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ADELAIDE PROJECT, PROGRESS REPORT
HUMBOLDT COUNTY, NEVADA

January 2, 1970

see Sample Library File 53-A

Ward Carithers
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ILLUSTRATIONS

All superseded by report Mar 12, 1971

ADELAIDE PROJECT, PROGRESS REPORT
HUMBOLDT COUNTY, NEVADA
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SUMMARY

Most work on this project during the final three months of 1969 was concentrated in the Granite Canyon sector, where copper, molybdenum and tungsten anomalies have been found associated with a quartz monzonite stock. Seventy-four new claims were staked and validated, so Cerro now controls the mineral rights within about 5-1/2 square miles, including the claims, Southern Pacific leases, and private land owned by Allied Properties.

About four miles of bulldozer cuts and roads were made to expose rock and provide access. Considerable alteration was found in quartz monzonite in Granite Canyon. Geochemical sampling, detailed geologic mapping and ground magnetic surveying were started in some areas, and a geochemical copper-tungsten anomaly coincident with a magnetic "low" and alteration was delineated in the eastern part of the sector.

In areas outside the Granite Canyon sector, a 1,005-foot diamond drill hole was put down on the Gomes-Vetter property. It found only minor, non-encouraging mineralization, so the property was dropped. Additional geochemical sampling in the area southwest of the Adelaide copper mine did not extend the low grade copper anomaly known there, and the origin of this anomaly is still not resolved.

CONCLUSIONS AND RECOMMENDATIONS

The copper-tungsten anomaly in the north part of the Vet group of claims is underlain by sericitized schist which is apparently mineralized but which is also considerably obscured by mantle rock and talus. Bulldozer trenching, followed by shallow drilling, is recommended to better delineate this anomaly and to see if deeper drilling is warranted. Open ground just north should be staked for protection prior to this drilling.

The northwest edge of the Granite Canyon stock is obscured for about a mile by post-mineral Tertiary volcanics and alluvium. A quartz porphyry intrusive, a breccia pipe and altered quartz monzonite, all mineralized by copper and molybdenum, occur on the southern edge of the obscuring rocks, and a quartz-veined zone in quartz monzonite is exposed on the northern edge. These showings might be signalling a hidden copper-molybdenum porphyry-type deposit.

Drilling of this prospect is warranted, but first a considerable amount of preliminary work will be required to delineate targets:

1. Detailed mapping is recommended to (a) see how deep the obscuring volcanics and alluvium are, and (b) to become thoroughly familiar with the geologic section there; some horizons of the Paleozoic rocks are better "ore-makers" than others (as the Battle and Harmony formations in the Battle Mountain district), so targets might be indicated by estimating where favorable stratum are in relation to the contact zone.

2. The mapping should, of course, be coupled with additional geochemical sampling, especially in the altered areas.

3. Additional bulldozing and shallow drilling is recommended to augment the geologic and geochemical work.

4. A U. S. Geological Survey aeromagnetic map over this region is expected to be released in March, 1970. This should be reviewed carefully to see if additional ground magnetic work will be useful.

Assuming a moderate winter, useful work can probably be resumed in the upper Granite Canyon area in April. In the Vet area, however, work can likely start in March, or even earlier.

INTRODUCTION

A study of the Adelaide district was begun for Cerro Corporation in May, 1969, and was continued until late December when snow finally forced closing of roads at upper elevations and generally made geologic work impractical. A report prepared in early October, Geologic Investigation of Adelaide Mining District by Ward Carithers, summarized the study and made positive recommendations to:

1. Concentrate effort in the Granite Canyon sector where copper-molybdenum-tungsten anomalies were found.

2. Drill a hole into a copper anomaly on the Gomes-Vetter property.

This report is to summarize progress in the Granite Canyon sector of the Adelaide district. Four maps covering geology, geochemical prospecting, geophysical (magnetic) data and property accompany the text. These are all on a common base which is a 500-scale enlargement of parts of the Winnemucca, Edna Mountain and Leach Hot Springs quadrangles (see figures 1 and 2).

A 1,005-foot diamond drill hole was put down on the Gomes-Vetter ground and as nothing of interest was found, the property was dropped. This work is covered in another, separate report.

