

# Feature

## Mine of the Month

### Key West Mine



(Copper King/Bunkerville District, NV)

The Key West Mine is located about 15 miles east of Bunkerville, NV, on the western flank at the southern end of the Virgin Mountain Range. Copper was discovered in the late 1880s, and small amounts of nickel and platinum were subsequently discovered in the ores. Values occur in hornblendite/peridotite intrusions hosted by pre-Cambrian gneisses and schists. These dikes represent one of the few examples of pre-Cambrian ore deposits in Nevada. The dominant rock in the immediate vicinity of the mine is hornblende gneiss with lenses of granite gneiss. Scattered throughout the region are dikes and irregular masses of pegmatite and layers of garnetiferous biotite schist.

The chief metallic minerals found in the dikes are chalcopyrite, pyrite, pyrrhotite, and magnetite, which are in small patches and grains scattered throughout the hornblendite. These minerals are considered to be primary constituents of the dikes. Nickel and platinum are mostly associated with the pyrrhotite, though several primary sulfides of these metals do occur. A litany of mineral species, including many very rare ones (glaukosphaerite, kotulskite, merenskyite, michenerite, moncheite, palladium, polydymite, sperrylite), have been recorded from the Key West. Though at present the location is an excavation along the side of a ridge with overburden removed, in its earlier days mining was completely underground, comprising 3,000 linear feet of workings (now all flooded or caved) and several shafts, the deepest of which was 312 feet.

Another deposit located a little more than a mile to the north is the Great Eastern Mine, on the northern extension of the mineralized zone explored by the Key West Mine. Thus, the geologic setting and minerology is similar, though this mine was not productive as the distribution of the ore minerals was erratic in the dikes, being entirely absent from some, and scattered at random through others. Considerable development work by hand methods was completed on the claims, but no ore was ever shipped. The adits are essentially inaccessible today.

Recorded production from the Key West property from 1908 to 1935 consisted predominantly of copper, of which 127,976 pounds was recovered. Conversely, nickel is a rare element in North America, the largest deposits occurring at the famous Sudbury location. The Key West Mine yielded 1,700 pounds—a significant amount outside of Canada! The discovery of PGEs in the ore caused a considerable stir at the time, but expectations were greatly exaggerated as ultimately only 177 ounces of palladium and 10 ounces of platinum were produced, along with 52 ounces of gold and 982 ounces of silver.

# OBSERVATIONS and COMMENTS

I originally visited this location in the late 1980s, and returned several times during those early years of my career as a geologist, but this was my first visit in at least 15 years. Finding it was easy, but somehow the environment seemed different, as if the mine had been reworked...the vagary of an aging mind, I suppose! Or perhaps the site had experienced much more visitation than in those “old” days, before the advent of the internet introduced more of the wilderness to a much more mobile hoard of weekend explorers and collectors who have since thoroughly picked through the dumps like a swarm of locusts!

I find this to be a common theme these days. Before the internet, the only people one would encounter at mining locations—and the core of mineral collectors—were other geologists! Mineral collecting then was not a big industry as it is today. The internet changed all that. With the exchange of information being much more expeditious, and a growing population of free spirits ready to hit the road in better vehicles made for off-road venturing, mineral collection grew rapaciously. The result, of course, is that many once-productive sites (in terms of finding good specimens) now provide only crumbs.

In the case of the Key West Mine, however, those “crumbs” consist of a rare mineral overlooked and unappreciated by the uninformed masses—namely *glaukosphaerite*. Easily mistaken for the far-more common and boring malachite, glaukosphaerite is similar in appearance and chemistry, with the exception that some of the copper in the molecule is replaced with nickel. It is a *basic copper nickel carbonate*,  $(\text{Cu,Ni})_8(\text{CO}_3)(\text{OH})_8$ , in the rosasite group. It can still be found abundantly throughout the dumps as apple-green botryoidal crusts coating pieces of host rocks, but the best specimens—clean and unweathered—can be claimed from fractures in the walls of the excavation. It is often accompanied by bluish chrysocolla. Also abundant on the dumps and easily overlooked is the cobalt mineral, heterogenite. There is no record of the Key West producing cobalt, but it would seem that if the miners had recognized the presence of heterogenite, and if there was a market for the metal, considerable value would have been gained by exploiting that resource.



**General View North**

Key West Mine excavated out of a ridge in the foothills of the Virgin Mountains.



**Close Up**

Conspicuous faults, including a near vertical fracture, stained with secondary copper minerals.



