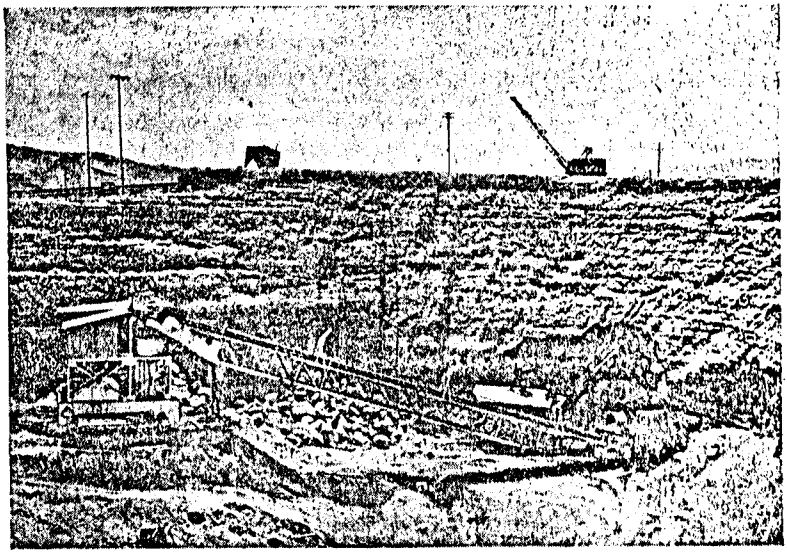
The Round Mountain mining district lies in the vicinity of a symmetrical hill of silicified rhyolite, referred to as Round Mountain, which sits slightly out from the west slope of the Toquima range. The town of Round Mountain is on the north side of the hill and is 57 miles by paved highway north of Tonopah.

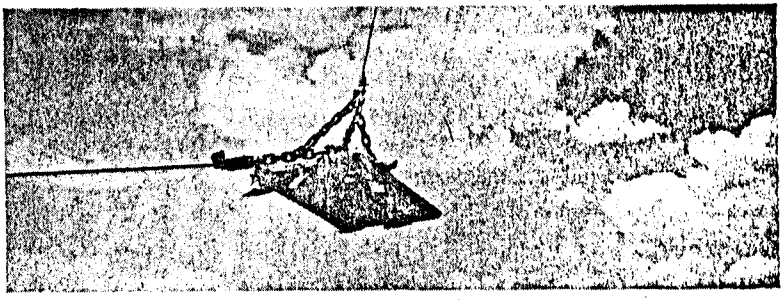
Louis D. Gordon of Reno is credited with the discovery of the district in 1906, in the same year Thomas Wilson discovered the presence of placer gold below the lode deposits. Several companies soon started operations here and production from the district began in 1907. This production, from both lode and placer, continued at a fair rate until about 1940 when the Dodge Construction Company ceased its placer operation. The last underground mining was done by the Nevada Porphyry Mines in 1935.

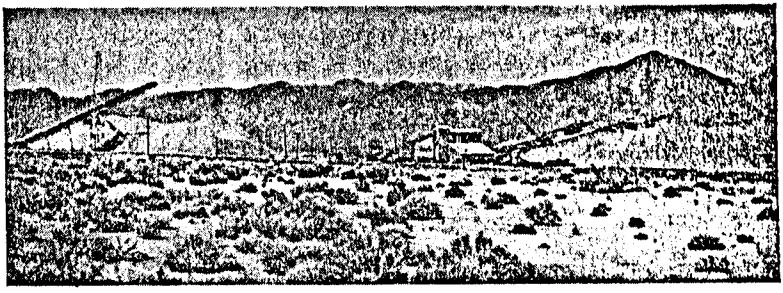
Originally the camp had many operating companies; however, consolidations and other transactions decreased the group to five, which in 1929 pooled their resources to form the Nevada Porphyry Gold Mines, Incorporated, with Louis D. Gordon as president. This company now controls essentially all the lode and placer properties in the immediate area of Round Mountain.

