

# Feature

## Mine of the Month

# Widow Mine



(Furnace Creek District, CA)

The Widow Mine is comprised of several claims that explore lacustrine borate deposits discovered in 1882, hosted in what is now known as the Furnace Creek Formation (tuff, clay, mudstone, sandstone, limestone) of Miocene age (5-24.6 myo). The workings are located on the western slope of the Greenwater Range south of the site of Ryan at an elevation of over 3400 feet above sea level. In this part of the range, the ore body itself was reported to be at least 150 feet in thickness, and extended about 700 feet in length.

Numerous mines along the same stratigraphic horizon were collectively the world's leading producers of borax through the early 1920s. These included the Billie, Upper and Lower Biddy McCarthy, Played Out, Lizzie V. Oakley (mistakenly called the Annie Oakley in some reports), Grandview, and of course, the Widow Mines (#1, #3, and #7). Colemanite was the chief ore mineral, but also present in minable amounts were ulexite and probertite (known as "boydite" by the early miners before the mineral was officially described).

The central portion of the Widow ore body was composed of massive ulexite. The colemanite was best developed along the footwall of the deposit, but also present to a lesser extent along the hanging wall. Probertite was found associated with the colemanite; its relationship to the ulexite could not be determined, though it is usually supergene. The general similarity of colemanite to ulexite of similar deposits suggests that probertite is a recrystallization of ulexite, the formation of the lower hydrate (probertite) favored by the pressure of the superincumbent load of sediments and lavas or by the pressure induced by earth movements.

While the deposit has not been completely exhausted, the property currently lies idle.



### Greenwater Range

This view is looking E from the Boraxo Mine in the foreground. The lofty ridge in the background is part of the Funeral Mountains, with the dark brown Greenwater Range in the center of the photo. The range is pockmarked with buff-colored excavations that bely the various mines exploiting borate deposits



# OBSERVATIONS and COMMENTS

The Widow Mine serves as a good example of the purpose and mission of this journal. As companies resort to strip mining practices, and the BLM continues its misguided policy of blocking off entrances to mines that present little actual danger—indeed, some mines *are* dangerous, such as those that have vertical surface-exposed shafts or are excavated out of incompetent rocks (schists, shales, et al)—the romance and mining history of the Mojave Desert is slowly being whittled away; and increasingly becoming inaccessible for continued exploration and research, accelerated by the relentless advancement of urban encroachment.

The photos below represent how I remember the mine from my visits in the early 1990s. The entrance was well-fortified with lumber and chicken wire (left photo), and extended about 50 yards into the mountainside where it opened into a room-and-pillar excavation (right photo), a mining technique typical of coal mines, whereby "rooms" are stoped out and "pillars" of native rock are left in place for support.



Throughout the cavernous mine, the walls presented numerous pockets of pristine, water-clear aggregates of equant crystals unmarred by exposure to the outside elements. Winning them from the hard-rock matrix required a sledgehammer, muscle, and sweat, but the effort was well worth it in retrospect as specimens made admirable centerpiece additions to any collection.

My return this year was greeted by the disappointment of discovering all had changed since those “glory” days. Economics dictated open-pit mining as the cheapest means of exploiting the remaining reserves. No more showpieces; just exposed and decaying clumps of cloudy crystals barely held together by corroded clay!

Still, a visit to the area is sure to relinquish specimens of adequate quality to add to your collection. The mine itself is located off Furnace Creek Wash Road/Dante's View Road in a canyon a couple miles south of the former company town of Ryan high on the slopes of the range to the left as you head towards the Dante's View overlook. The nearest workings to the blacktop road denote the Lizzie V Oakley Mine that explores the same geologic environment as the Widow and other mines on the ridge. Park safely off the road, hike up the slope to the Oakley, then follow the foot trail to the remnant of the former baby-gauge railroad grade above the mine. Once reached, this grade makes for an easy mile or so traverse to the Widow claims in the canyon ahead.



## LOCATION

**DISTRICT:**            **Furnace Creek**                            Inyo County, California

**TOPO MAP:**           **Furnace Creek Quadrangle**        7.5 Minute Series  
                             SW 1/4 SW 1/4   secs 16 T 25 N   R 3 E

**GPS:**                    36° 17' 57" N, 116° 39' 54" W

**DIRECTIONS:** From Pahrump, NV, west on Rt. 372 (becomes Rt. 178 in CA) about 27 miles to Shoshone, CA. Turn north on Rt. 127, about 26 miles to Death Valley Junction. Turn west on Rt. 190, 18 miles to left turn onto Dante's View Rd. Travel south about 6 miles (passing Ryan on the slope to the east). Park safely off the road; hike about 1.5 miles to mine. Closest workings on ridge is the Lizzie V Oakley Mine. Widow Mine is in the canyon to the south (right) via the remnant of the baby-guage RR grade above the Oakley Mine.

## GEOLOGY

### SETTING:

Lacustrine borate deposits in Furnace Creek Formation (both of Miocene age). Associated rocks include highly altered Pliocene-Miocene and Tertiary volcanics, with Tertiary non-volcanic formations.

