UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

Analytical results and sample locality map of stream-sediment, heavy-mineral-concentrate, and rock samples from the Mount Tipton Wilderness Study Area (AZ-020-012/042), Mohave County, Arizona

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STUDIES RELATED TO WILDERNESS

Bureau of Land Management Wilderness Study Areas

The Federal Land Policy and Management Act (Public Law 94-579, October 21, 1976) requires the U.S. Geological Survey and the U.S. Bureau of Mines to conduct mineral surveys on certain areas to determine their mineral resource potential. Results must be made available to the public and be submitted to the President and the Congress. This report presents the results of a geochemical survey of the Mount Tipton Wilderness Study Area and proposed additions, (AZ-020-012/042), Mohave County, Arizona.

INTRODUCTION

In March 1987, the U.S. Geological Survey conducted a reconnaissance geochemical survey of the Mount Tipton Wilderness Study Area (WSA), Mohave County, Arizona.

The Mount Tipton WSA comprises about 53 mi^2 (33,950 acres) in the western half of central Mohave County, Arizona. The WSA include 52.2 mi^2 (33,410 acres) of actual study area and 0.8 mi^2 (510 acres) of proposed additions.

The study area is in the Cerbat Mountains 20 mi northwest of Kingman, Arizona, south of Pierce Ferry Road between U.S. Highway 93 and Stockton Hill Road. Big Wash Road, which connects with U.S. Highway 93, is contiguous with part of the southern boundary and is the only improved access route; unimproved roads lead to other parts of the study area boundary (fig. 1).

The Cerbat Mountains are a northwest-trending tilted fault block in the Mohave Section of the Basin and Range physiographic province. Deeply incised crystalline rocks in this Sierra-like range rise sharply from the flanking aggraded desert plains. The Range is six to ten miles wide and 30 miles long. Elevations in the WSA range from 3280 ft on the western edge to 7148 ft on the summit of Mt. Tipton (Almquist, 1988).

Rocks in the WSA consist of Precambrian-age granites with associated pegmatite bodies, and metamorphic gneisses, and schists. A Laramide-age granite porphyry intrusion is in contact with this assemblage in the southeast corner of the study area. Also in the southeast corner, small remnants of Tertiary and Quaternary-age volcanic rocks cap older crystalline rocks. Detailed structural information is lacking, but in the part of the Cerbat Range within the study area, faults and joints generally strike northwest (Hernon, 1938). Precambrian and Laramide crystalline rocks extend south from the study area into the adjacent mineralized belt encompassed by the Wallapai mining district. A porphyry copper and molybdenum deposit, and peripheral fissure vein deposits of lead, zinc, silver, and gold in this district are not known to extend into the WSA (Thomas, 1949).

METHODS OF STUDY

Sample Media

Analyses of the stream-sediment samples represent the chemistry of the rock material eroded from the drainage basin upstream from each sample site. Such information is useful in identifying those basins which contain concentrations of elements that may be related to mineral deposits. Heavy-mineral-concentrate samples from stream sediments provide information about the chemistry of certain minerals in rock material eroded from the drainage basin upstream from each sample site. The selective concentration of minerals, many of which may be ore related, permits determination of some elements that are not easily detected in stream-sediment samples.

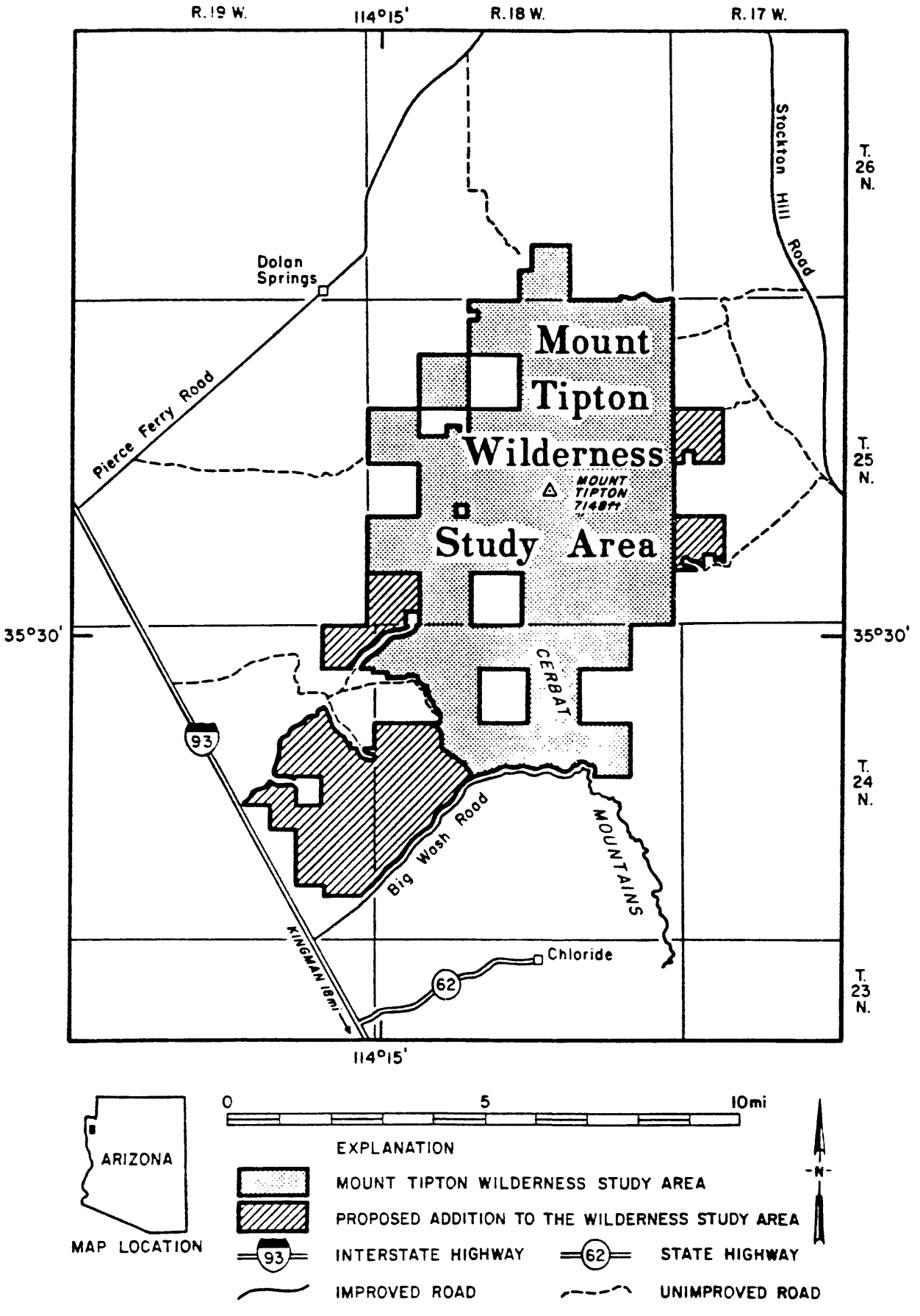

Figure 1. Location of the Mount Tipton Wilderness Study Area, Mohave County, Arizona.

Analyses of unaltered or unmineralized rock samples provide background geochemical data for individual rock units. On the other hand, analyses of altered or mineralized rocks, where present, may provide useful geochemical information about the major- and trace-element assemblages associated with a mineralizing system.

Sample Collection

Stream-sediment samples were collected at 43 sites (plate 1). A corresponding heavy-mineral-concentrate sample was collected at each site. Rock samples were collected at 32 sites. Sampling density was about one sample site per 0.8 mi^2 for the stream sediment samples. The area of the drainage basins sampled ranged from 0.2 mi^2 to 2.0 mi^2.

Stream-sediment samples

The stream-sediment samples consisted of active alluvium collected primarily from first-order (unbranched) and second-order (below the junction of two first-order) streams as shown on USGS topographic maps (scale = 1:24,000). Each sample was composited from several localities within an area that may extend as much as 50 ft from the site plotted on the map.

