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Humboldt County  
Mining Districts:

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137, 141

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REPORT ON GEOLOGIC FIELD EXAMINATIONS OF THE  
NEVADA GARVEY RANCH LANDS  
HUMBOLDT AND ELKO COUNTIES, NEVADA

By

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Reno, Nevada  
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Humboldt County  
Item 2



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INTRODUCTION

This report is based on 16 days of field examinations in June, 1969, on lands belonging to Nevada Garvey Ranches in the eastern part of Humboldt County and the western edge of Elko County, Nevada. These lands total approximately 157,400 acres, but only those in the mountain ranges or on other higher ground were included in the present survey. The extensive holdings in the broad flat structural valleys lie on overburden far too deep to permit exploration or mining. By no means all of the higher lands could be examined in the time allotted, but areas were selected on the basis of known mineralization, possibly favorable geology, and related factors. By general observation and comparison various adjacent or near-by blocks also could be roughly evaluated. Further, examinations were not confined strictly to Garvey lands, for other near-by areas were checked if the geology appeared sufficiently favorable or informative.

The purpose of the survey was to determine whether any of the lands show sufficient indications or possibilities of mineralization to justify more detailed exploration. The findings are described in detail in the body of this report. To summarize briefly,



most of the areas examined either do not show any direct or indirect evidences of mineralization or they show mineralization of a type or extent that would not be economically feasible to mine. A couple of areas may warrant additional investigation, and special exploration of certain volcanic areas also may be warranted, as noted in the final section of this report.

In an office report for Nevada Garvey Ranches dated November, 1968, I described and summarized the topography, geology, and structure of the general area. This data is not repeated herein, and the reader is referred to that report for geologic details. The earlier report included a new geologic map of the entire area, adapted from a preliminary map by the U.S.G.S.<sup>1/</sup> A revised copy of this map is included herewith (in pocket), on which have been added certain roads pertinent to the field survey, and numbered red circles marking the localities examined and described herein. The circles do not show the total area covered but merely mark localities; in most places a much larger area was examined than the areas covered by the circles.

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<sup>1/</sup> Willden, Ronald, Preliminary geologic map of Humboldt County, Nevada: U. S. Geol. Survey, Mineral Investigations, Field Studies Map MF-236, 1961.



FIELD EXAMINATIONS

(135) No. 1. Martin Creek canyon. This area is the lower part of the canyon of Martin Creek, at the southwest edge of the volcanic plateau. It was examined because it lies on the southeasterly projection of the postulated transverse structural zone at the head of Paradise Valley and because it presents a thick section of the Tertiary volcanic rocks. The rocks on the Garvey land farther upstream, in T. 42 N. and T. 43 N., R. 41 E., also were examined, working from a trail off the Hardscrabble Road (No. 10).

The volcanic rocks in this area are dominantly rhyolite, although high rims formed by overlying basalt flows are prominent in places, especially in the upper part of the canyon. A basalt plug or neck also occurs in the lower part of the canyon in the S.E.  $\frac{1}{4}$ , Sec. 1, T. 42 N., R. 40 E., again suggesting the probable presence of the transverse structural trend. The volcanic rocks are thick in this area, extending from the tops of the high ridges to below present drainage. No rocks other than the volcanic rocks are exposed. No bleaching or other alteration was noted such as might accompany a zone of mineralization. This area appears to be barren.

(136) No. 2. Bullion area. The site of the early day mining camp of Bullion is on Garvey land in the S.E.  $\frac{1}{4}$ , Sec. 29, T. 43 N., R. 40 E. Very little is known or available concerning the early operations. Raymond <sup>2/</sup> states that the Paradise district was organized

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<sup>2/</sup> Raymond, R. W., Report on mineral resources of states and territories west of the Rocky Mountains: Washington, Govt. Printing Office, 1874, pp. 262-263.



during the first part of 1874 or the latter part of 1873. The U.S.G.S.<sup>3/</sup> reported in 1908 that "the Bullion mine is opened by a 400-foot vertical shaft and an 800-foot tunnel". Nothing now remains in the area but overgrown old dumps and prospect holes and caved tunnel portals.

