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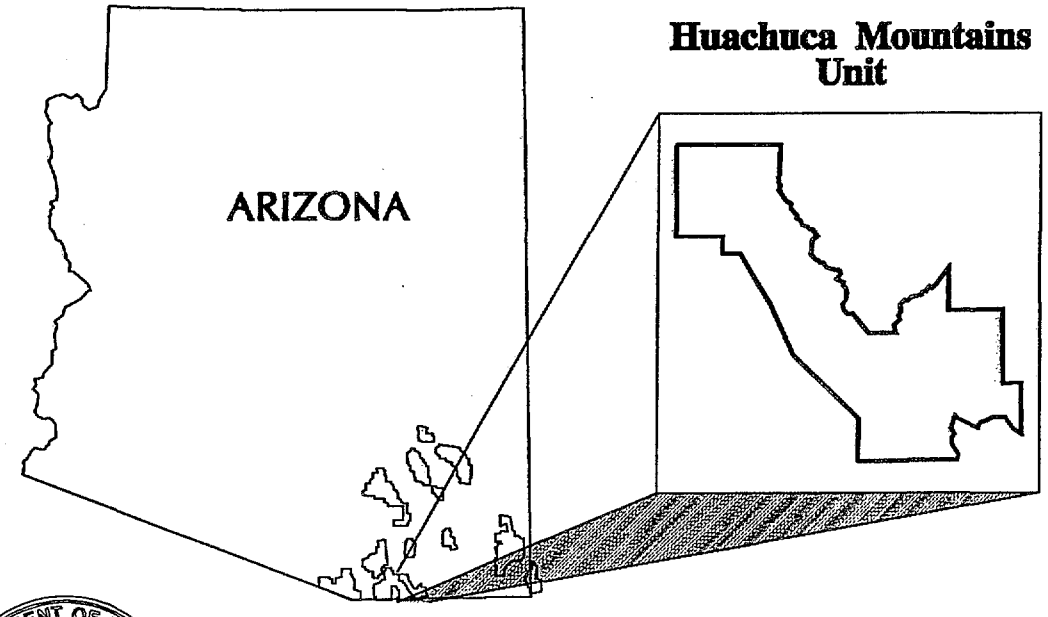
MINERAL APPRAISAL OF CORONADO NATIONAL FOREST, PART 8

Huachuca Mountains Unit
Cochise and Santa Cruz Counties, Arizona



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Between 1988 and 1992, the U.S. Bureau of Mines studied the mineral resources of the Coronado National Forest to appraise and determine types and locations of deposits that could be mined economically, both under current conditions and in the foreseeable future. The study included a literature search and a comprehensive field examination to find, examine, and inventory any mine or prospect sites. This report covers the work done in the Huachuca Mountains unit of the Forest. None of the mineralized areas in the study area have been identified as containing economic resources. One was identified as containing a marginally economic resource of gold-bearing silica flux. Four other mineral occurrences might contain base metal resources. Limited access into many of the underground workings precluded the collection of sufficient information for resource determination. Sites not containing economic quantities of gold and/or copper are not likely to be developed in the near future. Much of the study area is in the Miller Peak Wilderness Area or is close to other recreational areas, and is, therefore, effectively closed to mining activity. Only limited future mining activity is likely in the study area, principally at the few active unpatented mining claims.

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MINERAL APPRAISAL OF CORONADO NATIONAL FOREST

PART 8: HUACHUCA MOUNTAINS UNIT, COCHISE AND SANTA CRUZ COUNTIES, ARIZONA

by

Steven E. Tuftin

and

Robert C. Armstrong

MLA 1-94
1994

Intermountain Field Operations Center,
Denver, Colorado

UNITED STATES DEPARTMENT OF THE INTERIOR
Bruce Babbit, Secretary

BUREAU OF MINES
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PREFACE

A January 1987, Interagency Agreement between the U.S. Bureau of Mines, U.S. Geological Survey, and U.S. Forest Service describes the purpose, authority, and program operation for the forest-wide studies. The program is intended to assist the U.S. Forest Service in incorporating mineral resource data in forest plans as specified by the National Forest Management Act (1976) and Title 36, Chapter 2, Part 219, Code of Federal Regulations, and to augment the USBM's mineral resource database so that it can analyze and make available minerals information as required by the National Materials and Minerals Policy, Research and Development Act (1980). This report is based on available data from literature and a field investigation.

This open-file report summarizes the results of part of a Bureau of Mines forest-wide study of the Coronado National Forest. The report is preliminary and has not been edited or reviewed for conformity with the Bureau of Mines editorial standards. This study was conducted by personnel from the Intermountain Field Operations Center, Building 20, Denver, Colorado, 80225.

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UNIT OF MEASURE ABBREVIATIONS USED IN THIS REPORT

ft	foot
ft^3	cubic feet
in.	inch
mi	mile
ppb	parts per billion
ppm	parts per million
%	per cent
lb	pound
st	short ton, 2,000 pounds
stu	short ton units of WO_3, 20 lb
oz	troy ounce
oz/st	troy ounce per short ton

MINERAL APPRAISAL OF THE CORONADO NATIONAL FOREST
PART 8: HUACHUCA MOUNTAINS UNIT,
COCHISE AND SANTA CRUZ COUNTIES, ARIZONA

by

Steven E. Tuftin and Robert C. Armstrong,
U.S. Bureau of Mines.

SUMMARY

Between 1988 and 1992, the Bureau of Mines studied the mineral resources of the Coronado National Forest to appraise and determine types and locations of deposits that could be mined economically, both under current conditions and in the foreseeable future. The study included a literature search and a comprehensive field examination to find, examine, and inventory any mine or prospect sites. This report covers the work done in the Huachuca Mountains management unit of the Forest.

None of the mineralized areas in the Huachuca Mountains unit have been identified as containing economic resources. One was identified as containing a marginally economic resource of gold-bearing silica flux. Four other mineral occurrences might contain base metal resources. Limited access into many of the underground workings precluded the collection of sufficient information for resource determination, and inference that a locality contains no mineral resources should be read with caution; limitations in the informational database often precluded adequate assessment.

Only limited future exploration or mining activity is likely in the area, as no economic resources were identified. Given the current low value of metals such as silver, lead, zinc, manganese, and tungsten, areas containing these commodities are presently unattractive for development. Locations not containing economic

quantities of gold and/or copper are not likely to be developed in the near future. Also, much of the study area is in the Miller Peak Wilderness Area, and is therefore effectively closed to minerals exploration activity. Additional parts of the study area are in proximity to other popular recreational areas, which would further inhibit development. However, some unpatented mining claims in the study area are active, and limited activity is likely to continue at these locations.

INTRODUCTION

For purposes of the Bureau of Mines field investigations, the Coronado National Forest is divided into 13 study units (fig. 1). The Huachuca Mountains unit (Unit 8) is located in southeastern Arizona, west of the city of Sierra Vista.

The Coronado National Forest Huachuca management unit encompasses 78,188 acres, or about 4.3% of the total in the Coronado National Forest. Of that, roughly 63,308 acres are in Cochise county, and 14,880 acres are in Santa Cruz county.

The term "Huachuca Mountains unit" refers to the area of the Huachuca Mountains which lies within the Forest boundary. "Huachuca Mountains" refers to the entire mountain range. "Military Reservation" refers to the Fort Huachuca Military Reservation, "Wilderness Area" refers to the Miller Peak Wilderness area, and "National Memorial" refers to the Coronado National Memorial.

Geographic Setting

The Huachuca Mountains unit is located in southeastern Arizona, and is partially bounded by Mexico on the south. Elevations range from about 5,000 ft to over 9,400 ft. Miller Peak is the highest point, at 9,466 ft. Other prominent features are Carr Peak, Granite Peak, and Montezuma Pass. The terrain is of moderate to rugged relief. Vegetation is moderate to heavy, typical of the intermediate to higher mountain areas of southern Arizona. Access to the Huachuca Mountains unit is through unimproved roads and trails which connect with state routes 83 from Sonoita and 92 from Sierra Vista (plate 1.).

Geologic setting and its relation to mineral development

Precambrian through Tertiary age rocks are exposed in the Huachuca Mountains (Hayes and Raup, 1968; plate 2). Precambrian granitic rocks are exposed in the eastern front of the mountains. They are overlain by Paleozoic sedimentary, chiefly carbonate, rocks. Triassic- to Jurassic-age siliceous volcanic rocks, of intracauldera origin, overlie the Paleozoic rocks (Lipman and Hagstrum, 1992, p. 32-33). Blocks of the Paleozoic carbonates, contained within the siliceous volcanic rocks, reach dimensions of up to 1.2 mi. The blocks often contain pyrometosomatic mineralization. The Jurassic Huachuca Quartz Monzonite pluton trends northwest through the center of the mountain range, and intrudes the siliceous volcanic rocks and the Paleozoic sediments. Cretaceous sedimentary and volcanic rocks form the uppermost units in the study area. Tertiary-age rhyolitic dikes and sills intrude many of the units, particularly the Cretaceous sediments.

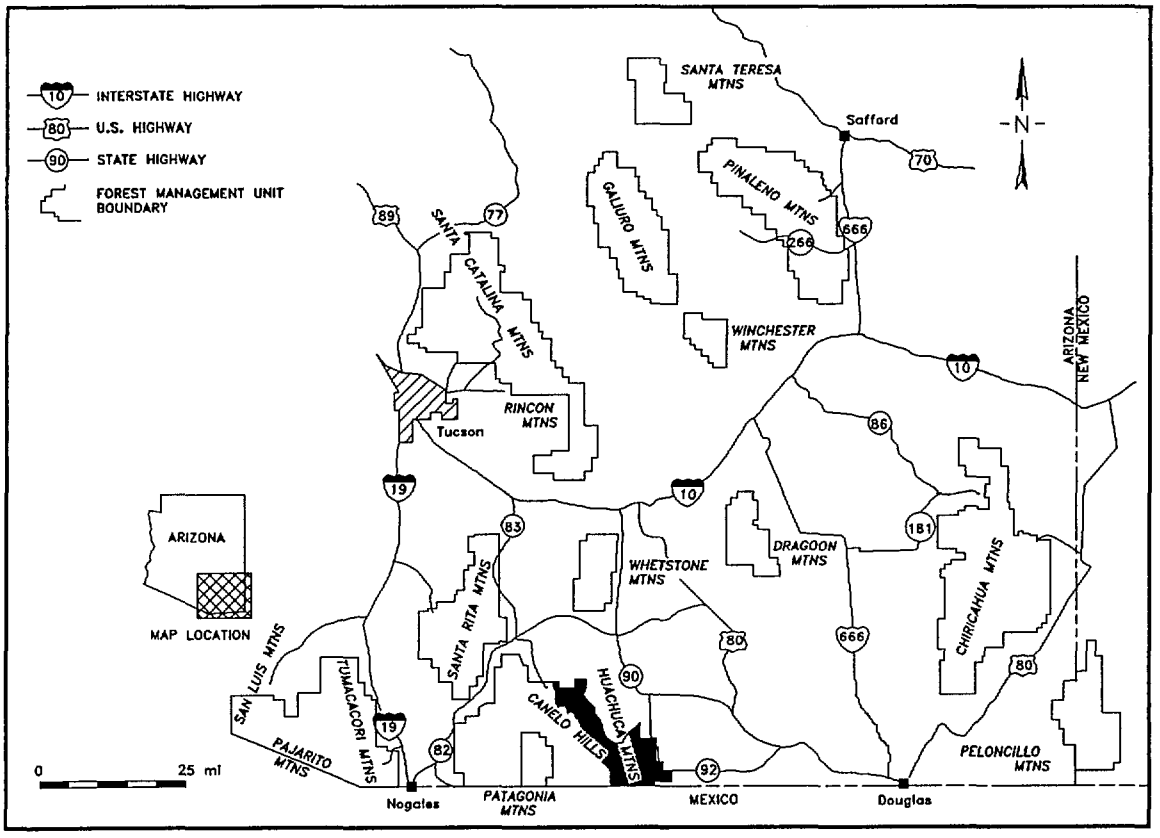

Figure 1.--Location map of the Huachuca Mountains Unit, Cochise and Santa Cruz Counties, Arizona.

The Huachuca Mountains have been greatly deformed by folding and faulting, mostly after the Cretaceous period. Several thrust faults, probably pre-Triassic in age, occur in the Precambrian granites of the eastern range front. Quartz veins in the thrust-faulted Precambrian granite and Paleozoic sediments have produced tungsten and precious metals.

Pyrometasomatic mineralization of Paleozoic carbonate blocks ocurred due to the intrusion of the Huachuca Quartz Monzonite pluton. Some such mineralization may also have ocurred due to rhyolitic intrusions in the areas west and north of Sutherland Peak. Commodities found in these mineralized areas include silver, lead, copper, zinc, manganese, and tungsten.

The Huachuca Quartz Monzonite contains Tertiary-age gold-pyrite bearing quartz veins. Gold-bearing placers are associated with these veins.

Several mines and prospects have explored quartz veins associated with Tertiary-age dikes and sills intruding Cretaceous sediments, including the Cintura and Morita Formations of the Bisbee Group, and Cretaceous andesitic lavas. Blocks of Paleozoic carbonates are contained within the andesitic lavas, and replacement mineralization occurs where the blocks are intruded by the dikes and sills. These veins and replacement bodies have yielded copper, lead, and gold.

Mining history and past production

Mineral exploration and production have occurred in the Huachuca Mountains and surrounding area since the late 1800's. Mining activity increased after Apache Indian raids were curbed by the establishment of Fort Huachuca in

1877. The mining district in this area has been called by various names, including Hartford, Huachuca, Huachuca Mountains, and West Huachuca.

Three metallic mineral districts delineated by Keith and others (1983, p. 10, 12, 13, and map) are within the Huachuca Mountains unit: the Hartford district, the Reef district, and the Parker Canyon district (fig. 2). They divided the historic Hartford mining district into the Hartford and Reef mineral districts, grouping areas of tungsten production into the Reef district and other areas into the Hartford district. The Hartford and Parker Canyon districts were classified as containing lead-zinc-silver vein and replacement deposits, of early Tertiary and late Cretaceous age, respectively. The Reef district was classified as containing tungsten, occurring as skarns, veins, or pegmatites, with or without lithium or beryllium minerals, of early Tertiary age.

The Parker Canyon district is located southwest of Parker Canyon Lake (fig. 2). Since no mines, prospects, or mineral occurrences were found mentioned in the literature, the basis for the establishment of the district as well as the source(s) of production for the Parker Canyon mineral district are unknown.

The Hartford mineral district produced lead, zinc, copper, silver, and gold, from the late 1800's to the 1960's. The Reef mineral district produced minor amounts of precious and base-metals, mostly in the early 1900's. Production shifted to tungsten during World War I. Production from these districts is given in table 1.

Literature and field investigations indicate that some mines with past tungsten production are either in the Hartford district or are outside any district as defined by Keith. To accommodate all tungsten producing mines within the Reef

district, and mines producing other primary commodities in the Hartford district, the mineral districts have been redefined by the authors. To avoid confusion, the redefined districts are referred to as the New Hartford and the New Reef districts (fig. 3). Further discussion of production, resources, etc., will refer to these redefined districts. Recorded production for the New Hartford and New Reef mineral districts is summarized in tables 2 and 3.

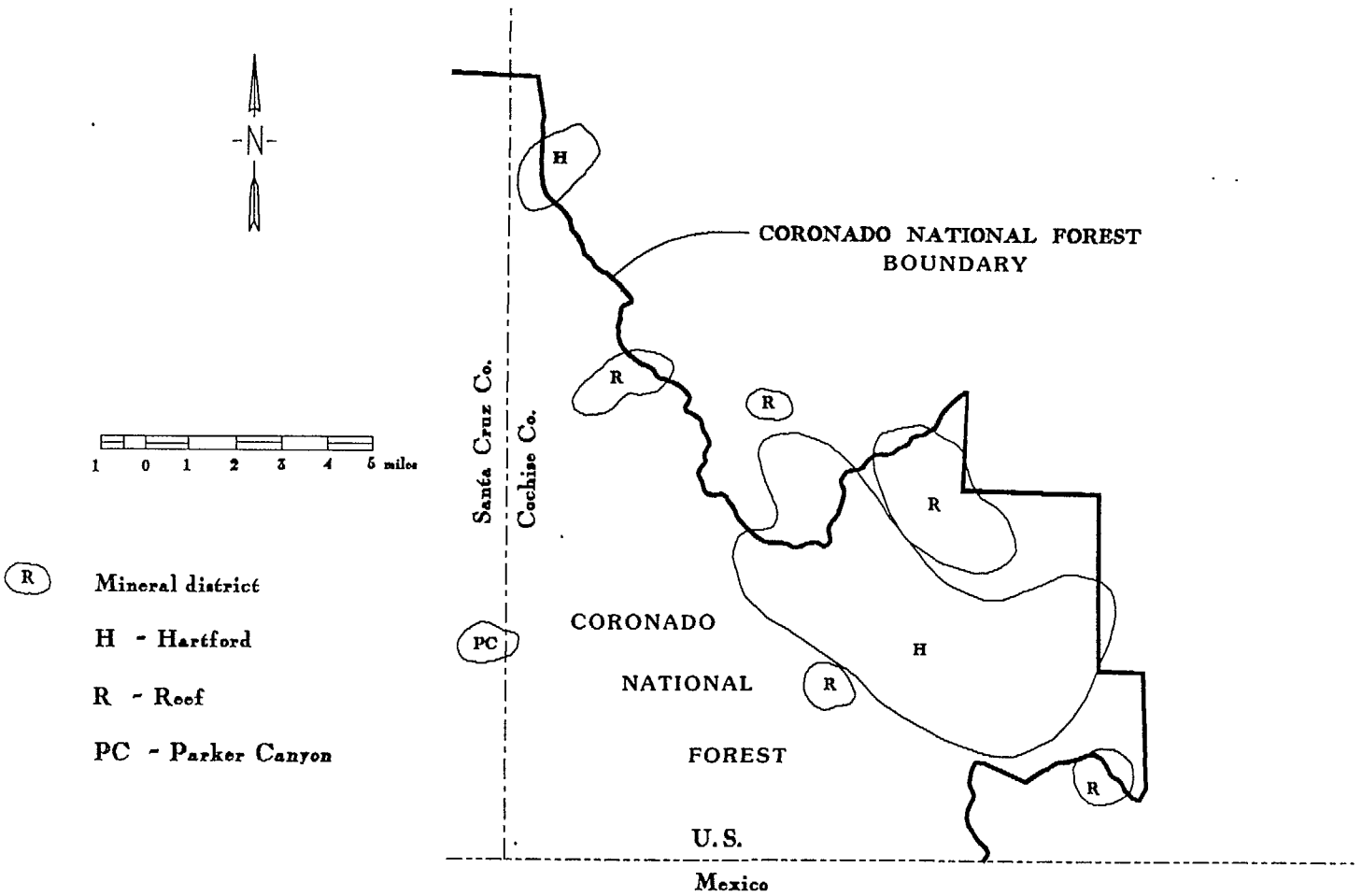

Figure 2.--Locations of Hartford, Reef, and Parker Canyon mineral districts (after Keith and others, 1983, map).

Table 1.--Production by metallic mineral district in the Huachuca Mountains unit. (Keith and others, 1983, p. 30-31, 40-41, 44-45; Keith, 1973, p. 64-67).

[--, data not available or not applicable; lb, thousands of pounds]

District	Year(s)	Cu (lb)	Pb (lb)	Zn (lb)	Au (oz)	Ag (oz)	Mn (lb)	W (stu)
Hartford	1897-1963	180	1,193	746	400	60,000	28.5	--
Reef	1900-1950s	--	--	--	--	--	--	12,350
Parker Canyon	1933	0.2	0.5	--	<100	100	--	--

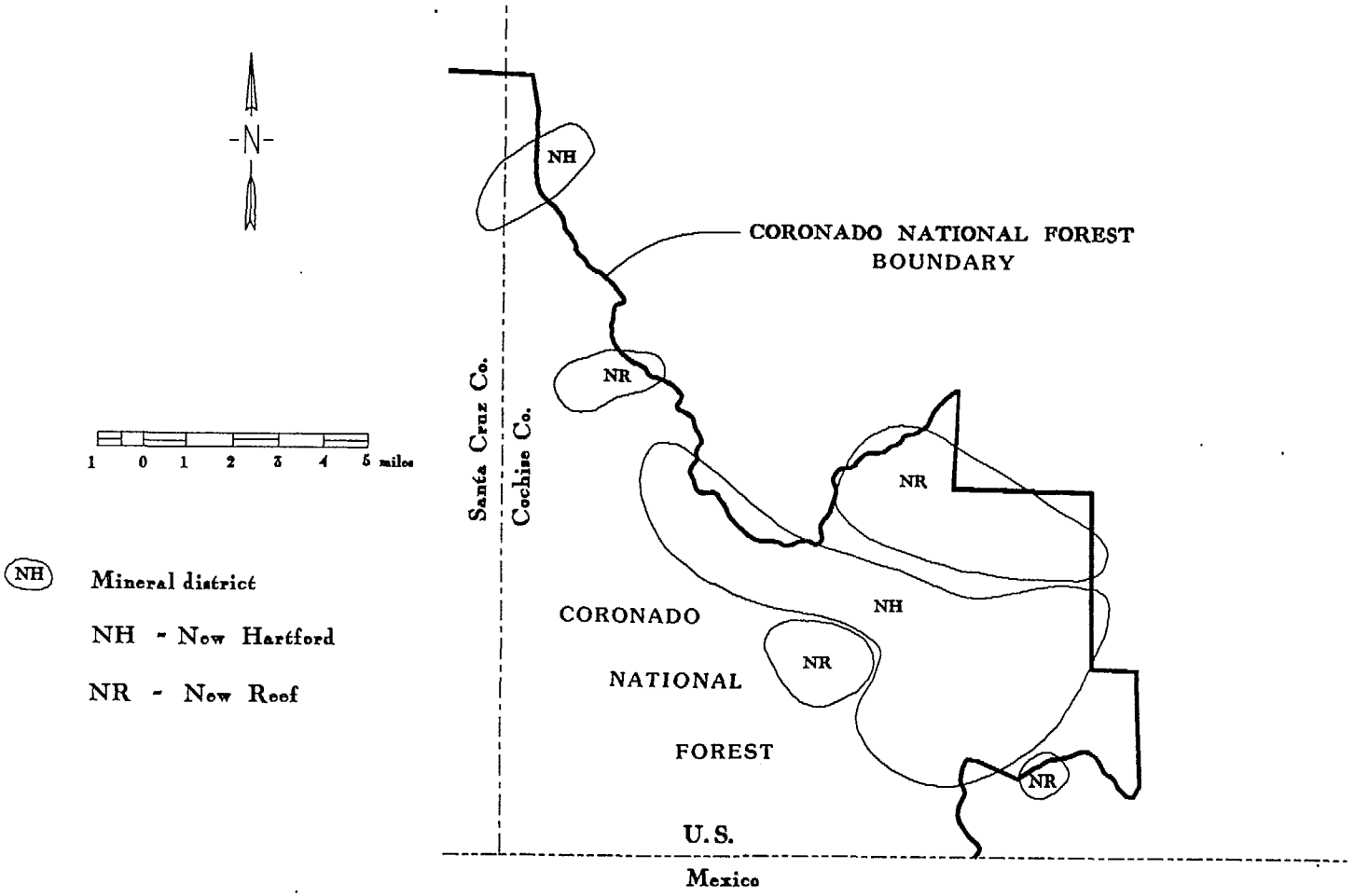

Figure 3.--Locations of New Hartford and New Reef mineral districts.

Table 2.--Reported production for individual mines in the New Hartford mineral district.
[--, data not available or not applicable]
[Production data taken from references given in individual mine summaries; see appendix D]

Mine	Year(s)	Total Ore	Copper (lb)	Gold (oz)	Silver (oz)	Other
Peterson Mine	1916	About 30 st unspecified ore	--	--	--	--
Eureka Mine	1900-1934	--	unknown amount	--	$50,000 value	470,000 lb lead
Copper Glance Group	1900-1934	several hundred st	300,000	$4,000 value	--	--
Hamburg Group	circa 1900-1914	up to 100 st of unspecified ore	--	--	--	--
Power Claim	1917	383 st lead ore, 20 st manganese ore	--	--	--	--
Armistice Group	1940-1944	681 st of lead and lead-silver ore	--	--	--	--
	1948-1949	189 st lead ore	--	--	--	--
Lutz Tunnel	1910	test lots of unspecified ore	--	--	--	--
Cave Mines	1946-1947	565 st lead-zinc, lead-zinc-copper ore.	--	--	--	--
Boston, Samson, Way Up claims	1937	90 st of unspecified ore	--	--	--	--
Gold Placers	1919	--	--	50	--	--
	1932-1934	--	--	200	--	--

Table 3.--Reported production for individual mines in the New Reef mineral district.

[--, data not available or not applicable]
[Production data taken from references given in individual mine summaries; see appendix D]

Mine	Year(s)	Ore Produced	WO_3 concentrates (stu)	Gold (oz)	Other
Arrow Group	early 1900s	--	--	minor	--
	before 1950	A few st of scheelite	--	--	--
	1950-1960	1 st of 5% WO^3 ore	--	--	--
James Group	1918	450 st tungsten ore	--	--	--
	1945	a small amount of lead ore	--	--	--
	1946-1947	--	about 200, approx. 60% WO_3.	--	--
	1947	25 st lead ore	--	--	--
	1953	200-300 st tungsten ore at greater than 1% WO_3	--	--	--
Lucky Strike Mine	early 1900s	some gold ore	--	--	--
	during WWI	considerable tungsten ore	--	--	--
	1935-1938	minor amount tungsten ore	--	--	--
	1953	--	about 4.5	--	--

Table 3.--Recorded production for individual mines in the New Reef district, continued.

Mine	Year(s)	Ore Produced	WO_3 concentrates (stu)	Gold (oz)	Other
Tungsten Reef Mine	1870s and early 1900s	minor gold and silver ore	--	--	--
	1916-1918, 1934-1942, 1955-1956	--	15,900, averaging 71.3% WO_3.	--	--
	1953-1954	--	--	--	891 st sized quartz
Morgan Mine	early 1900s, 1939	unknown amount of lode and placer gold-silver ore	--	--	--
Western Tungsten Mine	early 1900s	unknown amount of silver-lead and copper carbonate ore	--	--	--
	during WWI	unknown amount of high-grade silver and copper ore	--	--	--
Van Horn	during WWI	minor amounts of tungsten ore.	--	--	--
	1943-1945	concentrates are from ore estimated at 4-5% WO_3.	25-30	--	--

Table 3.--Recorded production for individual mines in the New Reef district, continued.

Mine	Year(s)	Ore Produced	WO_3 concentrates (stu)	Gold (oz)	Other
Harper Group	early 1900's	minor gold-silver ore.	--	--	--
	1941	--	several hundred	--	--
	unknown	--	--	--	12 st vuggy quartz
Wakefield Mine	1896-1940	At least 100 st gold-silver ore.	--	--	--
	1943-1944	About 10 st tungsten ore.	10	--	--

Five mines, adjacent to the Huachuca Mountains unit, have had past base metals or tungsten production. They are on federal land which is currently closed to mining (either the Coronado National Memorial or Ft. Huachuca Military Reservation, plate 1). They are the Alto Mine, the Manila Mine, the State of Texas Mine, the Tracy Mine, and the Zaleski Mine.

Gold placer operations have occurred in Ash Canyon and South Fork Ash Canyon since the early part of the century.

Detailed information on mines and prospects in the study area, and the five mines adjacent to the study area, is given in appendix D. All gold placer claims are grouped under the name Gold Placers.

Previous Investigations

In 1984, a preliminary mineral resource assessment of the proposed Miller Peak Wilderness Area was performed by the U.S. Geological Survey (Ludington, 1984, p. 1). The Wilderness Area covers about 22,000 acres south of the Fort Huachuca Military Reservation (plate 1). The study was based entirely on a literature review; no geochemical, geophysical, or mineral field studies of the area were conducted (Ludington, 1984, p. 1). Results of the study are given in the Mineral Appraisal section.

In 1988, a preliminary mineral resource assessment of the Tucson and Nogales $1^{\circ} \times 2^{\circ}$ Quadrangles was performed (Peterson, 1990, p. 1), based on geological, geochemical, geophysical, and mineral data previously gathered and available. Results of the study are given in the Mineral Appraisal section.

Methods of investigation

The present investigation included research of geologic and mining literature, including the Arizona Department of Mines and Mineral Resources (ADMMR) "miscellaneous information" files. BLM mining claim records were also examined; there are 12 current unpatented mining claims in the study area.

U.S. Forest Service 1:24,000 scale land-use maps and U.S. Geological Survey 7 1/2 minute 1:24,000 scale topographic maps were used to determine Forest and private land boundaries.

Field examination of mines, prospects, and mineralized outcrops, and laboratory analyses of rock-chip, select, and grab samples, were also conducted. Reconnaissance field work of 1989 was followed by detailed field work in 1991. A total of 269 rock-chip, select, and grab samples were taken within the Forest boundary (plate 1). Each sample was analyzed by a) 34 element instrumental neutron activation analysis (INAA) performed by Bondar-Clegg, Inc; and b) 32 element inductively-coupled plasma spectrometry (ICP) performed by Chemex Labs, Inc. Results of the analyses are given in appendices A and B. Sample descriptions are given in appendix C.

MINERAL APPRAISAL

In many cases, literature research and field work have not sufficed to define mineral resources. Records of the commodities and tonnages produced from many properties are incomplete or unavailable. Many of the underground workings were

inaccessible, and only surface exposures of mineralization could be examined. At select locations, there is sufficient information to determine whether a resource may be present.

Mineral resources are discussed for the New Hartford and the New Reef mineral districts. Mineral commodities reported to be present, or identified as being present during this study, include lead, zinc, copper, silver, gold, tungsten, manganese, and silica flux.

Note: anomalous element concentrations typically follow a log-normal distribution, therefore grades given below are the log-normal mean of metal concentrations in samples taken.

New Hartford mineral district

One area, the Tako #9 claim, has been identified as containing marginally economic mineral resources. Two other locations, the Peterson Mine and the Power claim, contain mineral occurrences with indications of undiscovered resources, and are discussed in detail below.

Other sites contain either mineral occurrences only or little to no mineralization. These include the Eureka Mine, the Copper Glance Group, the Hamburg Group, the Miller Canyon prospect, the Nellie James prospect, the Armistice Group, the Baumkirchner Mine, the Lutz tunnel, the Samson claim, the Cave Mines, the Oversite Mine, the Carr Ridge Mines, and unnamed workings. Tables 4 and 5 (p. 183 and 186, respectively) summarize mineral appraisal information on these workings.

Tako #9 claim

Workings at the Tako #9 claim include a 130 ft long open-cut, an upper adit of at least 310 ft, and a lower adit 500 ft long (fig. 4). They expose a quartz vein which has an average strike of N. 29° W. and an average dip of 57° SW. The vein varies in thickness from 27 to 50 in., and is exposed for 75 ft along strike. Numerous slickensides parallel to the strike are present in the wallrock. The vein is offset by several faults. The quartz vein contains disseminated sphalerite and chalcopyrite, is locally stained by iron oxide, and is hosted in Cretaceous Morita Formation clastic sediments.

Rock-chip samples HU149-HU151, HU153-HU154, HU156, and HU158-HU160 were collected from the quartz vein in the open cut. Gold concentrations range from 1,510 to about 21,600 ppb (0.04 to 0.630 oz/st), averaging 0.18 oz/st (appendix A); silver concentrations range from 14.8 to 89.6 ppm, averaging 32.7 ppm (appendix B). Copper, lead, zinc, bismuth, and cadmium are geochemically anomalous in select samples (appendices A and B). The highest metal concentrations are in the upper exposed part of the quartz vein.

Rock-chip samples HU148, HU152, HU155, HU157, HU161, and HU162 were collected from the siltstone/sandstone wallrock adjacent to the quartz vein. Gold and silver are present in trace amounts only; other metal values mentioned for the quartz vein samples are present in much smaller amounts.

The upper Tako #9 adit intersects the quartz vein 40 ft from the portal in the initial drift (fig. 5). The main drift of the adit generally follows a 1 to 3.5 ft quartz vein, but in the northwest part of the mine, the drift follows an unmineralized fault. Another drift follows a northeast-striking mineralized quartz vein which is exposed

for about 40 ft before it is cut off by a fault.

Rock-chip samples HU163-HU172 were taken in the upper adit. Gold values ranged from 25 to 1,940 ppb (appendix A). Other metals present in the cut are found in trace to minor amounts.

The lower Tako #9 adit includes a northeast-trending crosscut about 260 ft long, and about 430 ft of drifts along a northwest-trending fault and accompanying quartz vein (fig. 6).

The fault and quartz vein intersect the crosscut at about 90 ft from the portal. The quartz vein generally ranges between 2 and 4 ft thick. Fifteen rock-chip samples (HU173-HU187) were taken across the fault and vein system in these drifts.

Gold content of the samples taken in the lower Tako #9 adit is low (320 ppb maximum, appendix A). Other metals are similarly low, although HU173 and HU174 have somewhat more than 2,000 ppm zinc (appendix B). Samples HU181 and HU186 had 10 ppm and 5 ppm mercury, respectively (appendix B).

The Tako #9 quartz vein is estimated to extend 500 ft along strike, 160 ft down dip, and has an average thickness of 3 ft. The tonnage of vein material is estimated at 20,000 st.

A marginally economic resource of precious metal-bearing silica flux exists at the Tako #9 claim. Using $330/oz for gold and $3.50/oz for silver, with a smelter paying 85% of these prices, the in situ value of the resource is somewhat under $1.1 million, or $53/st. An increase in the price of gold and silver, or greater than estimated volume or grade of mineralization, could make this an economic deposit.

See appendix D, p. 110 for a complete summary.

Peterson Mine

Of a reported 700 ft of underground workings (Svacina, 1941, p. 1), one 80 ft adit was found and sampled (fig. 7). The adit drifts on a quartz vein hosted in a very fine grained dike. The quartz vein ranges from 3 - 16 in. thick; in many places the vein is split, with silicified andesite country rock between quartz veins. It strikes N. 18° W., has an average dip of 31° SW., and hosts fine, disseminated chalcopyrite. The adit is near the top of a ridge, and the maximum exposed lateral extent of the vein is 200 ft.

Rock-chip samples HU012 to HU023 were taken at the Peterson Mine. All of the samples collected from the quartz vein contain gold, silver, and copper. Gold concentrations range from 75 to about 30,500 ppb (0.890 oz/st), averaging 0.03 oz/st (appendix A); silver concentrations range from 13.8 ppm (0.4 oz/st) to 48.0 oz/st, averaging 3.64 oz/st, and copper from 5,170 ppm (0.5%) to 10.1%, averaging 2.34% (appendix B). Samples HU019 and HU016 have 600 and 450 ppm tungsten, respectively.

Based on field work, 480 st of mineralized material is indicated or inferred. This is assuming an average vein thickness of 0.5 ft, a strike length of 200 ft, a length along dip of 60 ft, and deducting an estimated 30 st of previously mined volume.

Although the exposed mineralized body is small, undiscovered mineral resources of gold, silver and copper in the area are suggested. The presence of a strong local fault (traceable for almost a mile to the northwest), and very fine grained granodiorite dikes, suggests a favorable environment for similar metal-carrying quartz veins in a zone extending to the northwest of the sampled adit.

Svacina (1941, p. 1-4) also asserts that significant base- and precious metal mineralization occurs elsewhere in the area. Further, the 700 ft of reported workings indicate significant historic interest in the property, although no historic production figures are available.

See appendix D, p. 74 for a complete summary.

Power claim

About 510 ft of underground workings, as well as a 20 ft deep open pit, were reported by Farnham and others (1961, p. 41); one 350 ft adit was found and sampled. In this adit, lens-shaped mineralized bodies 1 - 5 ft in length occur in 5 - 10 ft wide shear zones striking N. 50° W and dipping 72° SW. Mineralization is argentiferous pyrolusite, wad, limonite, and hematite.

Sample HU098 is a rock-chip sample in a shear zone, at the portal of the caved adit, which strikes northwest and dips steeply northeast. The analyses show 32.4 oz/st silver, 3,414 ppm copper, greater than 1.0% manganese, greater than 1% lead, 2,160 ppm antimony (appendix B); and 480 ppm cadmium and greater than 2.0% zinc (appendix A).

Samples HU099-HU109 are rock-chip samples taken in mineralized shear zones in the open adit (fig. 8). Manganese oxide and iron oxide mineralization is strong and contains 7.0 - 193.4 ppm silver, averaging 10.3 ppm; 3,035 to greater than 10,000 ppm manganese, averaging over 7,700 ppm (appendix B); and 240 to greater than 20,000 ppm zinc, averaging over 3,600 ppm (appendix A). One 40 ft shoot near the portal (sampled by HU100 through HU102) had average concentrations of 4.67 oz/st silver, greater than 1.7% zinc, greater than 0.39% lead, and 136 ppm cadmium.

The full extent of the mineralized body is difficult to determine from field work. Data on the second adit and other historical workings in the area was unavailable. Manganiferous mineralization is inferred to be present throughout an area of about 200 by 500 ft, with a good possibility of undiscovered resources of silver, lead, zinc, and/or cadmium contained in localized shoots.

See appendix D, p. 96 for a complete summary.

Anticipated future activity

The Tako #9 claim is current, and recent mining activity has taken place. It is likely that at least intermittent mining activity will continue. The Peterson Mine is on patented mining claims; future activity might be expected if the prices of silver and copper rise, and if a larger volume of mineralized material is discovered. Although no activity is expected at the Power claim, it would be necessary to determine the actual grade of manganese for a more accurate assessment. However, the Power claim workings are within the Miller Peak Wilderness Area, effectively prohibiting future mining activity.

Current unpatented lode and placer claims are also located in the vicinity of the Armistice Group claims, in the lower Lutz and South Ash Fork Canyons, and near the Way Up claim. Current activity there is unknown, but future activity, consisting of at least assessment work, is likely.

New Reef mineral district

No areas were identified as containing mineral resources in the New Reef mineral district. Two areas, the James Group and the Tungsten Reef Mine, have

been identified as containing mineral occurrences with indications of undiscovered resources. Other mineralized areas and areas of past exploration were sampled, but no resources were identified there. These include the Arrow Group, the Lucky Strike Mine, the Thomas Tungsten claims, the Pleasant View claims, the Huachuca claims, the Morgan Mine, the Western Tungsten Mine, the Van Horn Mine, the Harper Mine, the Wakefield Mine, and unnamed workings. Tables 6 and 7 summarize mineral appraisal information on these sites.

James Group

The main adit in the James Group, probably the Pomona Mine, was found to be inaccessible in 1991. An open cut with a 60 ft adit was found (fig. 9); the adit is driven on a 3.5 - 6 ft wide silicified structure. Grab sample HU050, and rock-chip samples HU051 and HU052 were taken in the cut, and rock-chip samples HU053 - HU059 from the silicified structure. The analyses show most of these, samples to contain high amounts of lead (894 to greater than 10,000 ppm, averaging greater than 0.39%, appendix B), zinc (3,000 to greater than 20,000 ppm, averaging greater than 1.0%, appendix A), and cadmium (16 to 1,110 ppm, averaging 231 ppm, appendix A).

The moderate to high lead, zinc, and cadmium concentrations in samples taken outside the mapped silicified structure indicate that metal-bearing silicious fluids have penetrated and replaced larger areas of the limestone away from the structure. The extent of silicification and mineralization of the carbonate country rock suggests that nearby areas may contain undiscovered mineral resources of lead, zinc, and cadmium and may be a viable exploration target.

See appendix D, p. 83 for a complete summary.

Tungsten Reef Mine

Of several workings in the mine area, only one 210 ft adit was accessible in 1991 (fig. 10). Samples were taken from the adit, dumps of other workings, and a surface exposure of a quartz vein.

Sample HU092 is a composite grab sample from several dumps in the mine area. It shows no significant concentrations of metallic elements.

Sample HU093 is a rock-chip sample across a northeast-striking, northwest-dipping quartz vein at the surface. It contains 210 ppm tungsten (appendix B), but no other notable metallic concentrations.

Rock-chip samples HU094-HU097 were taken from the accessible adit (fig. 11). Much of the adit is in a massive, 6 - 8 ft thick quartz vein, which strikes northeast and dips shallowly to the northwest. Samples HU096 and HU097 are from this vein. Samples HU094 and HU095 are from northwest striking, southwest dipping quartz veins. Tungsten values ranged from 30 to 210 ppm in all four samples, and mercury was present at 14 and 10 ppm, respectively, in HU095 and HU096 (appendix B). Gold values ranged from 150 to 2,180 ppb (appendix A).

The Tungsten Reef Mine has had extensive past production of tungsten, and minor production of precious metals (table 3). Field work indicates that occurrences of tungsten and gold remain at the site, but poor access to the workings prohibits the determination of the size and grade of mineralization. In recent years, limited exploration has focused on resources of gold-bearing silica flux.

See appendix D, p. 94 for a complete summary.

Anticipated future activity

The Tungsten Reef Mine has been the subject of recent exploration activity. However, significant future activity is not likely, due to the mine's proximity to the Carr Canyon recreational area. The James Group is within the Miller Peak Wilderness Area, effectively prohibiting future exploration or mining activity there. Further, the absence of notable gold or copper concentrations points to low future exploration or mining activity.

Comparison of other mineral appraisal studies to the current study

In a Wilderness Study Area (WSA) study, Ludington (1984, p. 5; fig. 3-5) delineated tracts with potential for undiscovered mineral resources which cover portions of the Huachuca Mountains unit (plate 3). Deposit types noted as possibly occurring include vein and disseminated tungsten (tracts A-C), copper-silver-gold replacement deposits (tract D), and precious- and base-metal vein deposits (tract E).

A USGS preliminary survey (Peterson, 1990, p. 71-72; plates 22 and 24) delineated mineral resource tracts which include large portions of the Huachuca Mountains unit (plate 3). Deposits types noted as possibly occurring include tungsten skarn, copper skarn, zinc-lead skarn, polymetallic replacement, and manganese replacement (tracts 1-3); polymetallic vein (tract 4), and porphyry copper (tract 5). The study also concluded (ibid., p. 73) that the Miller Peak Wilderness was favorable for undiscovered disseminated and vein tungsten deposits in granitic rocks. Rocks proximate to a rhyolite porphyry intrusive center near Sutherland Peak were considered an especially favorable location.

The type of mineralization observed at locations sampled by the authors generally corresponds with tracts delineated by the subject USGS studies. Locations identified as mineral occurrences with possible undiscovered resources are used as examples. The Peterson Mine is within tract 4 and close to tract E. The James Group is within tracts 3 and B. The Tungsten Reef Mine is also within tracts 3 and B; however, there are no indications of skarn or replacement bodies at this location. The Power claim does not lie within any of the tracts, but is close to tract 3.

CONCLUSIONS

Although there are numerous mineralized areas in the Huachuca Mountains unit, none of them have been identified by this study as containing economic resources. The Tako #9 claim was identified as containing a marginally economic resource of gold-bearing silica flux. Four mineral occurrences, the Peterson Mine, the James Mine, the Tungsten Reef Mine, and the Power claim, have evidence which suggests that they might contain resources. Limited access into many of the underground workings precluded collection of sufficient information for a resource determination. Inference that a locality contains no mineral resources should be read with caution; limitations in the informational database often precluded adequate assessment. At other locations, however, sufficient information about the mineralization was available, but no resources could be identified.

Under current conditions, economic and political factors are likely to limit both mineral exploration and mining activity in most mineralized areas of the

Huachuca Mountains unit. No economic resources were identified; the most economical resource, the Tako #9, is classified as marginally economical. Identified mineralized bodies are relatively small, and indications are that other bodies which may be discovered as a result of exploration activities would be small also. The current low values of metals such as silver, lead, zinc, manganese, and tungsten, make areas containing these commodities, such as the James Mine and the Powers claim, unattractive for development in the foreseeable future. Locations containing economic quantities of gold and/or copper are the only ones likely to be developed under current conditions. In addition, much of the study area is included in the Miller Peak Wilderness Area, and is therefore effectively closed to minerals exploration activity. Additional parts of the study area are in proximity to other popular recreational areas, which would further inhibit development. However, limited activity is likely to continue at the active unpatented mining claims in the study area, such as the Tako #9.

REFERENCES

Note: ADMMR is the abbreviation for the Arizona Department of Mines and Mineral Resources. Their files are located in Phoenix, AZ.

Alexis, C. O., 1949, The geology of the northern part of the Huachuca Mountains, Arizona: University of Arizona, PhD Dissertation, 74 p.

Anaconda document no. 8937: Anaconda Geological Document Collection, American Heritage Center - University of Wyoming, 3 p.

Anon., no date, prospectus concerning the Armistace Mine: unpublished report available at ADMMR files, 1 p.

Arizona Pay Dirt, 1984, "Goldsil drops mining plan after Forest Service rejection," in Arizona Pay Dirt, December 1984: published news article available at ADMMR Tungsten Reef Mine files, 1 p.

Dale, V. B., Stewart, L. A., and McKinney, W. A., 1960, Tungsten deposits of Cochise, Pima, and Santa Cruz Counties, Arizona: U.S. Bureau of Mines Report of Investigations 5650, 132 p.

Dunning, C. H., 1951, personal communication to Continental Uranium Corp. regarding the James Mine group: unpublished letter available at ADMMR files, 2 p.

Farnham, L. L., Stewart, L. A., DeLong, C. W., 1961, Manganese deposits of eastern Arizona: U.S. Bureau of Mines Information Circular 7990, 178 p.

Greeley, M. N., 1985, ADMMR field report on Tako #9 claim: unpublished report available at ADMMR files, 1 p. and 1:24,000 scale location map.

Greeley, M. N., 1983, ADMMR field report on Huachuca claims: unpublished report available at ADMMR files, 1 p. and 1:24,000 scale location map.

Hayes, P. T., and Raup, R. B., 1968, Geologic map of the Huachuca and Mustang Mountains, southeastern Arizona: U.S. Geological Survey, Miscellaneous Geologic Investigations Map I-509, scale 1:48,000.

Johnson, A. L., 1957, ADMMR field engineers report on the Thomas Tungsten claims: unpublished report available at ADMMR files, 1 p.

Keith, S. B., 1973, Index of mining properties in Cochise County, Arizona: Arizona Geological Survey Bulletin 187, 98 p.

Keith, S. B., Gest, D. E., DeWitt, Ed, Toll, N. W., Everson, B. A., 1983, Metallic mineral districts and production in Arizona: Arizona Bureau of Geology and Mineral Technology, Bulletin 194, 58 p. and map, scale 1:1,000,000.

Lipman, P. W., and Hagstrum, J. T., 1992, Jurassic ash-flow sheets, calderas, and related intrusions of the Cordilleran volcanic arc in southeastern Arizona: implications for regional tectonics and ore deposits: Geological Society of America Bulletin, v. 104, 1671 p.

Ludington, Steve, 1984, Preliminary mineral resource assessment of the proposed Miller Peak Wilderness, Cochise County, Arizona: U.S. Geological Survey Open-File Report 84-293, 9 p.

McElveny, L. T., 1928, Engineering report Lead-Bullion Mine in the Hartford mining district, Huachuca Mountains, Cochise County, Arizona: unpublished report available at ADMMR files, 10 p.

Peterson, J. A. (Ed.), 1990, Preliminary mineral resource assessment of the Tucson and Nogales 1° by 2° quadrangles, Arizona: U.S. Geological Survey, Open-File Report 90-276, 129 p.

Phillips, K. A., 1987, Arizona industrial minerals: Arizona Department of Mines and Mineral Resources, Mineral Report 4, 185 pages.

Svacina, L. S., 1941, personal communication to H. D. Mullan: Anaconda Document 8611, Anaconda Geological Document Collection, American Heritage Center, University of Wyoming, 4 p.

USBM Minerals Yearbook, 1940, 1941, 1942, 1943, 1944, 1948, 1949, chapters entitled "Gold, Silver, Copper, Lead, Zinc in Arizona": U.S. Bureau of Mines, Minerals Yearbook annuals, various page totals.

Van Horn, H. G., 1940, information submitted to ADMMR: unpublished report available at ADMMR Sunny South file, 2 p.

Weber, R. H., 1950, The geology of the east-central portion of the Huachuca Mountains, Arizona: University of Arizona, PhD Dissertation, 164 pp.

Wilson, E. D., 1941, Tungsten deposits of Arizona: Arizona Bureau of Mines Bulletin 148, 54 p.

Wilson, E. D., 1951, Huachuca Mountains, Chapter IV in Part II, Arizona lead and zinc deposits: Arizona Bureau of Mines Bulletin 158, 115 p.

Wilson, E. D., 1961, Arizona gold placers, Part I of Gold placers in Arizona: Arizona Bureau of Mines Bulletin 168, 124 p.

Winters, Wayne, no date, prospectus by owner: unpublished report available at ADMMR files, 1 p.

Appendix A - Neutron activation multi-element analytical data for rock-chip, grab, and select samples taken in the Huachuca Mountains unit, 1991, analyzed by Bondar-Clegg and Co., Ltd.

[<, less than; *, less than, for lower detection limits elevated by interference from other elements;
>, greater than; #, no result; ^, overlimit result by fire assay in oz/st]

Sample No.	Ag (Ppm)	As (Ppm)	Au (Ppb)	Ba (Ppm)	Br (Ppm)	Cd (Ppm)	Ce (Ppm)	Co (Ppm)	Cr (Ppm)	Cs (Ppm)	Eu (Ppm)	Fe (Pct)	Hf (Ppm)	Ir (Ppb)	La (Ppm)	Lu (Ppm)	Mo (Ppm)	Na (Pct)	Ni (Ppm)	Rb (Ppm)	Sb (Ppm)	Sc (Ppm)	Se (Ppm)	Sm (Ppm)	Sn (Ppm)	Ta (Ppm)	Tb (Ppm)	Te (Ppm)	Th (Ppm)	U (Ppm)	W (Ppm)	Yb (Ppm)	Zn (Ppm)	Zr (Ppm)
HU001	< 5	4	19	490	3	< 10	40	< 10	< 50	4	< 2	2.2	3	< 100	19	< 0.5	< 2	0.48	< 20	81	0.8	4.3	< 10	4.1	< 200	1	< 1	< 20	4.6	1.2	< 2	< 5	< 200	< 500
HU002	< 5	12	160	580	2	< 10	61	13	130	58	< 2	3.5	2	< 100	29	< 0.5	< 2	0.11	< 20	190	2.7	11.0	< 10	6.3	< 200	1	< 1	< 20	7.1	4.1	12	< 5	< 200	< 500
HU003	10	17	9	430	1	< 10	55	< 10	100	17	2	1.8	7	< 100	33	< 0.5	< 2	0.13	< 20	110	3.8	9.1	< 10	5.5	< 200	1	< 1	< 20	10.0	5.6	2	< 5	< 200	590
HU004	< 5	8	< 5	760	2	< 10	72	17	70	9	3	5.0	5	< 100	37	0.6	< 2	2.80	< 20	110	0.8	11.0	< 10	7.0	< 200	1	1	< 20	3.1	1.6	< 2	< 5	< 200	< 500
HU005	< 5	3	< 5	440	< 1	< 10	45	< 10	110	2	< 2	1.4	6	< 100	22	< 0.5	< 2	0.65	< 20	32	0.5	4.3	< 10	4.7	< 200	< 1	1	< 20	10.0	2.2	2	< 5	< 200	< 500
HU006	< 5	3	< 5	1100	< 1	< 10	100	< 10	< 50	6	< 2	2.6	8	< 100	44	0.7	< 2	0.54	< 20	140	1.3	9.0	< 10	8.4	< 200	2	2	< 20	16.0	3.5	< 2	< 5	< 200	< 500
HU007	< 5	3	< 5	720	< 1	< 10	60	< 10	80	4	< 2	1.8	8	< 100	25	< 0.5	< 2	0.66	< 20	98	1.0	6.0	< 10	5.6	< 200	1	1	< 20	12.0	3.0	< 2	< 5	< 200	< 500
HU008	< 5	4	6	390	14	< 10	31	< 10	120	3	< 2	1.3	4	< 100	16	< 0.5	< 2	0.14	< 20	32	0.9	3.8	< 10	2.8	< 200	< 1	< 1	< 20	4.2	2.2	< 2	< 5	< 200	< 500
HU009	23	61	12	< 100	3	< 10	10	< 10	180	< 1	< 2	4.8	< 2	< 100	< 5	< 0.5	236	< 0.05	< 20	< 10	73.1	2.0	< 10	3.3	< 200	< 1	< 1	< 20	< 0.5	3.0	< 2	< 5	< 200	< 500
HU010	76	5	90	190	< 1	< 10	10	< 10	390	< 1	< 2	1.1	< 2	< 100	< 5	< 0.5	8	< 0.05	< 20	14	3.9	1.1	< 10	0.9	< 200	< 1	< 1	< 20	0.6	< 0.5	< 2	< 5	< 200	< 500
HU011	< 5	9	180	260	< 1	< 10	19	< 10	480	< 1	< 2	1.8	< 2	< 100	< 5	< 0.5	12	< 0.05	< 20	12	4.5	0.7	< 10	1.3	< 200	< 1	< 1	< 20	0.5	< 0.5	521	< 5	< 200	< 500
HU012	60	15	950	6900	2	< 10	20	< 10	220	8	< 2	3.3	< 2	< 100	12	< 0.5	33	< 0.05	< 20	130	62.1	2.9	< 10	1.7	< 200	< 1	< 1	< 20	1.8	1.3	34	< 5	< 200	< 500
HU013	20	16	626	12900	< 1	< 10	28	< 10	400	14	< 2	2.8	< 2	< 100	17	< 0.5	11	< 0.05	< 20	130	33.7	4.8	< 10	3.0	< 200	< 1	< 1	< 20	1.8	2.6	84	< 5	< 200	< 500
HU014	10	8	120	9800	2	< 10	19	< 10	500	5	< 2	1.7	< 2	< 100	12	< 0.5	13	< 0.05	< 20	34	20.7	1.5	< 10	2.4	< 200	< 1	< 1	< 20	0.9	1.0	52	< 5	< 200	< 500
HU015	61	20	1220	3600	3	< 10	29	< 10	400	8	< 2	2.3	< 2	< 100	8	< 0.5	23	< 0.05	< 20	78	70.5	2.2	< 10	1.4	< 200	< 1	< 1	< 20	0.9	1.5	24	< 5	< 200	< 500
HU016	>100	34	^ 0.890	2900	8	< 10	39	< 10	280	9	3	8.1	* 4	< 100	18	< 0.5	59	0.07	* 41	160	227.0	< 0.5	93	2.9	* 660	< 1	< 1	* 65	* 1.4	< 0.5	32	< 5	< 200	* 1100
HU017	>100	46	2890	660	7	< 10	23	< 10	410	< 1	< 2	3.3	< 2	< 100	< 5	< 0.5	71	< 0.05	< 20	* 21	186.0	< 0.5	< 10	< 0.2	* 460	< 1	< 1	* 45	< 0.5	0.8	* 5	< 5	310	< 500
HU018	>100	34	2370	2500	7	< 10	25	< 10	350	6	< 2	2.0	< 2	< 100	9	< 0.5	49	< 0.05	< 20	53	187.0	0.8	< 10	1.3	* 510	< 1	< 1	* 52	* 1.1	3.1	140	< 5	< 200	< 500
HU019	>100	6	987	15400	< 1	< 10	34	< 10	120	4	< 2	7.7	< 2	< 100	7	< 0.5	53	< 0.05	< 20	41	14.0	1.1	< 10	1.3	< 200	< 1	< 1	< 20	< 0.5	1.2	310	< 5	< 200	< 500
HU020	73	18	480	4100	2	< 10	35	10	260	14	< 2	4.5	3	< 100	18	< 0.5	75	< 0.05	< 20	150	32.9	5.1	< 10	3.0	< 200	< 1	< 1	< 20	2.0	3.6	35	< 5	< 200	< 500
HU021	>100	55	710	14700	9	< 10	41	12	340	13	< 2	3.5	< 2	< 100	22	< 0.5	62	< 0.05	< 20	160	198.0	4.5	< 10	3.1	* 470	< 1	< 1	* 48	2.6	4.0	37	< 5	210	< 500
HU022	>100	79	947	6200	10	< 10	26	< 10	220	5	< 2	3.1	< 2	< 100	10	< 0.5	52	< 0.05	< 20	35	248.0	1.7	< 10	1.5	* 520	< 1	< 1	* 55	* 1.1	21.0	18	7	360	< 500
HU023	36	8	75	9100	< 1	< 10	10	< 10	360	2	< 2	5.0	< 2	< 100	< 5	< 0.5	51	< 0.05	< 20	23	5.6	0.7	< 10	0.8	< 200	< 1	< 1	< 20	< 0.5	0.6	37	< 5	< 200	< 500
HU024	>100	11	50	400	1	< 10	150	24	130	1	5	7.1	16	< 100	82	1.4	< 2	0.14	< 20	48	1.4	22.0	< 10	11.0	< 200	1	< 1	< 20	17.0	7.2	< 2	10	250	900
HU025	< 5	13	8	350	< 1	< 10	47	< 10	110	6	< 2	3.0	9	< 100	22	0.6	< 2	1.60	< 20	94	0.8	10.0	< 10	4.1	< 200	< 1	< 1	< 20	6.4	2.2	2	< 5	< 200	< 500
HU026	< 5	4	16	2500	< 1	< 10	100	36	67	19	< 2	7.1	10	< 100	45	< 0.5	< 2	3.60	< 20	170	1.7	19.0	< 10	7.0	< 200	< 1	< 1	< 20	4.0	1.5	4	5	310	< 500
HU027	< 5	6	14	760	3	< 10	100	23	75	54	3	7.8	7	< 100	45	0.6	< 2	3.40	< 20	230	1.9	21.0	< 10	8.1	< 200	1	1	< 20	5.0	1.8	4	< 5	270	< 500
HU028	< 5	4	11	930	< 1	< 10	110	36	80	14	3	6.2	6	< 100	50	0.6	< 2	2.70	54	160	2.1	15.0	< 10	6.2	< 200	< 1	< 1	< 20	2.7	0.7	6	< 5	400	< 500
HU029	< 5	22	< 5	1900	< 1	13	160	43	81	73	3	8.9	6	< 100	75	0.7	< 2	1.00	60	440	5.4	23.0	< 10	10.0	< 200	1	< 1	< 20	5.2	1.8	17	< 5	210	< 500
HU030	53	13	140	>20000	< 1	< 10	100	24	160	25	3	4.6	6	< 100	45	< 0.5	< 2	0.85	< 20	200	20.0	11.0	< 10	4.9	< 200	< 1	< 1	< 20	2.5	1.1	5	< 5	< 200	< 500
HU031	< 5	6	86	>20000	< 1	< 10	87	25	130	20	< 2	2.9	4	< 100	44	< 0.5	< 2	0.11	< 20	130	5.1	6.4	< 10	3.7	< 200	< 1	< 1	< 20	1.7	< 0.5	8	< 5	< 200	< 500
HU032	< 5	5	30	2800	< 1	< 10	74	30	72	22	< 2	4.6	< 2	< 100	50	< 0.5	< 2	0.10	47	120	4.9	8.3	< 10	3.1	< 200	< 1	< 1	< 20	0.7	< 0.5	12	< 5	310	< 500
HU033	< 5	5	460	16900	< 1	< 10	80	14	140	28	< 2	2.6	4	< 100	36	< 0.5	< 2	0.07	42	220	4.7	9.4	< 10	4.1	< 200	< 1	< 1	< 20	2.0	1.3	45	< 5	210	< 500
HU034	8	6	170	>20000	< 1	< 10	< 10	< 10	420	13	< 2	1.0	5	< 100	23	< 0.5	< 2	< 0.05	< 20	65	12.0	3.8	< 10	1.4	< 200	< 1	< 1	< 20	0.5	0.6	18	< 5	< 200	< 500
HU035	11	10	330	>20000	< 1	< 10	52	< 10	130	20	< 2	1.0	9	< 100	32	< 0.5	5	0.08	< 20	140	7.9	6.4	< 10	2.7	< 200	< 1	< 1	< 20	2.4	< 0.5	21	< 5	< 200	< 500
HU036	16	6	160	>20000	< 1	< 10	35	< 10	< 50	11	< 2	1.3	9	< 100	23	< 0.5	< 2	< 0.05	< 20	93	2.3	4.8	< 10	2.2	< 200	< 1	< 1	< 20	1.0	< 0.5	21	< 5	< 200	< 500
HU037	16	94	* 20	2200	13	< 10	42	11	* 130	32	< 2	1.6	* 4	< 100	23	< 0.5	8	0.09	< 20	230	406.0	6.8	* 22	4.3	* 750	< 1	< 1	* 73	2.7	< 0.5	26	14	< 200	< 500
HU038	>100	532	1760	18900	58	* 65	130	< 10	* 480	* 4	* 12	* 1.1	* 15	* 510	10	* 3.1	28	0.24	* 110	* 94	2100.0	* 1.7	* 84	0.5	* 2800	3	< 1	* 270	* 5.8	* 3.2	160	58	* 580	* 2700
HU039	38	30	160	8200	3	< 10	10	< 10	690	4	< 2	1.3	< 2	< 100	8	0.8	34	< 0.05	< 20	16	95.9	0.8	< 10	1.7	< 200	< 1	< 1	< 20	1.3	< 0.5	16	< 5	< 200	< 500
HU040	96	694	230	3300	* 90	* 61	73	< 10	* 170	20	* 6	3.1	* 6	* 280	29	3.0	18	* 4.60	* 52	150	1840.0	8.9	* 28	4.7	* 980	< 1	< 1	* 120	* 2.1	* 2.6	* 47	27	430	* 1200
HU041	>100	1550	350	>20000	* 266	* 190	170	* 27	* 600	* 5	* 18	2.1	* 18	* 630	22	7.2	* 32	# 0	* 150	* 150	>5000.0	* 2.1	* 100	1.3	* 3200	* 3	* 2	* 400	* 7.2	* 9.2	* 82	73	1300	* 3500
HU042	>100	2130	1000	14600	* 302	* 230	200	* 33	* 700	* 5	* 21	2.2	* 22	* 740	* 16	* 5.8	* 38	# 0	* 180	* 170	>5000.0	* 2.5	* 120	* 0.6	* 3800	* 4	* 2	* 470	* 8.5	* 11.0	860	120	1900	* 4200
HU043	>100	2310	9740	4900	* 449	* 360	320	* 51	* 1100	* 8	* 32	5.6	* 35	# 0	39	11.0	120	# 0	* 270	* 260	>5000.0	* 4.1	* 190	* 1.0	* 6000	8	* 4	* 740	* 13.0	* 17.0	* 150	150	2300	* 6700
HU044	88	160	250	4700	21	< 10	56	< 10	* 190	26	* 5	3.9	* 7	< 100	30	* 1.4	12	* 0.29	100	250	835.0	9.2	< 10	5.0	* 620	< 1	< 1	* 93	* 2.0	* 1.7	13	18	< 200	< 500
HU045	>100	131	160	< 100	* 2	45	20	67	160	3	< 2	>10.0	< 2	< 100	7	1.0	15	0.08	< 20	21	5.5	0.6	< 10	1.4	< 200	< 1	< 1	< 20	3.8	4.4	85	< 5	15000	< 500
HU046	11	17	8	220	< 1	16	56	21	150	12	< 2	4.5	4	< 100	27	0.7	2	0.38	< 20	160	4.4	5.4	< 10	4.5	< 200	< 1	< 1	< 20	10.0	5.7	21	< 5	>20000	< 500
HU047	< 5	35	< 5	540	< 1	21	14	40	90	2	< 2	>10.0	15	< 100	5	0.7	4	0.08	< 20	< 10	7.6	3.4	< 10	2.1	< 200	< 1	< 1	< 20	4.1	1.4	296	< 5	11000	< 500
HU048	< 5	5	< 5	150	< 1	< 10	15	< 10	< 50	3	< 2	0.7	2	< 100	9	< 0.5	< 2	0.18	< 20	68	1.3	2.0	< 10	1.7	< 200	< 1	< 1	< 20	4.1	1.7	5	< 5	1100	< 500
HU049	< 5	8	< 5	< 100	< 1	< 10	10	< 10	< 50	1	< 2	1.2	< 2	< 100	< 5	< 0.5	< 2	< 0.05	< 20	< 10	1.1	< 0.5	< 10	0.5	< 200	< 1	< 1	< 20	0.9	2.4	15	< 5	2200	< 500
HU050	17	6	130	< 100	2	1110	< 10	29	280	< 1	< 2	1.7	< 2	< 100	< 5	< 0.5	9	< 0.05	* 41	< 10	20.9	1.0	< 10	< 0.2	< 200	< 1	< 1	< 20	< 0.5	15.0	9	< 5	>20000	< 500