Heavy-mineral-concentrate samples

Heavy-mineral-concentrate samples were collected from the same active alluvium as the stream-sediment samples. Each bulk sample was screened with a 2.0-mm (10-mesh) screen to remove the coarse material. The less than 2.0-mm fraction was panned until most of the quartz, feldspar, organic material, and clay-sized material were removed.

Rock samples

Rock samples were collected from various types of occurrences in the vicinity of the plotted site location. Descriptions of rock samples are in table 6.

Sample Preparation

The stream-sediment samples were air dried, then sieved using 80-mesh (0.17-mm) stainless-steel sieves. The portion of the sediment passing through the sieve was saved for analysis.

Samples that had been panned in the field were air dried and sieved to minus 35 mesh; bromoform (specific gravity 2.85) was used to remove the remaining quartz and feldspar. The resultant heavy-mineral sample was separated into three fractions using a large electromagnet by placing the sample in contact with the face of the magnet (in this case, a modified Frantz Isodynamic Separator). The most magnetic material (removed at a setting of 0.25 ampere), primarily magnetite, was not analyzed. The second fraction (removed at a setting of 1.75 ampere), largely ferromagnesian silicates and iron oxides, was saved for archival storage. The third fraction (the nonmagnetic material which may include the nonmagnetic ore minerals, zircon, sphene, etc.) was split using a Jones splitter. One split was hand ground for spectrographic analysis; the other split was saved for mineralogical analysis.

Rock samples were crushed and then pulverized to minus 0.15 mm with ceramic plates.

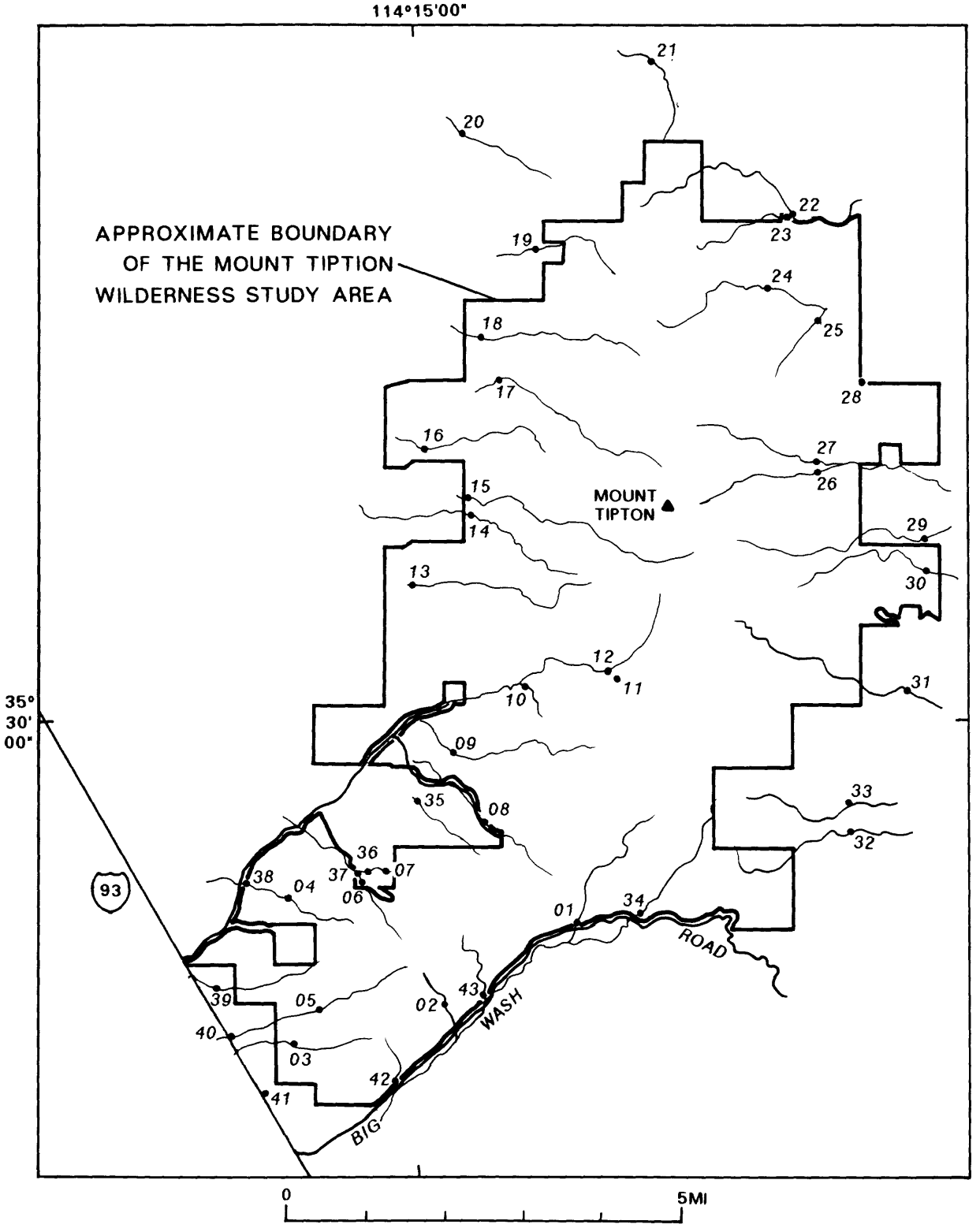

Figure 2. Locality map of heavy-mineral-concentrate, stream-sediment, and rock samples from the Mount Tipton Wilderness Study Area, Mohave County, Arizona

Sample Analysis

Spectrographic method

The stream-sediment, heavy-mineral-concentrate, and rock samples were analyzed for 35 elements using a semiquantitative, direct-current arc emission spectrographic method (Grimes and Marranzino, 1968). The elements analyzed and their lower limits of determination are listed in table 1. Spectrographic results were obtained by visual comparison of spectra derived from the sample against spectra obtained from standards made from pure oxides and carbonates. Standard concentrations are geometrically spaced over any given order of magnitude of concentration as follows: 100, 50, 20, 10, and so forth. Samples whose concentrations are estimated to fall between those values are assigned values of 70, 30, 15, and so forth. The precision of the analytical method is approximately plus or minus one reporting interval at the 83 percent confidence level and plus or minus two reporting intervals at the 96 percent confidence level (Motooka and Grimes, 1976). Values determined for the major elements, iron, magnesium, calcium, and titanium, are given in weight percent; all others are given in parts per million (micrograms/gram). Analytical data for samples from the Mount Tipton WSA are listed in tables 3, 4, and 5.

Chemical methods

Rock and stream-sediment samples were also analyzed by atomic absorption spectroscopy (AA) and inductively coupled plasma emission spectroscopy (ICP). Samples were analyzed for arsenic (As), antimony (Sb), bismuth (Bi), cadmium (Cd), and zinc (Zn) using AA and ICP, for gold (Au) using flame AA, and for mercury (Hg) using cold vapor AA. Limits of determination and references are listed in table 2.

Analytical results using these methods for stream-sediment and rock samples are listed in tables 3 and 5, respectively.

ROCK ANALYSIS STORAGE SYSTEM

Upon completion of all analytical work, the analytical results were entered into a computer-based file called Rock Analysis Storage System (RASS). This data base contains both descriptive geological information and analytical data. Any or all of this information may be retrieved and converted to a binary form (STATPAC) for computerized statistical analysis or publication (VanTrump and Miesch, 1977).