4020 0216

#1950 BULL. - KRALL







(14) Operation of the Round Mountain Gold Dredging Corporation.
Upper. Looking down on the mining operation.
Center. The scarifying drag weighs about 7,200 pounds.
Lower. The washing plant with its huge stockpile on the left and tails on the right.

Water was originally piped from Jefferson and Shoshone Canyons, but, it is now obtained from Jett Creek across the Big Smoky Valley to the west. Recently this supply has been supplemented by two wells drilled in the valley. Power is purchased from the California Electric Power Company that transmits it from Bishop, California.

As per figures kindly furnished by Mr. Gordon, a gross production of $6,625,000 was made by the Round Mountain mines to August 15, 1933. Recorded gross production after that date, as given by Couch, is about $1,225,000 from the Nevada Porphyry Mines. This would make a total from the district of $7,850,000 to the end of 1940. The only appreciable production since then is that now being made by the Round Mountain Gold Dredging Corporation which started operation on January 1, 1950.

Of the nearly 8 million dollars produced from this group of mines, one and one-half millions have come from placers. Considering the present operation, it may be expected that in a few years the placer production will have overshadowed the total lode production. The average yield of all placer operations in the area is believed to have been almost $1 per cubic yard.[82]

The Gold Hill mine, which lies a few miles north of Round Mountain, has not been included. Data kindly submitted by Mr. Albert Silver show a total production of $987,000 from this property during 1930–1942. With this amount, the Round Mountain mining district has a total production of nearly 9 million dollars.

Geology. H. G. Ferguson's report[83] well describes the areal geology of the district. Excerpts from his report follow:

> The rocks in the neighborhood of the Round Mountain consist of Paleozoic sediments, granitic rocks of probable Mesozoic age, and later Tertiary igneous rocks and lake beds.
>
> The Paleozoic rocks are for the most part dark limestones, which are interbedded with black jaspar, and dark slaty schist, chiefly of Ordovician age. Ordovician fossils (graptolites) were found on the ridge north of Mariposa Creek, about 4 miles south of Round Mountain, and the underlying rocks in this locality closely resemble the series of Ordovician sediments of the Manhattan district. Sedimentary rocks, consisting chiefly of schist

[82]Vanderburg, William O., Placer Mining in Nevada: Univ. of Nev. Bull., Vol. XXX, No. 4, p. 133, 1936.

[83]Ferguson, H. G., The Round Mountain District, Nevada: U. S. Geol. Survey Bull. 725-I, pp. 386, 397, 1921.

and thin beds of crystalline limestone occur in the valley of Jefferson Creek, about 4 miles northeast of Round Mountain.

The ore deposits of the Round Mountain district belong to two periods. The earlier of these periods followed the granite intrusion and is characterized by tungsten ores. To the later period belong the gold-bearing veins of late Tertiary age.

In the Round Mountain district the ores formed as a result of the granite intrusion are represented by small veins in the granite that carry small quantities of the manganese tungstate huebnerite. These veins have been known since 1907, but the early attempts to develop them were unsucecssful. In 1915 a small quantity of tungsten ore was produced by working residual surface material with dry-washing machines.

Mineralogically the veins are comparatively simple. Huebnerite is the only metallic mineral present, except in a few veins close to the slate contact, where a little tetrahedrite also occurs. The quartz is coarsely crystalline, with rather rare vugs. The sharp heubnerite crystals inclosed in the quartz suggest that the crystallization of these minerals was simultaneous or that the quartz was slightly later. Muscovite is present in nearly all the veins but is usually confined to a narrow band close to the walls. Fluorite, in complex delicate pink crystals, was seen in nearly all the veins, usually as crystals on the faces of projecting quartz pyramids in the vugs and more rarely as poorly defined streaks in the central parts of the veins. A very slight amount of oxidation is shown by minute amounts of manganese oxide stain and small specks of yellow tungstite. Concentrates from these deposits, from the old mill on Shoshone Creek, showed, aside from a little magnetite derived from the granite, only huebnerite and fluorite.

