

BAT INVENTORY AND MONITORING IN ARIZONA 1992-1994

Shawn V. Castner, Nongame Mammals Biologist
Tim K. Snow, Nongame Mammals Biologist
Debra C. Noel, Bat Management Coordinator
Nongame Branch, Wildlife Management Division



Technical Report 54
Nongame and Endangered Wildlife Program
Program Chief: Terry B. Johnson
Arizona Game and Fish Department
2221 West Greenway Road
Phoenix, Arizona 85023-4312

July 1994

(Reformatted and reprinted July 2003)

Recommended citation: Castner, S.V., T.K. Snow, and D.C. Noel. 1994. Bat inventory and monitoring in Arizona 1992-1994. Nongame and Endangered Wildlife Program Technical Report 54. Arizona Game and Fish Department, Phoenix, Arizona.

Funding for this project was provided by: voluntary contributions to Arizona's Nongame Wildlife Checkoff; the Arizona Game and Fish Department's Heritage Fund; Project W-95-M, Jobs 2 and 4, under the Federal Aid in Wildlife Restoration Act (Pittman-Robertson Act); Project E5, Jobs 8, 20 and 28, under Title VI of the Endangered Species Act; a Bureau of Land Management Challenge Cost Share Agreement; and a grant from the U.S. Army Yuma Proving Ground.

INTRODUCTION

Bats are one of the most misunderstood animals in nature. The subjects of many myths and legends, bats have been perceived as demonic creatures that are dirty and undesirable. Their importance to the ecosystem, however, has shown this perception to be incorrect. Some species are the primary pollinators of agave and columnar cactus. Others are the leading predators on night flying insects, eating tons of insects each night. Bat guano is an important source of fertilizer and houses unique organisms that are useful in the production of waste detoxifying agents, gasohol and antibiotics. These distinctions along with the concern for rabies and disease has prompted a magnitude of interest and study in recent years. Unfortunately, many questions regarding migrational patterns, hibernation, and roost selection still remain unanswered.

We do know that bats use a variety of shelters for roost sites. These shelters may be used for short rest periods between foraging forays or for extended periods such as day roosting or hibernation. Roost selection varies between species and includes natural shelters such as tree foliage, cavities in trees and columnar cacti, rock or cliff crevices, and caves (Hoffmeister 1986, Barbour and Davis 1969).

Human disturbance in and around roost sites has been a significant factor in the decline of many bat populations (Belwood and Waugh 1991, Pierson and Brown 1992, Tuttle 1991). Many species of bats have had to look elsewhere for roost sites, thus turning to man-made structures such as houses, bridges, and abandoned or inactive mines (Hoffmeister 1986, Barbour and Davis 1969, Brown and Berry 1991).

Twenty-eight of the 42 species of bats found in Canada and the United States spend at least part of their time in Arizona. The U.S. Fish and Wildlife Service (USFWS) lists one of Arizona's bats as an Endangered Species and 7 others as candidate species (Category 2). The Arizona Game and Fish Department's (AGFD) 1988 list of **Threatened Native Wildlife in Arizona (TNW)** includes one bat species as Endangered and five others as either threatened or candidate species (Appendix 1).

Beginning in 1990, the Nongame and Endangered Wildlife Program (NGEWP) of the AGFD implemented a bat management program utilizing funds from USFWS through Section 6 of the Endangered Species Act, Pittman-Robertson Wildlife Restoration Act and the Arizona State Income Tax check-off. In 1991, the Department obtained funds from the Heritage Initiative which was augmented with cost-share agreements between the Department and various other federal agencies. Field surveys began in July 1992 with the goal of searching known historical and suspected bat roosts throughout the state and monitoring significant roost sites. The purpose of this report is to document the progression of the bat management program.

SURVEY AREAS

The majority of the bat surveys were conducted in three areas; The U.S. Army Yuma Proving Ground (YPG) in southwestern Arizona, the Bill Williams River (BWR) area, and the Bureau of Land Management's (BLM) Phoenix District, including the Phoenix, Kingman, and Lower Gila resource areas. Other site specific areas were surveyed in response to threats, development plans, special interests, or other concerns. Figure 1 is a map of Arizona showing counties, mountain ranges, and major drainages.

METHODS

A variety of methods were employed, depending upon the type of structure being surveyed or the type of survey being conducted. With this in mind, we have categorized our discussion of methods by their respective survey type or structure. The categories are netting, buildings, dams and bridges, mines and caves, and monitoring.

Netting

Mist nets were placed across washes, open areas, ponds, or waterways that had potential as flyways or watering locations. Net height and length was adjusted depending on the site. Visual sightings and electronic bat detectors were used to verify bats in the area.

Nets of 30-50 denier, 2 ply, black nylon with a 3.8 centimeter mesh were set before sunset and opened 15-30 minutes after sunset depending upon avian and bat activity. During winter surveys total netting time was less as a result of the decrease in bat activity. Visual sightings and electronic bat detectors were used again to verify the absence of bats before closure of the nets.

Mist nets were also used to identify species at roost sites where hand nets or visual identification were not effective. Nets were placed near predicted roost site exits and opened during the initial evening exodus. The nets were closed as soon as the species present was determined.

Data collected included date, observers, site location, legal description, habitat description, weather conditions, number of nets set (N), hours open per net (H), total netting hours (N X H), time of capture, species, sex, age, reproductive condition, weight, and length of the forearm.

Buildings

Building surveys were conducted in response to reported roosts. The survey was conducted by searching the building for potential roost entry locations and inspecting the interior of the building when possible. Species identification was made either visually or by hand capture. When necessary, exit counts were conducted to verify entry locations and roost size.

Data collected included date, observers, species, sex, age, reproductive condition, and the approximate number of bats present.

Dams and Bridges

Dams were surveyed on the exterior by searching for guano accumulations, skeletal remains, urine stains, or bat presence. Contacts with operations personnel were made to arrange future surveys of inaccessible areas.

Arizona Department of Transportation's information on bridge construction prompted surveys of Colorado River bridges. Additional bridge surveys were conducted in conjunction with mine and cave surveys by searching any bridge encountered as we travelled between sites.

Data collected at the dams or bridges included observers, date, location, bat presence via guano accumulation, skeletal remains, urine stains, and species identification if possible.

Mines and Caves

Areas for mine surveys were chosen by consulting historical references, United States Geological Survey (USGS) 7.5' topographical maps, and the Arizona Department of Mines and Mineral Resources' County Mine Map Series (CMMS). The CMMS was a valuable tool in helping with locations and naming a particular site. Surveys were not conducted at sites that were actively being mined, extremely remote from vehicle access, or located on private property.

Mine surveys consisted of exploring for evidence of bat use, such as guano deposits, skeletal remains, urine staining on ceilings and walls, prey remains, and bat presence. Data collected included date, observers, location of mine, mine name, mine type (adit, shaft, prospect), aspect of entrance, temperature, relative humidity, species, and number and of bats present. Exit counts were conducted on a few of the mines to minimize disturbance. Hand nets were used when species identification could not be made by visual observation. A map of the internal configuration was drawn along with any notes about specific bat roosting locations within the mine, visual sightings of other wildlife, and signs of human disturbance. A sling psychrometer or electronic meter was utilized to measure relative humidity.

Guano accumulations were measured according to the following scale: (1) no guano present, (2) scattered or small piles (less than 30 centimeters in diameter or 3.8 centimeters high) present, and (3) large piles (greater than 30 centimeters in diameter or 3.8 centimeters high) or complete coverage of the floor.

The mines investigated during this survey included adits, shafts, and prospects. Some sites included several of these configurations. The mine site classification system used was based on field experience and the various symbols used on USGS topographical maps and is as follows:

Adits - horizontal tunnels that vary in length from three to several hundred meters. These can be straight or with many twists and turns. It is possible to have additional drifts (horizontal passageways) within adits. Adits are the easiest type to survey because of easy access.

Shafts - vertical entrances with depths greater than three meters. These may be straight or declining with varying slopes and may or may not contain drifts. Some of the vertical shafts were not surveyed due to safety concerns.

Prospects - small, shallow holes or scrapes constructed to prove claims or explore new areas. They did not exceed three meters in depth when shaft-like or length when adit-like. Areas identified on topographic maps as "prospects" were not surveyed. Prospects near or in the same general area as other types of mines were surveyed.

Mines that appeared unsafe to enter were not surveyed. Safety concerns include stability of walls and ceilings, contaminated air, contaminated surface water on the floor of the mine, and use by potentially dangerous wildlife such as rattlesnakes, javelina, and mountain lions. These sites may be surveyed in the future by an internal inspection if the hazards are no longer present or by exit counts.

Caves were chosen by consulting knowledgeable people in the area and reviewing USGS 7.5' topographical and mineral deposit maps. Areas with similar rock and soil types as those localities that had known caves were hiked in an attempt to find new sites not on the topographical map. Data collection for surveying caves was the same as listed above for mines except for the distinction of mine type.

Monitoring

Any roost that contained more than 50 bats or showed signs of significant bat use was monitored either by re-entry visits or exit counts. Re-entry was required to monitor roosts with multiple openings. Disturbance to maternity roosts was minimized.

Exit counts involved counting the number of bats exiting the roost at dusk. Night vision equipment was used to increase observer accuracy. Red filtered lights were used to increase visibility and for counts when night vision equipment was not available for all observers. Light-colored sheets were occasionally used as back drops to aid in observing the bats.

Data collected included observers, weather conditions, time of first bat, total time of count, total number counted, total number left inside, and any new signs of human disturbance (trash, footprints, etc.).

RESULTS

Tonto National Forest

The Tonto National Forest (TNF) cave and mine surveys were conducted from 15 September 1992 to 30 September 1992 and during September 1993. These surveys were conducted in conjunction with the Redman Cave roost monitoring by AGFD and U.S. Forest Service biologists. The area around Redman Cave, Red Lake Cave, Scout Cave and Christopher Mountain Cave were searched during this time. Ten cave entrances were found and five were surveyed. Fringed myotis (*Myotis thysanodes*) was the only species found during the TNF cave surveys.

Forty-eight mines were surveyed on the TNF. Species encountered in these mines included Townsend's big-eared bat (*Plecotus townsendii*), big brown bat (*Eptesicus fuscus*), fringed myotis, cave myotis (*Myotis velifer*) and california myotis (*Myotis californicus*). Results of the TNF mine and cave surveys are shown in Table 1.

Yuma Proving Ground

Bat surveys conducted on the YPG were conducted from 20-29 October 1992 and 26 April to 3 June 1993. The total number of mines surveyed was 14 with 5 (35.7%) of these mines showing signs of being significant roost sites. An exit count conducted on the Laser Site 7 mine resulted in a tally of 200 California leaf-nosed bats (*Macrotus californicus*).

Four natural caves were surveyed on YPG and small amounts of guano were found in all of these caves. No bats, however, were seen during these cave surveys.

Mist netting was also performed during the YPG survey with a total of 396.25 netting hours taking place. Although bats were detected in the area, most were observed flying well above the nets. Seven species were captured during the mist netting on or near YPG and included California myotis, big brown bat, Yuma myotis (*Myotis yumanensis*), pallid bat (*Antrozous pallidus*), Western pipistrelle (*Pipistrellus hesperus*), Mexican free-tailed bat (*Tadarida brasiliensis*), and California leaf-nosed bat.

For more information regarding the YPG survey, see Castner et al. (1993).

Bill Williams River

The BWR area was chosen due to the lack of historical records of bat roosts and/or collection sites. In addition, this area is within the winter range of 11 of Arizona's 28 bat species, 6 of which are known to utilize mines. These include California leaf-nosed bats, Yuma myotis, small-footed myotis (*Myotis ciliolabrum*), Allen's lappet-browed bats (*Idionycteris phyllotis*), Townsend's big-eared bats, and Mexican free-tailed bats (Hoffmeister 1986).

The BWR survey was conducted from November 1992 through March 1994. A total of 488 mines were investigated during this survey. Of these, 209 mines (42.8%) had signs of bat use and 69 mines (14.1%) had significant bat use. Bats were present in 49 (10.0%) of the mines. Nine mines in the BWR contained more than 50 California leaf-nosed bats and two were believed to be Townsend's big-eared bat hibernacula. Other bat species found during the BWR mine survey were Yuma myotis, cave myotis, California myotis, and Mexican free-tailed bat. Results of the BWR survey are grouped into La Paz (Table 2), Yavapai (Table 3), and Mohave (Table 4) counties. Some of the mines surveyed in this area are located on BLM's Phoenix District and are reviewed in the BLM survey section.

Bureau of Land Management

BLM mine surveys were conducted from November 1992 to September 1993 with additional surveys contingent on the availability of funds. Mine surveys were conducted on the Phoenix, Kingman, and Lower Gila Resource Areas of the Phoenix District.

A total of 772 mines were surveyed for the BLM study. Of these, 173 mines (22.4%) had signs of bat use and 33 mines (4.2%) had significant bat use. Bats were present in 122 (15.8%) of the mines. For more information regarding the BLM Survey, see Snow et al. (1993).

Netting

Mist netting is a perpetual activity that began in July 1992. For areas outside YPG, twenty species have been caught during 315 netting hours at 73 locations (Table 9).