DESCRIPTION OF DATA TABLES

Tables 3-5 list the results of analyses for the stream-sediment, heavy-mineral-concentrate, and rock samples, respectively. For the three tables, the data are arranged so that column 1 contains the USGS-assigned sample numbers. These numbers correspond to the numbers shown on the site location map (figure 2). Columns in which the element headings show the letter "s" below the element symbol are emission spectrographic analyses; "aa" indicates atomic absorption analyses; "icp" indicates inductively coupled plasma analyses. A letter "N" in the tables indicates that a given element was looked for but not detected at the lower limit of determination shown for that element in tables 1 and 2. For emission spectrographic analyses and AA analyses of As, Sb, Bi, Cd, and Zn, a "less than" symbol (<) entered in the

tables in front of the lower limit of determination indicates that an element was observed but was below the lowest reporting value. For AA analyses of Au and Hg, an "N" entered in the tables indicates that an element was below the lowest reporting value. If an element was observed but was above the highest reporting value, a "greater than" symbol (>) was entered in the tables in front of the upper limit of determination. If an element was not looked for in a sample, two dashes (--) are entered in tables 3-5 in place of an analytical value. Because of the formatting used in the computer program that produced tables 3-5, some of the elements listed in these tables (Fe, Mg, Ca, Ti, Ag, and Be) carry one or more nonsignificant digits to the right of the significant digits. The analysts did not determine these elements to the accuracy suggested by the extra zeros. None of the stream-sediment samples were analyzed for Ga, Ge, Na, and P so these columns were omitted from Table 3.

ACKNOWLEDGMENTS

A number of our colleagues also participated in the collection, preparation, and analyses of these samples: collection, Janet Jones, Sigurd Juanarajs, and Tracey Delaney; preparation, Ted Sparks and John Unruh; and analyses, David Fey, Al Love, Bryan Anderson, and Olga Erlich.

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TABLE 1.--Limits of determination for the spectrographic analysis of rocks, stream sediments, based on a 10-mg sample

[The spectrographic limits of determination for heavy-mineral-concentrate samples are based on a 5-mg sample, and are therefore two reporting intervals higher than the limits given below]

Elements	Lower determination limit	Upper determination limit
	Percent	
Calcium (Ca)	.05	20
Iron (Fe)	0.05	20
Magnesium (Mg)	.02	10
Sodium (Na)	0.2	5
Phosphorus (P)	0.2	10
Titanium (Ti)	.002	1
	Parts per million	
Silver (Ag)	0.5	5,000
Arsenic (As)	200	10,000
Gold (Au)	10	500
Boron (B)	10	2,000
Barium (Ba)	20	5,000
Beryllium (Be)	1	1,000
Bismuth (Bi)	10	1,000
Cadmium (Cd)	20	500
Cobalt (Co)	10	2,000
Chromium (Cr)	10	5,000
Copper (Cu)	5	20,000
Gallium (Ga)	5	500
Germanium (Ge)	10	100
Lanthanum (La)	50	1,000
Manganese (Mn)	10	5,000
Molybdenum (Mo)	5	2,000
Niobium (Nb)	20	2,000
Nickel (Ni)	5	5,000
Lead (Pb)	10	20,000
Antimony (Sb)	100	10,000
Scandium (Sc)	5	100
Tin (Sn)	10	1,000
Strontium (Sr)	100	5,000
Thorium (Th)	100	2,000
Vanadium (V)	10	10,000
Tungsten (W)	20	10,000
Yttrium (Y)	10	2,000
Zinc (Zn)	200	10,000
Zirconium (Zr)	10	1,000

TABLE 2.--Commonly used chemical methods

[AA = atomic absorption; ICP = inductively coupled plasma spectroscopy]

Element or constituent determined	Sample type	Method	Determination limit (micrograms/ gram or ppm)	Reference
Gold (Au)	rock/str-sed	AA	.1	Modification of Thompson and others, 1968.
Mercury (Hg)	rock/str-sed	AA	0.02	Koirtyohann and Khalil, 1976.
Arsenic (As)	rock/str-sed	AA	10	O'Leary and Viets, 1986.
Antimony (Sb)	rock/str-sed	AA	2	
Zinc (Zn)	rock/str-sed	AA	5	
Bismuth (Bi)	rock/str-sed	AA	1	
Cadmium (Cd)	rock/str-sed	AA	0.1	
Arsenic (As)	rock/str-sed	ICP	5	Crock and others, 1987.
Antimony (Sb)	rock/str-sed	ICP	2	
Zinc (Zn)	rock/str-sed	ICP	2	
Bismuth (Bi)	rock/str-sed	ICP	2	
Cadmium (Cd)	rock/str-sed	ICP	0.1	

TABLE 3.--RESULTS OF ANALYSES OF STREAM-SEDIMENT SAMPLES FROM THE MOUNT TIPTON WILDERNESS STUDY AREA, MOHAVE COUNTY, ARIZONA.

[N, not detected; <, detected but below the limit of determination shown; >, determined to be greater than the value shown.]

Sample	Latitude	Longitude	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	Ag-ppm s	As-ppm s	Au-ppm s
87MT001S	35 27 46	114 12 47	5	1.5	1.5	.7	1,500	N	N	N
87MT002S	35 26 53	114 14 32	10	5.0	3.0	>1.0	3,000	N	N	N
87MT003S	35 26 27	114 16 34	7	7.0	3.0	>1.0	3,000	N	N	N
87MT004S	35 28 2	114 16 38	3	1.0	.7	.5	700	N	N	N
87MT005S	35 26 48	114 16 13	7	5.0	2.0	>1.0	1,000	N	N	N
87MT006S	35 28 13	114 15 39	7	1.5	1.0	1.0	2,000	N	N	N
87MT007S	35 28 20	114 15 20	5	1.0	1.0	.7	1,000	N	N	N
87MT008S	35 28 53	114 13 59	7	.7	1.0	1.0	1,000	N	N	N
87MT009S	35 29 37	114 14 25	5	1.0	1.0	.7	1,000	N	N	N
87MT010S	35 30 21	114 13 27	3	1.0	1.5	.5	700	N	N	N
87MT011S	35 30 27	114 12 14	5	2.0	1.5	1.0	1,500	N	N	N
87MT012S	35 30 31	114 12 20	5	2.0	1.5	.7	2,000	N	N	N
87MT013S	35 36 56	114 14 58	3	1.5	1.0	.7	500	N	N	N
87MT014S	35 32 12	114 14 10	10	5.0	2.0	1.0	1,500	N	N	N
87MT015S	35 32 24	114 14 13	5	5.0	3.0	1.0	1,000	N	N	N
87MT016S	35 32 55	114 14 48	5	2.0	2.0	.5	700	N	N	N
87MT017S	35 33 40	114 13 49	5	2.0	2.0	1.0	1,000	N	N	N
87MT018S	35 34 7	114 14 2	10	5.0	3.0	>1.0	2,000	N	N	N
87MT019S	35 35 4	114 13 19	10	7.0	3.0	>1.0	2,000	N	N	N
87MT020S	35 36 18	114 14 18	10	5.0	2.0	>1.0	2,000	N	N	N
87MT021S	35 37 7	114 11 44	15	7.0	2.0	>1.0	2,000	N	N	N
87MT022S	35 35 37	114 9 49	10	7.0	3.0	>1.0	2,000	N	N	N
87MT023S	35 35 25	114 9 52	10	5.0	3.0	>1.0	3,000	N	N	N
87MT024S	35 34 40	114 10 10	7	3.0	2.0	1.0	2,000	N	N	N
87MT025S	35 34 19	114 9 30	7	3.0	2.0	>1.0	1,500	N	N	N
87MT026S	35 32 41	114 9 31	7	5.0	2.0	.7	1,500	N	N	N
87MT027S	35 32 47	114 9 31	5	1.5	1.0	1.0	700	N	N	N
87MT028S	35 33 38	114 8 55	5	2.0	1.5	1.0	1,000	N	N	N
87MT029S	35 37 28	114 8 4	10	7.0	5.0	>1.0	5,000	N	N	N
87MT030S	35 37 8	114 8 3	10	2.0	2.0	>1.0	2,000	N	N	N
87MT031S	35 30 47	114 8 21	7	5.0	3.0	>1.0	2,000	N	N	N
87MT032S	35 28 48	114 9 6	7	3.0	2.0	>1.0	1,500	N	N	N
87MT033S	35 29 6	114 9 7	5	1.5	1.0	1.0	1,000	N	N	N
87MT034S	35 27 53	114 11 55	7	2.0	1.0	>1.0	1,500	N	N	N
87MT035S	35 29 7	114 14 24	7	.5	.5	.3	300	N	N	N
87MT036S	35 28 20	114 15 19	7	.7	.7	.5	300	N	N	N
87MT037S	35 28 18	114 15 42	7	1.5	.7	.5	500	N	N	N
87MT038S	35 28 12	114 17 12	5	.5	.5	.3	200	N	N	N
87MT039S	35 27 3	114 17 37	15	3.0	1.0	1.0	500	N	N	N
87MT040S	35 26 31	114 17 26	15	3.0	2.0	.7	700	N	N	N
87MT041S	35 25 53	114 16 58	7	3.0	1.5	.7	1,000	N	N	N
87MT042S	35 26 2	114 15 13	15	5.0	5.0	1.0	1,000	N	N	N
87MT043S	35 26 57	114 13 1	10	2.0	1.5	.7	700	N	N	N