As indicated by the geologic map, most or all of the Bullion area is underlain by intrusive igneous rock. The rock, as exposed in a series of rough knolls, is a fine- to medium-grained, gray to dark gray granodiorite. Much of it is weathered and softened, but no zones of strong or extensive alteration were noted.

In the east central part of the area there is a zone of shearing and minor bleaching that contains discontinuous quartz veins up to a foot or more thick. The zone, marked by a line of old prospect holes, strikes about N. 70° W. down the northwest slope of a high knoll. Just above the point where the zone goes under cover there is a old deep adit. Much of the rock on the large dump is stained red by iron oxide. Two samples taken from this zone assayed as follows:

Sample No.	Gold oz./ton	Silver oz./ton	Value per ton
G-B-1	0.005	0.39	\$0.92
G-B-2	0.01	0.12	0.65
Gold @ \$43.00/oz.		Silver @ \$1.80 oz.	

Sample G-B-1, chips of vein quartz in bleached igneous rock, from prospect hole up slope from old adit.

Sample G-B-2, chips & fines from dump of old adit, red-stained vein quartz and igneous rock.

Fissure veins of this type are fairly common in the igneous intrusions. Some of them may contain high-grade ore, but they tend

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<sup>3/</sup> Mineral resources of the United States: U. S. Geol. Survey, 1908, p. 490.



to be narrow and erratic both in form and mineral content. It appears that the Bullion area does not warrant any further work.

(135) No. 3. Spring City area. The site of former Spring City is not on Garvey land, but as this part of the Paradise Valley district contains the only major old mines in the area, an examination was made. The old workings are largely in Sec. 22, T. 43 N., R. 40 E. Numerous large dumps marking the sites of old adits and shafts occur along Spring City Canyon and extensively on the east slope of the high steep ridge to the west. The size and number of the dumps indicate very extensive workings in and under this ridge. The canyon also contains the remains of at least two old mills.

As shown on the geologic map, the Spring City area lies at or near a contact between Mesozoic sedimentary rocks on the west and Tertiary intrusive rocks on the east. In the mining area the chief rock is dark sericite schist, which is cut along faults or fault zones by erratic fingers or apophyses of the intrusion, a white quartz porphyry or rhyolite. One such broad fault zone high on the ridge strikes N. 30° W. and dips 50°-60° S.W., and other faults seem to have about the same strike and dip. The ore shoots, containing a variety of sulphide minerals, also occur in these structural zones, in close association with white vein quartz. Thus the ore deposits are spatially, if not genetically related to the contact zone of the rhyolite intrusion.

Across the canyon from the old workings and a short distance upstream there is a body of white, iron-stained quartz porphyry about



100 feet wide, lying between sericite schist on the southwest and a broad band of dark gray, fine-grained basalt or andesite on the northeast. A large old dozer cut gives a good exposure of the rocks. The geology looks favorable for at least submarginal mineralization, except that no vein quartz is present. Three samples of the white rock were taken, but the assays proved negative.

<u>Sample No.</u>	<u>Gold oz./ton</u>	<u>Silver oz./ton</u>	<u>Value per ton</u>
G-SC-1	Trace	0.06	\$0.11
G-SC-2	Trace	0.13	0.23
G-SC-3	Trace	0.06	0.11
Gold @ \$43.00/oz.		Silver @ \$1.80/oz.	

Sample G-SC-1, chips from hard rib just west of basalt contact.

Sample G-SC-2, chips and some fines from softer central zone.

Sample G-SC-3, chips and some fines from hard rib and contact zone just east of sericite schist.

In spite of these negative results at one locality, and in view of the geological and mineralogical associations in the Spring City area, I believe that further scouting and sampling should be done in the area of this Tertiary intrusion, if further work is undertaken in the Garvey area and if land records show the ground to be open.

(135) No. 4. Lower Spring City Canyon. About a mile and a half below the site of Spring City near the mouth of the canyon a number of old shallow inclined shafts and short adits are driven on narrow quartz veins in the Mesozoic rocks. There are no igneous rocks in this area. The chief rocks are dark gray to black siliceous schist and coarse-grained mica schist. The quartz is milky white and is tightly frozen to the walls of the irregular fractures in which it



occurs. No sulphide minerals were seen, but some of the quartz is coated with an apple green stain. All of it looks very lean. It is believed to be older than the typical quartz of the main mineralized veins of the area. No further work is warranted in this area.