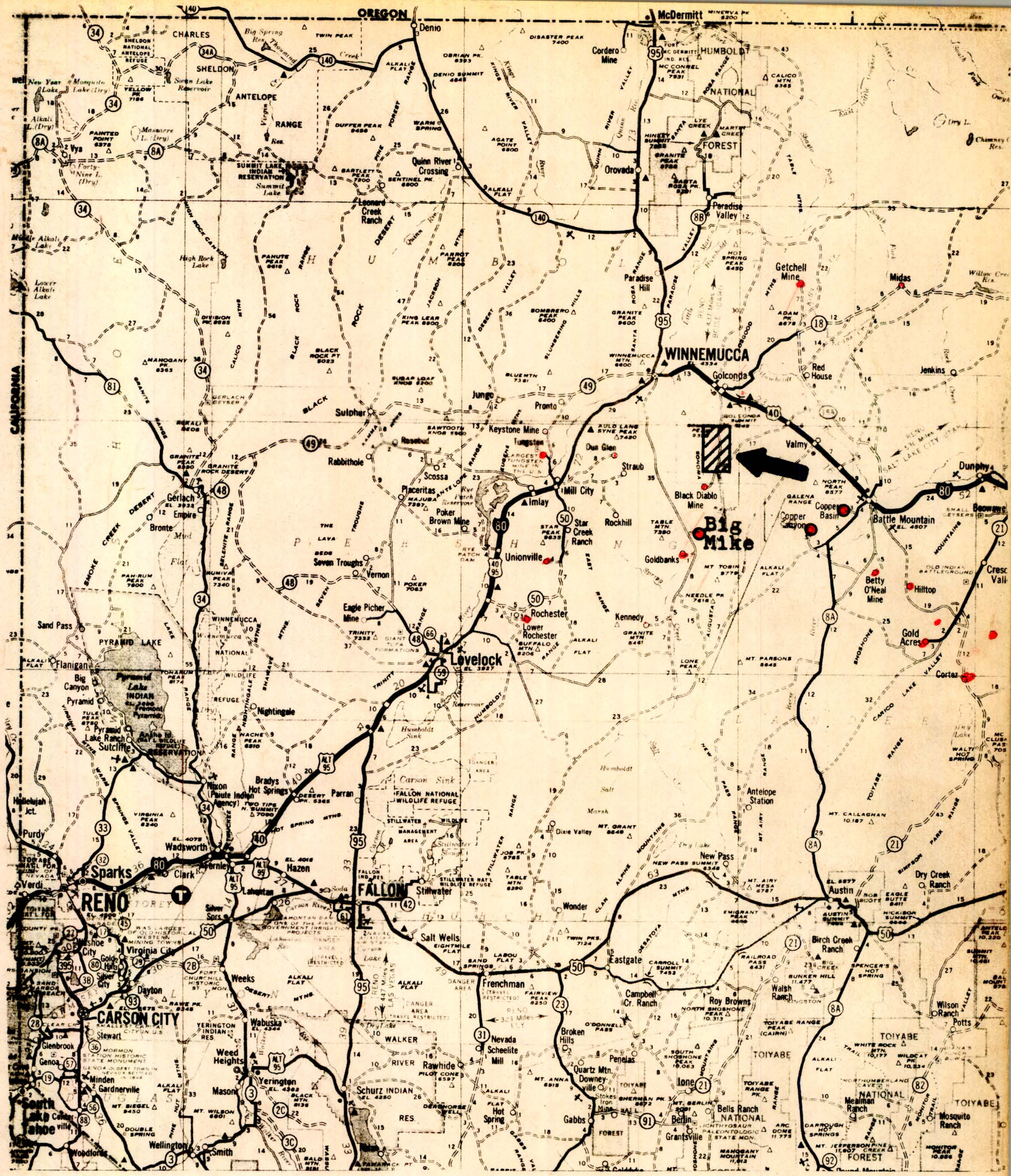


Figure 1. Map of northwest Nevada showing location of Adelaide District.
Scale: 1 in = 25 mi.