Appendix A - Neutron activation multi-element analytical data for rock-chip, grab, and select samples taken in the Huachuca Mountains unit, 1991, analyzed by Bondar-Clegg and Co., Ltd.-Continued

Sample No.	Ag (Ppm)	As (Ppm)	Au (Ppb)	Ba (Ppm)	Br (Ppm)	Cd (Ppm)	Ce (Ppm)	Co (Ppm)	Cr (Ppm)	Cs (Ppm)	Eu (Ppm)	Fe (Pct)	Hf (Ppm)	Ir (Ppb)	La (Ppm)	Lu (Ppm)	Mo (Ppm)	Na (Pct)	Ni (Ppm)	Rb (Ppm)	Sb (Ppm)	Sc (Ppm)	Se (Ppm)	Sm (Ppm)	Sn (Ppm)	Ta (Ppm)	Tb (Ppm)	Te (Ppm)	Th (Ppm)	U (Ppm)	W (Ppm)	Yb (Ppm)	Zn (Ppm)	Zr (Ppm)
HU051	< 5	1	11	< 100	< 1	530	45	10	< 50	< 1	< 2	1.7	6	< 100	15	< 0.5	13	0.13	< 20	91	0.6	3.0	< 10	2.9	< 200	< 1	< 1	< 20	4.5	2.3	17	< 5	>20000	670
HU052	< 5	< 1	51	190	2	16	26	< 10	76	1	< 2	4.1	16	< 100	< 5	< 0.5	12	< 0.05	< 20	63	0.7	2.1	< 10	1.1	< 200	< 1	< 1	< 20	1.4	3.7	1600	< 5	3000	< 500
HU053	< 5	1	12	230	< 1	< 10	< 10	< 10	54	< 1	< 2	< 0.5	< 2	< 100	< 5	< 0.5	< 2	< 0.05	< 20	32	0.4	1.1	< 10	0.9	< 200	< 1	< 1	< 20	1.2	1.2	< 2	< 5	270	< 500
HU054	< 5	4	34	< 100	< 1	210	< 10	< 10	99	3	< 2	1.2	3	< 100	10	< 0.5	27	< 0.05	< 20	130	4.0	3.8	< 10	1.9	< 200	< 1	< 1	< 20	3.3	3.0	15	< 5	16000	< 500
HU055	7	2	19	< 100	< 1	190	< 10	< 10	140	< 1	< 2	0.7	< 2	< 100	< 5	< 0.5	8	< 0.05	< 20	53	5.8	1.3	< 10	0.3	< 200	< 1	< 1	< 20	< 0.5	4.1	23	< 5	13000	< 500
HU056	5	2	29	< 100	< 1	400	< 10	11	220	1	< 2	1.3	< 2	< 100	< 5	< 0.5	5	< 0.05	< 20	54	5.2	1.8	< 10	0.4	< 200	< 1	< 1	< 20	0.7	2.0	7	< 5	>20000	< 500
HU057	9	1	19	< 100	< 1	500	< 10	< 10	270	2	< 2	0.8	2	< 100	< 5	< 0.5	12	< 0.05	< 20	62	3.4	1.2	< 10	0.4	< 200	< 1	< 1	< 20	1.2	1.4	< 2	< 5	>20000	< 500
HU058	47	6	56	< 100	3	550	< 10	13	250	< 1	< 2	0.8	< 2	< 100	< 5	< 0.5	10	< 0.05	< 20	50	32.9	0.6	< 10	< 0.2	< 200	< 1	< 1	< 20	0.9	7.2	< 2	< 5	>20000	< 500
HU059	10	1	83	< 100	< 1	1050	< 10	22	250	< 1	< 2	0.9	< 2	< 100	< 5	< 0.5	9	< 0.05	< 20	31	4.8	1.1	< 10	< 0.2	< 200	< 1	< 1	< 20	< 0.5	5.3	< 2	< 5	>20000	< 500
HU060	76 *	3	4240	470	7	48	110	36	740	11	< 2	5.8	53	< 100	48	2.2	18	0.23	< 20	340	< 0.2	8.7	< 10	11.0	< 200	1	1	* 48	19.0	7.5	>2000	7	250	< 500
HU061	< 5	1	77	510	< 1	< 10	120	< 10	470	11	< 2	2.2	8	< 100	50	2.0	6	0.71	< 20	330	0.5	7.5	< 10	11.0	< 200	2	2	< 20	28.0	8.6	73	6	< 200	< 500
HU062	< 5	< 1	1170	1200	< 1	< 10	160	< 10	240	13	< 2	3.2	11	< 100	66	1.5	< 2	1.60	39	590	1.6	12.0	< 10	12.0	< 200	2	1	< 20	26.0	3.9	78	5	< 200	< 500
HU063	< 5	2	13	< 100	< 1	< 10	10	< 10	630	< 1	< 2	0.9	< 2	< 100	< 5	< 0.5	9	< 0.05	< 20	14	3.3	< 0.5	< 10	0.3	< 200	< 1	< 1	< 20	< 0.5	< 0.5	4	< 5	< 200	< 500
HU064	< 5	< 1	51	< 100	< 1	< 10	< 10	< 10	240	2	< 2	1.0	< 2	< 100	6	< 0.5	< 2	< 0.05	< 20	70	0.3	2.4	< 10	0.9	< 200	< 1	< 1	< 20	1.5	1.3	4	< 5	< 200	< 500
HU065	< 5	1	10	220	< 1	< 10	58	< 10	180	4	< 2	1.8	6	< 100	23	< 0.5	< 2	0.20	< 20	270	0.4	5.4	< 10	3.9	< 200	< 1	< 1	< 20	8.6	2.0	12	< 5	< 200	< 500
HU066	< 5	1	7	< 100	< 1	< 10	16	< 10	230	< 1	< 2	0.6	< 2	< 100	7	< 0.5	< 2	< 0.05	< 20	50	0.3	0.9	< 10	0.6	< 200	< 1	< 1	< 20	1.7	< 0.5	4	< 5	< 200	< 500
HU067	< 5	< 1	< 5	< 100	< 1	< 10	< 10	< 10	230	< 1	< 2	< 0.5	< 2	< 100	< 5	< 0.5	< 2	< 0.05	< 20	31	0.4	0.8	< 10	1.0	< 200	< 1	< 1	< 20	5.3	< 0.5	< 2	< 5	< 200	< 500
HU068	< 5	< 1	15	< 100	< 1	< 10	< 10	< 10	170	2	< 2	0.9	< 2	< 100	< 5	< 0.5	4	0.06	< 20	67	0.4	1.0	< 10	0.8	< 200	< 1	< 1	< 20	1.8	0.6	4	< 5	< 200	< 500
HU069	< 5	< 1	10	< 100	< 1	< 10	< 10	< 10	230	< 1	< 2	< 0.5	< 2	< 100	< 5	< 0.5	< 2	< 0.05	< 20	20	0.4	0.5	< 10	0.2	< 200	< 1	< 1	< 20	0.5	< 0.5	< 2	< 5	< 200	< 500
HU070	< 5	< 1	19	580	< 1	< 10	110	19	380	28	2	3.7	4	< 100	46	0.9	< 2	0.74	56	810	0.9	12.0	< 10	9.3	< 200	1	2	< 20	28.0	10.0	15	8	280	< 500
HU071	< 5	1	17	< 100	< 1	< 10	< 10	< 10	280	< 1	< 2	0.7	< 2	< 100	< 5	< 0.5	< 2	< 0.05	< 20	38	0.5	1.1	< 10	0.2	< 200	< 1	< 1	< 20	< 0.5	0.7	3	< 5	< 200	< 500
HU072	< 5	< 1	15	320	< 1	< 10	10	44	480	85	< 2	7.8	< 2	< 100	10	1.3	< 2	0.44	120	1080	0.5	27.0	< 10	4.1	< 200	< 1	< 1	< 20	6.7	7.6	25	< 5	< 200	< 500
HU073	< 5	2	< 5	< 100	< 1	< 10	10	< 10	670	7	< 2	2.5	< 2	< 100	< 5	0.9	8	< 0.05	40	190	0.4	5.6	< 10	1.2	< 200	< 1	< 1	< 20	2.4	6.4	36	< 5	< 200	< 500
HU074	< 5 *	3 *	11	300	2	< 10	100	20	640	13	< 2	2.8	7	< 100	33	5.0 *	6	5.30 *	60	540	0.7	22.0	< 10	8.9	< 200	27	2	< 20	48.0	30.0	11	16	< 200	< 500
HU075	< 5	< 1	< 5	230	< 1	< 10	73	< 10	310	29	< 2	1.3	4	< 100	32	2.3	3	0.92	< 20	550	0.3	8.3	< 10	6.9	< 200	4	1	< 20	24.0	8.0	7	7	< 200	< 500
HU076	< 5	4	5	< 100	< 1	< 10	11	< 10	500	2	< 2	1.0	4	< 100	< 5	< 0.5	11	< 0.05	< 20	47	0.6	0.8	< 10	0.7	< 200	< 1	< 1	< 20	3.3	2.8	170	< 5	< 200	< 500
HU077	< 5	6	8	< 100	< 1	< 10	10	< 10	560	15	< 2	2.0	< 2	< 100	6	1.5	6	< 0.05	28	230	0.6	5.6	< 10	2.2	< 200	< 1	< 1	< 20	2.4	14.0	170	< 5	< 200	< 500
HU078	6	8 <	5	< 100	1	< 10	10	< 10	690	13	< 2	3.2	10	< 100	6	2.5	8	< 0.05	39	420	1.4	13.0	< 10	1.7	< 200	< 1	< 1	< 20	1.9	18.0	729	< 5	< 200	< 500
HU079	< 5	2 <	5	< 100	< 1	< 10	10	< 10	590	1	< 2	0.9	5	< 100	< 5	< 0.5	9	< 0.05	< 20	38	0.5	0.5	< 10	0.5	< 200	< 1	< 1	< 20	1.7	0.7	370	< 5	< 200	< 500
HU080	< 5	2 <	5	< 100	< 1	< 10	10	< 10	710	1	< 2	0.9	< 2	< 100	< 5	< 0.5	10	< 0.05	< 20	27	0.4	< 0.5	< 10	0.2	< 200	< 1	< 1	< 20	0.7	< 0.5	42	< 5	< 200	< 500
HU081	< 5	2 <	5	880	< 1	< 10	100	13	100	14	< 2	2.9	7	< 100	59	0.9	< 2	1.20	< 20	500	0.8	11.0	< 10	14.0	< 200	3	3	< 20	25.0	12.0	7	9	< 200	< 500
HU082	< 5	1 <	5	520	< 1	< 10	40	< 10	110	21	< 2	1.7	< 2	< 100	24	0.8	< 2	1.40	< 20	530	0.6	10.0	< 10	5.6	< 200	4	1	< 20	16.0	9.1	6	8	< 200	< 500
HU083	< 5	< 1	< 5	530	1	< 10	78	< 10	160	12	< 2	1.8	5	< 100	35	0.9	< 2	2.40	< 20	350	< 0.2	8.0	< 10	8.5	< 200	3	2	< 20	27.0	10.0	3	7	< 200	< 500
HU084	7	< 1	46	250	< 1	< 10	40	< 10	310	4	< 2	1.3	3	< 100	21	< 0.5	< 2	0.40	< 20	180	0.2	3.9	< 10	4.2	< 200	< 1	< 1	< 20	8.7	7.9	18	< 5	< 200	< 500
HU085	< 5	< 1	24	< 100	< 1	< 10	10	< 10	350	10	< 2	2.3	< 2	< 100	7	< 0.5	11	< 0.05	24	180	0.2	5.3	< 10	1.7	< 200	< 1	< 1	< 20	2.1	19.0	81	< 5	< 200	< 500
HU086	5	< 1	100	< 100	< 1	< 10	10	< 10	390	3	< 2	2.5	< 2	< 100	< 5	< 0.5	59	< 0.05	< 20	33	0.3	0.7	< 10	0.6	< 200	< 1	< 1	< 20	1.1	5.9	16	< 5	< 200	< 500
HU087	15	< 1	1150	< 100	< 1	< 10	10	< 10	360	< 1	< 2	0.6	6	< 100	< 5	< 0.5	93	< 0.05	< 20	22	< 0.2	< 0.5	< 10	0.6	< 200	< 1	< 1	24	0.8	1.1	630	< 5	< 200	< 500
HU088	< 5	< 1	22	130	< 1	< 10	10	< 10	400	9	< 2	1.9	2	< 100	8	< 0.5	17	0.05	< 20	150	< 0.2	4.6	< 10	1.0	< 200	< 1	< 1	< 20	2.2	4.2	130	< 5	< 200	< 500
HU089	< 5	< 1	37	430	< 1	< 10	28	< 10	460	44	< 2	4.2	4	< 100	9	< 0.5	20	0.33	36	860	0.4	21.0	< 10	3.1	< 200	< 1	< 1	< 20	5.0	13.0	219	< 5	210	< 500
HU090	15	2	120	< 100	< 1	24	10	< 10	610	4	< 2	4.1	< 2	< 100	< 5	< 0.5	13	< 0.05	23	53	0.5	1.4	< 10	0.2	< 200	< 1	< 1	< 20	< 0.5	3.1	58	< 5	720	< 500
HU091	< 5	< 1	160	< 100	< 1	< 10	10	< 10	540	33	< 2	2.5	4	< 100	< 5	0.8	13	0.08	31	380	0.4	7.7	< 10	1.1	< 200	< 1	< 1	< 20	1.3	9.1	363	< 5	< 200	< 500
HU092	< 5	1	40	< 100	< 1	< 10	10	< 10	310	3	< 2	0.5	< 2	< 100	< 5	< 0.5	12	< 0.05	< 20	36	0.8	0.9	< 10	0.4	< 200	< 1	< 1	< 20	0.7	< 0.5	14	< 5	< 200	< 500
HU093	12	3	100	< 100	< 1	< 10	10	< 10	730	4	< 2	0.9	2	< 100	< 5	< 0.5	38	< 0.05	< 20	34	4.7	< 0.5	< 10	< 0.2	< 200	< 1	< 1	< 20	< 0.5	< 0.5	140	< 5	< 200	< 500
HU094	14	31	150	560	4	< 10	10	< 10	690	< 1	< 2	1.0	< 2	< 100	< 5	< 0.5	12	< 0.05	< 20	< 10	125.0	< 0.5	< 10	< 0.2	< 200	< 1	< 1	< 20	< 0.5	< 0.5	23	< 5	< 200	< 500
HU095	9	5	220	130	< 1	< 10	10	< 10	590	< 1	< 2	0.9	< 2	< 100	< 5	< 0.5	8	< 0.05	< 20	< 10	19.0	< 0.5	< 10	0.2	< 200	< 1	< 1	< 20	< 0.5	< 0.5	8	< 5	< 200	< 500
HU096	8	2	250	< 100	< 1	< 10	10	< 10	700	7	< 2	1.1	4	< 100	< 5	< 0.5	33	< 0.05	< 20	91	6.7	0.8	< 10	0.5	< 200	< 1	< 1	< 20	0.9	0.6	150	< 5	< 200	< 500
HU097	6	2	2180	< 100	< 1	< 10	10	< 10	680	1	< 2	0.8	< 2	< 100	< 5	< 0.5	12	< 0.05	< 20	< 10	3.0	< 0.5	< 10	< 0.2	< 200	< 1	< 1	< 20	< 0.5	< 0.5	53	< 5	< 200	< 500
HU098	>100	929 *	57 *	450	175	480 *	89	< 10 *	220	5	* 10	2.2 *	9 *	250	23 *	1.8	65	* 1.20 *	89	140	250.0	< 0.5	* 42	3.9	* 1600	2	< 1	* 160 *	2.9 *	2.7	31	55	>20000	* 1600
HU099	< 5	95	71	620	4	28	110	40	220	23	5	3.6	4	< 100	38	< 0.5	33	0.08	99	360	11.0	15.0	< 10	11.0	< 200	< 1	2	< 20	11.0	12.0	< 2	6	2800	< 500
HU100	>100	491	43	330	37	68	140	440	67	23	< 2	>10.0	< 2	< 100	42	< 0.5	63	< 0.05	72	94	269.0	16.0	< 10	7.7	* 650	< 1	< 1	* 60	8.9	23.0	* 6	8	11000	< 500
HU101	>100	78	34	170	26	110	110	< 10	210	11	7	1.1	< 2	< 100	62	1.0	62	0.24	< 20	89	91.5	3.5	< 10	16.0	< 200	< 1	3	< 20	3.0	5.8	< 2	10	>20000	< 500
HU102	>100	408 *	18	< 100	26	230	65	12	< 50	17	4	2.0	< 2	< 100	36	< 0.5	120	< 0.05	< 20	200	280.0	5.1	< 10	8.9	* 610	< 1	< 1	* 57	3.2	6.8	8	11	>20000	< 500
HU103	< 5	166 <	5	270	11	34	95	13	110	22	2	3.1	8	< 100	40	< 0.5	17	0.06	51	400	16.0	12.0	< 10	5.2	< 200	< 1	< 1	< 20	10.0	4.6	7	< 5	11000	< 500
HU104	< 5	14	8	570	< 1	< 10	72	22	< 50	23	< 2	5.1	5	< 100	31	0.6	< 2	0.08	< 20	460	3.5	17.0	< 10	5.6	< 200	< 1	< 1	< 20	7.4	2.8	< 2	< 5	240	< 500
HU105	< 5	95	17	540	2	< 10	64	27	130	23	2	5.7	5	< 100	25	0.6	10	0.09	48	400	16.0	21.0	< 10	4.9	< 200	< 1	< 1	< 20	6.8	3.9	12	< 5	2100	< 500

Appendix A - Neutron activation multi-element analytical data for rock-chip, grab, and select samples taken in the Huachuca Mountains unit, 1991, analyzed by Bondar-Clegg and Co., Ltd.-Continued

Sample No.	Ag (Ppm)	As (Ppm)	Au (Ppb)	Ba (Ppm)	Br (Ppm)	Cd (Ppm)	Ce (Ppm)	Co (Ppm)	Cr (Ppm)	Cs (Ppm)	Eu (Ppm)	Fe (Pct)	Hf (Ppm)	Ir (Ppb)	La (Ppm)	Lu (Ppm)	Mo (Ppm)	Na (Pct)	Ni (Ppm)	Rb (Ppm)	Sb (Ppm)	Sc (Ppm)	Se (Ppm)	Sm (Ppm)	Sn (Ppm)	Ta (Ppm)	Tb (Ppm)	Te (Ppm)	Th (Ppm)	U (Ppm)	W (Ppm)	Yb (Ppm)	Zn (Ppm)	Zr (Ppm)
HU106	< 5	135	38	520	3	15	100	38	81	28	3	4.6	6	< 100	45	1.1	4	0.09	< 20	490	21.1	16.0	< 10	7.5	< 200	1	1	< 20	11.0	7.8	9	8	2000	750
HU107	< 5	202	< 5	520	5	< 10	110	37	170	21	3	4.1	10	< 100	44	0.8	25	0.07	< 20	340	23.1	11.0	< 10	7.3	< 200	2	2	< 20	12.0	7.3	< 2	10	2800	< 500
HU108	< 5	94	< 5	560	3	12	120	< 10	< 50	32	3	3.2	7	< 100	48	0.8	6	0.08	< 20	560	21.6	11.0	< 10	7.7	< 200	1	1	< 20	20.0	6.1	5	7	2200	580
HU109	< 5	229	16	850	2	< 10	91	11	110	25	< 2	3.0	7	< 100	35	< 0.5	15	0.10	< 20	450	17.0	8.8	< 10	6.5	< 200	1	< 1	< 20	17.0	5.1	8	< 5	1700	< 500
HU110	< 5	55	< 5	490	2	< 10	76	< 10	160	11	3	2.0	4	< 100	43	0.5	< 2	0.06	< 20	190	3.4	10.0	< 10	5.8	< 200	< 1	1	< 20	8.1	3.9	6	< 5	220	< 500
HU111	>100	18	330	< 100	* 2	960	* 27	220	< 50	< 1	< 2	8.1	< 2	< 100	7	< 0.5	5	0.07	* 68	37	1.0	< 0.5	230	1.0	< 200	< 1	< 1	1700	1.6	2.0	160	< 5	>20000	* 1100
HU112	40	15	96	< 100	1	69	21	82	< 50	< 1	< 2	0.9	< 2	< 100	9	< 0.5	20	0.06	< 20	< 10	5.8	2.2	18	0.8	< 200	< 1	< 1	44	0.7	0.7	8	< 5	>20000	< 500
HU113	>100	25	170	< 100	* 2	1050	* 26	270	< 50	< 1	< 2	>10.0	< 2	< 100	8	< 0.5	6	< 0.05	* 67	* 33	5.7	< 0.5	77	1.0	< 200	< 1	< 1	550	1.1	1.3	202	< 5	>20000	* 1100
HU114	>100	11	29	< 100	< 1	100	54	69	< 50	< 1	< 2	>10.0	4	< 100	25	< 0.5	< 2	< 0.05	< 20	< 10	0.6	6.5	< 10	3.8	< 200	< 1	< 1	110	9.2	2.7	67	< 5	>20000	< 500
HU115	8	34	13	< 100	1	< 10	150	13	63	2	< 2	7.5	11	< 100	69	< 0.5	< 2	< 0.05	< 20	59	11.0	13.0	< 10	8.1	< 200	1	1	< 20	27.0	8.3	< 2	6	12000	600
HU116	< 5	2	11	1500	< 1	< 10	110	< 10	75	10	< 2	1.2	6	< 100	54	< 0.5	< 2	2.40	< 20	350	0.5	6.8	< 10	5.4	< 200	< 1	< 1	< 20	13.0	3.4	< 2	< 5	530	< 500
HU117	< 5	3	5	1400	< 1	< 10	110	< 10	120	6	< 2	1.9	5	< 100	45	< 0.5	< 2	3.30	< 20	270	0.6	6.4	< 10	4.6	< 200	< 1	< 1	< 20	13.0	3.3	5	< 5	310	< 500
HU118	< 5	2	33	700	< 1	< 10	160	< 10	200	12	4	3.5	9	< 100	73	1.5	< 2	0.60	< 20	560	0.6	15.0	< 10	12.0	< 200	2	2	< 20	29.0	8.0	19	11	330	< 500
HU119	< 5	1	18	< 100	< 1	< 10	< 10	< 10	410	< 1	< 2	0.6	< 2	< 100	< 5	< 0.5	< 2	< 0.05	< 20	18	0.3	0.6	< 10	0.3	< 200	< 1	< 1	< 20	1.0	< 0.5	2	< 5	< 200	< 500
HU120	< 5	8	21	360	< 1	< 10	77	< 10	87	9	< 2	2.0	6	< 100	31	< 0.5	4	0.13	< 20	400	0.7	7.6	< 10	5.8	< 200	1	1	< 20	21.0	4.5	4	< 5	< 200	< 500
HU121	< 5	15	27	570	4	< 10	120	16	300	26	< 2	3.1	7	< 100	71	1.3	3	0.08	< 20	400	0.7	10.0	< 10	13.0	< 200	2	2	< 20	21.0	6.3	13	< 5	< 200	< 500
HU122	< 5	13	17	< 100	< 1	< 10	10	< 10	130	3	< 2	>10.0	5	< 100	10	0.7	< 2	< 0.05	< 20	49	2.1	2.7	< 10	2.2	< 200	< 1	< 1	< 20	6.4	3.1	75	< 5	< 200	< 500
HU123	< 5	25	< 5	190	3	< 10	92	< 10	220	9	3	6.5	9	< 100	42	1.9	< 2	0.15	< 20	280	4.3	8.9	< 10	8.0	< 200	1	1	< 20	22.0	7.8	12	< 5	< 200	< 500
HU124	< 5	4	8	170	< 1	< 10	10	< 10	450	< 1	< 2	0.7	< 2	< 100	< 5	< 0.5	8	< 0.05	< 20	< 10	1.4	< 0.5	< 10	0.2	< 200	< 1	< 1	< 20	< 0.5	< 0.5	< 2	< 5	< 200	< 500
HU125	< 5	18	8	820	< 1	< 10	36	13	190	2	< 2	6.7	7	< 100	24	< 0.5	5	0.71	< 20	170	2.0	6.2	< 10	4.9	< 200	< 1	< 1	< 20	11.0	4.8	13	< 5	760	< 500
HU126	29	3	320	< 100	< 1	100	10	< 10	700	< 1	< 2	1.9	< 2	< 100	< 5	< 0.5	15	< 0.05	25	37	6.9	< 0.5	< 10	0.3	< 200	< 1	< 1	< 20	0.8	< 0.5	4	< 5	4600	< 500
HU127	12	3	1070	< 100	< 1	< 10	12	< 10	680	< 1	< 2	1.1	< 2	< 100	< 5	< 0.5	21	< 0.05	< 20	13	1.9	< 0.5	< 10	0.4	< 200	< 1	< 1	< 20	0.7	< 0.5	4	< 5	< 200	< 500
HU128	< 5	2	17	< 100	< 1	< 10	10	< 10	730	< 1	< 2	0.9	< 2	< 100	< 5	< 0.5	12	< 0.05	< 20	27	3.1	< 0.5	< 10	0.3	< 200	< 1	< 1	< 20	1.9	< 0.5	3	< 5	< 200	< 500
HU129	35	5	689	370	< 1	< 10	37	< 10	340	3	< 2	3.3	3	< 100	25	< 0.5	< 2	0.09	< 20	270	0.7	3.1	< 10	1.8	< 200	< 1	< 1	< 20	13.0	3.0	6	< 5	200	< 500
HU130	45	2	4560	< 100	< 1	22	16	< 10	250	2	< 2	2.3	< 2	< 100	10	< 0.5	202	0.05	< 20	150	0.6	1.1	< 10	1.3	< 200	< 1	< 1	< 20	5.6	1.5	23	< 5	490	< 500
HU131	7	< 1	400	230	< 1	< 10	29	< 10	230	3	< 2	3.3	3	< 100	18	< 0.5	15	< 0.05	< 20	220	0.4	2.4	< 10	2.1	< 200	< 1	< 1	< 20	7.9	1.5	23	< 5	< 200	< 500
HU132	15	< 1	1780	< 100	< 1	< 10	15	< 10	360	< 1	< 2	1.2	< 2	< 100	5	< 0.5	58	< 0.05	< 20	68	0.4	0.9	< 10	0.7	< 200	< 1	< 1	< 20	2.4	0.9	4	< 5	< 200	< 500
HU133	< 5	2	7820	< 100	< 1	< 10	10	13	180	2	< 2	10.0	3	< 100	10	< 0.5	19	< 0.05	< 20	96	0.5	1.8	< 10	1.3	< 200	< 1	< 1	< 20	5.4	7.0	180	< 5	330	< 500
HU134	< 5	2	94	690	< 1	< 10	70	< 10	210	4	< 2	1.3	4	< 100	37	< 0.5	6	1.10	< 20	420	0.6	3.2	< 10	1.8	< 200	< 1	< 1	< 20	24.0	2.8	7	< 5	210	< 500
HU135	6	2	8030	< 100	< 1	< 10	10	< 10	660	3	< 2	1.9	< 2	< 100	< 5	< 0.5	8	< 0.05	< 20	110	0.6	1.8	< 10	0.5	< 200	< 1	< 1	< 20	3.0	1.4	6	< 5	< 200	< 500
HU136	< 5	2	290	< 100	< 1	< 10	10	< 10	640	< 1	< 2	0.9	< 2	< 100	< 5	< 0.5	8	< 0.05	< 20	18	0.7	< 0.5	< 10	0.2	< 200	< 1	< 1	< 20	1.0	< 0.5	5	< 5	< 200	< 500
HU137	< 5	2	210	310	< 1	< 10	41	< 10	400	3	< 2	1.4	3	< 100	17	< 0.5	5	0.13	< 20	200	0.8	2.5	< 10	2.6	< 200	< 1	< 1	< 20	12.0	2.3	14	< 5	< 200	< 500
HU138	< 5	8	< 5	180	< 1	< 10	28	< 10	52	4	< 2	1.2	3	< 100	9	< 0.5	3	0.27	< 20	92	1.1	2.1	< 10	2.2	< 200	< 1	< 1	< 20	6.1	5.7	6	< 5	430	< 500
HU139	< 5	< 1	< 5	430	< 1	< 10	43	< 10	78	14	< 2	2.2	< 2	< 100	22	< 0.5	< 2	0.25	28	490	0.5	6.3	< 10	4.8	< 200	1	< 1	< 20	16.0	5.2	10	< 5	< 200	780
HU140	< 5	10	< 5	600	< 1	< 10	77	< 10	100	25	< 2	1.0	4	< 100	29	1.0	< 2	0.27	< 20	400	0.9	6.0	< 10	8.5	< 200	1	2	< 20	18.0	5.5	4	< 5	< 200	< 500
HU141	< 5	2	< 5	< 100	< 1	< 10	10	< 10	< 50	< 1	< 2	< 0.5	< 2	< 100	< 5	< 0.5	< 2	< 0.05	< 20	< 10	0.4	1.0	< 10	0.4	< 200	< 1	< 1	< 20	0.8	4.4	< 2	< 5	< 200	< 500
HU142	< 5	9	< 5	370	< 1	< 10	71	< 10	71	23	2	1.1	3	< 100	31	0.6	< 2	0.49	< 20	410	0.9	5.4	< 10	7.8	< 200	1	1	< 20	18.0	6.1	< 2	< 5	< 200	< 500
HU143	< 5	4	< 5	690	< 1	< 10	76	< 10	< 50	18	< 2	3.1	8	< 100	37	< 0.5	< 2	1.30	< 20	430	1.3	8.3	< 10	6.7	< 200	1	< 1	< 20	20.0	8.4	6	< 5	560	< 500
HU144	< 5	17	< 5	370	1	< 10	45	< 10	91	2	< 2	1.6	7	< 100	18	< 0.5	2	0.23	28	63	2.7	4.6	< 10	3.6	< 200	< 1	< 1	< 20	7.4	5.0	5	< 5	260	1200
HU145	< 5	5	< 5	< 100	< 1	< 10	10	< 10	< 50	< 1	< 2	< 0.5	< 2	< 100	< 5	< 0.5	< 2	< 0.05	< 20	< 10	0.9	1.1	< 10	0.6	< 200	< 1	< 1	< 20	1.3	5.6	< 2	< 5	< 200	< 500
HU146	>100	46	2210	< 100	7	< 10	27	12	200	2	< 2	5.6	< 2	< 100	< 5	< 0.5	200	< 0.05	< 20	29	140.0	< 0.5	< 10	0.8	* 530	< 1	< 1	* 53	* 1.4	4.2	17	< 5	500	< 500
HU147	22	11	20	< 100	< 1	< 10	19	< 10	55	2	< 2	2.1	3	< 100	8	< 0.5	12	0.20	< 20	48	7.8	1.9	< 10	1.6	< 200	< 1	< 1	< 20	4.3	3.9	9	< 5	340	< 500
HU148	< 5	2	97	660	< 1	< 10	140	12	< 50	13	< 2	4.6	10	< 100	57	< 0.5	< 2	0.30	< 20	580	1.2	19.0	< 10	8.9	< 200	1	1	< 20	19.0	4.9	18	< 5	1100	750
HU149	100	1	^ 0.583	210	< 1	< 10	* 25	< 10	200	1	< 2	2.1	< 2	< 100	6	< 0.5	13	< 0.05	< 20	21	1.2	< 0.5	18	0.8	< 200	< 1	< 1	< 20	1.3	< 0.5	< 2	< 5	920	< 500
HU150	77	2	^ 0.578	640	< 1	93	23	< 10	210	2	< 2	1.6	< 2	< 100	9	< 0.5	10	< 0.05	< 20	81	1.2	1.7	< 10	1.5	< 200	< 1	< 1	< 20	4.3	3.4	6	< 5	6800	< 500
HU151	41	< 1	^ 0.393	< 100	< 1	320	* 21	11	310	1	< 2	1.2	< 2	< 100	< 5	< 0.5	15	< 0.05	< 20	18	1.3	< 0.5	< 10	0.4	< 200	< 1	< 1	< 20	< 0.5	< 0.5	< 2	< 5	>20000	< 500
HU152	< 5	4	42	750	< 1	< 10	110	24	53	10	4	4.7	8	< 100	51	0.6	< 2	1.30	< 20	550	2.6	16.0	< 10	7.1	< 200	1	1	< 20	17.0	5.2	24	< 5	470	< 500
HU153	36	1	3320	< 100	< 1	16	< 10	< 10	370	< 1	< 2	1.0	< 2	< 100	< 5	< 0.5	3	< 0.05	< 20	23	1.5	< 0.5	20	0.3	< 200	< 1	< 1	< 20	< 0.5	< 0.5	< 2	< 5	1700	< 500
HU154	24	< 1	^ 0.630	< 100	< 1	170	10	< 10	340	< 1	< 2	0.7	< 2	< 100	< 5	< 0.5	7	< 0.05	< 20	40	1.0	0.8	< 10	0.8	< 200	< 1	< 1	< 20	1.2	< 0.5	3	< 5	11000	< 500
HU155	< 5	3	120	580	< 1	< 10	120	< 10	< 50	7	2	3.2	7	< 100	47	< 0.5	< 2	0.93	< 20	450	3.2	10.0	< 10	6.7	< 200	1	1	< 20	20.0	4.9	29	< 5	570	< 500
HU156	20	1	1810	< 100	< 1	100	< 10	< 10	360	< 1	< 2	0.9	< 2	< 100	< 5	< 0.5	7	< 0.05	< 20	31	1.3	0.5	< 10	0.3	< 200	< 1	< 1	< 20	0.6	< 0.5	< 2	< 5	7100	< 500
HU157	< 5	< 1	9	290	< 1	41	120	< 10	69	7	< 2	2.9	7	< 100	46	< 0.5	5	0.12	< 20	460	1.8	8.9	< 10	6.8	< 200	1	< 1	< 20	17.0	4.0	23	< 5	2000	< 500
HU158	15	< 1	2780	< 100	< 1	77	10	< 10	330	< 1	< 2	0.6	< 2	< 100	< 5	< 0.5	6	< 0.05	< 20	33	1.6	0.6	< 10	0.5	< 200	< 1	< 1	< 20	1.7	< 0.5	3	< 5	6500	< 500
HU159	39	1	3950	< 100	< 1	< 10	< 10	< 10	340	< 1	< 2	0.7	< 2	< 100	< 5	< 0.5	15	< 0.05	< 20	20	1.3	< 0.5	< 10	0.2	< 200	< 1	< 1	< 20	< 0.5	< 0.5	2	< 5	250	< 500
HU160	22	< 1	1510	< 100	< 1	< 10	< 10	< 10	400	< 1	< 2	0.8	< 2	< 100	< 5	< 0.5	< 2	< 0.05	< 20	25	1.3	< 0.5	< 10	0.2	< 200	< 1	< 1	< 20	0.6	< 0.5	< 2	< 5	< 200	< 500

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Sample No.	Ag (Ppm)	As (Ppm)	Au (Ppb)	Ba (Ppm)	Br (Ppm)	Cd (Ppm)	Ce (Ppm)	Co (Ppm)	Cr (Ppm)	Cs (Ppm)	Eu (Ppm)	Fe (Pct)	Hf (Ppm)	Ir (Ppb)	La (Ppm)	Lu (Ppm)	Mo (Ppm)	Na (Pct)	Ni (Ppm)	Rb (Ppm)	Sb (Ppm)	Sc (Ppm)	Se (Ppm)	Sm (Ppm)	Sn (Ppm)	Ta (Ppm)	Tb (Ppm)	Te (Ppm)	Th (Ppm)	U (Ppm)	W (Ppm)	Yb (Ppm)	Zn (Ppm)	Zr (Ppm)
HU161	< 5	2	65	400	< 1	< 10	84	11	160	5	3	3.0	6	< 100	36	< 0.5	< 2	0.18	< 20	380	2.4	8.7	< 10	4.7	< 200	< 1	< 1	< 20	15.0	3.3	15	< 5	590	< 500
HU162	< 5	2	120	420	< 1	< 10	150	18	86	6	2	4.0	10	< 100	55	< 0.5	3	0.63	< 20	560	3.5	13.0	< 10	7.7	< 200	2	1	< 20	24.0	5.0	31	6	1700	640
HU163	< 5	1	1940	110	< 1	< 10	30	< 10	300	3	< 2	0.7	3	< 100	15	< 0.5	< 2	< 0.05	< 20	170	1.2	2.7	< 10	2.8	< 200	< 1	< 1	< 20	7.2	1.9	11	< 5	520	< 500
HU164	5	2	150	550	2	< 10	71	< 10	150	11	< 2	2.3	5	< 100	33	< 0.5	< 2	0.85	< 20	280	1.4	7.2	< 10	6.2	< 200	1	1	< 20	16.0	3.9	17	< 5	1300	< 500
HU165	< 5	< 1	25	< 100	< 1	< 10	17	< 10	320	2	< 2	0.6	< 2	< 100	9	< 0.5	< 2	< 0.05	< 20	120	1.6	2.0	< 10	1.4	< 200	< 1	< 1	< 20	4.0	0.8	7	< 5	< 200	< 500
HU166	< 5	2	713	660	< 1	< 10	57	< 10	150	8	< 2	2.1	5	< 100	30	< 0.5	< 2	1.10	< 20	290	1.6	6.8	< 10	5.6	< 200	< 1	< 1	< 20	9.2	4.7	10	< 5	250	< 500
HU167	11	1	1480	120	< 1	12	20	< 10	330	3	< 2	0.8	< 2	< 100	6	< 0.5	< 2	< 0.05	< 20	90	1.8	3.4	< 10	1.4	< 200	< 1	< 1	< 20	1.6	0.7	11	< 5	1500	< 500
HU168	< 5	< 1	878	160	< 1	< 10	14	< 10	290	6	< 2	1.3	< 2	< 100	6	< 0.5	< 2	< 0.05	< 20	140	1.1	3.9	< 10	1.3	< 200	< 1	< 1	< 20	1.2	0.8	14	< 5	510	< 500
HU169	< 5	4	611	310	< 1	34	40	10	230	10	< 2	1.8	3	< 100	17	< 0.5	3	0.05	< 20	280	2.0	7.9	< 10	4.0	< 200	< 1	< 1	< 20	3.9	2.4	27	< 5	2700	< 500
HU170	< 5	< 1	581	< 100	< 1	< 10	10	< 10	490	< 1	< 2	0.7	< 2	< 100	< 5	< 0.5	< 2	< 0.05	< 20	44	1.0	0.9	< 10	0.6	< 200	< 1	< 1	< 20	1.8	0.5	4	< 5	640	< 500
HU171	< 5	< 1	1510	130	< 1	< 10	23	< 10	280	3	< 2	1.3	< 2	< 100	9	< 0.5	< 2	< 0.05	< 20	140	1.4	3.5	< 10	1.7	< 200	< 1	< 1	< 20	4.2	1.6	10	< 5	< 200	< 500
HU172	< 5	1	45	790	< 1	< 10	75	10	61	7	< 2	2.4	6	< 100	34	< 0.5	< 2	1.60	< 20	350	0.8	7.6	< 10	6.7	< 200	< 1	< 1	< 20	15.0	6.0	7	< 5	< 200	< 500
HU173	8	< 1	280	290	< 1	65	10	< 10	370	2	< 2	0.7	< 2	< 100	< 5	< 0.5	10	< 0.05	< 20	46	1.1	0.9	< 10	0.7	< 200	< 1	< 1	< 20	1.9	< 0.5	4	< 5	2200	< 500
HU174	5	< 1	320	< 100	< 1	22	10	< 10	350	< 1	< 2	< 0.5	< 2	< 100	< 5	< 0.5	< 2	< 0.05	< 20	39	1.3	0.6	< 10	0.6	< 200	< 1	< 1	< 20	1.8	< 0.5	3	< 5	2000	< 500
HU175	< 5	< 1	140	< 100	< 1	25	10	< 10	470	< 1	< 2	< 0.5	< 2	< 100	< 5	< 0.5	< 2	< 0.05	< 20	24	0.6	< 0.5	< 10	0.4	< 200	< 1	< 1	< 20	0.8	< 0.5	2	< 5	1700	< 500
HU176	6	< 1	64	< 100	< 1	< 10	11	< 10	480	1	< 2	< 0.5	< 2	< 100	< 5	< 0.5	< 2	< 0.05	< 20	56	1.0	1.2	< 10	0.8	< 200	< 1	< 1	< 20	2.3	0.5	4	< 5	240	< 500
HU177	< 5	< 1	61	< 100	< 1	< 10	11	< 10	440	2	< 2	0.6	< 2	< 100	< 5	< 0.5	< 2	< 0.05	< 20	47	0.9	0.9	< 10	0.6	< 200	< 1	< 1	< 20	2.0	0.5	5	< 5	220	< 500
HU178	< 5	< 1	63	< 100	< 1	< 10	11	< 10	440	2	< 2	0.6	< 2	< 100	< 5	< 0.5	< 2	< 0.05	< 20	46	0.8	1.0	< 10	0.8	< 200	< 1	< 1	< 20	2.5	0.5	6	< 5	350	< 500
HU179	< 5	< 1	6	120	< 1	< 10	18	< 10	470	3	< 2	0.8	< 2	< 100	7	< 0.5	< 2	< 0.05	< 20	77	0.5	1.4	< 10	1.2	< 200	< 1	< 1	< 20	3.2	0.7	4	< 5	430	< 500
HU180	< 5	< 1	8	< 100	< 1	< 10	10	< 10	390	2	< 2	< 0.5	< 2	< 100	< 5	< 0.5	< 2	< 0.05	< 20	67	0.6	1.1	< 10	0.8	< 200	< 1	< 1	< 20	2.6	0.6	4	< 5	< 200	< 500
HU181	< 5	< 1	< 5	< 100	< 1	< 10	12	< 10	530	1	< 2	0.6	< 2	< 100	5	< 0.5	< 2	< 0.05	< 20	69	1.1	1.1	< 10	0.9	< 200	< 1	< 1	< 20	2.8	0.5	6	< 5	200	< 500
HU182	< 5	< 1	9	120	< 1	< 10	34	< 10	390	2	< 2	0.7	< 2	< 100	12	< 0.5	< 2	< 0.05	< 20	140	1.4	1.9	< 10	2.2	< 200	< 1	< 1	< 20	6.7	1.5	9	< 5	< 200	< 500
HU183	< 5	< 1	< 5	< 100	< 1	< 10	10	< 10	540	< 1	< 2	< 0.5	< 2	< 100	< 5	< 0.5	< 2	< 0.05	< 20	16	0.9	< 0.5	< 10	0.2	< 200	< 1	< 1	< 20	< 0.5	< 0.5	< 2	< 5	< 200	< 500
HU184	< 5	< 1	< 5	110	< 1	< 10	14	< 10	340	3	< 2	1.1	< 2	< 100	8	< 0.5	< 2	< 0.05	< 20	180	1.7	4.5	< 10	1.5	< 200	< 1	< 1	< 20	3.0	1.3	15	< 5	430	< 500
HU185	< 5	< 1	24	150	< 1	< 10	10	< 10	470	3	< 2	0.7	< 2	< 100	< 5	< 0.5	< 2	< 0.05	< 20	79	1.0	1.6	< 10	0.7	< 200	< 1	< 1	< 20	0.7	0.5	8	< 5	< 200	< 500
HU186	< 5	< 1	120	< 100	< 1	< 10	19	< 10	380	1	< 2	0.9	< 2	< 100	7	< 0.5	7	0.05	< 20	89	0.8	1.6	< 10	1.5	< 200	< 1	< 1	< 20	2.5	1.2	5	< 5	< 200	< 500
HU187	< 5	4	18	740	< 1	< 10	55	19	54	15	< 2	4.6	3	< 100	27	< 0.5	< 2	2.20	22	260	0.7	15.0	< 10	6.2	< 200	< 1	< 1	< 20	7.9	3.8	7	< 5	290	< 500
HU188	< 5	3	8	840	< 1	< 10	84	< 10	< 50	18	< 2	2.7	7	< 100	25	< 0.5	4	1.30	< 20	530	1.0	10.0	< 10	5.2	< 200	< 1	< 1	< 20	22.0	5.2	18	< 5	740	< 500
HU189	>100	8	69	300	< 1	< 10	51	11	86	4	< 2	>10.0	4	< 100	23	< 0.5	4	1.40	< 20	150	1.9	4.3	39	3.5	< 200	< 1	< 1	71	8.9	12.0	58	< 5	950	< 500
HU190	7	6	< 5	1300	< 1	< 10	19	< 10	120	3	< 2	1.8	< 2	< 100	11	< 0.5	< 2	0.17	< 20	65	1.7	3.5	< 10	3.2	< 200	< 1	< 1	< 20	2.4	2.3	6	< 5	4200	< 500
HU191	< 5	17	410	700	7	< 10	28	< 10	470	12	< 2	3.4	3	< 100	15	0.9	7	0.09	< 20	230	2.9	5.2	< 10	3.6	< 200	< 1	< 1	< 20	6.4	4.2	27	< 5	900	< 500
HU192	< 5	15	79	390	< 1	< 10	10	< 10	420	< 1	< 2	3.2	2	< 100	6	0.7	3	0.06	< 20	23	1.0	2.9	< 10	2.0	< 200	< 1	< 1	< 20	3.1	3.2	22	< 5	370	< 500
HU193	< 5	44	110	1100	2	< 10	27	< 10	51	35	< 2	9.4	6	< 100	17	1.2	11	0.06	< 20	310	4.3	10.0	< 10	4.8	< 200	< 1	< 1	< 20	13.0	8.5	39	< 5	1100	< 500
HU194	< 5	6	8	670	< 1	< 10	67	< 10	69	5	< 2	2.2	7	< 100	28	< 0.5	< 2	1.10	< 20	230	1.0	6.6	< 10	5.0	< 200	< 1	< 1	< 20	11.0	3.7	6	< 5	310	< 500
HU195	< 5	2	18	1000	< 1	< 10	86	< 10	51	6	< 2	2.2	6	< 100	41	< 0.5	< 2	1.90	< 20	270	0.6	8.0	< 10	7.2	< 200	2	< 1	< 20	22.0	5.4	7	< 5	270	< 500
HU196	87	25	420	730	< 1	61	140	39	54	20	< 2	3.6	7	< 100	79	< 0.5	4	0.28	< 20	550	2.3	10.0	13	9.1	360	2	< 1	< 20	25.0	8.6	13	< 5	15000	< 500
HU197	< 5	2	< 5	1000	< 1	< 10	37	< 10	< 50	12	< 2	1.8	6	< 100	18	< 0.5	< 2	0.07	< 20	210	1.1	7.9	< 10	3.9	< 200	1	< 1	< 20	12.0	4.7	< 2	< 5	< 200	630
HU198	6	440 *	15	< 100	6	27	22	< 10	< 50	< 1	< 2	0.6	< 2	< 100	< 5	< 0.5	< 2	< 0.05	< 20	* 21	106.0	< 0.5	< 10	0.3	* 450	< 1	< 1	* 48	< 0.5	2.4	22	< 5	3100	< 500
HU199	23	19 *	12	< 100	* 2	390	21	15	< 50	< 1	< 2	3.5	< 2	< 100	< 5	< 0.5	7	< 0.05	* 51	< 10	11.0	< 0.5	< 10	< 0.2	< 200	< 1	< 1	< 20	< 0.5	2.8	9	< 5	>20000	* 1000
HU200	6	33	14	180	< 1	90	16	12	99	2	< 2	3.3	< 2	< 100	9	< 0.5	2	0.15	< 20	67	4.2	3.9	< 10	1.8	< 200	< 1	< 1	< 20	4.5	3.9	20	< 5	18000	< 500
HU201	>100	178	17	< 100	< 1	270	10	34	120	1	< 2	>10.0	< 2	< 100	< 5	0.6	6	< 0.05	< 20	< 10	3.5	1.0	< 10	1.0	< 200	< 1	< 1	< 20	1.9	3.1	100	< 5	>20000	< 500
HU202	< 5	9	7	< 100	< 1	19	10	< 10	< 50	7	< 2	0.5	< 2	< 100	6	< 0.5	< 2	0.06	< 20	34	0.7	1.4	< 10	1.3	< 200	< 1	< 1	< 20	1.9	3.3	< 2	< 5	5200	< 500
HU203	< 5	5	< 5	< 100	< 1	< 10	14	< 10	< 50	2	< 2	< 0.5	< 2	< 100	< 5	< 0.5	6	0.06	< 20	11	1.3	1.7	< 10	0.8	< 200	< 1	< 1	< 20	1.3	6.6	< 2	< 5	430	< 500
HU204	< 5	6	< 5	< 100	< 1	16	10	14	100	< 1	< 2	1.3	< 2	< 100	< 5	0.6	2	< 0.05	< 20	< 10	1.2	1.9	< 10	1.1	< 200	< 1	< 1	< 20	2.3	5.8	6	< 5	8200	< 500
HU205	44	41	< 5	< 100	< 1	130	10	32	210	< 1	< 2	5.0	< 2	< 100	5	< 0.5	4	0.05	* 41	< 10	4.4	2.4	< 10	0.8	< 200	< 1	< 1	< 20	2.1	4.3	38	< 5	>20000	< 500
HU206	41	16	31	< 100	2	120	10	41	82	8	< 2	8.4	< 2	< 100	< 5	< 0.5	27	< 0.05	< 20	< 10	7.1	1.0	< 10	0.3	< 200	< 1	< 1	< 20	1.0	6.3	< 2	< 5	>20000	< 500
HU207	< 5	16	< 5	< 100	< 1	< 10	10	< 10	< 50	6	< 2	0.6	< 2	< 100	< 5	< 0.5	< 2	< 0.05	< 20	< 10	1.5	< 0.5	< 10	< 0.2	< 200	< 1	< 1	< 20	< 0.5	3.7	< 2	< 5	4300	< 500
HU208	< 5	66	< 5	< 100	< 1	< 10	38	< 10	76	4	< 2	2.0	6	< 100	16	1.0	< 2	0.33	< 20	< 10	3.8	5.7	< 10	3.8	< 200	< 1	< 1	< 20	6.7	7.6	< 2	< 5	< 200	< 500
HU209	< 5	19	6	100	< 1	< 10	42	< 10	< 50	2	< 2	1.2	4	< 100	22	0.7	< 2	0.24	< 20	44	4.4	3.7	< 10	3.4	< 200	< 1	< 1	< 20	4.5	6.1	5	< 5	< 200	< 500
HU210	< 5	6	< 5	420	< 1	< 10	42	< 10	130	12	< 2	1.5	4	< 100	20	1.1	< 2	0.78	26	400	1.7	3.9	< 10	3.7	< 200	1	< 1	< 20	18.0	4.7	3	< 5	590	< 500
HU211	20	48	22	280	< 1	52	10	18	310	27	< 2	2.5	< 2	< 100	< 5	0.7	19	< 0.05	< 20	190	8.1	3.4	< 10	1.1	< 200	< 1	< 1	< 20	5.0	10.0	< 2	< 5	>20000	< 500
HU212	< 5	4	< 5	180	< 1	< 10	97	18	< 50	8	2	5.1	6	< 100	35	0.7	< 2	3.30	< 20	190	1.0	16.0	< 10	5.6	< 200	< 1	1	< 20	6.1	1.3	< 2	< 5	< 200	< 500
HU213	< 5	2	< 5	890	< 1	< 10	110	12	97	16	2	3.5	6	< 100	43	< 0.5	< 2	3.60	< 20	360	1.6	12.0	< 10	4.9	< 200	1	< 1	< 20	21.0	4.7	2	< 5	< 200	< 500
HU214	>100	56	450	< 100	4	16	22	18	160	2	< 2	>10.0	< 2	< 100	7	< 0.5	150	< 0.05	< 20	34	26.5	0.6	10	< 0.2	< 200	< 1	< 1	< 20	< 0.5	10.0	110	< 5	2000	< 500
HU215	5	8	38	740	< 1	< 10	40	32	55	22	4	6.4	5	< 100	20	< 0.5	< 2	1.70	< 20	310	3.8	18.0	< 10	4.1	< 200	< 1	< 1	< 20	4.2	3.8	14	< 5	1500	< 500

Appendix A - Neutron activation multi-element analytical data for rock-chip, grab, and select samples taken in the Huachuca Mountains unit, 1991, analyzed by Bondar-Clegg and Co., Ltd.-Continued