(135) No. 5. Buttermilk Summit. A narrow and difficult jeep trail leads from the old Bullion area (No. 2) to Buttermilk Summit, in the northeast part of T. 43 N., R. 40 E., at the crest of the high ridge northeast of Paradise Valley. There are scattered tracts of Garvey land in this area, on which rather extensive scouting was done on foot. The rocks on and around Buttermilk Summit are rhyolitic and andesitic or basaltic volcanic flow rocks. In this area they show no evidence of strong alteration or mineralization.

(135) No. 6. Tunnel area. In the northeast corner of T. 43 N., R. 39 E., on the high ridge east of the Hinkey Summit road, there are large areas of white quartz in fine-grained gray schist of Mesozoic age. An old tunnel, now caved, and a number of prospect holes have been dug in the quartz areas. In this general area south and east of Hinkey Summit the geologic map shows both older and younger intrusive bodies cutting the Mesozoic rocks, on the line of the postulated transverse structural trend.

This general area was extensively scouted on foot but no evidence of any important mineralization was found. The quartz, while impressive in volume, appears "lean and dry" and is in frozen contact with the schist. It is believed to be an older generation of quartz. There is little or no alteration of the schist, and sulphide minerals



are very sparse or lacking. The rock mapped as a late Tertiary intrusion is a light gray, vesicular porphyry that looks more like a flow rock. It is remarkably uniform and unaltered even close to the contact zone. This area appears to be of no further interest.

(132) No. 7. Hinkey Summit area. Although there is no Garvey land in the immediate area of Hinkey Summit (see map), the rocks along the road were checked as a matter of course. The chief rocks are gray quartz-mica schist of Mesozoic age, overlain by volcanic rocks of Tertiary age, including gray to black platy andesite or basalt and hard volcanic agglomerate. Aside from the usual effects of weathering, there is little or no alteration and no evidence of mineralization at or near Hinkey Summit.

(133) No. 8. Granite Peak area. Granite Peak, one of the high peaks in the Santa Rosa Range, is formed by a relatively small intrusive stock in the southwest part of T. 44 N., R. 39 E. There is Garvey land along the north edge of the stock. This area is reached by a narrow and rough road that extends up Lye Creek from the Martin Creek ranger station and eventually reaches the crest of the range in a broad saddle north of Granite Peak.

The northeast part of the contact zone and surrounding areas were scouted on foot. This is a rough but relatively flat broad bench between Granite Peak on the south and higher volcanic ridges on the north. Much of the area is covered by overburden. The exposed rocks are mainly light gray to pink, medium-grained granodiorite (?) seamed with tightly frozen quartz veinlets. In places there is much



float of fine-grained gray schist, but most of this rock and the exact contact zone are covered. No evidence of mineralization was found, nor were any old workings of any kind seen.

(32) No. 9. Canyon Creek area. The Canyon Creek road runs from the Winnemucca-McDermitt highway (U.S. 95) across the Santa Rosa Range south of Buckskin peak and connects southward to the Hinky Summit road. A geologic examination was made of the rocks along the road, particularly in the vicinity of the south contact of the Tertiary intrusion in the center of T. 45 N., R. 39 E. A large block of Garvey land lies just to the west and south.

The complex contact zone occurs between fine-grained gray schist and light gray to buff rhyolite or quartz porphyry. In detail the contact is very irregular, and it is complicated by large bodies of dense, fine-grained black basalt or andesite, which are believed to be dikes.

Much of the rock in the contact zone has undergone strong hydrothermal alteration. The rhyolite is leached and softened and in part heavily iron-stained; the basalt is bleached, some of it nearly white or yellow and brown, and is heavily impregnated with dark brown iron oxide. The area looks interesting, although assays of two samples from the lower contact zone and one sample from a rhyolite dike higher in the range are negative.