## LOCATION

**DISTRICT:** Copper King (Bunkerville) Clark County, Nevada

**TOPO MAP:** **Whitney Pocket** Quadrangle  
sec 22 T 15 S R 70 E

**GPS:** 36° 37' 7" N, 114° 9' 55" W

**DIRECTIONS:** From Las Vegas north on I-15, about 67.5 mi to Exit 112 Bunkerville/Riverside; west 2.5 mi to bridge over the Virgin River; turn right just past bridge onto Gold Butte Rd (paved, but rough); 12.7 mi to dirt rd on left (about 3 mi past palm nursery); .8 mi to fork, turn right and continue to mine (2.8 mi from main road).

## GEOLOGY

### SETTING:

Pre-Cambrian gneiss and schist cut by hornblendite dikes which contain disseminated grains and patches of pyrite, chalcopyrite, and nickeliferous pyrrhotite. Traces of platinum and palladium minerals occur in the ore.

### REFERENCES:

Longwell, Pampeyan, Bowyer, Roberts; NV Bureau of Mines and Geology; Bull. 62; "Geology and Mineral Deposits of Clark Co., NV," 1965

Society of Economic Geologists; Economic Geology, Vol XIX, June-July, 1924, No.4, "Nickel Ores from the Key West Mine, Nevada."

Bancroft, Howland, "Platinum in Southeastern Nevada," Bull. 430, USGS, pp. 192-199, 1909.

# PHOTOS OF LOCATION and MINERALS



## Back Country Byway

Sign on Gold Butte Rd along the Virgin River informs visitors they have entered a protected wilderness area where travel is restricted to only designated roads and trails.

## Welcome to Gold Butte

This information board introduces visitors to the Gold Butte Area of Critical Environmental Concern, with information about backcountry travel, indigenous plant and animal species, and doing your part to protect the desert for the enjoyment of future generations.



## Getting Close

This prominent ridge serves as a landmark that looms above the Key West Mine, which is located on the foothills of the peak. From this point the mine is only a couple miles ahead on a fairly well-maintained desert road.



# PHOTOS OF LOCATION and MINERALS



## Destination Reached

The dumps of the Key West Mine betray its location as you approach the deposits from the south. It is worthwhile to search through the numerous piles of wasterock to recover a variety of valuable mineral specimens, the best of which are glaukosphaerite and brochantite.

## Unsightly Mining Methods

What was originally an underground mine, later leasees resorted to open-pit methods that essentially carved the deposit out of the mountain, leaving an unsightly gash in the ridge. Modern miners would be hard pressed to get permission to do likewise in these days of environmental conscientiousness!



## Holes to Nowhere

This is one of several exploratory adits burrowing into the excavation. These adits are very shallow--only a few meters in length. Though not nearly as dangerous as the ubiquitous sign leads one to believe, the portals are virtually barren and not worth exploring anyway.



# PHOTOS OF LOCATION and MINERALS

## Different Flavor of Green

Copper staining on the walls of the excavation appears at first glance to be typical malachite and chrysocolla commonly found at copper workings. While present in minor amounts, these minerals take a back seat to the very rare copper nickel carbonate, glaukosphaerite, which is quite attractive under a microscope!



## Intrusive Exposure

This is a good exposure of a hornblendite dike that hosts copper/platinum/nickel ore minerals, which led to the development of the Key West Mine.

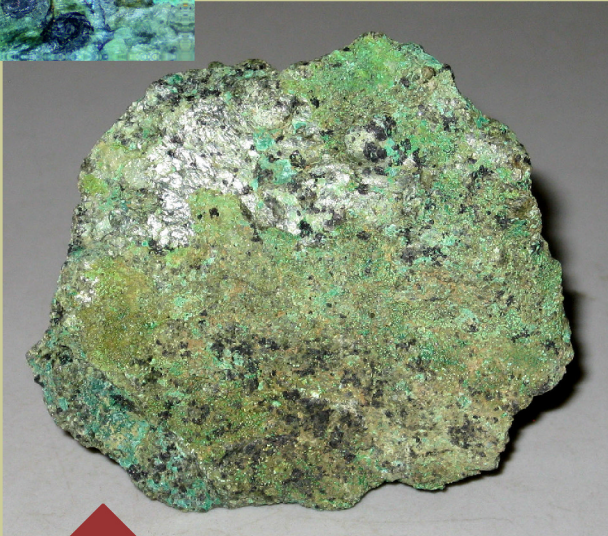
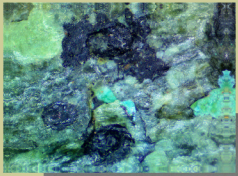
## Lake Mead

Viewed from atop the ridge over the Key West Mine, the Overton arm of Lake Mead can be seen in the distance.





