GEOLOGY AND HISTORY OF MINES OF JOSHUA TREE NATIONAL PARK

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INTRODUCTION

Mining is an integral part of the history of the Joshua Tree National Park region. There are 288 abandoned mining sites in Joshua Tree National Park with 747 mine openings.[1] Gold was the commodity of greatest interest. In the Pinto Mountains, immediately outside the Park, are two mining districts with numerous abandoned mines. As recently as 1998, there were eight claimants having mining claims in the Park. The sites include mill and mine sites, gravel pits, some open pits, but most were underground operations (Chris Holbeck, pers. comm., 1998).

Mining activity in the region began in the 1870s, but peaked in the 1920s and 1930s. The ore produced by the many mines came mainly from gold-bearing quartz veins that intruded Mesozoic granitic rocks and Proterozoic metamorphic rocks (Tucker and Sampson, 1945; Trent, 1998).

There are eight mining districts in and adjacent to Joshua Tree National Park, the 1) Twentynine Palms, 2) Dale,

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[1] A mine site may include several openings with some combination of shafts, open cast cuts and adits. Some sites included mills. The most recent records available show that in 1998, two claimants still held eleven patented claims, meaning the claimants hold titles to the property. These patented claims are within the old (former) Monument boundary. Six claimants held 49 unpatented claims, all in the new lands added through the California Desert Protection Act (CDPA).

Park lands are withdrawn from mineral entry, which excludes claim staking. Existing claims, however, are grandfathered in and claimants may conduct mining activities at their claims. They must first comply with the Mining in the Parks Act (1976), and regulations at 36 Code of Federal Regulations, Part 9A. These regulations ensure that an environmentally considerate operation takes place on a legal claim, where reclamation design is a requirement of the operation.

3) Rattler, 4) Monte Negras, 5) Eagle Mountains, 6) Cottonwood Spring, 7) Piñon, and 8) Gold Park. The mines most easily visited are the Mastodon in the Cottonwood Spring District, the Lost Horse, Gold Coin and the Silver Bell in the Middle Pinyon District, and the Desert Queen in the northern Pinyon District.

DESERT QUEEN MINE (McHaney Mine)

Location

The Desert Queen Mine is on the northeastern margin of Queen Valley. It is reached by a well-worn, three-quarter-mile trail that begins at the Pine City Back Country parking area.

Years of operation

1895 - 1942? (Greene, 1983, p. 204)

Production:

1895-1900 (?): 3,701 oz gold (worth ~$1,454,500 in July, 2004 dollars).

1900-1941: 144 oz gold, (worth ~$56,600 in July, 2004 dollars) and 87 oz silver (worth ~$523 in July, 2004 dollars).

It is reported by Willis Keys that his father, William F. "Bill" Keys, made more money by leasing out the mine to operators than he ever earned from his own operation. The terms of a lease would be for one year but the operators usually walked away from the mine before the lease expired (Bill Truesdell, pers. comm., 2002).

Geology

The Desert Queen Mine is developed in the White Tank monzogranite, south of the contact with the Palms Quartz Monzonite. Gold is described as being in pockets associated with dikes of pegmatite, aplite, andesite, and veins of gold-bearing quartz. Minor veinlets of malachite and azurite, pyrolusite dendrites, and probable turquoise occur in fractures in some of the mineralized pockets in the aplite and quartz veins. Waste rock piles are stained with these secondary minerals. The ore was milled at the McHaney Ranch (which eventually was owned by Bill Keys and became the Desert Queen Ranch).

History

The story of the mine's discovery in 1895 reads like a wild west dime-novel involving a hapless prospector, a gang of thieves, a cold-blooded murder and a trial that is a classic example of poor justice. The story is told in Bob Cates' book, *Joshua Tree National Park: A Visitor's Guide*, and in Keys and Kidwell's *Growing Up At the Desert Queen Ranch.* Keys and Kidwell relate that the jury's verdict was that James "came to his death from two pistol shot wounds inflicted by Charles Martin …" and that Martin had "acted in self defense while his life was in jeopardy at the hands of the deceased," who supposedly was attacking Martin with a knife. Inexplicably, a pistol just happened to be lying on the ground near Martin which he picked up and shot James (Keys and Kidwell, 1997, p. 67-69).