Sample No.	Ag (Ppm)	As (Ppm)	Au (Ppb)	Ba (Ppm)	Br (Ppm)	Cd (Ppm)	Ce (Ppm)	Co (Ppm)	Cr (Ppm)	Cs (Ppm)	Eu (Ppm)	Fe (Pct)	Hf (Ppm)	Ir (Ppb)	La (Ppm)	Lu (Ppm)	Mo (Ppm)	Na (Pct)	Ni (Ppm)	Rb (Ppm)	Sb (Ppm)	Sc (Ppm)	Se (Ppm)	Sm (Ppm)	Sn (Ppm)	Ta (Ppm)	Tb (Ppm)	Te (Ppm)	Th (Ppm)	U (Ppm)	W (Ppm)	Yb (Ppm)	Zn (Ppm)	Zr (Ppm)
HU216	< 5	7	22	980	< 1	< 10	93	16	63	13	2	5.2	5	< 100	41	< 0.5	< 2	2.80	< 20	360	2.1	18.0	< 10	6.2	< 200	1	< 1	< 20	11.0	2.5	5	< 5	400	< 500
HU217	< 5	2	< 5	900	< 1	< 10	99	16	130	16	< 2	4.1	6	< 100	44	< 0.5	< 2	1.40	< 20	480	1.2	13.0	< 10	5.0	< 200	< 1	< 1	< 20	17.0	4.4	6	< 5	200	< 500
HU218	< 5	8	1870	< 100	< 1	< 10	14	< 10	250	2	< 2	1.4	< 2	< 100	9	< 0.5	< 2	< 0.05	< 20	79	2.4	2.2	< 10	0.8	< 200	< 1	< 1	< 20	3.1	0.9	6	< 5	< 200	< 500
HU219	7	3	1730	140	< 1	< 10	< 10	< 10	480	1	< 2	1.6	< 2	< 100	< 5	< 0.5	7	0.06	< 20	33	1.0	1.2	< 10	0.4	< 200	< 1	< 1	< 20	1.3	0.9	3	< 5	< 200	< 500
HU220	< 5	4	3410	240	< 1	< 10	39	< 10	200	3	< 2	2.9	3	< 100	22	< 0.5	< 2	0.07	< 20	270	1.2	5.2	< 10	2.7	< 200	< 1	< 1	< 20	10.0	2.4	14	< 5	300	< 500
HU221	8	9	9540	< 100	< 1	< 10	< 10	< 10	260	< 1	< 2	2.4	< 2	< 100	< 5	< 0.5	6	< 0.05	< 20	17	2.8	0.9	< 10	0.3	< 200	< 1	< 1	< 20	1.4	2.7	6	< 5	< 200	< 500
HU222	< 5	3	80	370	< 1	< 10	100	< 10	< 50	18	< 2	3.0	7	< 100	38	< 0.5	3	0.10	< 20	470	2.7	8.6	< 10	5.8	< 200	1	1	< 20	22.0	8.1	31	< 5	400	< 500
HU223	< 5	4	1660	< 100	< 1	< 10	< 10	< 10	340	< 1	< 2	0.7	< 2	< 100	< 5	< 0.5	< 2	< 0.05	< 20	15	1.5	< 0.5	< 10	< 0.2	< 200	< 1	< 1	< 20	< 0.5	0.8	3	< 5	< 200	< 500
HU224	< 5	5	20	590	< 1	< 10	130	< 10	71	22	< 2	2.9	8	< 100	43	< 0.5	4	0.10	< 20	440	2.2	8.7	< 10	5.9	< 200	1	< 1	< 20	23.0	5.3	13	< 5	560	< 500
HU225	9	8	^ 0.340	< 100	< 1	< 10	< 10	< 10	360	< 1	< 2	5.2	< 2	< 100	< 5	< 0.5	8	< 0.05	20	17	2.1	< 0.5	< 10	0.2	< 200	< 1	< 1	< 20	0.7	1.3	3	< 5	240	< 500
HU226	< 5	3	14	710	< 1	< 10	130	< 10	< 50	21	3	3.1	8	< 100	60	< 0.5	< 2	1.00	< 20	490	3.3	9.4	< 10	7.5	< 200	1	< 1	< 20	21.0	4.2	14	5	420	< 500
HU227	< 5	12	< 5	630	< 1	< 10	78	< 10	74	5	< 2	1.8	10	< 100	28	< 0.5	3	0.82	< 20	210	1.7	6.8	< 10	3.8	< 200	1	< 1	< 20	11.0	4.5	< 2	< 5	< 200	< 500
HU228	>100	12	90	470	3	< 10	110	25	< 50	14	3	6.0	7	< 100	42	< 0.5	15	0.41	< 20	480	27.6	19.0	< 10	7.3	< 200	< 1	< 1	< 20	16.0	4.8	44	5	210	< 500
HU229	38	9	100	430	5	< 10	110	15	< 50	27	< 2	5.2	9	< 100	45	< 0.5	4	0.23	44	620	26.2	13.0	< 10	8.2	< 200	1	< 1	< 20	18.0	5.8	200	< 5	300	< 500
HU230	34	4	42	1600	< 1	< 10	94	16	53	15	< 2	4.5	7	< 100	35	< 0.5	5	0.12	< 20	570	12.0	19.0	< 10	6.7	< 200	1	< 1	< 20	10.0	3.6	12	< 5	250	< 500
HU231	>100	7	130	610	2	< 10	95	12	< 50	14	< 2	4.1	8	< 100	45	0.6	< 2	0.82	< 20	530	15.0	17.0	< 10	6.8	< 200	1	< 1	< 20	13.0	3.7	10	6	340	< 500
HU232	64	13	69	940	2	< 10	150	29	95	8	< 2	7.9	11	< 100	58	< 0.5	< 2	2.90	48	360	13.0	26.0	< 10	9.3	< 200	1	1	< 20	20.0	6.8	45	7	320	< 500
HU233	< 5	10	< 5	1600	< 1	< 10	91	< 10	73	11	< 2	1.9	8	< 100	44	< 0.5	< 2	1.60	< 20	450	1.9	6.8	< 10	7.6	< 200	2	< 1	< 20	18.0	5.7	7	< 5	< 200	670
HU234	< 5	28	60	500	13	< 10	83	< 10	68	33	< 2	3.6	7	< 100	40	< 0.5	< 2	0.07	31	180	11.0	9.3	< 10	13.0	< 200	1	2	< 20	12.0	6.8	16	< 5	440	< 500
HU235	< 5	29	31	400	3	< 10	94	< 10	94	31	2	3.1	9	< 100	39	< 0.5	< 2	0.17	28	190	3.9	11.0	< 10	11.0	< 200	< 1	2	< 20	12.0	10.0	8	< 5	250	< 500
HU236	< 5	52	24	800	2	< 10	34	< 10	87	19	< 2	1.8	3	< 100	20	< 0.5	< 2	0.35	< 20	210	22.6	4.9	< 10	4.1	< 200	< 1	< 1	< 20	6.0	5.0	16	< 5	< 200	520
HU237	96	18	^ 0.603	140	< 1	< 10	20	< 10	280	5	< 2	< 0.5	< 2	< 100	10	< 0.5	< 2	< 0.05	< 20	73	3.9	0.6	42	1.6	360	< 1	< 1	< 20	2.5	1.1	4	< 5	< 200	< 500
HU238	96	5	2670	< 100	< 1	< 10	10	< 10	320	1	< 2	< 0.5	< 2	< 100	< 5	< 0.5	< 2	< 0.05	< 20	26	2.5	< 0.5	32	0.5	< 200	< 1	< 1	< 20	0.9	< 0.5	< 2	< 5	< 200	< 500
HU239	< 5	16	12	400	< 1	< 10	19	40	180	37	< 2	7.1	< 2	< 100	11	< 0.5	< 2	0.43	100	440	6.8	19.0	< 10	3.7	< 200	< 1	< 1	< 20	3.3	3.4	23	< 5	< 200	< 500
HU240	< 5	34	43	920	1	< 10	61	19	< 50	40	< 2	4.6	4	< 100	30	< 0.5	< 2	0.38	< 20	590	23.0	14.0	< 10	7.7	< 200	< 1	1	< 20	11.0	4.5	87	< 5	< 200	< 500
HU241	< 5	32	69	470	1	< 10	27	< 10	120	34	< 2	2.0	< 2	< 100	14	< 0.5	6	0.09	< 20	280	30.1	3.9	< 10	3.3	< 200	< 1	< 1	< 20	4.2	1.4	28	< 5	< 200	< 500
HU242	< 5	19	9	860	< 1	< 10	72	< 10	< 50	14	< 2	2.8	10	< 100	34	< 0.5	3	0.34	< 20	390	5.2	8.1	< 10	7.7	< 200	< 1	< 1	< 20	18.0	5.2	488	< 5	< 200	< 500
HU243	< 5	21	350	370	< 1	< 10	44	< 10	150	17	< 2	1.8	8	< 100	26	< 0.5	< 2	0.05	< 20	350	11.0	8.5	< 10	5.4	< 200	< 1	< 1	< 20	9.4	4.3	45	< 5	< 200	< 500
HU244	20	25	220	1700	2	< 10	34	13	100	21	< 2	3.1	7	< 100	24	0.6	5	0.07	< 20	410	34.4	11.0	< 10	5.4	< 200	< 1	1	< 20	8.4	3.3	612	< 5	< 200	< 500
HU245	< 5	16	270	330	< 1	< 10	29	< 10	160	12	< 2	1.6	5	< 100	17	< 0.5	< 2	0.05	< 20	240	10.0	5.6	< 10	3.6	< 200	< 1	< 1	< 20	7.1	2.2	46	< 5	< 200	< 500
HU246	< 5	6	38	140	< 1	< 10	10	< 10	430	4	< 2	0.8	< 2	< 100	6	< 0.5	9	< 0.05	< 20	93	6.5	1.4	< 10	1.4	< 200	< 1	< 1	< 20	2.8	1.0	13	< 5	< 200	< 500
HU247	< 5	5	36	5400	< 1	< 10	15	< 10	590	4	< 2	2.4	< 2	< 100	7	< 0.5	13	< 0.05	26	91	16.0	2.1	< 10	1.2	< 200	< 1	< 1	< 20	1.1	1.2	35	< 5	< 200	< 500
HU248	58	41	3010	7200	5	< 10	23	< 10	670	2	< 2	3.4	< 2	< 100	< 5	1.0	10	< 0.05	< 20	50	165.0	1.4	< 10	0.6	< 200	< 1	< 1	* 41	< 0.5	2.5	170	5	< 200	< 500
HU249	< 5	8	66	4900	< 1	< 10	89	24	120	23	< 2	4.0	7	< 100	50	< 0.5	< 2	0.79	< 20	430	14.0	13.0	< 10	10.0	< 200	1	1	< 20	4.4	2.9	63	6	< 200	< 500
HU250	73	14	340	7200	1	< 10	57	17	110	17	< 2	3.9	5	< 100	37	0.6	< 2	0.08	< 20	280	33.9	9.0	< 10	8.8	< 200	< 1	1	< 20	3.5	3.0	50	< 5	< 200	< 500
HU251	20	38	160	2800	3	< 10	36	11	220	12	< 2	2.3	< 2	< 100	25	< 0.5	< 2	< 0.05	< 20	150	104.0	4.5	< 10	5.1	< 200	< 1	1	< 20	5.7	1.4	35	5	< 200	< 500
HU252	79	9	3070	16700	< 1	< 10	30	12	< 50	24	< 2	3.5	17	< 100	41	0.9	12	0.07	< 20	260	57.6	7.6	< 10	8.9	* 420	1	2	< 20	5.8	2.4	1480	< 5	< 200	< 500
HU253	6	9	17	5100	< 1	< 10	10	14	200	10	< 2	3.1	< 2	< 100	11	< 0.5	< 2	< 0.05	< 20	120	18.0	6.1	< 10	2.7	< 200	< 1	< 1	< 20	1.3	1.0	25	< 5	< 200	< 500
HU254	78	9	55	1300	< 1	< 10	43	21	180	10	< 2	3.1	3	< 100	23	< 0.5	< 2	< 0.05	< 20	270	14.0	7.4	< 10	4.5	< 200	< 1	< 1	< 20	1.8	2.8	48	< 5	< 200	< 500
HU255	63	7	490	>20000	< 1	< 10	52	24	140	15	< 2	3.7	6	< 100	22	< 0.5	< 2	0.14	< 20	280	18.0	8.1	< 10	4.9	< 200	< 1	< 1	< 20	2.1	1.6	53	< 5	< 200	620
HU256	< 5	10	180	2200	3	< 10	78	18	67	30	< 2	4.2	7	< 100	41	< 0.5	< 2	0.19	< 20	600	24.9	17.0	< 10	7.6	< 200	1	1	< 20	3.6	3.8	140	< 5	< 200	< 500
HU257	< 5	5	< 5	1600	< 1	< 10	77	25	84	8	2	5.7	8	< 100	35	0.7	< 2	3.10	< 20	96	1.6	13.0	< 10	7.2	< 200	1	< 1	< 20	2.9	1.0	< 2	< 5	< 200	< 500
HU258	< 5	10	1150	680	< 1	< 10	28	< 10	310	10	< 2	2.0	2	< 100	13	< 0.5	3	< 0.05	< 20	99	2.9	4.3	< 10	2.6	< 200	< 1	< 1	< 20	1.6	1.3	48	< 5	< 200	< 500
HU259	< 5	4	270	670	< 1	< 10	19	< 10	300	10	< 2	1.7	< 2	< 100	12	< 0.5	3	0.05	< 20	100	2.8	3.9	< 10	2.3	< 200	< 1	< 1	< 20	1.3	0.8	20	< 5	< 200	< 500
HU260	< 5	6	1350	630	< 1	< 10	26	< 10	410	10	< 2	2.0	< 2	< 100	10	< 0.5	3	< 0.05	< 20	84	2.8	3.6	< 10	1.9	< 200	< 1	< 1	< 20	0.9	0.8	25	< 5	< 200	< 500
HU261	< 5	12	350	1000	< 1	< 10	43	13	200	16	< 2	3.1	< 2	< 100	19	< 0.5	6	0.06	< 20	210	5.4	6.1	< 10	4.3	< 200	< 1	< 1	< 20	2.4	1.2	46	< 5	< 200	< 500
HU262	13	19	908	2000	< 1	< 10	51	10	200	23	< 2	3.6	9	< 100	27	0.6	8	0.05	39	210	12.0	8.1	< 10	4.6	< 200	< 1	< 1	< 20	2.4	1.6	560	< 5	< 200	< 500
HU263	44	7	670	370	< 1	< 10	20	< 10	250	8	< 2	1.8	3	< 100	13	< 0.5	25	< 0.05	< 20	110	6.5	3.6	< 10	2.3	< 200	< 1	< 1	20	1.6	0.6	18	< 5	210	< 500
HU264	8	13	1110	580	< 1	< 10	24	11	260	9	< 2	2.6	< 2	< 100	17	< 0.5	3	< 0.05	< 20	150	4.2	4.7	< 10	3.3	< 200	< 1	< 1	< 20	1.7	0.9	26	< 5	< 200	< 500
HU265	10	22	360	950	< 1	< 10	51	< 10	310	17	< 2	2.6	6	< 100	29	< 0.5	4	< 0.05	< 20	220	5.6	10.0	< 10	4.4	< 200	1	< 1	< 20	1.7	0.6	46	< 5	< 200	640
HU266	25	37	1230	740	< 1	< 10	17	< 10	240	6	< 2	1.1	2	< 100	9	< 0.5	12	< 0.05	< 20	87	6.1	2.8	< 10	1.4	< 200	< 1	< 1	< 20	0.9	< 0.5	15	< 5	< 200	< 500
HU267	11	38	470	1100	< 1	< 10	46	12	220	11	< 2	2.2	< 2	< 100	14	< 0.5	30	< 0.05	< 20	160	6.0	4.5	< 10	3.4	< 200	< 1	< 1	< 20	1.9	1.0	36	< 5	< 200	< 500
HU268	< 5	15	390	1700	< 1	< 10	41	11	180	18	< 2	2.4	3	< 100	22	< 0.5	3	< 0.05	< 20	200	3.8	5.5	< 10	4.2	< 200	< 1	< 1	< 20	2.9	1.4	32	< 5	< 200	< 500
HU269	< 5	15	504	1800	< 1	< 10	38	12	190	18	< 2	2.9	4	< 100	24	< 0.5	< 2	0.05	< 20	200	3.8	6.6	< 10	4.2	< 200	< 1	< 1	< 20	2.8	1.8	34	< 5	< 200	< 500

Appendix B - Inductively coupled plasma-atomic emission spectroscopy multi-element analytical data for rock-chip, grab, and select samples collected in the Huachuca Mountains unit, 1991, analyzed by Chemex Labs, Inc.

[<, less than; *, less than for lower detection limit elevated by interference from other elements; >, greater than;
^, overlimit result by aqua regia-atomic absorbtion in oz/st; @, overlimit result by aqua regia-atomic absorbtion in percent]

Sample No.	Ag (Ppm)	Al (Pct)	As (Ppm)	Ba (Ppm)	Be (Ppm)	Bi (Ppm)	Ca (Pct)	Cd (Ppm)	Co (Ppm)	Cr (Ppm)	Cu (Ppm)	Fe (Pct)	Ga (Ppm)	Hg (Ppm)	K (Pct)	La (Ppm)	Mg (Pct)	Mn (Ppm)	Mo (Ppm)	Na (Pct)	Ni (Ppm)	P (Ppm)	Pb (Ppm)	Sb (Ppm)	Sc (Ppm)	Sr (Ppm)	Ti (Pct)	Tl (Ppm)	U (Ppm)	V (Ppm)	W (Ppm)	Zn (Ppm)
HU001	< 0.2	0.94	10	140	< 0.5	< 2	>15.00	< 0.5	3	16	36	1.86	60	< 1	0.24	40	0.19	535	< 1	0.04	< 1	200	28	10	2	76	<0.01	< 10	< 10	7	10	50
HU002	0.2	1.16	15	340	< 0.5	8	5.38	< 0.5	14	30	197	3.08	30	< 1	0.42	30	0.25	670	< 1	0.03	6	1040	58	10	6	84	0.02	< 10	< 10	31	10	86
HU003	3.2	0.77	< 5	170	< 0.5	< 2	1.59	< 0.5	8	27	651	1.72	10	< 1	0.26	10	0.19	380	< 1	0.02	1	310	166	5	4	26	<0.01	< 10	< 10	25	< 10	52
HU004	< 0.2	2.21	< 5	90	< 0.5	< 2	5.81	< 0.5	17	25	29	4.52	40	< 1	0.24	40	1.68	655	< 1	0.05	14	1890	10	5	4	73	0.03	< 10	< 10	53	20	110
HU005	< 0.2	1.32	10	70	< 0.5	< 2	1.87	< 0.5	6	37	14	1.59	20	< 1	0.10	20	0.50	535	< 1	0.04	< 1	60	< 2	5	1	41	<0.01	< 10	< 10	15	< 10	20
HU006	< 0.2	1.69	< 5	180	< 0.5	< 2	2.04	< 0.5	5	7	15	2.28	20	< 1	0.26	50	0.47	430	< 1	0.05	< 1	90	8	5	3	70	0.01	< 10	< 10	21	10	28
HU007	< 0.2	1.44	< 5	150	< 0.5	< 2	1.49	< 0.5	7	23	15	1.95	20	< 1	0.17	30	0.50	485	< 1	0.05	< 1	80	2	20	2	59	<0.01	< 10	< 10	15	10	24
HU008	0.2	0.72	< 5	190	< 0.5	< 2	8.28	< 0.5	< 1	42	21	1.01	40	< 1	0.13	30	0.36	80	< 1	0.14	< 1	200	16	5	1	162	<0.01	< 10	< 10	15	10	24
HU009	28.8	0.40	55	210	< 0.5	< 2	11.64	< 0.5	12	134	7449	5.52	40	6	0.07	30	1.19	1525	253	0.01	22	60	470	75	2	187	<0.01	< 10	< 10	24	30	172
HU010	89.2	0.13	5	90	< 0.5	8	4.02	< 0.5	7	315	5407	1.42	20	7	0.05	10	0.06	450	8	0.01	7	< 10	< 2	10	1	103	<0.01	20	< 10	10	30	22
HU011	1.2	0.08	< 5	270	< 0.5	< 2	0.09	< 0.5	3	378	577	2.31	< 10	4	0.02	< 10	0.03	215	8	0.01	9	60	10	10	1	7	<0.01	< 10	< 10	7	860	16
HU012	77.6	0.53	35	6540	< 0.5	< 2	0.22	< 0.5	5	246	5170	4.14	< 10	4	0.32	10	0.05	110	30	0.01	9	740	26	45	1	94	<0.01	< 10	10	13	40	28
HU013	26.4	0.92	5	>10000	< 0.5	40	0.56	< 0.5	12	323	@ 2.60	2.86	10	9	0.42	20	0.12	605	8	0.02	21	800	< 2	25	3	152	0.02	< 10	10	24	50	96
HU014	13.8	0.23	< 5	9160	< 0.5	* 20	0.30	< 0.5	4	343	@ 2.91	1.87	< 10	3	0.11	10	0.04	470	13	0.01	15	400	< 2	10	1	118	<0.01	< 10	< 10	13	* 50	98
HU015	79.4	0.41	< 5	3590	< 0.5	< 2	2.35	< 0.5	9	314	7731	2.79	10	< 1	0.21	10	0.27	330	23	0.01	11	530	< 2	55	1	117	<0.01	< 10	< 10	12	20	64
HU016	^ 48.00	0.58	30	1280	< 0.5	* 20	2.80	< 0.5	18	152	@ 10.10	9.93	10	< 1	0.39	20	1.05	480	57	0.01	7	800	20	175	5	92	<0.01	< 10	10	14	450	356
HU017	^ 11.10	< 0.01	50	2320	< 0.5	20	0.64	2.0	5	332	@ 2.49	3.93	< 10	< 1	< 0.01	< 10	0.18	235	77	<0.01	14	* 200	4	185	1	41	<0.01	< 10	< 10	5	* 50	524
HU018	^ 9.33	0.24	10	2250	< 0.5	* 20	2.69	1.0	1	304	@ 1.40	2.98	10	< 1	0.14	10	0.77	560	48	0.01	21	400	< 2	150	2	92	<0.01	< 10	< 10	8	220	180
HU019	138.2	0.11	5	640	< 0.5	* 20	11.08	< 0.5	5	117	@ 8.80	8.94	30	< 1	0.08	30	1.33	770	47	0.01	6	* 200	42	10	3	615	<0.01	< 10	< 10	11	600	174
HU020	85.4	0.83	20	3060	< 0.5	40	4.93	< 0.5	12	187	@ 3.34	5.07	20	< 1	0.42	40	1.04	580	80	0.01	24	600	< 2	25	4	256	<0.01	10	< 10	18	* 50	38
HU021	182.0	1.02	65	5600	< 0.5	40	6.17	1.0	9	248	@ 1.61	3.67	30	< 1	0.53	40	1.93	855	67	0.04	20	800	24	160	3	283	<0.01	< 10	< 10	20	* 50	352
HU022	^ 9.01	0.35	70	6190	< 0.5	* 20	8.24	3.5	13	285	@ 1.30	3.97	40	5	0.19	30	2.27	1560	59	0.01	20	400	< 2	215	3	272	<0.01	< 10	30	20	* 50	454
HU023	47.2	0.13	< 5	2060	< 0.5	40	5.83	< 0.5	1	280	@ 4.20	5.73	20	1	0.06	20	0.93	485	52	0.01	10	* 200	< 2	5	2	267	<0.01	< 10	< 10	12	* 50	32
HU024	^ 9.97	8.00	10	340	< 0.5	< 2	5.23	1.5	13	33	@ 9.42	4.24	< 10	< 1	0.13	40	1.56	985	3	0.02	5	1180	18	< 5	15	1170	0.50	< 10	< 10	57	140	174
HU025	1.4	2.98	30	270	< 0.5	2	3.97	< 0.5	1	34	334	2.13	< 10	< 1	0.75	10	1.06	635	< 1	0.06	< 1	330	10	5	6	89	0.14	10	< 10	38	20	66
HU026	0.6	3.25	20	920	< 0.5	< 2	1.67	< 0.5	14	42	100	4.97	< 10	< 1	0.54	30	2.50	690	< 1	0.07	26	1800	< 2	10	9	169	0.28	20	< 10	103	20	90
HU027	0.2	4.68	10	550	< 0.5	< 2	1.02	< 0.5	13	31	35	5.29	< 10	1	1.13	30	2.32	645	1	0.08	17	1800	24	10	10	51	0.08	< 10	< 10	80	20	76
HU028	< 0.2	1.90	5	410	< 0.5	< 2	7.31	< 0.5	17	40	23	4.23	< 10	< 1	0.48	40	2.82	1220	2	0.04	25	1710	16	10	6	158	0.25	< 10	< 10	82	40	148
HU029	< 0.2	1.73	< 5	1080	< 0.5	< 2	0.78	0.5	3	23	27	5.49	< 10	< 1	0.31	40	0.27	825	2	0.02	13	2470	32	15	7	45	0.07	< 10	< 10	107	20	70
HU030	39.4	1.22	10	>10000	< 0.5	< 2	8.71	< 0.5	7	47	3232	3.08	< 10	< 1	0.51	40	0.59	665	2	0.03	8	1640	< 2	20	4	648	0.06	< 10	< 10	36	30	42
HU031	2.6	0.70	< 5	>10000	< 0.5	< 2	9.76	0.5	10	47	127	1.81	< 10	< 1	0.29	20	1.84	1490	< 1	0.02	16	840	20	5	2	706	0.01	20	< 10	16	30	102
HU032	1.2	0.80	< 5	2140	< 0.5	< 2	12.41	1.5	19	25	140	3.20	< 10	< 1	0.39	20	2.92	2335	< 1	0.03	10	660	16	< 5	4	162	<0.01	< 10	< 10	34	30	196
HU033	0.8	1.16	< 5	>10000	< 0.5	< 2	13.08	< 0.5	1	41	140	1.39	< 10	< 1	0.57	20	0.75	1505	< 1	0.03	< 1	1260	22	10	3	446	<0.01	< 10	< 10	29	30	88
HU034	5.0	0.54	5	>10000	< 0.5	< 2	2.15	< 0.5	2	179	95	0.51	< 10	< 1	0.24	10	0.07	185	< 1	0.02	< 1	510	< 2	< 5	1	460	<0.01	< 10	< 10	14	30	10
HU035	7.4	0.54	5	>10000	< 0.5	< 2	5.71	0.5	< 1	28	297	0.28	< 10	4	0.26	20	0.09	210	< 1	0.02	< 1	870	< 2	< 5	1	808	<0.01	< 10	< 10	10	30	10
HU036	14.6	0.31	10	>10000	< 0.5	< 2	>15.00	0.5	2	4	937	0.79	< 10	< 1	0.17	20	0.21	795	< 1	0.02	< 1	600	12	< 5	2	1323	<0.01	< 10	< 10	15	30	28
HU037	10.0	1.55	40	1470	< 0.5	< 2	0.47	2.0	6	93	1389	1.71	10	< 1	0.78	20	0.13	855	1	0.01	14	1600	< 2	265	4	35	0.01	< 10	10	31	* 50	126
HU038	^ 12.50	0.16	455	>10000	< 0.5	40	0.38	16.5	2	258	@ 1.90	2.20	< 10	3	0.08	< 10	0.09	160	11	0.01	8	110	4	1955	1	259	<0.01	< 10	< 10	13	250	722
HU039	42.6	0.11	< 5	7520	< 0.5	< 2	0.10	< 0.5	10	330	1170	1.47	< 10	< 1	0.02	< 10	0.04	500	29	<0.01	15	290	< 2	75	1	134	<0.01	< 10	< 10	19	30	22
HU040	117.2	0.62	400	3030	< 0.5	12	4.68	12.0	8	97	7354	3.59	10	10	0.36	40	0.44	725	3	0.01	16	1700	< 2	1505	4	186	0.04	< 10	< 10	28	50	704
HU041	^ 9.53	0.15	775	9990	< 0.5	* 20	2.42	25.0	14	226	@ 2.57	2.14	10	30	0.11	10	0.33	830	9	0.01	24	* 200	< 2	4405	2	234	<0.01	< 10	< 10	14	* 50	1622
HU042	^ 13.20	0.04	1130	7140	< 0.5	* 20	2.56	38.5	16	246	@ 3.47	2.88	10	19	0.05	10	0.71	1005	23	<0.01	16	* 200	< 2	5930	2	161	<0.01	< 10	< 10	12	1050	2124
HU043	^ 91.10	0.11	885	2110	< 0.5	* 20	1.27	55.0	16	265	@ 17.20	4.07	< 10	33	0.07	< 10	0.31	300	146	0.01	11	* 200	10	7745	4	87	<0.01	< 10	< 10	14	1500	3234
HU044	95.8	1.08	115	3440	< 0.5	< 2	4.31	< 0.5	18	102	9414	3.31	20	3	0.59	40	1.19	755	7	0.01	14	1540	2	565	5	140	0.03	< 10	< 10	30	20	282
HU045	^ 5.71	1.00	95	10	84.0	380	11.23	90.5	46	97	@ 1.62	14.56	20	< 1	0.04	30	1.30	5880	6	0.02	23	* 200	7754	15	2	113	0.03	< 10	10	18	150	>10000
HU046	12.4	1.35	25	40	1.0	20	>15.00	32.5	19	71	502	3.35	50	< 1	0.29	50	1.16	3900	1	0.03	9	530	1372	10	3	198	0.07	< 10	10	29	80	>10000
HU047	6.4	1.26	50	460	< 0.5	70	9.21	27.5	11	65	564	7.72	20	1	0.01	30	0.66	>10000	< 1	0.02	6	< 10	354	10	2	27	0.15	< 10	< 10	19	200	9244
HU048	1.0	0.63	< 5	30	< 0.5	< 2	>15.00	15.0	< 1	27	47	0.65	80	11	0.16	50	0.99	1045	3	0.02	< 1	60	52	20	1	1184	0.01	< 10	10	17	40	1068
HU049	1.2	0.16	5	10	< 0.5	12	>15.00	8.5	2	10	36	0.82	80	< 1	0.04	50	0.59	3920	< 1	0.02	1	< 10	118	25	< 1	2131	<0.01	< 10	< 10	11	40	1868

Appendix B - Inductively coupled plasma-atomic emission spectroscopy multi-element analytical data for rock-chip, grab, and select samples collected in the Huachuca Mountains unit, 1991, analyzed by Chemex Labs, Inc.-Continued

Sample No.	Ag (ppm)	Al (pct)	As (ppm)	Ba (ppm)	Be (ppm)	Bi (ppm)	Ca (pct)	Cd (ppm)	Co (ppm)	Cr (ppm)	Cu (ppm)	Fe (pct)	Ga (ppm)	Hg (ppb)	K (pct)	La (ppm)	Mg (pct)	Mn (pct)	Mo (ppm)	Na (pct)	Ni (ppm)	P (ppm)	Pb (ppm)	Sb (ppm)	Sc (ppm)	Sr (ppm)	Ti (pct)	Tl (ppm)	U (ppm)	V (ppm)	W (ppm)	Zn (ppm)
HU050	20.6	0.08	5	10	< 0.5	10	0.82	>100.0	17	93	736	1.76	< 10	< 1	0.03	< 10	0.40	500	11	0.01	< 1	110	>10000	< 5	< 1	61	<0.01	< 10	30	2	150	>10000
HU051	< 0.2	0.40	< 5	20	< 0.5	10	>15.00	>100.0	6	19	24	1.19	< 10	< 1	0.21	20	9.34	740	11	0.02	< 1	1200	620	< 5	2	101	<0.01	< 10	< 10	17	70	>10000
HU052	< 0.2	0.33	< 5	30	0.5	< 2	>15.00	11.0	3	44	19	2.93	< 10	< 1	0.17	20	2.33	610	4	0.01	2	240	894	< 5	2	172	<0.01	< 10	< 10	9	1350	1790
HU053	1.0	0.21	< 5	170	< 0.5	< 2	>15.00	4.0	< 1	35	18	0.32	< 10	< 1	0.09	20	0.45	135	1	0.02	< 1	< 10	184	10	1	322	<0.01	< 10	< 10	8	20	206
HU054	4.0	0.76	5	40	0.5	< 2	>15.00	>100.0	4	44	56	0.97	< 10	< 1	0.23	20	0.50	260	26	0.02	3	90	>10000	< 5	3	195	<0.01	< 10	< 10	12	50	>10000
HU055	6.8	0.16	< 5	30	< 0.5	< 2	>15.00	>100.0	< 1	73	193	0.71	< 10	< 1	0.10	10	0.50	265	8	0.02	< 1	90	>10000	< 5	1	229	<0.01	< 10	< 10	5	50	9006
HU056	3.8	0.19	< 5	40	< 0.5	< 2	2.41	>100.0	7	86	64	1.21	< 10	< 1	0.12	< 10	0.28	345	4	0.01	< 1	190	>10000	< 5	1	34	<0.01	< 10	< 10	4	50	>10000
HU057	2.8	0.20	< 5	30	< 0.5	< 2	1.46	>100.0	7	136	209	0.79	< 10	< 1	0.10	< 10	0.34	285	13	0.02	< 1	50	8824	< 5	1	12	<0.01	< 10	< 10	4	60	>10000
HU058	38.4	0.14	25	40	< 0.5	< 2	0.44	>100.0	< 1	88	622	0.80	< 10	< 1	0.06	< 10	0.17	160	11	0.01	< 1	160	>10000	5	< 1	52	<0.01	< 10	10	4	80	>10000
HU059	2.8	0.08	< 5	30	< 0.5	< 2	0.39	>100.0	14	90	224	1.00	< 10	6	0.06	< 10	0.20	300	12	0.01	1	110	>10000	< 5	< 1	12	<0.01	< 10	< 10	3	130	>10000
HU060	101.8	0.80	< 5	50	< 0.5	40	1.72	72.5	24	274	54	5.01	10	3	0.49	30	0.30	670	11	0.01	33	960	9092	20	4	71	0.01	< 10	< 10	13	3840	294
HU061	1.2	0.81	5	50	0.5	< 2	1.50	1.0	4	225	61	1.73	10	10	0.43	40	0.25	625	7	0.02	14	530	88	5	2	67	0.03	10	< 10	11	90	38
HU062	0.8	0.62	10	80	< 0.5	< 2	0.05	0.5	2	123	47	2.15	< 10	8	0.53	40	0.05	185	1	0.04	8	650	< 2	5	2	22	<0.01	< 10	< 10	7	20	26
HU063	1.2	< 0.01	< 5	10	< 0.5	< 2	0.01	< 0.5	< 1	332	91	0.85	< 10	2	0.02	< 10	< 0.01	70	6	0.01	7	< 10	< 2	10	< 1	< 1	<0.01	10	10	4	10	< 2
HU064	2.0	0.29	< 5	10	< 0.5	2	0.04	< 0.5	< 1	91	271	0.66	< 10	< 1	0.14	< 10	0.07	165	2	0.01	7	90	32	< 5	< 1	2	<0.01	< 10	< 10	5	< 10	78
HU065	3.6	0.70	< 5	40	0.5	< 2	0.07	0.5	< 1	80	979	1.04	< 10	1	0.37	10	0.08	70	1	0.01	2	330	44	< 5	1	7	<0.01	20	< 10	8	< 10	74
HU066	< 0.2	0.14	< 5	20	< 0.5	24	< 0.01	< 0.5	< 1	126	54	0.46	< 10	< 1	0.08	< 10	< 0.01	50	< 1	0.01	2	100	16	< 5	< 1	4	<0.01	< 10	< 10	< 1	< 10	28
HU067	0.2	0.11	5	10	< 0.5	10	< 0.01	< 0.5	< 1	127	90	0.32	< 10	2	0.07	< 10	< 0.01	40	1	0.01	< 1	30	6	< 5	< 1	< 1	<0.01	< 10	20	< 1	< 10	30
HU068	0.4	0.13	< 5	10	< 0.5	< 2	< 0.01	0.5	< 1	92	38	0.67	< 10	3	0.12	< 10	0.01	25	1	0.01	< 1	70	72	< 5	< 1	2	<0.01	< 10	20	< 1	< 10	20
HU069	0.4	0.05	< 5	< 10	< 0.5	26	< 0.01	0.5	< 1	118	48	0.40	< 10	8	0.04	< 10	< 0.01	35	1	0.01	1	20	32	< 5	< 1	< 1	<0.01	< 10	30	< 1	< 10	18
HU070	1.0	1.68	10	110	1.0	< 2	0.70	1.0	13	123	81	2.57	< 10	1	1.20	30	0.89	970	4	0.03	35	620	58	< 5	4	25	0.08	< 10	< 10	21	< 10	172
HU071	0.6	0.11	< 5	10	< 0.5	6	< 0.01	< 0.5	< 1	137	49	0.48	< 10	8	0.07	< 10	0.01	50	< 1	0.01	< 1	< 10	42	< 5	< 1	1	<0.01	20	20	< 1	< 10	14
HU072	1.4	4.85	5	90	1.0	< 2	3.72	0.5	42	236	123	6.73	10	< 1	2.67	20	3.14	2050	1	0.03	105	440	66	5	18	62	0.22	< 10	20	144	40	240
HU073	0.6	0.94	< 5	20	0.5	< 2	0.07	0.5	4	398	85	2.24	< 10	< 1	0.45	< 10	0.18	190	5	0.01	18	260	62	5	3	3	0.02	< 10	20	27	30	24
HU074	1.0	0.65	< 5	10	< 0.5	< 2	0.04	< 0.5	1	139	42	1.21	< 10	< 1	0.13	10	0.08	245	1	0.06	8	140	< 2	5	3	3	0.02	< 10	20	8	10	8
HU075	0.4	1.33	< 5	10	0.5	< 2	0.07	< 0.5	4	175	30	0.71	10	2	0.43	30	0.09	115	2	0.04	7	50	< 2	5	2	4	0.01	< 10	10	7	10	18
HU076	2.0	0.12	5	< 10	< 0.5	< 2	0.21	< 0.5	1	289	110	1.20	10	11	0.05	< 10	0.02	275	8	0.01	13	60	194	5	< 1	5	<0.01	< 10	20	8	220	100
HU077	2.2	0.67	40	10	1.5	< 2	0.10	0.5	5	279	128	2.13	< 10	5	0.40	< 10	0.30	1140	7	0.01	20	300	200	5	2	12	0.02	< 10	10	14	220	122
HU078	5.0	0.66	10	10	0.5	< 2	0.04	< 0.5	5	251	72	2.56	< 10	< 1	0.51	< 10	0.14	175	4	0.03	24	150	472	5	2	20	0.01	< 10	10	14	910	58
HU079	2.2	0.07	10	< 10	< 0.5	< 2	0.05	< 0.5	< 1	315	109	0.79	< 10	5	0.04	< 10	0.01	90	6	0.01	6	20	44	10	< 1	2	<0.01	< 10	< 10	5	550	24
HU080	0.2	0.06	< 5	< 10	< 0.5	< 2	0.04	< 0.5	1	459	81	0.89	< 10	5	0.05	< 10	0.01	80	8	0.01	8	20	14	5	< 1	1	<0.01	< 10	< 10	6	80	2
HU081	0.2	1.47	< 5	100	< 0.5	8	0.17	< 0.5	10	46	20	2.32	10	4	0.61	50	0.39	795	1	0.03	9	460	32	5	3	13	0.04	< 10	< 10	21	10	68
HU082	< 0.2	1.36	30	60	< 0.5	< 2	0.07	< 0.5	4	52	21	1.44	< 10	4	0.76	20	0.51	425	< 1	0.03	6	140	48	5	3	6	0.09	< 10	< 10	18	< 10	74
HU083	< 0.2	0.98	20	50	< 0.5	< 2	0.57	< 0.5	6	54	19	1.67	< 10	1	0.61	20	0.34	355	< 1	0.08	< 1	500	6	10	4	11	0.10	< 10	< 10	14	10	36
HU084	4.6	0.46	< 5	60	< 0.5	2	0.11	0.5	4	145	22	1.05	10	< 1	0.26	20	0.06	800	3	0.03	< 1	280	474	5	1	10	0.04	10	< 10	6	20	12
HU085	2.6	0.65	< 5	40	< 0.5	< 2	0.05	0.5	9	163	35	2.23	< 10	< 1	0.43	< 10	0.26	390	7	0.02	8	210	518	5	2	5	0.09	< 10	< 10	16	50	46
HU086	7.0	0.19	< 5	10	< 0.5	< 2	0.03	< 0.5	2	164	44	2.65	< 10	2	0.13	< 10	0.08	170	52	0.03	3	170	884	5	1	5	0.01	< 10	< 10	8	20	18
HU087	17.8	0.08	< 5	10	< 0.5	< 2	0.03	< 0.5	< 1	177	10	0.64	10	< 1	0.05	< 10	0.01	20	78	0.01	< 1	60	1600	5	< 1	2	<0.01	< 10	< 10	2	830	8
HU088	0.6	0.49	5	30	< 0.5	< 2	0.02	< 0.5	5	174	8	1.78	< 10	1	0.43	< 10	0.25	75	13	0.02	3	210	248	5	1	20	0.05	< 10	< 10	10	100	34
HU089	1.2	2.16	< 5	90	< 0.5	< 2	0.07	< 0.5	11	154	23	3.86	< 10	2	1.94	10	1.42	300	15	0.02	50	410	274	5	7	7	0.15	< 10	< 10	43	180	164
HU090	15.0	0.13	25	< 10	< 0.5	2	0.03	39.0	5	359	106	4.44	< 10	< 1	0.10	< 10	0.11	100	11	0.01	19	20	1302	5	< 1	1	<0.01	< 10	< 10	9	80	852
HU091	2.6	1.60	< 5	50	1.5	4	0.13	0.5	13	380	75	2.73	< 10	< 1	1.09	< 10	0.91	270	12	0.02	40	230	212	5	6	3	0.08	< 10	10	53	440	114
HU092	2.4	0.22	< 5	20	< 0.5	6	0.08	< 0.5	3	172	18	0.55	< 10	< 1	0.10	< 10	0.10	95	9	0.01	3	< 10	36	5	1	2	<0.01	10	< 10	7	10	34
HU093	6.6	0.07	< 5	20	< 0.5	< 2	0.02	0.5	4	333	102	0.84	< 10	4	0.08	< 10	0.17	70	29	0.01	6	< 10	308	5	< 1	< 1	<0.01	30	< 10	4	210	26
HU094	11.6	< 0.01	15	510	< 0.5	< 2	0.07	< 0.5	< 1	338	768	0.88	< 10	1	< 0.01	< 10	0.01	95	6	<0.01	9	< 10	< 2	120	< 1	8	<0.01	< 10	< 10	3	50	44
HU095	4.4	< 0.01	< 5	90	< 0.5	< 2	0.02	< 0.5	< 1	281	189	0.79	< 10	14	< 0.01	< 10	< 0.01	70	4	0.01	13	40	< 2	20	< 1	1	<0.01	< 10	< 10	3	30	10
HU096	6.6	0.27	< 5	30	< 0.5	< 2	0.01	< 0.5	2	316	118	0.96	< 10	10	0.27	< 10	0.36	80	25	0.01	18	70	222	5	< 1	< 1	<0.01	< 10	< 10	4	210	66
HU097	4.2	0.03	15	10	< 0.5	< 2	0.01	< 0.5	4	309	84	0.74	< 10	< 1	0.03	< 10	0.05	55	9	<0.01	2	< 10	38	10	< 1	< 1	<0.01	< 10	< 10	4	80	20
HU098	^ 32.40	0.45	525	70	0.5	< 2	0.65	>100.0	18	3	3414	1.89	< 10	< 1	0.21	30	0.14	>10000	63	0.03	18	550	>10000	2160	2	640	<0.01	< 10	250	46	250	>10000
HU099	7.0	2.94	95	540	1.0	< 2	0.22	35.0	33	29	84	2.62	< 10	< 1	0.74	30	0.20	>10000	39	0.03	86	680	124	10	6	109	0.01	< 10	50	31	30	1942
HU100	172.4	0.99	535	380	< 0.5	< 2	0.28	72.0	323	6	571	11.26	< 10	< 1	0.36	30	0.10	>10000	78	0.06	29	3460	5542	270	14	543	<0.01	< 10	120	28	50	7532
HU101	114.2	1.26	50	70	2.5	< 2	1.49	>100.0	5	26	400	0.91	< 10	< 1	0.23	50	0.28	>10000	71	0.18	63	1530	1468	55	3	472	<0.01	< 10	90	26	70	>10000
HU102	193.4	0.71	395	40	1.0	< 2	1.73	>100.0	12	< 1	520	1.99	< 10	< 1	0.30	30	0.24	>10000	132	0.05	22	870	4700	220	2	565	<0.01	< 10	180	36	130	>10000
HU103	6.0	1.51	145	110	2.0	< 2	0.69	38.5	4	18	34	2.69	< 10	< 1	0.88	30	0.24	>10000	19	0.02	27	1600	324	< 5	4	155	0.01	< 10	50	28	40	7616

Appendix B - Inductively coupled plasma-atomic emission spectroscopy multi-element analytical data for rock-chip, grab, and select samples collected in the Huachuca Mountains unit, 1991, analyzed by Chemex Labs, Inc.-Continued

Sample No.	Ag (Ppm)	Al (Pct)	As (Ppm)	Ba (Ppm)	Be (Ppm)	Bi (Ppm)	Ca (Pct)	Cd (Ppm)	Co (Ppm)	Cr (Ppm)	Cu (Ppm)	Fe (Pct)	Ga (Ppm)	Hg (Ppb)	K (Pct)	La (Ppm)	Mg (Pct)	Mn (Pct)	Mo (Ppm)	Na (Pct)	Ni (Ppm)	P (Ppm)	Pb (Ppm)	Sb (Ppm)	Sc (Ppm)	Sr (Ppm)	Ti (Pct)	Tl (Ppm)	U (Ppm)	V (Ppm)	W (Ppm)	Zn (Ppm)
HU104	2.0	2.48	< 5	100	< 0.5	< 2	10.39	1.0	10	4	48	3.20	< 10	< 1	0.70	30	1.71	4180	6	0.01	1	1140	58	< 5	4	238	0.01	20	10	29	10	146
HU105	6.0	2.80	125	200	< 0.5	< 2	7.28	3.5	14	30	91	4.24	< 10	< 1	0.76	20	1.74	>10000	11	0.02	33	940	162	10	6	130	0.01	< 10	< 10	49	10	1448
HU106	6.0	1.66	130	220	0.5	< 2	0.07	15.5	24	26	74	3.68	< 10	< 1	0.77	30	0.18	>10000	5	0.01	14	800	172	20	4	31	0.01	20	< 10	21	< 10	1308
HU107	3.0	1.75	180	280	2.0	< 2	0.23	8.0	19	65	65	3.26	< 10	13	0.78	30	0.17	>10000	23	0.01	13	1450	228	10	4	20	0.01	< 10	< 10	16	10	1830
HU108	2.0	1.02	90	140	1.5	< 2	0.10	12.5	2	2	36	2.36	< 10	< 1	0.52	30	0.12	4935	8	<0.01	11	870	150	10	2	12	<0.01	< 10	< 10	10	10	1572
HU109	2.0	0.98	190	380	< 0.5	< 2	0.17	9.5	3	31	45	2.76	< 10	< 1	0.59	30	0.10	3035	13	<0.01	3	820	120	20	2	11	<0.01	10	< 10	14	10	1324
HU110	1.6	1.33	45	120	< 0.5	< 2	1.55	1.0	< 1	48	26	0.91	< 10	< 1	0.61	30	0.19	1310	2	0.01	< 1	6670	48	10	3	33	0.01	10	< 10	29	< 10	118
HU111	^ 23.40	0.83	35	10	< 0.5	4522	8.62	>100.0	43	11	# 0.96	6.22	10	3	0.01	20	0.56	3500	9	0.01	9	* 200	>10000	< 5	1	15	0.02	< 10	20	11	450	>10000
HU112	31.8	0.79	< 5	< 10	0.5	116	>15.00	60.0	20	11	194	0.66	< 10	< 1	< 0.01	40	3.11	5030	15	0.02	3	< 10	5082	< 5	2	108	0.03	< 10	10	13	100	>10000
HU113	^ 15.40	0.78	< 5	< 10	< 0.5	3196	9.33	>100.0	36	8	# 2.28	10.80	10	2	0.01	30	0.55	4565	12	0.01	17	* 200	>10000	< 5	2	4	0.03	< 10	30	10	400	>10000
HU114	91.2	3.71	10	< 10	< 0.5	226	>15.00	9.5	8	29	2693	7.93	< 10	< 1	0.02	20	0.60	7930	8	0.01	< 1	380	5336	< 5	5	10	0.13	< 10	< 10	34	140	>10000
HU115	3.6	3.82	< 5	30	< 0.5	106	4.35	10.5	4	28	336	2.86	10	< 1	0.10	40	2.14	7390	< 1	0.01	11	780	1422	< 5	5	567	0.27	< 10	20	37	30	7504
HU116	0.8	1.89	35	60	< 0.5	< 2	0.50	< 0.5	1	22	23	0.97	< 10	< 1	0.34	20	0.73	970	< 1	0.04	< 1	210	30	15	3	55	0.12	< 10	< 10	21	< 10	264
HU117	< 0.2	1.50	< 5	100	< 0.5	< 2	0.98	1.5	< 1	43	24	1.41	< 10	< 1	0.33	20	1.16	770	< 1	0.07	< 1	230	76	< 5	3	32	0.08	< 10	< 10	23	< 10	142
HU118	0.8	0.73	< 5	80	1.0	< 2	0.10	0.5	< 1	47	24	1.20	< 10	< 1	0.50	40	0.08	185	5	0.02	< 1	390	112	< 5	1	11	0.01	10	< 10	10	10	30
HU119	0.6	0.07	< 5	< 10	< 0.5	< 2	0.02	< 0.5	< 1	122	36	0.46	< 10	< 1	0.02	< 10	0.01	40	< 1	0.01	< 1	< 10	< 2	10	< 1	1	<0.01	< 10	< 10	6	< 10	4
HU120	1.2	0.77	< 5	30	< 0.5	< 2	0.11	1.0	8	34	185	1.62	< 10	9	0.29	30	0.20	920	6	0.01	7	490	414	5	< 1	8	<0.01	< 10	< 10	5	20	258
HU121	2.6	1.37	30	80	< 0.5	< 2	0.35	< 0.5	12	150	136	1.98	10	8	0.43	80	0.31	1220	5	0.01	8	910	158	5	2	13	0.01	10	< 10	10	20	62
HU122	1.6	1.26	< 5	10	< 0.5	< 2	>15.00	1.5	1	42	60	9.27	50	< 1	0.12	40	0.82	4755	< 1	0.01	12	170	40	10	2	286	0.07	< 10	< 10	34	150	86
HU123	1.6	3.13	5	60	< 0.5	4	4.60	1.5	4	112	62	3.87	10	13	0.48	30	1.07	1740	6	0.03	10	790	16	5	4	270	0.25	10	< 10	34	30	138
HU124	2.2	0.01	< 5	10	< 0.5	< 2	0.31	< 0.5	2	308	375	0.87	< 10	< 1	< 0.01	< 10	0.04	115	7	0.01	10	20	< 2	5	< 1	10	<0.01	< 10	< 10	4	10	22
HU125	1.8	0.86	20	60	< 0.5	< 2	0.84	2.5	9	80	201	6.36	< 10	< 1	0.10	10	0.20	550	< 1	0.02	9	590	146	10	2	83	0.21	< 10	10	31	20	980
HU126	26.0	0.06	30	< 10	< 0.5	< 2	0.06	>100.0	< 1	422	892	1.89	< 10	5	0.05	< 10	< 0.01	50	12	<0.01	12	< 10	>10000	5	< 1	4	<0.01	< 10	< 10	5	40	4718
HU127	11.0	0.02	10	10	< 0.5	< 2	0.03	1.5	< 1	412	75	1.05	< 10	8	0.01	< 10	< 0.01	55	19	0.01	14	90	378	5	< 1	1	<0.01	< 10	< 10	5	20	70
HU128	1.4	0.08	< 5	10	< 0.5	< 2	0.02	2.5	< 1	435	65	0.83	< 10	4	0.06	< 10	< 0.01	50	10	<0.01	17	30	88	5	< 1	1	<0.01	< 10	< 10	5	20	86
HU129	30.4	0.42	< 5	100	< 0.5	< 2	0.04	< 0.5	1	122	98	2.21	< 10	< 1	0.40	10	0.02	50	4	0.03	< 1	300	1640	< 5	1	11	<0.01	10	< 10	10	20	88
HU130	44.6	0.22	< 5	30	< 0.5	6	0.03	18.5	3	85	239	2.58	< 10	< 1	0.31	< 10	0.01	30	172	0.02	4	250	3106	5	< 1	3	<0.01	10	10	3	20	488
HU131	5.2	0.33	10	60	< 0.5	< 2	0.03	< 0.5	4	98	100	3.35	10	< 1	0.54	< 10	0.02	10	11	0.03	< 1	390	2236	5	< 1	8	<0.01	< 10	< 10	7	20	186
HU132	15.2	0.16	10	30	< 0.5	10	0.01	< 0.5	2	144	59	1.07	< 10	< 1	0.21	< 10	< 0.01	10	50	0.01	< 1	200	1220	5	< 1	1	<0.01	10	< 10	3	< 10	30
HU133	3.2	0.33	< 5	30	< 0.5	< 2	0.03	< 0.5	14	73	153	9.77	< 10	< 1	0.16	< 10	0.03	60	14	0.02	< 1	650	936	5	1	6	<0.01	< 10	< 10	48	230	282
HU134	1.0	0.60	< 5	60	< 0.5	< 2	0.03	< 0.5	< 1	88	108	0.60	< 10	1	0.33	30	0.02	40	2	0.03	< 1	170	952	< 5	< 1	3	<0.01	< 10	< 10	5	20	94
HU135	6.0	0.42	< 5	40	< 0.5	< 2	0.04	< 0.5	< 1	387	92	1.52	10	< 1	0.25	< 10	0.03	50	6	0.01	13	220	728	5	< 1	3	<0.01	< 10	10	10	20	4
HU136	0.4	0.05	< 5	20	< 0.5	< 2	0.02	< 0.5	< 1	392	55	0.89	< 10	3	0.03	< 10	0.01	50	4	<0.01	11	40	50	10	< 1	3	<0.01	10	< 10	5	20	< 2
HU137	0.2	0.79	20	50	< 0.5	< 2	0.04	< 0.5	1	273	77	0.92	< 10	< 1	0.42	10	0.04	90	1	0.02	4	120	106	10	1	4	<0.01	< 10	< 10	9	10	50
HU138	< 0.2	0.98	< 5	30	< 0.5	< 2	>15.00	0.5	4	38	115	1.25	60	3	0.16	50	1.58	1435	2	0.02	6	140	46	15	1	689	0.05	< 10	< 10	18	20	628
HU139	0.2	1.83	20	160	< 0.5	< 2	7.89	< 0.5	< 1	45	57	1.67	40	< 1	0.64	50	1.02	965	< 1	0.01	8	610	< 2	20	2	169	<0.01	< 10	< 10	17	30	92
HU140	1.0	1.98	10	50	2.0	< 2	1.91	0.5	< 1	71	116	0.75	20	< 1	0.74	30	0.36	430	2	0.01	3	< 10	16	10	2	61	0.01	10	< 10	6	20	110
HU141	< 0.2	0.51	< 5	10	< 0.5	< 2	>15.00	< 0.5	< 1	24	42	0.25	90	< 1	0.16	60	1.22	125	2	0.02	3	< 10	< 2	15	1	828	0.03	< 10	< 10	18	30	30
HU142	< 0.2	1.64	5	50	1.5	4	3.48	< 0.5	4	58	164	0.99	20	< 1	0.84	40	0.16	660	2	0.02	1	130	36	5	2	42	0.02	< 10	10	14	20	84
HU143	0.8	1.76	25	90	0.5	< 2	5.27	1.0	7	47	132	2.51	30	5	0.75	60	0.73	1610	< 1	0.03	3	700	58	20	3	107	0.04	< 10	20	24	30	642
HU144	1.2	1.36	20	20	< 0.5	< 2	4.08	1.0	5	62	168	0.84	10	< 1	0.08	30	1.04	535	< 1	0.01	11	430	232	15	1	37	0.15	< 10	10	17	20	304
HU145	0.6	0.46	< 5	< 10	< 0.5	< 2	>15.00	0.5	< 1	16	138	0.22	80	1	0.11	50	1.15	545	1	0.02	7	< 10	188	10	1	474	0.02	< 10	20	17	30	334
HU146	^ 13.00	0.16	20	80	< 0.5	120	12.78	< 0.5	6	89	# 5.30	5.67	40	< 1	0.06	30	1.90	1545	179	0.01	23	* 200	2444	85	2	386	<0.01	< 10	< 10	15	* 50	652
HU147	21.2	0.95	< 5	20	< 0.5	< 2	>15.00	4.5	13	50	2832	2.32	60	< 1	0.12	50	2.44	1395	8	0.02	15	90	54	20	2	682	0.05	< 10	< 10	28	40	374
HU148	0.4	2.76	< 5	250	2.0	< 2	0.29	2.5	4	7	127	2.09	10	< 1	1.40	40	0.27	800	< 1	0.01	3	1130	132	< 5	6	10	0.01	< 10	< 10	26	30	568
HU149	89.6	0.29	10	150	< 0.5	134	0.03	4.5	1	146	2690	1.73	< 10	3	0.09	< 10	0.04	50	14	0.01	< 1	70	>10000	< 5	< 1	4	<0.01	< 10	< 10	7	40	566
HU150	77.0	0.37	< 5	570	< 0.5	110	0.08	78.5	7	73	3801	1.55	< 10	2	0.18	< 10	0.17	120	5	0.01	< 1	70	6564	5	< 1	9	<0.01	10	< 10	5	10	5862
HU151	33.0	0.15	< 5	30	< 0.5	34	0.02	>100.0	2	140	4379	0.99	< 10	< 1	0.04	< 10	0.01	40	19	0.02	< 1	90	6758	< 5	< 1	1	<0.01	20	< 10	3	50	>10000
HU152	0.2	1.72	< 5	250	1.5	< 2	0.39	3.5	6	17	98	2.78	< 10	< 1	0.96	30	0.17	2045	5	0.03	< 1	1040	122	10	8	14	0.01	< 10	< 10	22	< 10	308
HU153	32.0	0.19	< 5	30	< 0.5	28	0.02	13.0	< 1	177	3666	0.67	< 10	< 1	0.12	< 10	0.01	40	2	0.01	< 1	20	6094	< 5	< 1	1	<0.01	< 10	< 10	1	< 10	1088
HU154	25.2	0.12	5	20	< 0.5	44	0.21	>100.0	4	136	1722	0.56	< 10	< 1	0.12	< 10	0.06	125	2	0.01	< 1	< 10	3598	5	< 1	6	<0.01	30	< 10	1	20	9834
HU155	1.2	1.26	5	170	1.0	< 2	1.15	3.0	2	12	161	1.83	< 10	< 1	0.74	40	0.20	885	1	0.02	< 1	570	190	< 5	4	29	<0.01	10	< 10	16	< 10	302
HU156	14.8	0.19	10	20	< 0.5	38	0.02	87.5	< 1	168	2319	0.60	< 10	< 1	0.08	< 10	0.01	30	7	0.02	< 1	10	3512	< 5	< 1	1	<0.01	20	< 10	3	20	4790
HU157	0.8	1.10	< 5	90	0.5	< 2	2.54	39.5	1	17	200	1.55	< 10	< 1	0.80	40	0.58	850	3	0.02	< 1	660	62	< 5	4	66	<0.01	< 10	< 10	12	10	1518

Appendix B - Inductively coupled plasma-atomic emission spectroscopy multi-element analytical data for rock-chip, grab, and select samples collected in the Huachuca Mountains unit, 1991, analyzed by Chemex Labs, Inc.-Continued

Sample No.	Ag (Ppm)	Al (Pct)	As (Ppm)	Ba (Ppm)	Be (Ppm)	Bi (Ppm)	Ca (Pct)	Cd (Ppm)	Co (Ppm)	Cr (Ppm)	Cu (Ppm)	Fe (Pct)	Ga (Ppm)	Hg (Ppb)	K (Pct)	La (Ppm)	Mg (Pct)	Mn (Pct)	Mo (Ppm)	Na (Pct)	Ni (Ppm)	P (Ppm)	Pb (Ppm)	Sb (Ppm)	Sc (Ppm)	Sr (Ppm)	Ti (Pct)	Tl (Ppm)	U (Ppm)	V (Ppm)	W (Ppm)	Zn (Ppm)
HU158	16.0	0.12	10	20	< 0.5	38	0.02	71.5	< 1	164	1410	0.44	< 10	< 1	0.10	< 10	0.01	20	1	0.02	5	20	3634	5	< 1	1	<0.01	20	10	2	10	6104
HU159	49.6	0.12	10	20	< 0.5	74	0.01	2.5	< 1	163	494	0.49	< 10	< 1	0.05	< 10	< 0.01	115	17	0.02	< 1	70	2816	< 5	< 1	1	<0.01	< 10	< 10	4	10	184
HU160	20.0	0.16	20	50	< 0.5	18	0.02	< 0.5	< 1	202	590	0.64	< 10	< 1	0.07	< 10	0.02	30	< 1	0.01	< 1	50	1644	< 5	< 1	2	<0.01	10	< 10	5	20	92
HU161	0.6	0.59	< 5	120	0.5	< 2	0.69	3.0	< 1	52	76	1.50	< 10	< 1	0.44	20	0.20	775	< 1	0.02	< 1	550	116	< 5	3	18	<0.01	< 10	< 10	8	< 10	360
HU162	1.4	1.23	< 5	90	0.5	< 2	0.22	2.5	6	6	635	1.71	< 10	< 1	0.60	40	0.39	560	2	0.02	< 1	910	636	< 5	4	10	<0.01	< 10	< 10	12	10	970
HU163	3.0	0.36	< 5	40	< 0.5	34	0.05	5.0	< 1	101	247	0.32	< 10	< 1	0.34	10	0.03	45	< 1	0.01	6	120	418	5	< 1	4	<0.01	< 10	20	4	10	524
HU164	3.0	1.03	< 5	100	< 0.5	2	0.18	2.5	< 1	32	248	1.47	< 10	< 1	0.41	20	0.43	790	< 1	0.04	1	530	742	5	2	8	<0.01	20	< 10	8	< 10	1240
HU165	0.4	0.29	< 5	20	< 0.5	12	0.09	2.0	< 1	122	238	0.37	< 10	< 1	0.23	< 10	0.06	75	< 1	0.02	3	140	362	5	< 1	4	<0.01	< 10	< 10	2	< 10	154
HU166	1.2	0.53	< 5	270	< 0.5	12	5.90	2.5	< 1	33	279	1.35	30	< 1	0.49	40	0.82	975	< 1	0.03	3	610	162	5	2	200	<0.01	10	< 10	7	10	262
HU167	10.8	0.42	5	40	< 0.5	28	0.06	9.5	2	147	400	0.68	< 10	< 1	0.24	< 10	0.15	145	< 1	0.01	3	120	984	5	1	3	<0.01	10	10	7	20	1372
HU168	0.8	0.42	< 5	50	< 0.5	8	0.36	8.5	1	111	182	0.90	< 10	< 1	0.29	< 10	0.12	320	< 1	0.01	< 1	180	194	5	1	7	<0.01	10	10	6	< 10	460
HU169	1.0	0.70	< 5	100	< 0.5	6	0.20	31.0	4	94	651	1.25	< 10	< 1	0.55	10	0.06	340	< 1	0.01	1	430	1132	5	3	9	<0.01	10	< 10	14	10	2322
HU170	1.2	0.22	< 5	40	< 0.5	8	0.18	8.5	< 1	228	145	0.47	< 10	< 1	0.15	< 10	0.04	100	< 1	0.01	5	40	126	5	< 1	5	<0.01	30	< 10	2	< 10	658
HU171	1.4	0.44	< 5	80	< 0.5	18	1.68	2.0	1	117	704	1.07	10	< 1	0.28	10	0.58	345	< 1	0.02	3	150	740	5	1	86	<0.01	10	10	7	< 10	170
HU172	< 0.2	1.11	25	380	< 0.5	12	5.48	< 0.5	7	6	17	1.55	30	2	0.50	40	1.61	775	< 1	0.05	1	720	12	5	4	312	<0.01	< 10	< 10	12	20	52
HU173	4.8	0.20	10	300	< 0.5	28	0.37	60.0	< 1	180	380	0.50	< 10	< 1	0.13	< 10	0.05	80	6	0.02	4	40	428	5	< 1	14	<0.01	10	< 10	2	< 10	2006
HU174	3.2	0.13	5	30	< 0.5	10	0.14	22.5	< 1	171	256	0.31	< 10	< 1	0.12	< 10	0.02	20	1	0.02	< 1	< 10	406	5	< 1	6	<0.01	10	< 10	1	< 10	2064
HU175	1.2	0.11	< 5	30	< 0.5	14	0.12	22.5	< 1	220	144	0.43	< 10	< 1	0.06	< 10	0.04	75	< 1	0.01	3	40	116	5	< 1	3	<0.01	10	10	2	< 10	1486
HU176	4.8	0.19	< 5	20	< 0.5	6	0.04	2.5	< 1	212	423	0.38	< 10	< 1	0.15	< 10	0.03	30	< 1	0.02	6	10	318	5	< 1	2	<0.01	< 10	10	2	< 10	254
HU177	1.8	0.29	< 5	30	< 0.5	18	0.06	3.5	< 1	208	98	0.46	< 10	< 1	0.15	< 10	0.09	80	< 1	0.01	3	20	100	5	< 1	4	<0.01	20	10	3	< 10	206
HU178	0.6	0.27	15	40	< 0.5	4	0.12	3.0	< 1	204	27	0.46	< 10	< 1	0.15	< 10	0.11	55	< 1	0.02	2	< 10	38	5	< 1	8	<0.01	20	< 10	3	< 10	318
HU179	0.6	0.34	10	60	< 0.5	18	0.56	3.5	< 1	193	40	0.40	< 10	< 1	0.27	10	0.05	110	< 1	0.01	6	< 10	6	5	< 1	16	<0.01	10	< 10	3	< 10	438
HU180	< 0.2	0.25	10	30	< 0.5	10	0.32	< 0.5	< 1	171	15	0.38	< 10	< 1	0.18	< 10	0.07	120	< 1	0.01	10	70	34	5	< 1	11	<0.01	< 10	< 10	3	< 10	46
HU181	0.8	0.26	< 5	20	< 0.5	< 2	0.12	2.5	< 1	215	22	0.43	< 10	10	0.20	< 10	0.06	80	< 1	0.01	6	90	84	5	< 1	3	<0.01	20	< 10	3	< 10	192
HU182	0.6	0.30	< 5	30	< 0.5	< 2	2.24	2.5	< 1	126	23	0.32	10	4	0.30	10	0.07	80	< 1	0.01	3	170	66	5	< 1	27	<0.01	< 10	10	2	< 10	98
HU183	< 0.2	0.09	5	10	< 0.5	2	0.20	< 0.5	< 1	227	9	0.37	< 10	2	0.04	< 10	0.03	60	< 1	0.02	5	< 10	30	5	< 1	3	<0.01	10	< 10	1	< 10	30
HU184	< 0.2	0.56	< 5	50	< 0.5	2	0.31	1.0	3	137	70	0.85	< 10	< 1	0.36	< 10	0.22	315	< 1	0.01	6	30	260	5	1	4	<0.01	20	< 10	6	< 10	320
HU185	< 0.2	0.29	5	130	< 0.5	12	0.46	< 0.5	< 1	209	21	0.47	< 10	2	0.19	< 10	0.06	75	< 1	0.02	2	80	6	5	< 1	22	<0.01	10	< 10	4	< 10	16
HU186	< 0.2	0.28	< 5	40	< 0.5	12	0.84	< 0.5	2	162	42	0.60	10	5	0.19	10	0.25	180	3	0.02	< 1	100	< 2	5	< 1	43	<0.01	10	10	3	< 10	36
HU187	< 0.2	1.95	< 5	140	< 0.5	24	4.67	< 0.5	16	12	31	3.23	10	< 1	0.50	20	1.82	830	< 1	0.06	7	1290	74	5	6	152	0.22	10	< 10	56	10	144
HU188	6.6	1.46	25	70	0.5	70	0.24	6.0	< 1	10	252	1.70	10	2	0.75	10	0.19	645	4	0.02	< 1	410	850	< 5	2	10	0.02	< 10	10	16	20	1128
HU189	170.8	1.72	< 5	200	< 0.5	* 20	0.75	4.5	7	32	* 6.67	13.58	20	< 1	0.27	10	1.59	2020	8	0.03	1	2000	538	< 5	4	19	0.06	< 10	30	93	* 50	678
HU190	2.8	0.96	< 5	1020	< 0.5	< 2	>15.00	3.5	8	56	54	1.51	60	9	0.15	50	0.80	4735	< 1	0.01	7	160	136	10	2	559	0.03	< 10	< 10	24	40	3546
HU191	2.0	2.74	15	620	0.5	2	0.51	1.5	6	288	209	2.80	10	1	0.61	10	2.19	7995	3	0.06	17	440	516	5	4	45	0.02	10	10	46	50	826
HU192	2.0	1.69	40	370	< 0.5	< 2	2.01	0.5	7	293	251	3.57	10	< 1	0.07	10	1.80	9190	2	0.02	15	350	94	5	3	45	0.02	< 10	< 10	39	20	494
HU193	2.4	4.38	35	1030	0.5	< 2	2.95	2.0	5	40	390	8.31	10	5	0.71	30	2.90	>10000	2	0.03	11	780	20	15	8	79	0.06	< 10	20	70	40	906
HU194	1.0	1.65	5	130	< 0.5	10	6.69	< 0.5	9	27	174	1.65	30	5	0.25	40	1.87	1225	< 1	0.04	7	560	248	5	2	152	0.02	10	10	28	20	208
HU195	1.4	1.80	5	50	< 0.5	36	0.46	< 0.5	4	10	106	1.96	10	< 1	0.18	30	1.29	1100	< 1	0.05	6	690	464	5	3	17	0.03	10	< 10	38	20	310
HU196	78.2	1.77	20	70	< 0.5	100	0.42	49.0	35	22	1562	3.28	10	< 1	0.60	50	1.11	5340	2	0.02	< 1	800	>10000	5	4	15	0.03	< 10	< 10	26	30	>10000
HU197	3.8	5.21	< 5	850	2.0	6	0.25	< 0.5	10	24	7520	1.64	20	< 1	1.40	10	1.20	325	< 1	0.02	12	60	< 2	20	8	29	<0.01	< 10	< 10	38	10	134
HU198	8.2	0.26	395	10	1.0	< 2	>15.00	19.0	2	36	1071	0.85	80	< 1	0.03	50	0.92	>10000	4	0.01	10	< 10	1934	45	1	277	<0.01	< 10	20	23	70	3750
HU199	24.4	0.23	< 5	< 10	< 0.5	< 2	7.98	>100.0	22	38	6553	3.90	30	< 1	0.02	20	0.60	>10000	6	0.01	1	< 10	>10000	5	< 1	66	<0.01	< 10	50	27	190	>10000
HU200	9.6	1.74	30	30	< 0.5	< 2	>15.00	90.5	15	60	548	4.07	50	< 1	0.09	50	1.06	>10000	7	0.02	2	210	>10000	5	3	237	0.12	< 10	10	54	100	>10000
HU201	148.0	1.43	160	70	< 0.5	* 20	12.87	>100.0	37	78	* 3.13	13.67	40	< 1	0.02	30	0.32	>10000	< 1	0.01	< 1	* 200	>10000	5	2	53	0.04	< 10	20	41	250	>10000
HU202	54.6	0.93	< 5	30	< 0.5	< 2	>15.00	39.5	9	23	86	0.45	80	8	0.33	50	1.59	1920	< 1	0.03	2	< 10	586	25	1	839	0.05	< 10	< 10	28	40	4714
HU203	0.8	0.86	< 5	10	< 0.5	2	>15.00	3.0	< 1	19	42	0.46	80	< 1	0.19	50	1.61	2940	5	0.02	* 10	< 10	252	5	1	863	0.06	< 10	20	24	30	444
HU204	1.6	1.11	10	< 10	< 0.5	< 2	>15.00	27.5	5	43	1223	1.01	70	6	0.03	50	1.06	7725	1	0.01	2	80	2996	5	2	252	0.06	< 10	10	26	50	6916
HU205	36.2	1.11	30	< 10	< 0.5	24	9.12	>100.0	15	74	1377	4.79	30	< 1	< 0.01	30	0.69	>10000	7	0.01	8	70	>10000	5	1	42	0.06	< 10	30	29	190	>10000
HU206	47.6	1.23	< 5	20	1.5	< 2	0.85	>100.0	48	50	6120	8.41	< 10	< 1	0.09	10	0.93	>10000	25	0.03	< 1	60	>10000	5	1	226	0.02	< 10	150	39	140	>10000
HU207	2.8	0.15	40	< 10	1.0	< 2	>15.00	13.0	4	10	53	0.46	70	< 1	0.06	50	0.73	>10000	4	0.03	< 1	< 10	3058	15	< 1	521	0.01	< 10	60	16	50	3794
HU208	0.8	3.91	< 5	10	< 0.5	< 2	2.64	2.0	12	34	65	1.48	10	< 1	0.04	20	7.28	1015	< 1	0.02	18	1100	148	10	4	30	0.17	< 10	10	76	30	214
HU209	0.8	1.48	< 5	20	0.5	< 2	>15.00	1.0	5	33	46	0.86	40	< 1	0.05	50	2.68	1830	3	0.03	9	310	42	15	3	216	0.12	10	20	30	20	116
HU210	1.2	0.77	10	30	< 0.5	< 2	3.95	1.0	< 1	67	177	1.12	20	< 1	0.29	20	0.42	615	< 1	0.03	8	230	568	20	2	34	0.04	20	< 10	18	10	648
HU211	17.6	1.78	70	10	0.5	10	3.42	80.5	23	156	7478	2.84	10	8	0.25	10	1.51	5240	15	0.01	13	190	>10000	5	3	47	0.10	< 10	20	41	70	>10000