TABLE 3.--RESULTS OF ANALYSES OF STREAM-SEDIMENT SAMPLES FROM THE MOUNT TIPTON WILDERNESS STUDY AREA, MOHAVE COUNTY, ARIZONA.--Continued

Sample	B-ppm s	Ba-ppm s	Be-ppm s	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s
87MT001S	10	1,000	1.0	N	N	<10	50	20	50	N	N	15
87MT002S	30	1,500	1.5	N	N	20	150	50	150	N	<20	30
87MT003S	200	500	<1.0	N	N	15	200	70	<50	N	N	70
87MT004S	10	700	1.0	N	N	30	30	10	<50	N	N	5
87MT005S	50	1,000	1.0	N	N	<10	150	70	100	N	N	70
87MT006S	30	1,500	1.0	N	N	30	100	30	70	<5	<20	20
87MT007S	10	1,000	1.5	N	N	10	20	20	100	<5	<20	7
87MT008S	10	500	1.0	N	N	<10	30	15	100	N	<20	5
87MT009S	15	700	1.5	N	N	<10	10	30	<50	N	<20	<5
87MT010S	20	700	2.0	N	N	<10	20	20	<50	N	N	10
87MT011S	20	700	1.5	N	N	20	70	20	<50	N	N	30
87MT012S	50	500	<1.0	N	N	10	70	15	100	N	N	20
87MT013S	10	500	<1.0	N	N	<10	50	20	<50	N	N	20
87MT014S	15	500	N	N	N	20	300	30	50	N	N	100
87MT015S	20	1,000	1.0	N	N	30	200	20	50	N	N	100
87MT016S	20	1,000	<1.0	N	N	<10	50	20	70	<5	N	20
87MT017S	30	700	<1.0	N	N	10	70	20	70	N	N	30
87MT018S	30	1,500	1.0	N	N	30	150	70	200	N	N	70
87MT019S	15	1,000	N	N	N	50	200	70	70	N	N	150
87MT020S	20	1,500	<1.0	N	N	30	150	70	300	N	N	70
87MT021S	20	1,000	<1.0	N	N	50	500	100	150	N	<20	200
87MT022S	10	1,500	<1.0	N	N	50	150	100	150	N	N	150
87MT023S	20	1,500	1.0	N	N	50	200	100	300	N	N	100
87MT024S	10	1,000	2.0	N	N	20	100	30	200	N	N	50
87MT025S	30	1,000	1.0	N	N	20	100	50	100	N	<20	50
87MT026S	500	300	N	N	N	30	200	50	70	N	N	70
87MT027S	20	300	<1.0	N	N	10	50	20	70	N	<20	20
87MT028S	20	700	1.0	N	N	20	50	30	70	N	<20	20
87MT029S	10	500	N	N	N	50	100	100	150	N	N	70
87MT030S	30	700	1.5	N	N	30	50	50	150	N	N	30
87MT031S	30	1,000	1.5	N	N	30	70	50	150	N	<20	50
87MT032S	50	1,000	1.5	N	N	20	100	50	100	N	N	20
87MT033S	10	500	1.5	N	N	<10	20	20	50	<5	N	10
87MT034S	10	500	1.0	N	N	15	30	30	100	N	<20	15
87MT035S	15	200	3.0	N	N	<10	10	10	<50	N	<20	10
87MT036S	10	300	3.0	N	N	<10	15	10	<50	N	<20	5
87MT037S	15	300	5.0	N	N	<10	20	15	<50	N	20	20
87MT038S	10	200	3.0	N	N	<10	10	7	<50	N	<20	5
87MT039S	<10	200	2.0	N	N	20	50	30	50	N	N	70
87MT040S	30	300	3.0	N	N	30	70	30	70	N	<20	100
87MT041S	20	150	1.0	N	N	20	70	20	<50	N	N	70
87MT042S	30	100	1.0	N	N	70	70	100	<50	N	N	100
87MT043S	10	300	3.0	N	N	10	50	20	100	N	<20	50

TABLE 3.--RESULTS OF ANALYSES OF STREAM-SEDIMENT SAMPLES FROM THE MOUNT TIPTON WILDERNESS STUDY AREA, MOHAVE COUNTY, ARIZONA.--Continued

Sample	Pb-ppm s	Sb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	Au-ppm aa
87MT001S	30	N	15	N	100	700	N	700	N	1,000	N	N
87MT002S	30	N	20	N	300	150	N	100	N	>1,000	N	N
87MT003S	<10	N	15	N	200	150	N	20	N	200	N	N
87MT004S	15	N	7	N	150	20	N	30	N	300	N	N
87MT005S	20	N	30	N	300	100	N	50	N	500	N	N
87MT006S	30	N	20	N	100	100	N	150	N	>1,000	N	N
87MT007S	30	N	20	N	100	50	N	200	N	>1,000	N	N
87MT008S	20	N	20	N	100	70	N	200	N	>1,000	N	N
87MT009S	20	N	20	N	150	20	N	100	N	>1,000	N	N
87MT010S	15	N	20	N	100	30	N	150	N	1,000	N	N
87MT011S	15	N	15	N	100	100	N	70	N	700	N	N
87MT012S	10	N	30	N	100	100	N	150	N	300	N	N
87MT013S	15	N	15	N	150	50	N	50	N	500	N	N
87MT014S	10	N	20	N	150	200	N	300	N	1,000	N	N
87MT015S	15	N	20	N	300	150	N	30	N	300	N	N
87MT016S	20	N	15	N	200	70	N	50	N	300	N	N
87MT017S	20	N	30	N	150	100	N	70	N	>1,000	N	N
87MT018S	20	N	20	N	300	200	N	50	N	1,000	N	N
87MT019S	15	N	20	N	700	150	N	30	N	>1,000	N	N
87MT020S	30	N	20	N	500	200	N	50	N	1,000	N	N
87MT021S	10	N	30	N	700	200	N	70	N	1,000	N	N
87MT022S	15	N	30	N	1,000	150	N	50	N	500	N	N
87MT023S	20	N	30	N	700	200	N	70	N	>1,000	N	N
87MT024S	15	N	20	N	700	200	N	50	N	700	N	N
87MT025S	20	N	20	N	500	150	N	50	N	1,000	N	N
87MT026S	<10	N	20	N	150	150	N	30	N	300	N	N
87MT027S	20	N	30	N	100	100	N	70	N	>1,000	N	N
87MT028S	30	N	30	N	150	100	N	50	N	1,000	N	N
87MT029S	10	N	50	N	200	150	N	50	<200	500	N	N
87MT030S	20	N	30	N	150	100	N	150	N	1,000	N	N
87MT031S	30	N	50	N	200	100	N	70	N	>1,000	N	N
87MT032S	30	N	30	N	300	100	N	50	N	>1,000	N	N
87MT033S	20	N	20	N	100	30	N	70	N	500	N	N
87MT034S	30	N	30	N	100	70	N	50	N	>1,000	N	N
87MT035S	20	N	7	N	<100	50	N	30	N	>1,000	N	N
87MT036S	20	N	10	N	<100	50	N	20	N	700	N	N
87MT037S	30	N	10	N	100	50	N	20	N	700	N	N
87MT038S	20	N	5	N	<100	30	N	15	N	700	N	N
87MT039S	15	N	10	N	200	100	N	15	<200	300	N	N
87MT040S	15	N	15	N	150	100	N	15	N	500	N	N
87MT041S	20	N	10	N	100	100	N	15	<200	200	N	N
87MT042S	<10	N	20	N	<100	150	N	50	<200	100	N	N
87MT043S	15	N	10	N	100	70	N	20	N	700	N	N