Bridges and Dams

Thirty-two bridges were surveyed with guano and/or urine stains being observed at 19 (59.4%). Bats were found under eleven of the bridges (34.4%) with eight bridges (25.0%) having significant roosts. Mexican free-tailed bats, Yuma myotis, Townsend's big-eared bats, and big brown bats were found during the bridge surveys with Mexican free-tailed bats and Yuma myotis having the largest populations. Two dams were surveyed with bats being observed at both. Table 10 provided the results of the bridge and dam surveys.

Buildings

The AGFD received numerous reports of bats roosting in various buildings prompting surveys at 16 locations. Bats were identified at 14 of these locations. Exclusion of the bats from the roost took place at four of the buildings and nine of the building roosts have been allowed to remain active. Results of the building surveys are shown in Table 11.

Monitoring

The NGEWP bat management program is currently monitoring 105 roost sites. Most of these sites are mines, but several bridges and caves are also being monitored. Seventeen of these roosts are shared by more than one species. The species occupying the roosts being monitored include fringed myotis, Townsend's big-eared bats, California leaf-nosed bats, pallid bats, California myotis, cave myotis, big brown bats, and Mexican free-tailed bats.

Miscellaneous

Biological or public concerns prompted mine and cave surveys to be conducted outside project boundaries. The results of these surveys are grouped by county (Tables 5-8).

In addition, Agua Fria Unnamed Mine, Chalk Peak (4 adits), Beehive Mine (adit with shaft), Hilltop Mines (3 adits), Mineral Creek tunnel, and Grand Canyon Bat Cave were surveyed but are not included in the tables. Bats present during these surveys included Allen's lappet-browed bats from Chalk Peak; lesser long-nosed bats at the Hilltop mines; Yuma myotis from Mineral Creek tunnel; and Mexican free-tailed bats from Grand Canyon Bat Cave.

The NGEWP bat management program, with cooperation from the BLM Phoenix Training Center and Maricopa County Parks and Recreation, funded and coordinated the modification of the bat gate at Dixie Mine. This gate was not preventing human access because of an enlarged portal. The modifications have been successful in preventing human access while allowing access to the maternity colony of Townsend's big-eared bats and winter colony of California leaf-nosed bats.

CONCLUSIONS/RECOMMENDATIONS

Preliminary results of the mine surveys indicate that mines are very important shelters to a number of wildlife species. Thirty-three percent of the mines surveyed showed signs of bat use and some of the mines that did not have bat sign were used by other animals. This information suggests that land management agencies should evaluate impacts to wildlife, especially bats, when considering closure of an abandoned mine or reactivating mining operations. Gating is a recommended alternative to complete closure as long as the gate design does not impede the ingress and egress of animals using the mine.

Exact locations surveyed and the specific data collected at each site have been omitted from this report in an attempt to protect sensitive roosts. The NGEWP bat management program is following the guidelines recommended by the American Society of Mammalogists' Conservation of Land Mammals Committee (Sheffield et al 1992) that states revealing exact locations of bat roosts may result in declines in populations, damage to roosts or both, soon after the publication reveals the roost location. Land management agencies requiring specific inventory results can contact the AGFD's Heritage Data Management System.

Bat roost monitoring should continue for those roosts that contain 50 or more individuals. This number was chosen in an attempt to balance the time between monitoring and surveying new areas. Monitoring is also needed for those sites with significant bat sign but species use has yet to be documented. However, as the number of new roosts increase, monitoring and surveying efforts may need to be coordinated with the appropriate land management agencies.

Table 1. Mines and caves surveyed on the Tonto National Forest - Gila County, Arizona.											
Quad Name	Caves Surveyed	Guano Rating*			Mines Surveyed	Guano Rating*			Sites With Bats	Species Present	Month Of Survey
		1	2	3		1	2	3			
Diamond Point	1	1	0	0	0	-	-	-	0	none	9/92
Gentry Mtn.	0	-	-	-	42	26	16	0	10	<i>Eptesicus fuscus</i> <i>Plecotus townsendii</i>	9/92
Meddler Wash	0	-	-	-	6	4	1	1	2	<i>Plecotus townsendii</i> <i>Myotis velifer</i> <i>Myotis thysanodes</i> <i>Myotis californicus</i>	9/93
Parallel Canyon	3	2	1	0	0	-	-	-	1	<i>Myotis thysanodes</i>	9/92, 9/93
Woods Canyon	1	0	0	1	0	-	-	-	1	<i>Myotis thysanodes</i>	9/92, 9/93
Total	5	3	1	1	48	30	17	1	14	<i>Eptesicus fuscus</i> <i>Plecotus townsendii</i> <i>Myotis thysanodes</i> <i>Myotis velifer</i> <i>Myotis californicus</i>	9/92, 9/93

*Guano rating: 1) none. 2) scattered or small piles. 3) large piles or covering the floor.

Table 2. Mines surveyed in La Paz County, Arizona.

Quad Name	Mines Surveyed	Guano Rating*			Mines With Bats	Species Present	Month Of Survey
		1	2	3			
Alamo Dam	5	5	0	0	0	none	11/92
Bouse	3	3	0	0	0	none	3/93
Bouse Hills East	1	1	0	0	1	<i>Macrotus californicus</i>	3/93
Bouse Hills West	15	15	0	0	0	none	3/93
Cross Roads	37	21	11	5	6	<i>Macrotus californicus</i>	12/92, 3/93, 1/94
Cunningham Mtn.	3	2	0	1	1	<i>Macrotus californicus</i>	10/92
Cunningham Pass	62	43	15	4	5	<i>Macrotus californicus</i> , <i>Plecotus townsendii</i> , <i>Myotis velifer</i>	10/92, 2/93, 9/93
E.C.P. Peak	3	2	0	1	0	none	2/93
East of Utting	26	12	9	5	2	<i>Macrotus californicus</i> , <i>Myotis californicus</i>	2/93, 1/94
Gene Wash	3	1	2	0	0	none	3/93
Harcuvar	59	53	6	0	2	<i>Macrotus californicus</i>	2/93, 3/93, 1/94
Harcuvar Peak	22	15	7	0	1	<i>Macrotus californicus</i>	3/93
Harrisburg Valley	48	39	7	2	4	<i>Macrotus californicus</i> , <i>Myotis californicus</i>	7/93, 1/94
Hidden Valley	11	5	4	2	3	<i>Macrotus californicus</i> , <i>Eptesicus fuscus</i>	5/93
Hope	5	2	3	0	1	<i>Macrotus californicus</i>	2/93, 1/94
Osbourne Well	15	11	3	1	1	<i>Macrotus californicus</i>	1/93, 1/94
Picacho	4	2	0	2	2	<i>Macrotus californicus</i> , <i>Myotis californicus</i>	10/92
Total (this page)	322	232	67	23	29	<i>Macrotus californicus</i> , <i>Plecotus townsendii</i> , <i>Eptesicus fuscus</i> , <i>Myotis velifer</i>	10/92-1/94

* Guano rating: 1) none. 2) scattered or small piles. 3) large piles or covering the floor.

Table 2 (cont). Mines surveyed in La Paz County, Arizona.							
Quad Name	Mines Surveyed	Guano Rating*			Mines With Bats	Species Present	Month Of Survey
		1	2	3			
Planet	63	18	21	24	6	<i>Macrotus californicus, Myotis velifer, Plecotus townsendii</i>	12/92, 1/93, 12/93
Powerline Well	2	2	0	0	0	none	1/93
Reid Valley	24	7	14	3	3	<i>Macrotus californicus</i>	11/92, 1/93, 9/93
Smith Peak	1	1	0	0	0	none	2/93
Swansea	11	0	6	5	3	<i>Macrotus californicus</i>	1/93, 2/93, 1/94
Webber Canyon	2	0	1	1	0	none	3/93
Total (this page)	103	28	42	33	12	<i>Macrotus californicus, Myotis velifer, Plecotus townsendii</i>	11/92-1/94
Total (both pages)	425	260	109	56	41	<i>Macrotus californicus, Plecotus townsendii, Eptesicus fuscus, Myotis velifer</i>	10/92-1/94

* Guano rating: 1) none. 2) scattered or small piles. 3) large piles or covering the floor.

Table 3. Mines surveyed in Yavapai County, Arizona.

Quad Name	Mines Surveyed	Guano Rating*			Mines With Bats	Species Present	Month Of Survey
		1	2	3			
Arrastra Mtn. NE	1	1	0	0	0	none	2/93
Black Canyon City	8	5	3	0	1	<i>Plecotus townsendii</i>	1/94
Cleator	6	4	2	0	4	<i>Plecotus townsendii</i>	9/93, 6/93
Columbia	13	7	6	0	6	<i>Macrotus californicus</i> , <i>Plecotus townsendii</i>	1/94
Crown King	2	2	0	0	0	none	6/93
Malpais Mesa SW	1	1	0	0	0	none	2/93
Middle Verde	2	2	0	0	1	<i>Myotis spp.</i>	9/93
Morgan Butte	13	9	4	0	3	<i>Plecotus townsendii</i> , <i>Myotis velifer</i>	1/94
New River	1 (cave)	0	0	1	1	<i>Macrotus californicus</i>	3/94
Poland Junction	2	0	2	0	0	none	9/93
Smith Peak	14	8	2	4	2	<i>Macrotus californicus</i> , <i>Myotis yumanensis</i> , <i>Tadarida brasiliensis</i> , <i>Plecotus townsendii</i>	2/93, 10/93
Total	63	39	19	5	18	<i>Macrotus californicus</i> , <i>Tadarida brasiliensis</i> , <i>Plecotus townsendii</i> , <i>Myotis velifer</i> , <i>Myotis yumanensis</i>	2/93-3/94

* Guano rating: 1) none. 2) scattered or small piles. 3) large piles or covering the floor.

Table 4. Mines surveyed in Mohave County, Arizona.

Oquad Name	Mines Surveyed	Guano Rating*			Mines With Bats	Species Present	Month Of Survey
		1	2	3			
Artillery Peak	7	0	4	3	4	<i>Myotis yumanensis</i> , <i>Plecotus townsendii</i> , <i>Macrotus californicus</i>	11/92, 3/94
Bat Cave	1 (cave)	0	0	1	1	<i>Tadarida brasiliensis</i>	3/94
Buck Mtns.	6	6	0	0	0	none	1/93
Centennial Wash	7	5	2	0	0	none	12/92
Crossman Peak	10	9	1	0	1	<i>Plecotus townsendii</i>	1/93
Franconia	6	5	1	0	1	<i>Macrotus californicus</i>	1/93
Garnet Mtn. NW	3	2	1	0	1	<i>Plecotus townsendii</i>	3/94
Grayback Mts.	2	2	0	0	0	none	2/94
Kaiser Spring	4	0	2	2	1	<i>Macrotus californicus</i> , <i>Myotis velifer</i> <i>Plecotus townsendii</i>	11/92, 8/93
Kingman	4	2	2	0	0	none	7/93
Lake Havasu City N	5	5	0	0	0	none	1/93
Lake Havasu City S	2	1	1	0	0	none	1/93
McCracken Peak	5	3	1	1	1	<i>Plecotus townsendii</i>	11/92
Rawhide Wash	50	21	22	7	7	<i>Tadarida brasiliensis</i> , <i>Macrotus californicus</i> , <i>Myotis velifer</i> , <i>Myotis velifer</i> , <i>Plecotus townsendii</i>	11/92, 3/94, 5/94
Reid Valley	2	0	1	1	1	<i>Macrotus californicus</i>	12/92
Signal	4	2	1	1	1	<i>Plecotus townsendii</i>	11/92, 3/94
Signal Mtn	1	0	1	0	0	none	11/92
Total (this page)	119	63	40	16	19	<i>Macrotus californicus</i> , <i>Myotis californicus</i> , <i>Plecotus townsendii</i> , <i>Myotis yumanensis</i> , <i>Tadarida brasiliensis</i>	11/92-5/94

* Guano rating: 1) none. 2) scattered or small piles. 3) large piles or covering the floor.

Table 4 (cont). Mines surveyed in Mohave County, Arizona.							
Quad Name	Mines Surveyed	Guano Rating*			Mines With Bats	Species Present	Month Of Survey
		1	2	3			
Standard Wash	3	3	0	0	0	none	1/93
Swansea	4	2	1	1	1	<i>Macrotus californicus</i>	12/92, 12/93
Topock	2	2	0	0	0	none	1/93
Union Pass	1	0	1	0	1	<i>Plecotus townsendii</i>	3/94
Wikieup NW	5	5	0	0	0	none	2/93
Total (this page)	15	12	2	1	2	<i>Macrotus californicus, Plecotus townsendii</i>	12/92-3/94
Total (both pages)	134	75	42	17	21	<i>Macrotus californicus, Myotis californicus, Plecotus townsendii, Myotis yumanensis, Tadarida brasiliensis</i>	11/92-5/94

* Guano rating: 1) none. 2) scattered or small piles. 3) large piles or covering the floor.