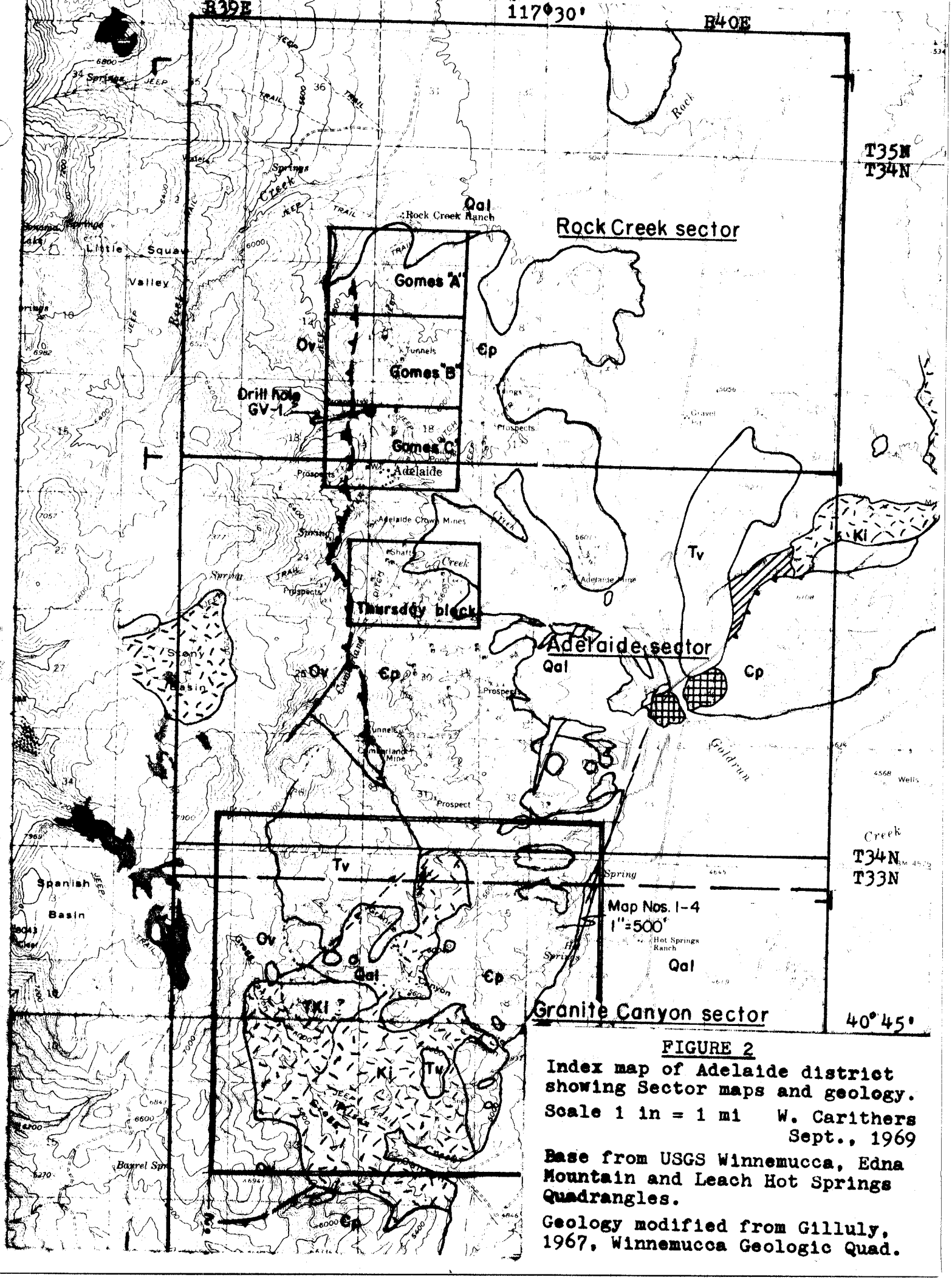


FIGURE 2

Index map of Adelaide district showing Sector maps and geology.

Scale 1 in = 1 mi W. Carithers Sept., 1969

Base from USGS Winnemucca, Edna Mountain and Leach Hot Springs Quadrangles.

Geology modified from Gilluly, 1967, Winnemucca Geologic Quad.