Appendix B - Inductively coupled plasma-atomic emission spectroscopy multi-element analytical data for rock-chip, grab, and select samples collected in the Huachuca Mountains unit, 1991, analyzed by Chemex Labs, Inc.-Continued

Sample No.	Ag (ppm)	Al (Pct)	As (ppm)	Ba (ppm)	Be (ppm)	Bi (ppm)	Ca (Pct)	Cd (ppm)	Co (ppm)	Cr (ppm)	Cu (ppm)	Fe (Pct)	Ga (ppm)	Hg (ppb)	K (Pct)	La (ppm)	Mg (Pct)	Mn (Pct)	Mo (ppm)	Na (Pct)	Ni (ppm)	P (ppm)	Pb (ppm)	Sb (ppm)	Sc (ppm)	Sr (ppm)	Ti (Pct)	Tl (ppm)	U (ppm)	V (ppm)	W (ppm)	Zn (ppm)
HU212	< 0.2	2.55	10	90	< 0.5	< 2	0.95	< 0.5	15	20	17	3.24	< 10	< 1	0.46	10	1.31	735	< 1	0.04	5	990	40	< 5	8	71	0.36	< 10	< 10	76	30	62
HU213	0.2	1.72	< 5	70	< 0.5	< 2	1.05	< 0.5	8	44	22	2.24	< 10	2	0.45	20	0.97	1045	< 1	0.04	5	690	6	< 5	5	38	0.18	< 10	< 10	51	20	80
HU214	^ 5.68	0.34	35	60	< 0.5	60	3.57	9.5	3	104	> 10000	10.70	10	3	0.07	10	0.32	1050	138	*0.01	8	140	1880	5	2	65	0.01	< 10	< 10	74	230	994
HU215	0.8	4.13	5	520	< 0.5	< 2	3.66	7.5	16	26	207	4.18	10	< 1	0.94	20	3.39	1575	< 1	0.03	4	1130	236	< 5	9	172	0.10	< 10	< 10	93	50	956
HU216	0.6	2.47	< 5	150	< 0.5	< 2	0.86	1.5	13	34	144	3.49	< 10	< 1	0.64	20	1.01	1215	< 1	0.04	3	1200	88	< 5	8	45	0.25	< 10	< 10	71	20	184
HU217	0.8	1.23	< 5	170	< 0.5	< 2	2.96	0.5	2	37	35	2.10	< 10	< 1	0.65	30	0.77	1280	1	0.03	2	780	6	< 5	3	124	<0.01	< 10	< 10	29	< 10	50
HU218	2.8	0.39	< 5	30	< 0.5	< 2	0.05	< 0.5	3	80	176	0.93	< 10	< 1	0.14	< 10	0.11	195	2	0.01	< 1	90	268	10	1	4	<0.01	< 10	< 10	49	10	72
HU219	5.8	0.29	20	110	< 0.5	< 2	0.12	< 0.5	< 1	229	807	1.27	< 10	< 1	0.09	< 10	0.05	40	5	0.02	< 1	110	286	< 5	< 1	14	<0.01	< 10	< 10	5	10	42
HU220	3.4	0.60	10	110	< 0.5	< 2	0.11	0.5	< 1	66	149	1.56	< 10	< 1	0.37	10	0.06	205	2	0.01	< 1	290	398	10	1	6	<0.01	< 10	< 10	9	10	162
HU221	13.4	0.15	20	10	< 0.5	< 2	0.05	< 0.5	< 1	82	208	2.03	< 10	< 1	0.05	< 10	0.04	60	5	0.02	< 1	140	910	5	< 1	3	<0.01	< 10	< 10	7	10	78
HU222	2.0	0.85	< 5	90	0.5	< 2	0.10	1.5	< 1	13	74	1.36	< 10	1	0.77	30	0.06	1480	7	0.01	< 1	440	332	5	2	9	<0.01	< 10	< 10	9	< 10	124
HU223	1.8	0.06	< 5	< 10	< 0.5	< 2	0.02	0.5	1	140	36	0.70	< 10	< 1	0.01	< 10	0.01	35	2	0.01	< 1	60	156	< 5	< 1	1	<0.01	10	< 10	5	10	22
HU224	1.6	0.90	< 5	330	1.0	< 2	0.65	2.0	< 1	13	54	1.14	< 10	< 1	0.64	30	0.06	1955	2	0.02	< 1	670	214	< 5	2	13	<0.01	20	< 10	12	10	134
HU225	10.2	0.06	5	20	< 0.5	< 2	0.02	2.5	-8	124	60	4.44	< 10	< 1	0.02	< 10	0.01	25	10	0.01	4	50	444	< 5	< 1	1	<0.01	< 10	< 10	5	< 10	134
HU226	0.8	1.05	5	150	< 0.5	< 2	0.39	0.5	< 1	22	41	1.50	< 10	< 1	0.60	40	0.13	820	< 1	0.02	< 1	600	68	5	3	21	0.02	< 10	< 10	18	10	100
HU227	1.2	1.40	15	30	< 0.5	< 2	2.17	< 0.5	4	15	100	1.02	< 10	< 1	0.14	10	1.61	205	2	0.03	< 1	430	< 2	10	3	58	0.11	< 10	< 10	34	< 10	22
HU228	121.2	2.72	< 5	150	< 0.5	< 2	1.84	1.5	6	< 1	7797	4.01	< 10	< 1	1.07	30	0.68	990	14	0.02	< 1	950	50	25	8	52	0.04	< 10	< 10	53	30	110
HU229	37.8	3.08	< 5	250	1.0	< 2	0.86	3.0	10	3	6824	4.19	< 10	< 1	1.35	40	0.54	2255	4	0.08	2	1390	58	15	8	26	0.02	< 10	< 10	44	150	178
HU230	25.6	1.82	< 5	1180	0.5	< 2	5.45	7.0	6	3	2680	2.65	< 10	< 1	1.04	30	1.19	895	6	0.02	< 1	1150	32	< 5	6	128	<0.01	< 10	< 10	30	10	138
HU231	104.6	1.84	< 5	410	< 0.5	14	1.11	1.0	1	< 1	6053	2.49	< 10	< 1	0.99	30	0.45	515	3	0.03	< 1	970	16	10	5	31	0.01	< 10	< 10	26	< 10	84
HU232	39.4	2.53	5	70	< 0.5	2	1.17	< 0.5	13	15	6355	3.14	< 10	< 1	0.42	20	1.45	800	1	0.04	3	1140	< 2	5	7	113	0.17	< 10	< 10	58	10	70
HU233	0.4	0.71	5	160	< 0.5	< 2	0.11	< 0.5	1	23	106	1.42	< 10	< 1	0.21	10	0.24	415	< 1	0.05	< 1	260	6	5	2	18	0.09	< 10	< 10	16	10	24
HU234	1.4	1.98	70	330	< 0.5	< 2	1.82	< 0.5	8	29	131	2.05	10	< 1	0.16	40	0.89	5395	< 1	0.03	7	300	100	5	5	24	0.10	< 10	< 10	37	10	348
HU235	2.6	2.71	15	160	< 0.5	< 2	1.63	< 0.5	5	14	67	1.85	20	< 1	0.27	30	0.78	980	< 1	0.04	4	490	22	5	6	22	0.07	< 10	< 10	37	10	84
HU236	2.2	1.82	40	590	< 0.5	< 2	6.33	< 0.5	8	46	183	1.46	30	< 1	0.44	40	1.31	>10000	< 1	0.02	< 1	1000	38	10	3	149	0.02	< 10	< 10	41	30	104
HU237	132.8	0.19	20	100	< 0.5	46	0.12	< 0.5	4	107	4269	0.41	< 10	< 1	0.14	10	0.03	535	< 1	0.01	< 1	60	530	5	< 1	8	<0.01	< 10	< 10	24	< 10	6
HU238	79.6	0.08	< 5	20	< 0.5	28	0.02	< 0.5	1	158	7045	0.28	< 10	< 1	0.05	< 10	< 0.01	60	< 1	0.01	< 1	< 10	40	5	< 1	1	<0.01	< 10	< 10	8	< 10	< 2
HU239	< 0.2	2.03	< 5	130	< 0.5	< 2	1.59	< 0.5	41	96	176	7.17	10	< 1	0.47	10	1.62	1410	< 1	0.02	109	570	70	10	17	44	0.10	< 10	< 10	130	30	116
HU240	< 0.2	1.40	20	320	< 0.5	< 2	0.39	< 0.5	19	10	23	4.33	10	< 1	0.54	30	0.39	1510	< 1	0.01	< 1	1250	26	10	7	19	0.03	10	< 10	45	80	114
HU241	< 0.2	0.37	40	120	< 0.5	< 2	0.10	< 0.5	2	49	30	2.02	< 10	< 1	0.23	10	0.09	385	1	0.01	< 1	210	60	10	1	8	0.01	10	< 10	16	30	32
HU242	< 0.2	0.65	25	410	< 0.5	< 2	0.16	< 0.5	7	33	63	2.17	10	< 1	0.48	30	0.12	1000	< 1	0.02	< 1	590	< 2	10	3	19	<0.01	< 10	< 10	17	590	52
HU243	1.8	0.83	15	330	< 0.5	< 2	0.87	< 0.5	6	57	236	1.47	10	< 1	0.52	20	0.28	1160	< 1	0.01	1	620	110	10	4	25	<0.01	< 10	< 10	25	40	84
HU244	18.2	0.87	55	1450	< 0.5	< 2	0.74	< 0.5	10	51	1359	2.21	10	< 1	0.61	20	0.19	1465	1	0.02	< 1	820	538	20	5	47	0.01	< 10	< 10	33	710	110
HU245	1.2	0.62	5	240	< 0.5	< 2	0.27	< 0.5	5	60	255	1.19	10	< 1	0.40	10	0.07	650	< 1	0.02	< 1	410	130	5	2	16	<0.01	< 10	10	22	30	62
HU246	0.8	0.40	5	80	< 0.5	< 2	0.04	< 0.5	< 1	344	121	1.16	< 10	5	0.24	< 10	0.02	180	6	0.01	13	140	40	5	1	3	<0.01	< 10	< 10	11	30	8
HU247	1.6	0.40	< 5	4980	< 0.5	< 2	0.03	< 0.5	3	400	722	2.34	< 10	< 1	0.25	< 10	0.02	80	8	0.01	15	160	122	10	1	114	<0.01	< 10	< 10	13	30	6
HU248	57.4	0.17	< 5	6480	< 0.5	* 20	0.05	< 0.5	9	334	# 2.43	3.76	< 10	2	0.11	< 10	0.01	485	8	<0.01	4	* 200	348	115	1	105	<0.01	10	10	30	200	64
HU249	8.0	0.67	< 5	4170	< 0.5	< 2	1.34	< 0.5	15	22	2623	3.45	10	< 1	0.53	40	0.29	1060	< 1	0.02	2	1290	68	5	6	124	0.02	< 10	< 10	29	40	88
HU250	66.8	0.45	< 5	6100	< 0.5	< 2	0.19	< 0.5	19	32	8257	3.05	< 10	< 1	0.43	20	0.04	1185	< 1	0.02	< 1	470	30	20	4	103	<0.01	< 10	< 10	16	< 10	64
HU251	13.8	0.22	< 5	2200	< 0.5	< 2	1.11	< 0.5	8	47	5232	1.97	10	9	0.19	20	0.26	970	< 1	0.01	< 1	20	88	65	2	61	<0.01	< 10	< 10	5	10	74
HU252	73.8	0.39	< 5	>10000	< 0.5	< 2	2.62	< 0.5	12	20	6770	2.61	20	< 1	0.34	30	0.53	770	3	0.02	< 1	300	< 2	40	4	331	<0.01	< 10	< 10	15	1400	78
HU253	6.6	0.23	< 5	4340	< 0.5	< 2	0.64	< 0.5	16	55	2336	3.02	< 10	< 1	0.22	< 10	0.02	1490	< 1	0.02	7	490	10	10	4	67	<0.01	< 10	< 10	18	20	94
HU254	71.4	0.36	15	1030	< 0.5	< 2	0.22	< 0.5	20	46	4893	2.35	< 10	3	0.38	10	0.03	1300	< 1	0.01	1	750	< 2	5	3	23	<0.01	< 10	10	15	20	78
HU255	49.6	0.45	25	>10000	< 0.5	* 20	0.30	< 0.5	18	19	# 2.30	3.29	10	< 1	0.36	< 10	0.05	985	2	0.01	< 1	1000	34	5	4	370	<0.01	< 10	< 10	18	* 50	52
HU256	1.2	0.57	< 5	1630	< 0.5	10	0.29	< 0.5	10	6	673	2.16	10	< 1	0.56	30	0.09	600	< 1	0.02	< 1	630	44	10	4	51	<0.01	< 10	< 10	13	90	74
HU257	0.6	2.19	30	170	< 0.5	< 2	1.17	< 0.5	18	50	66	5.42	< 10	5	0.26	30	1.28	1105	< 1	0.07	40	1880	8	15	10	96	0.60	< 10	< 10	126	20	94
HU258	1.0	0.39	10	260	< 0.5	< 2	0.15	< 0.5	7	134	138	1.87	10	< 1	0.28	10	0.05	180	< 1	0.01	2	600	34	5	1	13	<0.01	10	< 10	11	30	22
HU259	2.0	0.26	< 5	350	< 0.5	< 2	0.36	< 0.5	2	115	48	1.40	10	2	0.20	< 10	0.10	165	< 1	0.02	< 1	590	44	5	1	34	<0.01	< 10	< 10	7	20	22
HU260	1.8	0.34	5	270	< 0.5	< 2	0.13	< 0.5	7	151	119	1.82	10	< 1	0.22	< 10	0.04	345	< 1	0.02	< 1	560	26	5	1	9	<0.01	< 10	< 10	8	10	10
HU261	2.4	0.42	< 5	570	< 0.5	< 2	0.88	< 0.5	10	59	83	2.47	10	< 1	0.34	10	0.25	305	2	0.02	4	1340	62	5	2	75	<0.01	< 10	< 10	15	30	46
HU262	13.0	0.35	20	1040	< 0.5	< 2	0.68	1.5	8	37	390	2.59	10	< 1	0.32	< 10	0.09	235	2	0.02	6	1140	992	5	2	31	<0.01	< 10	< 10	42	600	208
HU263	40.4	0.43	30	190	< 0.5	< 2	0.31	3.5	3	128	498	1.62	10	1	0.34	10	0.11	80	23	0.02	4	760	232	5	1	36	<0.01	< 10	< 10	8	< 10	228
HU264	6.8	0.33	10	380	< 0.5	< 2	0.55	< 0.5	7	98	322	2.12	10	< 1	0.30	10	0.17	290	2	0.01	3	910	168	5	1	28	<0.01	10	< 10	14	10	46
HU265	9.4	0.46	25	610	< 0.5	6	0.24	< 0.5	4	109	39	1.99	10	< 1	0.43	10	0.03	30	4	0.02	< 1	870	32	5	1	26	<0.01	< 10	< 10	8	10	26

Appendix B - Inductively coupled plasma-atomic emission spectroscopy multi-element analytical data for rock-chip, grab, and select samples collected in the Huachuca Mountains unit, 1991, analyzed by Chemex Labs, Inc.-Continued

Sample No.	Ag (Ppm)	Al (Pct)	As (Ppm)	Ba (Ppm)	Be (Ppm)	Bi (Ppm)	Ca (Pct)	Cd (Ppm)	Co (Ppm)	Cr (Ppm)	Cu (Ppm)	Fe (Pct)	Ga (Ppm)	Hg (Ppb)	K (Pct)	La (Ppm)	Mg (Pct)	Mn (Pct)	Mo (Ppm)	Na (Pct)	Ni (Ppm)	P (Ppm)	Pb (Ppm)	Sb (Ppm)	Sc (Ppm)	Sr (Ppm)	Ti (Pct)	Tl (Ppm)	U (Ppm)	V (Ppm)	W (Ppm)	Zn (Ppm)
HU266	20.8	0.25	25	390	< 0.5	< 2	0.04	< 0.5	< 1	113	123	0.99	< 10	6	0.21	< 10	0.02	30	6	0.02	< 1	120	144	5	< 1	8	<0.01	< 10	< 10	4	< 10	44
HU267	10.6	0.62	45	880	< 0.5	< 2	0.19	< 0.5	15	108	305	2.47	10	4	0.33	10	0.09	860	24	0.02	3	750	152	5	2	19	<0.01	< 10	< 10	20	20	54
HU268	2.0	0.70	10	1100	< 0.5	< 2	0.66	< 0.5	8	71	111	2.55	10	< 1	0.51	20	0.15	135	1	0.02	10	1130	34	5	2	36	<0.01	< 10	< 10	18	20	28
HU269	2.0	0.64	15	1100	< 0.5	< 2	0.66	< 0.5	10	80	113	2.54	10	< 1	0.46	20	0.14	135	< 1	0.02	8	1110	34	5	2	36	<0.01	20	< 10	17	10	28

APPENDIX C - Sample description data for rock-chip, grab, and select samples taken from the Huachuca Mountains unit, 1991.

[xx, not applicable]

Note: Assays are in appendices A and B. Sample type definitions are as follows: Chip samples are a regular series of rock chips taken in a continuous (or semi-continuous) line across a mineralized zone or other exposure, and usually across the entire width or thickness of that exposure. Grid and grab samples are from mine/prospect dumps. Grid type samples are taken systematically over an area to convey possible mineral value distributed in a dump. Grab type samples are taken unsystematically, usually as a background check, where no specific mineral zone is known or expected. In some cases, grab samples may be collected from an outcrop, for similar reasons. Select samples are often from a mine/prospect dump or are select chips of a specific rock type; select samples can also be collected from an in situ mineral structure to convey assays for the specific zone. Samples noted as "high-grade" are select samples collected from the most intensely mineralized (usually metallized) rock available in dumps, outcrops, or other exposed mineral zones. "Length" is that of rock-chip measured intervals for applicable samples.

Number	Type	Length (in.)	Remarks
HU001	Chip	36	Across shear zone (N. 65° W. 55° NE.) in trench; no mineralization noted; country rock is siltstone and is partly silicified in the shear zone.
HU002	Chip	24	Vertical across fault (N. 47° E. 15° NW.) at face; no mineralization noted.
HU003	Chip	42	Across shear zone at intersection of two structures (N. 62° W. 25° NE., N. 12° E. 20° NW.); unidentified copper mineral disseminated in siltstone country rock. See also fig. 3.
HU004	Chip	72	Across bedding (roughly N. 25° W. 30° NE.) in small prospect pit; no mineralization noted.
HU005	Chip	36	Across fault (N. 60° E. 35° NW.) at portal of adit; partly silicified gray Cintura Formation siltstone; some quartz stringers. See also fig. 14 for samples HU005-HU007.
HU006	Chip	36	In back of adit at intersection of two faults (N. 21° W. 28° NE., N. 10° W. 80° NE.); minor silicification in red/brown Cintura Formation siltstone.
HU007	Chip	60	In back of adit; highly fractured, red/brown, partly silicified siltstone (Cintura Formation); has some red clay gouge; shear and fracture surfaces have abundant chlorite.

APPENDIX C--Sample description data for rock-chip, grab, and select samples taken from the Huachuca Mountains unit, 1991.-Continued

Number	Type	Length (in.)	Remarks
HU008	Chip	24	Across shear zone (N. 45° W. 80° NE.), 1-2 ft, in small quarry; sandstone and shale country rock in the zone is sheared/altered to a sandy clay; also has silicified seams to 2 in., limonite stain; no dump.
HU009	Grab	xx	Random quartz vein material from waste dump of prospect; quartz has common-abundant chalcopyrite and limonite; some calcite and manganese oxide; minor malachite and azurite; country rock in dump is Morita Formation siltstone; gray dike in prospect strikes N. 75° W., dip unknown; dump is 500 ft^3.
HU010	Grab	xx	Random vein quartz from dump of shaft; vein not seen in shaft due to water and cover; quartz mostly clean and white; some limonite; minor green copper mineral; dump is 80 ft^3.
HU011	Grab	xx	Random sample of float material; coarsely crystalline, vuggy vein quartz with limonite stain, very minor pyrite; most pyrite is oxidized to limonite; main vein is not exposed in prospect, but 1 in. quartz vein has N. 50° E. 53° SE. attitude.
HU012	Chip	10	Across quartz vein (N. 18° W. 33° SW.); quartz is coarsely crystalline with disseminated chalcopyrite and its green alteration mineral; some manganese oxide on fracture surfaces. Samples HU012-HU022 are on the same quartz vein structure; strike is the same and dip is as given. (See also fig. 7 for samples HU012-HU023)
HU013	Chip	18	Across quartz vein (36° SW.), 9 in. thick, two gouge zones, and fractured andesite; quartz is sub-hedral and carries chalcopyrite; abundant green copper mineral at lower quartz/gouge contact.
HU014	Chip	48	Across quartz vein (23° SW.) in altered andesite?; quartz is sub-hedral and carries chalcopyrite with its green alteration mineral.
HU015	Chip	18	Across quartz vein (25° SW.), 1 ft thick, and fault gouge; quartz is white and vuggy, and carries abundant chalcopyrite and its green alteration mineral; includes 3 in. of silicified gouge.

APPENDIX C--Sample description data for rock-chip, grab, and select samples taken from the Huachuca Mountains unit, 1991.-Continued

Number	Type	Length (in.)	Remarks
HU016	Chip	18	Vertical across two quartz veins (32° SW.), 2 and 3 in., separated by silicified andesite; quartz has abundant chalcopyrite and its green alteration mineral; silicified andesite has spots of chalcopyrite.
HU017	Chip	16	Across vuggy quartz vein (32° SW.) in silicified andesite?; quartz has pockets of crystals, abundant chalcopyrite with its green alteration mineral.
HU018	Chip	6	Across quartz vein (35° SW.); quartz is sub-hedral, with chalcopyrite to 0.125 in. and its green alteration mineral; wallrock is silicified andesite.
HU019	Chip	6	Across quartz vein (36° SW.); abundant chalcopyrite irregularly distributed in veins; also green copper carbonate; andesite country rock.
HU020	Chip	30	Across silicified country rock with quartz veins to 3 in.; both have chalcopyrite which is disseminated in the country rock and in blobs in the quartz.
HU021	Chip	36	Across quartz vein (30° SW.); includes about 17 in. vuggy quartz with chalcopyrite, green copper mineral, scheelite? or calcite?; rest of sample is altered country rock with chalcopyrite.
HU022	Chip	60	Across quartz vein (30° SW.), 3-6 in. thick; includes chalcopyrite, a green copper mineral, vuggy white quartz, minor azurite, scheelite?.
HU023	Chip	6	Across white quartz vein (roughly N. 40° W. 5° SW.) in the back of main drift, 2-8 in. thick; contains chalcopyrite and light green copper mineral; vein cut off by fault (N. 18° W. 45° SW.).
HU024	Select	xx	High-grade sample from dump of caved adit; includes malachite, azurite, chalcocite, bornite, barite; no quartz or calcite noted; this high-grade material found only on top layer of dump; dump size 16,000 ft^3.
HU025	Grab	xx	Representative sample of HU024 dump; mostly red/brown rhyolite? or Morita Formation?; some white quartzite.

APPENDIX C--Sample description data for rock-chip, grab, and select samples taken from the Huachuca Mountains unit, 1991.-Continued

Number	Type	Length (in.)	Remarks
HU026	Grab	xx	Dump material from HU027 adit; Cretaceous brown-red/brown andesitic lava, some chloritic alteration; dump size 1,400 ft^3.
HU027	Chip	18	Across two fracture zones (N. 18° W. 62° NE., N. 18° W. 42° SW.) in altered Cretaceous andesitic lava; no mineralization noted (but adit is not fully accessible).
HU028	Grab	xx	Dump material from inaccessible adit; mostly Cretaceous andesitic lava; also some quartz vein and calcite vein material with abundant limonite. See also fig. 16 for samples HU028-HU036.
HU029	Chip	19	Across altered zone (N. 58° E. V) at portal of inaccessible adit; limonite stain; country rock is Cretaceous andesitic lava.
HU030	Grab	xx	Random sample from dump of adit; mostly Cretaceous red/brown andesitic lava with calcite amygdules; some quartz vein and calcite vein material with minor spots of malachite, bornite, pyrite, and limonite.
HU031	Chip	10	Across quartz vein (N. 35° E. 82° SE.) and fractured andesitic lava; includes 3 in. of heavily limonite-impregnated quartz; andesite has calcite amygdules.
HU032	Chip	8	Across HU031 quartz vein (now N. 37° E. 70° SE.); two veins, 2 and 5 in., separated by 1 in. gouge; minor limonite in quartz.
HU033	Chip	4	Across HU031 quartz vein (now N. 40° E. 74° SE.); includes 3 in. white quartz with limonite streaks and spots, and trace galena; 1 in. gouge.
HU034	Chip	12	Across HU031 quartz vein (now N. 40° E. 76° SE.); white quartz with minor malachite; limonite clay coating on fracture surfaces.
HU035	Chip	14	Across HU031 quartz vein (now N. 42° E. 56° SE.), 14 in. thick; white calcite with limonite bands and streaks, and clay gouge; includes 1 in. of white quartz and minor malachite.

APPENDIX C--Sample description data for rock-chip, grab, and select samples taken from the Huachuca Mountains unit, 1991.-Continued

Number	Type	Length (in.)	Remarks
HU036	Chip	14	Across HU031 quartz vein; mostly white calcite with minor malachite; 1 in. band of limonite; 1 - 2 in. clay gouge.
HU037	Chip	42	Across fault zone (N. 27° E. V) at face of adit; includes 3 ft of whitish altered gouge; 0.5 ft silicified zone with azurite, malachite, chrysocolla, chalcocite.
HU038	Select	xx	Dump material; vein quartz containing chalcopyrite, chalcocite, malachite, azurite, chrysocolla, manganese oxide, bornite?, tetrahedrite?; dump is 3,500 ft^3; vein is inaccessible but has N. 39° E. V trend, is about 3 ft thick, and has same mineralization as sample.
HU039	Chip and Select	9	Across quartz vein (N. 40° E. 87° NW.), 9 in. thick, at portal of inaccessible adit; white quartz with sparse green copper minerals, pyrite, and limonite in vugs and fractures; also includes high-grade vein material on dump from this vein; country rock is Cretaceous red andesitic lava.
HU040	Grab	xx	Random sample from HU039 dump; mostly red andesitic lava; also quartz with limonite, chalcopyrite, bornite?, tetrahedrite?, malachite, azurite, chalcocite?; dump size 13,000 ft^3.
HU041	Select	xx	Dump sample from caved adit; quartz vein material with abundant mineralization; includes chalcopyrite, malachite, barite, limonite, tetrahedrite?, chalcocite?, bornite?; some vugs with crystals; maximum thickness of vein about 9 in.; country rock is Cretaceous red andesitic lava; dump size 19,000 ft^3.
HU042	Select	xx	Dump sample from caved adit; same description as for HU041; dump size 6,000 ft^3.
HU043	Select	xx	High-grade sample from dump of water-filled shaft; vein quartz with bornite, chalcopyrite, malachite, chrysocolla, chalcocite?, tetrahedrite?; some barite and calcite in vuggy quartz veins; vein not seen in place but maximum thickness noted in dump is 4 in.; country rock is Cretaceous red/brown andesitic lava; dump size 18,000 ft^3.

APPENDIX C--Sample description data for rock-chip, grab, and select samples taken from the Huachuca Mountains unit, 1991.-Continued

Number	Type	Length (in.)	Remarks
HU044	Grab	xx	Random sample from HU043 dump; mostly country rock; same mineralization as HU043.
HU045	Select	xx	High-grade sample from dump of caved adit; includes pyrite, chalcopyrite, galena, limonite, chalcocite?, specularite?; this high-grade material rare on dump; dump size 42,000 ft^3.
HU046	Grab	xx	Random sample from HU045 dump; mostly skarn; calcite, grossularite, quartz, marble.
HU047	Chip	84	Across outcrop of silicious skarn below HU045 dump; irregular exposure about 7 x 35 ft; no structure noted; abundant honey yellow garnet; sparse copper stain on fractures; silicious iron-stained matrix; dark green mafic mineral?.
HU048	Grab	xx	Random sample from dump of caved adit; slightly marbleized gray Concha limestone, some marble; no mineralization noted; dump size 2,000 ft^3.
HU049	Grab	xx	Random sample from dump of caved adit; gray/white marble (of Concha limestone?); some iron-rich red/brown skarn; no other mineralization; dump size 9,000 ft^3.
HU050	Select	xx	Dump material from adit and cut; silicified limestone and vein quartz with galena, sphalerite, abundant limonite staining. See also fig. 9 for HU050-HU059.
HU051	Chip	60	On south wall of cut; partly silicified limestone; includes quartz vein/stringers to 1.5 in. thick; very minor sphalerite associated with quartz; limonite throughout.
HU052	Chip	60	On north wall of cut; partly silicified limestone; includes thin quartz stringers to 0.25 in. at random orientations; limestone bedding has N.-S. 5° W. attitude.
HU053	Chip	48	At portal of adit; partly silicified limestone; quartz stringers to 0.75 in.; no mineralization noted.

APPENDIX C--Sample description data for rock-chip, grab, and select samples taken from the Huachuca Mountains unit, 1991.-Continued

Number	Type	Length (in.)	Remarks
HU054	Chip	42	In left rib of adit; very poorly mineralized gray limestone; with quartz veins to 0.5 in. and very minor spotty galena and pyrite.
HU055	Chip	66	In right rib of adit, in mineralized zone (N. 33° W. 50° SW.); limestone is partly silicified in areas; quartz pods and stringers carry galena; limonite stain and manganese oxide in limestone.
HU056	Chip	30	In mineralized zone of adit; includes 6-8 in. zone of very vuggy limestone and quartz, with powdery limonite, sphalerite, galena; also silicified limestone with goethite after pyrite.
HU057	Chip	60	In right rib of adit; partly silicified limestone with quartz stringers; limonite stain; small spots and streaks of galena to 2 in.; minor sphalerite to 0.5 in.; pyrite altering to goethite.
HU058	Chip	72	Across back of adit in mineralized zone; silicified limestone with quartz pods and stringers; irregular masses of galena associated with quartz; limonite stain on limestone; goethite after pyrite; minor malachite.
HU059	Chip	60	Across face of adit, in mineralized zone; silicified limestone with quartz stringers; goethite after pyrite; pyrite to 0.25 in.; galena in irregular masses; hematite and limonite stain.
HU060	Select	xx	High-grade dump sample; white quartz veins and veinlets with galena, pyrite, scheelite?, calcite?; hematite and limonite in vugs and fractures; no copper mineralization; Precambrian granite country rock; dump size 23,000 ft^3.
HU061	Grab	xx	Random sample from HU060 dump; mostly granitic rock; some vein quartz, pyrite, scheelite?.
HU062	Grab	xx	Random sample of quartz float in vicinity of pits; very clean, white vein quartz.
HU063	Chip	36	Slightly altered Precambrian granite in prospect pit; no structure; no mineralization other than some light iron stain and some small vugs of limonite.

APPENDIX C--Sample description data for rock-chip, grab, and select samples taken from the Huachuca Mountains unit, 1991.-Continued

Number	Type	Length (in.)	Remarks
HU064	Chip	20	Across outcrop of quartz vein (attitude uncertain); limonite in vugs and coating fracture surfaces. See also fig. 18 for samples HU064-HU071.
HU065	Chip	72	Across quartz vein (N. 13° E. 83° NW.); white quartz; includes 2 ft of chloritically altered granite with quartz stringers.
HU066	Chip	72	Across quartz vein (N. 17° W. V) in small prospect; massive white quartz with granite; limonite coating on fractures; some quartz slightly gray.
HU067	Chip	72	Across quartz vein (N. 25° W. 31° SW.); 67% massive clean white quartz; 33% granite.
HU068	Chip	84	Across quartz vein (N. 1° W. 18° SW.); white quartz with red hematite in hairline fractures; some pyrite; < 5% granite; some brown iron oxide in vuggy areas.
HU069	Chip	70	Across quartz vein (N. 8° E. 22° NW.); mostly white quartz; some pyrite; few vugs; minor iron stain and granite inclusions.
HU070	Chip	66	In footwall of HU069 quartz vein; includes 1 ft dark fine-grained band, limonite-stained, probably oxidized pyrite; 4.5 ft silicified Precambrian granite.
HU071	Chip	114	Across quartz vein (N. 20° E. 22° NW.); massive white quartz; finely disseminated limonite in upper 2 ft; trace malachite.
HU072	Grab	xx	Random dump sample; includes schist with scheelite?; white quartz with scheelite?, pyrite (cubic and disseminated); scheelite? is common on dump. See also fig. 19 for samples HU072, HU073.
HU073	Chip	7	Across quartz vein (N. 60° W. 32° NE.), 7 in. thick; white quartz; minor calcite?; iron oxide coating on fracture surfaces; Precambrian granite country rock.
HU074	Chip	18	Across fault zone (N. 77° W. 55° NE.), 1.5 ft wide, in prospect pit; includes two gray quartz veins, each 1-1.5 in. thick; minor iron stain; Precambrian granite country rock is altering to clay in fault zone.

APPENDIX C--Sample description data for rock-chip, grab, and select samples taken from the Huachuca Mountains unit, 1991.-Continued

Number	Type	Length (in.)	Remarks
HU075	Chip	30	Across HU074 fault zone in trench; altered zone here is only 8-9 in. wide, no quartz veining or other mineralization noted; minor iron stain; same country rock.
HU076	Chip	8	Across quartz vein (varies N. 5-17° E. 48° NW.), 8 in. thick; white quartz with limonite stain on fractures; in decomposed alaskite?. See fig. 20 for samples HU076-HU079.
HU077	Chip	24	Across fractured white quartz vein (N. 11° W. V); vein pinches and swells, intersects minor veinlets at various angles; minor manganese oxide stain on fracture surfaces.
HU078	Chip	16	Across HU076 quartz vein (now 19° NW.), 8 in. thick; limonite stain on fracture surfaces; country rock is alaskite? with pyrite remnants to 0.125 in.
HU079	Chip	14	Across white quartz vein (N. 17° E. 42° NW.) outside of mine and adjacent to open stope; sparse limonite stain.
HU080	Grab	xx	Dump material from working which may be a caved adit; clean white quartz; granite, alaskite country rock; dump size 600 ft^3.
HU081	Chip	30	In footwall of fault (N. 35° W. 49° NE.) at portal of adit; country rock is Precambrian granite; no mineralization noted.
HU082	Chip	36	In hangingwall of HU081 fault; felsite with sericite alteration; some chlorite, mica; possible shearing.
HU083	Grid	xx	Dump material taken on a 60 in. grid from pit; granite and felsite; some chlorite; no metallic minerals noted; no structure visible in pit; dump size 100 ft^3.
HU084	Chip	10	Across 10 in. brown iron-stained quartz vein (N. 10° W. 25° SW.). See also fig. 22.

APPENDIX C--Sample description data for rock-chip, grab, and select samples taken from the Huachuca Mountains unit, 1991.-Continued

Number	Type	Length (in.)	Remarks
HU085	Chip	18	Across 1.5 ft quartz vein (N. 38° W. 35° SW.) adjacent to 1 ft thick basalt dike; lower 1/2 is finely brecciated while the upper 1/2 is more massive; minor pyrite in fractures in 1 in. zone; some heavy iron oxide stain. See also fig. 23 for samples HU085 and HU086.
HU086	Chip	20	Across HU065 quartz vein in adit; white quartz with iron oxide as stain and disseminated mineralization; 1 in. of heavier iron oxide-stained zone.
HU087	Select	xx	Dump material from small inaccessible adit; vein quartz (N. 50° W. 50° SW.) with small amounts of galena, pyrite; also unknown fine-grained gray mineral coating quartz, and disseminated in Precambrian granite country rock; dump size is 400 ft^3.
HU088	Chip	18	Across 1.5 ft quartz vein (N. 10° W. 25° SW.) at portal of adit; vein pinches and swells dramatically; some iron stain; trace pyrite.
HU089	Grid	xx	Dump material taken on 60 in. grid from shaft; quartz, granite, phyllite with pyrite; dump size 200 ft^3.
HU090	Select	xx	Dump material from caved adit; white vein quartz with pyrite and limonite after pyrite; vein thickness up to 3 ft noted in float; dump size 6,000 ft^3.
HU091	Grab	xx	Random sample from HU090 dump; quartz with minor pyrite; black schist; granite.
HU092	Select	xx	Dump material; sample appears to be white quartz, but fluoresces yellow under short-wave UV light; this material is sparse on dump (estimated 0.1-0.5% of total volume).
HU093	Chip	72	Across quartz vein (N. 30° E. 16° NW.), 6 ft thick, cropping out at surface; white fractured quartz; no mineralization noted.
HU094	Chip	42	Across quartz vein, 3.5 ft thick; massive white quartz; few vugs; no mineralization noted. See also fig. 11 for samples HU094-HU097.

APPENDIX C--Sample description data for rock-chip, grab, and select samples taken from the Huachuca Mountains unit, 1991.-Continued

Number	Type	Length (in.)	Remarks
HU095	Chip	48	Across quartz vein (N. 30° E. 13° NW.), 4 ft thick; highly fractured white quartz; few vugs; no mineralization noted.
HU096	Chip	42	In quartz vein (N. 30° E. 15° NW.); white fractured quartz; no mineralization noted.
HU097	Chip	48	Across quartz vein (N. 30° E. 15° NW.); limonite in streaks and vugs; some spots of scheelite.
HU098	Chip	16	Across shear zone (N. 75° W. 60° NE.) at contact between Precambrian granite and limestone block; shear zone is heavily impregnated with manganese oxide; a probable caved adit is nearby, with 500 ft^3 dump.
HU099	Chip	36	Across shear zone (N. 52° W. 60° NE.); heavy manganese oxide; some limonite. See also fig. 8 for samples HU099-HU109.
HU100	Chip	54	Across back through HU099 shear zone (now N. 50° W. 66° NE.); soft, fractured rock rich in manganese oxide and limonite.
HU101	Chip	60	Across HU099 shear zone (now N. 38° W. 81° NE.); highly fractured rock rich in manganese oxide and limonite.
HU102	Chip	54	Across HU099 shear zone (now N. 66° W. 57° NE.) in back and by stoped area; highly fractured rock, heavily impregnated with manganese oxide; some limonite.
HU103	Chip	48	Across HU099 shear zone (now N. 48° W. 64° NE.) in back; soft, very fractured rock, heavily impregnated with hematite and manganese oxide.
HU104	Chip	72	Across shear zone (N. 40° W. 74° NE.) at contact with green/gray metamorphosed rock; original rock type unknown, it is now a chlorite schist; very finely disseminated pyrite throughout; some white quartz in veinlets and stringers.

APPENDIX C--Sample description data for rock-chip, grab, and select samples taken from the Huachuca Mountains unit, 1991.-Continued

Number	Type	Length (in.)	Remarks
HU105	Chip	114	Across shear zone next to fault (N. 48° W. 74° NE.); zone includes irregular lenses of limestone replaced by limonite; much of zone is partly silicified; manganese oxide is sparse here; some very fine pyrite; some chlorite alteration.
HU106	Chip	60	Across HU105 shear zone (now N. 63° W. 77° NE.) in back; impregnated with manganese oxide, limonite; more silicious than next three samples.
HU107	Chip	35	Across HU105 shear zone (now N. 62° W. 80° NE.) in back; includes manganese oxide, limonite; gouge; some silicified areas.
HU108	Chip	64	Across HU105 shear zone (now N. 52° W. 77° NE.) in back; includes limonite, gouge, manganese oxide, some quartz veinlets and stringers.
HU109	Chip	29	Across HU105 shear zone (now N. 43° W. 84° NE.); limonite-impregnated, with much clay gouge.
HU110	Chip	30	Across shear zone (N. 65° E. 68° NW.) in adit; some quartz pods at portal, but no other mineralization noted; country rock is limestone block.
HU111	Select	xx	Dump material from prospect cut; includes galena, sphalerite, specularite, pyrolusite, malachite, epidote, chlorite, red hematite. See also fig. 24 for samples HU111-HU115.
HU112	Chip	72	On S. wall of cut; in transition zone between marble and replacement zone; limestone with some manganese.
HU113	Chip	66	On S. wall of cut; across replacement zone; includes epidote, manganese oxide, abundant galena in pods, sphalerite veinlets, malachite stain.
HU114	Chip	120	On SW. wall of cut; across HU113 replacement zone; limestone with much epidote replacement; minor sphalerite.
HU115	Chip	60	In red/brown limestone outcrop; includes hematite, manganese oxide, chlorite, thin calcite veins.

APPENDIX C--Sample description data for rock-chip, grab, and select samples taken from the Huachuca Mountains unit, 1991.-Continued

Number	Type	Length (in.)	Remarks
HU116	Chip	40	Across portal of inaccessible adit; pale gray highly altered silicious volcanic rock with tiny white phenocrysts; no structure or mineralization noted.
HU117	Grab	xx	Random sample from dump of HU116 adit; all fine-grained pale gray silicious volcanic rock; very sparse white vein quartz; minor chlorite; no other mineralization noted; dump size 1,800 ft^3.
HU118	Chip	13	Across exposure of quartz veins (N. 42° W. 87° SW.) in trench; includes a 2.5 and a 0.75 in. quartz vein with limonite and goethite; country rock is coarse-grained Precambrian granite.
HU119	Chip	11	Across quartz vein (N. 67° E. 50° SE.), 11 in. thick, in trench; white quartz with limonite and manganese oxide coating on fractures; country rock is Precambrian granite.
HU120	Chip	36	Across thinly layered weathered tuff; no mineralization noted. See also fig. 25 for samples HU120-HU123
HU121	Chip	24	Across loose weathered tuff in fracture zone (N. 58° W. 55° NE.); some limonite stain; trace pyrolusite.
HU122	Chip	18	Across silicious zone (N. 60° W. 35° NE.) and quartz in tuff; trace of sphalerite and pyrite or chalcopyrite; calcareous fillings.
HU123	Chip	36	Across fracture (about N. 70° E. V); weathered tuff and part of a block of limestone; trace of pyrite in limestone.
HU124	Chip	24	In white bull quartz in prospect pit; structure very poorly exposed, attitude unknown; minor manganese oxide.
HU125	Select	xx	Dump material from shaft; silicious and rhyodacite tuffs; some gossan; minor white quartz; not a trace of ore mineralization.

APPENDIX C--Sample description data for rock-chip, grab, and select samples taken from the Huachuca Mountains unit, 1991.-Continued

Number	Type	Length (in.)	Remarks
HU126	Select	xx	High-grade sample from dump material of shaft; white vein quartz with inclusions of galena, sphalerite, pyrite; red earthy hematite in vugs; limonite coating on fractures; dump size 600 ft^3.
HU127	Chip	18	Across 1.5 ft quartz vein (N. 12° W. 51° SW.) in HU126 shaft; massive white quartz with hematite, limonite coating on fractures; country rock is fine-grained Huachuca Quartz Monzonite.
HU128	Chip	8	Across 8 in. quartz vein (N. 30° W. 51° SW.); sparse galena and iron oxide coating on fractures; country rock is fine-grained Huachuca Quartz Monzonite, silicified on hangingwall.
HU129	Chip	46	Quartz vein (N. 55° W. 65° SW.) exposed in pit, 46 in. thick, 12 ft or more in length; white quartz, partly vuggy with crystals; minor iron stain on fracture surfaces; country rock is Jurassic Huachuca Quartz Monzonite.
HU130	Chip	36	Across quartz vein (N. 35° W. 50° SW.), 3 ft thick; includes spots of galena and pyrite 0.125-0.5 in.; also chalcopyrite?, limonite stain; quartz is in "sheets" about 3 in. thick within vein. See also fig. 26 for samples HU130-HU133.
HU131	Chip	48	Across HU130 quartz vein and silicified zone; pyrite spots 0.125 in.; chalcopyrite?; vein is about 1 ft thick here and grades into silicified wallrock with no sulfide minerals.
HU132	Chip	36	Across quartz vein (N. 37° W. 50° SW.), 3 ft thick, in trench; quartz is milky white with trace galena.
HU133	Chip	24	Across quartz vein and brecciated quartz (N. 40° W. 58° SW.); milky white quartz; breccia is in matrix of limonite and hematite.
HU134	Chip	13	In silicified vein or zone (N. 11° W. 60° SW.) in trench; grades into pure white quartz; limonite coating on fractures; in Jurassic Huachuca Quartz Monzonite country rock.

APPENDIX C--Sample description data for rock-chip, grab, and select samples taken from the Huachuca Mountains unit, 1991.-Continued

Number	Type	Length (in.)	Remarks
HU135	Chip	12	Across quartz vein (N. 50° W. 55° SW.), 1 ft thick; red iron oxide stain, but no mineralization noted. See also fig. 27 for samples HU135-HU137.
HU136	Chip	18	Across HU135 quartz vein, 1.5 ft here; minor pyrite; iron oxide on fractures.
HU137	Chip	16	Across HU135 quartz vein (now 60° SW.), 16 in. thick here; includes silicified country rock.
HU138	Grab	xx	Random sample from dump; marble and iron-enriched volcanic rock; dump size 24,000 ft^3. See also fig. 28 for samples HU138-HU145.
HU139	Chip	12	In hangingwall of contact (N. 18° E. 65° NW.) between altered fine-grained volcanics and granite; minor manganese oxide?.
HU140	Chip	12	Across gouge-filled fault zone (N. 35° W. 60° NE.); mostly clay; minor calcite; no mineralization of interest.
HU141	Chip	36	Dirty gray marble with no mineralization noted.
HU142	Chip	42	Across HU140 fault zone (now N. 51° W. 67° NE.) and altered volcanic rock in back; more iron-enriched in footwall; greenish tint in hangingwall.
HU143	Chip	42	Across fracture zone (about N. 15° E. V) in iron-enriched silicious volcanics; minor copper carbonate.
HU144	Chip	48	In fine-grained volcanic near contact with marble; rock has slight greenish tint but no mineralization noted.
HU145	Chip	60	Slightly metamorphosed gray limestone; white calcite veinlets; no mineralization noted.
HU146	Select	xx	Dump material from prospects; chalcopyrite, calcite, quartz, malachite, azurite, chalcocite, limestone; from replacement deposits; dump size 4,000 ft^3.
HU147	Grab	xx	Random sample from HU146 dump; mostly marble and limestone, some iron oxide-enriched; some copper minerals (green carbonate); sparse chalcopyrite.

APPENDIX C--Sample description data for rock-chip, grab, and select samples taken from the Huachuca Mountains unit, 1991.-Continued

Number	Type	Length (in.)	Remarks
HU148	Chip	48	In footwall of fault (N. 65° E. 60° SE.); fine-grained brown Morita Formation country rock, highly fractured; limonite stained. See also fig. 4 for samples HU148-HU162.
HU149	Chip	23	Across quartz vein (N. 5° E. 35° NW.); milky white quartz with galena, malachite, azurite, chalcopyrite, hematite, unknown black mineral; vein covered by dump material on SE. end.
HU150	Chip	30	Across exposed part of quartz vein (N. 35° W. 43° SW.) in trench; white quartz with chalcopyrite, iron oxide, malachite, azurite on fracture surfaces.
HU151	Chip	27	Across exposed part of HU150 quartz vein (now N. 37° W. 38° SW.) in trench; white quartz with galena, chalcopyrite, malachite, limonite coating with grains of free gold.
HU152	Chip	41	Across altered Morita Formation rock above HU150 quartz vein; rock is heavily impregnated with limonite; minor quartz stringers to 0.25 in.; no other mineralization noted.
HU153	Chip	22	Across exposed part of HU150 quartz vein; quartz with chalcopyrite, malachite, limonite, red hematite, galena.
HU154	Chip	36	Across exposed part of HU150 quartz vein (now N. 60° W. 55° SW.); quartz with chalcopyrite, galena, sphalerite, in spots to 0.5 in.; some malachite on fracture surfaces.
HU155	Chip	48	In highly silicified country rock next to HU150 quartz vein; rock is impregnated with limonite and cut by white quartz veinlets 0.5-3.0 in. thick at random orientations; no other mineralization noted.
HU156	Chip	50	Across entire width of HU150 quartz vein (now N. 25° W. 43° SW.); taken next to HU155; white quartz with chalcopyrite, galena, malachite, limonite.

APPENDIX C--Sample description data for rock-chip, grab, and select samples taken from the Huachuca Mountains unit, 1991.-Continued

Number	Type	Length (in.)	Remarks
HU157	Chip	22	In silicified country rock next to HU150 quartz vein and sample HU156; rock is greenish, with numerous white quartz veinlets; trace galena, malachite, chalcopyrite.
HU158	Chip	54	Across exposed part of HU150 quartz vein (now N.-S., 43° W.); quartz with some chalcopyrite, sphalerite, galena, sparser than previous samples.
HU159	Chip	36	Across quartz vein adjacent to fault (N. 16° E. 71° NW.) which cuts off HU150 quartz vein; massive white quartz with limonite coating fractures; finely disseminated limonite; spots of galena, chalcopyrite; trace malachite.
HU160	Chip	21	Across HU159 quartz vein (now N. 13° E. 48° NW.); white quartz with chalcopyrite, galena; some hematite; trace malachite.
HU161	Chip	40	In very fine-grained brown country rock; heavily impregnated with limonite; includes numerous white quartz veinlets 0.25-0.5 in. thick, at random orientations; pyrite in cubes and altering to goethite.
HU162	Chip	48	In slightly altered country rock; limonite coating on fractures; some green chlorite; trace azurite and malachite on fractures.
HU163	Chip	18	Across quartz vein (N. 20° W. 64° SW.); quartz with chalcopyrite, galena. See also fig. 5 for samples HU163-HU172.
HU164	Chip	30	Across shear zone adjacent to HU163 quartz vein (now N. 35° W. 72° SW.); highly fractured rock with minor quartz veins to 2 in.; no mineralization noted; wallrock is very fine-grained, brown Morita Formation sediments.
HU165	Chip	36	Across HU163 quartz vein; quartz with chalcopyrite, galena, green copper mineral stain on fractures.
HU166	Chip	48	Across fracture system (N. 28° E. 48° NW.); fine-grained quartzite with trace chalcopyrite.

APPENDIX C--Sample description data for rock-chip, grab, and select samples taken from the Huachuca Mountains unit, 1991.-Continued

Number	Type	Length (in.)	Remarks
HU167	Chip	30	Across HU163 quartz vein (now 47° SW.); quartz with sparse spots of chalcopyrite, chalcocite? or sphalerite; limonite stain on fractures.
HU168	Chip	42	Across HU163 quartz vein (now N. 30° W. 58° SW.); quartz with chalcopyrite; trace galena; green copper mineral stain on fractures.
HU169	Chip	24	Across HU163 quartz vein (now N. 28° W. 68° SW.); quartz with chalcopyrite, sphalerite, limonite, minor green copper mineral stain.
HU170	Chip	42	Across quartz vein (N. 20° E. 63° NW.); mostly milky white quartz; minor chalcopyrite; iron oxide stain on fractures.
HU171	Chip	12	Across HU170 quartz vein (now N. 10° W. 40° SW.); quartz with chalcopyrite, galena?.
HU172	Chip	60	No mineralization noted except iron oxide stain on rib; hard, silicified, fine-grained red/purple quartzite? Morita Formation country rock.
HU173	Chip	42	Across quartz vein (N. 36° W. 40° SW.) at face of drift; milky white quartz; minor chalcopyrite, galena or sphalerite, green copper mineral stain. See also figure 6 for samples HU173 - HU187.
HU174	Chip	60	Across HU173 quartz vein (now N. 33° W. 67° SW.); white quartz with spotty streaks of chalcopyrite, sphalerite; light green copper mineral stain on fractures.
HU175	Chip	30	In HU173 quartz vein; white quartz with minor chalcopyrite.
HU176	Chip	24	Same as HU175.
HU177	Chip	78	Across HU173 quartz vein (now N. 22° W. 56° SW.); white quartz with minor chalcopyrite; trace green copper mineral stain.
HU178	Chip	18	Across HU173 quartz vein (now N. 24° W. 61° SW.); quartz with light limonite stain; no sulfides.

APPENDIX C--Sample description data for rock-chip, grab, and select samples taken from the Huachuca Mountains unit, 1991.-Continued

Number	Type	Length (in.)	Remarks
HU179	Chip	24	Across HU173 quartz vein (now N. 10° W. 50° SW.); white quartz with trace sulfides.
HU180	Chip	54	Across HU173 quartz vein; white quartz; chlorite; some limonite in small pockets; no sulfides.
HU181	Chip	42	Across HU173 quartz vein (now N. 25° W. 42° SW.) in crosscutting fracture zone (N. 60° E. 65° SE.); white quartz with iron oxide, manganese oxide; no sulfides.
HU182	Chip	42	Across HU173 quartz vein (now N. 18° W. 54° SW.); white quartz with trace limonite; no sulfides.
HU183	Chip	36	Across HU173 quartz vein (now N. 30° W. 53° SW.); clear quartz with no mineralization noted.
HU184	Chip	18	Across HU173 quartz vein (now N. 25° W. 54° SW.); very sheared; trace of green copper mineral stain; no sulfides.
HU185	Chip	18	Across HU173 quartz vein (now N. 28° W. 66° SW.); greenish stain from chlorite or sericite; no other mineralization noted.
HU186	Chip	48	Across HU173 quartz vein (now 45° SW.); white quartz; some sheared, chloritically altered rock between quartz; iron oxide; trace green copper mineral stain; no sulfides.
HU187	Chip	48	No structure noted at face; travertine coating surface of rock.
HU188	Chip	48	At fracture (N. 47° E. V) at head of trench; quartz veinlets about 0.125 in. thick; manganese oxide on fracture surfaces; no other mineralization; country rock is reddish Morita Formation
HU189	Select	xx	Dump material from HU188 trench; dark red country rock, partly vuggy with some limonite; malachite coating fracture surfaces; possibly some finely disseminated sulfides; dump size 700 ft^3.

APPENDIX C--Sample description data for rock-chip, grab, and select samples taken from the Huachuca Mountains unit, 1991.-Continued

Number	Type	Length (in.)	Remarks
HU190	Grab	xx	Random sample from dump; limestone, some partly marbleized; some calcite; minor iron oxide. See also figure 29.
HU191	Chip	18	Across fault zone (roughly E.-W., 79° S.); fractured, fine-grained country rock; also includes 3 in. band of heavily limonite-stained material and 3 in. band of silicified/quartz vein. See also figure 30 for samples HU191 - HU193.
HU192	Chip	48	Across HU191 fault zone (83° S. here) in back; contains several quartz veins to 4 in. thick; also silicified gouge and fractured country rock.
HU193	Chip	12	Across HU191 fault zone (88° S. here); fractured country rock; also has a band of hard, yellow-stained gouge.
HU194	Grid	xx	Dump material taken on 10 ft grid from caved adit; partly silicified limestone; minor epidote; dump size 1,900 ft^3.
HU195	Chip	36	Across shear zone (N. 20° W. V); moderate iron oxide stain, limonite; no silicification. See also figure 31 for samples HU195, HU196.
HU196	Chip	36	In sheared volcanic rock; includes 0.5 ft partly silicified zone; heavy iron oxide stain; country rock is punky/weathered.
HU197	Chip	18	Across fracture zone (N. 25° E. 67° NW.), 1.5 ft wide, in prospect pit; green copper carbonate? mineral, no other mineralization noted; country rock is Morita Formation sediments.
HU198	Grab	xx	Dump material from caved adit; siliceous limestone or dolomite with some sphalerite, galena, and chalcopyrite, representative of dump; dump size 4,000 ft^3.
HU199	Select	xx	High-grade sample from HU198 dump; abundant galena, chalcopyrite, pyrite?; sparse sphalerite; in very siliceous limestone.