Table 5. Mines surveyed in Santa Cruz County, Arizona.							
Quad Name	Mines Surveyed	Guano Rating*			Mines With Bats	Species Present	Month Of Survey
		1	2	3			
Arivaca	1	0	0	1	1	<i>Plecotus townsendii</i>	2/94
Bartlett Mtn	11	10	1	0	0	none	2/94
Duquesne	22	21	1	0	1	<i>Plecotus townsendii</i>	4/93
Harshaw	20	20	0	0	0	none	4/93
Total	54	51	2	1	2	<i>Plecotus townsendii</i>	4/93, 2/94

Table 6. Mines surveyed in Yuma County, Arizona.							
Quad Name	Mines Surveyed	Guano Rating*			Mines With Bats	Species Present	Month Of Survey
		1	2	3			
Castle Dome Peak	4	1	3	0	3	<i>Macrotus californicus</i>	10/92
Dome	2	0	2	0	0	none	10/92
Laguna Dam	8	2	1	5	3	<i>Macrotus californicus</i>	10/92
Picacho	2	0	1	1	2	<i>Macrotus californicus, Myotis velifer</i>	5/93
Total	16	3	7	6	8	<i>Macrotus californicus, Myotis velifer</i>	10/92, 5/93

* Guano rating: 1) none. 2) scattered or small piles. 3) large piles or covering the floor.

Table 7. Mines surveyed in Maricopa County, Arizona.							
Quad Name	Mines Surveyed	Guano Rating*			Mines With Bats	Species Present	Month Of Survey
		1	2	3			
Belmont Mountain	4	3	1	0	0	none	1/94
Hieroglyphic Mts. SW	3	1	2	0	1	<i>Macrotus californicus</i>	1/94
McDowell Peak	5	2	2	1	2	<i>Plecotus townsendii, Myotis velifer, Myotis californicus, Macrotus californicus, Leptonycteris curasoe</i>	7/92-3/94
Total	12	6	5	1	3	<i>Plecotus townsendii, Myotis velifer, Myotis californicus, Macrotus californicus, Leptonycteris curasoe</i>	7/92-3/94

Table 8. Mines surveyed in Pima County, Arizona.							
Quad Name	Mines Surveyed	Guano Rating*			Mines With Bats	Species Present	Month Of Survey
		1	2	3			
Ajo South	3	3	0	0	0	none	4/93
Bates Well	4	3	1	0	0	none	4/93
Chico Shunie	3	2	1	0	0	none	4/93
Rincon Peak	1 (cave)	1	0	0	0	none	9/93
Total	11	9	2	0	0	none	4/93, 9/93

* Guano rating: 1) none. 2) scattered or small piles. 3) large piles or covering the floor.

Table 9. Results of mist netting

Netting Location	Legal Description	Date	# of Nets Set	Net Time (hrs)	Total Net Hours	Bats Present (Y/N)	Capture Results
Hart Canyon	T13N,R13E,SEC33,SE1/4,SE1/4	7/15/92	6	3.5	21	Y	<i>Idionycteris phyllotis</i> (1), <i>Myotis thysanodes</i> (1)
Chevelon Crossing	T13N,R13E,SEC19,NE1/4,NE1/4	7/16/92	3	2.5	7.5	Y	<i>Myotis ciliolabrum/californicus</i> (1)
Apache Creek	T18N,R6W,SEC25,SW1/4,NE1/4	7/27/92	2	3	6	Y	<i>Myotis auriculus</i> (1), <i>Eptesicus fuscus</i> (3) <i>Antrozous pallidus</i> (2)
Apache Creek	T18N,R6W,SEC25,NE1/4,NE1/4	7/27/92	6	3	18	Y	<i>Eptesicus fuscus</i> (7), <i>Antrozous pallidus</i> (4), <i>Lasiurus cinereus</i> (1), <i>Myotis sp.</i> (1)
Hassayampa River	T12.5N,R2W,SEC26,NW1/4,NW1/4,SW1/4	7/28/92	3	5.5	16.5	Y	<i>Eptesicus fuscus</i> (6), <i>Antrozous pallidus</i> (1), <i>Lasiurus cinereus</i> (3), <i>Myotis auriculus</i> (2)
Parker/Colorado River	T10N,R18W,SEC6, on east river bank	10/15/92	1	3	3	Y	none caught
Gila River/McPhaul Bridge	T8S,R21W,SEC4,N1/2,SE1/4,SW1/4	10/27/92	1	2	2	Y	none caught
Bill Williams River	T10N,R15W,SEC1,SW1/4,SE1/4,SE1/4	11/30/92	2	2	4	Y	none caught
Happy Day Pond	T7N,R13W,SEC8,N1/2,SE1/4,NW1/4	2/11/93	2	3	6	Y	<i>Plecotus townsendii</i> (1)
Gravel Pit Pond	T5N,R14W,SEC20,NE1/4,SW1/4,NW1/4	2/24/93	1	2	2	N	none caught
Duquesne Wash Pond	T24S,R17E,SEC7,NW1/4,SW1/4,SE1/4	4/13/93	2	3	6	Y	<i>Myotis occultus</i> (1), <i>Lasiurus cinereus</i> (1)
Harshaw Creek	T22S,R16E,SEC15,SE1/4,SE1/4	4/14/93	3	3	9	Y	<i>Lasiurus blossevillii</i> (1)
Jagow Tank	T2S,R6W,SEC19,SW1/4,NE1/4	4/20/93	3	3	9	Y	none caught
Big Bug Creek	T12N,R1E,SEC6,SW1/4,NW1/4,NW1/4	6/14/93	1	1.5	1.5	Y	none caught
Black Canyon Creek	T9N,R2E,SEC17,NW1/4,NW1/4,SE1/4	6/16/93	1	1.5	1.5	Y	<i>Antrozous pallidus</i> (2), <i>Eptesicus fuscus</i> (2), <i>Myotis californicus</i> (1)
Castle Creek	T7N,R1W,SEC24,NE1/4,SE1/4,SW1/4	6/23/93	2	2.5	5	Y	<i>Pipistrellus hesperus</i> (8), <i>Antrozous pallidus</i> (2), <i>Myotis velifer</i> (2), <i>Myotis yumanensis</i> (1)
Hassayampa River	T8N,R5W,SEC12,E1/2,NE1/4,SE1/4	6/28/93	2	1.5	3	Y	none caught
Tribley Wash	T7N,R3W,SEC1,E1/2,NW1/4,SE1/4	7/6/93	2	2	4	Y	<i>Myotis velifer</i> (4), <i>Eptesicus fuscus</i> (1)
Iron City #3 (mine adit)	T8N,R5W,SEC12,NE1/4,NW1/4,SE1/4	7/7/93	1	.5	.5	Y	<i>Antrozous pallidus</i> (3), <i>Macrotus californicus</i> (1)
Boulder Well	T20N,R17W,SEC21,NW1/4,NE1/4,NE1/4	7/19/93	1	3	3	Y	<i>Myotis californicus</i> (3), <i>Myotis thysanodes</i> (2), <i>Plecotus townsendii</i> (2), <i>Antrozous pallidus</i> (3)

Table 9 (cont). Results of mist netting

Netting Location	Legal Description	Date	# of Nets Set	Net Time (hrs)	Total Net Hours	Bats Present (Y/N)	Capture Results
Wash Cove/Mohave Lake	T22N,R22W,SEC25,NW1/4,SW1/4,NE1/4	7/13/93	3	2	6	Y	<i>Pipistrellus hesperus</i> (3), <i>Myotis californicus</i> (3), <i>Antrozous pallidus</i> (2)
		7/14/93	3	2	6	Y	<i>Antrozous pallidus</i> (1)
Mohave Lake	T24N,R22W,SEC16,SW1/4,NE1/4,SW1/4	7/20/93	1	1.5	1.5	Y	none caught
Pumphouse Wash	T20N,R6E,SEC25,NE1/4	7/22/93	3	4.5	13.5	Y	<i>Lasiurus cinereus</i> (3), <i>Myotis occultus</i> (1), <i>Myotis californicus</i> (1), <i>Antrozous pallidus</i> (1)
Middle Water Spring	T25N,R21W,SEC1,SE1/4,NW1/4	7/26/93	2	2	4	Y	none caught
Bonelli Landing	UTM E726600, N3996200	7/27/93	2	2	4	Y	none caught
Willow Tank	T19N,R15W,SEC5,SE1/4,NE1/4,SW1/4	8/2/93	4	3	12	Y	<i>Eptesicus fuscus</i> (17), <i>Myotis thysanodes</i> (6), <i>Myotis volans</i> (1), <i>Tadarida brasiliensis</i> (15), <i>Nyctinomops femorosaccus</i> (2)
Flag Mine	T20N,R15W,SEC32,SE1/4,NE1/4,NE1/4	8/3/93	1	1	1	Y	<i>Eptesicus fuscus</i> (1), <i>Myotis occultus</i> (1), <i>Myotis thysanodes</i> (5), <i>Myotis yumanensis</i> (1)
Crozier Wash	T15N,R15W,SEC1,NW1/4,NE1/4	8/8/93	1	1.5	1.5	Y	<i>Antrozous pallidus</i> (5), <i>Myotis volans</i> (1), <i>Myotis occultus</i> (1)
Butte Tank	T24N,R15W,SEC12,NE1/4,NE1/4,SE1/4	8/10/93	2	1.5	3	Y	none caught
Hualapai Wash/Lake Mead	UTM E758850, N3988540	8/11/93	1	3	3	Y	<i>Pipistrellus hesperus</i> (6), <i>Myotis yumanensis</i> (2), <i>Myotis californicus</i> (1), <i>Eptesicus fuscus</i> (1)
		8/17/93	1	2	2	Y	none caught
Crow Creek	T17N,R14W,SEC23,SE1/4,SE1/4,NW1/4	8/18/93	1	3	3	Y	<i>Antrozous pallidus</i> (1)
Copper Canyon	T13N,R4E,SEC10,S1/2,NW1/4	9/7/93	5	2.5	12.5	Y	<i>Myotis velifer</i> (2), <i>Pipistrellus hesperus</i> (1)
Camp Wood	T17N,R6W,SEC35,SE1/4,SW1/4,NW1/4	9/8/93	4	3	12	Y	<i>Antrozous pallidus</i> (2), <i>Eptesicus fuscus</i> (11), <i>Myotis auriculus</i> (5), <i>Myotis californicus</i> (1), <i>Myotis occultus</i> (1), <i>Myotis volans</i> (1), <i>Myotis yumanensis</i> (1)
Viet Springs Pond	T22N,R6E,SEC12,NW1/4	9/8/93	2	2	4	Y	none caught
Little Springs	T14N,R11E,SEC18,NE1/4,NE1/4,SW1/4	9/9/93	1	.25	.25	Y	<i>Myotis volans</i> (5), <i>Myotis thysanodes</i> (1)

Table 9 (cont). Results of mist netting

Netting Location	Legal Description	Date	# of Nets Set	Net Time (hrs)	Total Net Hours	Bats Present (Y/N)	Capture Results
Horse Crossing	T14N,R11E,SEC24,NE1/4,NE1/4,SE1/4	9/10/93	3	3.75	11.25	Y	none caught
Ramsey Canyon	T23S,R20E,SEC9,S1/2,NE1/4	9/15/93	4	4.5	18	Y	<i>Choeronycteris mexicana</i> (10), <i>Eptesicus fuscus</i> (18), <i>Leptonycteris curasoae</i> (17), <i>Myotis auricularis</i> (1)
Dixie Mine Wash	T4N,R6E,SEC31,NW1/4,NW1/4,NW1/4	12/2/93	2	1.5	3	Y	<i>Myotis yumanensis</i> (1), <i>Pipistrellus hesperus</i> (1)
Tiger Well	UTM E292820, N3737670	1/10/94	2	2	4	Y	none caught
Arizona Shaft Wash	UTM E243210, N3786640	1/11/94	1	2	2	Y	none caught
Eagle Wash	T10N,R18W,SEC8,SW1/4,NW1/4,SW1/4	1/25/94	2	2.25	4.5	Y	<i>Macrotus californicus</i> (1)
Soloman Gulch	T8N,R4W,SEC12,SW1/4,SE1/4,NW1/4	1/26/94	2	2.25	4.5	N	none caught
Japanese Valley Pond	UTM E474370, N3749330	2/7/94	3	1.5	4.5	Y	<i>Myotis californicus</i> (2)
Fort Pearce Wash	UTM E280580, N4097450	2/22/94	3	2	6	Y	none caught
Quail Canyon Tank	UTM E270130, N4086530	2/23/94	4	2.5	10	Y	none caught
Maggie Tank	UTM E249460, N3808830	3/14/94	2	2.5	5	Y	<i>Tadarida brasiliensis</i> (16), <i>Pipistrellus hesperus</i> (7), <i>Antrozous pallidus</i> (5), <i>Myotis californicus</i> (2), <i>Myotis yumanensis</i> (1), <i>Nyctinomops femorosaccus</i> (1)
		5/18/94	1	2.5	2.5	Y	<i>Tadarida brasiliensis</i> (11), <i>Myotis velifer</i> (31), <i>Pipistrellus hesperus</i> (2), <i>Plecotus townsendii</i> (1)
Arrastra Canyon	UTM E258550, N3815540	3/16/94	2	2	4	Y	none caught
Odle Ranch Ponds	T20N,R15W,SEC25	5/17/94	3	2	6	Y	none caught
Egret Tank	T25N,R17W,SEC22,NE1/4,SE1/4,SE1/4	5/17/94	2	2	4	Y	none caught
Bill Williams River	UTM E225960, N3794840	5/19/94	1	3	3	Y	<i>Myotis yumanensis</i> (3), <i>Myotis Velifer</i> (5), <i>Pipistrellus hesperus</i> (12), <i>Nyctinomops femorosaccus</i> (1), <i>Tadarida brasiliensis</i> (10), <i>Lasiurus cinereus</i> (1), <i>Antrozous pallidus</i> (1), <i>Plecotus townsendii</i> (1)
Browns Canyon Spring	T6N,R9W,SEC29,NW1/4,NW1/4	5/31/94	2	2.5	5	Y	<i>Pipistrellus hesperus</i> (6), <i>Myotis velifer</i> (3), <i>Myotis californicus</i> (1), <i>Plecotus townsendii</i> (1)
Total (all pages)					315		