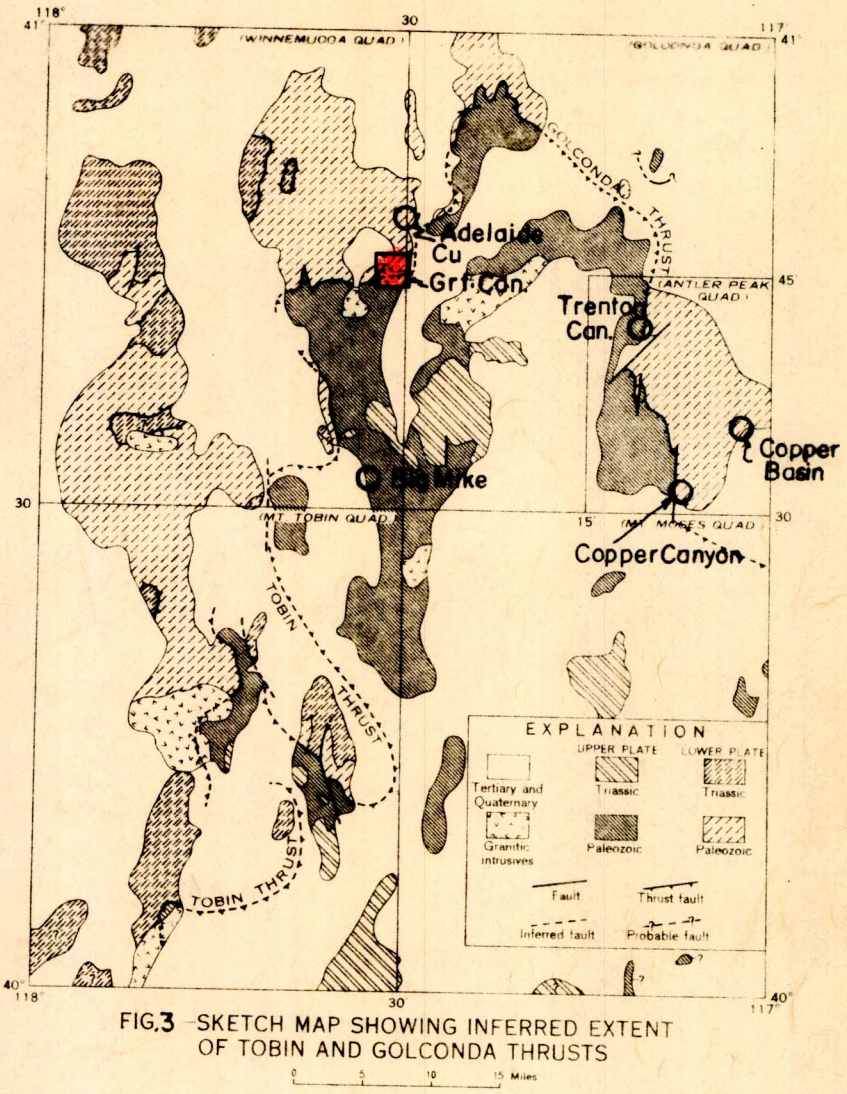


FIG. 3 SKETCH MAP SHOWING INFERRED EXTENT OF TOBIN AND GOLCONDA THRUSTS

From Ferguson, Roberts and Muller, Geol Survey, Golconda Geol. Quadrangle

PROPERTY

The property situation in the Granite Canyon sector is shown on Map No. 4. A total of 74 lode claims have been staked in three groups to cover open ground in the areas of chief interest. These are considered adequate to hold the ground needed for the initial studies, but in the event drilling is started in the Vet group, some additional staking should be done for protection in the northwest part of Section 18, T. 33 N., R. 40 E. All of the claims were staked in the name of Ward Carithers, and have been assigned by quitclaim deed to Cerro Corporation.

The property that Cerro has under lease from the Southern Pacific Company is indicated. This is for mineral rights only, the surface being held by the U. S. or by Hugh Tipton. A payment of $881.92 will be due Southern Pacific on March 15, 1970, to hold this lease, and a report covering the geologic work done during the first year will be due April 25, 1970.

Allied Properties, a San Francisco land-holding firm, owns considerable land in the region, and Cerro has an option to lease two sections; Section 1, T. 33 N., R. 39 E., and Section 7, T. 33 N., R. 40 E.

The total ground under which Cerro now controls mineral rights now amounts to about 5-1/2 square miles.

GEOLOGY

Map No. 1 shows the geology as presently known in the Granite Canyon sector. This map is essentially a reconnaissance job, for detailed work has so far been done in only a few local places, mostly in the Vet area and near the breccia pipe in the west. Therefore, several questions having to do with faulting and stratigraphy are not yet resolved.

The Table of Formations presented herewith is from the geologic literature and shows the chief rock types that might be expected in the general area. The Cambrian Preble formation is the principal early rock shown in the east part of the sector.

It is comprised chiefly of phyllitic shale and slate together with beds and lenses of limestone, and it is considered a favorable host rock for ore. The Valmy formation, on the other hand, is the main rock to the west; it is mostly quartzite in that area and although it is locally mineralized by copper and molybdenite, this rock is not considered to be a favorable host.

The contact between the Preble and the Valmy is cut out by the quartz monzonite intrusive in the south part of the sector and is obscured by Tertiary volcanics and alluvium in the north. Farther north, however, the contact consists of the Adelaide thrust zone along which the Valmy has over-ridden the Preble, cutting out several thousand feet of two other formations that are normally between the Harmony and the Comus. As the Adelaide thrust projects into the Granite Canyon sector and appears to be coincident with the anomalous copper-molybdenum mineralization, a breccia pipe and a porphyry, it adds additional interest to the problem of what lies under the volcanics.

The southeastern tip of the rock formation mapped as Preble, in the northern part of the Vet claim group, consists mostly of sericite schist which is considerably obscured by alluvium and talus. Both soil and rock are anomalously high in copper and tungsten, and gossan fragments found in talus contain as much as 2100 ppm Cu. Tertiary volcanics overlie the area nearby, so it could be near an old Miocene surface. Further work is warranted to see if the rock is ore-bearing.