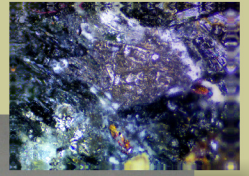
# PHOTOS OF MINE and MINERALS



**IV 88 D**

## **Chromite**

rounded grains  
in Serpentine  
2.2" x 1.8"



**II 80 D**

## **Moncheite**

in Hornblendite  
2" x 2.5"  
grains ~ 1mm



**XXI 58 D**

## **Nepouite**

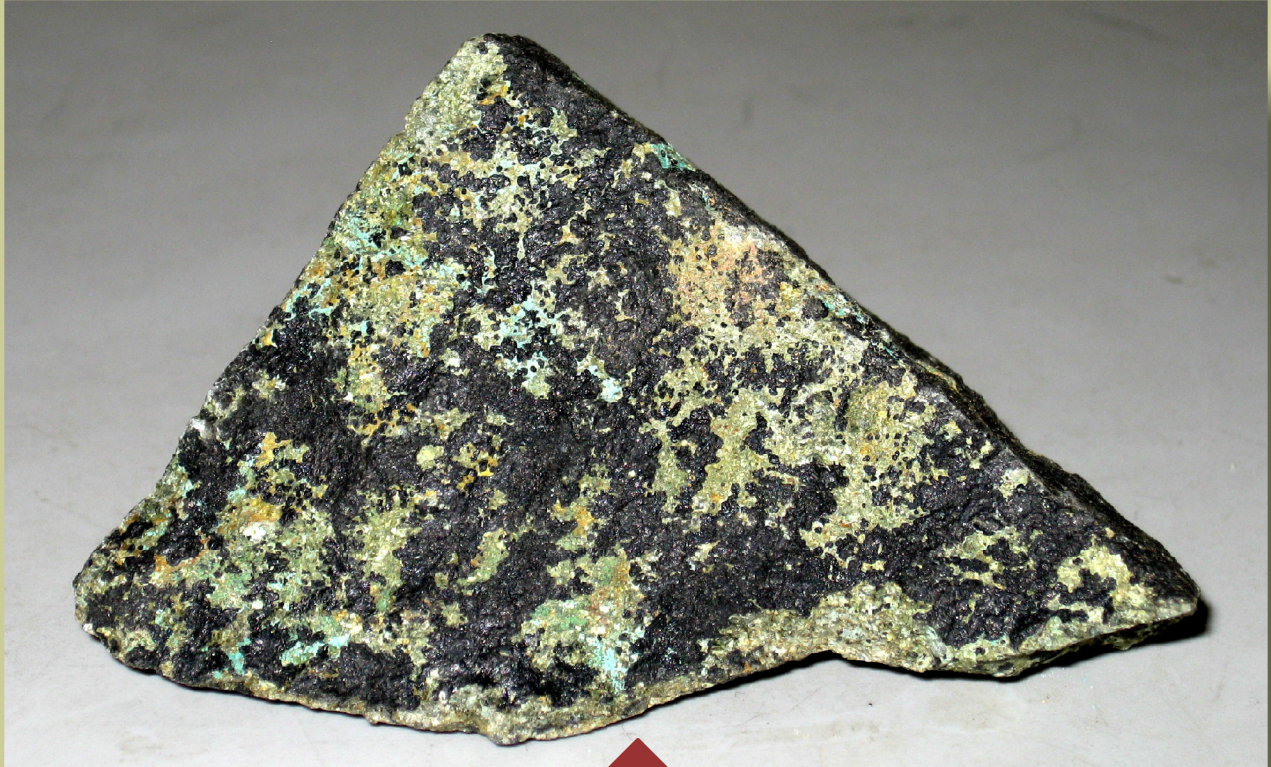
1.75" x 1"  
a main constituent  
of "garnierite"

A visitor to the Key West Mine can expect to find at least some of these minerals.