Table 10. Bridges and dams surveyed for the presence of bats in Arizona.					
Bridge or Dam	Location	Legal Description	Bat Sign	Bats Present	Date of Visit
Gila Gravity Main Canal Bridge	1/2 mile below Imperial Dam	T6S,R21W,SEC30,SW1/4	No	No	10/13/92
Mittry Entry Canal Bridge	1/2 mile below Imperial Dam	T15S,R24E,SEC17,SE1/4,NE1/4,NE1/4 *	Yes	Yes	10/13/92
Colorado River Bridge	1/2 mile below Imperial Dam	T16S,R24E,SEC16,NW1/4,NW1/4 *	Yes	Yes	10/13/92
4th Avenue Bridge	Yuma, Colorado River	T16S,R22E,SEC35,W1/2 *	No	No	10/13/92
Interstate 8 Bridge	Yuma, Colorado River	T16S,R22E,SEC35,E1/2 *	No	No	10/13/92
Interstate 8 Railroad Bridge	Yuma, Colorado River	T16S,R22E,SEC36,W1/4,NW1/4,NW1/4 *	No	No	10/13/92
Cibola Refuge Bridge	Colorado River, Cibola Wildlife Refuge	T1N,R24W,on Sec26/35 line	No	No	10/14/92
Cibola Island Bridge	Colorado River, Cibola Wildlife Refuge	~1/2 mi south of above bridge-Not on map	No	No	10/14/92
Cibola Farmers Bridge	Colorado River, Cibola Wildlife Refuge	T1N,R23W, on SEC20/21 line	No	No	10/14/92
Interstate 10 Bridge	Ehrenberg, Colorado River	T3N,R22W,SEC16,NE1/4	No	No	10/14/92
Colorado Indian Reservation Bridge	Colorado River, 10 mi. S. of Parker	T8N,R21W,on W1/4 of SEC10/15 line	Yes	No	10/14/92
Parker Bridge	Parker, Colorado River	T10N,R20W,SEC36,SW1/4	Yes	No	10/14/92
Parker Dam	Colorado River, Lake Havasu	T11N,R18W,SEC16,E1/2	Yes	Yes	10/15/92
Parker Dam Powerplant Bridge	Hwy 95, Lake Havasu	T11N,R18W,SEC14,SW1/4,SW1/4SE1/4	Yes	No	10/15/92
Bill Williams River Bridge	Hwy 95, Bill Williams River	T11N,R18W,SEC13,NW1/4	Yes	No	10/15/92
Interstate 40 Bridge	Topock, Colorado River	T15N,R21W,SEC3,NE1/4	Yes	No	10/15/92
J Street Bridge	Needles, Colorado River	T17N,R22W,SEC33,NW1/4,NE1/4,NW1/4	No	No	10/15/92
Hwy 68 Bridge	Bullhead City/Laughlin, Colorado River	T21N,R22W,SEC30,W1/2,SW1/4	Yes	No	10/15/92
Davis Dam Bridge	Colorado River, Hwy 68	T21N,R21W,SEC18,SW1/4,SW1/4	Yes	No	10/16/92
Davis Dam	Colorado River, Mohave Lake	T21N,R21W,SEC19W,NW1/4,NW1/4	Yes	Yes	10/16/92
Santa Maria River Bridge	Hwy 93, Santa Maria River	T12N,R9W,SEC22,SW1/4,SE1/4,NE1/4	Yes	Yes	10/16/92
Sycamore Creek Bridge	Hwy 87, Sycamore Creek	T5N,R8E,SEC12,NE1/4,NE1/4 (approx.)	Yes	Yes	9/17/92
Deer Creek Bridge	Hwy 87, Deer Creek	T8N.R10E,SEC8,NW1/4,NW1/4	Yes	Yes	9/17/92

* Legal description from the California baseline

Table 10 (cont.). Bridges and dams surveyed for the presence of bats in Arizona.

Bridge or Dam	Location	Legal Description	Bat Sign	Bats Present	Date of Visit
Gila River Bridge	Hwy 95, Gila River	T8S,R21W,SEC4,NW1/4,SE1/4,SE1/4	No	No	10/13/92
London Bridge	Lake Havasu City	T13N,R20W,SEC15,N1/2,NW1/4	Yes	Yes	1/22/93
Cherry Creek Bridge	Hwy 288, Cherry Creek	T9N,R14E,SEC4,NE1/4	Yes	Yes	9/16/92
Star Valley Bridge	Hwy 260, Houston Creek, Star Valley	T11N,R11E,SEC31,E1/2	No	No	9/17/92
Rye Creek Bridge	Hwy 87, Rye Creek	T9N,R10E,SEC32,NE1/4,NW1/4	Yes	No	9/17/92
Preacher Canyon Bridge	Hwy 260, Preacher Canyon	T11N,R11E,SEC24,E1/4 (approx.)	No	No	9/17/92
Salt River Bridge	Hwy 288, Salt River, Roosevelt Lake	UTM E507300, N3719750	No	No	9/25/92
Rio Rico Bridge	Rio Rico, Santa Cruz River	UTM E500800, N3481470	Yes	Yes	2/6/94
22nd ST Bridge	Pantano Wash, Tucson	UTM E516540, N3563130	Yes	Yes	8/26/93
Broadway Bridge	Pantano Wash, Tucson	UTM E516150, N3564740	Yes	Yes	8/26/93
Speedway Bridge	Pantano Wash, Tucson	UTM E515440, N3566370	Yes	Yes	8/26/93

Table 11. Buildings surveyed for the presence of bats in Arizona.				
Site name	Type of Structure	Date Visited	Species (Population Size)	Final Outcome
Canelo School	One Room School	9/92	<i>Antrozous pallidus</i> (50) <i>Leptonycteris curasoae</i> (~6-night roost)	roost allowed
Solomonville School	Attic	9/13/92	<i>Myotis yumanensis</i> (1500-2500)	exclusion
Cluff Ranch	Bunkhouse	9/13/92	unknown (10-15)	roost allowed
Cluff Ranch	Barn	9/13/92	<i>Myotis velifer</i> (100)	roost allowed
Madera Canyon	House	9/18/92	<i>Choeronycteris mexicana</i> (2)	demolition
Roosevelt Dam	Pumphouse	9/24/92	<i>Myotis yumanensis</i> (~2700)	roost allowed
Salt River Diversion Dam	Pumphouse	9/24/92	<i>Myotis velifer</i> , <i>Myotis yumanensis</i> (unknown)	roost allowed
Governor's Office	Nine Story Building	1/22/93	<i>Tadarida brasiliensis</i> (75)	exclusion
Chandler Reclamation Facility	Office Building	2/25/93	<i>Tadarida brasiliensis</i> (170)	exclusion
Old Buena High School	School	3/19/93	<i>Tadarida brasiliensis</i> (~35)	exclusion
1st Interstate Building	Parking Garage	10/8/93	<i>Tadarida brasiliensis</i> (349), <i>Pipistrellus hesperus</i> (18)	relocated
Coolidge Safeway Plaza	Sign on Building	11/8/93	<i>Tadarida brasiliensis</i>	roost allowed
Coconino High School	School	9/9/93	unknown	roost allowed
Arizona Historical Society, Flagstaff	Building	9/8/93	<i>Tadarida brasiliensis</i> , <i>Eptesicus fuscus</i> (unknown)	roost allowed
V.A. Medical Center, Tucson	Hospital	8/25/93	<i>Eptesicus fuscus</i> (~50)	undecided
APS Deer Valley Garage	Building	5/8/93	<i>Tadarida brasiliensis</i> (~100)	roost allowed

ACKNOWLEDGMENTS

The authors of this report would like to acknowledge the efforts of the following people whose assistance with gaining entry access, documentation, and data collection was greatly appreciated:

Barry Spicer, AGFD Heritage Data Management System
Dale Ward, AGFD Nongame Support Biologist
Brian Vrooman, AGFD Geographic Information System
Kevin Bergersen, AGFD Region VI Field Operations
Mike Senn, AGFD Region III Field Operations
Don Mattus, Becky Wright, and Larry Phoenix, AGFD Region IV Field Operations
Joe Sacco, AGFD Region V Field Operations
Shelley Mizaur, AGFD Region VI Field Operations
AGFD Student Interns
Matt Schumaker and Mary Gilbert, U.S. Bureau of Land Management, Phoenix Training Center
Bob Hall, Tim Hughes, and Laurie Young, U.S. Bureau of Land Management, Phoenix District
Debbie Harris, U.S. Forest Service, Tonto National Forest
Sharon Churchill and Cathy Taylor, U.S. Forest Service, Coconino National Forest
Valerie Morrill, Yuma Proving Ground Wildlife Biologist
Dr. Yar Petryszyn, University of Arizona, Assistant Mammals Collection Curator
Dr. E.L. Cockrum, University of Arizona, Mammals Collection Curator, Professor Emeritus
Drs. Patricia Brown and Robert Berry (Brown-Berry Biological Consultants), Dr. Virginia and
Dave Dalton, Dr. Donna Howell, and Ronnie Sidner for assistance and guidance
Mike Sarsam, Arizona Department of Transportation
Doug Inman, U.S. Bureau of Reclamation, Lake Havasu Powerplant
Lee Hall, U.S. Bureau of Reclamation, Davis Dam Powerplant
Henry Messing, U.S. Bureau of Reclamation, Wildlife Biologist
T.J. Harris and F.G. "Fritz" Seifritz, Maricopa County Parks and Recreation, Lake Pleasant
Chris Pike, Kingman High School, Biology Instructor
Central Arizona Grotto
Escabrosa Grotto
Wes Patrick, Critter Control and Gavin Gallifant, First and Last Pest Control, for assistance with
exclusion projects
Marion Vittetoe for guidance, modification, and assistance with the bat gate at Dixie Mine

LITERATURE CITED

- Castner, S.V., T.K. Snow, and D.C. Noel. 1993a. Bat inventory and monitoring in Arizona. Nongame and Endangered Wildlife Program Technical Report. Arizona Game and Fish Department, Phoenix, Arizona. 26 pp.
- Castner, S.V., T.K. Snow, and D.C. Noel. 1993b. Bat inventory of U.S. Army Yuma Proving Ground. Nongame and Endangered Wildlife Program Technical Report. Arizona Game and Fish Department, Phoenix, Arizona. 16 pp.
- Barbour, R.W. and W.H. Davis. 1969. Bats of America. The University Press of Kentucky. 286 pp.
- Belwood, J.J. and R.J. Waugh. 1991. Bats and mines: abandoned does not always mean empty. *Bats*. 9(3):13-16.
- Brown, P.E. and R.D. Berry. 1991. Bats: habitat, impacts, and mitigation. Thorne Ecological Institute. Proceedings V: Issues and Technology in the Management of Impacted Wildlife. pp 26-30.
- Hoffmeister, D.F. 1986. Mammals of Arizona. The University of Arizona Press and The Arizona Game and Fish Department. 602 pp.
- Jones, J.K. Jr., R.S. Hoffman, D.W. Rice, C. Jones, R.J. Baker, and M.D. Engstrom. 1992. Revised checklist of North American mammals north of Mexico, 1991. Texas Tech University Press. *Occas. Papers Mus., Texas Tech Univ.* 146:1-23.
- Pierson, E.D. and P.E. Brown. 1992. Saving old mines for bats. *Bats*. 10(4):11-13.
- Sheffield, S.R., J.H. Shaw, G.A. Heidt, and L.R. McClenaghan. 1992. Guidelines for the protection of bat roosts. *Journal of Mammalogy*. 73(3):707-710.
- Snow, T.K., S.V. Castner, and D.C. Noel. 1993. Bat inventory of abandoned mines-Bureau of Land Management, Phoenix District. Nongame and Endangered Wildlife Program Technical Report. Arizona Game and Fish Department, Phoenix, Arizona. 16 pp.
- Tuttle, M.D. 1991. How North America's bats survive the winter. *Bats*. 9(3):7-12.