The profitable gold deposits are confined to the rhyolite on Round Mountain and the neighboring hill to the east. The hills south of Round Mountain consist of similar rock but appear to be barren.

The principal veins on Round Mountain are known as the Los Gazabo and the Keane. The Los Gazabo crops out on the south flank of Round Mountain. It strikes

westward and dips about 15° N. It has yielded ore for 900 feet down the dip, or less than 350 feet vertically below the outcrop. The Keane vein dips to the south and has proved productive only in the lower levels. The Mariposa vein lies north of the Keane and dips gently to the south. Several rich stringers have been encountered at depth on the footwall side of the Los Gazabo. In the so-called sheeted zone, on the west side of the hill, and the stringer section east of the shaft small veinlets occur so close together that the entire deposit has been mined by the glory-hole method.

The grade of ore mined differs according to the method of mining adopted. From 1910 to 1917, when the Round Mountain Co. for the most part mined its own ores, a large tonnage could be handled economically, and the average value of bullion recovered per ton of ore was between $6 and $7. In 1918 and 1919 the leasing system was chiefly used, and small rich streaks were followed by the lessees. During this period the average value of bullion recovered per ton of ore mined was $35.77. In 1920 the recovered value per ton of ore mined on company account was $4.73 and that mined by lessees $52.68.

The range of ore deposition is comparatively shallow. The deepest ore mined, from the 900-foot level of the Sunnyside mine (about 300 feet below the collar of the shaft), is above the water level and about 700 feet below the top of Round Mountain. Elsewhere in the district the productive zone appears to be even shallower.

Free gold is the only valuable mineral obtained, for although auriferous pyrite is present in some veins the quantity is too small to warrant concentration or cyanidation. The gold is intercrystallized with quartz or associated with limonite and minor manganese oxide in small fissures in which quartz may be lacking, and both types of occurrence may be present in the same vein.

The primary quartz veins are for the most part not continuous over long distances. The Keane vein and apparently also the primary veins of the Fairview seem to have followed pre-existing faults. These veins generally do not exceed a few inches in width, and much of the high-grade ore from the top of Round Mountain came from veins scarcely over an inch wide.

The primary metallic minerals present are gold, pyrite, and rarely realgar. The gangue consists essentially of quartz together with accessory adularia and alunite and rarely fluorite.

After the primary quartz veins were deposited, new fissures were formed. This later fissuring was probably as extensive as the original fissuring, but for the most part the later fissures did not follow closely the original veins. The supergene waters that oxidized the auriferous pyrite in general followed the new channels, which crossed the older veins at many points, and iron oxide and secondary gold were deposited along these newly formed fissures.

The result is a second type of vein which consists of a fissure filled chiefly with mixed oxides or iron and manganese, the iron in excess of the manganese. Commonly the adjoining country rock is shattered for some distance from the major fissure, and in many places the smaller parallel fissures are the more productive. Crushed fragments of vein quartz occur here and there, but in some of these fissures no gangue minerals other than limonite and pyrolusite are present. The gold is usually inclosed in limonite or manganese oxide, in the middle of the fissure. The gold in these veins differs from that of the quartz veins in that distinct individual crystals are absent, and it occurs in small thin plates or delicate flat feathery crystals, that never show the greenish tinge commonly seen in the gold from quartz veins.

The veins of Round Mountain and the neighboring hill to the southeast have yielded placers, which are in places exceedingly rich. Most of the placer production has come from the immediate vicinity of Round Mountain, but placers have also been mined in the low ground south of the ridge between the Fairview and Sunnyside mines.