*All specimens from the G. Miles Lehman Collection*



# PHOTOS OF MINE and MINERALS



V 24 D

## Heterogenite

botryoidal crust on Serpentine  
3.25" x 2" x 2"

VII 145 C

## Glaukosphaerite

w/Chrysocolla  
3.25" x 2" x 2.6"

X 102 D

## Brochantite

w/Heterogenite  
1.8" x 1.2"

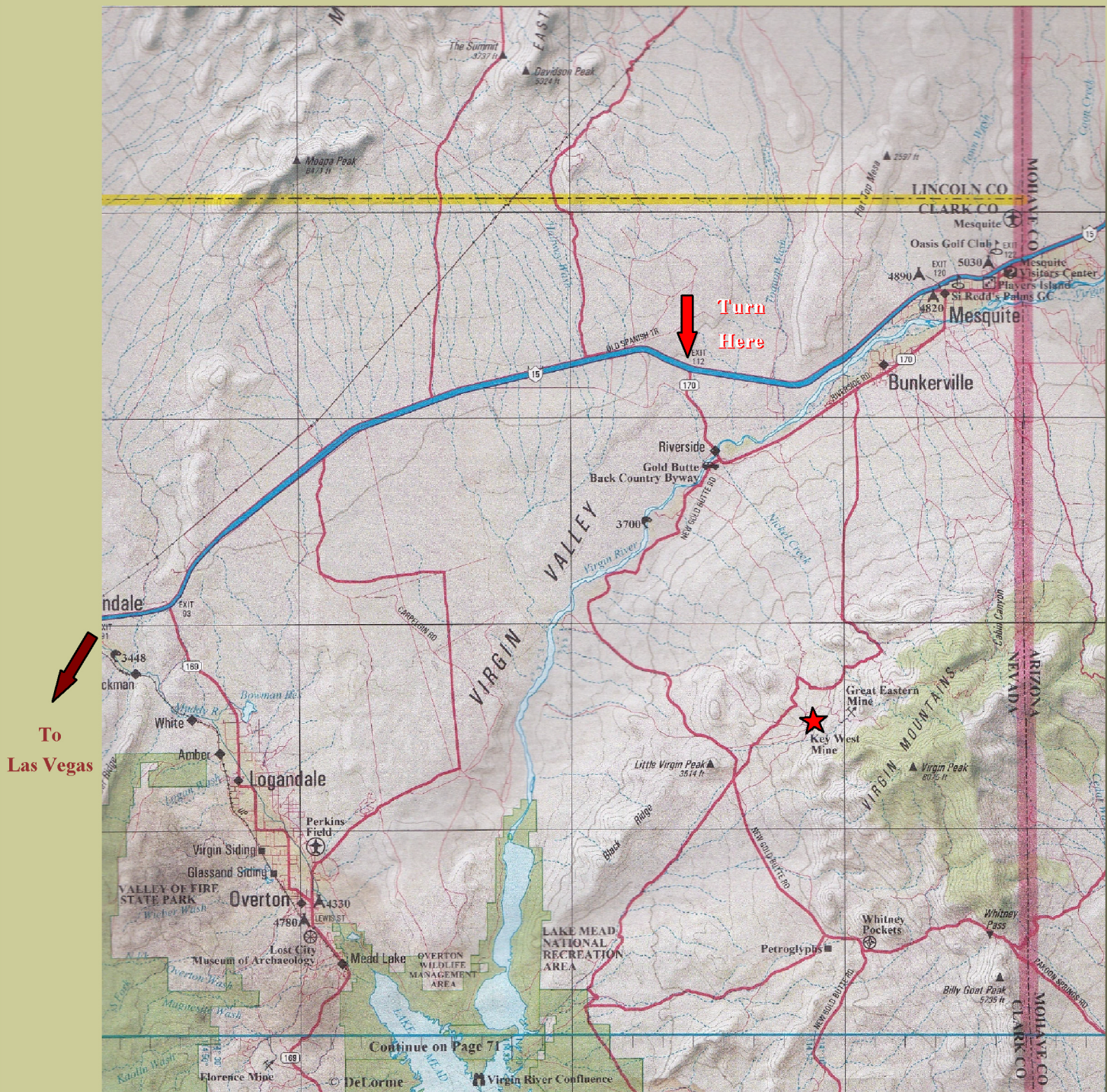


A visitor to the Key West Mine can expect to find at least some of these minerals.