A ridge of quartzite rests upon the sericite schist in the anomalous area, but it does not appear to be a bed within the Preble (?). I suspect it is a klippen of an upper plate along a thrust. Just south, the sericite schist is apparently cut off by a breccia zone which is laced by quartz vein material and which is intruded by a pipe of altered quartz monzonite. The rock south of this is hard, siliceous rhyolitic material containing conglomerate beds and altered andesite. It looks like the Koipato formation of Permian age, in which case there is a considerable amount of the Paleozoic section cut out. This could be due to the Golconda thrust zone which is shown by Ferguson, et al. (Winnemucca geologic quadrangle), to pass through this place and to be cut out by the quartz monzonite intrusive (see figure 3). The Golconda thrust, which is a correlative of the Tobin thrust, cuts Paleozoic rocks, and the Havallah and Pumpernickel formations are ordinarily on the upper plate. If this rhyolitic rock is, indeed, the Koipato, it is the farthest northeast that the formation is known.

The tungsten prospects in the Vet claims consist of hübnerite together with pyrite and minor chalcopyrite in short quartz veins that cut rhyolite. They are of interest chiefly because limey horizons under the nearby Golconda thrust might contain major deposits.

GEOCHEMICAL EXPLORATION

The results of geochemical sampling in the sector are shown on Map No. 2. In the Vet claim area a copper anomaly roughly corresponds with hydrothermal alteration in quartz monzonite. However, in the northern part it reflects underlying and probably mineralized sericite schist, and this is probably the most significant for follow-up work. The molybdenum values are not particularly outstanding, but the scattered tungsten values of 10 to 40 ppm are interesting particu-

larly as they are not entirely in the area of known tungsten prospects. As this entire anomalous area is still "open" toward the north, west and south (across Wilson Creek) further sampling should be done.

No additional sampling was done in the upper Granite Canyon area, so further work is necessary here, around the breccia pipe as well as to the north in the quartz-veined quartz monzonite.

A small, modest copper anomaly was found around a little prospect in the northeast part of the map area. Detailed mapping can be done to evaluate this.