In the early days of the camp good returns were obtained from surface material on the slopes of Round Mountain worked by dry-washing machines. Water, however, was soon brought from Jefferson and Shoshone creeks and hydraulic mining commenced. This supply was insufficient, and in 1915 the Round Mountain Co. completed the installation of a 9-mile pipe line to bring

water from Jett Canyon, in the Toyabe Range. Even this pipe line did not supply sufficient water for hydraulic operations throughout the year, and the length of the mining season varies with the amount of winter snowfall in the mountains. Under ordinary circumstances placer operations can not be continued later than July.

The placer gravel at the Sunnyside mine is composed of coarse, angular rhyolitic wash, without definite bedding. Where it is being mined near the hill the maximum depth is about 30 feet, but it deepens toward the valley. Out into the valley, however, the angular rhyolitic talus is covered by roughly stratified material containing an admixture of granite pebbles and boulders unsorted in size. This material carries far less gold than the angular unstratified rhyolitic material beneath it.

The grade of bedrock toward the valley is about 4 percent and that of the surface is somewhat less, so that the deposits become thicker to the west. Some shafts sunk in the valley west of Round Mountain to depths of 100 to 200 feet indicate the possibility of old stream channels along bedrock, which may prove profitable. These channels were presumably formed during an earlier, more humid period of permanent streams.

Although the gold is found in workable amount throughout the unsorted material, in places the material that rests directly on bedrock is extraordinarily rich. The writer has seen six small egg pans of gravel taken just above bedrock that yielded 0.4 ounce of gold.

The gold is angular and coarse and shows no evidence of any transportation. Nearly all the nuggets carry particles of either quartz or siliceous limonite attached to their surfaces. Besides the gold, the concentrates contain only a little finely divided magnetite and small grains of limonite and manganese oxide. As far as appears from the inspection of a few nuggets, the two types of gold—that of the quartz veins and that which occurs in the limonite fissures—are about equally represented.

On the Red Top claim in the wash to the east the rhyolitic material is to some extent contaminated with granite wash, and a little huebnerite and monazite, together with rare specks of native copper, were found.

The angular material of the Round Mountain placers, particularly that near bedrock, is in places cemented by a limy deposit into a hard conglomerate. In places small cavities between the pebbles have been filled with crystalline calcite. The gradual break-up of this hardpan in the sluice boxes prevents any marked concentration of gold in the upper boxes.

Properties. The Nevada Porphyry Gold Mines[84] property includes essentially all the gold mines in the immediate area of Round Mountain. The Los Gazabos shaft, the principal working, is 1,200 feet on a 20 degree incline and has about 10 miles of workings. In addition to this there are the Gordon shaft, Placer Vein shaft, No. 2 shaft, and Fairview shaft, all between 250 feet and 350 feet in depth; and three main adits. Other workings are more shallow. A 240-foot vertical shaft sunk in the alluvium by the Nevada Gold Development Company encountered 210 feet of pay gravel.

Several attempts have been made to develop a large low-grade gold deposit. During 1931–1933 the Nevada Porphyry Gold Mines spent about $105,000 in sampling and exploration, which resulted in blocking out 13 million tons of reasonably assured ore of $1.50 per ton value, at that time. The increase in the price of gold in 1934 would make the present value $2.60 per ton. The company milled about 6,000 tons taken from the better part of this ore and recovered $2.53 per ton. At the same time the company blocked out a million yards of gravel of $1 per yard value. After several other groups spent about $150,000 sampling the placer, the last being the present operating company, about 42 million cubic yards of gravel, estimated to contain 30 cents per cubic yard, had been developed. During 1935–1936 the A. O. Smith Company spent a reported $916,000 exploring and sampling lode deposits of the Round Mountain and Manhattan districts in an attempt to develop a large low-grade deposit. It is understood that they abandoned their work as they could not come to an agreement of terms with the Nevada Porphyry Mines, on whose ground most of the work was done. Their sampling was characterized by huge samples and an excellent assay office operated 24 hours per day. It is said that 12 assayers were employed on each shift, and fusions were run in large crucibles using 5 assay tons each.