In the 1960s, when Bill Keys was being interviewed about the region's early history, he related a very different version of the acquisition of the Desert Queen Mine by the McHaney Gang. "James was a miner working in the Lost Horse Mine, but on Sundays he'd walk and prospect. Well, these coyote cowboys (George Meyers, Charlie Martin, and James McHaney) saw his track because it was easy to follow. They were as sharp as a coyote as to any disturbance in the ground."

"So these three fellows came here on horseback and stayed up on a hill above James' cabin off the Lost Horse Mine road. Charlie Martin walked down a little ways and yelled to James who was in his cabin in the ravine. 'Do you own this? We found a rich strike here.' And he (James) went up to look, and Martin shot him. That was to get the Queen Mine. That was up on the ridge above James' cabin that they shot him" (Keys and Kidwell, 1997,p. 67-69). [There's an obvious problem with this story: the Lost Horse Mine road is about 10 miles from the location of the Desert Queen strike. Was James' cabin in the ravine below the Desert Queen Mine or in the ravine along the Lost Horse Mine road? – *DDT*].

Keys reported that Jim McHaney paid Martin $47,000 from the first mill run of Desert Queen ore for his involvement, and he gave George Meyers a herd of cattle for his involvement in the shooting. James' remains were buried in the little cemetery on the Ryan Ranch near today's Ryan Campground.

The mine went through a series of ownership changes and eventually became the property of Bill Keys.

The McHaney Gang

In the 1870s and 1880s, James B. and William S. McHaney ran cattle in upper Santa Ana Canyon near Seven Oaks, in the San Bernardino Mountains. Their herds were noted to grow in size mysteriously and it became obvious that they were rustling cattle. Their brand was never recorded, as required by law, there being so many variations of their brand from crude rebranding of rustled cattle, a single registered brand was impossible.

Jim McHaney, the more ruthless lawbreaking brother, collected four other like-minded cowboys, George Myers, Charlie Martin, Willie Burton, and Ike Chestnut, and they became known as the McHaney Gang. Growing tired of the gang's rustling cattle from Bear Valley, Redlands and Highland, a posse of East San Bernardino Valley ranchers was organized and tried to capture them. Although unsuccessful, they did manage to chase them out of the San Bernardino Mountains.

Thus, in 1888, the McHaney Gang moved their cattle business to the Little San Bernardino Mountains near modern day Twentynine Palms. They continued cattle rustling, hiding their cattle in a box canyon at their headquarters, Cow Camp, on the western edge of the Wonderland of Rocks. It was here that McHaney turned his eye toward gold mining (Robinson, 1989, p.89-91).

The gang discovered that Frank L. James, who worked for the Lang family at the Lost Horse Mine and prospected on his days off, had discovered the Desert Queen lode in 1894. At this point the story becomes confused, there being at least three different uncertain scenarios explaining the suspicious circumstances by which Jim McHaney gained control of the Desert Queen by claim jumping, with Frank James being killed at the hand of Charlie Martin. Bill McHaney, the more law abiding brother, was not involved in the take over of the Desert Queen, lived a respectful life spending part of his time at the Oasis of Mara (Twentynine Palms) and at a cabin in Music Valley (in the Pinto Mountains) where he was prospecting as late as the 1920s (Daily Sun, 1960). Jim McHaney eventually turned to counterfeiting which landed him a seven-year term in

a federal penitentiary. Following that it is reported that he worked for the Los Angeles street cleaning department (Cates, 1995, p. 75; Daily Sun, 1960).

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GOLD COIN MINE (Gold Galena Mine)

Location

The Gold Coin Mine is on the south flank of the Hexie Mountains, along the Geology Tour Road in Pleasant Valley, adjacent to the Geology Tour Backcountry Board, about 1.5 miles south of Park Boulevard.

Years of operation

1900?-1933 (Greene, 1983, p. 252-253).

Production

Unknown

Geology

The ore is in stringers in an east-west shear zone containing thin, discontinuous quartz in an irregular body of granite within the Precambrian Augustine Gneiss (Ruff, et al, 1982, p. 229). The Augustine gneiss consists of retrograded granulites ranging in composition from tonalite to granite (Powell, 1980). With only one exception, the Hexahedron Mine, four miles north east of the Gold Coin, all mines in the Middle Piñon, or Hexie, district follow oxidized veins of milky quartz occurring along faults within the gneisses. Most faults tend to follow the regional northwest to west trend, and are likely related to the Blue Cut fault.