*All specimens from the G. Miles Lehman Collection*



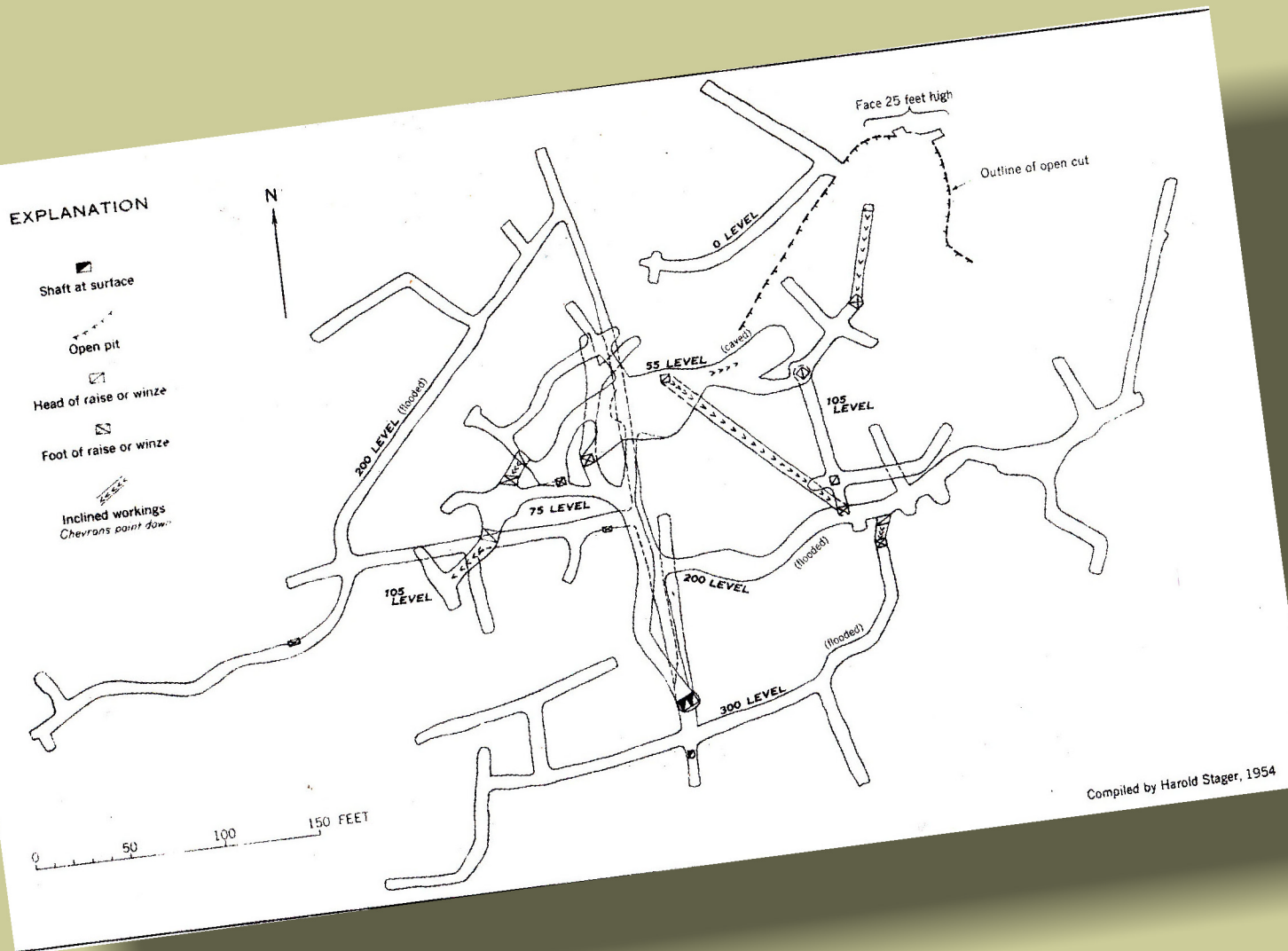
# TOPOGRAPHIC MAP



This is a scan from the Nevada Atlas & Gazetteer, pg 67, showing turn-off at exit 112, Route 170, Riverside/Bunkerville. Follow for about 2.5 miles to bridge over the Virgin River, then turn right onto Gold Butte Road just past the bridge. Continue almost 13 miles to dirt road on left heading into the moutains. The Key West Mine is just under 3 miles from the main road (see directions on pg 7).



# Plan of Workings



This plan, dated 1954, was copied from *Longwell, Pampeyan, Bowyer, Roberts; NV Bureau of Mines and Geology; Bull. 62; "Geology and Mineral Deposits of Clark Co., NV," 1965*. The beginnings of an open cut are noted by a dashed line at top right. However, a visitor to the Key West Mine today will immediately realize that these underground workings are no longer accessible.