<u>Sample No.</u>	<u>Gold</u> <u>oz./ton</u>	<u>Silver</u> <u>oz./ton</u>	<u>Value</u> <u>per ton</u>
G-CC-1	Trace	0.01	\$0.02
G-CC-2	Trace	0.04	0.06
G-CC-3	Trace	0.04	0.06
Gold @ \$43.00/oz.		Silver @ \$1.56/oz.	



Sample G-CC-1, highly altered basalt, in part bleached white, with very dark brown iron oxide. Chips from old road cut.

Sample G-CC-2, altered and iron-stained light gray rhyolite or quartz porphyry. Chips from float on hillside.

Sample G-CC-3, light gray rhyolite with much limonite. Chips from 75-foot wide dike cutting basalt high on west slope of Santa Rosa Range.

Despite the present negative results, in view of the strong hydrothermal alteration and the several near-by occurrences of quick-silver mineralization, this area probably warrants a reasonable amount of additional scouting and sampling if further work is undertaken.

No. 10. Hardscrabble Road. This is the Hardscrabble Road, which now is being completely realigned and reconstructed by the B.L.M. Eventually it will continue around the north end of the Santa Rosa Range to McDermitt. This road will give access to various parcels of Garvey land on the volcanic plateau. I mapped it quickly by compass and speedometer as far as the North Fork of the Little Humboldt River, where construction was in progress, and used it to check the volcanic rocks in the area for signs of zones of alteration. No near-by zones were noted.

137 No. 11. Little Humboldt unit. This is the Little Humboldt unit of the Garvey holdings, part of which is in Elko County. A good gravel road runs along the river from the Eden Valley road junction at the Garvey Bullhead unit in the southeast corner of T. 41 N., R. 41 E. to the Little Humboldt unit. All of the rocks along this road are Tertiary in age. They include various volcanic flow rocks ranging from rhyolite to basalt, and also broad areas of the sedimentary



Humboldt formation of late Miocene and early Pliocene age. Most of the Humboldt beds are light colored and contrast sharply with the dark volcanic rocks. The rocks were closely examined at a number of places along the road, but no evidence of mineralization was found anywhere in this area.

(136) No. 12. Tungsten mine. Old mine workings are present on or near Garvey land in the extreme southwest corner of T. 39 N., R. 42 E., high on the west slope of the Osgood Range. A poor road leads from the Eden Valley road up Anderson Canyon to the workings. An examination was made to check the geology and the extent of the workings and to determine what metals are present.

The metal sought here is tungsten. It occurs in a broad, highly altered contact zone between Paleozoic sedimentary rocks on the northwest and an older intrusive stock on the southeast. The Paleozoic rocks are limestone, schist, and metavolcanic rocks, which have been intruded by medium-grained, light gray granodiorite or quartz monzonite. The contact zone is marked by large bodies of tactite composed dominantly of dark brown to brownish green garnet, with much coarse crystalline pyrite, quartz, and epidote. As seen on the dumps, scheelite is only a minor constituent of the tactite, suggesting that the ore may have been of relatively low grade.

The tactite zone and related structures are opened by a large adit near the bottom of the canyon, by a large quarry-like open cut about 125 feet above the adit, and by various cuts and other workings still higher on the ridge. The general appearance of the workings



suggests that they date back at least to World War II, but there also are large cuts both here and across the canyon where more recent drilling has been done. Presumably this drilling did not find commercial ore. In any event, the mineralized area, both here and at other workings visible to the south, has been thoroughly prospected. In view of this fact and the fact that tungsten is the metal, no further work seems justified in this immediate area.

(136) No. 13. Dry Hills area. Some of the Garvey lands on the lower west slope of the Osgood Range lie in an area of Tertiary volcanic rocks in the west central part of T. 38 N., R. 41 E. This block of ground is called "Dry Hills" on some maps. In view of the probable presence of strong faults bounding and probably cutting this block, as well as the adjoining Paleozoic sedimentary rocks, a fairly thorough inspection was made by working off old ranch roads. No signs of any zones of alteration or mineralization were found.