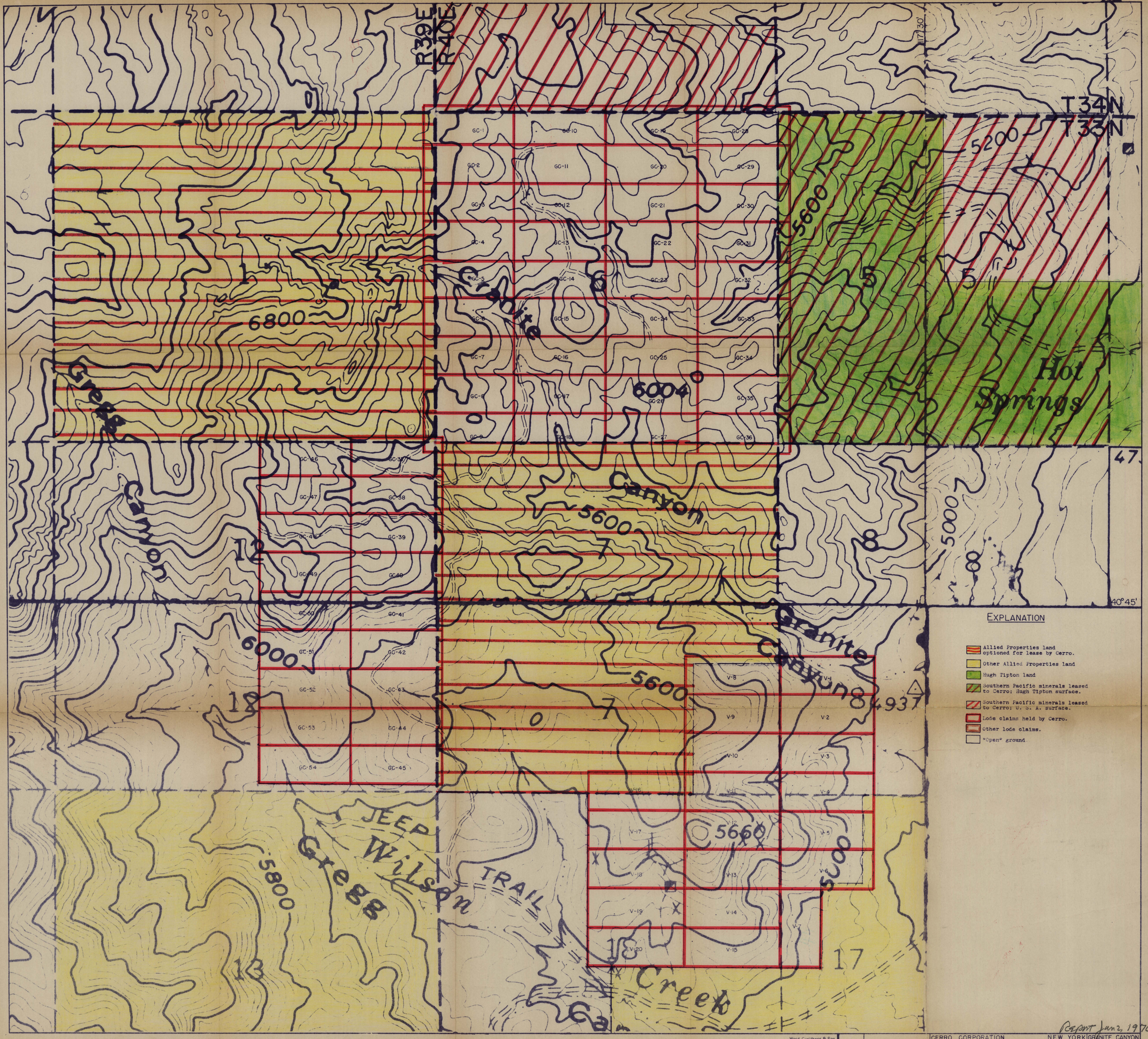
GEOPHYSICAL EXPLORATION

An MFI-100 magnetometer was rented in mid-December and operated for two weeks in the areas shown on Map No. 3. In the Vet area the 1100 gamma "high" in the east is due to a bed or dike of andesite in the Koipato (?) which is strongly epidotized and contains magnetite. It causes a compass declination. The broad "low" just north is of interest as it roughly corresponds with a breccia zone and altered sericite schist.

In the upper Granite Canyon area, another broad "low" in the northeast part of Section 12 roughly corresponds to a porphyry intrusive and alteration in quartz monzonite. Faulting might control the northwest edge of the zone. A sharp pinnacle of Tertiary volcanic rock corresponds to the 1750 gamma "high" near the common corner of Sections 1, 12, 6 and 7; this is probably due to lightning strikes. The broader "highs" to the north might be due to underlying volcanic rock, but the coverage there is insufficient for conclusions.

The Geological Survey flew about six quadranges in this general area with a magnetometer last summer, and according to Don Mabey, who heads up this work, the data should be released open file sometime in March, 1970. They should be reviewed as soon as possible following the release so that Cerro can take advantage of any anomalies found in this area of interest. Also, following this review, one would be in a better position to decide whether or not further ground magnetics are worthwhile.