TABLE 3.--RESULTS OF ANALYSES OF STREAM-SEDIMENT SAMPLES FROM THE MOUNT TIPTON WILDERNESS STUDY AREA, MOHAVE COUNTY, ARIZONA.--Continued

Sample	Hg-ppm aa	As-ppm aa	Bi-ppm aa	Cd-ppm aa	Sb-ppm aa	Zn-ppm aa	As-ppm icp	Bi-ppm icp	Cd-ppm icp	Sb-ppm icp	Zn-ppm icp
87MT001S	.02	N	N	N	N	80	--	--	--	--	--
87MT002S	.04	N	N	N	N	80	--	--	--	--	--
87MT003S	N	20	N	N	N	35	--	--	--	--	--
87MT004S	.02	N	N	.1	N	60	--	--	--	--	--
87MT005S	.02	N	N	.1	N	65	--	--	--	--	--
87MT006S	.04	N	N	N	N	65	--	--	--	--	--
87MT007S	.02	N	N	N	N	75	--	--	--	--	--
87MT008S	N	N	N	N	N	45	--	--	--	--	--
87MT009S	.04	N	N	N	N	60	--	--	--	--	--
87MT010S	.02	N	N	.1	N	60	--	--	--	--	--
87MT011S	.02	N	N	.1	N	35	--	--	--	--	--
87MT012S	N	N	N	N	N	35	--	--	--	--	--
87MT013S	N	N	N	N	N	40	--	--	--	--	--
87MT014S	N	N	N	N	N	35	--	--	--	--	--
87MT015S	N	N	N	N	N	40	--	--	--	--	--
87MT016S	.02	N	N	N	N	50	--	--	--	--	--
87MT017S	.02	N	N	N	N	50	--	--	--	--	--
87MT018S	.02	N	N	N	N	70	--	--	--	--	--
87MT019S	.02	N	N	N	N	80	--	--	--	--	--
87MT020S	.02	N	N	.1	N	85	--	--	--	--	--
87MT021S	.02	N	N	.1	N	80	--	--	--	--	--
87MT022S	.02	N	N	.1	N	60	--	--	--	--	--
87MT023S	N	10	N	.1	N	80	--	--	--	--	--
87MT024S	N	N	N	N	N	75	--	--	--	--	--
87MT025S	.02	10	N	.1	N	75	--	--	--	--	--
87MT026S	N	N	N	.1	N	75	--	--	--	--	--
87MT027S	.02	N	N	.1	N	35	--	--	--	--	--
87MT028S	.04	N	N	.2	N	50	--	--	--	--	--
87MT029S	.02	N	N	N	N	65	--	--	--	--	--
87MT030S	.04	N	N	N	N	45	--	--	--	--	--
87MT031S	.02	N	N	N	N	60	--	--	--	--	--
87MT032S	.02	N	N	N	N	65	--	--	--	--	--
87MT033S	.04	N	N	N	N	65	--	--	--	--	--
87MT034S	.04	N	N	N	N	60	--	--	--	--	--
87MT035S	N	--	--	--	--	--	<5	<2	.2	<2	51
87MT036S	.06	--	--	--	--	--	<5	<2	.3	<2	59
87MT037S	.02	--	--	--	--	--	<5	<2	.3	<2	62
87MT038S	N	--	--	--	--	--	<5	<2	.2	<2	42
87MT039S	.02	--	--	--	--	--	8	<2	1.0	<2	71
87MT040S	.02	--	--	--	--	--	6	<2	.8	<2	55
87MT041S	.02	--	--	--	--	--	29	<2	.7	<2	53
87MT042S	N	--	--	--	--	--	24	<2	.6	<2	37
87MT043S	N	--	--	--	--	--	5	<2	.6	<2	63

TABLE 4.--RESULTS OF ANALYSES OF HEAVY-MINERAL-CONCENTRATE SAMPLES FROM THE MOUNT TIPTON WILDERNESS STUDY AREA, MOHAVE COUNTY, ARIZONA.

[N, not detected; <, detected but below the limit of determination shown; >, determined to be greater than the value shown.]

Sample	Latitude	Longitude	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	Ag-ppm s	As-ppm s	Au-ppm s	B-ppm s
87MT001C	35 27 46	114 12 47	.20	.05	7.0	.50	150	N	N	N	N
87MT002C	35 26 53	114 14 32	1.00	.07	20.0	>2.00	300	N	N	N	N
87MT003C	35 26 27	114 16 34	.30	.07	15.0	1.00	50	N	N	N	<20
87MT004C	35 28 2	114 16 38	.50	.05	20.0	1.50	500	<1	N	N	20
87MT005C	35 26 48	114 16 13	.30	.15	20.0	.50	300	<1	N	N	<20
87MT006C	35 28 13	114 15 39	.20	<.05	10.0	.30	30	N	N	N	N
87MT007C	35 28 30	114 15 20	.30	<.05	20.0	.50	300	N	N	N	N
87MT008C	35 28 53	114 13 59	.50	<.05	2.0	1.50	50	N	N	N	N
87MT009C	35 29 37	114 14 25	.70	.05	20.0	>2.00	500	N	N	N	N
87MT010C	35 30 21	114 13 27	1.50	.07	15.0	>2.00	300	N	N	N	N
87MT011C	35 30 27	114 12 14	1.50	.10	10.0	2.00	200	N	N	N	50
87MT012C	35 30 31	114 12 20	.30	<.05	7.0	2.00	100	N	N	N	N
87MT013C	35 36 56	114 14 58	2.00	.10	10.0	>2.00	200	N	N	N	100
87MT014C	35 32 12	114 14 10	.50	.15	3.0	.70	30	N	N	N	50
87MT015C	35 32 24	114 14 13	.50	.10	10.0	.70	200	N	N	N	20
87MT016C	35 32 55	114 14 48	.70	.10	15.0	>2.00	300	N	N	N	<20
87MT017C	35 33 40	114 13 49	.70	.10	15.0	2.00	200	N	N	N	N
87MT018C	35 34 7	114 14 2	.50	.10	20.0	.50	200	N	N	N	N
87MT019C	35 35 4	114 13 19	.30	.05	20.0	.20	200	N	N	N	N
87MT020C	35 36 18	114 14 18	.70	.07	20.0	.20	500	N	N	N	N
87MT021C	35 37 7	114 11 44	.30	.15	30.0	.05	1,000	N	N	N	N
87MT022C	35 35 37	114 9 49	.30	.10	20.0	.30	500	N	N	N	N
87MT023C	35 35 25	114 9 52	.30	.10	20.0	.20	500	N	N	N	N
87MT024C	35 34 40	114 10 10	.70	.15	15.0	.50	150	N	N	N	20
87MT025C	35 34 19	114 9 30	.50	.10	15.0	.30	100	N	N	N	20
87MT026C	35 32 41	114 9 31	.70	.10	10.0	.50	100	N	N	N	1,000
87MT027C	35 32 47	114 9 31	.30	<.05	5.0	2.00	30	N	N	N	<20
87MT028C	35 33 38	114 8 55	.50	.07	1.5	1.00	30	N	N	N	N
87MT029C	35 37 28	114 8 4	1.00	.30	10.0	.30	200	N	N	N	50
87MT030C	35 37 8	114 8 3	.50	.05	5.0	.50	50	N	N	N	<20
87MT031C	35 30 47	114 8 21	.70	.07	7.0	1.00	150	N	N	N	<20
87MT032C	35 28 48	114 9 6	.50	<.05	10.0	2.00	300	N	N	N	N
87MT033C	35 29 6	114 9 7	1.00	.10	5.0	>2.00	500	N	N	N	<20
87MT034C	35 27 53	114 11 55	.30	.05	10.0	1.00	300	N	N	N	N
87MT035H	35 29 7	114 14 24	.20	.07	1.5	.50	30	N	N	N	N
87MT036H	35 28 20	114 15 19	.15	<.05	2.0	.30	20	N	N	N	N
87MT037H	35 28 18	114 15 42	.20	.05	10.0	1.00	50	N	N	N	N
87MT038H	35 28 12	114 17 12	.20	.05	5.0	1.50	30	20	N	20	N
87MT039H	35 27 3	114 17 37	.50	.07	10.0	1.50	30	N	N	N	N
87MT040H	35 26 31	114 17 26	.70	.15	10.0	2.00	100	N	N	N	N
87MT041H	35 25 53	114 16 58	.50	.10	5.0	1.50	20	N	N	N	N
87MT042H	35 26 2	114 15 13	.70	.10	3.0	>2.00	20	N	N	N	N
87MT043H	35 26 57	114 13 1	.50	.07	15.0	2.00	200	N	N	N	N