Arizona Game and Fish Department
 Bat Inventory and Monitoring in Arizona

Appendix 1. Bat taxonomy derived from Jones et al. 1992

Family/Scientific Name	Common Name	ESA	TNW
Mormoopidae (Ghost-faced bats)			
<i>Mormoops megalophylla</i>	Ghost-faced bat	-	-
Phyllostomidae (American leaf-nosed bats)			
<i>Macrotus californicus</i>	California leaf-nosed bat	C2	SC
<i>Choeronycteris mexicana</i>	Mexican long-tongued bat	C2	ST
<i>Leptonycteris curasoae yerbabuena</i>	Lesser long-nosed bat	-	-
(= <i>L. sanborni</i>)	Sanborn's long-nosed bat	LE	SE
Vespertilionidae (Evening bats)			
<i>Myotis yumanensis</i>	Yuma myotis	-	-
<i>Myotis velifer</i>	Cave myotis	-	-
(<i>M.v. brevis</i> = <i>M.v. velifer</i> in part)	Southwestern cave myotis	C2	-
<i>Myotis lucifugus</i>	Little brown myotis	-	-
(= <i>M. lucifugus occultus</i>)	Occult little brown bat	C2	-
<i>Myotis evotis</i>	Long-eared myotis	-	-
<i>Myotis auriculus</i>	Southwestern myotis	-	-
<i>Myotis thysanodes</i>	Fringed myotis	-	-
<i>Myotis volans</i>	Long-legged myotis	-	-
<i>Myotis californicus</i>	California myotis	-	-
<i>Myotis ciliolabrum</i>	Western small-footed bat	-	-
(= <i>M. leibii</i>)	Small-footed bat	-	-
<i>Lasionycteris noctivagans</i>	Silver-haired bat	-	-
<i>Pipistrellus hesperus</i>	Western pipistrelle	-	-
<i>Eptesicus fuscus</i>	Big brown bat	-	-
<i>Lasiurus blossevillii</i>	Western red bat	-	-
(= <i>L. borealis</i> in part)	Red bat	-	SC
<i>Lasiurus ega</i>	Southern yellow bat	-	SC
<i>Lasiurus cinereus</i>	Hoary bat	-	-
<i>Euderma maculatum</i>	Spotted bat	C2	SC
<i>Idionycteris phyllotis</i>	Allen's lappet-browed bat	-	-
<i>Plecotus townsendii</i>	Townsend's big-eared bat	-	-
<i>Antrozous pallidus</i>	Pallid bat	-	-
Molossidae (Free-tailed bats)			
<i>Tadarida brasiliensis</i>	Mexican free-tailed bat	-	-
<i>Nyctinomops femorosaccus</i>	Pocketed free-tailed bat	-	-
<i>Nyctinomops macrotis</i>	Big free-tailed bat	-	-
<i>Eumops perotis</i>	Western mastiff bat	-	-
<i>E.p. californicus</i>	Greater western mastiff bat	C2	-
<i>Eumops underwoodi</i>	Underwood's mastiff bat	C2	-

ESA = Endangered Species Act status
 LE = Listed Endangered
 C2 = Category 2

TNW = Threatened Native Wildlife in Arizona 1988 list
 SE = State Endangered
 ST = State Threatened
 SC = State Candidate

Note: Indentation equals listing name or other known name in Arizona.

Appendix 2. Mines not surveyed

MINE NAME	COUNTY	LEGAL DESCRIPTION	REASON
JOES SPRINGS #7	GILA	T8N,R15E,SEC26,NW1/4,SW1/4	SAFETY
AMBER	LA PAZ	T5N,R11W,SEC8,S1/2,SW1/4,SE1/4	REMOTE-TIME REQUIREMENTS
BALLIF	LA PAZ	UTM E247820, N3741450	PEOPLE LIVING ON SITE
BARN OWL	LA PAZ	T7N,R13W,SEC14,NE1/4,SE1/4,NE1/4	SAFETY
BATTLESHIP PEAK	LA PAZ	UTM E244860, N3770780	NO TRESPASSING SIGNS
BATTLESHIP PEAK EAST	LA PAZ	UTM E244410, N3771290	NO TRESPASSING SIGNS
BATTLESHIP PEAK NORTH	LA PAZ	UTM E244380, N3772060	NO TRESPASSING SIGNS
BATTLESHIP PEAK WEST	LA PAZ	UTM E243040, N3771340	NO TRESPASSING SIGNS
BLACKCAT #3 (NOT ON MAP)	LA PAZ	UTM E251160, N3737450	SHAFT BOARDED OVER
BLUEBELL	LA PAZ	T10N,R13W,SEC17,NW1/4,SW1/4,SE1/4	SAFETY
BONANZA SOUTH	LA PAZ	T7N,R13W,SEC26,S1/2,NE1/4,SW1/4,NW1/4	SAFETY
BONANZA SOUTH #1	LA PAZ	T7N,R13W,SEC26,NE1/4,SE1/4,NW1/4	SAFETY
BONANZA-6 ON MAP, ONE LEFT	LA PAZ	T7N,R13W,SEC26,NW1/4,NE1/4,NW1/4	SAFETY
CALCITE	LA PAZ	T7N,R13W,SEC14,SE1/4,SE1/4,SW1/4,NE1/4	SAFETY
CALCITE #5	LA PAZ	UTM E250300, N3741850	SAFETY
CARNATION	LA PAZ	T10N,R18W,SEC21SW1/4,SE1/4,NW1/4,NW1/4	SOMEONE LIVES ON SITE
CENTROID #4	LA PAZ	T7N,R12W,SEC18,NE1/4,NE1/4,SW1/4,SW1/4	SAFETY
CENTROID #7	LA PAZ	T7N,R12W,SEC18,N1/2,SE1/4,NW1/4,SW1/4	SAFETY
CENTROID NORTH #1	LA PAZ	T7N,R12W,SEC18,S1/2,NW1/4,SW1/4,NW1/4	SAFETY
CENTROID NORTH #2	LA PAZ	T7N,R12W,SEC18,SE1/4,SW1/4,NW1/4	SAFETY
CHOLLA #4	LA PAZ	T7N,R12W,SEC6,NW1/4,SW1/4,NW1/4	SAFETY
CHOLLA #7 (NOT ON MAP)	LA PAZ	T7N,R13W,SEC1,NE1/4,NE1/4,SW1/4,SE1/4	SAFETY
CHOLLA #8	LA PAZ	T7N,R13W,SEC1,W1/2,NW1/4,SW1/4,NE1/4	SAFETY
CIBOLA #8 SOUTH	LA PAZ	T2S,R23W,SEC36,NW1/4,NE1/4,NW1/4,NW1/4	SAFETY
CLARA	LA PAZ	T10N,R15W,SEC35,NW1/4,NE1/4,SW1/4	SAFETY
COPPER BOTTOM #4	LA PAZ	UTM E747680, N3718450	ACTIVE-NOT SURVEYED
COPPER BOTTOM #5	LA PAZ	UTM E747740, N3718450	ACTIVE-NOT SURVEYED
COPPER PENNY	LA PAZ	T10N,R16W,SEC35,NW1/4,SW1/4,NW1/4,NW1/4	SAFETY
CRITIC #7	LA PAZ	T7N,R13W,SEC11,SW1/4,SE1/4,SE1/4	SAFETY
DANGIE	LA PAZ	T7N,R13W,SEC21,NW1/4,NE1/4,NE1/4	SAFETY
DESERT BAR #2(NOT ON MAP)	LA PAZ	T10N,R18W,SEC17,NE1/4,SE1/4	SAFETY
DESERT BAR #3	LA PAZ	T10N,R18W,SEC17,NE1/4,SE1/4	SAFETY
DESERT BAR (NOT ON MAP)	LA PAZ	T10N,R18W,SEC17,NE1/4,SE1/4	SAFETY
DESERT QUEEN #1	LA PAZ	T5N,R14W,SEC16,SW1/4,NW1/4	SAFETY
DESERT QUEEN WEST	LA PAZ	T5N,R14W,SEC17,NE1/4,SE1/4,NE1/4	SAFETY
DONNA KAY #1	LA PAZ	T5N,R15W,SEC13,NE1/4,NW1/4,NE1/4	SAFETY
DONNA KAY #2	LA PAZ	T5N,R15W,SEC13,NW1/4,NW1/4,NE1/4	SAFETY
EAGLE NEST	LA PAZ	T10N,R18W,SEC16,SW1/4,SE1/4,NW1/4	SAFETY
ELLSWORTH KING #1	LA PAZ	UTM E250410, N3742850	SAFETY
EMPIRE	LA PAZ	T10N,R18W,SEC17,SW1/4,NE1/4,NW1/4	SAFETY
GOLDEN EAGLE SOUTH #2	LA PAZ	UTM E260430, N3729200	SAFETY
GOLDEN EAGLE SOUTH #2-4	LA PAZ	UTM E260000-400, N3728750-3729000	ON ACTIVE SITE
GOLDEN EAGLE SOUTH #4	LA PAZ	UTM E260370, N3729170	SAFETY
GOLDEN EAGLE SOUTH #5	LA PAZ	UTM E260380, N3729200	SAFETY
GREY	LA PAZ	UTM E248700, N3740470	SAFETY
GREY EAGLE	LA PAZ	T10N,R18W,SEC17,SE1/4,NE1/4,NE1/4	SAFETY

Appendix 2. Mines not surveyed

MINE NAME	COUNTY	LEGAL DESCRIPTION	REASON
HAPPY DAY #1	LA PAZ	UTM E257110, N3759420	SAFETY
HARQUAHALA #2	LA PAZ	T5N,R11W,SEC1,E1/2,NW1/4,NW1/4,NE1/4	REMOTE-TIME REQUIREMENTS
HARQUAHALA #3	LA PAZ	T6N,R11W,SEC36,SE1/4,SW1/4,SW1/4,SE1/4	REMOTE-TIME REQUIREMENTS
HORN MAIN	LA PAZ	UTM E229940, N3776870	SAFETY
INCLINED RAILWAY #7	LA PAZ	T7N,R13W,SEC27,NE1/4,NW1/4,NE1/4,NW1/4	SAFETY
IRON KING ("OLD GOLD")	LA PAZ	T10N,R16W,SEC6,NW1/4,NE1/4,SW1/4	SAFETY
LITTLE GIANT	LA PAZ	T7N,R13W,SEC12,NW1/4,SE1/4,SE1/4	SAFETY
LITTLE GIANT WEST #1	LA PAZ	T7N,R13W,SEC12,NW1/4,SW1/4,SE1/4	SAFETY
LITTLE HILL	LA PAZ	T7N,R13W,SEC12,NW1/4,NE1/4,SE1/4,NW1/4	SAFETY
MAGIC GROUP #1	LA PAZ	T5N,R11W,SEC29,SW1/4,SE1/4,NE1/4,NW1/4	LOCKED DOOR AT 25FT
MARTIN PEAK #2	LA PAZ	UTM E259480, N3727860	SAFETY
MENDOTA EAST	LA PAZ	UTM E244870, N3743800	ACTIVE-NO TRESPASSING
MENDOTA WEST	LA PAZ	UTM E244670, N3743910	ACTIVE-NO TRESPASSING
MINERAL KING	LA PAZ	T10N,R15W,SEC25,S1/2,NW1/4,NE1/4,NE1/4	SAFETY
MYSTERY HILL	LA PAZ	T10N,R13W,SEC18,NE1/4,SE1/4,SE1/4,NE1/4	SAFETY
NEW STANDARD EAST #1	LA PAZ	UTM E772950, N3780470	SAFETY
NEW STANDARD EAST #2	LA PAZ	UTM E772950, N3780470	SAFETY
NEW STANDARD WEST	LA PAZ	UTM E772950, N3780470	SAFETY
NEW STANDARD WEST	LA PAZ	UTM E773020, N3780700	UNABLE TO LOCATE
NORPS #1	LA PAZ	T5N,R10W,SEC31,NE1/4,SW1/4,SE1/4,SW1/4	REMOTE-TIME REQUIREMENTS
NORPS #2	LA PAZ	T5N,R10W,SEC31,NE1/4,SE1/4,SW1/4,SW1/4	REMOTE-TIME REQUIREMENTS
NORTHERN STAR	LA PAZ	T10N,R16W,SEC33,SW1/4,SE1/4,NW1/4	SAFETY
OLIVER	LA PAZ	UTM E250840, N3741570	SAFETY
PAPAGO NORTH	LA PAZ	T4S,R23W,SEC11,E1/2,NW1/4,NW1/4,SE1/4	SAFETY
PLANET #3 (NOT ON MAP)	LA PAZ	T10N,R16W,SEC6,SW1/4,NW1/4,NE1/4	SAFETY
POWERLINE	LA PAZ	T7N,R13W,SEC13,SE1/4,SE1/4,NE1/4,NE1/4	SAFETY
RECORD EAST	LA PAZ	T10N,R15W,SEC35,SE1/4,SE1/4,SW1/4	SAFETY
RECORD WEST	LA PAZ	T10N,R15W,SEC35,N1/2,SW1/4,SE1/4,SW1/4	SAFETY
RIO SOUTH #2	LA PAZ	UTM E259500, N3732880	SAFETY
RIO VISTA #8	LA PAZ	T10N,R19W,SEC26,SW1/4,NE1/4,SE1/4	SAFETY
SADDLE #1	LA PAZ	T7N,R13W,SEC22,SE1/4,SE1/4,SE1/4	SAFETY
SADDLE LOWER #2	LA PAZ	T7N,R13W,SEC22,SW1/4,SE1/4,SE1/4	SAFETY
SAGUARO	LA PAZ	UTM E248920, N3740650	SAFETY
SHEBA	LA PAZ	UTM E255490, N3751820	SAFETY
SOCORRO #1	LA PAZ	T5N,R12W,SEC26,NE1/4,NE1/4,NE1/4,SE1/4	SAFETY
SOCORRO #2	LA PAZ	T5N,R12W,SEC25,NW1/4,SW1/4,NW1/4,SW1/4	SAFETY
SOUTH FACE EAST	LA PAZ	T7N,R13W,SEC14,NW1/4,SE1/4,SW1/4	SAFETY
STERLING SOUTH	LA PAZ	UTM E260200, N3753680	SAFETY
SUE	LA PAZ	T10N,R19W,SEC23,NE1/4,NW1/4,NW1/4	SAFETY
SURE SHOT #1	LA PAZ	T10N,R18W,SEC20,NW1/4,NW1/4,NW1/4	SAFETY
SURE SHOT #2	LA PAZ	T10N,R18W,SEC19,SE1/4,NW1/4,NW1/4	SAFETY
TIN CAN NORTH	LA PAZ	UTM E263640, N3763820	SAFETY
TIN CAN SOUTH LOWER	LA PAZ	T7N,R12W,SEC6,NE1/4,NW1/4,NW1/4	SAFETY
TRUE BLUE	LA PAZ	UTM E247790, N3741450	PEOPLE LIVING ON SITE
VERDUGO	LA PAZ	UTM E249870, N3740530	SAFETY
VETA GRANDE	LA PAZ	T10N,R16W,SEC6,SW1/4,SW1/4,SW1/4,NW1/4	SAFETY