The significance of the Blue Cut fault and other faults in the region in their relation to mineral occurrences may lie in

the fact that the extensive fracturing and brecciation associated with these faults provided a plumbing system for oxygenated meteoritic water to percolate into low-grade sulfide metal deposits which could be leached to enrich the deposit and form an economic ore.

History

Information on this mine is scanty. The site was discovered 1900 and developed by the German-American Mining and Milling Co. in the early 1900s. The directors were F.C. Longnecker, S.L. Kistler, and A.N. Hamilton. By the fall of 1908 it reported to be working three mines, the Texas Chief, Lone Star, and the Apex. In 1911 it reported that water was hauled to the mines from Pinyon Well in Pushwalla Canyon (Greene, 1983, p. 252-253).

Events on record (from Greene, 1983, p. 252-253):

1916, the mine was bought out by the Gold Galena Mining Co. with underground workings from 70 to 100 ft on a vein containing galena-carrying gold. No mill is mentioned. The mine closed in 1918.

1920, Bill Keyes located two claims in the area, but unexplored. No real development.

1922, six claims and an inclined shaft 100 ft deep. No record of production

1929, a mill of sorts was located here with five claims owned by Longnecker with two men employed; a shaft 50 ft deep is reported. Gold values averaged $12 per ton (Greene, 1983, p. 253). Probably part of the 1930s effort was in processing old tailings which was being done in many old mining camps in the west during the years of the Great Depression. The tank that still remains at the mill site was either for storage of water or cyanide.

1957, Cliff Gray (pers. comm., 1998), geologist with the California Division of Mines and Geology, reported eight inclined shafts and two vertical shafts in the area.

SILVER BELL MINE

Location

The Silver Bell Mine is on the east end of the Hexie Mountains. It is the most obvious mine in the park, with two ore bins clearly visible from milepost 8 on the Pinto Basin Road. The site is accessible by walking cross country a short distance until joining the obscure abandoned mine road. Following the road-trail about 0.5 mile brings one to the site. Remains of buildings and various artifacts exist along the road-trail.

Years of Operation

1934 – 1962 (Emerson, 2000)

Production

Known production 1934-1954, 219 oz. gold, and 53 oz. silver (Emerson, 2000).

Geology

The workings follow a N60W trending 4-ft wide fault zone and several minor faults containing oxidized gold-bearing quartz veins within Augustine Gneiss. Assays in 1958 revealed low values of silver and gold but copper values at ~$90 per ton (Ruff, et al, 1982, p. 229; Emerson, 2000).

History

Little is known about the history of the mine. In the 1930s it was a gold mine. Upon closure of gold mines by the Federal government during World War II in order to release miners for work directed at the war effort, the Silver Bell became a lead mine. From 1956 to 1962 it was operated by the Farrington-Mann Company as a copper property (Emerson, 2000).

LOST HORSE MINE

Location

The Lost Horse Mine is near the summit of Lost Horse Mountain, between the southern end of Hidden Valley and Queen Valley. Starting from the Lost Horse Mine Parking area, a two-mile trail follows the old mine access road to the mine.

Years of Operation

1894 – 1942? (Ruff and others, 1982, p. 231)

Production

Minimum production estimates are 10,500 oz of gold and 16,000 oz of Silver (Fife and Fife, 1982, p. 455-456). In 2004 dollars those yields amount to about $4,127,000 in gold, and $96,300 in silver.

Geology

Sampson and Tucker (1945, p. 137) report the ore body is one or more quartz veins that occur in micaceous quartzite and granite. However, the host rock is clearly granitic quartz biotite gneiss; the Proterozoic Lost Horse pelitic granofels of the Pinto Gneiss according to Powell (1980). Coleman, et al, (2003, p. 67) map it as orthogneiss and with U-Pb ages of ~1715 and ~1700 Ma. The gold-bearing quartz vein in the mine varies in width from six inches to five feet (Sampson and Tucker, 1945, p. 137).