APPENDIX C--Sample description data for rock-chip, grab, and select samples taken from the Huachuca Mountains unit, 1991.-Continued

Number	Type	Length (in.)	Remarks
HU200	Grab	xx	Random sample from dump of adits; mostly silicious altered volcanic and sedimentary rock; some pieces rich in manganese, iron oxides, possibly some sphalerite; dump 3,600 ft^3. See also figure 33 for samples HU200 - HU207.
HU201	Select	xx	Possible ore from HU200 dump; silicious replacements of galena, sphalerite, minor green copper mineralization; some manganese oxide-rich pieces with limonite stain.
HU202	Chip	60	Pyrite; sparse chalcopyrite disseminated and in thin streaks on fractures. Samples HU202-HU207 are all in the same limestone block.
HU203	Chip	30	Marbleized gray limestone; no mineralization noted.
HU204	Chip	48	On left rib; slightly marbleized gray limestone; trace of green copper mineral stain.
HU205	Chip	30	Slightly marbleized gray limestone; a mineralized pod measures 1 by 1.5 ft and has galena, sparse chalcopyrite; no structure noted.
HU206	Chip	20	Across fault zone (N. 85° E. 35° SE.); extensive replacement of limestone by limonite and manganese oxide; some clay; small globs and stringers of white quartz are intermingled with the oxides; same material as from (inaccessible) stoped area.
HU207	Chip	24	Across partly marbleized gray limestone; iron oxide.
HU208	Chip	30	Across structure (N. 45° W. 62° NE.) in prospect pit; irregular splotches of iron oxide in clay or gouge in limestone; no mineralization noted.
HU209	Grab	xx	Random sample from dump of prospect pit; limestone, some iron stain; no mineralization noted.
HU210	Grab	xx	Random sample from dump of caved adit; includes marbleized limestone, granite, volcanics; no mineralization noted; dump size 150 ft^3.

APPENDIX C--Sample description data for rock-chip, grab, and select samples taken from the Huachuca Mountains unit, 1991.-Continued

Number	Type	Length (in.)	Remarks
HU211	Chip	48	In wall of prospect pit; irregular replacement zones in block of partly marbleized limestone; minerals include chrysocolla, malachite, limonite; no sulfides noted.
HU212	Grab	xx	Random sample from dump of caved adit; partly silicified gray limestone; dump size 200 ft^3.
HU213	Grab	xx	Random sample from dump of caved adit; Jurassic Huachuca Quartz Monzonite; no mineralization noted; dump size 6,000 ft^3.
HU214	Select	xx	High-grade samples from dump of caved adit; highly silicified rock, heavily impregnated with hematite; also calcite, malachite, specularite; probably an altered limestone block in Triassic/Jurassic siliceous volcanic rock; dump size 2,400 ft^3.
HU215	Grab	xx	Random sample from HU214 dump; mostly gray marble and altered volcanic rock; trace hematite, calcite, malachite, silicified limestone.
HU216	Grab	xx	Random sample from dump of caved adit; partly silicified, altered limestone; some iron oxide stain and quartz; dump size 400 ft^3.
HU217	Grab	xx	Random sample of dump from HU218 adit; mostly greenish/gray Huachuca Quartz Monzonite; some vein quartz, limonite stain on fracture surfaces; no other mineralization noted; dump size 5,400 ft^3.
HU218	Chip	26	Across quartz vein (N. 15° W. 67° SW.) at portal of inaccessible adit; goethite after pyrite to 0.25 in. in quartz; limonite coating on fracture surfaces.
HU219	Chip	24	Across quartz vein (N. 77° E. 28° NW.), 2 ft thick in prospect pit; massive milky white quartz with pyrite spots to 0.5 in.; limonite and oxidized pyrite coating on fracture surfaces; country rock is Huachuca Quartz Monzonite.
HU220	Chip	36	Across silicified zone (N. 77° E. 25° NW.) in prospect pit; quartz stringers and veins to 1 ft thick in altered, limonite-stained quartz monzonite; pyrite, limonite in small spots in quartz.

APPENDIX C--Sample description data for rock-chip, grab, and select samples taken from the Huachuca Mountains unit, 1991.-Continued

Number	Type	Length (in.)	Remarks
HU221	Chip	19	Across quartz vein (N. 50° W. 37° SW.); white quartz with goethite after pyrite; vugs with quartz crystals. See also figure 34 for samples HU221 - HU226.
HU222	Chip	40	Includes quartz veinlets 0.25-0.5 in. thick at random orientations; goethite after pyrite; limonite stain on fracture surfaces.
HU223	Chip	18	Across HU221 quartz vein; milky white quartz with goethite after pyrite; vugs with quartz crystals.
HU224	Chip	51	In moderately to highly altered and silicified country rock; some quartz veins to 3 in. thick.
HU225	Select	xx	Dump material from HU223-224 pit; white quartz with pyrite, goethite, hematite and limonite stain on fractures.
HU226	Grab	xx	Random sample from dump of a possible caved adit; mostly country rock; some goethite; minor white vein quartz and limonite; dump size 300 ft^3.
HU227	Grab	xx	Random sample from dump of caved adit; gray and buff limestone; no mineralization noted; dump size 600 ft^3.
HU228	Grab	xx	Random sample from dump of inclined shaft; heavily limonite-stained altered limestone; earthy malachite; minor quartz and manganese oxide stain; dump size 5,600 ft^3.
HU229	Chip	30	Across sheared zone (N. 25° E. 25° NW.) which is limonite-impregnated, with small veinlets of quartz and calcite; some malachite crusts on fractures. See also figure 35 for samples HU229 - HU231.
HU230	Chip	48	Across HU229 sheared zone (now 20° NW.); includes 3 in. zone of limonite, calcite, quartz with malachite; some quartz and pyrite in limestone.
HU231	Grab	xx	Random sample from dump; mostly limonite-impregnated limestone; earthy malachite common; some quartz veinlets, calcite, and chalcopyrite; dump size 2,400 ft^3.

APPENDIX C--Sample description data for rock-chip, grab, and select samples taken from the Huachuca Mountains unit, 1991.-Continued

Number	Type	Length (in.)	Remarks
HU232	Grab	xx	Random sample from dump of inclined shaft, now completely filled-in; limonite-impregnated limestone; earthy malachite crusts on fracture surfaces; dump size 600 ft^3.
HU233	Grid	xx	Dump material taken on 5 ft grid from caved adit; partly silicified Cretaceous red/brown andesitic lava; sparse quartz; dump size 200 ft^3.
HU234	Chip	60	On left rib; country rock has 1-2 in. pebbles, somewhat weathered or altered; conspicuous lack of mineralization. See also figure 37 for samples HU234, HU235.
HU235	Chip	30	Country rock with boulders to 2 ft; no structure or mineralization noted.
HU236	Grab	xx	Dump material from partially caved adit; quartz, limestone, volcanic material; no mineralization noted; dump size 200 ft^3.
HU237	Grab	xx	Dump material from prospect pit; white quartz with spots of chalcocite to 0.125 in; rare malachite; dump size 100 ft^3.
HU238	Grab	xx	Dump material from shaft; white quartz with abundant chalcocite, green copper mineral stain; dump size 200 ft^3.
HU239	Grab	xx	Dump material from caved adit; mostly volcanic megabreccia; 2% quartz; dump size 1,500 ft^3.
HU240	Grid	xx	Dump material on 5 ft grid from HU241 trench; 95% volcanic megabreccia; 5% quartz.
HU241	Chip	9	Across quartz vein (N. 60° E. 85° SE.) in trench.
HU242	Grid	xx	Dump material on 5 ft grid from trench; 90% volcanic megabreccia, 10% vein quartz; quartz vein is poorly exposed in trench and attitude is unknown.
HU243	Grid	xx	From third lobe of dump of mostly caved adit on 5 ft grid; mostly quartz and quartzite; no mineralization noted; lobe size 1,300 ft^3. See also figure 38 for samples HU243 - HU256.

APPENDIX C--Sample description data for rock-chip, grab, and select samples taken from the Huachuca Mountains unit, 1991.-Continued

Number	Type	Length (in.)	Remarks
HU244	Grid	xx	From second lobe of HU243 dump on 5 ft grid; quartz and quartzite with no mineralization noted; lobe size 700 ft^3.
HU245	Grid	xx	From first lobe of HU243 dump on 5 ft grid; quartz with no mineralization noted; lobe size 400 ft^3.
HU246	Chip	24	Across quartz vein (N. 43° W. 53° SW.) in filled-in shaft; includes 16 in. quartz vein with iron oxide stain; 8 in. silicified gouge.
HU247	Chip	20	Across quartz vein (N. 30° W. 25° SW.); heavy iron oxide stain on fractures, some quartz crystals, no other mineralization noted; country rock is Cretaceous andesitic lava.
HU248	Select	xx	High-grade vein quartz from float; with inclusions of chalcopyrite, pyrite, malachite, azurite, iron oxide; vein in place has attitude N. 30° W. 34° SW.
HU249	Grid	xx	Dump material on 5 ft grid from shaft; mostly quartz and fine-grained, dark volcanic rock; dump size 9,000 ft^3.
HU250	Chip	18	Across shear zone (N.-S. 40° W.); very fractured, altered wallrock with gouge; with quartz, chalcopyrite, iron oxide.
HU251	Chip	30	Across shear zone (N.-S. 33° W.); contains much vuggy vein quartz; also copper mineral stain, iron oxide, spotty chalcopyrite to 0.25 in.
HU252	Chip	20	Across shear zone (N.-S. 32° W.); 50% sheared rock; 50% quartz vein material with pyrite, chalcopyrite, green copper mineral stain, iron oxide.
HU253	Chip	12	Across silicified and brecciated gouge with limonite matrix; attitude N.-S. 43° W.
HU254	Chip	18	Across quartz vein and shear zone (N. 10° E. 32° W.); quartz with abundant pyrite, some chalcopyrite, iron oxide.

APPENDIX C--Sample description data for rock-chip, grab, and select samples taken from the Huachuca Mountains unit, 1991.-Continued

Number	Type	Length (in.)	Remarks
HU255	Chip	12	Across quartz vein (N. 30° W. 42° SW.); mostly vein quartz; includes pyrite from 0.5 in seam; abundant copper mineral stain and iron oxide; vein thickens to 3 ft at top of stope.
HU256	Chip	18	Across quartz veinlets (0.25 in. thick) in shear zone (N. 7° W. 37° SW.); country rock is sheared and altered Cretaceous red andesitic lava.
HU257	Grab	xx	Random sample from trench; Cretaceous red/brown andesitic lava; no structure or mineralization noted.
HU258	Chip	36	Across quartz vein (N. 43° W. 50° SW.), 3 ft thick; white massive bull quartz; limonite stain between fractures; trace pyrite. See also figure 39 for samples HU258 - HU260.
HU259	Chip	24	Across HU258 quartz vein (now 60° SW.), 2 ft thick; white massive bull quartz with some pyrite.
HU260	Chip	36	Across HU258 quartz vein (now 63° SW.), 3 ft thick; white massive bull quartz with some pyrite.
HU261	Chip	18	Across quartz vein (N. 41° W. 76° SW.); includes 8 in. quartz, 8 in. silicified wallrock; wallrock has calcite in vesicles; pyrite disseminated in vein. See also figure 40 for samples HU261 - HU269.
HU262	Chip	36	Across HU261 structure (now 67° SW.) in back; quartz veining and shear zones; abundant pyrite disseminated in quartz.
HU263	Chip	24	Across HU261 structure (now 76° SW.) in back; white bull quartz, with pyrite disseminated in lower half of vein.
HU264	Chip	36	Across HU261 structure (now 73° SW.) in back; white bull quartz vein and quartz in sheared rock; pyrite in quartz; some iron oxide stain and green copper mineral stain.
HU265	Chip	42	Across HU261 structure (now 76° SW.) in back; heavily iron-stained and partly fractured quartz; minor pyrite.

APPENDIX C--Sample description data for rock-chip, grab, and select samples taken from the Huachuca Mountains unit, 1991.-Continued

Number	Type	Length (in.)	Remarks
HU266	Chip	24	Across HU261 structure (now 73° SW.) in back; white bull quartz; some vugs with crystals; limonite stain on fractures; pyrite on lower side.
HU267	Chip	12	Across HU261 structure in back; white quartz with disseminated pyrite in lower half; limonite stain on fractures.
HU268	Chip	18	Across HU261 structure (now 75° SW.) in back; white quartz with inclusions of chalcopyrite to 0.5 in.; some green copper mineral stain; some red clay gouge on upper side of vein.
HU269	Chip	24	Across HU261 structure (now 73° SW.) in back; quartz vein and some sheared country rock; pyrite disseminated in lower half; wallrock slightly silicified on upper half.

APPENDIX D

INDIVIDUAL MINE AND PROSPECT DATA SHEETS

Primary name: Anderson Mine Group

Other names: none

Location: T. 22 S., R. 18 E., E. 1/2 sec. 12

Topographic map: Pyeatt Ranch, 7.5', 1958 (1983)

Land status: National Forest (Coronado, Huachuca unit)

County: Santa Cruz

MILS number: 0040230098 AZMILS number: 28?

Mineral District: none

Type of workings: Workings include a 31 ft adit, a 70 ft adit, a 60 ft adit, two prospect pits, and a 40 ft trench (fig. 12, 13, and 14).

Geology: Country rock is red-brown Cretaceous Cintura Formation siltstone. Shear zones 1-3 ft wide strike northwest and dip northeast. Silicification, including quartz veins up to 2 in. thick, occurs in some shear zones. Clay gouge and slickensides also noted in the shear zones.

Minerals: There was a notable scarcity of mineralization; some limonite stain in shear zones and some unidentified copper? mineral disseminated in the country rock.

Commodities: unknown

Production: unknown

Summary of Geochemical Analyses: Gold and silver are extremely low to lacking in all of the samples. No other metals are noted in significant concentrations.

Field Investigation:
Date: 3/91
Investigator: Tuftin, Harris
Sample numbers: HU001 - HU008

References: none

Primary name: Unnamed working

Location: T. 22 S., R. 19 E., NW. 1/4 sec. 29 (in Korn Canyon).

Topographic map: Huachuca Peak, 7.5', 1958 (1978)

Land status: National Forest (Coronado, Huachuca unit)

County: Cochise

MILS number: 0040030782 AZMILS number: none

Mineral district: New Reef

Type of workings: A prospect pit, mostly filled-in.

Geology: Country rock is Cretaceous Morita Formation siltstone. A gray mafic dike is adjacent to the pit. Quartz vein fragments are on the dump but no vein was seen in place.

Minerals: vein quartz with chalcopyrite, limonite; quartz is vuggy with crystals in vugs; some calcite and Mn oxide?; very minor malachite and azurite.

Commodities: unknown

Production: unknown

Summary of geochemical analyses: The sample contained 28.8 ppm silver, 7,449 ppm copper, 253 ppm molybdenum, 22 ppm nickel, 75 ppm antimony, 6 ppm mercury, and 61 ppm arsenic.

Other information: none.

Field Investigation:
Date: 5/91-6/91
Investigators: Tuftin, Creel
Sample numbers: HU009.

References: none

Primary name: Joe Bailey prospect

Location: T. 22 S., R. 19 E., SW. 1/4 sec. 29.

Topographic map: Huachuca Peak, 7.5', 1958 (1978)

Land status: National Forest (Coronado, Huachuca unit)

County: Cochise

MILS number: 0040030774 AZMILS number: 862

Mineral district: New Reef

Type of workings: A water-filled shaft, at least 9 ft deep.

Geology: Quaternary alluvium of Cretaceous Morita Formation sediments. White vein quartz fragments were on the dump, but no vein was seen in place.

Minerals: white vein quartz with some limonite in pockets and very minor green copper mineral.

Commodities: unknown

Production: unknown

Summary of geochemical analyses: The sample showed 90 ppb gold, 89.2 ppm silver, 5,407 ppm copper, and 7 ppm mercury.

Other information: none.

Field Investigation:
Date: 5/91-6/91
Investigators: Tuftin, Creel
Sample numbers: HU010.

References:

Alexis, 1949, p. 65.

Primary name: Arrow Mine Group

Other names: Lucky Day, East Wind

Location: T. 22 S., R. 19 E., SW. 1/4 sec. 28.

Topographic map: Huachuca Peak, 7.5', 1958 (1978)

Land status: National Forest (Coronado, Huachuca unit)

County: Cochise

MILS number: 0040030095 AZMILS number: 113

Mineral district: New Reef

Type of workings: Workings (shallow and near-surface) are caved and inaccessible. When visited in 1991, only three prospect pits, mostly filled with colluvium, were seen.

Geology: Country rock is Cretaceous Morita Formation sedimentary rocks. A very fine grained granodiorite dike exposed in the middle prospect trends N. 50° E. and dips 53° SE. Coarsely crystalline, vuggy quartz veins 1-10 in. thick are associated with the dike. Most of the vein quartz is seen as float, not in place.

Minerals: vein quartz with scheelite, galena, minor pyrite (much of which is altering to limonite).

Commodities: Au, W, Pb

Production: minor gold in early 1900's. Prior to 1950, a few tons of high-grade scheelite ore were produced. Between 1950 and 1960, about 1 st of ore, estimated at 5% WO_3, was produced. In 1957, a 10 in. wide quartz vein at the contact between the granodiorite dike and country rock was being worked. It had been explored for a distance of 70 ft along strike and 50 ft down dip. Scheelite occurred sporadically in the quartz, and rich pockets of scheelite ore occurred when limestone was encountered. A small amount of galena occurred with the scheelite. No other production records were found.

Summary of Geochemical Analyses: Sample HU011 contained 180 ppb gold and 860 ppm tungsten.

Other Information: The group consisted of 16 unpatented mining claims, which were relocations of the older Lucky Day and East Wind groups of claims.

Field Investigation:
Date: 5/91 - 6/91

Investigator: Tuftin, Creel
Sample numbers: HU011

References:

Dale and others, 1960, p. 40-41.
Keith, 1973, p. 65.
Ludington, 1984, p. 3-4.

Primary name: Peterson Mine

Other names: Copper Dog, Sylvania Group

Location: T. 23 S., R. 19 E., NW. 1/4 sec. 3 (southern slope of Peterson Peak).

Topographic map: Huachuca Peak, 7.5', 1958 (1978)

Land status: Patented mining claims

County: Cochise

MILS number: 0040030194 AZMILS number: 126

Mineral district: New Hartford

Type of workings: 16 adits, shafts, and open cuts totaling about 700 ft. The one adit found in 1991 is an 80 ft long adit with three declining drifts (fig. 7). The adit is probably the Pearl #1 adit. Drifting is on a northwest striking fault and adjacent quartz vein that dips to the southwest.

Geology: Mineralization consists of irregular bodies in fault fissure veins associated with a Tertiary-age very fine grained granodiorite dike or sill cutting Cretaceous Glance Conglomerate and andesitic volcanics.

Minerals: vein quartz with chalcopyrite, light green copper? mineral, scheelite? or calcite?.

Commodities: Cu, Ag, Au

Production: About 30 tons ore in 1916. Reported grades for some ore shipped (year unknown) were 10 to 12% copper, 25 to 30 oz/st silver, and about 0.1 to 0.5 oz/st gold.

Summary of geochemical analyses: The average grades are 3.64 oz/st silver and 2.34% copper. One sample contained 0.890 oz/st gold. Two samples also contained 450 and 600 ppm tungsten.

Other information: The patented claims are the Sylvania, Copper Dog, Pearl, Crescent, and Western Star.

Field Investigation:
Date: 5/91 - 6/91
Investigators: Tuftin, Creel
Sample numbers: HU012 - HU023

References:
Keith, 1973, p. 66.

Ludington, 1984, p. 3-4.
Svacina, 1941, p. 1, 4.

Primary name: Eureka Mine

Other names: Azurite, Tenorite, Connelite, Lotus

Location: T. 23 S., R. 19 E., SE. 1/4 sec. 14 (north slope of Eureka peak, at about 6,600 ft)

Topographic map: Huachuca Peak, 7.5', 1958 (1978)

Land status: National Forest (Coronado, Huachuca unit; Miller Peak Wilderness Area)

County: Cochise

MILS number: 0040030135 AZMILS number: 118

Mineral district: New Hartford

Type of workings: Adits; the one adit found in 1991 was caved. Dump size is 16,000 ft^3.

Geology: Country rock is red/brown Cretaceous andesitic lava. High-grade mineralization forms thin veneer on country rock in dump.

Minerals: malachite, azurite, chalcocite, bornite, barite; no quartz or calcite.

Commodities: Pb, Ag, Cu, Au

Production: 470,000 lb of lead, $50,000 value of silver, and an unknown amount of copper was produced from 1900-1934.

Summary of Geochemical Analyses: One sample contained 9.97 oz/st silver and 9.42% copper.

Other Information: The mine was operated by a religious group living in the nearby camp of Sunnyside, about the time of the production years. The Azurite, Tenorite, Connelite, and Lotus were formerly patented mining claims; the land has been reacquired by the federal government and may be withdrawn from mineral entry or location.

Field Investigation:
Date: 10/91
Investigators: Tuftin, Villalobos
Sample numbers: HU024, HU025

References:
Alexis, 1949, p. 63-66

Keith, 1973, p. 65.
Ludington, 1984, p. 3-4.

Primary name: Unnamed adit in Sunnyside Canyon

Location: T. 23 S., R. 19 E., NW. 1/4 sec. 13 (at about 6,400 ft).

Topographic map: Miller Peak, 7.5', 1958 (1978)

Land status: National Forest (Coronado, Huachuca unit; Miller Peak Wilderness Area)

County: Cochise

MILS number: 0040030798 AZMILS number: none

Mineral district: New Hartford

Type of workings: Adit, 80 ft, bearing S. 8° E. Adit is mostly water-filled.

Geology: Country rock is red/brown Cretaceous andesitic lava. Two fracture zones in adit strike N. 18° W., one dips 62° NE., the other dips 42° SW. Rock in fracture zones has some chloritic alteration, with feldspars turning to clays.

Minerals: none noted.

Commodities: unknown

Production: unknown

Summary of geochemical analyses: Rock-chip sample HU026 showed 36 ppm cobalt (appendix A), and 0.28% titanium and 103 ppm vanadium (appendix B).

Other information: none.

Field Investigation:
Date: 10/91
Investigators: Tuftin, Villalobos
Sample numbers: HU026, HU027

References: none

Primary name: Copper Glance Mine

Other names: Mandotta, Silver King, Smuggler

Location: T. 23 S., R. 19 E., NE. 1/4 sec. 24

Topographic map: Miller Peak, 7.5', 1958 (1978)

Land status: National Forest (Coronado, Huachuca unit; Miller Peak Wilderness Area)

County: Cochise

MILS number: 0040030123 AZMILS number: 117

Mineral district: New Hartford

Type of workings: Workings found in 1991 include a caved adit bearing N. 17° E. which declines steeply for at least 20 ft; a 190 ft adit bearing S. 33° W.; a 17 ft adit bearing S. 27° W. with 1,000 ft^3 dump; inaccessible adit (deep winze near portal) bearing N. 39° E. with 3,500 ft^3 dump; inaccessible (nearly caved) adit bearing N. 40° E. with 13,000 ft^3 dump; completely caved adit with 19,000 ft^3 dump; completely caved adit with 6,000 ft^3 dump; water-filled shaft with 18,000 ft^3 dump (fig. 15, 16).

Geology: Country rock is Cretaceous andesitic volcanics. A mineralized fault zone and quartz vein trending N. 35° E. and dipping near vertically, 1-4 ft in width, extend at least 1,000 ft on strike.

Minerals: Azurite, malachite, chrysocolla, chalcocite, tetrahedrite?, pyrite, galena, limonite, Mn oxides, barite, vein calcite; mineralization varies in type and abundance among the workings; it is usually carried in silicified zones and/or in vein quartz.

Commodities: Cu, Ag, Au

Production: several hundred tons in early 1900's, and from 1913-1915; production from 1900-1934 included 300,000 lb of copper and $4,000 value of gold.

Summary of geochemical analyses: Samples contained up to 91.10 oz/st silver, 0.28 oz/st gold, 17.2% copper, 1,500 ppm tungsten, >2% barium, 7,745 ppm antimony.

Other information: The mine was operated by a religious group living in Sunnyside. The Mandotta, Silver King, and Smuggler were formerly patented mining claims; the land has been reacquired by the federal government and may be withdrawn from mineral entry or location.

Field Investigation:

Date: 5/91 - 6/91; 10/91
Investigators: Tuftin, Creel; Tuftin, Villalobos
Sample numbers: HU028 - HU044

References:

Alexis, 1949, p. 63-66.
Keith, 1973, p. 65.
Ludington, 1984, p. 3-4.

Primary name: Hamburg Mine

Other names: Wisconsin, Hartford

Location: T. 23 S., R. 20 E., SE. 1/4 sec. 17 and NE. 1/4 sec. 20 (in upper Ramsey Canyon).

Topographic map: Miller Peak, 7.5', 1958 (1978)

Land status: Patented mining claims

County: Cochise

MILS number: 0040030151 AZMILS number: 119

Mineral district: New Hartford

Type of workings: Three main adits and numerous prospects. The first adit was driven about 1903, and was 200 ft in length. Three adits, all completely caved, were found when the property was visited in 1991 (fig. 16). The upper adit is at 7,100 ft, while the lower two are at 6,850 ft. The upper adit found matches the location of an adit given by Weber as being the most extensive. However, the locations of the other (lower) two adits found do not match those of the two others mentioned by Weber. The adits may have been mislocated by Weber, or there may be more adits not found in 1991 field work (fig. 17).

Geology: Country rock is Permian Concha Limestone. Irregular veinlets, pods, and disseminations of mineralization in skarn and/or tactite bodies adjacent to a strong fault and an intruding Jurassic Huachuca Quartz Monzonite body.

Minerals: pyrite, chalcopyrite, chalcocite?, bornite, galena, sphalerite, specularite, garnet.

Commodities: Cu, Pb, Zn, Ag, Au

Production: up to 100 tons produced intermittently in the early 1900's. Production was discontinued prior to WWI.

Summary of geochemical analyses: Samples contained up to 5.71 oz/st silver and 1.62% copper, greater than 2.0% zinc and 1.0% manganese.

Other information: The mining camp of Hamburg was established by 1912. The patented claims are the Undine, I.X.L., Wisconsin, Helena, Mountain Top, Mountain View, Wedge, Morgan, Dauntless, Log Cabin, Cape Nome, Marshall, Head Center, Harrison, Cleveland, Camp, Camp #2, Happy Thought, Huachuca Chief, and Key Stone.

Field Investigation:
Date: 5/91 - 6/91
Investigators: Tuftin, Creel
Sample numbers: HU045 - HU049

References:

Keith, 1973, p. 65.
Ludington, 1984, p. 3-4.
Weber, 1950, p. 156-160 (detailed description of ore mineralization)

Primary name: James Group

Other names: Emerald, Pomona, Black Eagle

Location: T. 23 S., R. 20 E., SW. 1/4 sec. 5; NW. 1/4 sec. 8

Topographic map: Miller Peak, 7.5', 1958 (1978)

Land status: National Forest (Coronado, Huachuca unit; Miller Peak Wilderness Area)

County: Cochise

MILS number: 0040030198 AZMILS number: 127

Mineral district: New Reef

Type of workings: A main adit of about 250 ft with drifts and stopes; this is probably the Pomona Mine. In 1991, it was found to be caved, and the dump completely gone. Workings also included open cuts; one open cut with a small adit, possibly the James Mine proper, was found in 1991 (fig. 9). The Pomona mine is 1,000 ft to the northeast of the open cut.

Geology: Country rock is Cambrian Abrigo and Devonian Martin limestone. Mineralization occurs in quartz veins and pockets. The country rock is deformed, thrust faulted, and silicified. In the open cut, a silicified zone with quartz pods and stringers trends N. 31° W. and dips 50° SW. This zone appears to pinch out close to the portal.

Minerals: scheelite, galena, sphalerite, pyrite, goethite, hematite, limonite, minor malachite

Commodities: W, Pb, Cu, Zn, Ag, Au

Production: Recorded tungsten production includes 450 st tungsten ore in 1918, about 200 stu of approximately 60% WO_3 concentrates during 1946-1947, and 200-300 st of ore at greater than 1% WO_3 in 1953. Production of lead ore was "a small amount" in 1945 and 25 st in 1947. Stockpiled lots of both scheelite and lead-zinc ore were noted in 1949.

Summary of geochemical analyses: The samples contained an average of greater than 0.39% lead, greater than 1.0% zinc, and 231 ppm cadmium.

Other information: The mine originally included three unpatented mining claims; a fourth was added later. James Kelley was the first of a series of owners and/or operators. He worked the claims for scheelite during World War I. The ore was milled in a nearby gravity plant. Following Kelley were Harvey James, the Pomona Mining Co., and the Huachuca Mining and Milling Co.

The Pomona Mining Co. added some roadwork and an aerial tram for moving ore and supplies.

Field Investigation:
Date: 10/91
Investigators: Tuftin, Villalobos
Sample numbers: HU050 - HU059

References:

Dale and others, 1960, p. 32-33.
Dunning, 1951, p. 1.
Keith, 1973, p. 66.
Ludington, 1984, p. 3-4.
Weber, 1950, p. 150-153 (detailed description of ore mineralization).
Wilson, 1941, p. 47.

Primary name: Lucky Strike Mine

Other names: None

Location: T. 23 S., R. 20 E., NW. 1/4 sec. 4 (in Brown Canyon)

Topographic map: Miller Peak, 7.5', 1958 (1978)

Land status: National Forest (Coronado, Huachuca unit)

County: Cochise

MILS number: 0040030175 AZMILS number: 121, 737

Mineral district: New Reef

Type of workings: inclined shaft (90 ft deep); adits, and surface workings; when visited in 1991, only a caved adit was seen and sampled.

Geology: streaks of scheelite, spotty galena, and disseminated pyrite along the hanging- and footwall of a quartz vein cutting coarse-grained, porphyritic Precambrian granite. The workings explored a quartz vein, 12-30 in. wide, striking N. 25 - 30° W. and dipping 15 - 30° southwest. The vein runs about 90 ft along strike and extends 180 ft down dip. An altered dike of dark green rock, possibly basalt or lamprophyre, is in the hanging wall.

Minerals: scheelite, galena, pyrite, earthy hematite, calcite, in quartz vein material.

Commodities: W, Pb, Ag, Au

Production: some gold ore in early 1900s; considerable tungsten ore during WWI; minor amount in 1935-1938, about 4.5 st of tungsten concentrates were produced from the shaft and waste dump in 1953. Dale estimates from size of stopes that a few thousand tons of high-grade scheelite ore, in excess of 2% WO_3, was mined.

Summary of geochemical analyses: A selected sample showed 0.12 oz/st gold, 2.9 oz/st silver, 9,092 ppm lead, and 3,840 ppm tungsten.

Other information: The mine was operated by Gold, Silver, and Tungsten, Inc., from 1935-38. From about 1942-1945, the property was owned by Gabrielson, Kaske, and Palmer. In 1953, the Standard Tungsten Corp. acquired six claims of the Lucky Strike group and located an additional 19 more.

Field Investigation:

Date: 5/91 - 6/91
Investigator: Tuftin, Creel
Sample numbers: HU060, HU061

References:

Dale and others, 1960, p. 33-34 (detailed information).
Keith, 1973, p. 66.
Ludington, 1984, p. 3-4.
Wilson, 1941, p. 47-48.

Primary name: Thomas Tungsten Claims

Other names: None

Location: T. 23 S., R. 20 E., NW. 1/4 SE. 1/4 sec. 4 (in Brown Canyon).

Topographic map: Miller Peak, 7.5', 1958 (1978)

Land status: National Forest (Coronado, Huachuca unit)

County: Cochise

MILS number: 0040030752 AZMILS number: 687

Mineral district: New Reef

Type of workings: Four prospect pits were found in 1991.

Geology: quartz veins in Precambrian granite.

Minerals: Vein quartz float with limonite stain; minor limonite in wallrock.

Commodities: none

Production: Only assessment work was done.

Summary of geochemical analyses: One sample contained 0.03 oz/st gold.

Other information: The property totaled five unpatented claims.

Field Investigation:
Date: 5/91-6/91
Investigators: Tuftin, Creel
Sample numbers: HU062, HU063

References:

Johnson, 1957, p. 1.

Primary name: Pleasant View claims

Location: T. 23 S., R. 20 E., SE. 1/4 sec. 4

Topographic map: Miller Peak, 7.5', 1958 (1978)

Land status: National Forest (Coronado, Huachuca unit)

County: Cochise

MILS number: 0040030306 AZMILS number: 668

Mineral district: New Reef

Type of workings: Two short adits and five prospects (fig. 18).

Geology: Country rock is Precambrian granite. The workings are on two massive white quartz veins with varying attitudes, 5.5 to 9.5 ft thick.

Minerals: vein quartz with limonite in vugs and on fractures.

Commodities: unknown

Production: unknown

Summary of geochemical analyses: Samples contained 24 and 26 ppm bismuth.

Other information: none

Field Investigation:
Date: 10/91
Investigators: Tuftin, Chatman
Sample numbers: HU064-HU071

References: none

Primary name: Unnamed prospects

Location: T. 23 S., R. 20 E., NW. 1/4 sec. 11

Topographic map: Miller Peak, 7.5', 1958 (1978)

Land status: National Forest (Coronado, Huachuca unit)

County: Cochise

MILS number: 0040030779 AZMILS number: none

Mineral district: New Reef

Type of workings: workings include a 30 ft trench with a water-filled pit at one end (fig. 19), a 20 ft trench, and a 9 ft diameter prospect pit.

Geology: The workings are in Precambrian granite. A 7 in. quartz vein is exposed in the longer trench; the other two prospects are on a northwest trending, northeast dipping fault; two 1.5 in. quartz veins are exposed in the pit.

Minerals: vein quartz with scheelite? and pyrite; minor calcite.

Commodities: unknown

Production: unknown

Summary of geochemical analyses: Some notable concentrations of REE; no notable concentrations of tungsten.

Other information: none

Field Investigation:
Date: 5/91-6/91
Investigators: Tuftin, Creel
Sample numbers: HU072-HU075

References: none

Primary name: Unnamed workings on the Harvey Hanes property

Location: T. 23 S., R. 20 E., NW. 1/4 sec. 12

Topographic map: Miller Peak, 7.5', 1958 (1978)

Land status: National Forest (Coronado, Huachuca unit)

County: Cochise

MILS number: 0040030797 AZMILS number: none

Mineral district: New Reef

Type of workings: A 90 ft adit with two portals (fig. 20); a 50 ft prospect trench which may be part of a caved adit.

Geology: Country rock is Precambrian granite and/or alaskite?. A white quartz vein, 8 to 24 in. thick, trends NE. and dips moderately NW.

Minerals: vein quartz with limonite and Mn oxide staining; some pyrite in wallrock.

Commodities: unknown

Production: unknown

Summary of geochemical analyses: Tungsten concentrations in samples taken on the quartz vein range from 220 to 910 ppm.

Other information: The adit is shown on the topographic sheet by two adit symbols; however, there is only one adit.

Field Investigation:
Date: 5/91-6/91
Investigators: Tuftin, Creel
Sample numbers: HU076-HU080

References: none

Primary name: Unnamed workings by the Broken Arrow Ranch

Location: T. 23 S., R. 20 E., east center sec. 13.

Topographic map: Miller Peak, 7.5′, 1958 (1978)

Land status: National Forest (Coronado, Huachuca unit)

County: Cochise

MILS number: 0040030780 AZMILS number: none

Mineral district: New Reef

Type of workings: Workings include a 20 ft adit bearing N. 13° W. with a 15 ft long winze, a 30 ft adit bearing N. 18° W., an 18 ft adit bearing N. 10° W. and a 10 ft adit bearing S. 29° W. with a 50 ft trench, and a prospect pit (fig. 21, 22, 23).

Geology: Country rock is Precambrian granite. The workings are on quartz veins and/or faults in the granite. A prominent fault at the portal of the 20 ft adit strikes N. 35° W. and dips 49° NE. Sericitic and chloritic alteration were noted in the fault zone. The 30 ft adit is on a 10 in. wide quartz vein which strikes N. 10° W. and dips 25° SW. The quartz is clean except for some iron-oxide coating on fracture surfaces. The 18 ft adit intersects an 18 in. quartz vein which strikes N. 52° E. and dips 33° NW; a 9 - 12 in. dike parallels the vein in the hanging wall. No structure was seen in the prospect pit, but traces of chlorite, and slickensides, were seen on rock in its dump.

Minerals: vein quartz; some with moderate to heavy hematite staining and pyrite.

Commodities: unknown

Production: unknown

Summary of geochemical analyses: no significant metal concentrations were found.

Other information: none

Field Investigation:
Date: 3/91
Investigators: Tuftin, Harris
Sample numbers: HU081-HU086

References: none

Primary name: Huachuca claims

Other names: Huachuca property

Location: T. 23 S., R. 20 E., SE. 1/4 sec. 13 (lower Miller Canyon)

Topographic Map: Miller Peak, 7.5', 1958 (1978)

Land status: National Forest (Coronado, Huachuca unit)

County: Cochise

MILS number: 0040030775 AZMILS number: 734

Mineral district: New Reef

Type of workings: Workings found in 1991 include a water-filled adit, a water-filled shaft, and two small, inaccessible adits (fig. 21). The shaft is 35 ft N. 20° W. of the portal of the water-filled adit.

Geology: Quartz veins in Precambrian granite. The quartz vein at the portal of the water-filled adit strikes N 10° W. and dips 20° SW. The quartz vein at the portal of the other adit strikes N. 50° W. and dips 50° SW.

Minerals: vein quartz, with occasional pyrite, galena and scheelite?; trace limonite stain.

Commodities: gold

Production: unknown.

Summary of geochemical analyses: One sample contained 0.03 oz/st gold, 0.5 oz/st silver, 1,600 ppm lead, and 830 ppm tungsten.

Other information: The property was composed of seven unpatented claims.

Field Investigation:
Date: 3/91
Investigator: Tuftin, Harris
Sample numbers: HU087-HU089

References:
Greeley, 1983, p. 1.

Primary name: Unnamed workings by the Broken Arrow Ranch

Location: T. 23 S., R. 20 E., east center sec. 13.

Topographic map: Miller Peak, 7.5', 1958 (1978)

Land status: National Forest (Coronado, Huachuca unit)

County: Cochise

MILS number: 0040030780 AZMILS number: none

Mineral district: New Reef

Type of workings: Workings include a 20 ft adit bearing N. 13° W. with a 15 ft long winze, a 30 ft adit bearing N. 18° W., an 18 ft adit bearing N. 10° W. and a 10 ft adit bearing S. 29° W. with a 50 ft trench, and a prospect pit (fig. 21, 22, 23).

Geology: Country rock is Precambrian granite. The workings are on quartz veins and/or faults in the granite. A prominent fault at the portal of the 20 ft adit strikes N. 35° W. and dips 49° NE. Sericitic and chloritic alteration were noted in the fault zone. The 30 ft adit is on a 10 in. wide quartz vein which strikes N. 10° W. and dips 25° SW. The quartz is clean except for some iron-oxide coating on fracture surfaces. The 18 ft adit intersects an 18 in. quartz vein which strikes N. 52° E. and dips 33° NW; a 9 - 12 in. dike parallels the vein in the hanging wall. No structure was seen in the prospect pit, but traces of chlorite, and slickensides, were seen on rock in its dump.

Minerals: vein quartz; some with moderate to heavy hematite staining and pyrite.

Commodities: unknown

Production: unknown

Summary of geochemical analyses: no significant metal concentrations were found.

Other information: none

Field Investigation:
Date: 3/91
Investigators: Tuftin, Harris
Sample numbers: HU081-HU086

References: none

Primary name: Huachuca claims

Other names: Huachuca property

Location: T. 23 S., R. 20 E., SE. 1/4 sec. 13 (lower Miller Canyon)

Topographic Map: Miller Peak, 7.5', 1958 (1978)

Land status: National Forest (Coronado, Huachuca unit)

County: Cochise

MILS number: 0040030775 AZMILS number: 734

Mineral district: New Reef

Type of workings: Workings found in 1991 include a water-filled adit, a water-filled shaft, and two small, inaccessible adits (fig. 21). The shaft is 35 ft N. 20° W. of the portal of the water-filled adit.

Geology: Quartz veins in Precambrian granite. The quartz vein at the portal of the water-filled adit strikes N 10° W. and dips 20° SW. The quartz vein at the portal of the other adit strikes N. 50° W. and dips 50° SW.

Minerals: vein quartz, with occasional pyrite, galena and scheelite?; trace limonite stain.

Commodities: gold

Production: unknown.

Summary of geochemical analyses: One sample contained 0.03 oz/st gold, 0.5 oz/st silver, 1,600 ppm lead, and 830 ppm tungsten.

Other information: The property was composed of seven unpatented claims.

Field Investigation:
Date: 3/91
Investigator: Tuftin, Harris
Sample numbers: HU087-HU089

References:
Greeley, 1983, p. 1.

Primary name: Unnamed adit by Clark Spring

Location: T. 23 S., R. 20 E., SE. 1/4 sec. 14.

Topographic map: Miller Peak, 7.5', 1958 (1978)

Land status: National Forest (Coronado, Huachuca unit; Miller Peak Wilderness Area)

County: Cochise

MILS number: 0040030781 AZMILS number: none

Mineral district: New Reef

Type of workings: Caved adit.

Geology: Country rock is Precambrian granite. Pieces of vein quartz up to three in. thick were noted on the dump.

Minerals: vein quartz with pyrite, limonite after pyrite.

Commodities: unknown

Production: unknown

Summary of geochemical analyses: A select sample contained 1,302 ppm lead, 852 ppm zinc, and 39.0 ppm cadmium. A grab sample contained 440 ppm tungsten.

Other information: none.

Field Investigation:
Date: 5/91-6/91
Investigators: Tuftin, Creel
Sample numbers: HU090, HU091.

References: none

Primary name: Tungsten Reef Mine

Other names: Reef, Exposed Reef, Sitruc

Location: T. 23 S., R. 20 E., SW. 1/4 sec. 14; E. 1/2 sec. 15

Topographic map: Miller Peak, 7.5', 1958 (1978)

Land status: National Forest (Coronado, Huachuca unit)

County: Cochise

MILS number: 0040030202 AZMILS number: 129

Mineral district: New Reef

Type of workings: open cuts and adits; several workings were found in 1991, but only one 210 ft adit was accessible (fig. 10, 11).

Geology: Mineralization occurs in a quartz blanket at the base of the Cambrian Abrigo Limestone, particularly along fractures and at joint intersections.

Minerals: irregular and sporadic bunches and disseminations of scheelite in milky quartz; sparse galena.

Commodities: W, Au, Ag, Pb, Cu, Zn, silica flux.

Production: 1870's and early 1900's minor gold and silver; 1916-1918, 1934-1942, and 1955-1956: 15,900 stu of tungsten concentrates, averaging 71.3% WO_3; 1953-1954, 891 tons of sized quartz sold for use in petroleum refining.

Summary of geochemical analyses: A grab sample from the dumps of several inaccessible workings showed no significant concentrations of metallic elements. An outcrop sample contained 210 ppm tungsten. Samples in the accessible adit contained tungsten in the range of 30 to 210 ppm, up to 2,180 ppb gold, and up to 14 ppm mercury.

Other information: The property was worked for gold since the 1870's. It consisted of five unpatented and nine patented claims. The patented claims have since been acquired by the U.S. Forest Service. In 1984, Goldsil Mining and Milling Co. of Denver dropped plans to explore and develop the area for precious metal-bearing silica flux. Exploration permitting had been denied by the U.S. Forest Service, partly due to the proximity of the area to Carr Canyon recreational facilities.

Field Investigation:

Date: 3/91; 5/91 - 6/91
Investigators: Tuftin, Harris; Tuftin, Creel
Sample numbers: HU092 - HU097

References:

Arizona Pay Dirt, 1984, p. 1
Dale and others, 1960, pp. 28-32 (detailed description).
Keith, 1973, p. 67.
Phillips, 1987, p. 156.
Weber, 1950, p. 122-150 (detailed description).

Primary name: Power claim

Other names: Anozira

Location: T. 23 S., R. 20 E., SW. 1/4 sec. 23

Topographic map: Miller Peak, 7.5', 1958 (1978)

Land status: National Forest (Coronado, Huachuca unit; Miller Peak Wilderness Area)

County: Cochise

MILS number: 0040030019 AZMILS number: 128

Mineral district: New Reef

Type of workings: The principle workings were a 20 ft diameter by 20 ft deep open pit, a 60 ft adit opening off this pit, an upper adit 250 to 300 ft long which extends to the zone underneath the pit, and a lower 150 ft long adit. Two adits, one open and one almost completely caved, were found and sampled in 1991 (fig. 8). The open adit is probably the upper adit; it totaled about 350 ft of workings. The closed one is possibly the lower adit.

Geology: Mineralization occurs in disconnected and irregular bodies in blocks of Paleozoic limestone in Triassic-Jurassic volcanics. The main mineralization occurs as a pipe-like mass 12 to 15 ft in diameter at the NW. end of the exposure. Other lens-shaped bodies, 1 to 5 ft wide, are in N. 50° W. striking, 72° NE. dipping fracture zones, along a strike distance of about 150 ft.

Minerals: argentiferous pyrolusite and wad, limonite, hematite, pyrite.

Commodities: Mn, Ag, Pb, Cu, Zn, Au

Production: About 20 tons of manganese ore and 383 tons of base-metal ore (probably lead ore) in 1917.

Summary of geochemical analyses: A chip sample across a shear zone near the close adit contained 32.4 oz/st silver, greater than 2.0% zinc, greater than 1.0% lead, greater than 1.0% manganese, and 480 ppm cadmium.

Field Investigation:
Date: 10/91
Investigators: Tuftin, Chatman
Sample numbers: HU098 - HU109

References:

Farnham and others, 1961, p. 40-41.
Keith, 1973, p. 66.

Primary name: Miller Canyon prospect

Other name: none

Location: T. 23 S., R. 20 E., NW. 1/4 sec. 26

Topographic map: Miller Peak 7.5′ 1958 (1978)

Land Status: National Forest (Coronado, Huachuca unit; Miller Peak Wilderness Area)

County: Cochise

MILS number: 0040030776 AZMILS number: none

Mineral district: New Hartford

Type of workings: A 35 ft adit.

Geology: The working is in a block of Paleozoic limestone in Jurassic-Triassic volcanics. Stoping was done on a shear zone which strikes N. 65° E. and dips 68° NW.

Minerals: No mineralization noted.

Commodities: unknown.

Production: unknown.

Summary of geochemical analyses: The samples did not contain significant metal concentrations.

Other information: none

Field Investigation:
Date: 10/91
Investigators: Tuftin, Chatman
Sample numbers: HU110

References:
Ludington, 1984, p. 3-4.

Primary name: Nellie James

Other name: none

Location: T. 23 S., R. 20 E., NE. 1/4 sec. 27

Topographic map: Miller Peak 7.5′ 1958 (1978)

Land Status: Patented mining claim

County: Cochise

MILS number: 0040030299 AZMILS number: 599

Mineral district: New Hartford

Type of workings: A cut in the hillside, about 20 by 30 ft, was found in 1991 (fig. 24).

Geology: A northwest trending fracture zone dips steeply to near-vertically northeast. A small replacement body in marble lies in this zone.

Minerals: galena, sphalerite, specular and red hematite, pyrolusite, malachite, epidote, chlorite, vein calcite.

Commodities: Zn, Pb, Cu, Ag

Production: No production records have been found.

Summary of geochemical analyses: Samples averaged metal concentrations of 2.48 oz/st silver, >0.94% zinc, >0.52% lead, 0.21% copper.

Other information: The patented claims are the Nellie James and the Salinas.

Field Investigation:
Date: 10/91
Investigators: Tuftin, Chatman
Sample numbers: HU111-HU115

References: none

Primary name: Unnamed adit in Hunter Canyon

Location: T. 23 S., R. 20 E., center W. 1/2 sec. 25

Topographic map: Miller Peak, 7.5', 1958 (1978)

Land status: National Forest (Coronado, Huachuca unit)

County: Cochise

MILS number: 0040030783 AZMILS number: none

Mineral district: New Hartford

Type of workings: An adit, mostly caved at the portal and unsafe to enter. Dump size 1,800 ft^3.

Geology: Country rock is Jurassic-Triassic volcanics. No structure noted at portal of adit.

Minerals: very sparse vein quartz in dump.

Commodities: unknown

Production: unknown

Summary of geochemical analyses: No significant metal concentrations were found.

Other information: This adit is probably on the former Annex claim.

Field Investigation:
Date: 10/91
Investigators: Tuftin, Villalobos
Sample numbers: HU116, HU117.

References: none

Primary name: Armistice Mine

Other names: Short, Kelley

Location: T. 23 S., R. 20 E., NE. 1/4 sec. 25 (in north fork of Hunter Canyon)

Topographic map: Miller Peak, 7.5′, 1958 (1978)

Land status: National Forest (Coronado, Huachuca unit; Miller Peak Wilderness Area)

County: Cochise

MILS number: 0040030094 AZMILS number: 112

Mineral district: New Hartford

Type of workings: Two inclined shafts opening onto drifts at four levels; several small prospects. Drifting is along the contact between Precambrian granite and Paleozoic limestone. Only two trenches in the granite were found and sampled in 1991.

Geology: Mineralization occurs in irregular, bedded replacement bodies in blocks of Paleozoic limestone and other limestone units at a faulted contact with Precambrian granite.

Minerals: cerussite, galena

Commodities: Pb, Ag, Cu, Au

Production: 681 st of lead and lead-silver ore during 1940-1944; 189 st of lead ore during 1948-1949.

Summary of geochemical analyses: The samples contained no significant metal concentrations.

Other information: none

Field Investigation:
Date: 10/91
Investigator: Tuftin, Villalobos
Sample numbers: HU118, HU119

References:

Anon., no date, p. 1.
Keith, 1973, p. 64.
McElveny, 1928, p. 2-3.

USBM Mineral Yearbook, 1940-1944 and 1948-1949.

Primary name: Baumkirchner Mine

Other names: Crocket, Moon, M Lode, Golden Crown

Location: T. 23 S., R. 21 E., center sec. 30

Topographic map: Nicksville, 7.5', 1952 (1983)

Land status: National Forest (Coronado, Huachuca unit)

County: Cochise

MILS number: 0040030097 AZMILS number: 114

Mineral district: New Hartford

Type of workings: adit, prospect pit, and shaft (at least 60 ft deep). Dump from adit is 1,800 ft^3 (fig. 25).

Geology: Country rock is Triassic-Jurassic volcanics. An exotic block of Paleozoic limestone is barely exposed. Some siliceous zones with minor quartz are in country rock. Replacement mineralization (base-metal sulfides) may be in limestone.

Minerals: Trace sphalerite, pyrite, chalcopyrite?, pyrolusite.

Commodities: Zn, Cu, Mn

Production: minor test lots intermittently from 1925-1937.

Summary of geochemical analysis: The samples contain up to 0.48% manganese, but no other significant metal concentrations.

Other information: This mine was in the International Group of the Baumkirchner claims. The Golden Crown Group was near upper Miller Canyon. There were 56 or 34 unpatented claims in all.

Field Investigation:
Date: 5/91 - 6/91
Investigators: Tuftin, Creel
Sample numbers: HU120 - HU125

References:

Anaconda document no. 8937., p. 1-2.
Keith, 1973, p. 65.
Ludington, 1984, p. 3-4.

Primary name: Unnamed workings

Location: T. 24 S., R. 20 E., NE. 1/4 sec. 1

Topographic map: Montezuma Pass, 7.5', 1958 (1982)

Land status: National Forest (Coronado, Huachuca unit)

County: Cochise

MILS number: 0040030796 AZMILS number: none

Mineral district: New Hartford

Type of workings: A 10 ft adit and a water-filled shaft.

Geology: Country rock is Jurassic Huachuca Quartz Monzonite. An 8 in. quartz vein at the portal of the adit strikes N. 30° W. and dips 51° SW. An 18 in. quartz vein at the shaft strikes N. 12° W. and dips 51° SW.

Minerals: vein quartz with galena, sphalerite, pyrite, earthy red hematite.

Commodities: Ag, Au, Pb

Production: unknown

Summary of geochemical analyses: A high-grade sample contained greater than 1.0% lead, 4,718 ppm zinc, 320 ppb gold, 29 ppm silver, 892 ppm copper, and 100 ppm cadmium. A rock-chip sample contained 1,070 ppb gold and 11.0 ppm silver.

Other information: none.

Field Investigation:
Date: 5/91-6/91
Investigators: Tuftin, Creel
Sample numbers: HU126-HU128.

References: none

Primary name: Unnamed workings

Location: T. 24 S., R. 20 E., SE. 1/4 sec. 1.

Topographic map: Montezuma Pass, 7.5', 1958 (1982)

Land status: National Forest (Coronado, Huachuca unit)

County: Cochise

MILS number: 0040030784 AZMILS number: none

Mineral district: New Hartford

Type of workings: A 5 ft shaft and a prospect pit.

Geology: Country rock is Jurassic Huachuca Quartz Monzonite. A 46 in. thick quartz vein, which strikes N. 55° W. and dips 65° SW., is exposed in the pit. The nearby shaft is in alluvium and was apparently excavated in an unsuccessful attempt to find the continuation of the vein.

Minerals: vein quartz.

Commodities: unknown

Production: unknown

Summary of geochemical analyses: A sample contained 689 ppb gold and 35 ppm silver.

Other information: none.

Field Investigation:
Date: 10/91
Investigators: Tuftin, Villalobos
Sample numbers: HU129

References: none

Primary name: Morgan Mine

Other names: Nugget

Location: T. 24 S., R. 20 E., SE. 1/4 sec. 1 (in Ash Canyon)

Topographic map: Montezuma Pass, 7.5', 1958 (1982)

Land status: National Forest (Coronado, Huachuca unit)

County: Cochise

MILS number: 0040030187 AZMILS number: 125

Mineral district: New Reef

Type of workings: Pit, shaft, adits, placering. Workings found in 1991 consisted of two small adits, a 20 ft deep shaft, and two trenches (fig. 26).

Geology: Country rock is Jurassic Huachuca Quartz Monzonite. Mineralization occurs in white quartz veins. The veins strike N. 35° - 40° W., dip 52° - 58° SW., and have an average thickness of 3 ft.

Minerals: scheelite (disseminated), free gold, galena, pyrite, chalcopyrite.

Commodities: Au, Ag, W

Production: some gold-silver ore from mine and placers in early 1900's and in 1939.

Summary of geochemical analyses: Samples from quartz veins contained up to 0.23 oz/st gold, 1.3 oz/st silver, 3,106 ppm lead, and 230 ppm tungsten.

Other information: none

Field Investigation:
Date: 3/91
Investigators: Tuftin, Harris
Sample numbers: HU130 - HU133

References:

Keith, 1973, p. 66.
Ludington, 1984, p. 3-4.

Primary name: Unnamed prospect

Location: T. 24 S., R. 20 E., S. center sec. 1.

Topographic map: Montezuma Pass, 7.5', 1958 (1982)

Land status: National Forest (Coronado, Huachuca unit)

County: Cochise

MILS number: 0040030794 AZMILS number: none

Mineral district: New Hartford

Type of workings: A 15 ft trench.

Geology: Country rock is Jurassic Huachuca Quartz Monzonite. A 13 in. wide silicified zone strikes N. 11° W. and dips 60° SW.

Minerals: vein quartz with limonite stain.

Commodities: none

Production: unknown

Summary of geochemical analyses: no significant metal concentrations were found.

Other information: none.

Field Investigation:
Date: 10/91
Investigators: Tuftin, Villalobos
Sample numbers: HU134.

References: none

Primary name: Unnamed workings

Location: T. 24 S., R. 20 E., center sec. 2

Topographic map: Montezuma Pass, 7.5', 1958 (1982)

Land status: National Forest (Coronado, Huachuca unit)

County: Cochise

MILS number: 0040030795 AZMILS number: none

Mineral district: New Hartford

Type of workings: A 25 ft trench, a 60 ft open cut with an adjoining inclined shaft, and a small adit are arranged to work a vein on three levels (fig. 27).

Geology: Country rock is Jurassic Huachuca Quartz Monzonite. The workings are on a quartz vein which trends northwest and dips southwest. The vein is 12 - 18 in. thick.

Minerals: vein quartz with minor pyrite, hematite stain.

Commodities: Au

Production: unknown

Summary of geochemical analyses: One sample contained 8,030 ppb (0.23 oz/st) gold, while the other two samples contained less than 300 ppb gold.

Other information: These workings may be part of the Golden Fleece claims.

Field Investigation:
Date: 5/91-6/91
Investigators: Tuftin, Creel
Sample numbers: HU135-HU137.

References: none

Primary name: Lutz Tunnel

Other names: Black Bear

Location: T. 23 S., R. 20 E., SW. 1/4 sec. 35 (In Ash Canyon, at about 7,225 ft)

Topographic map: Miller Peak, 7.5', 1958 (1978)

Land status: National Forest (Coronado, Huachuca unit; Miller Peak Wilderness Area)

County: Cochise

MILS number: 0040030176 AZMILS number: 123

Mineral district: New Hartford

Type of workings: Adit, 1,086 ft of workings (fig. 28). Drifting explores a marbleized limestone block. A prospect lies about 200 ft further up the canyon from the Lutz Tunnel, at about 7,300 ft.

Geology: Mineralization occurs in stringers and disseminated in blocks of Paleozoic limestone in Triassic-Jurassic volcanics. The first several hundred ft of the adit are in unmineralized Jurassic Huachuca Quartz Monzonite.

Minerals: malachite, azurite, chalcocite, chalcopyrite, trace hematite and Mn oxide.

Commodities: Cu, Ag

Production: Test lots of ore were produced in 1910; no other production records have been found.

Summary of geochemical analyses: A select sample contained 13.0 oz/st silver, 5.3% copper, and 0.06 oz/st gold.

Other information: Part of the Black Bear Group of six formerly patented claims. The land is now under U.S. Forest Service management.

Field Investigation:
Date: 5/91 - 6/91
Investigators: Tuftin, Creel
Sample numbers: HU138 - HU147

References:

Ludington, 1984, p. 3-4.
Keith, 1973, p. 66.
Winters, no date, p. 1.

Primary name: Tako #9 claim

Other names: Walter & Mildred

Location: T. 24 S., R. 20 E., SE. 1/4 sec. 3 and NE. 14 sec. 10 (in Copper Canyon).

Topographic Map: Montezuma Pass 7.5'

Land Status: National Forest (Coronado, Huachuca unit).

County: Cochise

MILS number: 0040030569 AZMILS number: 603, 756

Mineral district: New Hartford

Type of workings: A 500 ft lower adit, an upper adit of at least 310 ft, and a 130 ft long open-cut above the upper adit (fig. 4, 5, 6).

Geology: Country rock is fine-grained Cretaceous Morita Formation sandstone, siltstone, and mudstone. The workings are in a quartz vein which varies in thickness from 27 to 50 in. The vein has an average strike of N. 29° W. and an average dip of 57°.SW. The vein is cut by several faults.

Minerals: Vein quartz with sphalerite, chalcopyrite, chalcocite?, hematite, limonite, trace malachite.

Commodities: Cu, Pb, Ag, Au

Production: No records of the early history of the mine were found, but it was being operated as early as 1985 by Tako Mining of Sierra Vista, Arizona. No production records were available from that time, either.

Summary of geochemical analyses: The average grades are 0.18 oz/st gold, 0.95 oz/st silver, 0.19% copper, greater than 0.44% lead, and greater than 0.18% zinc. The highest metal concentrations are in the upper part of the quartz vein.

Other information: The claim was active at the time of this report. A marginally economic resource for precious-metal- and copper-bearing silica flux, about 20,000 st, was identified at this location.

Field Investigation:
Date: 3/91; 10/91
Investigators: Tuftin, Harris; Tuftin, Villalobos
Sample numbers: HU148 - HU187

References:

Greeley, 1985, p. 1-2.

Primary name: Boston, Samson and Way Up claims

Other names: Schwarzenbach

Location: T. 24 S., R. 20 E., SW. 1/4 sec. 2, SE. 1/4 sec. 3

Topographic map: Montezuma Pass, 7.5', 1958 (1982)

Land status: National Forest (Coronado, Huachuca unit)

County: Cochise

MILS number: 0040030104 AZMILS number: 115

Mineral district: New Hartford

Type of workings: Adits and surface workings; only one working, a 20 ft sloughed-in trench, was found in 1991.

Geology: Mineralization occurs in spotty bodies along fault zones in Cretaceous Morita Formation sediments and in exotic blocks of Paleozoic limestone in Triassic-Jurassic volcanics. Thin quartz veinlets were noted in fracture zone trending N. 47° E. and dipping near vertically.

Minerals: Vein quartz with minor malachite, Mn oxide, possibly trace metallic sulfides.

Commodities: Cu, Ag, Au

Production: 90 tons of ore in 1937.

Summary of geochemical analyses: A select sample contained 5.0 oz/st silver and 6.67% copper.

Other information: Only the Boston claim was sampled.

Field Investigation:
Date: 10/91
Investigator: Tuftin, Chatman
Sample numbers: HU188, HU189

References:
Keith, 1973, p. 65.

Ludington, 1984, p. 3-4.

Primary name: Unnamed adit

Location: T. 24 S., R. 20 E., SW. 1/4 NW. 1/4 sec. 11.

Topographic map: Montezuma Pass, 7.5′, 1958 (1982)

Land status: National Forest (Coronado, Huachuca unit)

County: Cochise

MILS number: 0040030785 AZMILS number: none

Mineral district: New Hartford

Type of workings: An adit, at least 40 ft; a winze at 15 ft prevents further access (fig. 29).

Geology: The adit is in a block of Paleozoic limestone, partly marbleized, within Jurassic-Triassic volcanics. It follows a fracture zone with a N.-S. strike and an unknown dip.

Minerals: minor iron oxides.

Commodities: unknown

Production: unknown

Summary of geochemical analyses: A random sample from the dump contained 4,200 ppm zinc and 9 ppm mercury.

