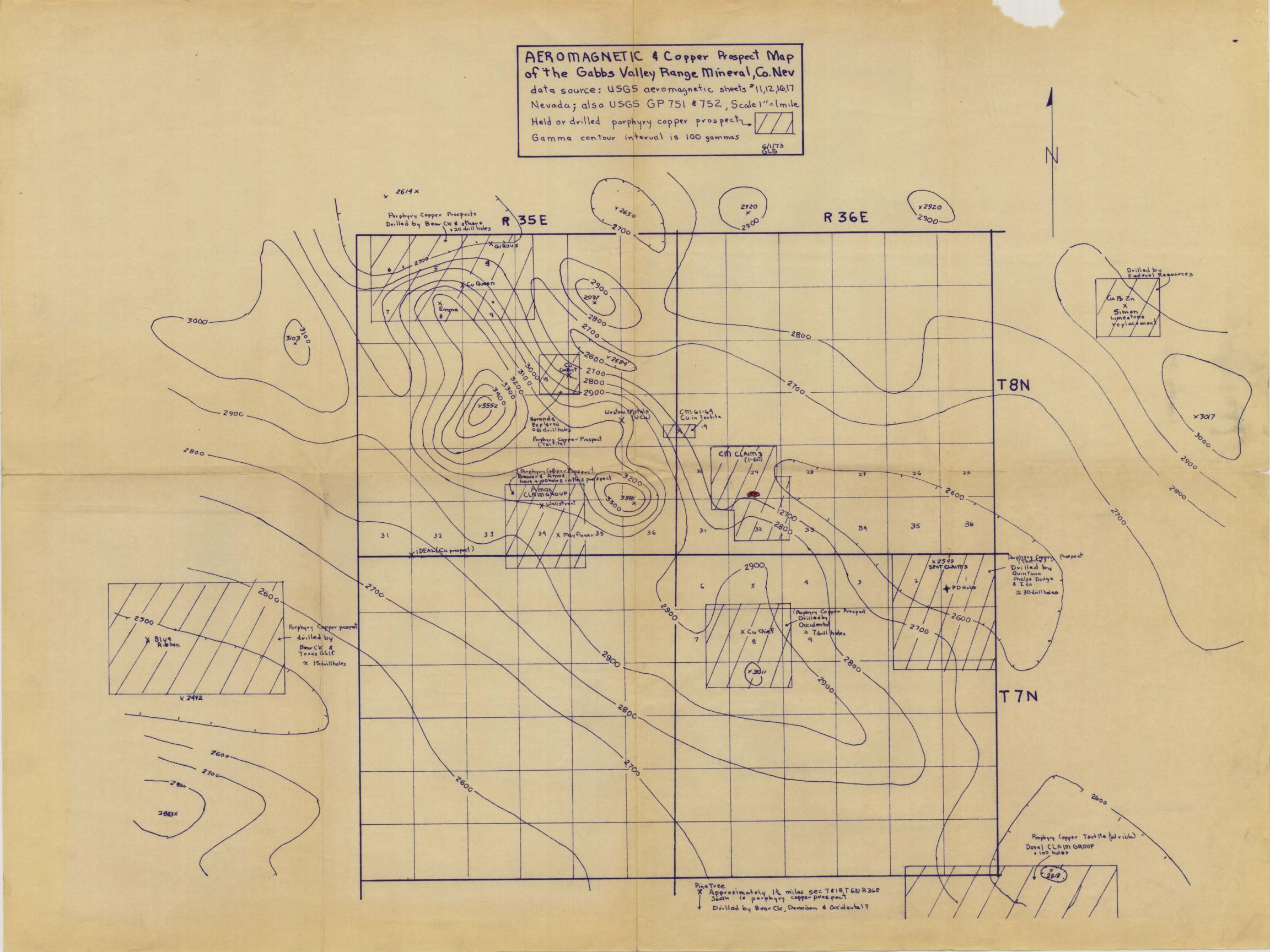
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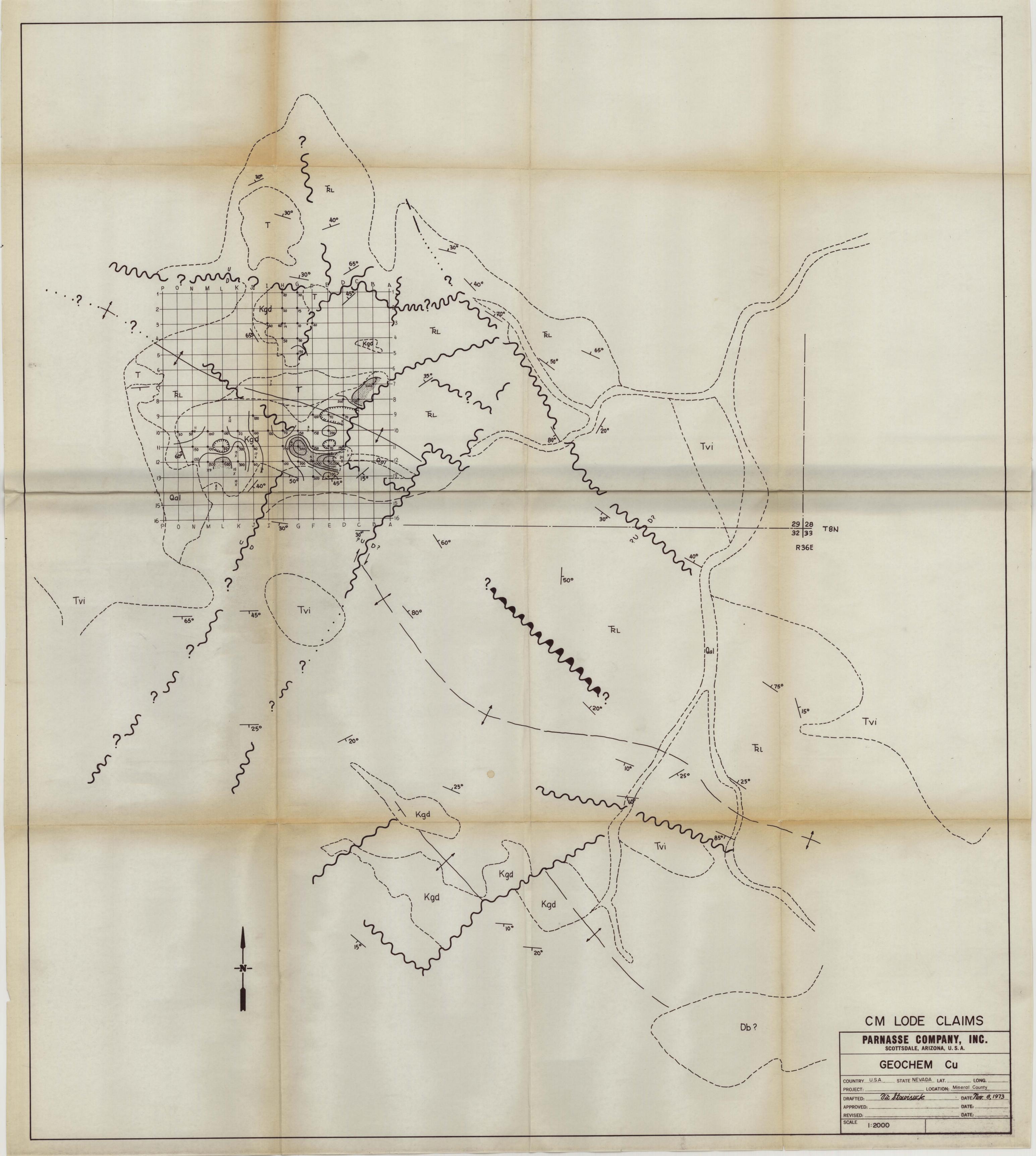
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