History

As with the Desert Queen Mine, the details of the discovery of the Lost Horse Mine is a bit cloudy. One story is that the mine was discovered in 1893 by four men, George Lang, John Lang, Ed Holland and James Fife. The other story, perhaps more likely, is that young Johnny Lang, with his father and brother, brought a herd of cattle from Texas to southern California in the early 1890s. On arriving in the Lost Horse area Lang met "Dutch" Diebold, a prospector, who had discovered likely-looking gold-bearing quartz near Pinyon Mountain but he had been driven away from the site by the McHaney Gang. Young Lang, too, experienced a similar encounter with the Gang. While looking for a lost horse, Lang walked into McHaney's camp where he had a run-in with Jim McHaney (Cates, 1995, p. 62). Lang offered Dutch $1,000 for his claim if it proved out. Lang began developing the property but under the ever-present threat of being killed by the McHaney outlaws. Meanwhile, young Lang's father had taken up residence at Witch Springs (now Lost Horse Well) and advised his son to take in some partners. Despite variations in the story, it is verified by official county records that George Lang, John Lang, James Fife and Ed Holland filed a location notice for the property in December, 1893 (Greene, 1983, p. 256).

Development began in 1894 when rich ore was hand cobbed from ore-shoots in the Lost Horse vein. Rich

outcroppings and float of this gold were also found, some of this rich ore being sold as specimen gold (Fife and Fife, 1982, p. 458). The richest known specimen of gold found near the mine was picked up by Jim Fife. It was a mass of gold the size of a man's fist; the grade of the ore estimated to run 4,000 oz per ton. Pieces of this gold-quartz nugget are still in the Fife family (Fife and Fife, 1982, p. 458). In the early stages of development, the high grade milling ore was processed by a two-stamp mill at Pinyon Well. This soon proved to be unsuitable causing Lang and Fife to erect their own two-stamp mill at Lost Horse Spring. In 1897 the mine was patented, a new ten-stamp mill was installed at the mine and a five-mile pipeline built to the site from Lost Horse Spring (Greene, 1983, p. 256).

Sampson and Tucker (1945, p. 137) report the development of the mine includes an 80-foot tunnel driven on the Lost Horse vein, and a 500-foot shaft sunk on the vein with drifts at the 100, 200, 300, and 400 levels. In 1936 the property was under lease and pillars of ore were removed from the upper levels and milled at the property by the 10-stamp mill.

Gasoline power was substituted for steam in the 1920s, and the last work appears to have been done in 1936 when the Ryans, or a Mr. Phelps, treated approximately 600 tons of tailings with cyanide. Also, in 1936, pillars of ore were removed from the upper levels and milled at the property by the 10-stamp mill. Despite all of the work done in the 1930s, only a few hundred ounces of gold were recovered during the decade (Sampson and Tucker, 1945, p. 137; Greene, 1983, p. 256-257).

The Lost Horse Mine was acquired by the NPS from the Ryan descendents in 1966. The mine road was closed to vehicles, the mill restored as a prime interpretative exhibit, the head frame taken down, and the mine shaft sealed by a concrete slab (Green, 1983, p. 261).

MASTODON MINE

Location

The Mastodon Mine is located in the Cottonwood Mountains and can be reached easily by hiking a three mile loop trail from the parking lot at Cottonwood Spring. The trail passes the mine and the remains of the Winona Mill.

Years of Operation

1934 - 1971 (Greene, 1983, p.170).

Production

Unknown

Geology

Tucker and Sampson (1945, p. 138) report the mine followed three parallel quartz veins in granite. The veins widths ranged from eight to 12 inches.

History and Development

Original location recorded in November, 1934. Development consists of an inclined shaft to a depth of 45 feet. Milled ore is reported to have averaged $40 per ton in gold. The mine was owned by the Hulsey family of Indio who performed the required assessment until 1971 when the property was acquired by the NPS. (Greene, 1983, p. 170; Tucker and Sampson, 1945, p. 138).

WINONA MILL

(aka Cottonwood Springs Custom Mill)

Location

The Winona Mill site is located on the west end of Cottonwood Mountains and is accessible by following the Mastodon Trail from Loop A of the Cottonwood Campground for about 0.5 mile; this is a section of the Mastodon Mine loop trail.

Years of Operation

Initial date of operation unknown but probably the mid-1930s – 1945 (?) (Greene, 1983, p. 170).

History

The mill was operated by the Hulsey family of Indio in conjunction with the development of their Mastodon Mine. The concrete foundations that remain supported the mill's machinery. Ore was processed with a Fulton jaw crusher, drag classifier, amalgamation plates and an amalgamation trap. Pulp from the trap was pumped to a cone classifier with overflow fed to a ball mill. Slurry from the bottom of the cone was routed

either to a concentrator or a 2-cell Groch flotation machine; tailings from the concentrator were routed to a settling tank, and the water from the settling tank returned to the ball mill. A 40 horsepower Buick engine powered the mill. The mill had a capacity of 40 tons per day with a recovery of 85 percent of the gold values (Sampson and Tucker (1945, p. 129).