Ward Carithers



Report June 1970

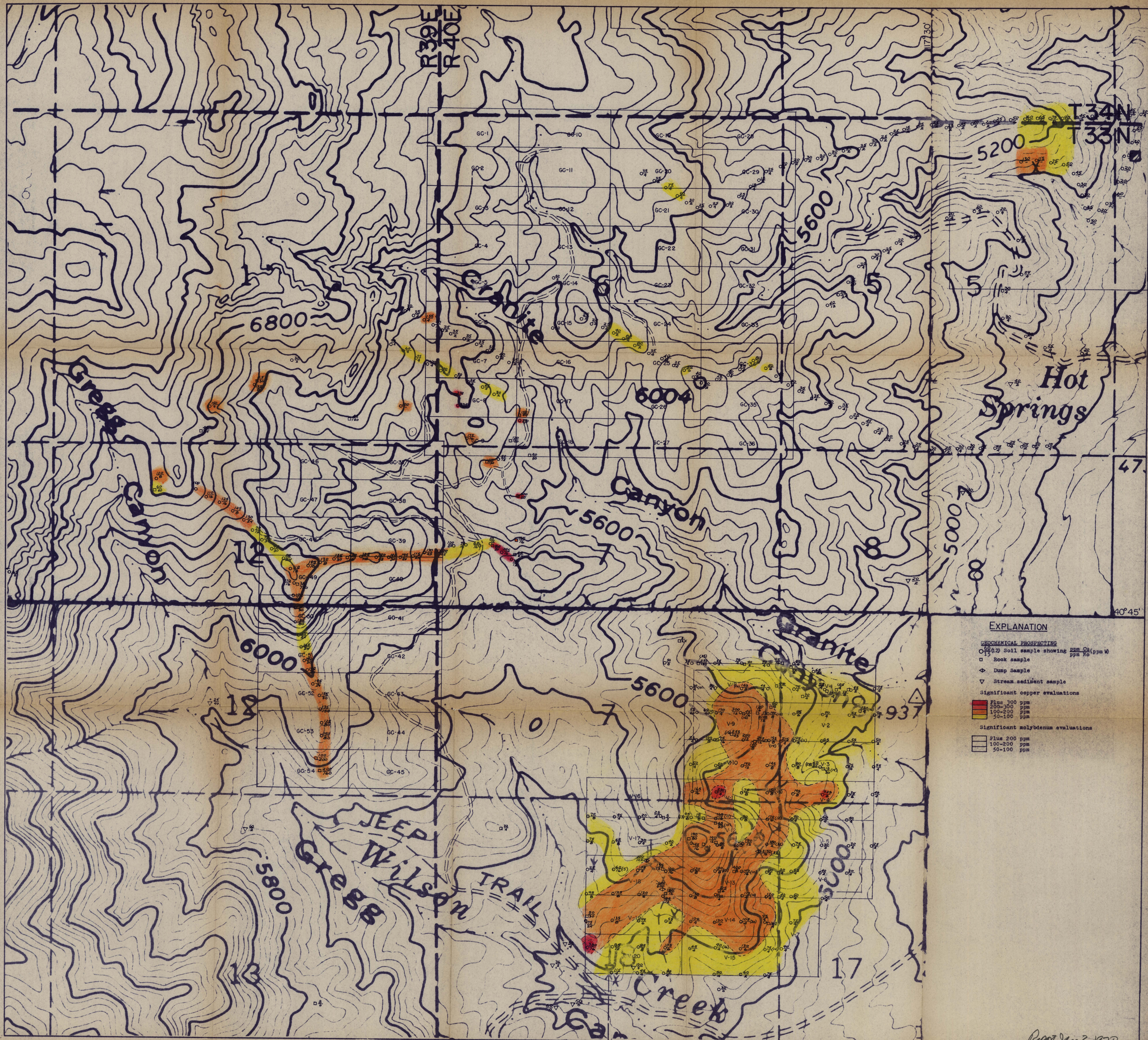
2120 0016

Ward Carithers & Son
Mining Geologists
Reno, Nevada

Geology by W.C., 1969
Drawn by W.C., Dec. 1969

CERRO CORPORATION NEW YORK
Adelaide Project, Humboldt County, Nevada
PROPERTY
1" = 500' contour interval 40' and 80'