Other information: none.

Field Investigation:
Date: 5/91-6/91
Investigators: Tuftin, Creel
Sample numbers: HU190

References: none

Primary name: Unnamed adit near Oak Spring

Location: T. 24 S., R. 20 E., NE. sec. 10.

Topographic map: Montezuma Pass, 7.5', 1958 (1982)

Land status: National Forest (Coronado, Huachuca unit)

County: Cochise

MILS number: 0040030786 AZMILS number: none

Mineral district: New Hartford

Type of workings: Workings are an 82 ft adit and a trench (fig. 30).

Geology: Country rock is red/brown Cretaceous Morita Formation mudstone. An approximately east-west fault zone, 4 ft thick, 79° - 83° S., contains silicified gouge and quartz veins to 4 in. thick.

Minerals: vein quartz, limonite.

Commodities: unknown

Production: unknown

Summary of geochemical analyses: Gold concentrations ranged from 79 to 410 ppb, manganese concentrations ranged from 7,995 to over 10,000 ppm.

Other information: none.

Field Investigation:
Date: 5/91-6/91
Investigators: Tuftin, Creel
Sample numbers: HU191-HU193.

References: none

Primary name: Unnamed adits

Location: T. 24 S., R. 20 E., SW. 1/4, SW. 1/4 sec. 3 (at about 6,270 ft)

Topographic map: Montezuma Pass, 7.5', 1958 (1982)

Land status: National Forest (Coronado, Huachuca unit)

County: Cochise

MILS number: 0040030788 AZMILS number: none

Mineral district: New Hartford

Type of workings: Two adits, one caved, the other about 35 ft (fig. 31).

Geology: The adits are in Cretaceous andesitic lava, although silicified limestone on the dump of the caved adit suggests that it intersects an exotic block of Paleozoic limestone. The open adit exposes a curved shear zone, which is generally northwest striking and vertically dipping.

Minerals: moderate-heavy limonite, some malachite

Commodities: unknown

Production: unknown

Summary of geochemical analyses: Samples HU194 and HU195 showed no significant metal concentrations, while HU196 contained 1.5% zinc, greater than 1.0% lead, 5,340 ppm manganese, 100 ppm bismuth, and 61 ppm cadmium.

Other information: none

Field Investigation:
Date: 3/91
Investigators: Tuftin, Harris
Sample numbers: HU194-HU196

References: none.

Primary name: Unnamed prospect

Location: T. 24 S., R. 20 E., SW. 1/4 sec. 4.

Topographic map: Montezuma Pass, 7.5', 1958 (1982)

Land status: National Forest (Coronado, Huachuca unit)

County: Cochise

MILS number: 0040030789 AZMILS number: none

Mineral district: New Hartford

Type of workings: prospect pit.

Geology: Country rock is Cretaceous Morita Formation sediments. A 1.5 ft wide fracture zone exposed in the pit strikes N. 25° E. and dips 67° NW.

Minerals: green copper carbonate? mineral, no other mineralization noted.

Commodities: unknown

Production: unknown

Summary of geochemical analyses: The sample contained 7,520 ppm copper.

Other information: none.

Field Investigation:
Date: 5/91 - 6/91
Investigators: Tuftin, Creel
Sample numbers: HU197

References: none

Primary name: Cave Mine

Other names: Cave Mountain, Cave Creek, Cave Canyon, Silver Plume, Snow Drop

Location: T. 23 S., R. 20 E., SW. 1/4 sec. 33 (in upper Cave Canyon)

Topographic map: Miller Peak, 7.5', 1958 (1978)

Land status: National Forest (Coronado, Huachuca unit; Miller Peak Wilderness Area)

County: Cochise

MILS number: 0040030048 AZMILS number: 116

Mineral district: New Hartford

Type of workings: Adits, prospects. Workings found in 1991 include a lower, caved adit, two small adjacent adits (40 ft and 55 ft) about 25 ft higher on the hillside. Another caved adit and three prospects were found further up the canyon (fig. 32, 33).

Geology: Mineralization occurs in irregular replacement bodies in blocks of Paleozoic limestone in Triassic-Jurassic volcanics. The country rock is extremely faulted and cut by Tertiary rhyolite dikes. The adits are near the fault contact of the carbonates and volcanics. Much of the rock on the dump is partly silicified limestone and dolomite.

Minerals: Galena, sphalerite, chalcopyrite, pyrite, Mn oxide, limonite, chrysocolla, malachite.

Commodities: Zn, Pb, Cu, Ag

Production: 565 tons of lead-zinc and lead-zinc-copper ore in 1946-1947

Summary of geochemical analyses: Samples contain up to 4.3 oz/st silver and 3.13% copper, and some contain >1.0% lead and manganese, and >2.0% zinc.

Other information: The property consisted of eleven unpatented claims. The caving of the lower adit had at one time undermined the road over it; considerable fill was required to repair the road damage. On the south side of this road, the former adit now resembles a trench. On the north side of the road, an opening can be seen into the adit, but it is cluttered with fallen boards and loose rock.

Field Investigation:

Date: 5/91 - 6/91
Investigators: Tuftin, Creel
Sample numbers: HU198 - HU211

References:

Keith, 1973, p. 65.
Ludington, 1984, p. 3-4.

Primary name: Oversite Mine

Other names: none

Location: T. 23 S., R. 20 E., S. center sec. 28

Topographic map: Miller Peak, 7.5', 1958 (1978)

Land status: National Forest (Coronado, Huachuca unit; Miller Peak Wilderness Area)

County: Cochise

MILS number: 0040030777 AZMILS number: 863

Mineral district: New Hartford

Type of workings: Four adits, all completely caved, were found in 1991. Two adits are at elevations of about 7,650 ft; the other two are at 7,500 ft and 7,325 ft.

Geology: Workings are in a block or blocks of Paleozoic limestone in Jurassic-Triassic volcanics.

Minerals: malachite, hematite, calcite, quartz.

Commodities: unknown

Production: unknown

Summary of geochemical analyses: A high-grade sample contained 5.68 oz/st silver, >1.0% copper, 1,880 ppm lead, 450 ppb gold, and 230 ppm tungsten.

Other information: none

Field Investigation:
Date: 10/91
Investigators: Tuftin, Villalobos
Sample numbers: HU212-HU216

References: none

Primary name: Carr Ridge Mine

Location: T. 23 S., R. 20 E., NE. 1/4 sec. 28 and S. center sec. 21.

Topographic map: Miller Peak, 7.5', 1958 (1978)

Land status: National Forest (Coronado, Huachuca unit)

County: Cochise

MILS number: 0040030778 AZMILS number: 864

Mineral district: New Hartford

Type of workings: In section 28, an adit at about 8,550 ft was filled with metal scrap and garbage and was unsafe to enter. Two prospect pits are nearby; one may actually be a caved adit (fig. 34). In section 21, two prospect pits and a working which may be a caved adit are at about 8,975 ft.

Geology: The workings are in Jurassic Huachuca Quartz Monzonite country rock. Quartz veins of varying attitudes are in the country rock.

Minerals: vein quartz with pyrite and limonite.

Commodities: unknown

Production: unknown

Summary of geochemical analyses: The samples contained gold concentrations up to 0.34 oz/st.

Other information: none.

Field Investigation:
Date: 10/91
Investigators: Tuftin, Villalobos
Sample numbers: HU217-HU226

References: none

Primary name: Unnamed adit

Location: T. 23 S., R. 20 E., NW. 1/4 sec. 28 (at about 7,600 ft)

Topographic map: Miller Peak, 7.5', 1958 (1978)

Land status: National Forest (Coronado, Huachuca unit)

County: Cochise

MILS number: 0040030791 AZMILS number: none

Mineral district: New Hartford

Type of workings: caved adit

Geology: the adit is in Cretaceous andesitic lava.

Minerals: no mineralization was noted.

Commodities: none

Production: unknown

Summary of geochemical analyses: the sample contained no significant metal concentrations.

Other information: none.

Field Investigation:
Date: 10/91
Investigators: Tuftin, Villalobos
Sample numbers: HU227

References: none

Primary name: Western Tungsten Mine

Other names: Western

Location: T. 23 S., R. 20 E., E. center sec. 29

Topographic map: Miller Peak, 7.5', 1958 (1978)

Land status: National Forest (Coronado, Huachuca unit; Miller Peak Wilderness Area)

County: Cochise

MILS number: 0040030227 AZMILS number: 133

Mineral district: New Reef

Type of workings: 200 ft shaft and surface workings. Three inclined shafts, only one of which is accessible, were found in 1991. This shaft declines 32° to intersect a the fault zone (fig. 35). A second shaft 35 ft to the northwest declines too steeply to enter. A third shaft, about 100 ft to the southwest, is completely caved. These two presumably were driven to intersect the same fault zone as the first shaft.

Geology: Mineralization occurs in quartz lenses in a thrust fault zone which strikes N. 25° E. and dips 21° NW. in blocks of Paleozoic limestone in Triassic-Jurassic volcanics.

Minerals: galena, chalcopyrite, scheelite

Commodities: Pb, Ag, W, Cu

Production: small, erratic production of silver-lead and copper carbonate ore during the early 1900's. High-grade silver ore was reportedly shipped from this shaft, and copper ore was shipped during World War I. Scheelite was found on ore from the lowest level.

Summary of geochemical analyses: Mineralized material in the accessible shaft averages 1.59 oz/st silver and 0.56% copper. Tungsten content was no higher than 200 ppm in any sample.

Other information: none

Field Investigation:
Date: 10/91
Investigators: Tuftin, Villalobos
Sample numbers: HU228 - HU232

References:

Dale and others, 1960, p. 39-40.
Keith, 1973, p. 67.
Ludington, 1984, p. 3-4.

Primary name: Unnamed adits

Location: T. 23 S., R. 20 E., NE. 1/4 sec. 31

Topographic map: Miller Peak, 7.5', 1958 (1978)

Land status: National Forest (Coronado, Huachuca unit)

County: Cochise

MILS number: 0040030792 AZMILS number: none

Mineral district: New Reef

Type of workings: two adits, a caved one at 6,060 ft, and an open adit at 6,025 ft (fig. 37).

Geology: the two adits are in Cretaceous andesitic lava. No structures were seen in the open adit.

Minerals: no notable mineralization.

Commodities: none

Production: unknown

Summary of geochemical analyses: the samples contained no significant metal concentrations.

Other information: the adits may be part of the Sunny South group of eight unpatented mining claims.

Field Investigation:
Date: 3/91
Investigators: Tuftin, Harris
Sample numbers: HU233-HU235

References:
Van Horn, 1940, p. 1-2.

Primary name: Unnamed workings

Location: T. 23 S., R. 20 E., center sec. 31 (at about 5,800 ft)

Topographic map: Miller Peak, 7.5′, 1958 (1978)

Land status: National Forest (Coronado, Huachuca unit)

County: Cochise

MILS number: 0040030790 AZMILS number: none

Mineral district: New Reef

Type of workings: Workings include a shaft, an adit, and a prospect pit. The adit has a bearing of N. 55° E., and is caved 30 ft in. The prospect pit is about 60 ft northeast of the adit portal. Another 25 ft uphill is the shaft, which is water-filled.

Geology: The country rock is Cretaceous andesitic lava. No structure was noted on the surface or in the adit. The adit and shaft may have intercepted a small mineralized limestone block and/or a quartz vein.

Minerals: vein quartz with chalcocite and malachite.

Commodities: unknown

Production: unknown

Summary of geochemical analyses: samples contained up to 3.87 oz/st silver, 7,075 ppm copper, 0.603 oz/st gold, and >1.0% manganese.

Other information: possibly part of the Van Horn Group.

Field Investigation:
Date: 3/91
Investigators: Tuftin, Harris
Sample numbers: HU236-HU238

References: none

Primary name: Van Horn Mine

Other names: none

Location: T. 23 S., R. 20 E., S. center sec. 30; N. center sec. 31 (at about 5,850 ft).

Topographic map: Miller Peak, 7.5', 1958 (1978)

Land status: National Forest (Coronado, Huachuca unit)

County: Cochise

MILS number: 0040030224 AZMILS number: none

Mineral district: New Reef

Type of workings: numerous shallow shafts, short adits, open cuts, and trenches; no extensive workings; 12 unpatented claims. Workings found in 1991 include a 30 ft long trench that lies about 15 ft uphill from a 20 ft long trench, and a caved adit with a small dump (fig. 36).

Geology: Country rock is Cretaceous sedimentary and volcanic rocks. Narrow quartz veins contain local pockets high-grade mineralization.

Minerals: scheelite

Commodities: W, Au, Ag

Production: minor amounts of tungsten ore during WWI; Production of WO_3 concentrate amounted to 25-30 stu during 1943-1945, from ore estimated at 4-5% WO_3. Most of the mining of tungsten ore has been done adjacent to the Harper property. The ore occurs there as small, rich pockets and lenses.

Summary of geochemical analyses: One sample contained 590 ppm tungsten.

Other information: The claims were originally located about 1905 as gold and silver properties.

Field Investigation:
Date: 3/91
Investigators: Tuftin, Harris
Sample numbers: HU239 - HU242

References:

Dale and others, 1960, pp. 38-39 (detailed reference).
Keith, 1973, p. 67.

Ludington, 1984, p. 3-4.

Primary name: Harper Mine

Other names: Ashworth; Rincon, Chirspa patented claims

Location: T. 23 S., R. 20 E., SW. 1/4 sec. 30

Topographic map: Miller Peak, 7.5', 1958 (1978)

Land status: Patented mining claims

County: Cochise

MILS number: 0040030152 AZMILS number: 120

Mineral district: New Reef

Type of workings: The principal tungsten workings were on the #1 vein. These were a mine which had a 25 ft long upper level, a 260 ft lower level, and a 25 ft connecting winze. Sporadic vuggy quartz with limonite assaying 0.31 oz/st gold was also reported from a small shaft on the lower level. Local minor copper mineralization was also reported on the #1 vein. Another shaft was located on the #3 vein; however, no scheelite was found in the #2 or #3 veins. The inclined Harper shaft on the #4 vein gave access to about 200 ft of workings and stoping. These were primarily worked for gold, silver, and copper. Scheelite was sparse in this vein. Workings found in 1991 include the Harper shaft and its workings, the caved adit of the #1 vein, the shaft on the #3 vein, and several shallow prospect pits (fig. 36, 38).

Geology: sporadic gold and silver values with scattered scheelite, chalcopyrite, bornite, and galena in quartz veins cutting Cretaceous Glance Conglomerate and andesitic volcanics containing blocks of Paleozoic limestone. Four quartz veins (#1 through #4), generally trending northwest and dipping southwest, crop out on the property.

Minerals: scheelite, chalcopyrite, bornite, galena; also, green cupro-scheelite with azurite and malachite

Commodities: Au, Ag, W, Cu, Pb

Production: minor gold-silver ore in early 1900's; several hundred tons of tungsten concentrates produced in 1941, probably from the #1 vein. Twelve tons of the vuggy quartz from the #1 vein were produced during an unknown time period. No record of production from the other veins was found.

Summary of geochemical analyses: A sample from the #1 vein contained 710 ppm tungsten. Samples from the #4 vein averaged 0.01 oz/st gold, 0.48 oz/st silver, 0.43% copper, and 48 ppm tungsten.

Other information: The property was originally owned by the Harper family. From 1939 to 1991 it was owned by the Southwest Tungsten Mining Co., of which Dean Mori was the principal partner. In 1991 the property was sold to Robert MacNeil. The patented claims are the Rincon and Chirspa.

Field Investigation:
Date: 3/91; 5/91 - 6/91
Investigators: Tuftin, Harris; Tuftin, Creel
Sample numbers: HU243 - HU256

References:

Dale and others, 1960, pp. 35-37 (detailed information).
Keith, 1973, p. 65.
Ludington, 1984, p. 3-4.

Primary name: Unnamed prospect

Location: T. 23 S., R. 19 E., SE. 1/4 sec. 25.

Topographic map: Miller Peak, 7.5', 1958 (1978)

Land status: National Forest (Coronado, Huachuca unit)

County: Cochise

MILS number: 0040030793 AZMILS number: none

Mineral district: New Reef

Type of workings: Trench, 40 ft long.

Geology: Country rock is Cretaceous andesitic lava. No structure was noted.

Minerals: No mineralization noted.

Commodities: none

Production: unknown

Summary of geochemical analyses: The sample contained 0.6% titanium and 126 ppm vanadium.

Other information: none.

Field Investigation:
Date: 5/91 - 6/91
Investigators: Tuftin, Creel
Sample numbers: HU257

References: none

Primary name: Wakefield Mine

Other names: Jack Wakefield

Location: T. 23 S., R. 20 E., NE. 1/4 sec. 30

Topographic map: Miller Peak, 7.5', 1958 (1978)

Land status: National Forest (Coronado, Huachuca unit)

County: Cochise

MILS number: 0040030226 AZMILS number: 132

Mineral district: New Reef

Type of workings: Two adits and a shaft, which intersect two quartz veins that strike northwest and dip steeply to the southwest. The lower adit has a 910 ft long haulageway driven to intersect a quartz vein; there are 110 ft of drifting along the vein. It is at about 6,275 ft. The upper adit is driven only about 25 ft into the hillside before it intersects a quartz vein. It is at about 6,325 ft. The upper adit has about 435 ft of drifts along the vein. A 70 ft winze follows the vein in the upper level. A 65 ft vertical shaft was sunk from the surface; the bottoms of the two are connected by a 30 ft drift. When visited in 1991, the two adits as well as a prospect pit were found; however, the shaft was not found (fig. 36, 39, 40).

Geology: Mineralization is disseminated and in pockets and lenses in quartz veins along and adjacent to the contact between Glance Conglomerate and Morita Formation sediments. Overall, the grade of mineralization is low, but pockets containing up to 7% WO_3 have been reported.

Minerals: vein quartz with chalcopyrite, galena, scheelite

Commodities: Au, Ag, W, Cu, Pb

Production: At least 100 tons of gold-silver ore (estimated value $20,000) were produced and shipped intermittently from 1896-1940 from stopes in the upper level. About 10 tons of tungsten ore, which yielded 10 stu of WO_3, were produced in 1943-1944.(Dale and others, 1960, p. 35).

Summary of geochemical analyses: Average grades are 0.02 oz/st gold and 0.22 oz/st silver, and one sample contained 600 ppm tungsten.

Other information: The claims were located about 1925 by Jack Wakefield. The Jack Wakefield Mining Co. had control in 1960.

Field Investigation:

Date: 3/91
Investigator: Tuftin, Harris
Sample numbers: HU258-HU269

References:

Dale and others, 1960, pp. 34-35 (detailed information).
Keith, 1973, p. 67.
Ludington, 1984, p. 3-4.

Primary name: Alto Mine

Other names: Elizabeth, Hamilton

Location: T. 24 S., R. 20 E., NW. 1/4 sec. 11

Topographic map: Montezuma Pass, 7.5', 1958 (1982)

Land status: National Memorial (Coronado)

County: Cochise

MILS number: 0040030089 AZMILS number: 111

Mineral district: New Hartford

Type of workings: adit and prospects.

Geology: Mineralization is in irregular replacement bodies in blocks of Paleozoic limestone, in Triassic-Jurassic volcanics.

Minerals: hematite.

Commodities: Cu, Pb, Zn, Ag, Au.

Production: minor, from 1921 to 1924.

Field Investigation: Not investigated

References:

Keith, 1973, p. 64.
Ludington, 1984, p. 3-4.

Primary name: Gold Placers, including the Nugget #1, Huachuca (Ash Canyon), and Yaqui claims.

Location: T. 23 S., R. 21 E., sec. 31 and 32; T. 24 S., R. 20 E., sec. 1 and 12; T. 24 S., R. 21 E., sec. 6

Topographic maps: Miller Peak, 7.5′, 1958 (1978); Nicksville, 7.5′, 1952 (1983); Montezuma Pass, 7.5′, 1958 (1983)

Land status: Patented mining claims and National Forest (Coronado, Huachuca unit)

County: Cochise

MILS number: 0000000000 AZMILS number: 867, 868, 869

Mineral district: mostly New Hartford

Type of workings: placers

Geology: The likely sources of the gold are the gold-bearing quartz veins of the Jurassic Huachuca Quartz Monzonite. The gold typically ranges in size from flakes to nuggets of less than 0.25 in. diameter. Placer gold-bearing gravels along three mi in the Ash Fork and South Ash Fork Canyons, mainly between elevations of 5,000 ft to 6,500 ft.

Minerals: free gold

Commodities: gold

Production: Placer operations and production have been sporadic throughout the century. The Nugget #1, Ash Canyon (or Huachuca) and Yaqui placer claims were among those in the area. Some large gold nuggets have been found, including one which was worth $450 when found in 1911. Reported production was 50 oz in 1919, and roughly 200 oz from 1932 to 1934. In 1970, U.S Forest Service officials acted to halt placer operations in the area by the Cochise Mining and Exploration Co.

Other Information: The Nugget #1 and Yaqui placer claims are patented.

Field Investigation: not investigated.

References:

Wilson, 1961, p. 69-70.

Primary name: Manila Mine

Other names: Panama, Huachuca Queen

Location: T. 22 S., R. 19 E., NW. 1/4 sec. 6

Topographic map: Pyeatt Ranch, 7.5′, 1958 (1983)

Land status: Fort Huachuca Military Reservation

County: Cochise

MILS number: 0040030178 AZMILS number: 124

Mineral district: New Hartford

Type of workings: adit and shaft

Geology: cerussite along steeply dipping fissure veins cutting badly faulted and broken Paleozoic and Cretaceous sedimentary formations under an overthrust fault plane.

Minerals: cerussite

Commodities: Pb, Ag

Production: over 400 tons ore in 1924-1928, and about 26 tons in 1949.

Field Investigation: Not investigated

References:

Alexis, 1949, p. 64-65.
Keith, 1973, p. 66.
Wilson, 1951, p. 39-40.

Primary name: State of Texas Mine

Other names:

Location: T. 24 S., R. 20 E., SW. 1/4 sec. 12; NW. 1/4 sec. 13

Topographic map: Montezuma Pass, 7.5', 1958 (1982)

Land status: National Memorial (Coronado)

County: Cochise

MILS number: 0040030218 AZMILS number: 130

Mineral district: none

Type of workings: adit and shaft

Geology: irregular replacement ore bodies of sphalerite, galena, and minor copper sulfides with lime silicates in folded and faulted impure Pennsylvanian-Permian Naco Group limestone along the contact with Jurassic quartz monzonite.

Minerals: sphalerite, galena

Commodities: Zn, Pb, Ag, Cu, Au

Production: reportedly was worked originally by Spaniards; again in the late 1880's. About 980 tons of ore produced in 1943-1946.

Field Investigation: Not investigated

References:

Keith, 1973, p. 67.
Wilson, 1951, p. 38-39.

Primary name: Tracy Mine

Other names:

Location: T. 24 S., R. 21 E., NW. 1/4 sec. 7

Topographic map: Montezuma Pass, 7.5', 1958 (1982)

Land status: National Memorial (Coronado)

County: Cochise

MILS number: 0040030755 AZMILS number: 689

Mineral district: New Hartford

Type of workings: adit.

Geology: quartz vein in granite

Minerals: vein quartz, limonite, hematite, pyrite.

Commodities: silica (smelter flux), Au, Ag, Pb, Cu.

Production: unknown

Field Investigation: Not investigated

References:

Ludington, 1984, p. 3-4.
Phillips, 1987, p. 156.

Primary name: Zaleski Mine

Other names:

Location: T. 24 S., R. 21 E., NW. 1/4 sec. 7

Topographic map: Montezuma Pass, 7.5', 1958 (1982)

Land status: National Memorial (Coronado

County: Cochise

MILS number: 0040030231 AZMILS number: none

Mineral district: New Reef

Type of workings: shaft, adit, and surface workings

Geology: sparse and spotty gold values and scattered high grade pockets of scheelite in quartz veins cutting Jurassic Huachuca Quartz Monzonite.

Minerals: scheelite

Commodities: Au, W

Production: a few tons of gold ore in early 1900's; some tons of tungsten ore in later years.

Field Investigation: Not investigated

References:

Dale and others, 1960, p. 40.
Keith, 1973, p. 67.
Ludington, 1984, p. 3-4.

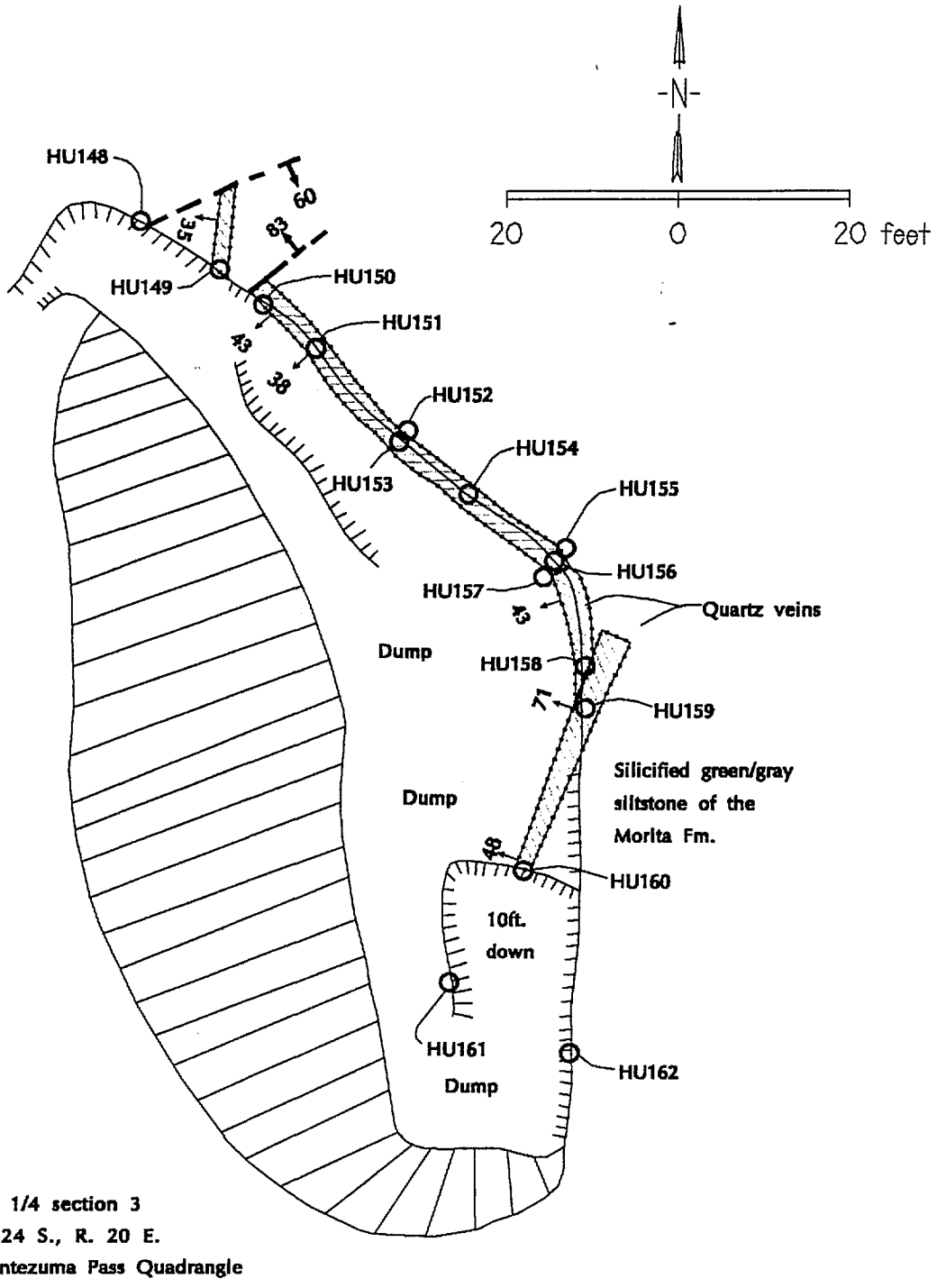


Figure 4.–Open cut of the Tako #9 claim showing sample localities HU148 - HU162.

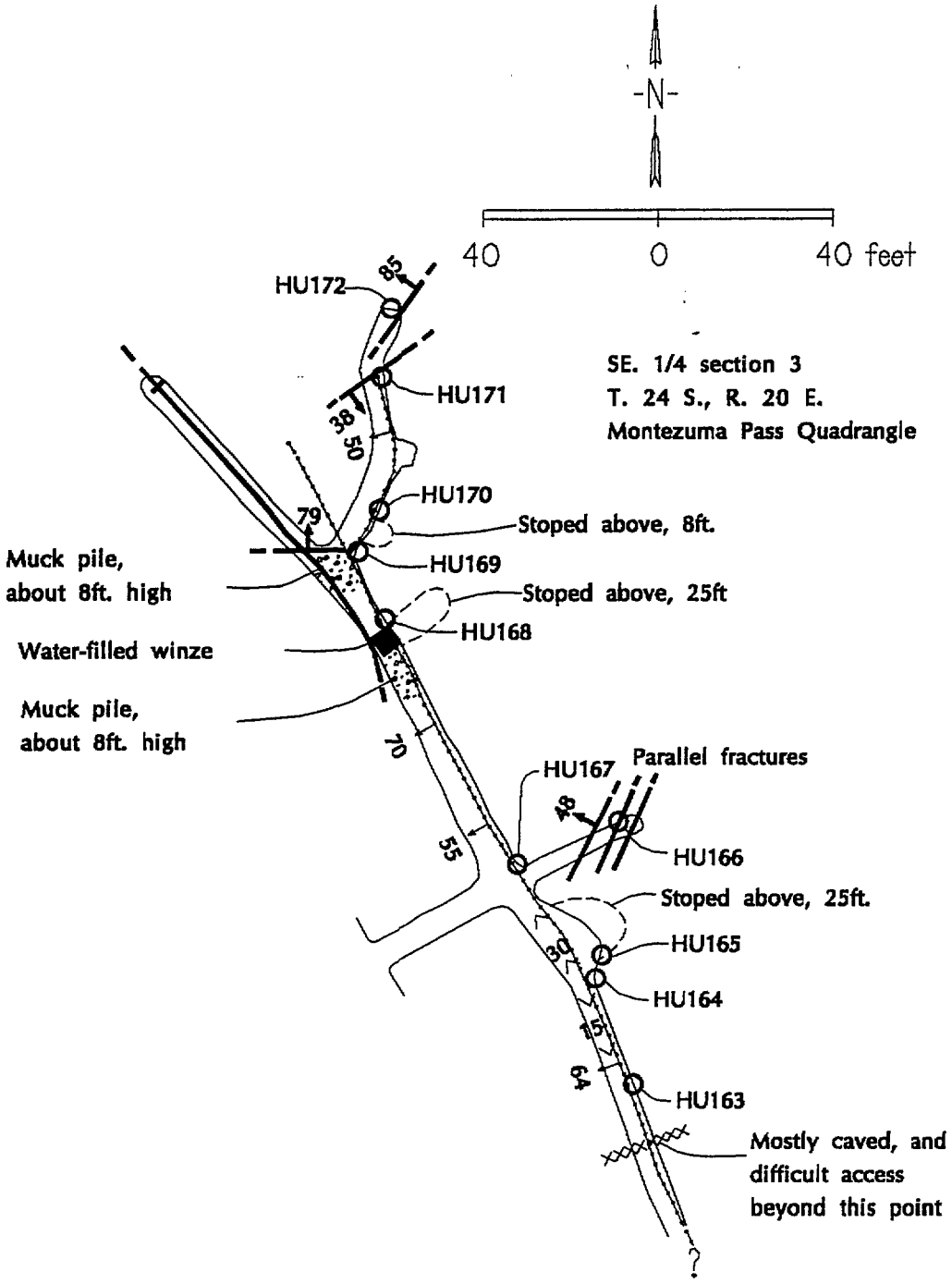


Figure 5.--Upper adit of the Tako #9 claim showing sample localities HU163 - HU172.

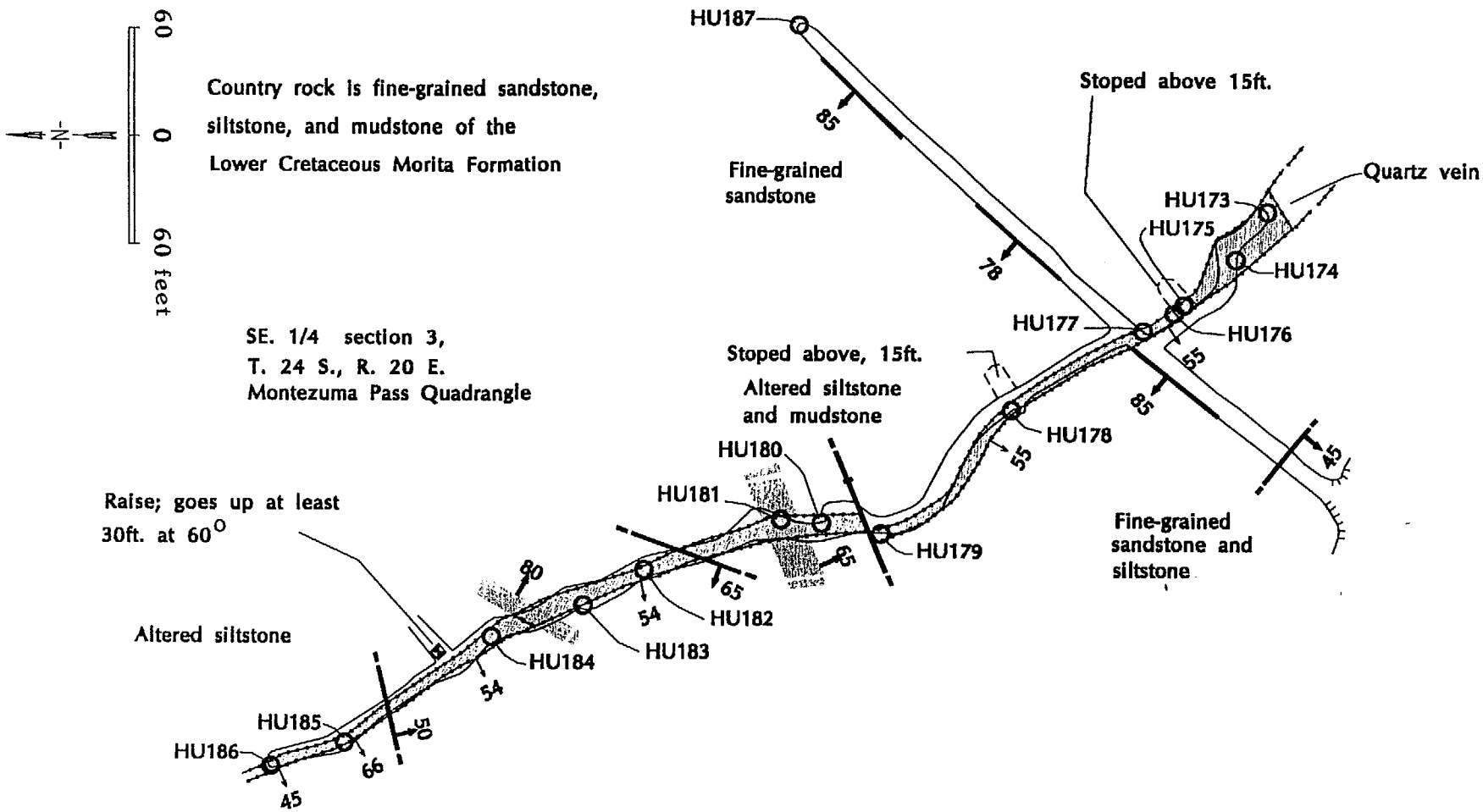


Figure 6.–Lower adit of the Tako #9 claim showing sample localities HU173 - HU187.

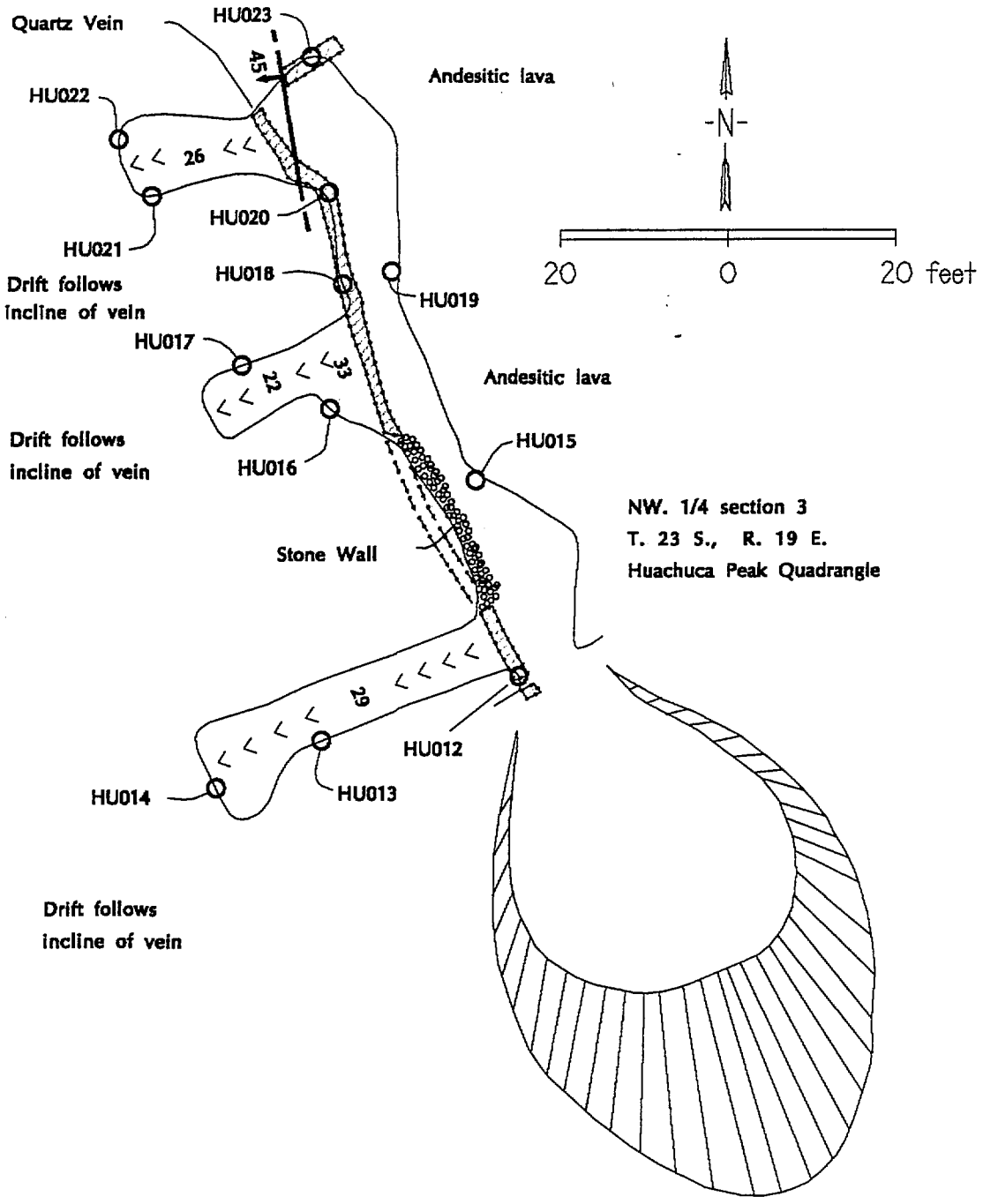


Figure 7.–Peterson Mine showing sample localities HU012 - HU023.

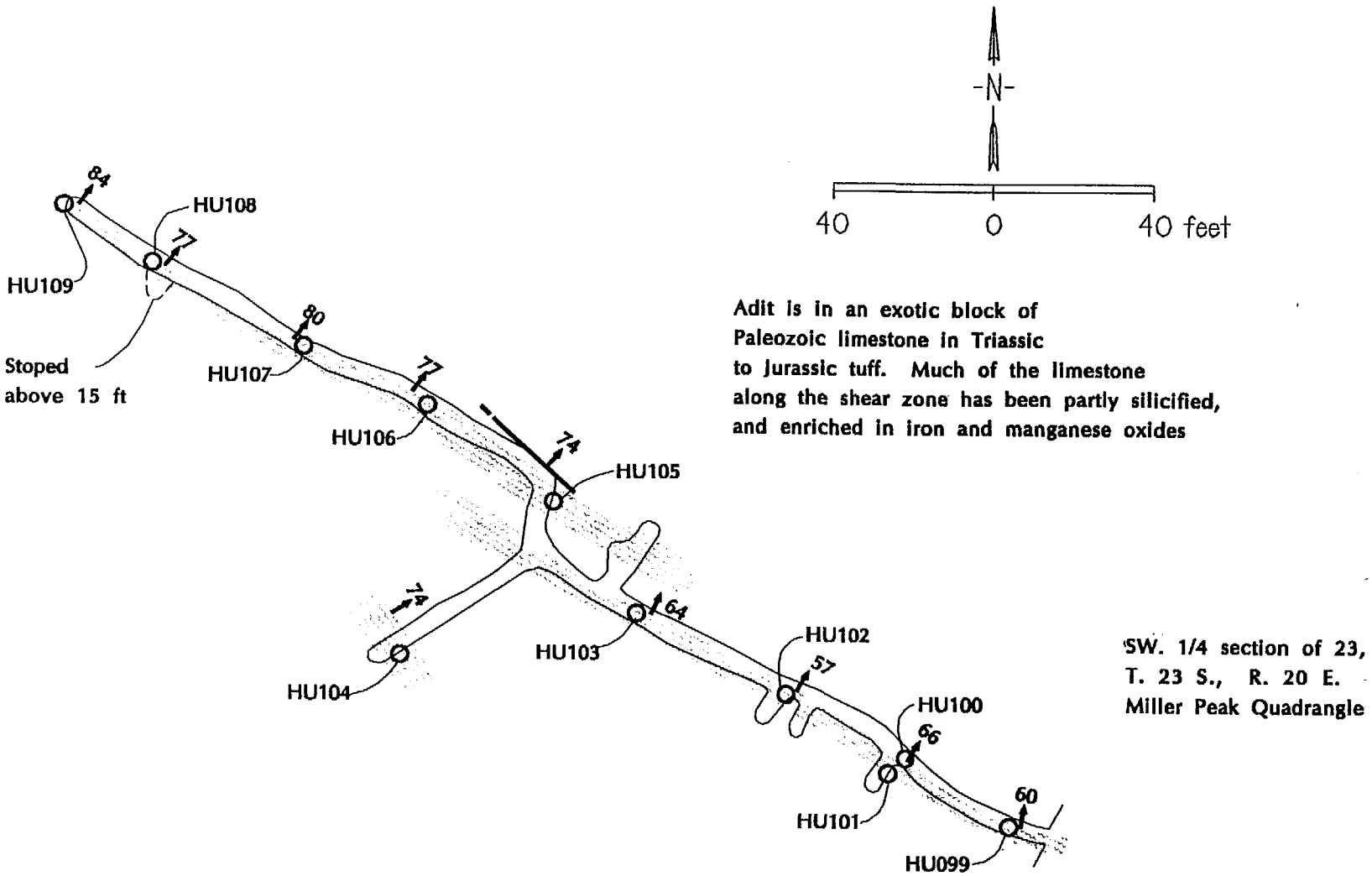
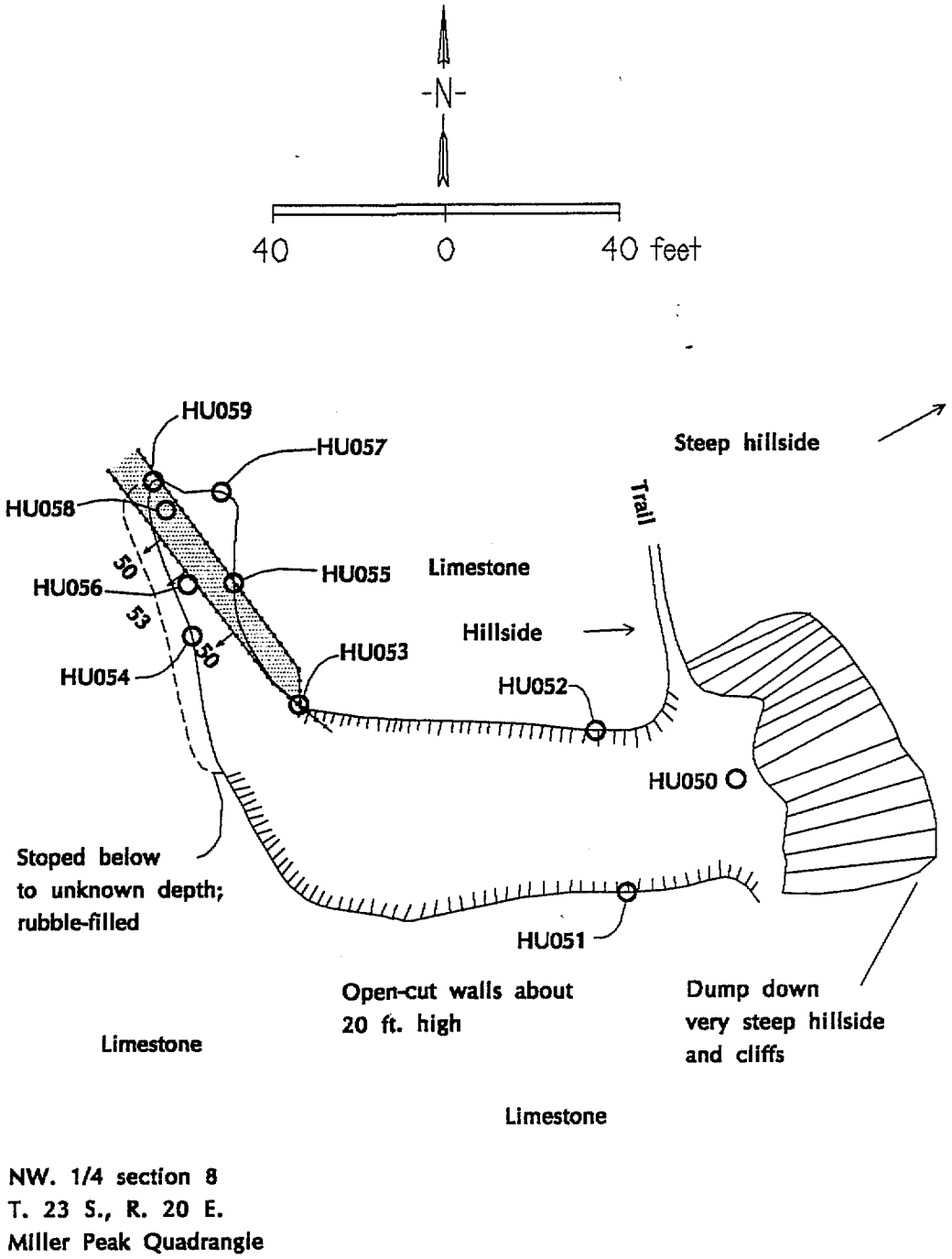
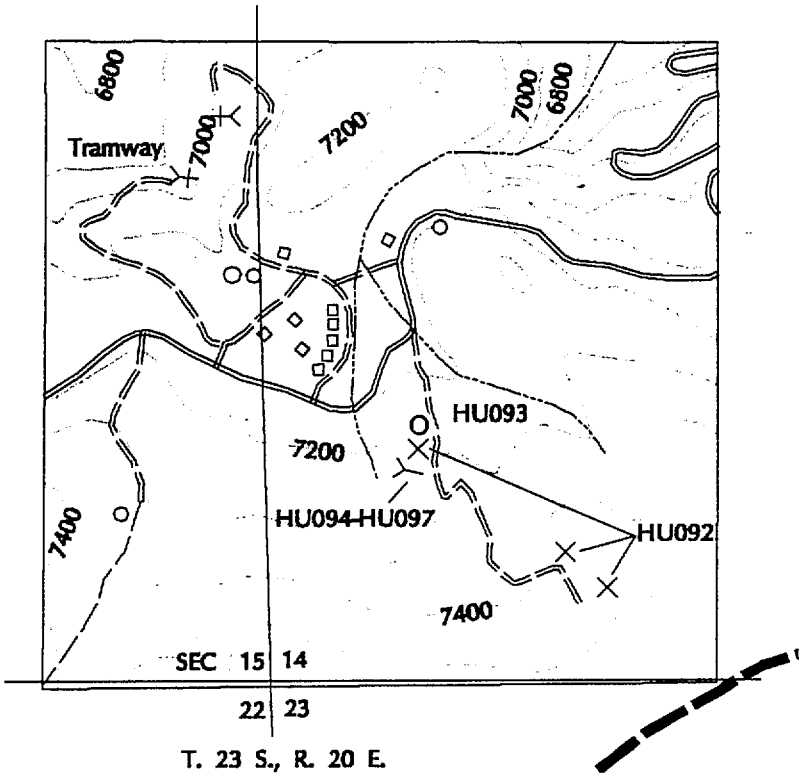


Figure 8.–Power Claim showing sample localities HU099 - HU109.



NW. 1/4 section 8
T. 23 S., R. 20 E.
Miller Peak Quadrangle

Figure 9.–James Mine showing sample localities HU050 - HU059.



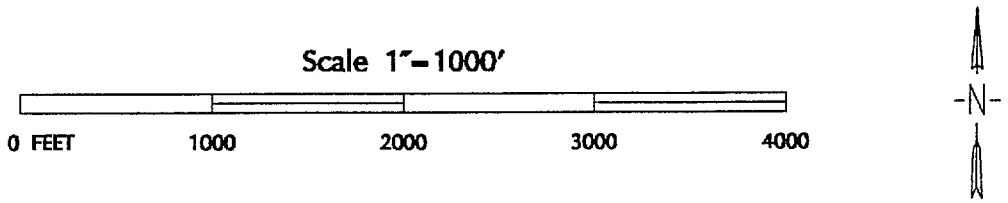


Figure 10.– Tungsten Reef Group showing sample localities HU092 - HU097.

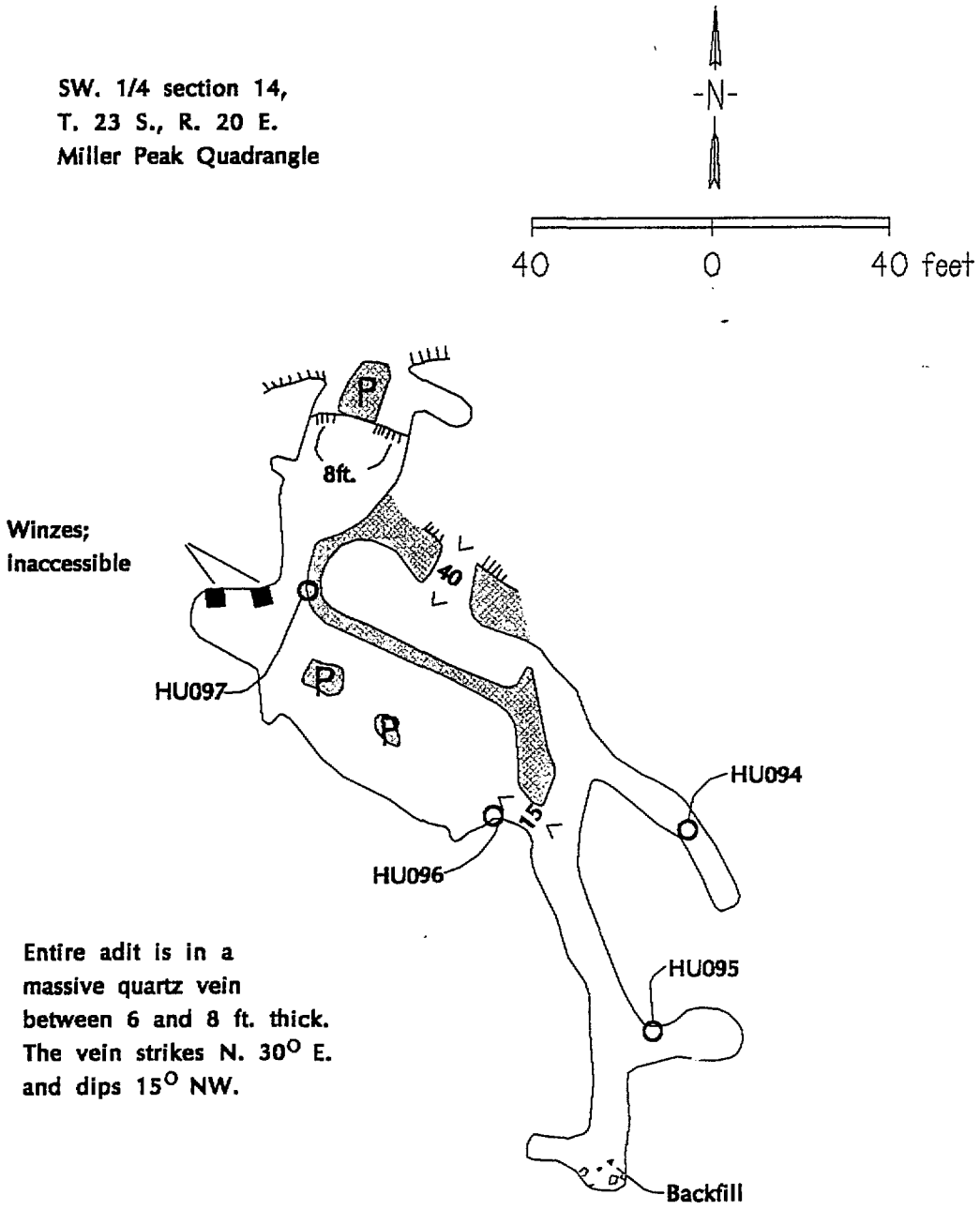
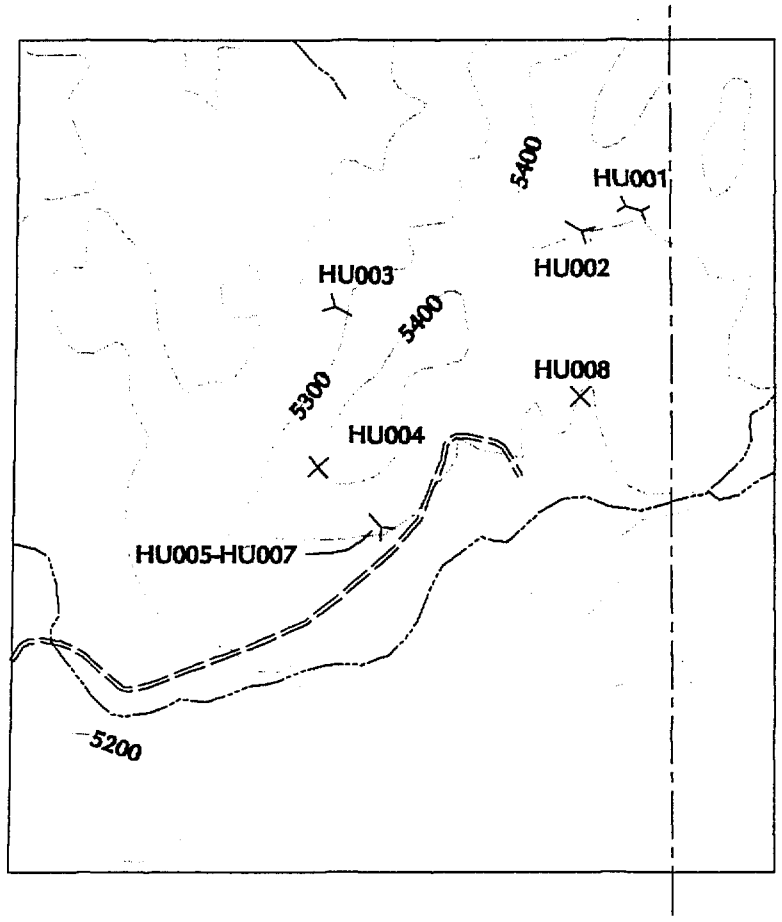


Figure 11.–Adit in the Tungsten Reef Group showing sample localities HU094 - HU097.



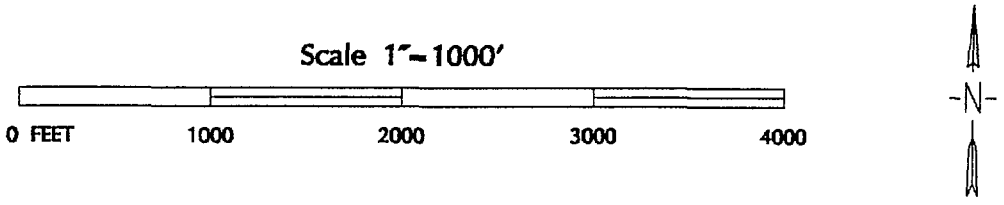


Figure 12.—Anderson Group showing sample localities HU001 - HU008.

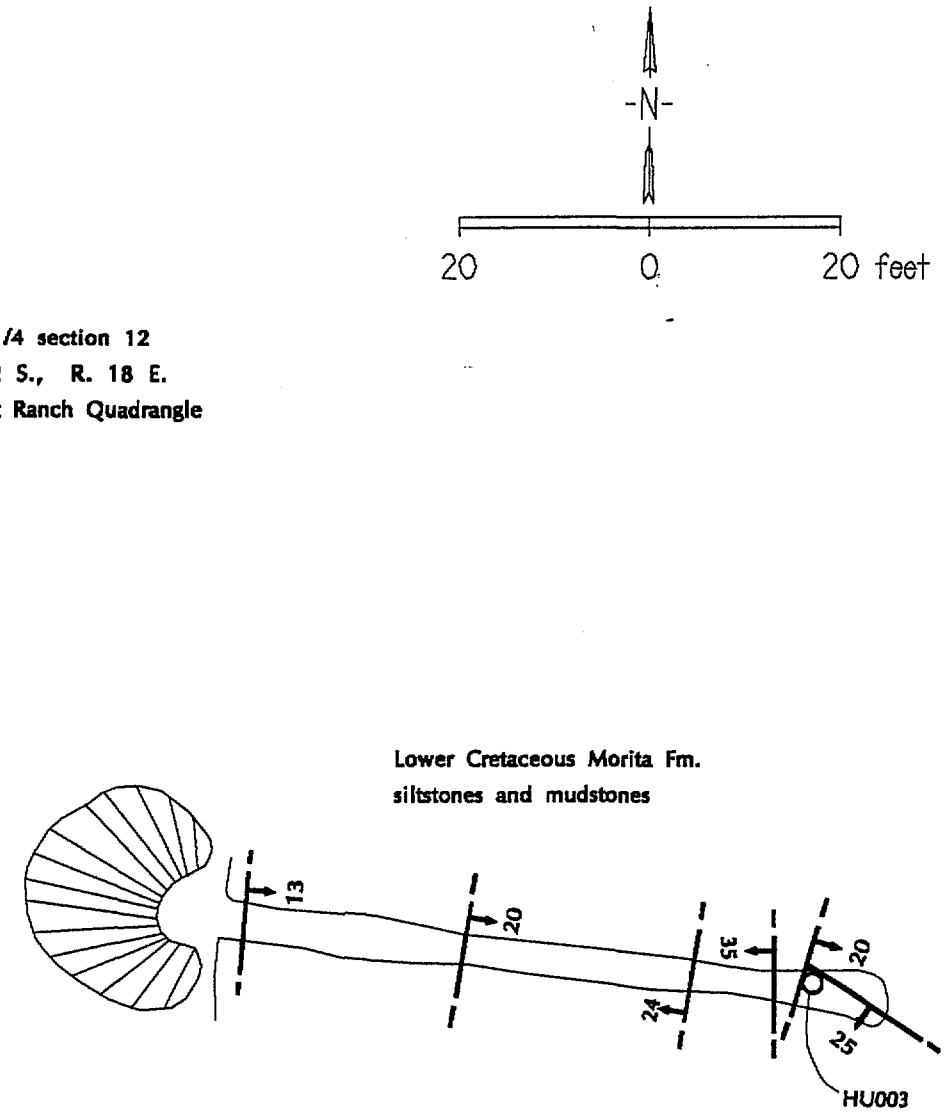


Figure 13.--Adit in the Anderson Group showing sample locality HU003.