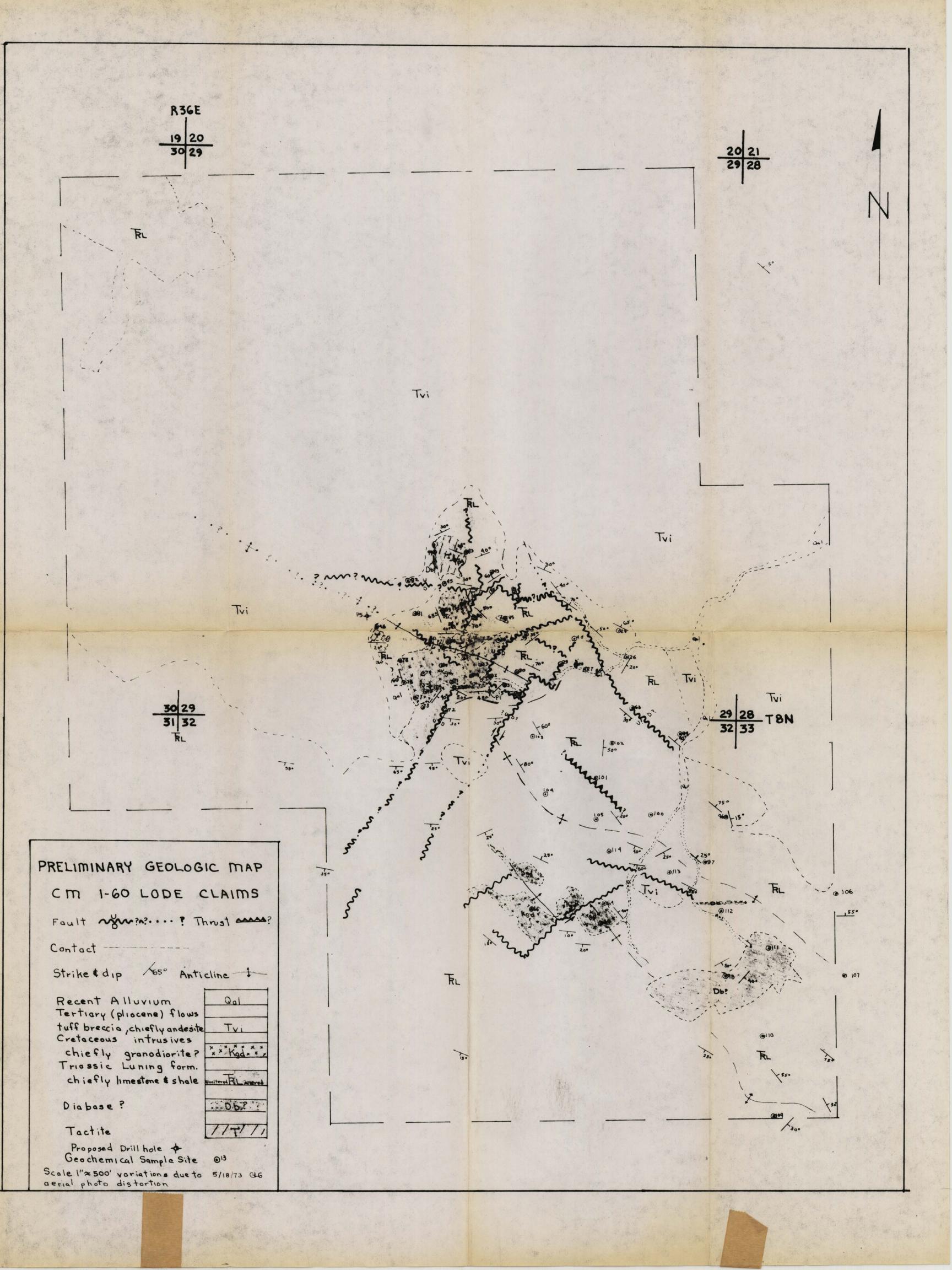
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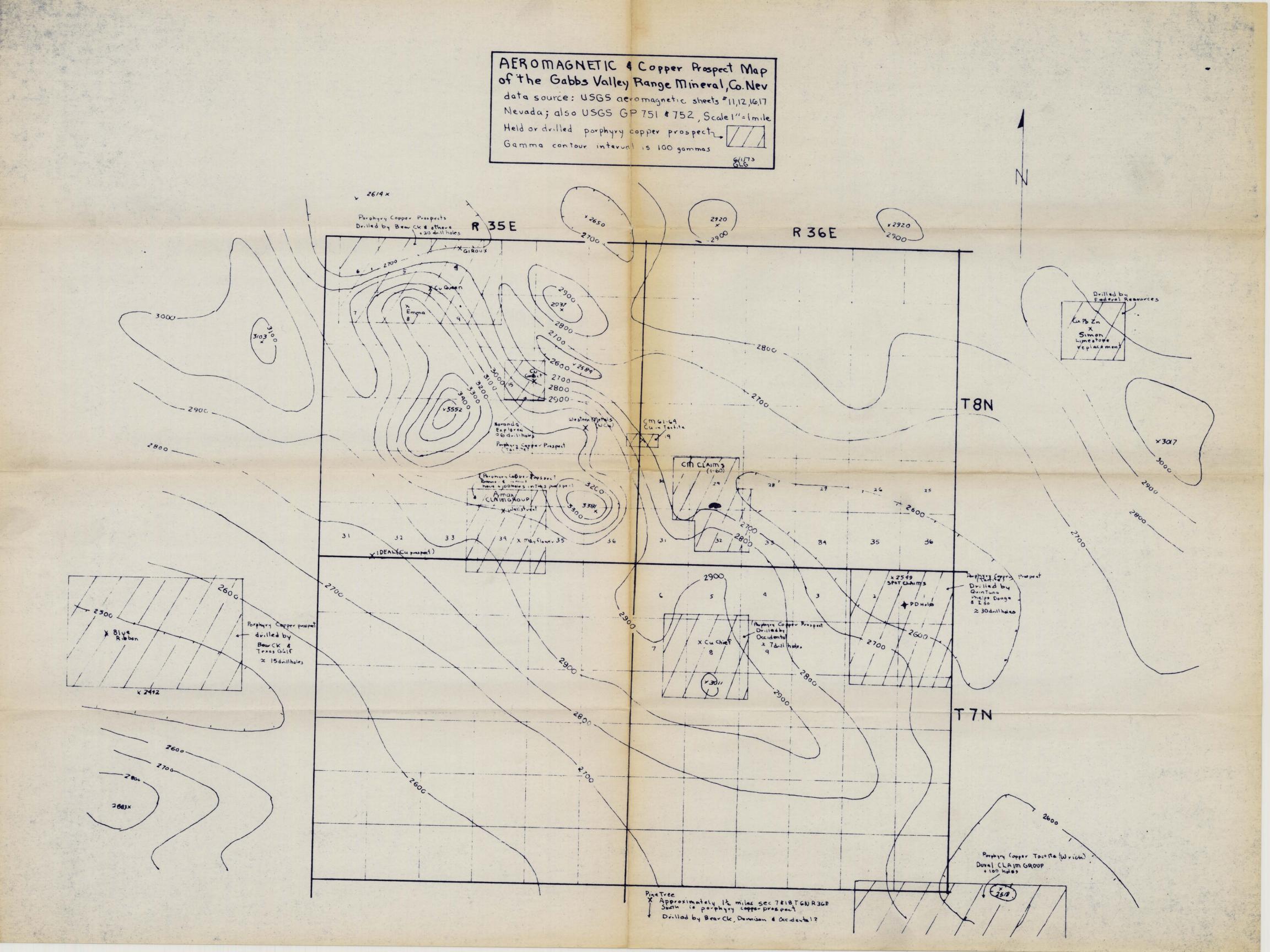
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# GUARDIAN MINE

SANTA FE MINING DISTRICT, MINERAL COUNTY NEVADA



MAYFLOWER OPEN PIT MINE

F. W. LEWIS, 120 GREENRIDGE DR. RENO, NEVADA, 89502

I INCH = 200 FT.

CALL GRANITE

C. ALTERED LIMESTONE WITH Much Copper

O . SAMPLE LOCATION

B SAMPLE NUMBER

(4) 525 PPM CU UPPER 0-18"

-1 PPM MOLY

LOWER 18" to 4'

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ASS AYS VERY high