TABLE 4.--RESULTS OF ANALYSES OF HEAVY-MINERAL-CONCENTRATE SAMPLES FROM THE MOUNT TIPTON WILDERNESS STUDY AREA, MOHAVE COUNTY, ARIZONA.--Continued

Sample	Ba-ppm s	Be-ppm s	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s	Sb-ppm s
87MT001C	1,000	3	1,000	N	N	N	N	<100	70	50	N	70	N
87MT002C	200	2	<20	N	N	20	N	300	N	N	N	50	N
87MT003C	<50	N	N	N	N	<20	N	N	70	100	<10	50	N
87MT004C	100	20	<20	N	N	20	N	200	15	<50	N	70	N
87MT005C	3,000	2	N	N	N	N	N	150	10	<50	N	50	N
87MT006C	5,000	5	30	N	N	N	N	100	70	50	N	30	N
87MT007C	100	15	N	N	N	N	N	<100	<10	N	N	70	N
87MT008C	150	7	N	N	N	N	N	100	10	<50	N	70	N
87MT009C	100	10	N	N	N	70	N	<100	20	50	N	70	N
87MT010C	<50	10	30	N	N	<20	N	150	<10	70	N	50	N
87MT011C	70	7	100	N	N	<20	N	150	10	70	N	70	N
87MT012C	2,000	<2	N	N	N	<20	N	<100	50	70	N	20	N
87MT013C	100	30	N	N	N	20	50	300	<10	50	N	70	N
87MT014C	200	<2	N	N	N	N	N	N	10	N	N	N	N
87MT015C	300	N	N	N	N	<20	N	<100	N	<50	N	N	N
87MT016C	500	3	N	N	N	20	N	300	N	50	N	30	N
87MT017C	2,000	2	N	N	N	<20	N	150	<10	<50	N	30	N
87MT018C	2,000	2	N	N	N	20	10	<100	N	N	<10	70	N
87MT019C	500	N	N	N	N	N	<10	1,000	N	N	N	20	N
87MT020C	200	<2	N	N	N	50	10	2,000	N	N	N	30	N
87MT021C	150	N	N	N	N	<20	<10	>2,000	<10	N	N	70	N
87MT022C	70	N	N	N	N	<20	<10	>2,000	N	N	N	<20	N
87MT023C	1,000	N	N	N	N	20	<10	>2,000	N	N	N	50	N
87MT024C	700	5	N	N	N	20	10	2,000	<10	<50	N	30	N
87MT025C	70	<2	N	N	N	20	N	<100	N	N	N	N	N
87MT026C	50	2	30	N	N	70	10	<100	20	<50	N	100	N
87MT027C	1,500	3	N	N	N	N	N	<100	300	50	N	20	N
87MT028C	100	3	N	N	N	<20	N	100	<10	N	N	30	N
87MT029C	100	<2	N	N	<20	50	10	<100	<10	<50	10	20	N
87MT030C	1,500	5	100	N	N	N	N	100	70	50	N	30	N
87MT031C	150	5	N	N	N	N	N	200	10	N	N	70	N
87MT032C	300	2	N	N	N	<20	N	100	N	<50	N	50	N
87MT033C	3,000	10	100	N	N	N	N	300	70	50	N	100	N
87MT034C	300	3	<20	N	N	N	N	<100	N	<50	N	70	N
87MT035H	200	5	N	N	N	N	N	N	<10	N	N	70	N
87MT036H	300	3	N	N	N	N	N	N	N	N	N	50	N
87MT037H	700	3	50	N	N	N	<10	200	<10	<50	N	30	N
87MT038H	100	10	N	N	N	N	N	<100	<10	<50	N	100	N
87MT039H	300	<2	N	N	N	<20	<10	100	N	<50	N	50	N
87MT040H	200	N	N	N	N	20	10	150	10	<50	N	100	N
87MT041H	200	N	N	N	N	<20	<10	N	N	<50	N	70	N
87MT042H	150	N	100	N	N	30	15	N	15	50	N	<20	N
87MT043H	500	N	<20	N	N	<20	<10	700	N	<50	N	100	N

TABLE 4.--RESULTS OF ANALYSES OF HEAVY-MINERAL-CONCENTRATE SAMPLES FROM THE MOUNT TIPTON WILDERNESS STUDY AREA, MOHAVE COUNTY, ARIZONA.--Continued