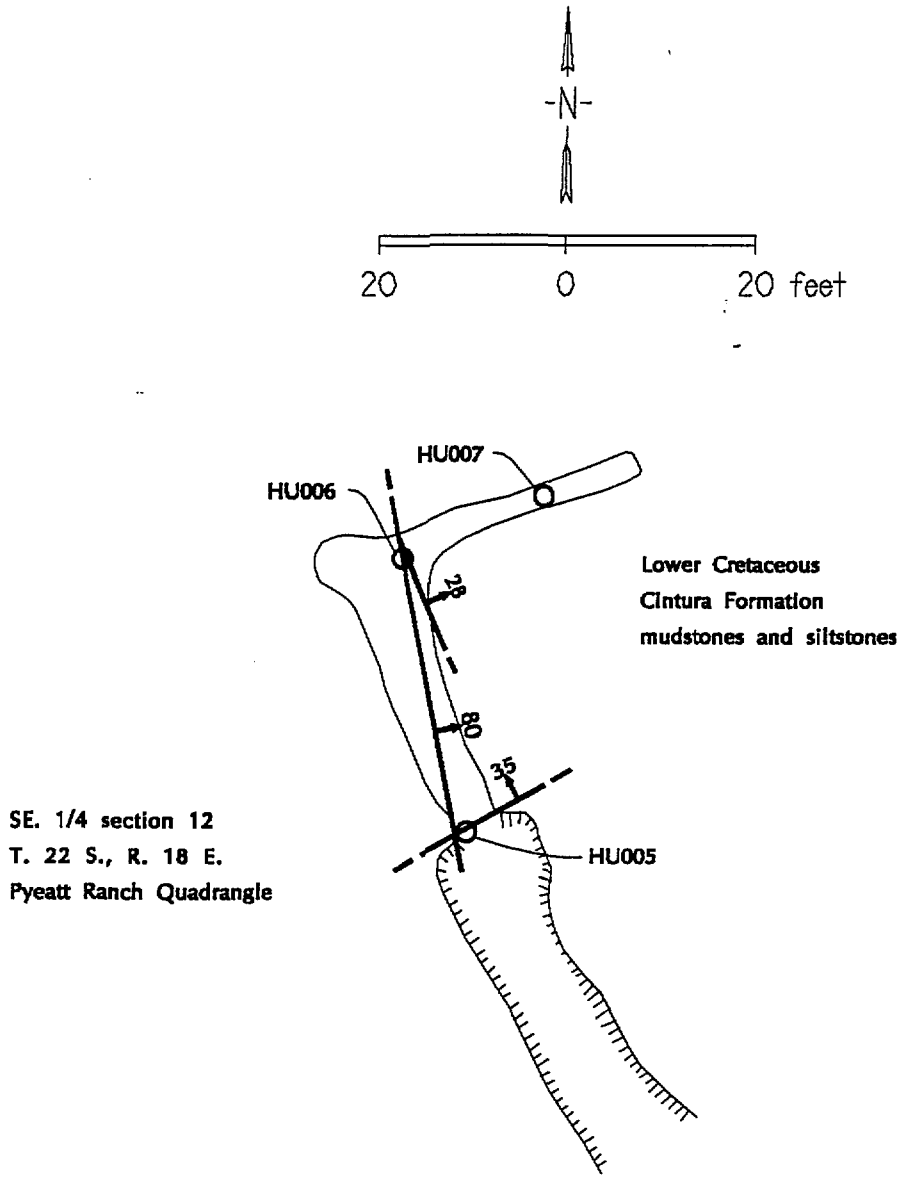
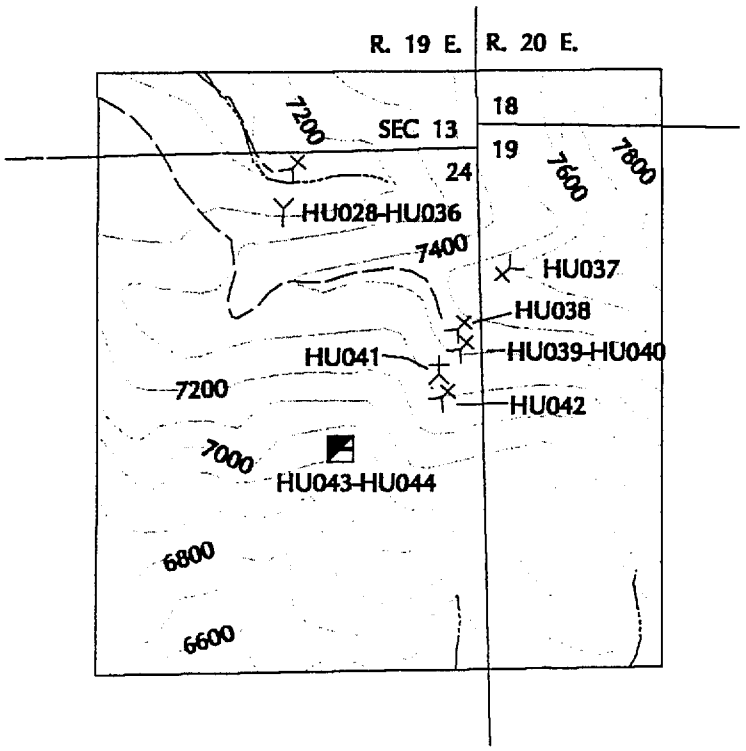


Figure 14.–Adit in the Anderson Group showing sample localities HU005 - HU007.



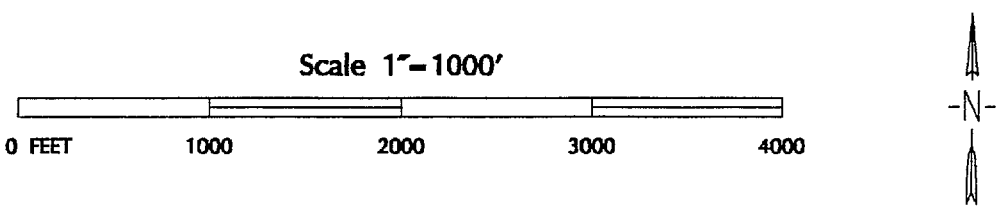


Figure 15.—Copper Glance Group showing sample localities HU028 - HU044.

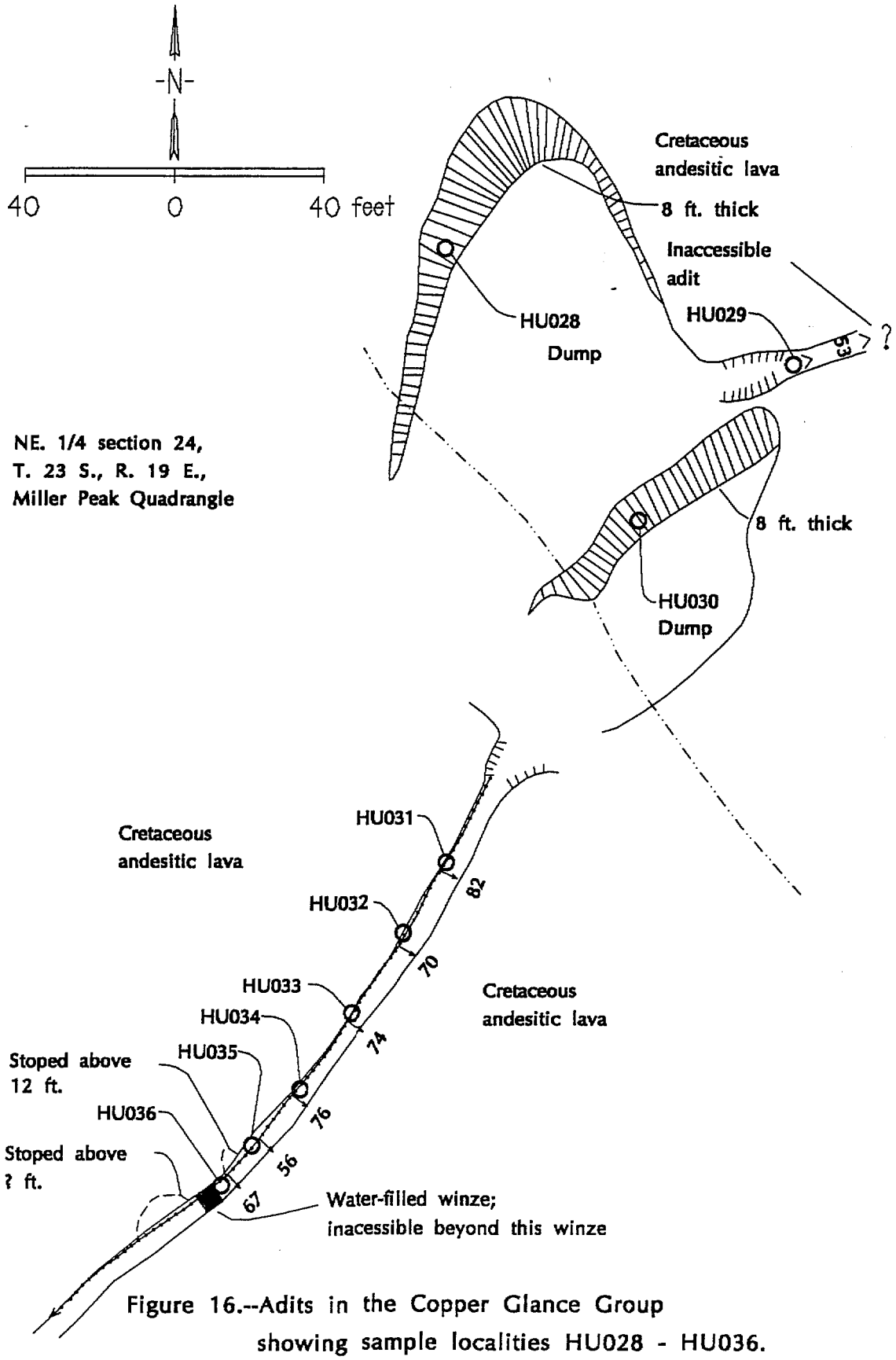
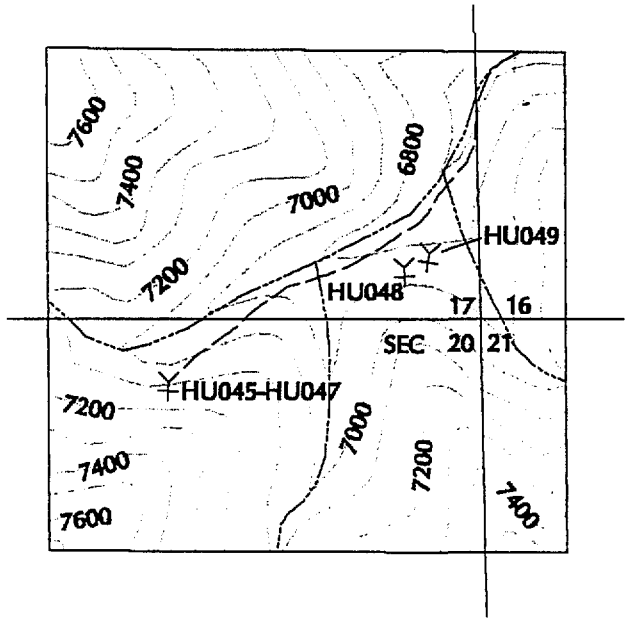


Figure 16.--Adits in the Copper Glance Group showing sample localities HU028 - HU036.



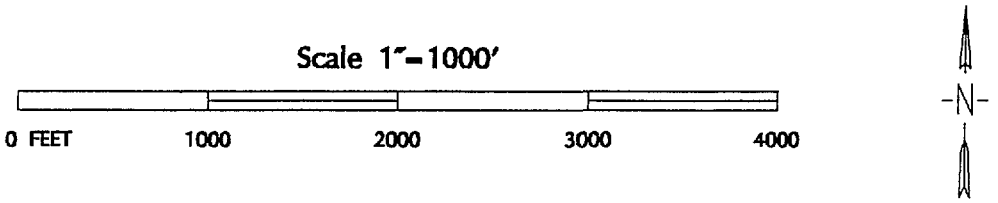


Figure 17.– Hamburg Group showing sample localities HU045 - HU049.

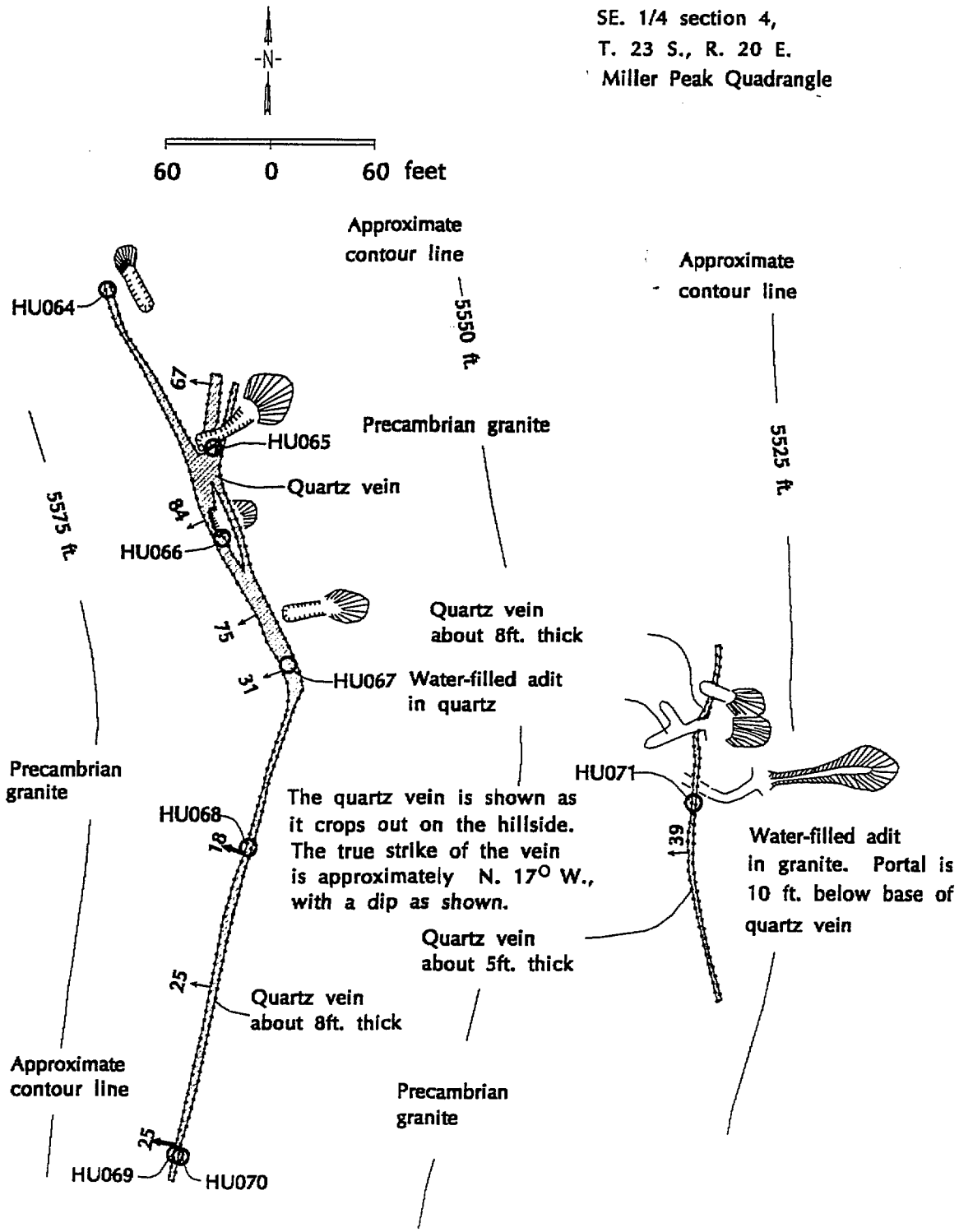


Figure 18.--Pleasant View Claims showing sample localities HU064 - HU071

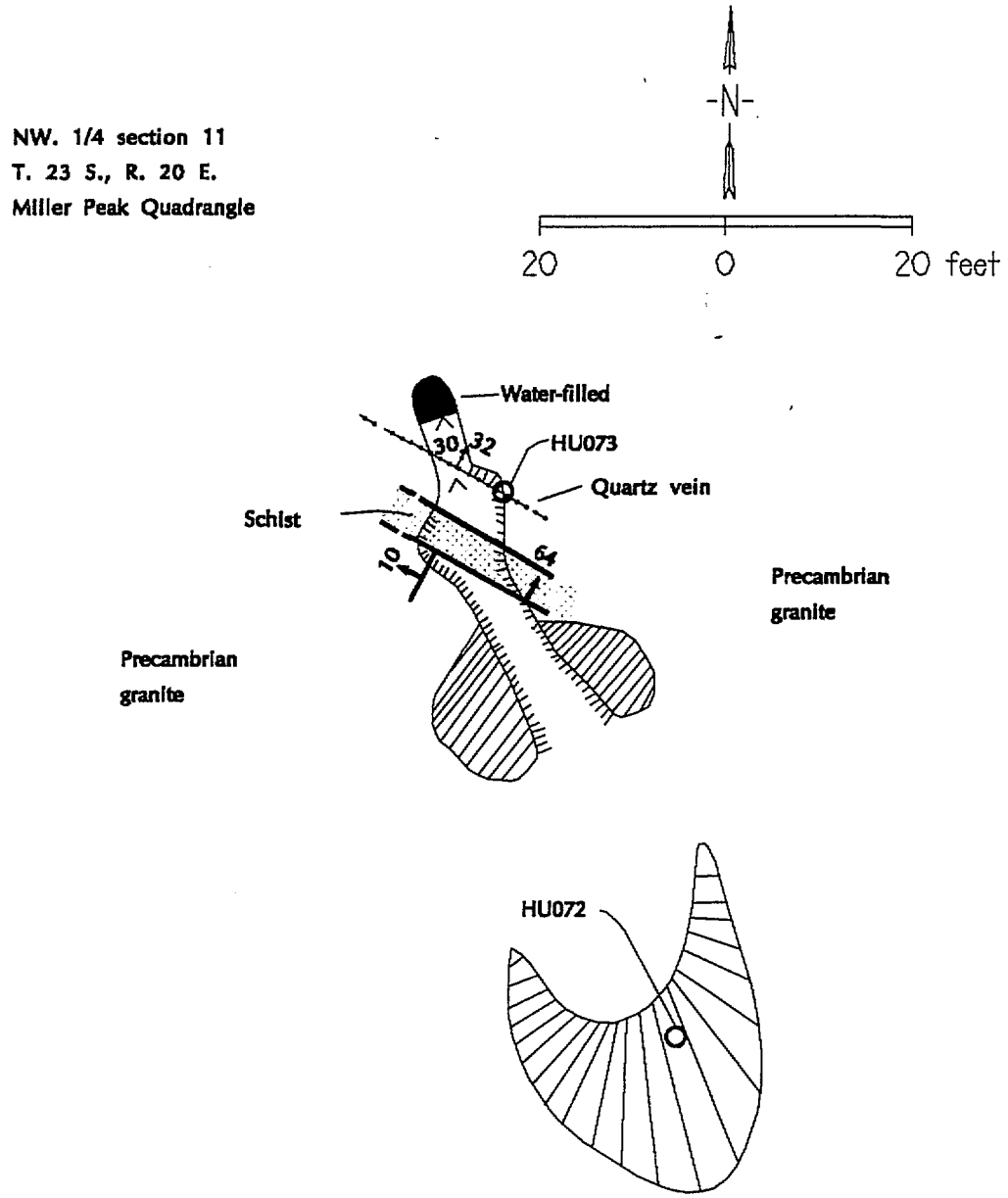


Figure 19.–Unnamed working showing sample localities HU072 and HU073.

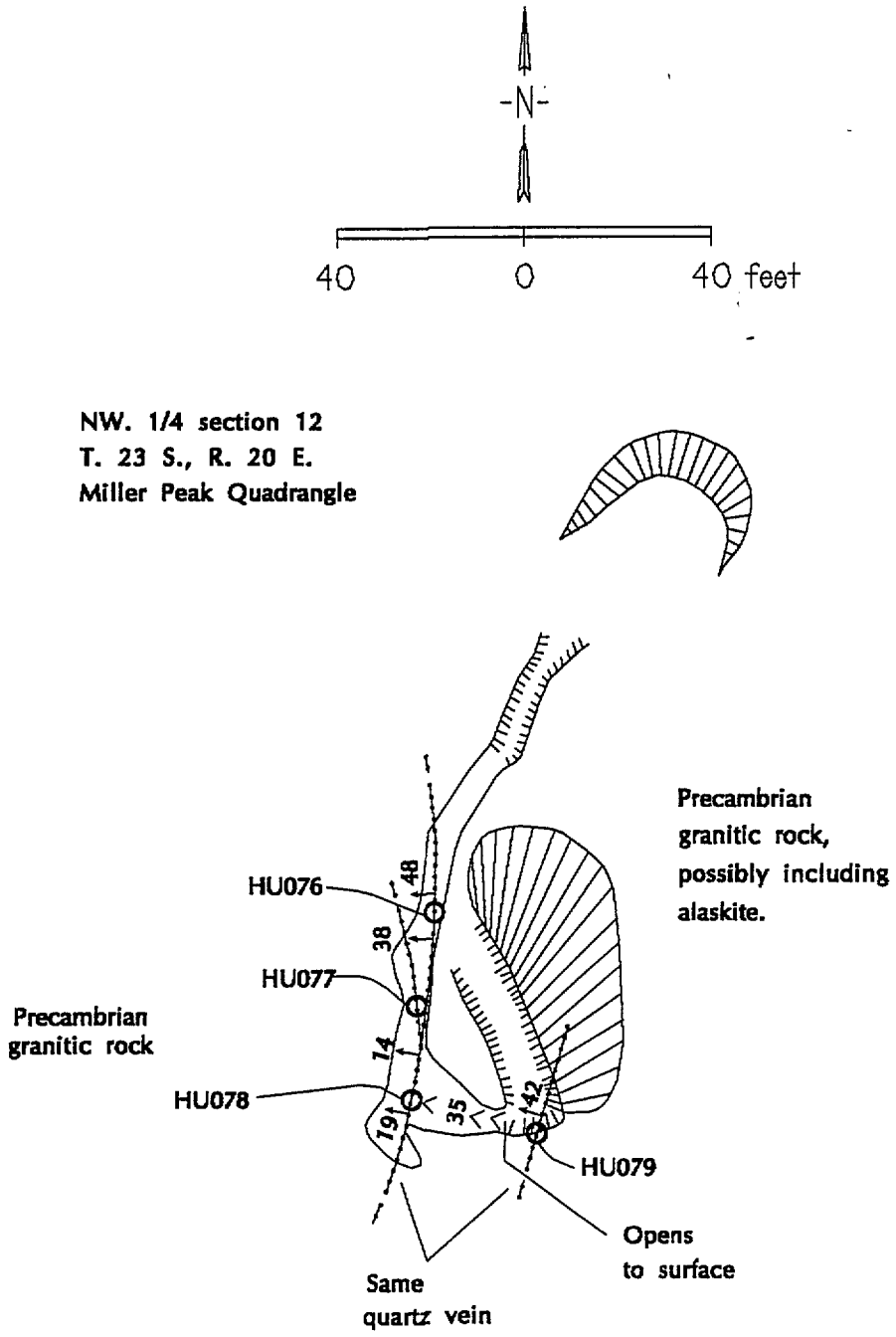
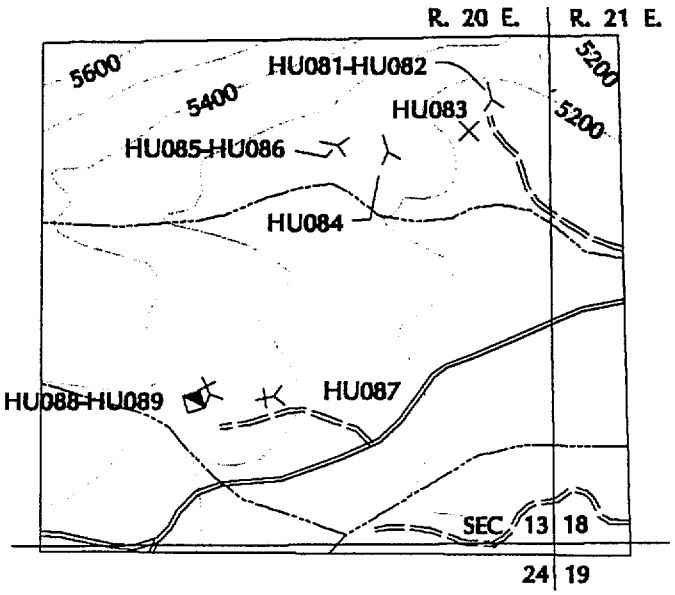
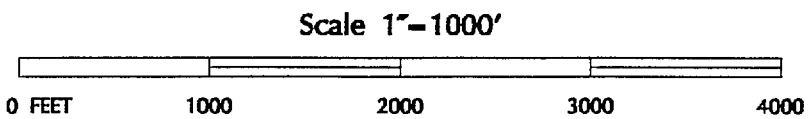


Figure 20.–Adit on the Harvey Hanes property showing sample localities HU076 - HU079.





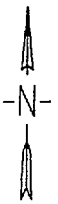


Figure 21.– Workings in lower Miller Canyon showing sample localities HU081 - HU089.

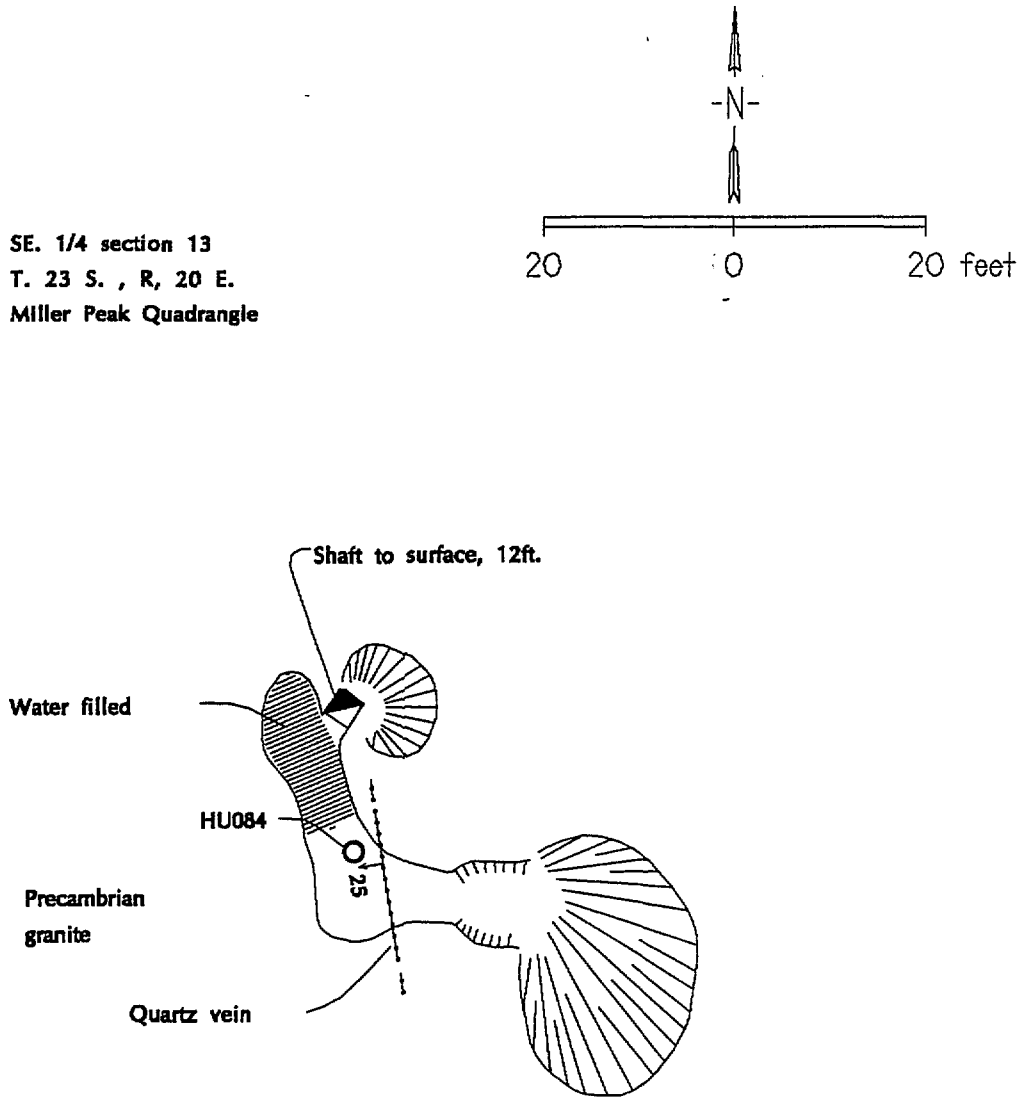


Figure 22.--Unnamed adit showing sample locality HU084.

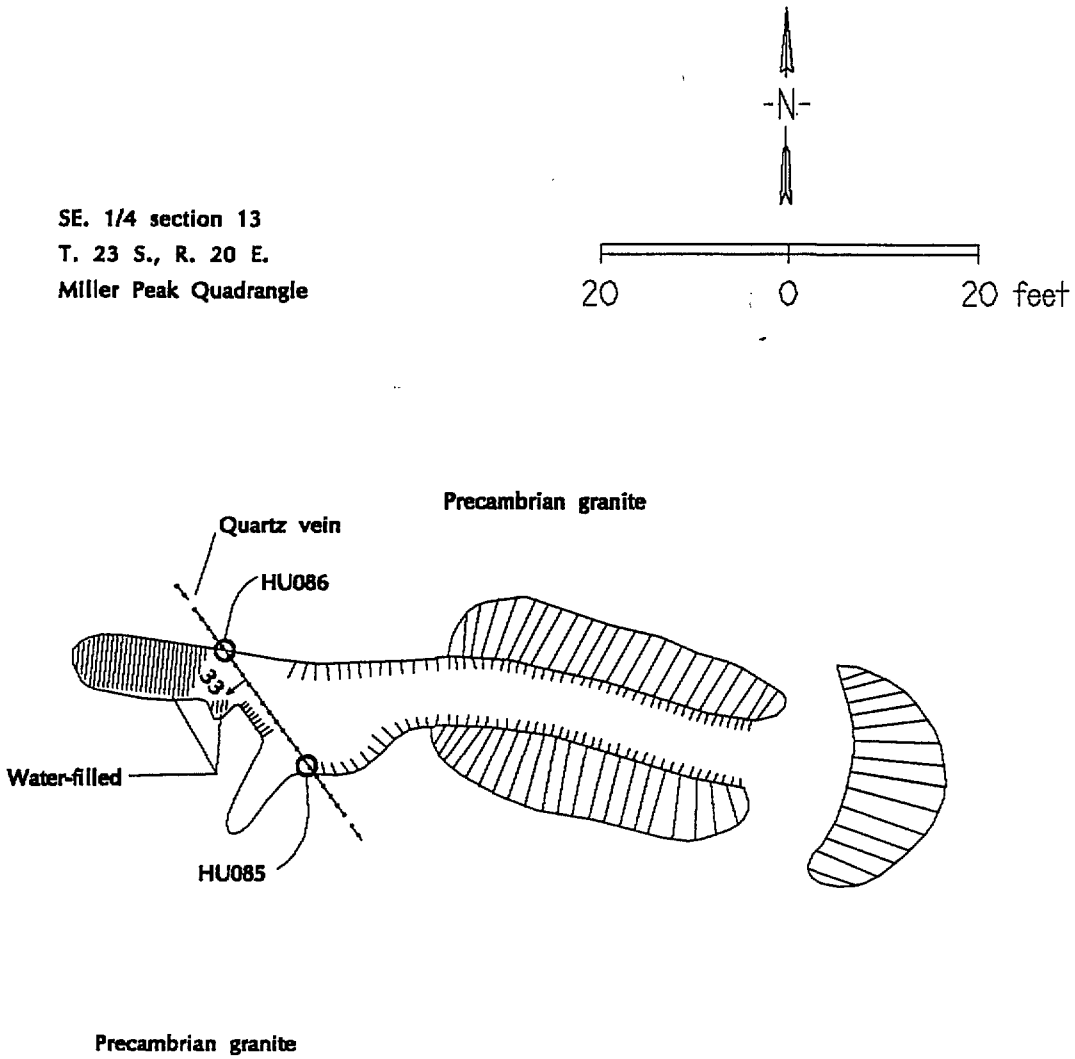


Figure 23.–Unnamed adit showing sample localities HU085 - HU086.

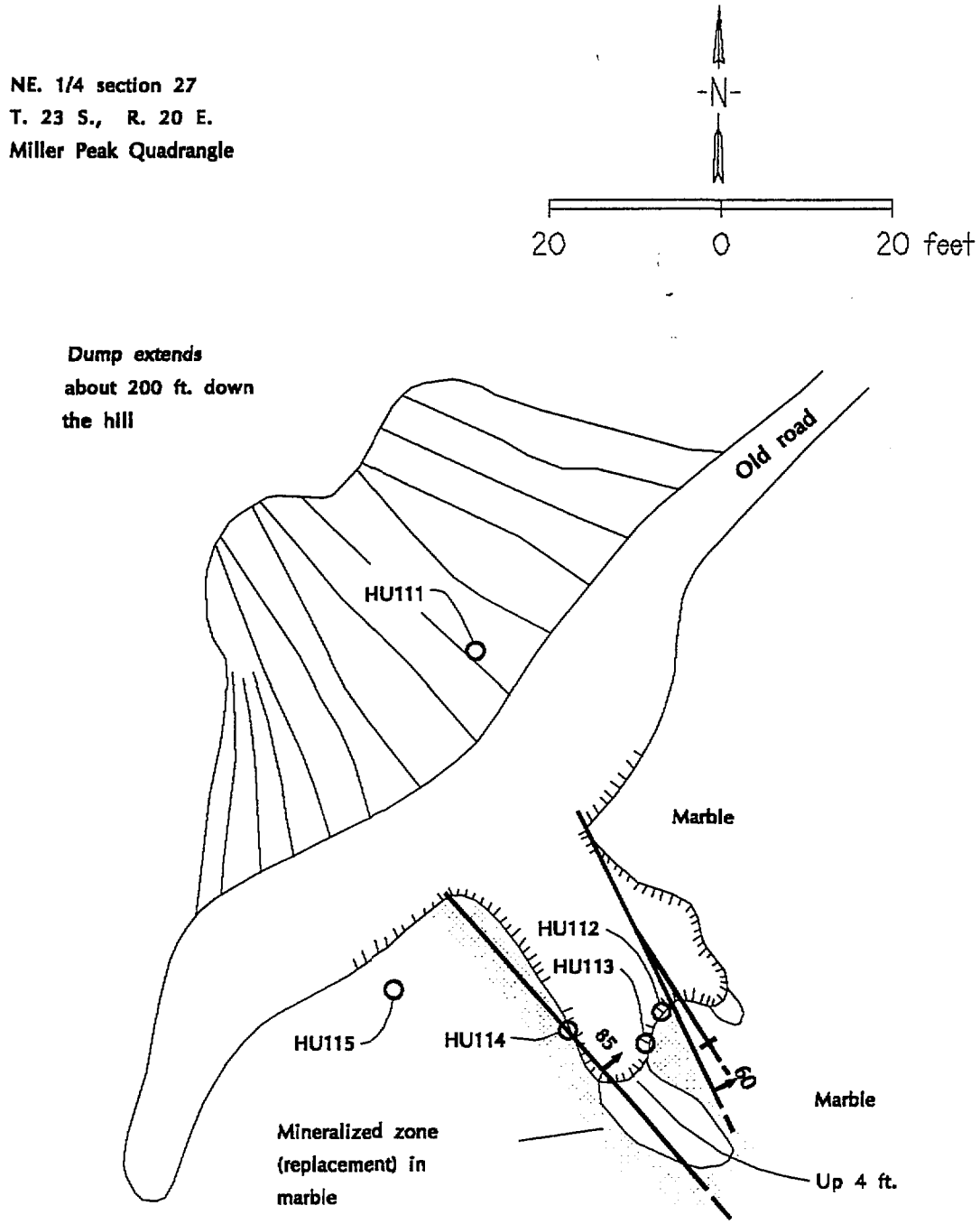


Figure 24.–Nellie James prospect showing sample localities HU111 - HU115.

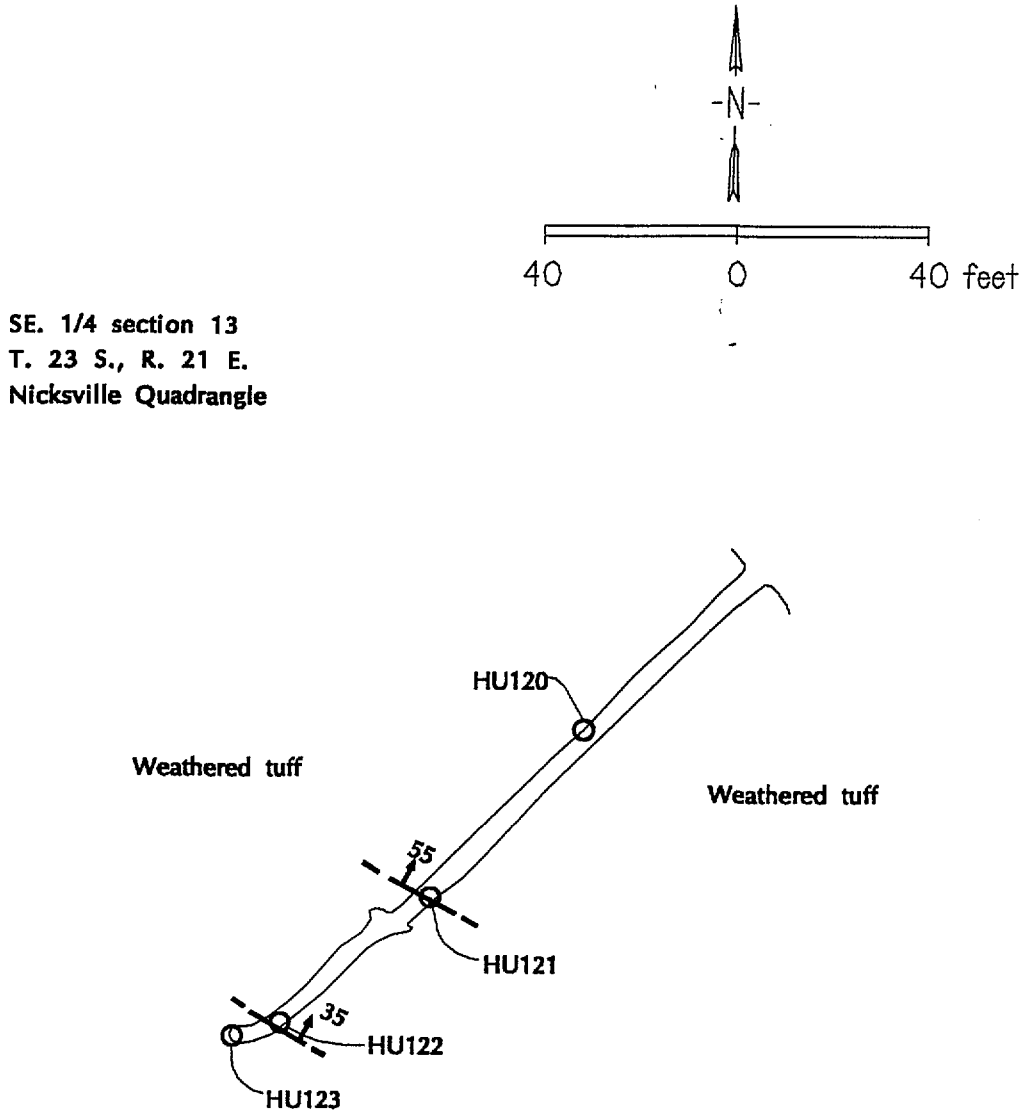


Figure 25.–Adit in the Baumkirchner Group showing sample localities HU120 - HU123.

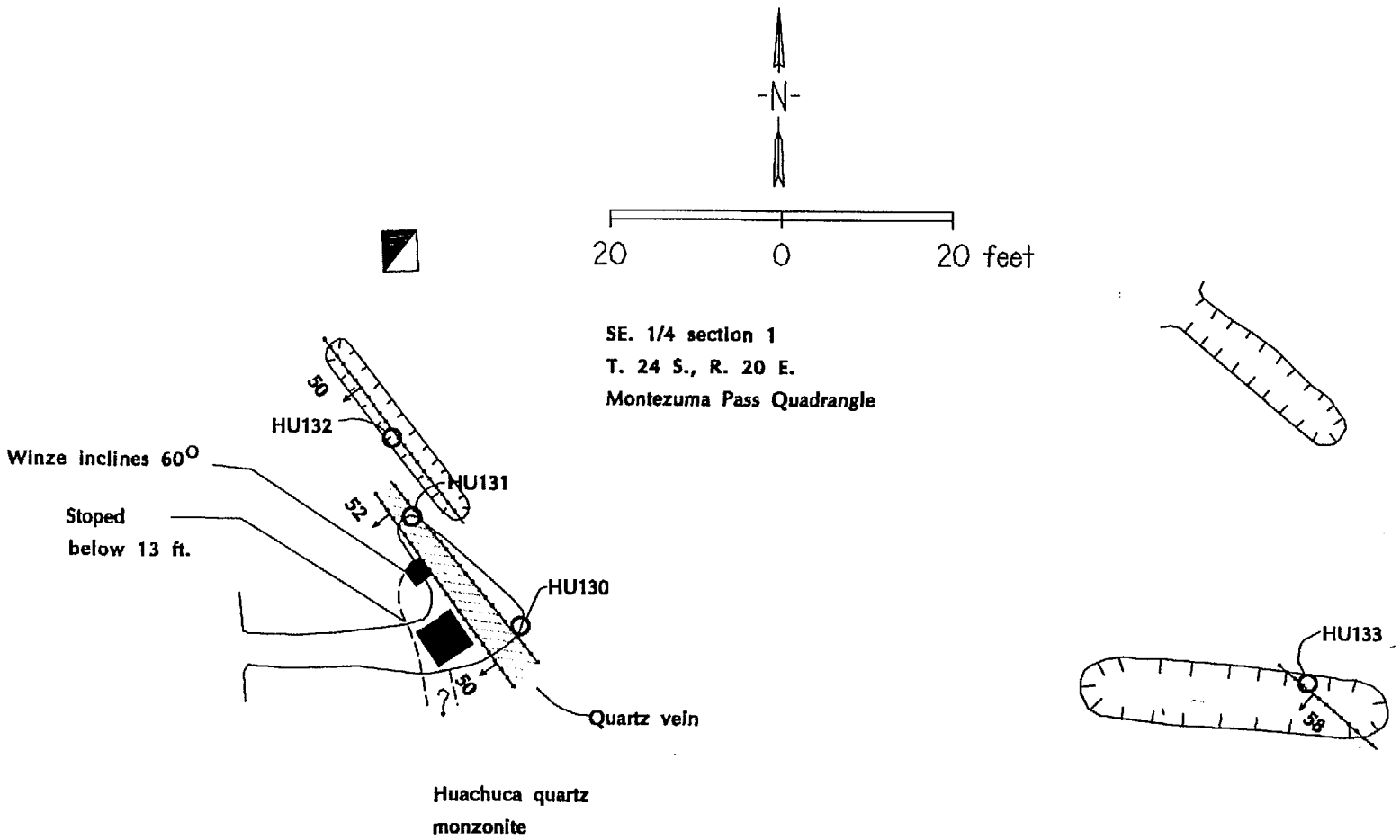


Figure 26.–Morgan Mine showing sample localities HU130 - HU133.

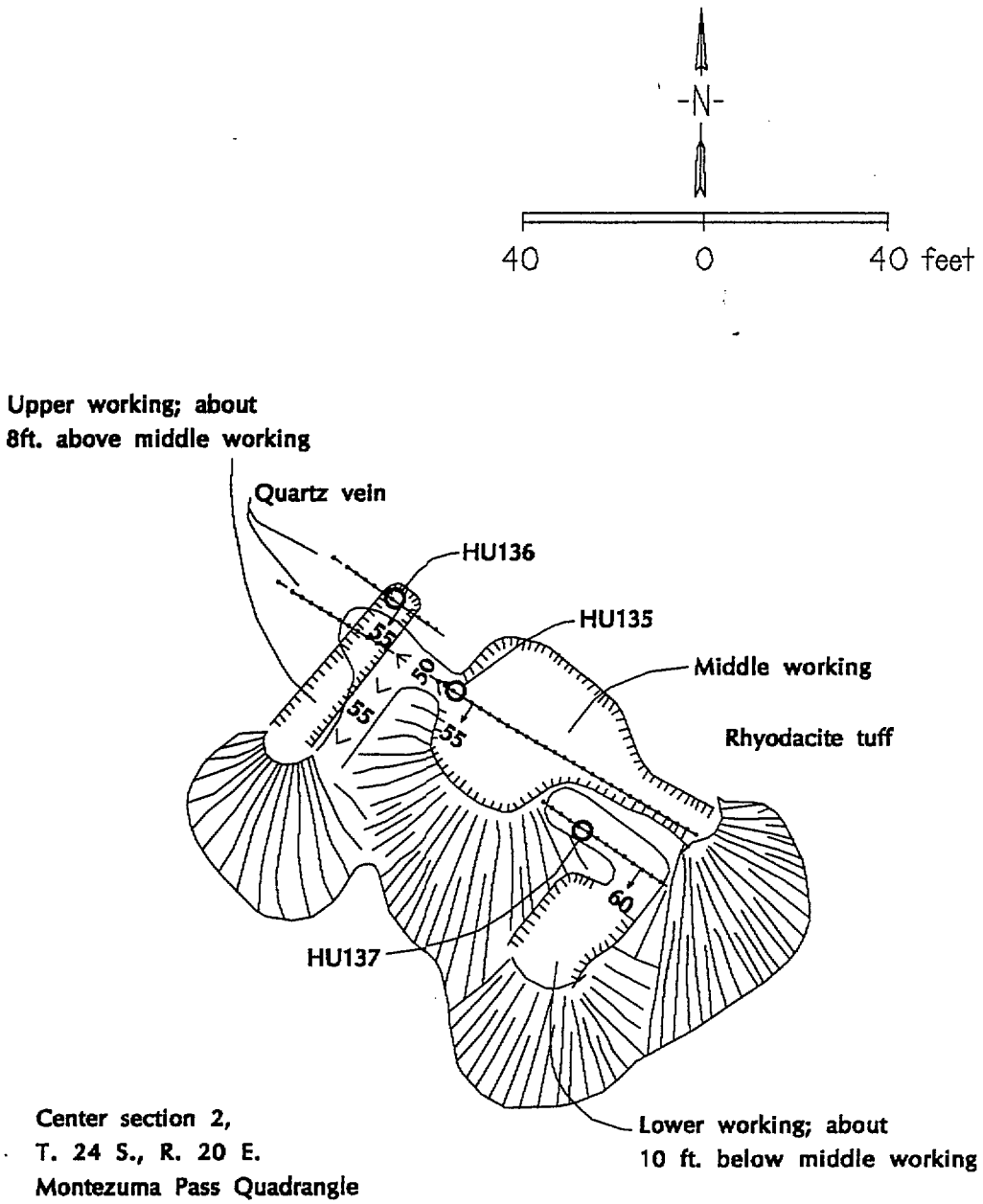


Figure 27.–Unnamed prospects showing sample localities HU135 - HU137.

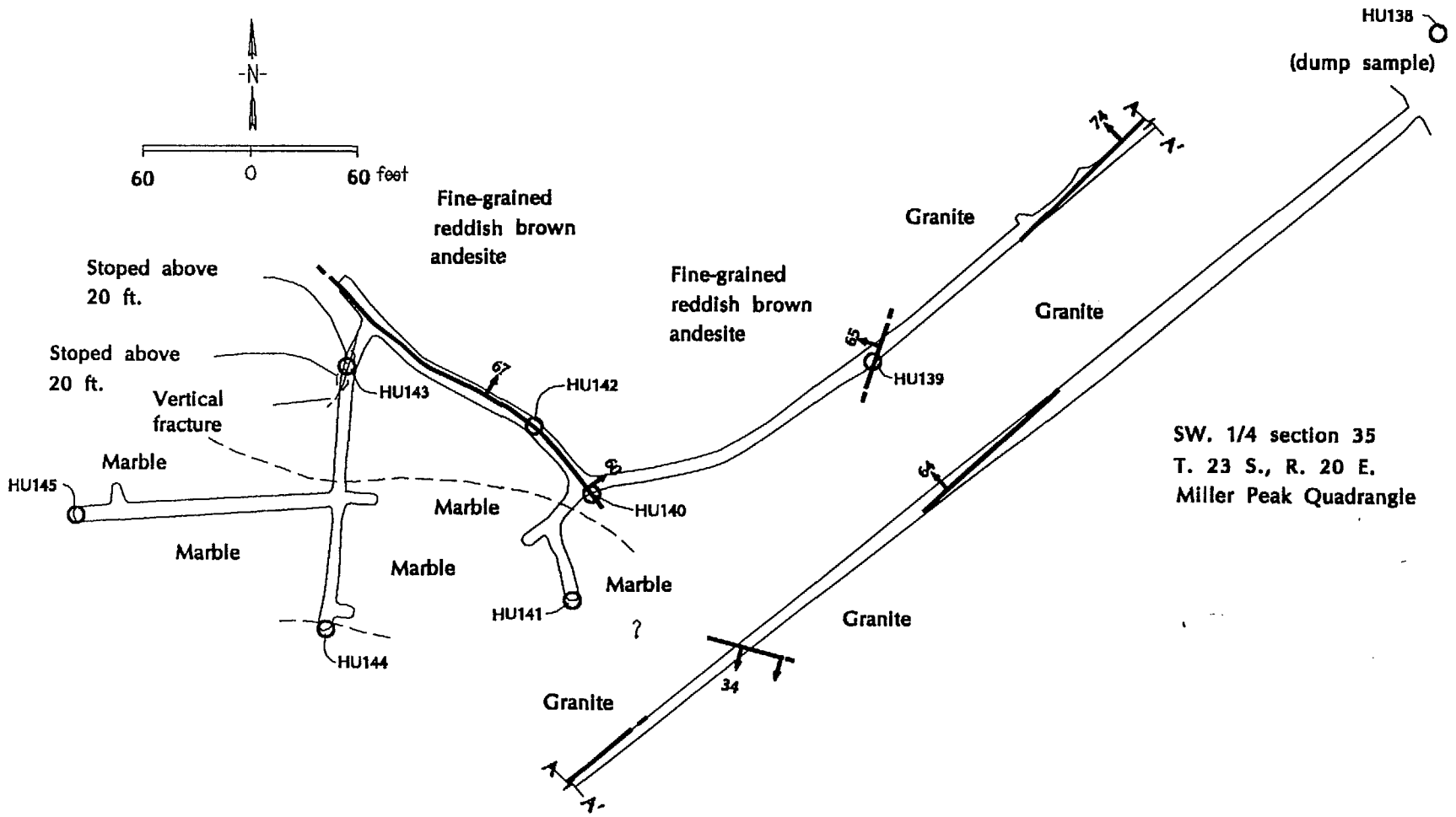


Figure 28.–Lutz Tunnel showing sample localitites HU138 - HU145.

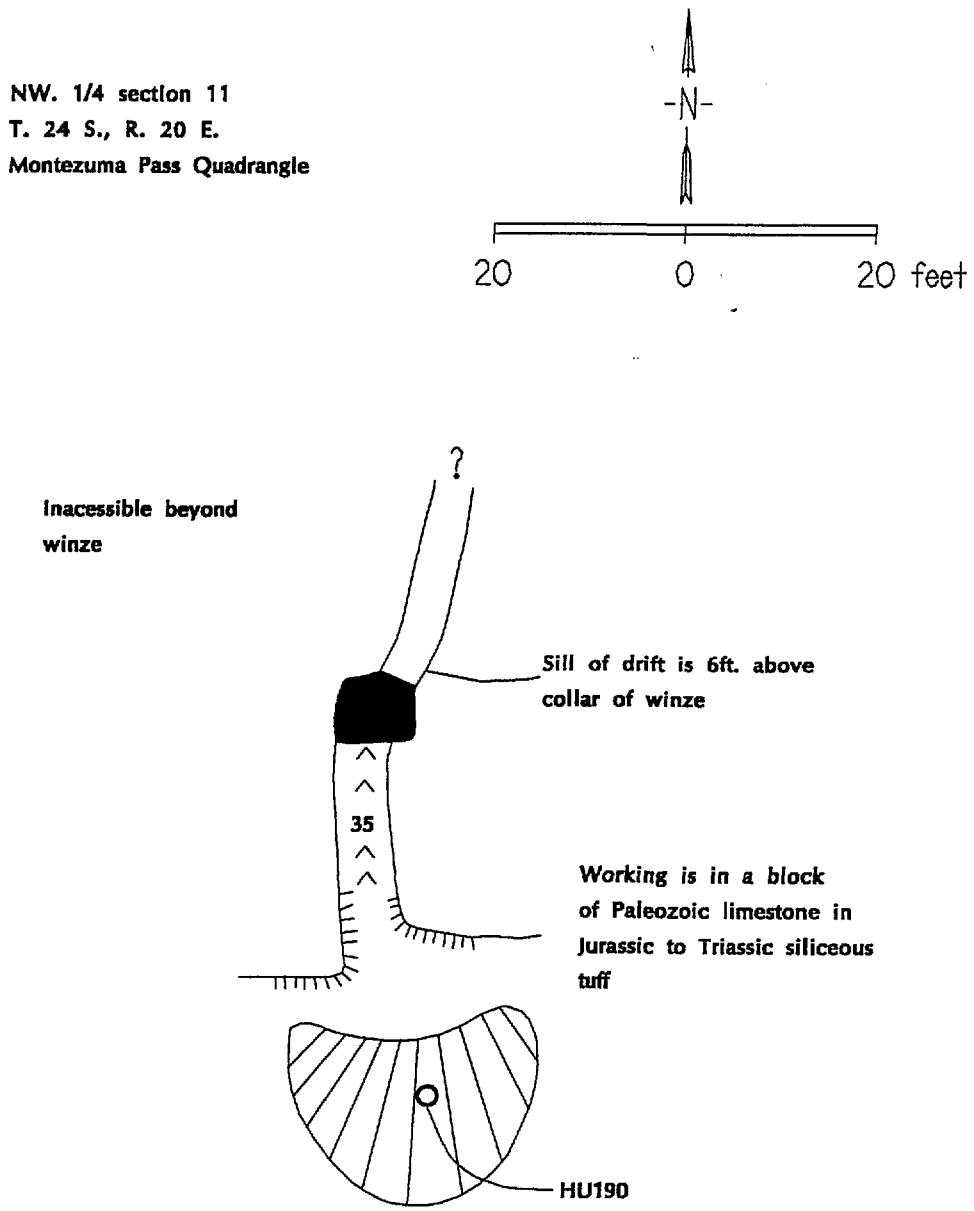


Figure 29.–Unnamed adit showing sample locality HU190.

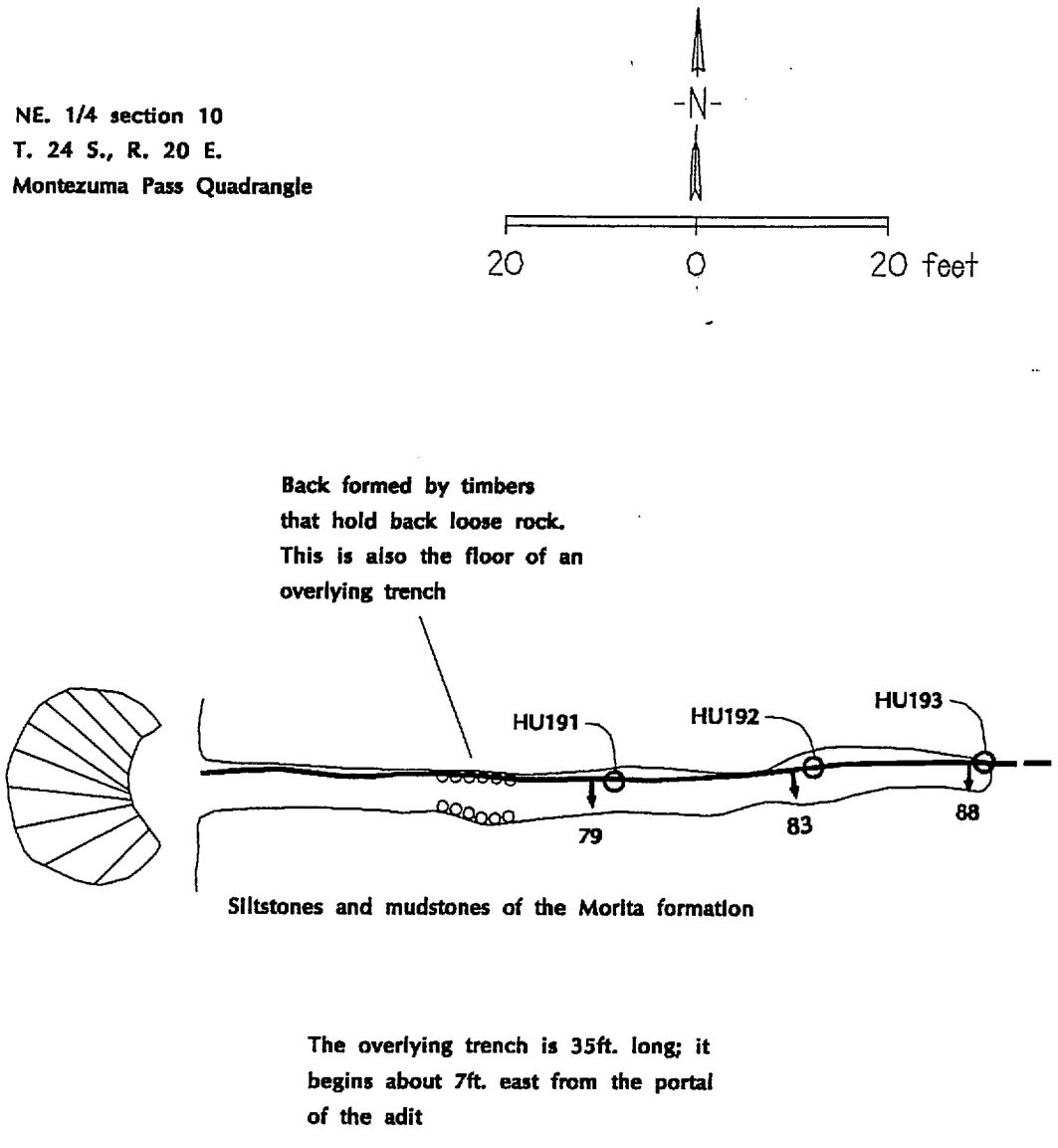
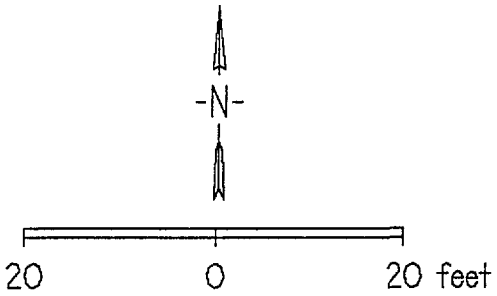


Figure 30.–Unnamed adit near Oak Spring showing sample localities HU191 - HU193.



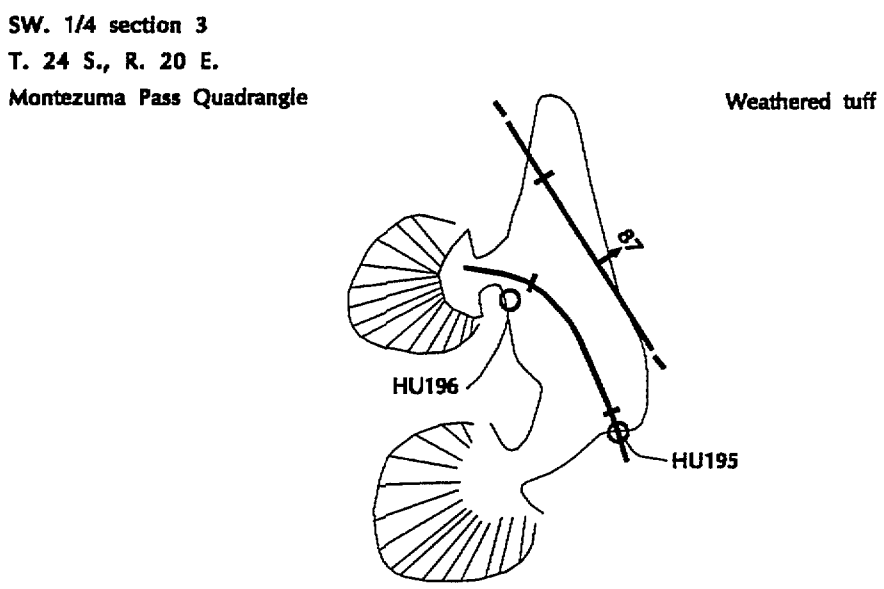
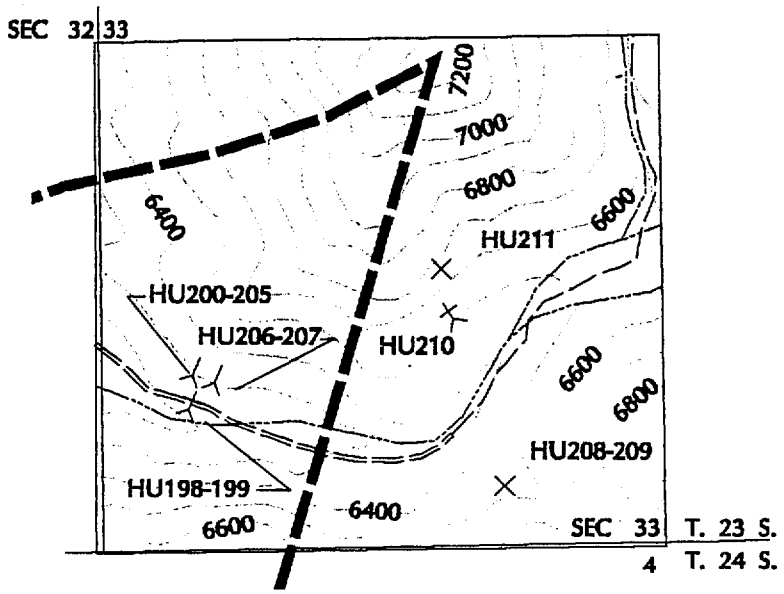
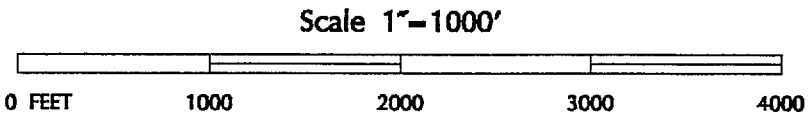


Figure 31.--Unnamed adit showing sample localities HU195 - HU196.





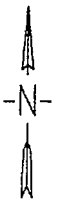


Figure 32.– Cave Mine Group showing sample localities HU198 - HU211.