GRANITE CANYON SECTOR
MAP No 4

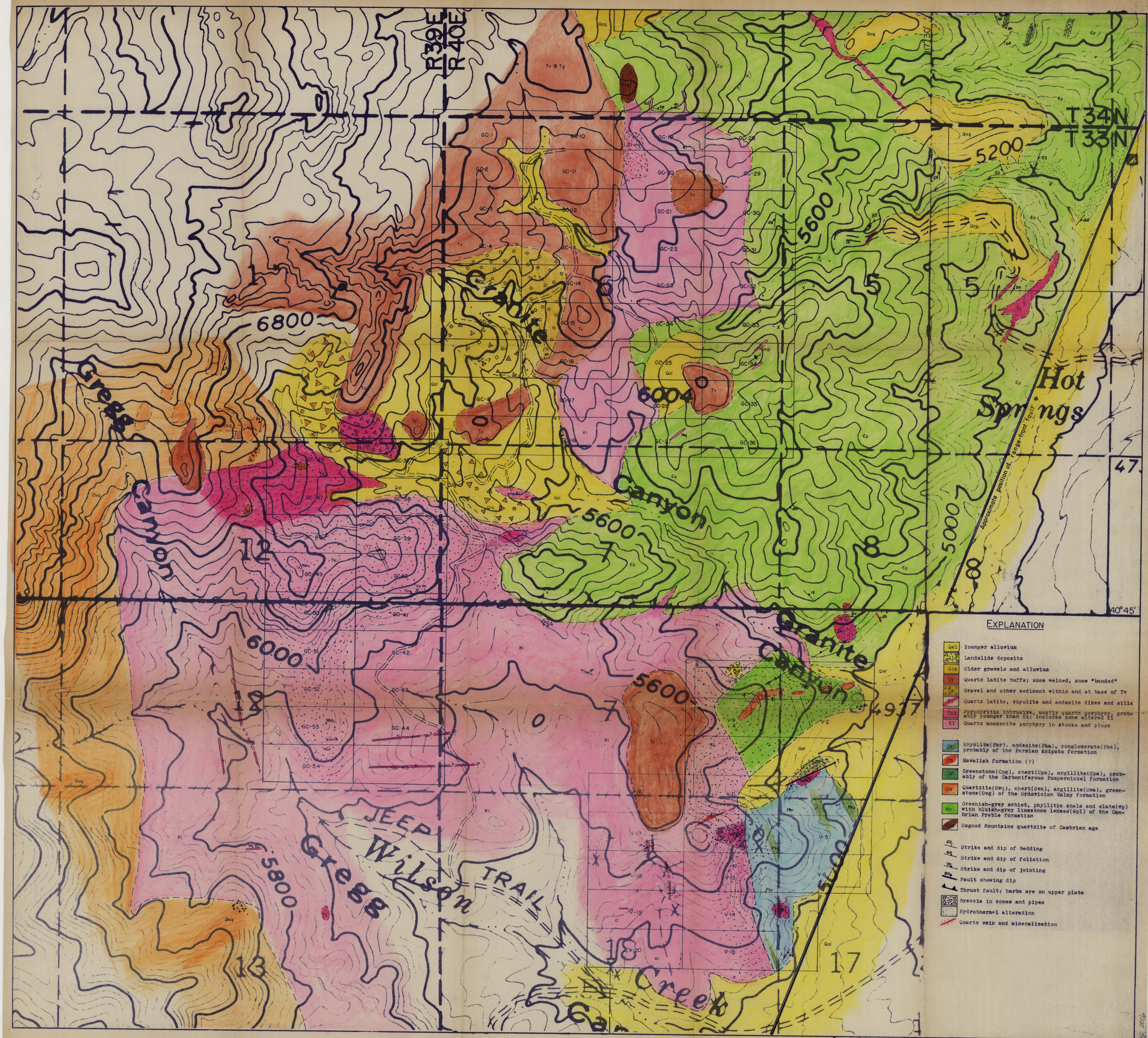


Report, Jan 2, 1970

Ward Carithers & Son Mining Geologists Reno, Nevada	Geology by W.C., 1969 Drawn by W.C., Dec. 1969	CERRO CORPORATION NEW YORK Adelaide Project, Humboldt County, Nevada GEOCHEMICAL PROSPECTING 1" = 500' contour interval 40' and 80'
		GRANITE CANYON SECTOR MAP No 2

2120 0016


R39E
R40E
T34N
T33N
117°30'
40°45'
5200
5600
6800
6004
6000
5000
5800
Hot Springs
Gregg Canyon
Granite
Canyon
Granite Canyon
JEEP TRAIL
Wilson
Gregg
Creek
EXPLANATION
Ground magnetic contour
Contour interval 50 and 100 gammas
"High"
"Low"
Report Jan 2.1970
Ward Carithers & Son
Mining Geologists
Reno, Nevada
Geology by W.C., 1969
Drawn by W.C., Dec. 1969
Sharpe MF1-100
Survey by B.C., Dec. 1969
CERRO CORPORATION NEW YORK
Adelaide Project, Humboldt County, Nevada
GEOPHYSICAL PROSPECTING --- MAGNETICS
1" = 500'
contour interval 40' and 80'
GRANITE CANYON SECTOR
MAP No 3
2120 0016


R39E
R40E
T34N
T33N
Granite
Canyon
Gregg
Canyon
Hot
Springs
Approximate position of range-front fault
JEEP
TRAIL
Wilson
Gregg
Creek
40°45'
EXPLANATION
Qal Younger alluvium
Qls Landslide deposits
Qog Older gravels and alluvium
Tv Quartz latite tuffs; some welded, some "banded"
Tg Gravel and other sediment within and at base of Tv
Ti Quartz latite, rhyolite and andesite dikes and sills
TKi Porphyritic intrusive, mostly quartz porphyry, probably younger than Ki; includes some altered Ki
Ki Quartz monzonite porphyry in stocks and plugs
Pk Rhyolite(Pkr), andesite(Pka), conglomerate(Pkc), probably of the Permian Koipato formation
Ph Havallah formation (?)
Cp Greenstone(Cpg), chert(Cpc), argillite(Cpa), probably of the Carboniferous Pumpernickel formation
Ov Quartzite(Ovq), chert(Ovc), argillite(Ova), greenstone(Ovg) of the Ordovician Valmy formation
Ꞓp Greenish-grey schist, phyllitic shale and slate(Ꞓp) with bluish-grey limestone lenses(Ꞓpl) of the Cambrian Preble formation
Ꞓog Osgood Mountains quartzite of Cambrian age
Strike and dip of bedding
Strike and dip of foliation
Strike and dip of jointing
Fault showing dip
Thrust fault; barbs are on upper plate
Breccia in zones and pipes
Hydrothermal alteration
Quartz vein and mineralization

Ward Carithers & Son
Mining Geologists
Reno, Nevada

Geology by W.C., 1969
Drawn by W.C., Dec. 1969

CERRO CORPORATION NEW YORK
Adelaide Project, Humboldt County, Nevada
GEOLOGY
1" = 500'
contour interval 40' and 80'

GRANITE CANYON SECTOR
MAP No 1

8130 0016