(127) No. 14. Central Hot Springs Range. The geologic map shows two small igneous intrusions in the southeast part of T. 39 N., R. 40 E., on or near the crest of the Hot Springs Range. As some such bodies are loci for mineralization, these were checked. A badly washed desert road leads from the Eden Valley road to a point near Willow Spring on the middle east slope of the range. From here I climbed on foot to the crest of the range and examined an area of about two square miles.

Paleozoic sedimentary rocks occupy most of the area. They include extensive beds of hard, fine-grained, light brown quartzite,



and smaller amounts of drab to purple fissile shale and thick-bedded bluish gray limestone. Structure in these rocks is obviously complex. There is no single large mass of intrusive igneous rock, but only scattered small dikes or sills. There is very little vein quartz, and little or no bleaching or similar evidence of mineralization - the entire area looks "lean and dry". Neither were any prospect diggings seen anywhere in this part of the range. No further work is warranted.

At Willow Spring a steep bank shows outcrops of iron-stained shale cut by quartz veinlets and small apophyses of igneous rock, all considerably altered. One sample of chips from the outcrops was taken, which proved negative on the assay.

<u>Sample No.</u>	<u>Gold Oz./ton</u>	<u>Silver Oz./ton</u>	<u>Value per ton</u>
G-WS-1	Trace	Nil	---

(127) No. 15. Dutch Flat area. The Dutch Flat mining district is in the west central part of T. 38 N., R. 40 E., on the lower west flank of the Hot Springs Range. Placer gold and cinnabar were discovered here in 1893. The district has had a minor production of gold and silver from placer and underground operations, and a substantial production of quicksilver from the Dutch Flat mine, which is being reopened at the present time (June, 1969). Because of the presence of gold and silver it was thought that this general area might be favorable for broad geochemical prospecting for a large low-grade gold deposit, but it now appears that the gold and silver are largely restricted to one relatively narrow zone.



The Dutch Flat quicksilver mine is in a short little canyon or notch in the range front, which is bordered on the south by a high sharp ridge that extends northeastward into higher ground in the range. South of the ridge is Sodarisi Canyon, which extends far into the range to the northeast. In the lower part of Sodarisi Canyon a line of old workings extends northeastward from the canyon bottom up a spur ridge nearly to the top of the main ridge. The workings, consisting of a number of vertical or nearly vertical shafts and a few adits, were dug for gold and silver. Garvey lands lie immediately to the north and east and a little farther to the west and south.

The rocks in this part of Sodarisi Canyon are dominantly fine- to medium-grained feldspathic sandstone. Along the crest of the spur ridge these rocks are cut by a broad, nearly vertical shear zone or a series of subparallel normal faults that strike northeastward and dip steeply northwestward or southeastward. The country rocks along the faults are hydrothermally altered and bleached, and the zones also contain much white quartz, which occurs as irregular and discontinuous veins and veinlets in the altered and sheared rock. Minor amounts of pyrite and other sulphides also occur sporadically. Eight samples from the old dumps all show small amounts of gold & silver.

<u>Sample No.</u>	<u>Gold</u> <u>Oz./ton</u>	<u>Silver</u> <u>Oz./ton</u>	<u>Value</u> <u>per ton</u>
G-DF-1	0.005	1.25	\$2.47
G-DF-2	0.02	3.72	7.56
G-DF-3	0.61	1.22	2.63
G-DF-4	0.02	3.51	7.18
G-DF-5	0.015	6.27	11.94
G-DF-6	0.02	0.30	1.40
G-DF-7	0.01	0.23	0.84
G-DF-8	0.005	0.15	0.49
Gold @ \$43.00/oz.		Silver @ \$1.80/oz.	



- Sample G-DF-1, chips and fines from big dump in canyon bottom below ranch reservoir.
- Sample G-DF-2, chips and fines, much quartz, from westernmost of three high dumps where spur ridge branches off main ridge.
- Sample G-DF-3, chips and fines, middle one of three high dumps, 50 feet east of DF-2, same structure.
- Sample G-DF-4, chips and fines, much quartz, from lower of two adjoining dumps high on spur. Vertical shaft in shear zone.
- Sample G-DF-5, chips and fines, abundant quartz, from dump of vertical shaft 40 feet S.W. of DF-4 shaft.
- Sample G-DF-6, chips and fines, much less quartz, from dump of deep shaft on crest of spur ridge, about 200 feet down to S.W. from DF-5, fault N.  $40^{\circ}$  E.,  $70^{\circ}$  S.E.
- Sample G-DF-7, chips and fines, from dump of old adit on fault N.  $39^{\circ}$  E.,  $75^{\circ}$  N.W. Minor vein quartz in altered & bleached sandstone, about 200 feet N.  $67^{\circ}$  E. from DF-1, above canyon bottom.
- Sample G-DF-8, chips and fines, from dump of adit in canyon bottom about half a mile below DF-1, in light gray igneous rock, no true vein.