Appendix 2. Mines not surveyed

MINE NAME	COUNTY	LEGAL DESCRIPTION	REASON
WAR EAGLE #2	LA PAZ	T10N,R16W,SEC6,W1/2,NE1/4,NW1/4	SAFETY
WAR EAGLE SOUTHWEST #1	LA PAZ	T10N,R16W,SEC6,SE1/4,NW1/4,NW1/4	SAFETY
WENDEN #3	LA PAZ	T7N,R13W,SEC11,NE1/4,NW1/4,SE1/4	SAFETY
WENDEN #4	LA PAZ	T7N,R13W,SEC11,NE1/4,NW1/4,SE1/4	SAFETY
WENDEN #5	LA PAZ	T7N,R13W,SEC11,NW1/4,NW1/4,SE1/4	SAFETY
WOODRAT (NOT ON MAP)	LA PAZ	UTM E250090, N3752980	SAFETY
YUMA	LA PAZ	UTM E245600, N3747630	ROAD GATED-NO TRESPASSING
YUMA COPPER	LA PAZ	UTM E245390, N3747330	ROAD GATED-NO TRESPASSING
APACHE WEST	MARICOPA	T5N,R9W,SEC29,NW1/4,NE1/4,SE1/4,SE1/4	SAFETY
BARON'S CABIN #2	MARICOPA	T4N,R9W,SEC8,SE1/4,NW1/4,NW1/4,NW1/4	SAFETY
BELMONT SOUTH	MARICOPA	T4N,R7W,SEC35,SW1/4,NE1/4,SW1/4,SE1/4	REMOTE-TIME REQUIREMENTS
BIGHORN SOUTH	MARICOPA	T3N,R9W,SEC22,SW1/4,NE1/4,NW1/4	SAFETY
BLACK DIAMOND #2	MARICOPA	T5N,R9W,SEC24,SW1/4,SW1/4,NW1/4,SE1/4	SAFETY
BLACK RAVEN #1	MARICOPA	T5N,R9W,SEC32,SW1/4,NW1/4,NE1/4,SE1/4	SAFETY
BLACK SUE	MARICOPA	T5N,R9W,SEC32,N1/2,NW1/4	REMOTE-TIME REQUIREMENTS
CITRUS VALLEY	MARICOPA	T3S,R5W,SEC33,NE1/4,SE1/4,NE1/4,SE1/4	SAFETY
CONTACT #1	MARICOPA	T5N,R7W,SEC31,SW1/4,NW1/4,NW1/4,NW1/4	SAFETY
COPPER BELT TRESPASSING	MARICOPA	T5N,R10W,SEC17,NE1/4	ROAD CABLED-NO
DIVIDE IRON CAP #2	MARICOPA	T4N,R7W,SEC20,W1/2,NE1/4,SE1/4,NW1/4	SAFETY
DIXIE #1	MARICOPA	UTM E311440, N3683250	SAFETY
DIXIE #3	MARICOPA	UTM E311270, N3683250	SAFETY
DIXIE #5	MARICOPA	UTM E311170, N3683250	SAFETY
DRAGON	MARICOPA	T7N,R4W,SEC23,NW1/4,NW1/4,SW1/4,SE1/4	SAFETY
ECLIPSE	MARICOPA	T5N,R8W,SEC25,S1/2,SE1/4,SW1/4,NE1/4	SAFETY
EL TIGRE #1	MARICOPA	T5N,R9W,SEC27,SW1/4,SE1/4,NW1/4,SW1/4	SAFETY
EL TIGRE #A	MARICOPA	T5N,R9W,SEC27,SE1/4,NW1/4,SW1/4	SAFETY
EVENING STAR #4	MARICOPA	T4N,R9W,SEC7,E1/2,SE1/4	SAFETY
GOLD CORD	MARICOPA	T4N,R9W,SEC18,NE1/4,NW1/4,NE1/4,SE1/4	SAFETY
GOLDEN STATE	MARICOPA	T3N,R8W,SEC6,NW1/4,SE1/4,NW1/4,SE1/4	SAFETY
GOOD EARTH	MARICOPA	T2S,R4W,SEC15,SE1/4,NW1/4,SE1/4	REMOTE-TIME REQUIREMENTS
GOOD EARTH NORTH	MARICOPA	T2S,R4W,SEC15,NW1/4,NW1/4,NW1/4	REMOTE-TIME REQUIREMENTS
HANSEN	MARICOPA	T4S,R5W,SEC2,SW1/4,SW1/4,SE1/4	SAFETY
HORN CLAIMS #2	MARICOPA	T5N,R9W,SEC26,SE1/4,NW1/4,SE1/4,SE1/4	SAFETY
HORN CLAIMS #3	MARICOPA	T5N,R9W,SEC26,SE1/4,SE1/4,NW1/4,SE1/4	SAFETY
LEAD DUKE	MARICOPA	T5N,R8W,SEC24,SW1/4,NE1/4,NE1/4,NW1/4	SAFETY
LEADVILLE	MARICOPA	T5N,R10W,SEC16,SE1/4,NE1/4,NE1/4,SE1/4	REMOTE-TIME REQUIREMENTS
LINDA	MARICOPA	T6N,R10W,SEC23,SW1/4,SW1/4,NW1/4,NW1/4	SAFETY
LITTLE SAN DOMINGO	MARICOPA	T7N,R3W,SEC15,SW1/4,SE1/4,SW1/4	PEOPLE LIVING ON SITE
LOST SPANIARD	MARICOPA	T4N,R7W,SEC24,NW1/4,NW1/4,NW1/4,NW1/4	SAFETY
LUCKY	MARICOPA	T5N,R9W,SEC34,SW1/4 AND SEC 33 SE1/4	REMOTE-TIME REQUIREMENTS
MOLLIE DAVENPORT	MARICOPA	T5N,R9W,SEC33,W1/2,NW1/4,NE1/4,NW1/4	BOARDED OVER
MOON ANCHOR	MARICOPA	T4N,R7W,SEC31,NE1/4,NE1/4,SE1/4,SW1/4	SAFETY
MORNING STAR	MARICOPA	T3N,R6W,SEC6,NW1/4,NW1/4,NE1/4,NW1/4	REMOTE-TIME REQUIREMENTS
PURPLE PANSY	MARICOPA	T5N,R9W,SEC19,NE1/4	SAFETY
RAWLEY SOUTH	MARICOPA	T4S,R8W,SEC25,SW1/4,NE1/4,SE1/4	SAFETY

Appendix 2. Mines not surveyed

MINE NAME	COUNTY	LEGAL DESCRIPTION	REASON
SADDLE MTN NORTH #1	MARICOPA	T2N,R7W,SEC31,W1/2,NW1/4,SW1/4	SAFETY
SADDLE MTN NORTH #2	MARICOPA	T2N,R7W,SEC31,N1/2,SW1/4,NW1/4,SW1/4	SAFETY
SADDLE MTN NORTH #3	MARICOPA	T2N,R7W,SEC31,W1/2,NW1/4,SW1/4	SAFETY
SADDLE MTN SOUTH #3	MARICOPA	T2N,R7W,SEC31,SE1/4,SE1/4,SW1/4,SE1/4	SAFETY
SAN DOMINGO	MARICOPA	T7N,R4W,SEC26,SE1/4,NE1/4,NE1/4	SAFETY
SCOTT	MARICOPA	T4N,R7W,SEC21,NW1/4,NE1/4,NW1/4,NE1/4	COVERED WITH PLYWOOD
SEVEN-SEVEN #2	MARICOPA	T4N,R7W,SEC15,NW1/4,SW1/4,SE1/4,SW1/4	SAFETY
SUNSET SOUTH	MARICOPA	T5N,R10W,SEC22,NW1/4,NW1/4,NE1/4,NW1/4	REMOTE-TIME REQUIREMENTS
SUNSHINE	MARICOPA	T6N,R10W,SEC14,NE1/4,SE1/4,NW1/4,NW1/4	SAFETY
TONOPAH-BELMONT #1	MARICOPA	UTM E320720, N3724470	SAFETY
TONOPAH-BELMONT #2	MARICOPA	UTM E320705, N3724470	SAFETY
UNKNOWN	MARICOPA	T3N,R7W,SEC2,SW1/4,SE1/4,NE1/4,SW1/4	REMOTE-TIME REQUIREMENTS
UNKNOWN	MARICOPA	UTM E319450, N3722450	SAFETY
UNKNOWN #1	MARICOPA	T4N,R7W,SEC32,S1/2,SE1/4,SW1/4,SW1/4	ACCESS VIA PRIVATE
PROPERTY			
UNKNOWN #7	MARICOPA	T5N,R8W,SEC13,NW1/4,SE1/4,NE1/4,SW1/4	SAFETY
UNKNOWN ADIT #2	MARICOPA	T5N,R9W,SEC29,SW1/4,NW1/4,NW1/4,NW1/4	SAFETY
WHITE PERLITE	MARICOPA	T5N,R8W,SEC15,SW1/4,NE1/4,SE1/4,NE1/4	SAFETY
WILD HORSE	MARICOPA	UTM E304170, N3651160	SAFETY
YELLOW MEDICINE NORTH #1	MARICOPA	UTM E296500, N3678740	SAFETY
YELLOW MEDICINE NORTH #2	MARICOPA	UTM E296700, N3679010	SAFETY
YELLOW MEDICINE SOUTH #1	MARICOPA	UTM E296150, N3678590	SAFETY
YORK #1	MARICOPA	T5N,R9W,SEC23,NE1/4,NW1/4,SW1/4,SE1/4	SAFETY
ABNER SOUTH	MOHAVE	T21N,R21W,SEC3,S1/2,SE1/4,SW1/4,SW1/4	ACTIVE-MOHAWK MINING
ANTARES #1	MOHAVE	T23N,R14W,SEC7,SW1/4,NW1/4,NW1/4,SE1/4	SAFETY
ANTARES #1A (NOT ON MAP)	MOHAVE	T23N,R14W,SEC7,NW1/4,SW1/4,NW1/4,SE1/4	SAFETY
ANTLER	MOHAVE	T12N,R11W,SEC16,NW1/4,NE1/4,SW1/4,SW1/4	SANTA MARIA UNCROSSABLE
APACHE #1	MOHAVE	UTM E759950, N3977000	SAFETY
APACHE #2	MOHAVE	UTM E759920, N3976980	SAFETY
ARIZONA GOLD SOUTH	MOHAVE	T20N,R17W,SEC6,S1/2,NW1/4,NE1/4,NE1/4	SAFETY
ARIZONA YUCCA	MOHAVE	T15N,R18W,SEC9,SE1/4,SE1/4,NE1/4	SAFETY
ARRASTRA CANYON	MOHAVE	T13N,R13W,SEC29,SW1/4,NE1/4,SE1/4	SAFETY
ASA SPRING	MOHAVE	T13N,R11W,SEC34,NE1/4,SW1/4,NW1/4,NE1/4	REMOTE-TIME REQUIREMENTS
ATT UPPER	MOHAVE	T21N,R20W,SEC22,NE1/4,SE1/4,SE1/4,NE1/4	SAFETY
BLACK DYKE MAIN	MOHAVE	T21N,R21W,SEC2,NW1/4,NW1/4,SE1/4,SW1/4	SAFETY
BLACKSMITH	MOHAVE	T13N,R15W,SEC25,NW1/4,NE1/4,NE1/4,SE1/4	SAFETY
BLACKSMITH #1	MOHAVE	T13N,R15W,SEC25,S1/2,SE1/4,SE1/4,NE1/4	SAFETY
BLACKSMITH #2	MOHAVE	T13N,R15W,SEC25,SE1/4,SE1/4,NE1/4	SAFETY
BLACKSMITH CENTRAL #1	MOHAVE	T13N,R15W,SEC25,MIDDLE OF E1/2,SW1/4,NW1/4	SAFETY
BLACKSMITH CENTRAL #2	MOHAVE	T13N,R15W,SEC25,NE1/4,SE1/4,NE1/4	SAFETY
BLACKSMITH EAST	MOHAVE	T13N,R14W,SEC30,E1/2,NE1/4,NW1/4,SW1/4	SAFETY
BLUE ROCK	MOHAVE	T15N,R13W,SEC17,MIDDLE OF SW1/4,NW1/4	SAFETY
BONANZA	MOHAVE	T11N,R14W,SEC24,NE1/4,SE1/4,NE1/4	NOT LOCATED
BONANZA EAST	MOHAVE	T11N,R14W,SEC24,NE1/4,SE1/4,NE1/4	NOT LOCATED
BONANZA WEST	MOHAVE	T11N,R14W,SEC24,E1/2,NW1/4,SE1/4,NE1/4	SAFETY
BORIANA UPPER	MOHAVE	T18N,R15W,SEC18,NE1/4,NW1/4,SW1/4	SAFETY