The location for the Winona Mill was selected because the site is one of only two springs between Mecca and Dale; water, of course, being critical in milling ore. The mill processed contract ore from smaller mines in the Hexie Mountains as well as ore from the Hulsey's Mastodon Mine (Moore, date unknown). In addition to the mill, this was the residence for workers who planted non-native shrubs and trees and cottonwoods which still flourish at the site (Furbush, 1995, p. 123).

WALL STREET MILL

Location

The Wall Street Mill is at the entrance to Wall Street Canyon near the southeastern edge of the Wonderland of Rocks. It is reached from Wonderland Ranch Parking Area by following the well-worn trail that is the abandoned Wall Street Mill road about one mile to the site.

Years of Operation

~1928 – 1949 (Greene, 1983, p. 218)

History

The site began as a 31-foot-deep well supposedly dug by Bill McHaney in 1896 for watering his livestock. Sometime later George Meyers took control of the well and also used it for cattle. The well was deepened at some time to 50 feet. In 1928, Oran Booth and Earl McGinnis needed a mill to work ore from their Wall Street Mine west of Jumbo Rocks and, because of the need for water to process the ore, they located their mill adjacent to Meyer's Well. They mill was given the same name as their mine. But Booth and McGinnis' dissolved their partnership when their mine played out and they offered the mill to Bill Keys. Keys filed a milling claim on the site in 1930.

A family in the area named Oberer arranged with Bill Keys to purchase the Wall Street millsite, a mine, and the mill at PinyonWell. They moved the two-stamp mill from Pinyon Well (located in Pushwalla Canyon southwest of Pleasant Valley) to the Wall Street mill site. The mill at Pinyon Well was probably the first mill to be erected in the region. The presence of a reliable, year-round supply of water necessary for operation dictated this original site. Also, it was readily accessible because it was situated on the Pushwalla Canyon freight road, the only route in the late 19th century that served the region that is now Joshua Tree National Park. Thus, it was convenient for miners in the region to bring their ore to the mill for custom milling. The mill was operated by E. Holland & Company, and the two-stamp mill was manufactured in Los Angeles by the Baker Iron Works in 1891.

The Oberer's mining efforts proved unsuccessful and they left with Bill Keys again taking possession of the mill.

With the help of a miner named Hopper, who had need of a mill to process ore from his mine, Keys rebuilt the mill in 1932 so it could be operated by one man (Keys and Kidwell, 1997, p. 72).

The site included two other structures in addition to the mill: a bunkhouse, now gone, and an outhouse, now collapsed. The mill building is framed from heavy timber salvaged from other mine structures in the region, and the framing was done largely by a woman millwright, a Mrs. Hopper. The structure is covered with corrugated iron. A 12-horsepower Western gas engine powered the belt-driven Fulton jaw crusher, Baker Iron Works two-stamp mill, and Myer concentrating table by a system of line shafts and pulleys that is typical of 19th century technology (Greene, 1983, p. 240). The structure and the machinery are still in good condition, although the copper plates are missing from the amalgamation table.

Keys operated the mill doing custom work for other mines in the area more-or-less regularly during the 1930s and then episodically until 1943. At times the mill ran for 24 hours per day with a maximum daily output of two to five tons depending on the nature of the ore. He charged miners $5 a ton for custom processing their ore which ran from $35 to $50 a ton (Keys and Kidwell, 1997, p. 72-75). Keys' operation of the mill ended in 1943 when he was convicted of manslaughter in the killing of Worth Bagley. Consequently, Keys, at age 64, was sent to San Quentin. He was paroled in 1948 and received a full pardon in 1956 as a result of an investigation and magazine articles written by Earle Stanley Garner (author of the Perry Mason mystery series) about Keys and the unjust conviction (Cates, 1995, p. 56-57).

Willis Keys operated the mill from 1947 until 1949 when it was shut down. Willis stated that at some time, probably in the late 1930s, someone cyanided the mill tailings. The mill was operated again, but only briefly, in 1966 (Greene, 1983, p. 218).