Sample	Sc-ppm s	Sn-ppm s	Sr-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Ga-ppm s	Ge-ppm s	Na-ppm s	P-ppm s	Th-ppm s
87MT001C	N	30	<200	<20	5,000	500	N	>2,000	--	--	--	--	N
87MT002C	10	20	500	50	70	1,000	N	>2,000	--	--	--	--	N
87MT003C	N	30	<200	50	20,000	100	N	>2,000	--	--	--	--	N
87MT004C	70	70	1,000	30	1,500	2,000	N	>2,000	--	--	--	--	200
87MT005C	N	N	700	30	2,000	700	N	>2,000	--	--	--	--	N
87MT006C	N	N	200	<20	2,000	500	N	>2,000	--	--	--	--	N
87MT007C	20	N	N	<20	1,500	2,000	N	>2,000	--	--	--	--	N
87MT008C	<10	20	200	30	1,000	1,000	N	>2,000	--	--	--	--	<200
87MT009C	200	1,500	N	<20	1,500	1,500	N	>2,000	--	--	--	--	N
87MT010C	N	<20	<200	20	2,000	1,500	N	>2,000	--	--	--	--	200
87MT011C	<10	300	200	30	2,000	1,000	N	>2,000	--	--	--	--	N
87MT012C	20	N	<200	<20	1,000	500	N	>2,000	--	--	--	--	N
87MT013C	50	20	N	50	300	1,500	N	>2,000	--	--	--	--	N
87MT014C	N	N	<200	20	1,000	70	N	>2,000	--	--	--	--	N
87MT015C	N	N	<200	20	N	500	N	>2,000	--	--	--	--	N
87MT016C	20	20	200	30	N	1,000	N	>2,000	--	--	--	--	N
87MT017C	50	20	<200	50	500	700	N	>2,000	--	--	--	--	N
87MT018C	N	N	300	30	70	700	N	>2,000	--	--	--	--	N
87MT019C	N	N	500	20	N	500	N	>2,000	--	--	--	--	N
87MT020C	N	N	200	30	200	700	N	>2,000	--	--	--	--	N
87MT021C	10	N	200	<20	700	1,000	N	>2,000	--	--	--	--	N
87MT022C	N	N	500	<20	N	700	N	>2,000	--	--	--	--	N
87MT023C	<10	N	300	<20	300	1,000	N	>2,000	--	--	--	--	N
87MT024C	N	N	500	30	100	500	N	>2,000	--	--	--	--	N
87MT025C	N	N	<200	20	N	700	N	>2,000	--	--	--	--	N
87MT026C	N	N	N	100	700	500	N	>2,000	--	--	--	--	<200
87MT027C	50	N	500	20	2,000	700	N	>2,000	--	--	--	--	N
87MT028C	20	N	N	20	100	700	N	>2,000	--	--	--	--	N
87MT029C	N	N	200	50	2,000	100	N	>2,000	--	--	--	--	<200
87MT030C	10	50	<200	20	2,000	700	N	>2,000	--	--	--	--	N
87MT031C	20	200	200	20	500	700	N	>2,000	--	--	--	--	N
87MT032C	20	<20	<200	70	300	700	N	>2,000	--	--	--	--	N
87MT033C	50	20	200	30	1,500	1,000	N	>2,000	--	--	--	--	200
87MT034C	10	N	<200	<20	2,000	700	N	>2,000	--	--	--	--	N
87MT035H	10	N	<200	20	150	1,500	N	>2,000	N	N	.5	1.0	N
87MT036H	15	N	<200	20	<50	1,500	N	>2,000	N	N	<.5	1.5	N
87MT037H	15	N	200	30	700	1,500	N	>2,000	<10	N	N	7.0	N
87MT038H	15	100	<200	30	200	1,500	N	>2,000	<10	N	N	1.5	N
87MT039H	<10	N	<200	50	300	1,000	N	>2,000	<10	N	.7	2.0	N
87MT040H	N	30	<200	70	700	500	N	>2,000	10	N	1.0	2.0	N
87MT041H	N	N	N	70	500	150	N	>2,000	20	N	1.5	1.0	N
87MT042H	N	50	N	100	1,000	100	N	>2,000	20	N	2.0	<.5	N
87MT043H	10	N	300	70	50	1,000	N	>2,000	<10	N	.5	10.0	N

TABLE 5.--RESULTS OF ANALYSES OF ROCK SAMPLES FROM THE MOUNT TIPTON WILDERNESS STUDY AREA, MOHAVE COUNTY, ARIZONA.
[N, not detected; <, detected but below the limit of determination shown; >, determined to be greater than the value shown.]

Sample	Latitude	Longitude	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	Ag-ppm s	As-ppm s	Au-ppm s	B-ppm s
87MT002R	35 26 53	114 14 32	5.0000	7.00	5.00	>1.000	1,000	N	N	N	10
87MT005R	35 26 48	114 16 13	10.0000	5.00	.30	>1.000	700	N	N	N	10
87MT009R	35 29 37	114 14 25	1.0000	.50	.30	.010	100	N	N	N	<10
87MT12R1	35 30 31	114 12 20	7.0000	7.00	3.00	.700	2,000	N	N	N	10
87MT12R2	35 30 31	114 12 20	1.0000	.20	.10	.070	50	N	N	N	<10
87MT013R	35 36 56	114 14 58	2.0000	.50	.50	.200	500	N	N	N	<10
87MT14R1	35 32 12	114 14 10	20.0000	7.00	5.00	1.000	2,000	N	N	N	20
87MT14R2	35 32 12	114 14 10	10.0000	7.00	5.00	>1.000	5,000	N	N	N	20
87MT16R1	35 32 55	114 14 48	3.0000	1.00	1.00	.300	500	N	N	N	<10
87MT16R2	35 32 55	114 14 48	10.0000	7.00	5.00	>1.000	1,500	N	N	N	10
87MT18R1	35 34 7	114 14 2	10.0000	7.00	5.00	>1.000	1,500	N	N	N	10
87MT18R2	35 34 7	114 14 2	7.0000	5.00	3.00	>1.000	300	N	N	N	10
87MT024R	35 34 40	114 10 10	7.0000	1.50	5.00	>1.000	300	N	N	N	<10
87MT025R	35 34 19	114 9 30	5.0000	1.50	1.50	.700	500	N	N	N	<10
87MT026R	35 32 41	114 9 31	>20.0000	10.00	5.00	.700	>5,000	N	N	N	<10
87MT031R	35 30 47	114 8 21	20.0000	10.00	7.00	>1.000	>5,000	N	N	N	<10
87MT032R	35 28 48	114 9 6	7.0000	1.00	5.00	.500	500	N	N	N	<10
87MT033R	35 29 6	114 9 7	.5000	.50	.07	.020	10	N	N	N	10
87MT035R	35 29 7	114 14 24	.5000	.02	.10	.010	20	N	N	N	N
87MT36R1	35 28 20	114 15 19	114.2553	.10	.15	.150	200	N	N	N	N
87MT36R2	35 28 20	114 15 19	7.0000	.70	.30	.500	300	N	N	N	N
87MT037R	35 28 18	114 15 42	15.0000	5.00	2.00	.500	700	N	N	N	<10
87MT038R	35 28 12	114 17 12	.3000	.10	<.05	.030	70	N	N	N	30
87MT041R	35 25 53	114 16 58	3.0000	2.00	1.50	1.000	500	N	N	N	<10
87MT42R1	35 26 2	114 15 13	10.0000	5.00	5.00	1.000	700	N	N	N	10
87MT42R2	35 26 2	114 15 13	.5000	.07	.10	.010	100	N	N	N	10
MT-38	35 32 0	114 13 15	.0500	.03	.15	<.002	20	N	N	N	150
MT-227-1	35 26 8	114 16 30	.1500	.02	.07	<.002	20	<.5	N	N	N
MT-227-2	35 26 8	114 16 30	.7000	.02	.50	.003	50	2.0	N	N	N
MT-229	35 25 45	114 16 5	<.0500	<.02	N	N	30	.5	N	N	N
MT-243	35 29 22	114 16 5	<.0500	<.02	N	.002	<10	N	N	N	N
MT-244-2	35 29 23	114 16 2	.1000	<.02	N	N	150	N	N	N	N

TABLE 5.--RESULTS OF ANALYSES OF ROCK SAMPLES FROM THE MOUNT TIPTON WILDERNESS STUDY AREA, MOHAVE COUNTY, ARIZONA.--Continued