Appendix 2. Mines not surveyed

MINE NAME	COUNTY	LEGAL DESCRIPTION	REASON
CENTURY WEST	MOHAVE	T20N,R15W,SEC11,N1/2,NW1/4,SE1/4,SE1/4	PEOPLE LIVING ON SITE
CIRRUS	MOHAVE	UTM E719950, N3956740	SAFETY
CLARK FLYNN	MOHAVE	T15N,R14W,SEC14,SE1/4,NE1/4,SE1/4	REMOTE-TIME REQUIREMENTS
COORS WELL	MOHAVE	UTM E289270, N3822160	SAFETY
COPPER GLANCE SOUTH	MOHAVE	UTM E759920, N3979170	SAFETY
COPPER HEAD	MOHAVE	T15N,R13W,SEC19,SW1/4	REMOTE-TIME REQUIREMENTS
DIAMOND JOE PEAK	MOHAVE	T17N,R14W,SEC21,NW1/4,SW1/4,NW1/4,SE1/4	REMOTE-TIME REQUIREMENTS
DUTCH FLAT	MOHAVE	T14N,R18W,SEC21,S1/2,NW1/4,NW1/4,SW1/4	SAFETY
ENIGMA #2	MOHAVE	UTM E721700, N3958220	SAFETY
ENIGMA #4	MOHAVE	UTM E721750, N3958200	SAFETY
ENIGMA #7	MOHAVE	UTM E721810, N3958010	SAFETY
FAY #2	MOHAVE	T20N,R17W,SEC29,W1/2,SW1/4,NE1/4,NE1/4	SAFETY
FAY #3 (A-C)	MOHAVE	T20N,R17W,SEC29,NW1/4,SE1/4,NE1/4	SAFETY
FLAG	MOHAVE	T20N,R15W,SEC32,SW1/4,NE1/4,NE1/4	SAFETY
FORD	MOHAVE	UTM E759830, N3981470	SAFETY
FROST EAST	MOHAVE	T21N,R15W,SEC26,NW1/4,SW1/4,SW1/4	SAFETY
FRY #1	MOHAVE	UTM E747530, N3963920	SAFETY
GEORGE GROUP	MOHAVE	T11N,R14W,SEC23,NW1/4,NE1/4,SW1/4	SAFETY
GOLD HILL	MOHAVE	UTM E751640, N3976660	PEOPLE LIVING ON SITE
GOLD STREET	MOHAVE	UTM E750470, N3967020	SAFETY
GOLDBUG	MOHAVE	T13N,R13W,SEC32,SW1/4,NE1/4,NW1/4	SAFETY
GOLDEN AGE #2	MOHAVE	UTM E722890, N3950980	SAFETY
GOLDEN AGE #4	MOHAVE	UTM E723170, N3951220	SAFETY
GOLDEN BUTTERFLY	MOHAVE	UTM E751660, N3964440 AND E751680, N3964450	ACTIVE OPEN PIT MINE
GOLDEN SLIPPER	MOHAVE	UTM E750150, N3963980	SAFETY
GRANITE STATE	MOHAVE	281700, 3823100	SAFETY
HOLY MOSES	MOHAVE	T20N,R17W,SEC11,SE1/4,SE1/4,SW1/4	SAFETY
HORN SILVER #1	MOHAVE	UTM E721580, N3956990	SAFETY
IDA MAE	MOHAVE	T14N,R19W,SEC16,SW1/4,NE1/4,NW1/4,SE1/4	SAFETY
IDEAL NORTH	MOHAVE	T16N,R18W,SEC30,MIDDLE OF E1/2,SE1/4	SAFETY
JOHNS	MOHAVE	UTM E721740, N3952470	SAFETY
JOHNS SOUTH	MOHAVE	UTM E722010, N3952190	SAFETY
KEMPLE CAMP #2(NOT ON MAP)	MOHAVE	UTM E729740, N3942410	SAFETY
KETZ	MOHAVE	T14N,R18W,SEC30,SE1/4,SW1/4,NE1/4	SAFETY
KETZ SOUTH PROSPECT	MOHAVE	T14N,R18W,SEC30,S1/2,NW1/4,NW1/4,SE1/4	SAFETY
KLONDYKE NORTH #1	MOHAVE	UTM E723350, N3933920	SAFETY
LAST DAY SOUTH	MOHAVE	T12N,R15W,SEC13,NE1/4,SE1/4,SW1/4,NE1/4	SAFETY
LOOKOUT #1	MOHAVE	T21N,R20W,SEC35,NE1/4,NE1/4,NW1/4	SAFETY
MAHOGANY EAST	MOHAVE	T12N,R14W,SEC34,NW1/4,SE1/4,NE1/4,NW1/4	SAFETY
MANITOWOC #2	MOHAVE	T13N,R18W,SEC17,SW1/4,SE1/4,NE1/4	SAFETY
MANITOWOC #3	MOHAVE	T13N,R18W,SEC17,SW1/4,SE1/4,NE1/4	SAFETY
MANITOWOC #4	MOHAVE	T13N,R18W,SEC17,SW1/4,SE1/4,NE1/4	SAFETY
MIDWAY	MOHAVE	T18N,R15W,SEC13,NE1/4,NW1/4,SW1/4,SE1/4	SAFETY
MILLER	MOHAVE	T21N,R21W,SEC17,NE1/4,SW1/4,NE1/4	SAFETY
MOHAVE EAST	MOHAVE	T15N,R20W,SEC11,NW1/4,NE1/4,SW1/4	SAFETY
MOHAWK #2	MOHAVE	T26N,R15W,SEC17,SW1/4,NE1/4,NW1/4,SW1/4	SAFETY

Appendix 2. Mines not surveyed

MINE NAME	COUNTY	LEGAL DESCRIPTION	REASON
MOHAWK #3	MOHAVE	T26N,R15W,SEC17,SE1/4,NW1/4,NW1/4,SW1/4	SAFETY
MONARCH #2 (NOT ON MAP)	MOHAVE	T21N,R20W,SEC26,NW1/4,SW1/4,NW1/4,SE1/4	SAFETY
MONARCH #3 (NOT ON MAP)	MOHAVE	T21N,R20W,SEC26,NW1/4,SW1/4,SE1/4	SAFETY
NO. 116	MOHAVE	T21N,R20W,SEC23,SE1/4,SE1/4,SE1/4,NW1/4	SAFETY
ODLE	MOHAVE	T20N,R15W,SEC24,SE1/4,SW1/4,NW1/4,SW1/4	SAFETY
OK EAST	MOHAVE	UTM E752790, N3964590	SAFETY
OWENS #4	MOHAVE	UTM E746930, N3970330	SAFETY
PALO VERDE	MOHAVE	T16N,R18W,SEC30,NE1/4,NE1/4,SE1/4	SAFETY
PAULY	MOHAVE	UTM E721350, N3955790	SAFETY
PEACOCK	MOHAVE	T23N,R14W,SEC18,NE1/4,SE1/4,NE1/4	SAFETY
PEACOCK #2	MOHAVE	T23N,R14W,SEC17,SW1/4,NE1/4,NW1/4,SW1/4	SAFETY
PEACOCK NORTH #2	MOHAVE	T23N,R14W,SEC8,SE1/4,NW1/4,SE1/4	SAFETY
PILGRIM	MOHAVE	T23N,R20W,SEC13,SE1/4,NE1/4,NE1/4	PRIVATE-NO TRESPASSING
PILGRIM EAST	MOHAVE	T23N,R19W,SEC18,NE1/4,NW1/4,SW1/4	SAFETY
PILOT ROCK	MOHAVE	T12N,R19W,SEC6,NE1/4,NE1/4,NE1/4,SE1/4	SAFETY
POPE #1	MOHAVE	UTM E721370, N3957450	SAFETY
POPE #2	MOHAVE	UTM E721390, N3957510	SAFETY
POPE #4	MOHAVE	UTM E721600, N3957700	SAFETY
POPE HALL #1	MOHAVE	UTM E721870, N3957810	SAFETY
POPE HALL #4	MOHAVE	UTM E721810, N3957810	SAFETY
PORTER #3	MOHAVE	UTM E724580, N3949970	SAFETY
POTTER	MOHAVE	UTM E725890, N3947150	SAFETY
RADIO TOWER	MOHAVE	UTM E723290, N3949910	SAFETY
RANKIN RANCH	MOHAVE	T10N,R14W,SEC5,NW1/4,NW1/4	SAFETY
RED HILLS	MOHAVE	T11N,R13W,SEC7,SW1/4,NW1/4,SW1/4,NW1/4	SAFETY
RED NORSE NORTH	MOHAVE	UTM E751200, N3962900	SAFETY
RED NORSE SOUTH	MOHAVE	UTM E751190, N3962860	SAFETY
RED RATTLER	MOHAVE	UTM E749190, N3977170	SAFETY
RED TOP EAST	MOHAVE	T12N,R14W,SEC21,NW1/4,NW1/4,SW1/4	SAFETY
ROADSIDE	MOHAVE	T21N,R21W,SEC12,SW1/4,SW1/4,NW1/4	PEOPLE LIVING ON SITE
SPRING	MOHAVE	T20N,R15W,SEC2,SE1/4,NW1/4,NE1/4,NW1/4	SAFETY
TOPOCK 1 NORTH	MOHAVE	T15N,R20W,SEC6,E1/2,SW1/4,NE1/4,NW1/4	REMOTE-TIME REQUIREMENTS
TOPOCK 1 SOUTH	MOHAVE	T15N,R20W,SEC6,E1/2,SE1/4,NE1/4,NW1/4	REMOTE-TIME REQUIREMENTS
TRUXTON	MOHAVE	T24N,R14W,SEC34,NE1/4,SW1/4,SE1/4	SAFETY
TWO BIT #2	MOHAVE	UTM E721970, N3949190	SAFETY
TWO BIT #3	MOHAVE	UTM E721910, N3949160	SAFETY
TWO BIT #3	MOHAVE	UTM E721920, N3949170	SAFETY
UNKNOWN	MOHAVE	T17N,R19W,SEC9,NE1/4,NW1/4,SE1/4,SW1/4	SAFETY
UNKNOWN	MOHAVE	T17N,R19W,SEC9,E1/2,NE1/4,NW1/4,SE1/4,SW1/4	SAFETY
UNKNOWN #1	MOHAVE	T26N,R15W,SEC18,NW1/4,NE1/4,NE1/4,SW1/4	SAFETY
UNKNOWN #15 ("GEORGE'S")	MOHAVE	T13N,R11W,SEC9,SE1/4,NW1/4,NE1/4,NE1/4	PERSON LIVING ON SITE
UNKNOWN #17	MOHAVE	T14N,R15W,SEC13,SW1/4,SE1/4,SW1/4	SAFETY
UNKNOWN #18	MOHAVE	T14N,R15W,SEC14,SW1/4,NE1/4,NE1/4	SAFETY
UNKNOWN #2	MOHAVE	T16N,R20W,SEC30,NE1/4,SE1/4,NW1/4	REMOTE-TIME REQUIREMENTS
UNKNOWN #22	MOHAVE	T16N,R15W,SEC15,NW1/4,SE1/4,NE1/4	REMOTE-TIME REQUIREMENTS
UNKNOWN #24	MOHAVE	T19N,R15W,SEC7,SE1/4,SE1/4,SE1/4,SW1/4	SAFETY