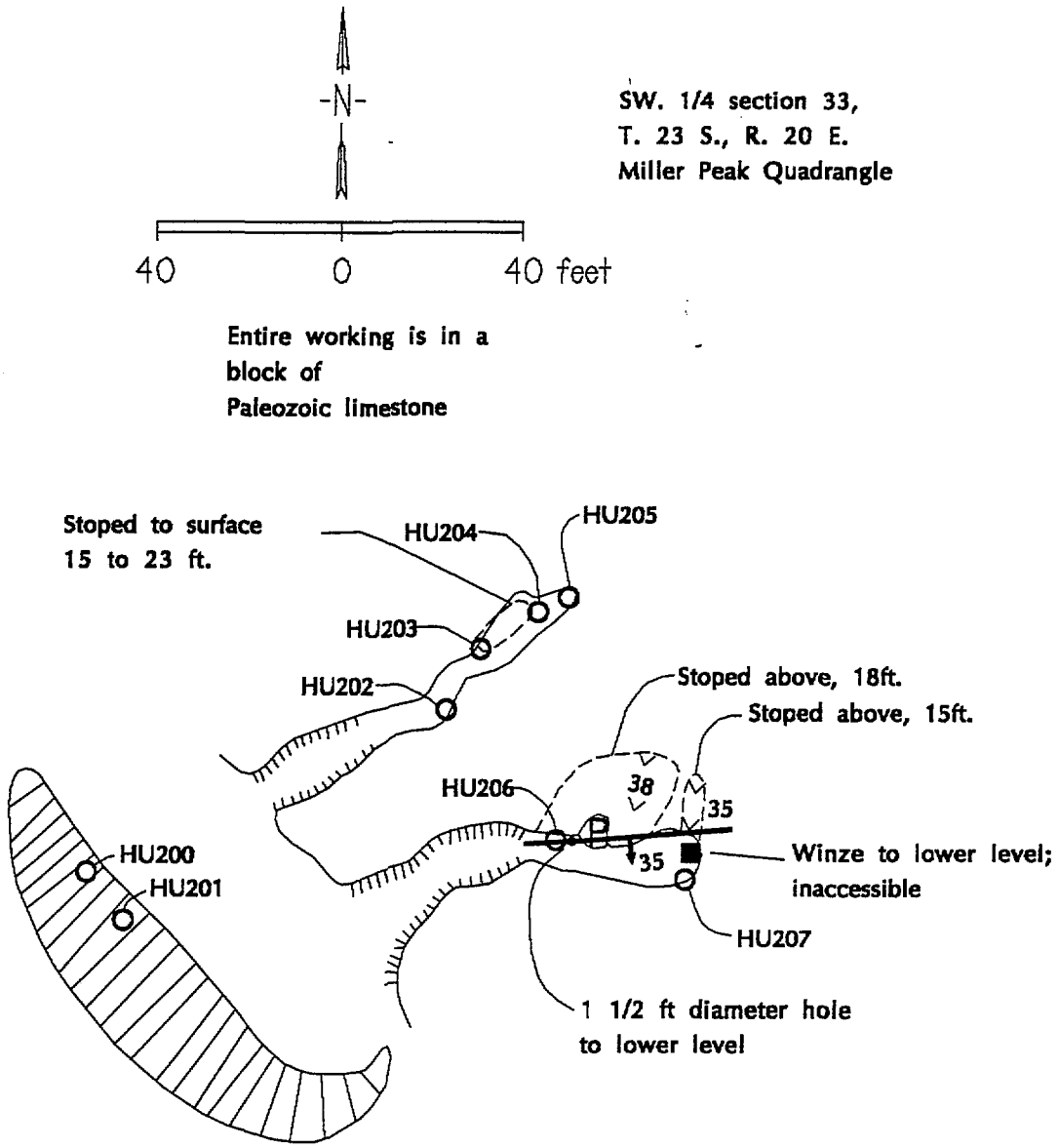


Figure 33.–Adits in the Cave Mine Group showing sample localities HU200 - HU207.

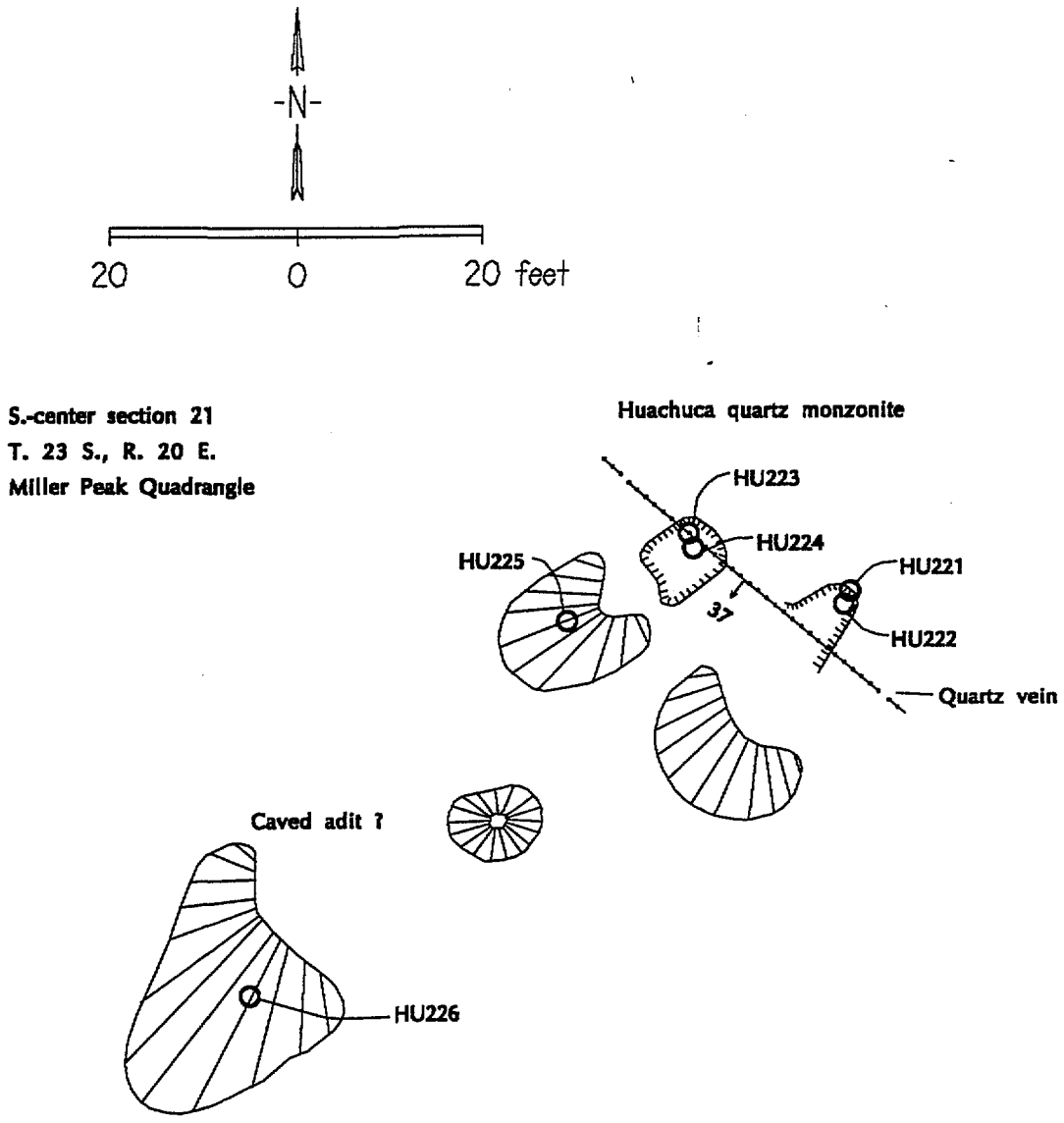
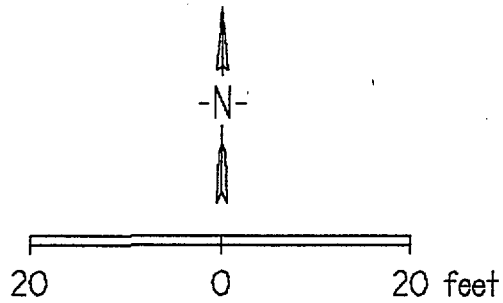


Figure 34.–Prospects in the Carr Ridge Mine showing sample localities HU221 - HU226.



SE. 1/4 section 29, along
border with sec. 28,
T. 23 S., R. 20 E.
Miller Peak Quadrangle

Working is in an
exotic block of
Paleozoic limestone
in siliceous volcanic rocks

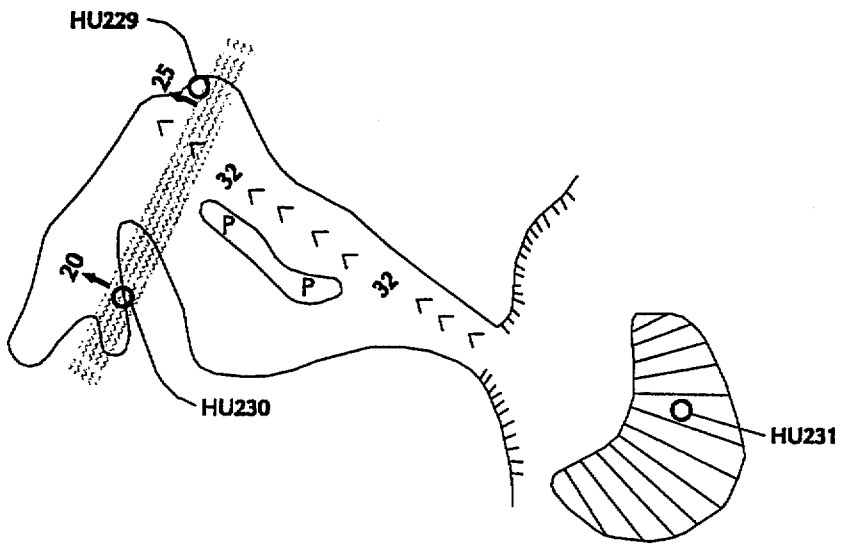


Figure 35.–An inclined shaft of the Western Tungsten Mine showing sample localities HU229 - HU231.

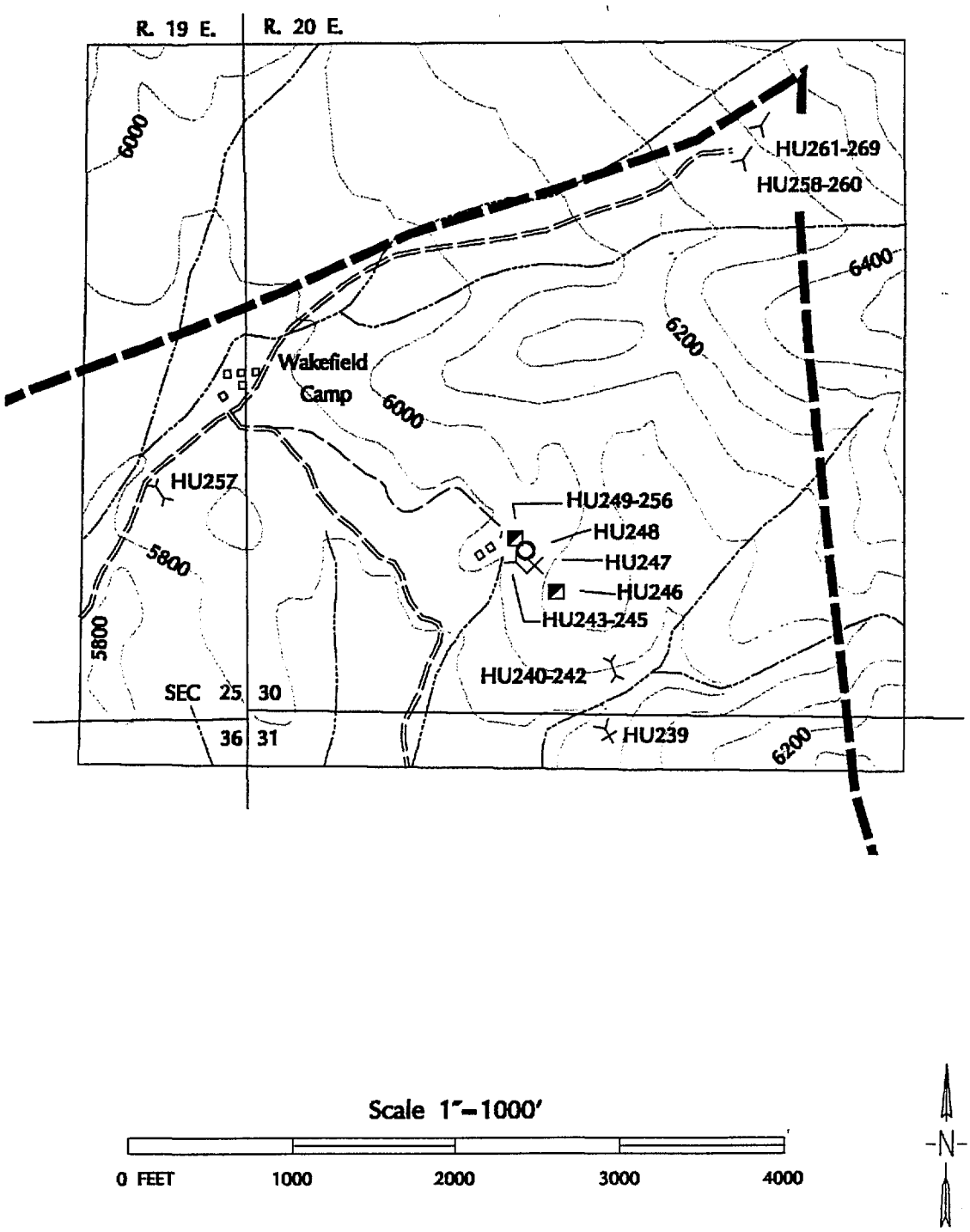


Figure 36.– Van Horn, Harper, and Wakefield Mines area showing sample localities HU239 - HU269.

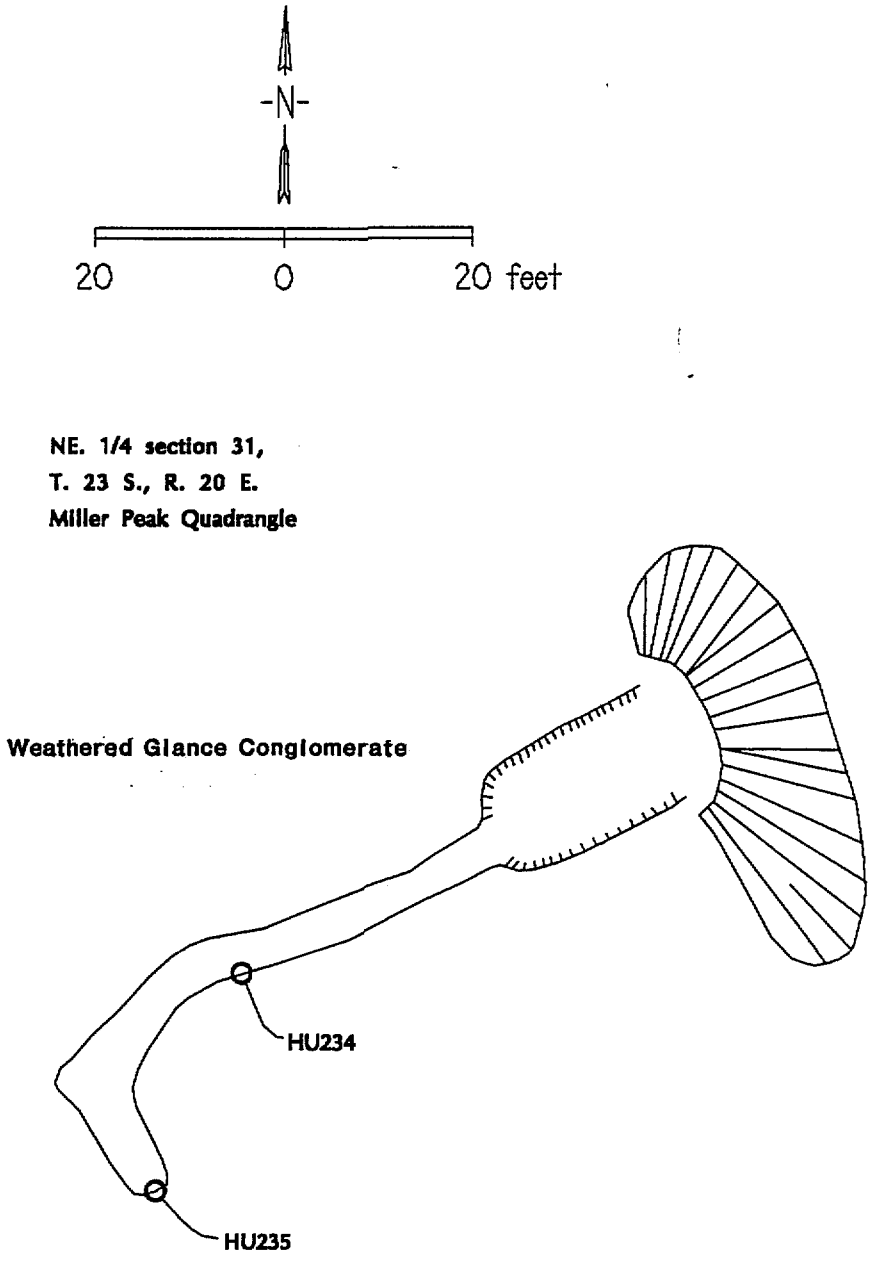


Figure 37.–Adit in the Van Horn Group showing sample localities HU234 - HU235.

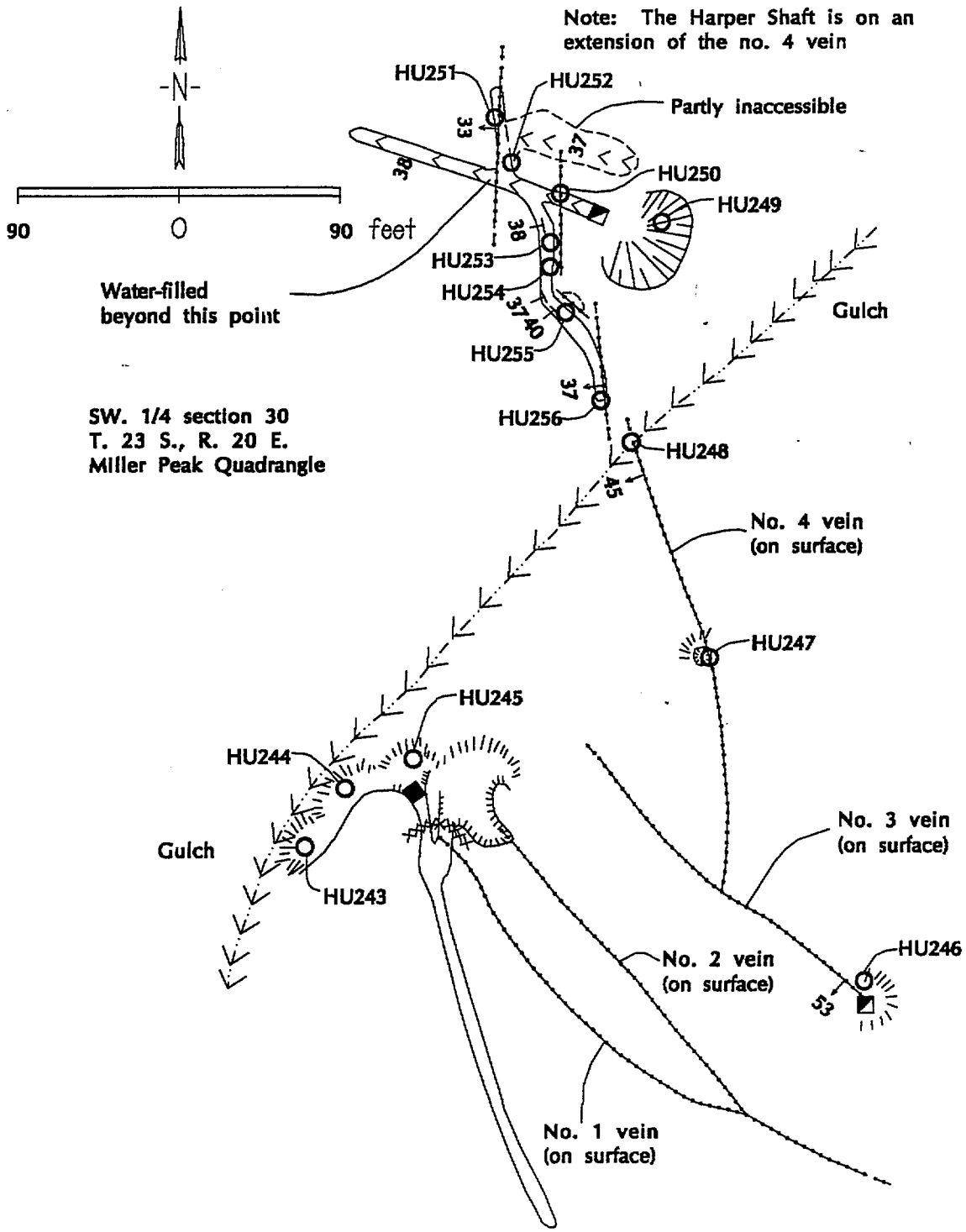


Figure 38.–Harper Mine area showing sample localities HU243 - HU256 (after Dale and others, 1960, fig. 3).

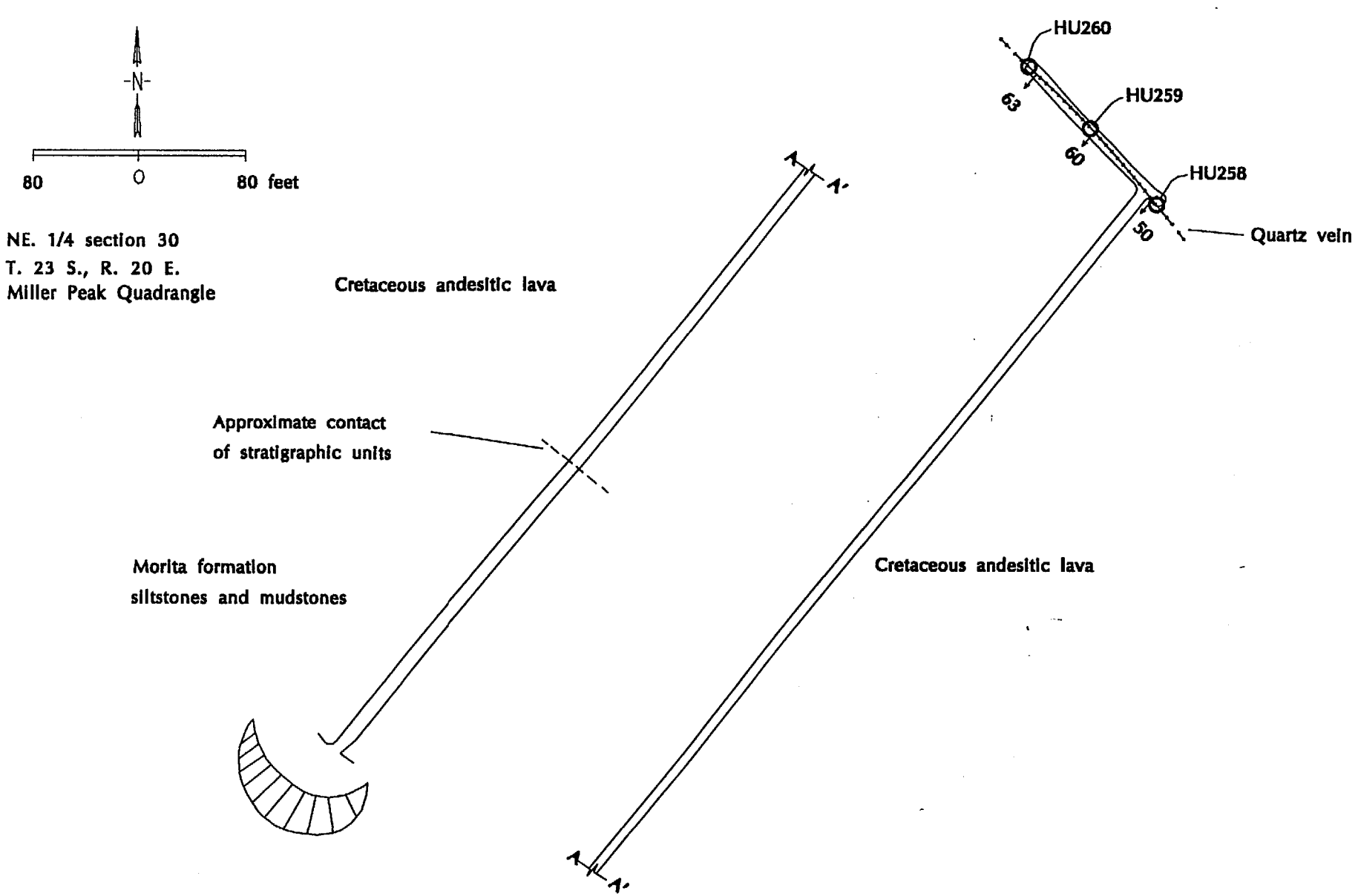


Figure 39.--Lower adit of Wakefield Mine showing sample localities HU258 - HU260.

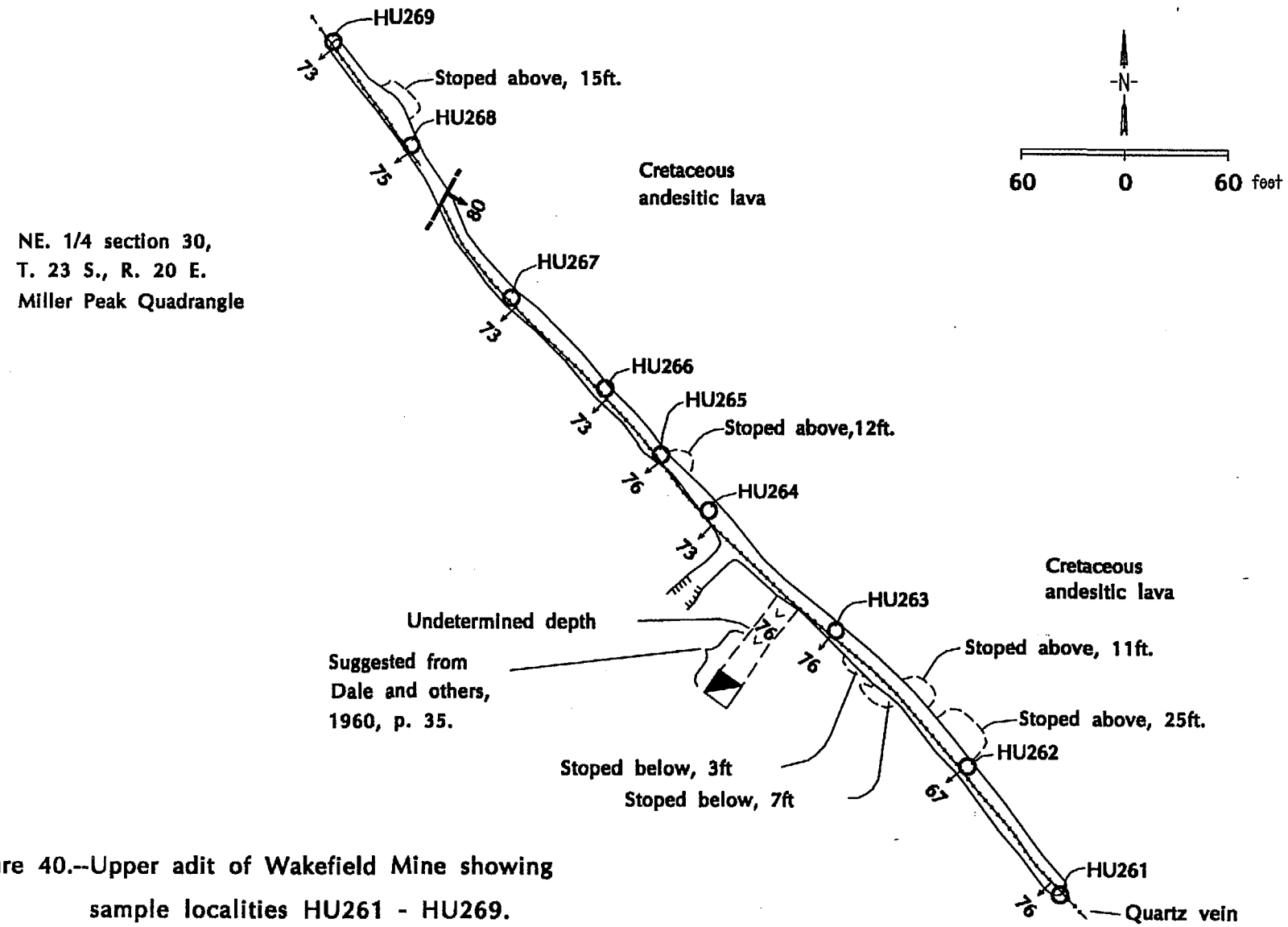
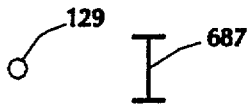


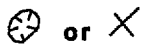
Figure 40.--Upper adit of Wakefield Mine showing sample localities HU261 - HU269.

EXPLANATION OF SYMBOLS FOR REPORT FIGURES, INCLUDING:
Features of detailed mine maps, both surface and underground, at various scales (larger than 1:24,000).

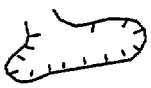


ROCK SAMPLE LOCALITY--Showing sample number

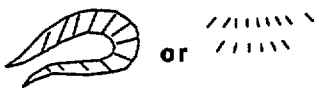
TRENCH



PITS

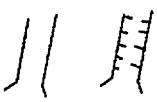


OPEN CUT

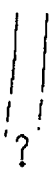


DUMPS

STOCKPILE

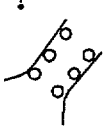


ADIT PORTAL (left);
ADIT PORTAL WITH TRENCH OR OPEN CUT (right)

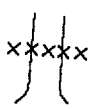


LEVEL WORKING--Dashed and/or queried where uncertain

INCLINED WORKING--Showing degree of inclination, chevrons pointing down; queried where uncertain or inaccessible



TIMBERED (Vertical timbers and/or lagging)



CAVED

RUBBLE (BACKFALL) FILLED, MUCK-FILLED, OR BACKFILLED WORKING--Queried where uncertain or inaccessible

EXPLANATION OF SYMBOLS FOR REPORT FIGURES, INCLUDING:
Features of detailed mine maps, both surface and underground, at various scales (larger than 1:24,000)--Continued.

STEP DOWN IN SILL--Showing drop in feet; hachures on down side

RAISE, head (left); RAISE, foot (right)

RAISE GOING UP AND WINZE GOING DOWN

WINZE--Noted if water filled

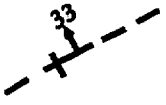
MANWAY (left); CHUTE (right)

SHAFT, open at surface (left);
SHAFT, bottom (right)

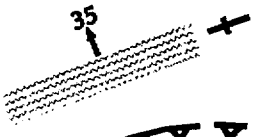
PILLAR

GEOLOGIC SYMBOLS

Strike and dip of bedding

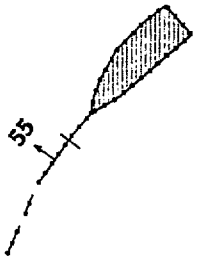


Fault--Showing strike and dip (inclined or vertical, degrees); dashed where approximate



Fault zone or shear zone--Showing strike and dip (inclined or vertical, degrees); dashed where approximate

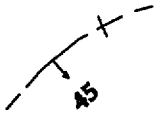
Thrust fault--Sawteeth on upthrown side



Vein--Showing strike and dip (inclined or vertical, degrees); dashed where approximate

EXPLANATION OF SYMBOLS FOR REPORT FIGURES, INCLUDING:
Features of detailed mine maps, both surface and underground, at various scales (larger than 1:24,000)–Continued.

GEOLOGIC SYMBOLS–*Continued*

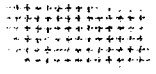


Contact–Showing strike and dip (inclined or vertical, degrees); dashed where approximate

Dike–Showing strike and dip (inclined or vertical, degrees); dashed where approximate

Shattered zones

Brecciated zones



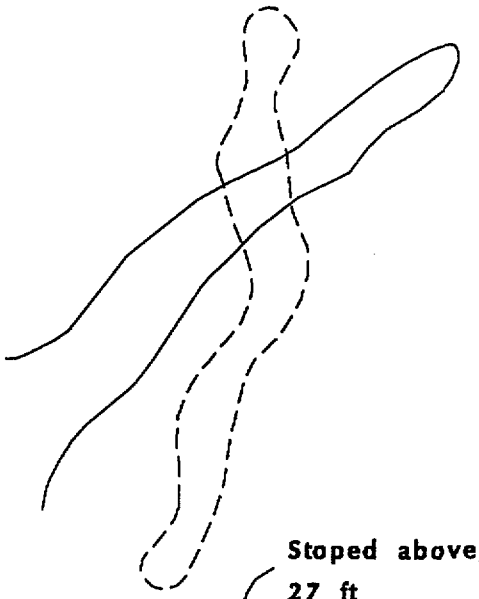
Igneous rock zone or structure

Mineralized zone, disseminated

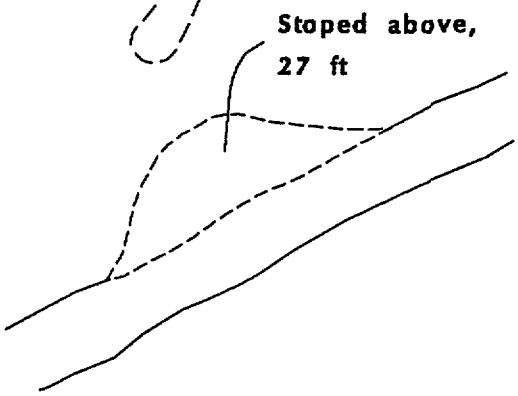
Mineralized zone, localized

Zone containing resources

EXPLANATION OF SYMBOLS FOR REPORT FIGURES, INCLUDING: Features of detailed mine maps, both surface and underground, at various scales (larger than 1:24,000)--Continued.



Multiple level workings



Stope

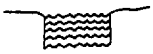
Symbols for vertical cross-section maps

Crosscut

Drift into facing wall

Drift into removed wall

Drift into facing and removed wall



Water-filled winze

EXPLANATION OF SYMBOLS FOR REPORT FIGURES AND PLATES, INCLUDING: Inset maps at various scales and 1:126,720-scale plates.

APPROXIMATE BOUNDARY OF THE FOREST MANAGEMENT AREA

APPROXIMATE BOUNDARY OF WILDERNESS

NATIONAL MONUMENT BOUNDARY

6000 — TOPOGRAPHIC CONTOUR–Showing elevation in feet above sea level

STATE LINE

COUNTY LINE

PRIMARY SECONDARY ROADS

UNIMPROVED ROADS TRAILS

INTERMITTENT STREAMS

MINING CLAIM BOUNDARIES

GRID TICK MARK

PATENTED MINING CLAIM

SURFACE OPENINGS–Showing sample number(s); symbols may represent more than one working. Also, VARIOUS REPRESENTATIONS OF SAMPLE SITES:

616 — Rock sample locality–Showing sample number

or or — Adit open (left); Adit, inaccessible (right)

Trenches

Open cut

Glory hole, open pit, or quarry

EXPLANATION OF SYMBOLS FOR REPORT FIGURES AND PLATES, INCLUDING:
Inset maps at various scales and 1:126,720-scale plates–Continued.

SURFACE OPENINGS–Showing sample number(s);
symbols may represent more than one working. Also,
VARIOUS REPRESENTATIONS OF SAMPLE SITES–Continued:

846 — Prospect (pit, open cut, or small trench)

326-328 — Tunnel

Mine or quarry (active, left; inactive, right)

Placer mine or gravel pit (active, left; inactive, right)

Shaft, open to surface (left);
Shaft, inclined (right)

Shaft, water filled (left);
Shaft, caved (right)

R — Shaft, reclaimed

Mine dump

DHxxx — Drill hole collar

Table 4.--Mineral appraisal summary for named workings in the New Hartford mineral district, without identified resources.

Name	Samples collected	Significant metal contents/mineralization	Appraisal
Eureka Mine	HU024, HU025	9.97 oz/st silver and 9.42% copper in HU024. Malachite, azurite, chalcocite, bornite, and barite noted.	No information on extent of mineralization obtained due to lack of access to workings. No appraisal could be made.
Copper Glance Group	HU028-HU044	Samples contained up to 91.10 oz/st silver, 0.28 oz/st gold, 17.2% copper, 1,500 ppm tungsten, >2% barium, 7,745 ppm antimony.	A mineralized fault zone and quartz vein extend at least 1,000 ft on strike. Some samples contained high concentrations of copper and silver. However, poor access to workings prevents the determination of size and grade of mineralization.
Hamburg Group	HU045-HU049	Samples contained up to 5.71 oz/st silver and 1.62% copper (HU045), greater than 2.0% zinc (HU046) and 1.0% manganese (HU047). An area of skarn mineralization roughly 35 x 7 ft was noted.	Some samples contained high concentrations of silver, copper, and zinc. However, all adits found were inaccessible, so size and grade of mineralization could not be made.
Miller Canyon prospect	HU110	The sample did not contain significant metal concentrations.	No evidence was found that would show a resource.
Nellie James prospect	HU111-HU115	Samples averaged metal concentrations of 2.48 oz/st silver, >0.94% zinc, >0.52% lead, 0.21% copper.	The estimated size of the mineralization is 200-300 st. No resource was determined due to the this small volume.

Table 4.--Mineral appraisal summary for named workings in the New Hartford mineral district, without identified resources.-Continued

Name	Samples collected	Significant metal contents/mineralization	Appraisal
Armistice Group	HU118-HU119	The samples did not contain significant metal concentrations.	No access was available to the underground workings, from which substantial past production of lead and zinc came. No estimation of size and grade of mineralization could be made.
Baumkirchner Mine	HU120-HU123	The samples contain up to 0.48% manganese, but no other significant metal concentrations.	No evidence was found that would show a resource.
Lutz tunnel	HU138-HU147	A select sample contained 13.0 oz/st silver, 5.3% copper, and 0.06 oz/st gold. Chalcopyrite, chalcocite, malachite, and azurite were noted.	
Boston claim	HU188-HU189	A select sample contained 5.0 oz/st silver and 6.67% copper.	Insufficient information on the size of the mineralized body was obtained to determine a resource.
Cave Mines	HU198-HU211	Samples contain up to 4.3 oz/st silver and 3.13% copper, and some contain >1.0% lead and manganese, and >2.0% zinc. Galena, chalcopyrite, and pyrite were noted.	Although some samples contain high metal values, the mineralized material is sporadically distributed. Average gold and silver concentrations are low.

Table 4.--Mineral appraisal summary for named workings in the New Hartford mineral district, without identified resources.-Continued

Name	Samples collected	Significant metal contents/mineralization	Appraisal
Oversite Mine	HU212-HU216	A high-grade sample (HU214) contained 5.68 oz/st silver, > 1.0% copper, and 0.19% lead.	Some samples contained high concentrations of silver and copper. However, all adits found were inaccessible, so size and grade of mineralization could not be made.
Carr Ridge Mines	HU217-HU226	A select sample of quartz vein material contained 0.34 oz/st gold	Insufficient information on mineralized vein(s) was obtained due to lack of access to workings.

Table 5.--Mineral appraisal summary for unnamed workings in the New Hartford mineral district, without identified resources.

Location	Samples collected	Significant metal contents/mineralization	Appraisal
T. 23 S., R. 19 E., NW. 1/4 sec. 13	HU026, HU027	Sample HU026 contained 36 ppm cobalt, 0.28% titanium, and 103 ppm vanadium	No evidence was found that would show a resource.
T. 23 S., R. 20 E., W. center 1/2 sec. 25	HU116, HU117	The samples contained no significant metal concentrations.	The adit was inaccessible. No evidence was found that would suggest a resource.
T. 24 S., R. 20 E., NE. 1/4 sec. 1	HU126-HU128	Samples contained up to 0.03 oz/st gold, 0.3 oz/st silver, greater than 1.0% lead, 4,718 ppm zinc, and 100 ppm cadmium. Galena, sphalerite, pyrite, and hematite were noted in quartz vein material.	Insufficient evidence was found that would show a resource.
T. 24 S., R. 20 E., SE. 1/4 sec. 1.	HU129	The sample contains 689 ppb gold and 35 ppm silver.	Insufficient evidence was found that would show a resource.
T. 24 S., R. 20 E., S. center sec. 1.	HU134	The sample contains no significant metal concentrations.	No evidence was found that would show a resource.
T. 24 S., R. 20 E., center sec. 2.	HU135-HU137	One sample contains 0.23 oz/st gold.	The average concentration of gold in the vein is low, and content varies widely within the vein. Insufficient evidence was found that would show a resource.

Table 5.--Mineral appraisal summary for unnamed workings in the New Hartford mineral district, without identified resources.-Continued

Location	Samples collected	Significant metal contents/mineralization	Appraisal
T. 24 S., R. 20 E., SW. 1/4 NW. 1/4 sec. 11.	HU190	The sample contained 4,200 ppm zinc, 4,735 ppm manganese, and 7 ppm mercury.	The adit was only partly accessible. Insufficient evidence was found that would show a resource.
T. 24 S., R. 20 E., NE. 1/4 sec. 10	HU191-HU193	Gold content ranged from 79 to 410 ppb, and manganese from 7,995 to >10,000 ppm.	No evidence was found that would show a resource.
T. 24 S., R. 20 E., SW. 1/4 SW. 1/4 sec. 3.	HU194-HU196	One sample contained 1.5% zinc, >1.0% lead, 61 ppm cadmium, and 100 ppm bismuth.	Of two adits, one was inaccessible. The mineralized material in the other adit is sporadic in grade, and the volume is less than 100 st. Insufficient evidence was found that would show a resource.
T. 24 S., R. 20 E., SW. 1/4 sec. 4.	HU197	The sample contained 7,520 ppm copper. A green copper carbonate? mineral was noted.	Insufficient evidence was found that would show a resource.
T. 23 S., R. 20 E., NW. 1/4 sec. 28.	HU227	The sample contained no significant metal concentrations.	No access to working. No evidence was found that would show a resource.

Table 6.--Mineral appraisal summary for named workings in the New Reef mineral district, without identified resources.

Name	Samples collected	Significant metal contents/mineralization	Appraisal
Joe Bailey prospect	HU009	The sample contained 28.8 ppm silver, 7,449 ppm copper, 253 ppm molybdenum.	No evidence was found that would show a resource.
Arrow Group	HU011	The sample contained 180 ppb gold and 860 ppm tungsten.	Only shallow pits and inaccessible workings were found. Little information on size and grade of previously worked mineralization was obtained.
Lucky Strike Mine	HU060, HU061	A selected sample showed 0.12 oz/st gold, 2.9 oz/st silver, 9,092 ppm lead, and 3,840 ppm tungsten. Vein quartz contained galena, pyrite, scheelite, and earthy hematite.	The selected sample indicates that high concentrations of gold and tungsten were mined. However, the vein was not exposed at the surface, and the underground workings were not accessible. No information on size and grade of remaining mineralization could be made.
Thomas Tungsten claims	HU062, HU063	One sample contained 0.03 oz/st gold.	No evidence was found that would show a resource.
Pleasant View claims	HU064-HU071	No samples contained significant metal concentrations.	No evidence was found that would show a resource.

Table 6.--Mineral appraisal summary for named workings in the New Reef mineral district, without identified resources.-Continued

Name	Samples collected	Significant metal contents/mineralization	Appraisal
Huachuca claims	HU087-HU089	One sample contained 0.03 oz/st gold, 0.5 oz/st silver, 1,600 ppm lead, and 830 ppm tungsten. Quartz with galena, pyrite, and scheelite? was noted.	No access was available to the adits, preventing the determination of the size and grade of mineralization.
Morgan Mine	HU130-HU133	Samples from quartz veins contained up to 0.23 oz/st gold, 1.3 oz/st silver, 3,106 ppm lead, and 230 ppm tungsten.	Average grades for the precious and base-metals were low. Less than 100 st of quartz vein is exposed, and the vein is often little more than highly silicified country rock.
Western Tungsten Mine	HU228-HU232	Mineralized material in the accessible shaft averages 1.59 oz/st silver and 0.56% copper. Tungsten content was no higher than 200 ppm in any sample.	Two shafts are inaccessible and size and grade of mineralization can not be determined. A mineralized body containing about 2,200 st exists in the accessible shaft, but a resource is not indicated.
Van Horn workings	HU239-HU242	One sample contained 590 ppm tungsten.	Insufficient evidence was found that would show a resource.

Table 6.--Mineral appraisal summary for named workings in the New Reef mineral district, without identified resources.-Continued

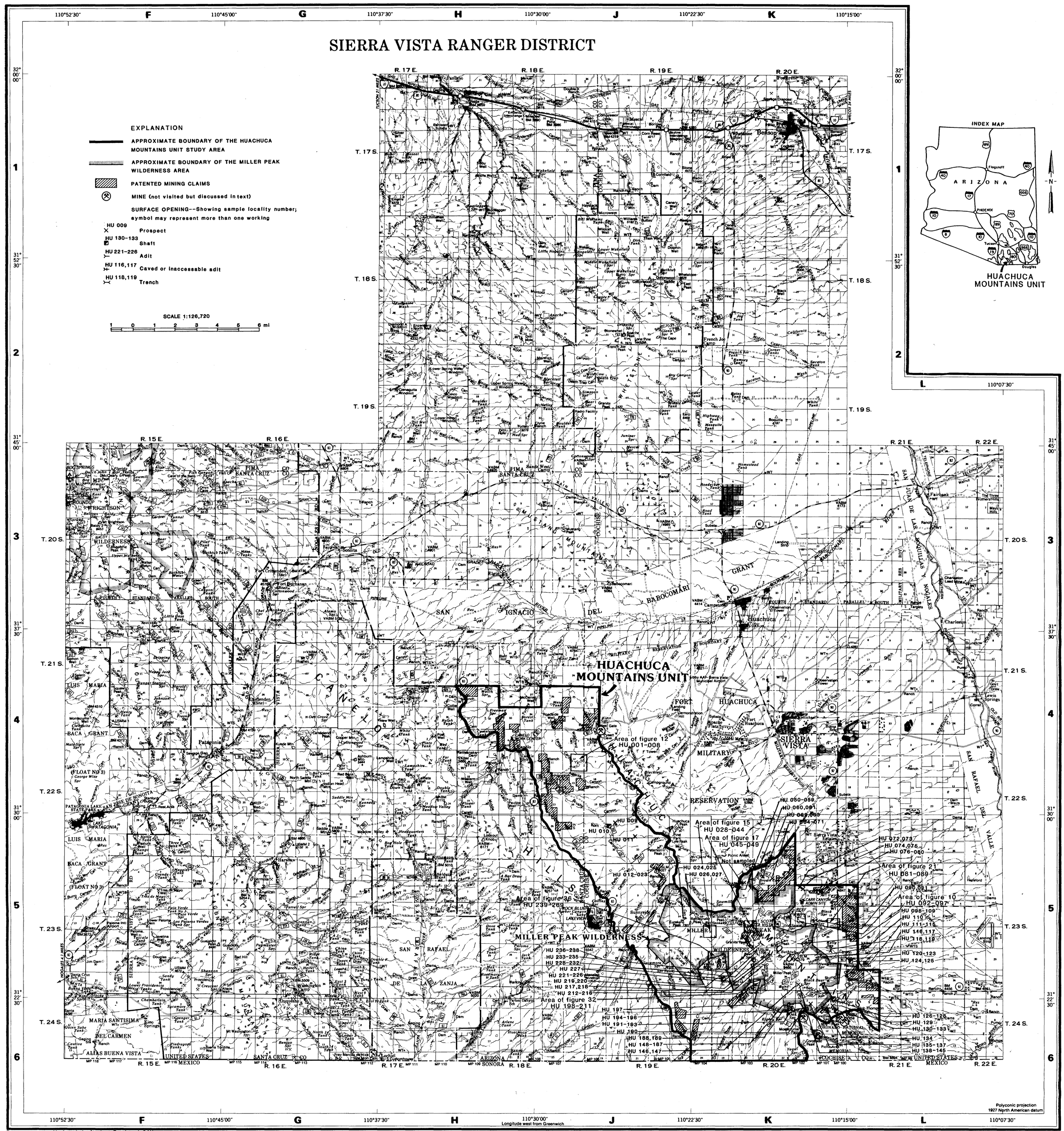
Name	Samples collected	Significant metal contents/mineralization	Appraisal
Harper Mine	HU243-HU256	A sample from the #1 vein contained 710 ppm tungsten. Samples from the #4 vein averaged 0.01 oz/st gold, 0.48 oz/st silver, 0.43% copper, and 48 ppm tungsten. Chalcopyrite, pyrite, malachite, azurite, and scheelite were noted.	Workings on the #1 vein, from which most of the past tungsten production has occurred, were inaccessible. Samples taken from the #4 vein showed sporadic distribution of metal concentrations. High-grade ore shoots probably exist, but overall concentrations are low.
Wakefield Mine	HU258-HU269	Average grades are 0.02 oz/st gold and 0.22 oz/st silver. Scheelite was noted.	High-grade shoots containing gold and tungsten have been mined in the past and may still exit, but overall concentrations are low.

Table 7.--Mineral appraisal summary for unnamed workings in the New Reef mineral district, without identified resources.

Location	Samples collected	Significant metal contents/mineralization	Appraisal
T. 22 S., R. 19 E., SW. 1/4 sec. 29.	HU010	The sample contained 90 ppb gold, 89.2 ppm silver, 5,407 ppm copper, and 7 ppm mercury.	Insufficient evidence was found that would show a resource.
T. 23 S., R. 20 E., NW. 1/4 sec. 11.	HU072-HU075	The samples contained no significant metal concentrations. Scheelite? was noted in the samples.	No evidence was found that would show a resource.
T. 23 S., R. 19 E., NW. 1/4 sec. 12.	HU076-HU080	The samples contained tungsten in the range of 220 to 910 ppm.	Insufficient evidence was found that would show a resource.
T. 23 S., R. 20 E., E. center sec. 13.	HU081-HU086	The samples contained no significant metal concentrations.	No evidence was found that would show a resource.
T. 23 S., R. 20 E., SE. 1/4 sec. 14.	HU090, HU091	A select sample of vein quartz with pyrite and limonite contained 1,302 ppm lead, 852 ppm zinc, and 39.0 ppm cadmium. A grab sample contained 440 ppm tungsten.	The adit was not accessible. Insufficient evidence was found that would show a resource.
T. 23 S., R. 20 E., NE. 1/4 sec. 31.	HU233-HU235	One sample contained 5,395 ppm manganese.	Of two adits, one was inaccessible. No evidence was found that would show a resource.

Table 7.--Mineral appraisal summary for unnamed workings in the New Reef mineral district, without identified resources.-Continued

Location	Samples collected	Significant metal contents/mineralization	Appraisal
T. 23 S., R. 20 E., center sec. 31.	HU236-HU238	The samples contain up to 0.603 oz/st gold, 3.87 oz/st silver, 7,075 ppm copper, and >1.0% manganese. Chalcocite was noted.	Limited access to the underground workings prevents determination of the size and grade of mineralization.
T. 23 S., R. 19 E., SE. 1/4 sec. 25.	HU257	The sample contained no significant metal concentrations.	No evidence was found that would show a resource.



Base map compiled and drafted at Regional Office, Albuquerque, New Mexico, from U.S. Forest Service Planimetric maps. Revised 1976.

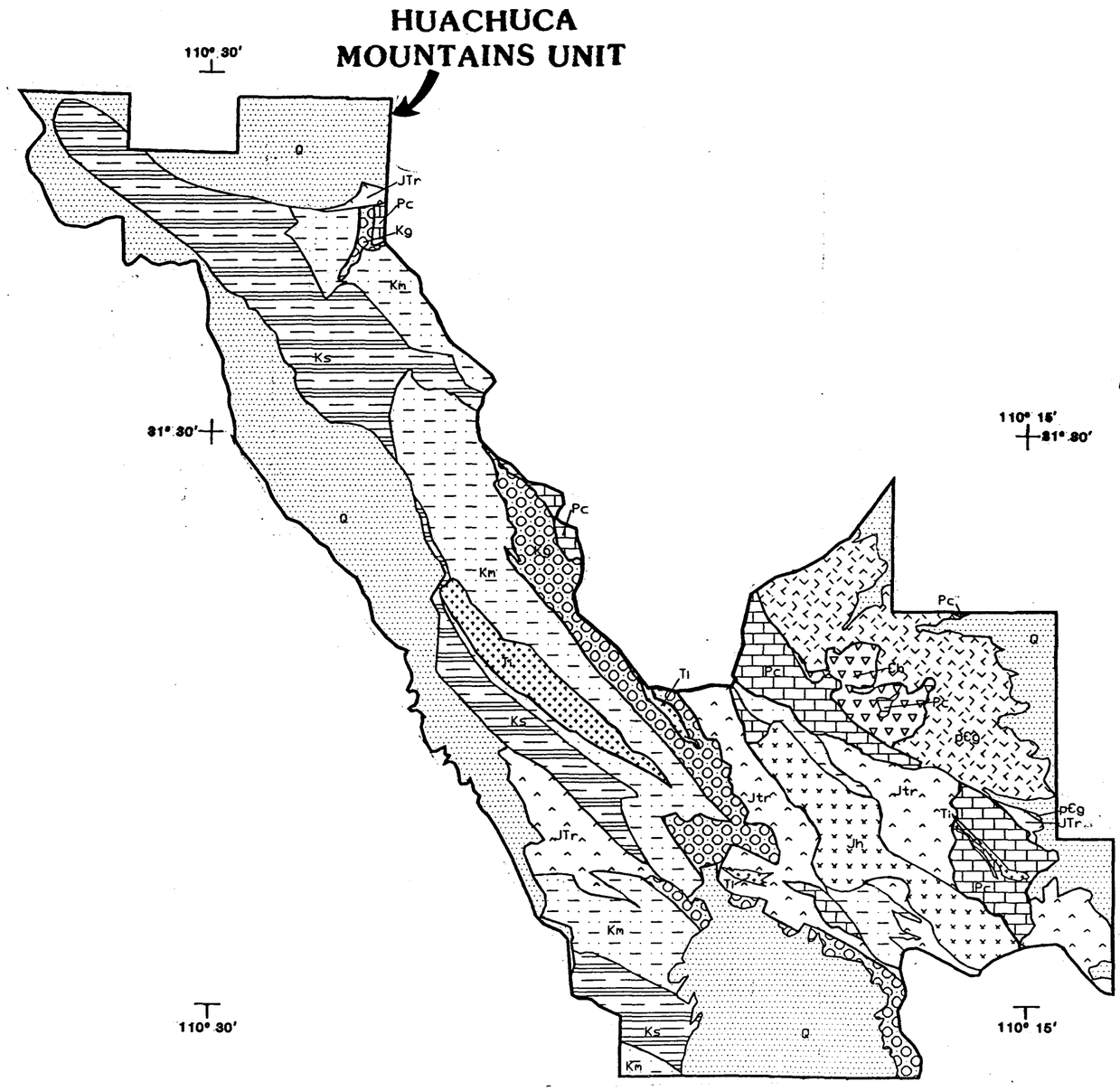
Field work completed in 1991 by Steven E. Tuftin; assisted by Mark L. Chapman, Raymond C. Harris, and Roger G. Villalobos.

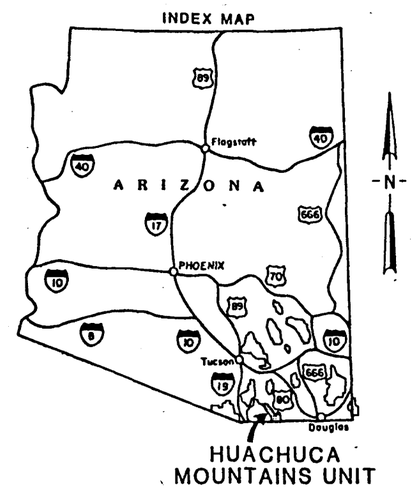
SAMPLE LOCALITY MAP FOR THE HUACHUCA MOUNTAINS UNIT, CORONADO NATIONAL FOREST, COCHISE AND SANTA CRUZ COUNTIES, ARIZONA

BY

STEVEN E. TUFTIN AND ROBERT C. ARMSTRONG, U.S. BUREAU OF MINES

1994





EXPLANATION

- Q — Alluvium and gravels of Quaternary and late Tertiary age.
- JTi — Tertiary quartz monzonite, granodiorite, diorite, and porphyritic rhyolite intrusive rock.
- Ks — Cretaceous sediments, including Ft. Crittenden Fm., Cintura Fm. and Mural Limestone
- Km — Lower Cretaceous Morita Fm.
- Kg — Lower Cretaceous Glance Congomerate and interbedded andesitic lava.
- Jh — Jurassic Huachuca Quartz Monzonite.
- JTr — Triassic-Jurassic rhyodacitic tuffs and lavas of the Huachuca Mountains and rhyolitic tuffs and lavas of the Canelo Hills.
- Pc — Paleozoic carbonates, including Naco Group, Escabrosa Limestone, Martin Limestone, and Abrigo Limestone.
- Ꞓb — Cambrian Bolsa Quartzite.
- pꞒg — Precambrian coarse-grained granite with local fine-grained alaskite.

SCALE 1:126,720

1 0 1 2 3 4 5 6 mi

After Hayes, P.T. and Raup, R.B., 1986, Geologic map of the Huachuca and Mustang Mountains, southeastern Arizona: U.S. Geological Survey, Miscellaneous Geologic Investigations Map I-509, scale 1:48,000.

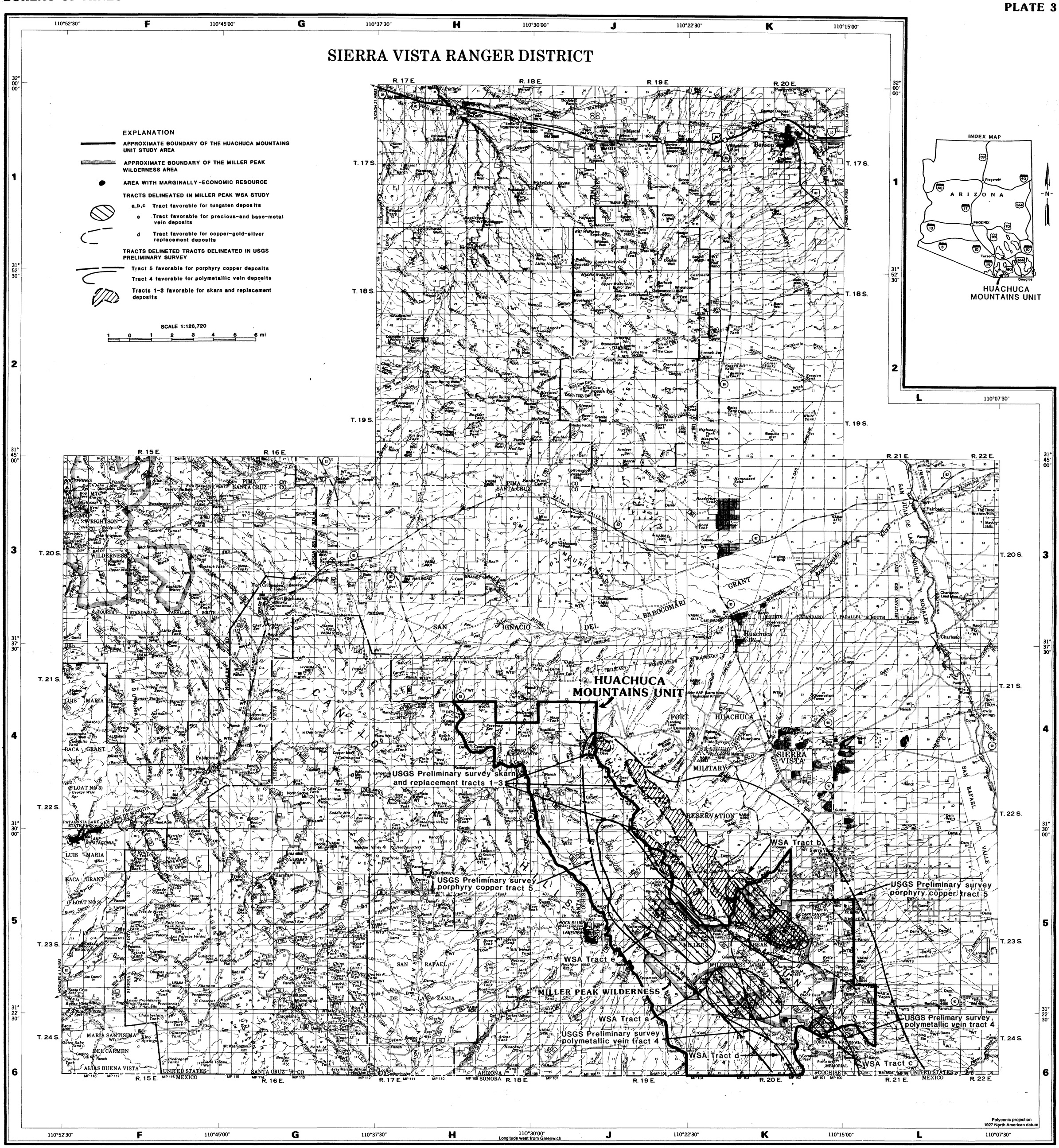
GENERALIZED GEOLOGIC MAP FOR THE HUACHUCA MOUNTAINS UNIT,

CORONADO NATIONAL FOREST, COCHISE AND SANTA CRUZ COUNTIES, ARIZONA

BY

ROBERT C. ARMSTRONG, U.S. BUREAU OF MINES

1994



MINERAL RESOURCES LOCALITY MAP FOR THE HUACHUCA MOUNTAINS UNIT, CORONADO NATIONAL FOREST, COCHISE AND SANTA CRUZ COUNTIES, ARIZONA

BY

ROBERT C. ARMSTRONG, U.S. BUREAU OF MINES

1994