### REFERENCES:

Pemberton, H. Earl (1983), Minerals of California; Van Nostrand Reinhold Press: 246, 256

<http://www.mindat.org/loc-220818.html>



# PHOTOS OF LOCATION and MINERALS



**End of the Line**

The railroad grade follows the contour of the range as it winds its way to the end of the line at the Widow Mine. The grade has been washed out by flash floods just ahead, leaving the rails dangling perilously over a gaping ravine.



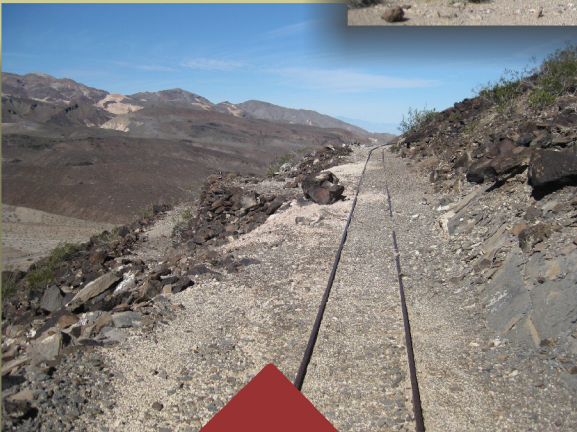
**Past its Prime**

Framing for a long forlorn tramway stands stubbornly in place in front of one of the main excavations of the Widow Mine, as if it is determined to once again find gainful employment in loading borate ore onto cars of the baby-guage railroad.



**Horizontal Expression**

Railroad grades are easily observed as horizontal lines carved out of the mountainside. The excavations at far right delineate the workings of the Widow Mine.



**All Aboard!**

The baby-guage (2-ft wide) railroad was built to carry borate ore from the mines to Ryan where the ore was transferred to the narrow-guage (3-ft wide) Death Valley Railroad, which in turn hauled the ore about 20 miles to Death Valley Junction for preliminary processing and subsequent shipping to markets. The view here is just around the bend from the Widow Mine, about 5 miles by rail from Ryan.



**Proper Perspective**

This is a view from the canyon where the Widow Mine is located looking west across Furnace Creek Wash to the Black Mountains in the distance. The actual valley called *Death Valley* lies beyond the peaks in the background. The Black Mountains are in essence an extension of the Amargosa Range, which abuts the Funeral Range to the north (right). Cars can be seen on Dante's View Rd, which bisects the wash.



# PHOTOS OF LOCATION and MINERALS

## Conspicuous Diggings

The Tenneco-Thompson (aka Boraxo) Mine is not among the numerous mines located on the slopes of the Greenwater Range, but does explore similar deposits in the floor of the valley. After an easy hike from the paved road, visitors can get a good appreciation of the borate deposits without the labor of having to climb the mountain to reach such mines as the Widow and Annie V Oakley.



## Furnace Creek Wash

The first valley east of Death Valley, Furnace Creek Wash is the namesake of the borate district. Bisecting the valley is Dante's View Road, which provides access to the mines in the region for the intrepid explorer.



## Staying Power

The Billie Mine was the longest lasting of all the workings on the Greenwater Range. Using a creative mining technique--long-hole stoping with backfilling--this northernmost mine exploiting the extensive borate deposits on the ridge finally closed in 2005.



# PHOTOS OF LOCATION and MINERALS

## Mining to Research Facility

Constructed in 1914 to accommodate the borate mines in the Greenwater Range, Ryan closed in 1930 after mining shifted to Kramer, CA. After sitting idle for 22 years, San Jose St. University began using the site for its Field Studies and Natural History program, which lasted until 2012. Currently, the site sits idle once again.



## Former Glory

The Greenwater Range (center) was the focus of global borate mining from the late 1800s to early 1900s. Located between the Black Mountains and the imposing Funeral Range (background), this small ridge once hosted the world's richest deposits of borate minerals.

## Conspicuous Scars

The Widow Mine was actually several separate operations (#1, #3, and #7) exploring the borate layer in the same canyon. Originally worked as underground "room and pillar" exploits, strategy shifted to open-pit mining in later years, which resulted in unsightly scarring that is conspicuous from the nearby Furnace Creek Wash/Dante's View Road.





# PHOTOS OF MINES and MINERALS



**Billie Mine**



**Lizzie V Oakley Mine**

Numerous mines exploit the same geologic facies all along the Greenwater Range, including the Billie and Lizzie V Oakley claims pictured above. The Upper and Lower Biddy McCarthy mines, the Played Out, Grandview, and the Widow group are among others that can be found within a roughly seven-mile stretch of the mineralized portion of this relatively low ridge (see center photo page 10).

Unlike the mines on the slopes of the Greenwater Range, two very large open-pit mines explore extensive lacustrine borate deposits in the valley below, the Sigma and the nearby Tenneco-Thompson Mines, the latter about 2 miles NNW of Ryan. Discovered in 1915, the Tenneco-Thompson was operated intermittently by several different companies until 1977, and ultimately reached a depth of about 800 feet. Considerable reserves still remain.