Appendix 2. Mines not surveyed

MINE NAME	COUNTY	LEGAL DESCRIPTION	REASON
UNKNOWN #25 LOWER	MOHAVE	T19N,R15W,SEC18,NW1/4,NE1/4,SW1/4	SAFETY
UNKNOWN #26	MOHAVE	T19N,R15W,SEC18,SW1/4,NW1/4,SE1/4	SAFETY
UNKNOWN #4	MOHAVE	T21N,R20W,SEC36,N1/2,NW1/4,SW1/4,NE1/4	SAFETY
VAN DEEMAN #4	MOHAVE	UTM E721290, N3952930	SAFETY
WIKIEUP QUEEN RANCH	MOHAVE	T15N,R13W,SEC21,NE1/4,NE1/4SE1/4,NE1/4	ROAD GATED AT MEDUELE
YELLOW JACKET	MOHAVE	T15N,R14W,SEC11,SW1/4,SE1/4,NE1/4	ROAD BLOCKED-PRIVATE
YUCCA	MOHAVE	T15N,R20W,SEC20,NW1/4,NW1/4,NE1/4,NE1/4	SAFETY
CAMELBACK MTN	PIMA	T12S,R6W,SEC21,SE1/4,SE1/4,SE1/4	POSTED NO TRESPASSING
DARBY #1	PIMA	T12S,R6W,SEC35,NE1/4,NE1/4,NE1/4	SAFETY
DARBY WELL	PIMA	T12S,R6W,SEC35,SE1/4,SW1/4,SE1/4	POSTED NO TRESPASSING
DARBY WELL	PIMA	UTM E 0, N3578590	PERSON LIVING ON SITE
NORTH AJO #2	PIMA	T12S,R6W,SEC30,SW1/4,NW1/4,SE1/4	SAFETY
59-322	SANTA CRUZ	T24S,R16E SEE WASHINGTON CAMP SALE MAP	SAFETY
EL ORO #5	SANTA CRUZ	UTM E473200, N3476270	SAFETY
EL ORO #5A	SANTA CRUZ	UTM E473200, N3476280	SAFETY
AMERICAN SELCO	YAVAPAI	T10N,R2E,SEC18,SE1/4,NE1/4,SW1/4	SAFETY
BADGER	YAVAPAI	T8N,R9W,SEC13SW1/4,NE1/4,NW1/4	SAFETY
BLAND #3	YAVAPAI	T10N,R2E,SEC29,E1/2,SE1/4,NW1/4	SAFETY
BLUE BUCKET #1	YAVAPAI	T10N,R5W,SEC27,SW1/4,NE1/4,SW1/4,NE1/4	ACTIVE-TRAILER ON SITE
BLUE BUCKET #2	YAVAPAI	T10N,R5W,SEC27,SE1/4,NE1/4,SW1/4,NE1/4	ACTIVE-TRAILER ON SITE
BLUE SILVER	YAVAPAI	T14N,R2E,SEC31,NW1/4,NE1/4,NE1/4	PEOPLE LIVING ON SITE
BULLARD	YAVAPAI	T8N,R10W,SEC11,SW1/4,NW1/4,NE1/4	SAFETY
BUMBLE BEE #29	YAVAPAI	T10N,R2E,SEC21,E1/4,NW1/4,NW1/4,NE1/4	SAFETY
CLEATOR #12	YAVAPAI	T10N,R2E,SEC6,NE1/4,NE1/4,NW1/4	SAFETY
CLEATOR #25 NORTH	YAVAPAI	T10N,R2E,SEC7,NE1/4,NW1/4,NW1/4,SW1/4	SAFETY
CLEATOR #25 SOUTH	YAVAPAI	T10N,R2E,SEC7,SW1/4,SW1/4,NW1/4	SAFETY
CLEATOR #8	YAVAPAI	T11N,R2E,SEC34,SW1/4,NE1/4,NW1/4,SW1/4	SAFETY
CLIMAX LOWER #1,#2	YAVAPAI	T8N,R3W,SEC35,SW1/4,NW1/4,SE1/4	PEOPLE LIVING ON SITE
COLUMBIA #47	YAVAPAI	T8N,R1E,SEC28,N1/2,SE1/4,SE1/4,NE1/4	REMOTE-TIME REQUIREMENTS
COPPEROPOLIS #9	YAVAPAI	T9N,R2W,SEC25,SE1/4,NW1/4,SW1/4,SE1/4	SAFETY
CORDES JTN 8	YAVAPAI	T10N,R3E,SEC4,NE1/4,NE1/4	ROAD BLOCKED BY RANCH
DEAD JAVELINA	YAVAPAI	T8N,R4W,SEC1,NW1/4,SE1/4,SE1/4	UNABLE TO LOCATE
DEVIL'S NEST #1 LAND	YAVAPAI	T10N,R4W,SEC31,NE1/4,SW1/4,SE1/4	ACCESS THROUGH PRIVATE
DEVIL'S NEST #2 LAND	YAVAPAI	T10N,R4W,SEC31,NW1/4,NE1/4,SW1/4	ACCESS THROUGH PRIVATE
DEVIL'S NEST #3 LAND	YAVAPAI	T10N,R4W,SEC31,SE1/4,SE1/4,NW1/4	ACCESS THROUGH PRIVATE
DEVIL'S NEST #4 LAND	YAVAPAI	T10N,R4W,SEC31,S1/2,SE1/4,NE1/4	ACCESS THROUGH PRIVATE
DOBLER EAST (NOT ON MAP)	YAVAPAI	T8N,R2W,SEC6,E1/2,SW1/4,NE1/4,SE1/4	SAFETY
EMPIRE #2	YAVAPAI	T14N,R2E,SEC34,NW1/4,NE1/4,SE1/4,NW1/4	SAFETY
EXCEPTED	YAVAPAI	T9N,R9W,SEC29,NW1/4,NE1/4,NW1/4,NW1/4	SAFETY
FRENCH GULCH NORTH	YAVAPAI	T11N,R3W,SEC7,NW1/4,SW1/4,NW1/4,SW1/4	UNABLE TO LOCATE
FRENCH GULCH NORTH	YAVAPAI	T11N,R3W,SEC7,NW1/4,SE1/4,NW1/4,SW1/4	SAFETY

Appendix 2. Mines not surveyed

MINE NAME	COUNTY	LEGAL DESCRIPTION	REASON
GREAT SOUTHERN #A	YAVAPAI	T8N,R3W,SEC32,N1/2,NW1/4,NW1/4,NW1/4	SAFETY
GREAT SOUTHERN #B	YAVAPAI	T8N,R3W,SEC32,N1/2,NE1/4,NW1/4,NW1/4	SAFETY
GREAT SOUTHERN SOUTH #2	YAVAPAI	T8N,R3W,SEC32,NE1/4,SE1/4,NW1/4	SAFETY
HARD TIMES UPPER	YAVAPAI	T8N,R1E,SEC18,SW1/4,SW1/4,NE1/4	SAFETY
HASSAYAMPA LAKE	YAVAPAI	T12 1/2N,R2W,SEC35,SE1/4,SE1/4,NE1/4	SAFETY
HIDDEN TREASURE NORTH	YAVAPAI	T10N,R2E,SEC8,NW1/4,SW1/4,SW1/4,SW1/4	SAFETY
HOME STAKE	YAVAPAI	T12N,R9W,SEC21,SW1/4,SW1/4,SW1/4,SE1/4	ACTIVE-WORKERS PRESENT
HOMESTEAD	YAVAPAI	T10N,R2E,SEC18,NW1/4,SW1/4,NE1/4	SAFETY
HOWARD COPPER	YAVAPAI	T10N,R2E,SEC30,NE1/4,SW1/4,SW1/4	SAFETY
INDEPENDENCE	YAVAPAI	T8N,R2W,SEC31,NW1/4,SW1/4,NW1/4	PEOPLE LIVING ON SITE
JEFF'S WINDMILL #1	YAVAPAI	T11N,R4W,SEC12,NE1/4,NW1/4,NE1/4	SAFETY
JEFF'S WINDMILL #2	YAVAPAI	T11N,R4W,SEC12,NE1/4,NW1/4,NE1/4	SAFETY
JOHN HENRY #3	YAVAPAI	T11N,R2E,SEC22,SW1/4,NW1/4,NE1/4	SAFETY
KING SOLOMON GULCH WEST	YAVAPAI	T8N,R3W,SEC8,SE1/4,SE1/4,SE1/4,SE1/4	SAFETY
LITTLE GIANT NORTH	YAVAPAI	T9N,R9W,SEC32,SW1/4,SE1/4,NW1/4	MINE ACTIVE-ROAD GATED
LITTLE GIANT SOUTH	YAVAPAI	T9N,R9W,SEC32,NW1/4,NE1/4,SW1/4	MINE ACTIVE-ROAD GATED
LONE STAR (ACTIVE)	YAVAPAI	T9N,R2W,SEC33,NE1/4,NW1/4,SW1/4	SAFETY
LOOKOUT #1	YAVAPAI	T13N,R1E,SEC20,NW1/4,NE1/4,SE1/4,SE1/4	SAFETY
MAGGIE	YAVAPAI	T9N,R2E,SEC22,NW1/4,NW1/4	PEOPLE LIVING ON SITE
MONARCH NORTH	YAVAPAI	T7N,R3W,SEC6,NE1/4,NE1/4,NE1/4,NW1/4	SAFETY
MONARCH SOUTH	YAVAPAI	T7N,R3W,SEC6,SE1/4,NW1/4,NE1/4,NW1/4	SAFETY
MONTE CRISTO SOUTH #1	YAVAPAI	T8N,R3W,SEC4,CENTER,NW1/4,NW1/4,SE1/4	SAFETY
MONTE CRISTO SOUTH #2	YAVAPAI	T8N,R3W,SEC4,NE1/4,NW1/4,NW1/4,SE1/4	SAFETY
MUSEUM #2	YAVAPAI	T8N,R1E,SEC8	SAFETY
MYER'S #1 LAND	YAVAPAI	T9N,R4W,SEC6,SW1/4,SE1/4,SW1/4,NW1/4	ACCESS THROUGH PRIVATE
MYER'S #2 LAND	YAVAPAI	T9N,R4W,SEC6,S1/2,SE1/4,SW1/4,NW1/4	ACCESS THROUGH PRIVATE
MYER'S #3 LAND	YAVAPAI	T9N,R4W,SEC6,NW1/4,SE1/4,NW1/4	ACCESS THROUGH PRIVATE
MYER'S #4 LAND	YAVAPAI	T9N,R4W,SEC6,NW1/4,SW1/4,NW1/4,NE1/4	ACCESS THROUGH PRIVATE
McKINZIE	YAVAPAI	T9N,R2W,SEC17,NW1/4,NE1/4,SE1/4,SE1/4	SAFETY
NELLIE-MEDA NORTH	YAVAPAI	T8N,R9W,SEC19,SE1/4,SW1/4,NE1/4	SAFETY
NELLIE-MEDA SOUTH	YAVAPAI	T8N,R9W,SEC19,SE1/4,SW1/4,SE1/4	SAFETY
OLD CONGRESS CEMETERY	YAVAPAI	T10N,R6W,SEC23,NW1/4,NW1/4,SE1/4	SAFETY
PLACERITA GULCH	YAVAPAI	T11N,R4W,SEC13,NE1/4,NW1/4,SE1/4	ROAD BLOCKED BY CABLE
PLACERITA GULCH NORTH	YAVAPAI	T11N,R4W,SEC13,NE1/4,SE1/4,NE1/4	SAFETY
POLAND-WALKER	YAVAPAI	T12 1/2N,R1W,SEC28,SE1/4,SW1/4,NW1/4,SE1/4	SAFETY
RED	YAVAPAI	T10N,R5W,SEC25,NE1/4,NW1/4,NW1/4,SW1/4	ACTIVE-PRIVATE
RED ROCK LOWER	YAVAPAI	T12 1/2N,R1W,SEC26,NE1/4,NE1/4,NE1/4	SAFETY
RED ROCK UPPER	YAVAPAI	T12 1/2N,R1W,SEC26,NE1/4,NE1/4,NE1/4	SAFETY
REPUBLICAN NORTH	YAVAPAI	T10N,R2E,SEC29,SE1/4,SE1/4,NE1/4	PEOPLE LIVING ON SITE
ROVER NORTH (NOT ON MAP)	YAVAPAI	T8N,R5W,SEC13,NE1/4,NE1/4,NE1/4	SAFETY
SILVER DOLLAR NORTH	YAVAPAI	T9N,R2W,SEC11,NE1/4,SE1/4,SE1/4	SAFETY
SILVER DOLLAR SOUTH	YAVAPAI	T9N,R2W,SEC11,NE1/4,SE1/4,SE1/4	SAFETY

Appendix 2. Mines not surveyed

MINE NAME	COUNTY	LEGAL DESCRIPTION	REASON
SINOSKI LAND	YAVAPAI	T9N,R4W,SEC10,SE1/4,SE1/4,SE1/4,SE1/4	ACCESS THROUGH PRIVATE
SINOSKI EAST LAND	YAVAPAI	T9N,R4W,SEC11,NW1/4,SW1/4,NE1/4,SW1/4	ACCESS THROUGH PRIVATE
SOURGRASS #1	YAVAPAI	T11N,R4W,SEC23,SW1/4,NW1/4,SW1/4	SAFETY
SOURGRASS #3	YAVAPAI	T11N,R4W,SEC23,NE1/4,NW1/4,SW1/4	SAFETY
SUNSET UNCROSSABLE	YAVAPAI	T12N,R9W,SEC29,NE1/4,SW1/4,NW1/4,NE1/4	SANTA MARIA RIVER
TIP TOP #3	YAVAPAI	T8N,R1E,SEC10,S1/2,NW1/4,SW1/4,NE1/4	SAFETY
TURTLE	YAVAPAI	T9N,R3W,SEC31SW1/4,NW1/4,SE1/4,SW1/4	SAFETY
UNIDA #4	YAVAPAI	352540, 3768910	SAFETY
UPPER RR TANK WATERS UNCROSSABLE	YAVAPAI	T11 1/2N,R1E,SEC24,SW1/4,SE1/4,NE1/4	SAFETY
WATERS UNCROSSABLE	YAVAPAI	T12N,R9W,SEC29,S1/2,SE1/4,NW1/4,NE1/4NW1/4	SANTA MARIA RIVER
WEEPAH UNCROSSABLE	YAVAPAI	T12N,R9W,SEC21,SE1/4,NW1/4,SW1/4	SANTA MARIA RIVER
WHIPSHAW CREEK	YAVAPAI	T8N,R2W,SEC7,E1/2,NE1/4,NW1/4,SW1/4	ACTIVE-TRAILER ON SITE
WHIPSHAW CREEK #1	YAVAPAI	T8N,R2W,SEC7,NE1/4,SE1/4,NW1/4,SW1/4	ACTIVE-TRAILER ON SITE
WHIPSHAW CREEK #2	YAVAPAI	T8N,R2W,SEC7,SE1/4,NE1/4,NW1/4,SW1/4	ACTIVE-TRAILER ON SITE
COLORADO #1	YUMA	UTM E764590, N3655220	SAFETY
LOS FLORES #4	YUMA	UTM 744590, 3630250	SAFETY
SADDLE NORTH	YUMA	T7S,R21W,SEC26,NW1/4,NW1/4,SE1/4,SW1/4	SAFETY