The Round Mountain Gold Dredging Corporation, controlled

[84]Data on the property kindly furnished by Mr. Louis D. Gordon.

by the Consolidated Gold Fields of South Africa, Ltd. and the Yuba Consolidated Gold Fields, now has a lease on the Nevada Porphyry Gold Mines property. The company became interested in the ground in 1945 and after doing considerable sampling, in addition to that done by prior groups, decided to install a washing plant. The plant was installed by the Yuba Manufacturing Company in 1949 and the operation started about January 1, 1950. Although the plant has operated since the first of the year, an installation of this type requires considerable time to work out the "bugs," and changes are still being made. The Round Mountain work is being conducted under the guidance of E. H. Oshier, field superintendent; M. W. Meisenheimer, general foreman; and Morton E. Pratt, metallurgist.

The general plan of operation is a combination of road gravel mining technique with dredge type washing and is capable of handling ground that cannot be dredged. That is, gravel that is either too deep and/or will not hold water. Mining here will eventually be in a pit having a maximum depth of 300 feet or more.

The method of mining the gravel is patterned after a plan in use in some road gravel pits. A scarifying drag, weighing about 7,200 pounds, is swung from the boom of a dragline on the bank of the pit and loosens the partly cemented gravel as it drags up and down the steep slope of the pit. A 7½-cubic yard electric shovel digs the toe of the face and picks up the loosened gravel which it dumps into a can-type hopper with 30-inch grizzly. The grizzly lays on top of the can and is merely tilted with a dragline to dump the oversize boulders. From the hopper, a 60-inch conveyor belt moves the gravel to a 42- by 36-inch jaw crusher mounted on a moveable car.

The crusher car, with its 60-inch feed belt, is a unit in which the belt is swung as a pendulum around the crusher. When an arc of the face has been mined, the crusher car and feed belt are moved ahead toward the face to prepare for the mining of the next arc.

The purpose of the crusher in the pit is to remove boulders by reducing to a size for belt transportation. In this way all rocks under 30 inches in size need very little handling and are removed from the pit. Only boulders over 30 inches in size are left behind and their quantity is not believed enough to become a problem.

Material leaving the crusher car is minus 10 inches in size and is transported by 42-inch conveyor belt to the stock pile at the

washing plant. The distance from a transfer point in the belt at the head of the pit to the stock pile is about 2,500 feet.

The use of the drag scraper is one of the most important features of the operation. It simplifies the mining of the partly cemented gravel to one bench only and makes the use of explosives unnecessary. It greatly improves safety conditions in the pit as it reduces to a minimum the loose rocks rolling down the bank. However, as there is no blasting, no men work on the slope or the toe of the face, making the hazard of accident by falling loose rock nearly negligible.

The stock pile is somewhat similar to those used at other well-planned large operations. A cut is completely concreted leaving draw points, in this case two. The gravel is stacked in a huge pile over the draw points and drawn by electrically controlled vibrating feeders to a conveyor belt which places it in the plant.

In the washing plant the gravel goes directly into a ½-inch trommel where it is thoroughly washed and the oversize goes to one or the other of two tails stackers. This is the route by which boulders in the pit are removed; the pit crusher reduces them to a size that can be handled and they are conveyed to the plant, through the trommel, and to tailing disposal.

The trommel undersize is divided by vibrating screens into minus and plus 8 mesh products which are handled separately by Yuba dredge type jigs and Hungarian riffle gold tables with mercury traps. Part of the concentrate is ground in a ball mill before amalgamation. Some of the gold recovered is in the form of electrum.

The washing plant is very similar to a dredge and in capacity is about comparable to a Yuba 18-cubic foot size. Sand wheels are used to elevate and dewater, and conveyer belts are used to facilitate the handling of large tonnages.