Sample	Ba-ppm s	Be-ppm s	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s	Sb-ppm s
87MT002R	300	N	N	N	20	200	N	<50	N	N	30	<10	N
87MT005R	500	N	N	N	30	150	N	50	N	N	30	15	N
87MT009R	200	N	N	N	N	N	10	N	N	N	N	15	N
87MT12R1	100	N	N	N	50	300	100	N	N	N	30	N	N
87MT12R2	200	N	N	N	N	N	N	N	N	N	N	15	N
87MT013R	1,500	N	N	N	N	N	N	70	N	N	N	50	N
87MT14R1	50	N	N	N	30	3,000	N	<50	N	N	200	10	N
87MT14R2	200	N	N	N	30	3,000	N	<50	N	N	150	<10	N
87MT16R1	1,500	N	N	N	<10	N	15	<50	N	N	<5	30	N
87MT16R2	5,000	N	N	N	30	10	50	150	N	N	20	20	N
87MT18R1	300	N	N	N	20	70	5	<50	N	N	20	<10	N
87MT18R2	2,000	N	N	N	20	70	10	70	N	N	30	30	N
87MT024R	100	N	N	N	<10	70	<5	50	N	N	5	30	N
87MT025R	700	N	N	N	10	N	N	<50	N	N	10	<10	N
87MT026R	5,000	N	N	N	70	2,000	15	N	N	N	300	N	N
87MT031R	700	N	N	N	50	700	150	N	N	N	70	<10	N
87MT032R	2,000	N	N	N	N	N	N	100	N	N	N	20	N
87MT033R	200	N	N	N	N	N	<5	N	N	N	N	70	N
87MT035R	150	<1	N	N	N	N	<5	N	N	N	N	20	N
87MT36R1	300	1	N	N	N	N	N	<50	N	N	N	20	N
87MT36R2	1,000	1	N	N	<10	<10	20	50	N	<20	<5	20	N
87MT037R	100	5	N	N	100	150	<5	N	N	N	100	N	N
87MT038R	30	3	N	N	N	N	N	N	N	20	N	20	N
87MT041R	1,000	2	N	N	10	<10	7	50	N	<20	5	15	N
87MT42R1	150	N	N	N	70	50	200	N	N	N	150	10	N
87MT42R2	100	<1	N	N	N	N	5	<50	N	N	N	30	N
MT-38	20	N	N	N	N	N	<5	N	N	N	N	N	N
MT-227-1	30	N	N	N	<10	N	70	N	N	N	N	N	N
MT-227-2	30	N	N	N	10	N	3,000	N	N	N	10	N	N
MT-229	30	N	N	N	N	N	5	N	N	N	N	N	N
MT-243	30	N	N	N	N	N	<5	N	N	N	N	N	N
MT-244-2	<20	N	N	N	N	N	5	N	N	N	N	N	N

TABLE 5.--RESULTS OF ANALYSES OF ROCK SAMPLES FROM THE MOUNT TIPTON WILDERNESS STUDY AREA, MOHAVE COUNTY, ARIZONA.--Continued

Sample	Sc-ppm s	Sn-ppm s	Sr-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Ga-ppm s	Ge-ppm s	Na-ppm s	P-ppm s	Th-ppm s
87MT002R	20	N	500	100	N	50	N	150	--	--	--	--	N
87MT005R	15	N	N	100	N	30	N	150	--	--	--	--	N
87MT009R	N	N	N	<10	N	15	N	N	--	--	--	--	N
87MT12R1	30	N	500	300	N	15	N	50	--	--	--	--	N
87MT12R2	<5	N	N	N	N	30	N	150	--	--	--	--	N
87MT013R	15	N	100	<10	N	50	N	200	--	--	--	--	N
87MT14R1	20	N	1,000	200	N	20	N	70	--	--	--	--	N
87MT14R2	50	N	700	500	N	30	N	50	--	--	--	--	N
87MT16R1	5	N	200	70	N	10	N	100	--	--	--	--	N
87MT16R2	15	N	5,000	150	N	50	N	300	--	--	--	--	N
87MT18R1	15	N	1,500	150	N	30	N	300	--	--	--	--	N
87MT18R2	15	N	1,500	100	N	30	N	200	--	--	--	--	N
87MT024R	15	N	1,500	100	N	20	N	100	--	--	--	--	N
87MT025R	5	N	300	70	N	N	N	200	--	--	--	--	N
87MT026R	30	N	150	300	N	15	N	50	--	--	--	--	N
87MT031R	70	N	700	500	N	30	N	70	--	--	--	--	N
87MT032R	20	N	1,500	30	N	70	N	300	--	--	--	--	N
87MT033R	<5	N	N	<10	N	15	N	N	--	--	--	--	N
87MT035R	N	N	N	<10	N	<10	N	150	--	--	--	--	N
87MT36R1	10	N	N	<10	N	20	N	150	--	--	--	--	N
87MT36R2	7	N	100	30	N	20	N	200	--	--	--	--	N
87MT037R	20	15	150	150	N	15	N	30	--	--	--	--	N
87MT038R	<5	N	N	<10	N	15	N	50	--	--	--	--	N
87MT041R	7	N	300	50	N	20	N	200	--	--	--	--	N
87MT42R1	20	N	<100	200	N	10	N	20	--	--	--	--	N
87MT42R2	N	N	N	10	N	20	N	150	--	--	--	--	N
MT-38	N	N	N	N	N	N	N	N	N	N	.2	<.2	N
MT-227-1	N	N	N	10	N	N	N	N	N	N	N	N	N
MT-227-2	N	N	N	30	<20	N	N	N	N	N	N	N	N
MT-229	N	N	N	N	N	N	N	N	N	N	N	N	N
MT-243	N	N	N	N	N	N	N	N	N	N	N	N	N
MT-244-2	N	N	N	N	N	N	N	N	N	N	N	N	N

TABLE 5.--RESULTS OF ANALYSES OF ROCK SAMPLES FROM THE MOUNT TIPTON WILDERNESS STUDY AREA, MOHAVE COUNTY, ARIZONA.--Continued

Sample	Au-ppm aa	Hg-ppm aa	As-ppm aa	Bi-ppm aa	Cd-ppm aa	Sb-ppm aa	Zn-ppm aa	As-ppm icp	Bi-ppm icp	Cd-ppm icp	Sb-ppm icp	Zn-ppm icp
87MT002R	N	.02	N	N	N	N	20	--	--	--	--	--
87MT005R	N	.02	N	N	N	N	35	--	--	--	--	--
87MT009R	N	.02	N	N	N	N	<5	--	--	--	--	--
87MT12R1	N	.04	N	N	N	N	5	--	--	--	--	--
87MT12R2	N	.02	N	N	N	N	5	--	--	--	--	--
87MT013R	N	.02	N	N	N	N	45	--	--	--	--	--
87MT14R1	N	N	N	N	N	N	5	--	--	--	--	--
87MT14R2	N	.02	N	N	N	N	5	--	--	--	--	--
87MT16R1	N	.02	N	N	N	N	25	--	--	--	--	--
87MT16R2	N	.02	N	N	N	N	40	--	--	--	--	--
87MT18R1	N	N	N	N	N	N	15	--	--	--	--	--
87MT18R2	N	.02	N	N	N	N	25	--	--	--	--	--
87MT024R	N	.02	N	N	N	N	<5	--	--	--	--	--
87MT025R	N	N	N	N	N	N	35	--	--	--	--	--
87MT026R	N	.02	N	N	N	N	<5	--	--	--	--	--
87MT031R	N	.02	N	N	N	N	15	--	--	--	--	--
87MT032R	N	.02	N	N	N	N	<5	--	--	--	--	--
87MT033R	N	.02	N	N	N	N	<5	--	--	--	--	--
87MT035R	N	N	--	--	--	--	--	<5	<2	<.1	<2	9
87MT36R1	N	N	--	--	--	--	--	<5	<2	.2	<2	72
87MT36R2	N	N	--	--	--	--	--	<5	<2	.5	<2	55
87MT037R	N	N	--	--	--	--	--	<5	<2	.1	<2	14
87MT038R	N	N	--	--	--	--	--	<5	<2	<.1	<2	4
87MT041R	N	N	--	--	--	--	--	<5	<2	.4	<2	30
87MT42R1	N	.02	--	--	--	--	--	21	<2	.6	<2	41
87MT42R2	N	N	--	--	--	--	--	10	<2	<.1	<2	3
MT-38	N	N	--	--	--	--	--	<5	<2	<.1	<2	6
MT-227-1	N	N	--	--	--	--	--	21	<2	<.1	<2	8
MT-227-2	N	N	--	--	--	--	--	55	<2	.1	3	25
MT-229	N	N	--	--	--	--	--	<5	<2	<.1	<2	2
MT-243	N	.02	--	--	--	--	--	<5	<2	<.1	<2	31
MT-244-2	N	N	--	--	--	--	--	8	<2	.1	<2	9