**Tenneco-Thompson (Boraxo) Mine**



**Deep pit of the Tenneco-Thompson Mine**





# PHOTOS OF MINES and MINERALS



**IX 26 D**

**Probertite**

2.5" x 1.5"



**IX 08 D**

**Gowerite**

2" x 1"



**IX 15 Da**

**Sborgite**

3.25" x 2.5"

**IX 06 C**

**Colemanite**

7.25" x 3.5" x 5.5"

**IX 06 D**

**Colemanite**

2.5" x 1.25"

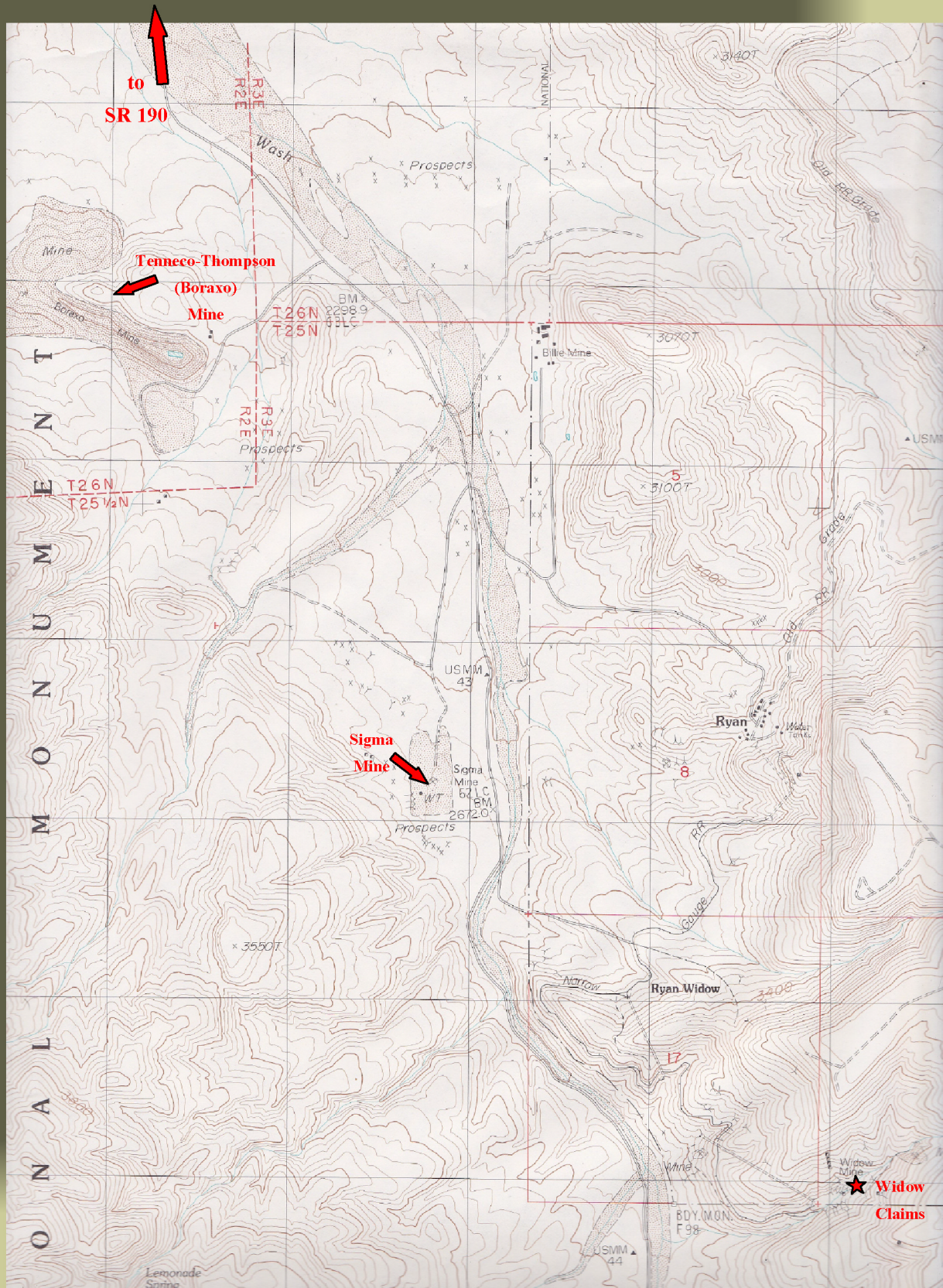


A visitor to the Widow Mines can expect to find at least some of these minerals.

*All specimens from the G. Miles Lehman Collection*



# TOPOGRAPHIC MAP



This is a scan from the Furnace Creek Quadrangle showing the mines in the Furnace Creek Wash valley and along the west slope of the Greenwater Range on the east side of Furnace Creek Wash.



# View of Workings



**Aerial view of the Widow Mine (lower right) on the western flank of the Greenwater Range south of Ryan, CA (site of the Upper and Lower Biddy McCarthy Mines).**