The Round Mountain Gold Dredging Corporation plans to eventually handle 17,000 tons per day with a total crew of 50 men. The washing plant operates 24 hours per day and mining is conducted on two shifts. The mine and plant work 6 days per week. On this basis, it is planned that the life of the operation will be 15 years or more.

The Gold Hill mine,[85] situated on a small hill of silicified rhyolite 4½ miles north of Round Mountain, is owned by the estate of Thomas F. Cole. The property was probably discovered shortly after the influx into Round Mountain. In about 1910, two prospectors had a shallow shaft on the vein but had sunk on a "horse"

[85]Information kindly furnished by Mr. Albert Silver.

in a split of the vein. In about 1930 the Tonopah Mining Company and the Tonopah Belmont Development Company purchased the ground and began exploration. A 500-foot shaft was sunk, and mill built, which produced $770,000 from 94,500 tons of ore during 1930–1933. T. F. Cole purchased the property in 1934, but did not operate it before his death in 1938. Since 1934, lessees have produced $217,000.

The ore has come from several parallel and branching veins striking westerly which are said to be traceable for about 930 feet on the surface and for 1,075 feet on the 225-foot level. The ore has a rake to the west and is cut off on this end by faulting. It appears that the property's potentialities lie in finding more ore beyond the faulting on the west or in the development of new bodies in parallel veins.

The present workings include the 500-foot Gold Hill shaft with six levels and the 300-foot Toquima shaft. The 225-foot level of the Gold Hill shaft is the lowest accessible working as water stands below. This shaft is also said to be caved between the 300- and 400-foot levels.

Mr. Silver reports that the mine is fully equipped with useable, although antiquated, machinery, and a cyanide mill on the ground is in rehabilitable condition.

The Rainbow uranium prospect, located by John Henebergh in 1928, lies about 1 mile east of the town of Round Mountain. The mineral autunite was identified in the ore by the Nevada State Analytical Laboratory in 1930. At present the claims are optioned to the Nevada Uranium Products Corporation that is driving exploratory workings. The uranium occurrence appears to follow a 6- to 10-foot kaolinized aplite dike in altered granite. The dike has a northeast strike and dips about 70° SE. It has been traced for 1,300 feet on the surface. In May 1950, a drift adit was 366 feet long and had a 152-foot winze in addition to some cross-cutting. The uranium indication is reported as good in the bottom of the winze as it is in the adit. Some samples of the material assay 0.16 percent uranium oxide.

The Violet Blue uranium prospect, located by Ed Michal and John Henebergh of Round Mountain, is situated just off Shoshone Canyon about 1 mile air line northeast of the Rainbow claims. This property is one of the early tungsten prospects. A 160-foot adit on a shear in granite is said to have been driven in the early 1900's in search of tungsten occurring as huebnerite. The adit shows some autunite and picked samples are said to contain 0.2 percent uranium oxide.

The Steigmeyer property, owned by the estate of Frederick Steigmeyer, is situated 3.5 miles south of Round Mountain. A gold occurrence here in shale has been mined by power shovel from a cut. In May 1950, John M. Ferry of Glendale, California, was attempting to beneficiate the ore by screening at the mine and had planned to mill the fines on Jefferson Creek. Equipment at the mine included a one cubic-yard power shovel, a dozer, and a simple trommel screening plant.

NATIONAL 45-490 Made in U. S. A

4020 0216

ROUND-MTN-

VANDERBURG-REPORTING ON ROUND-MTN-PLACERS- IN 1936 (PLACER MINING IN NEVADA - U of N. BULLETIN. Vol XXX, NO.4) - FOR AREAS WEST OF ROUND. REPORTS- VALUES AS FOLLOWS

DEPTH. FEET	1936 VALUE/yd.	1977 @ 145 Ton oz
0-10	$0.202	@.887
10-20	0.293	0.965
20-30	0.602	2.660
30-40	1.70	7.043
40-50	2.89	11.973
50-60	3.55	14.707

145/35

INDICATED. BY THE ABOVE TABLE. IS AN ABRUPT ENRICHMENT -AS- ONE APPROACHES BED ROCK. ALSO -OBVIOUS IS AN EVENNESS OF VALUES- IN THE UPPER 20 FEET. WITH AN AVERAGE IN 1936. of $0.217/yd OR $0.90/yd - ON 10 DAYS $145 PRICE.