Bill Keys died in 1969 and the site was relinquished to the NPS by the Keys' estate in 1971. In 1975, the Wall Street Mill was added to the National Register of Historic Sites due to its technological significance (Greene, 1983, p. 218). It is a fine example of a small but complete gold ore amalgamation mill

featuring 19th century technology, one of the few in the West that still stands where it was used.

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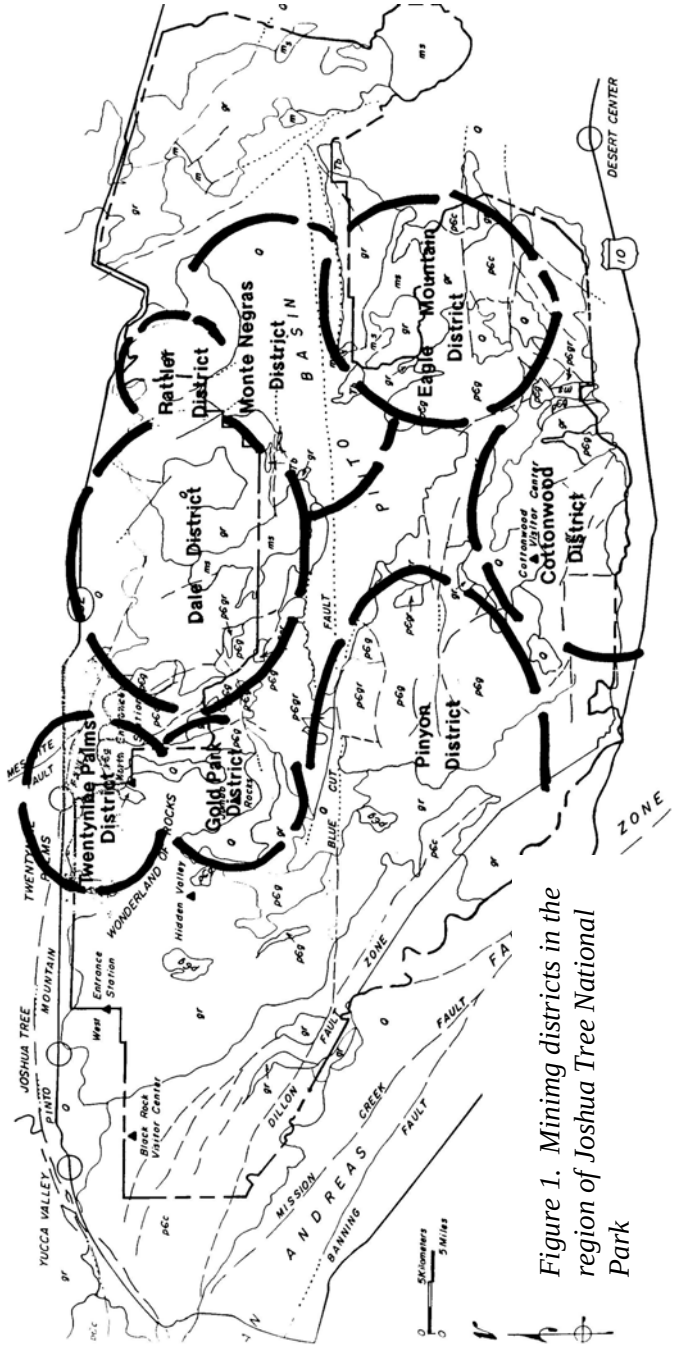

Figure 1. Minimg districts in the region of Joshua Tree National Park

Figure 2. Desert Queen Mine, adit portal and cyanide tanks circa 1935. From the collection of the National Park Service.

Figure 3. Remains of the mill at the Gold Coin Mine. Photo by Robert Cates.

Figure 4. Ore bins at the Silver Bell Mine, Hexi Mountains. Photo 2001 by D. D. Trent.

Figure 5. Lost Horse Mine, 1977. Photo shows ten-stamp battery, Holt gasoline engine and ore bins. Photo by D.D. Trent.

Figure 6. Lost Horse Mine, primary cusher, headframe and ore bin, circa 1935. Photo by Bruce W. black, collection of the National Park Service.

Figure 7. Two-stamp mill at Pinyon Well, circa 1920. Bill Keys later moved the stamp mill to the current Wall Street Mine. The mill was operated by Bill Keys as the Wall Street Mill. Photo from the collection of the National Park Service.

Figure 8. Exterior of the Wall Street Mill.

Figure 9. Interior of the Wall Street Mill.