In conjunction with the above sampling I covered a large surrounding area on foot, including climbing several of the high ridges, and found no evidence of alteration or mineralization. It appears that the area of the Dutch Flat mine and associated quick-silver prospects, and the gold-silver area in Sodarisi Canyon are the only mineralized localities in this vicinity. Presumably the Sodarisi Canyon zone supplied the placer gold that has been mined, although silver seems to be the dominant metal. This zone is much too narrow and low-grade for present day mining. In view of these facts and the general nature of the area, it appears that no further work is warranted in the Dutch Flat district.



(127)

No. 16. Last Chance area. An excellent road now leads from the Eden Valley road to a microwave station on the crest of the Hot Springs Range near the bench mark in the east central part of Sec. 21, T. 38 N., R. 40 E. The Last Chance quicksilver prospect is on the upper west slope of the range not far below this locality. I scouted along this road to the crest but found nothing of possible economic interest. The rocks at the crest are thin-bedded purple clay shale and massive drab sandstone. One sample of gouge and associated white quartz from a minor fault in sandstone near the crest of the range gave negative assay results.

<u>Sample No.</u>	<u>Gold</u> <u>Oz./ton</u>	<u>Silver</u> <u>Oz./ton</u>	<u>Value</u> <u>per ton</u>
G-16-1	Trace Silver @ \$1.56/oz.	0.03	\$0.05

(127)

No. 17. Front faults, Hot Springs Range. The geologic map shows two major faults or parts of a single fault separating Paleozoic sedimentary rocks from Tertiary volcanic rocks along the lower east slope of the Hot Springs Range in the east part of T. 38 N., R. 40 E. These faults were scouted for possible evidence of alteration or mineralization, but none was found.

(127)

No. 18. Red Devil area. The area of the Red Devil and other quicksilver prospects at the extreme south end of the Hot Springs Range was examined to check geology and intensity of mineralization and possible presence of other minerals. The rocks are interbedded feldspathic sandstone, silty shale, and drab fissile shale. The quicksilver workings comprise a couple of shallow shafts and one adit. There is considerable alteration, but apparently very little cinnabar.



About 1000 feet to the east and across a deep gulch there is a partly caved old inclined shaft sunk on a 1-foot wide vein of milky white quartz. The vein strikes about due east and dips  $60^{\circ}$  north. The quartz looks very lean, and no sulphide minerals were seen. There appears to be nothing of interest in this district.

(128)

No. 19. Southern Osgood Range. The central part of this large block of Tertiary volcanic rocks at the south end of the Osgood Range was scouted for signs of hydrothermal alteration that might indicate mineralization. A poor road leads to the base of the range, whence I climbed on foot to the crest and traversed several of the high ridges, from which large areas of the block could be seen. The rocks are essentially all fresh, scoriaceous basalt or andesite, with a few beds of coarse tuff at different elevations. No significant color changes were noted such as might indicate zones of alteration.

(141)

No. 20 and No. 21. Bloody Run Hills. The Bloody Run Hills, a southern extension of the Santa Rosa Range, include two fairly large intrusive stocks that cut clastic rocks of Jurassic age. The intrusive rock is very light gray, medium- to coarse-grained granodiorite or quartz monzonite. The sedimentary rocks are phyllite, slate, and fine-grained quartzite.

The Garvey lands include extensive holdings in and around these hills. Examinations were made of the central part and some of the north contact zone of the south stock (No. 20), and of part of the south contact zone and adjoining areas of the north stock (No. 21). The latter area includes the Basque "mine", a minor gold and silver