ASSUMING. THE PREMISE THAT THE MUCH LOWER VALUES WITH 20' REPRESENT ~ FINE OR FLOUR-GOLD, TRANSPORTABLE - OVER SOME DISTANCE AND- DISCOUNTING - THE VALUES. BY 33 1/3 % - BECAUSE OF DISTANCE FROM THE RHYOLITE SOURCE - THIS ANALYSIS PROPOSES. ~~60%~~ FOR LARD - IN REACHING - AN "EXPLORATION" TARGET VALUE

NATIONAL
45-490
Made in U.S.A.

1,290,666
~~1,742,400~~

YARDS

1	1320 x 660	- 871,200	
2	1320 x 660	871,200	
3	1320 x 1320	1,742,400	
	TOT	3,484,800	FT^2
	x 20		FT^3
	÷ 27	2,581,333	yds

x10
1,290,666
$ 187,146 @ 14½¢

~~2,581,333 yds x .45 = $1,161,600~~

~~.07½~~

2,581,333 x .45 = 1,161,600
@ 7½¢ = $87,120

USING 15' of THICKNESS

3484800 x 15/27 = 1,951,488 yds

20' -

2,581,333 yds - 1,893,333 = ~~738~~
1,548,800 60¢

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

ROUND MOUNTAIN QUADRANGLE
NEVADA—NYE CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

Topography by photogrammetric methods from aerial photographs taken 1970. Field checked 1971

Projection and 10,000-foot grid ticks: Nevada coordinate system, central zone (transverse Mercator)
1000-meter Universal Transverse Mercator grid ticks, zone 11, shown in blue. 1927 North American datum

Where omitted, land lines have not been established

UTM GRID AND 1971 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24000

CONTOUR INTERVAL 40 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

ROAD CLASSIFICATION

Primary highway, hard surface
Secondary highway, hard surface
Light-duty road, hard or improved surface
Unimproved road
Interstate Route
U. S. Route
State Route

NEVADA
QUADRANGLE LOCATION

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

ROUND MOUNTAIN, NEV.
N3837.5—W11700/7.5

1971

AMS 2561 II NE—SERIES V896

TOWNSHIP 10 NORTH RANGE 43 EAST OF THE MOUNT DIABLO MERIDIAN, NEVADA

4020 0216 ROUND MT. J TACER.

NYE COUNTY

BATTLE MTN GR DIST

STATUS OF PUBLIC DOMAIN
LAND AND MINERAL TITLES

MT PLAT

INDEX TO SEGREGATED TRACTS				
RESURVEY	ORIGINAL SURVEY			
TRACT NO	T	R	SEC	SUBDIVISION

FOR ORDERS EFFECTING DISPOSAL OR USE OF UNIDENTIFIED LANDS WITHDRAWN FOR CLASSIFICATION, MINERALS, WATER AND/OR OTHER PUBLIC PURPOSES, REFER TO INDEX OF MISCELLANEOUS DOCUMENTS.

N 1574 Cl Rein Segr 12/27/1968 affects Tp

Nev 056195 Determination P.L. 167 (Act of Cong 7/23/1955) complete 4/30/1962. All N.F. surface management by USFS

N 6974 Easement 44LD513 FS affects Secs 29, 31 & 32

SCALE

30 chains to the inch

CURRENT TO 3/14/77 BY

OG PLAT

GEO USE PLAT

N-060
T. 10 N.
R. 43 E.