UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

Analytical results and sample locality map of stream-sediment, heavy-mineral-concentrate, rock, and water samples from the Chemehuevi Mountains Wilderness Study Area (CDCA-310), San Bernardino County, California

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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 mineral survey of the Chemehuevi Mountains Wilderness Study Area, California Desert Conservation Area (CDCA-310), San Bernardino County, California.

INTRODUCTION

In April 1981 and March 1982, we conducted a reconnaissance geochemical survey of the Chemehuevi Mountains Wilderness Study Area (CDCA-310), San Bernardino County, California.

The Chemehuevi Mountains Wilderness Study Area comprises about 135 mi^2 (350 km^2) in eastern San Bernardino County, California, and lies about 11 mi (18 km) south of Needles, California (fig. 1). Access to the vicinity of the study area is provided on the north and west by U.S. Highway 95 and on the south by an access road to the Chemehuevi Indian Reservation.

The study area is underlain mainly by Proterozoic(?) and Mesozoic crystalline rocks consisting of granite, layered gneiss, schist, and migmatite and Tertiary volcanic and sedimentary rocks. Quaternary sedimentary deposits fringe the mountains along the margin of the study area. The structure of the range is dominated by multiple low-angle faults separating crystalline and stratified rocks above the faults from crystalline rocks below. The geology has been mapped in detail by B. E. John, 1982.

The topographic relief in the study area is about 3100 ft (950 m), with a maximum elevation of 3700 ft (1150 m). The ground surface is characterized by steep, rugged slopes and broad sandy washes. The climate is arid.

METHODS OF STUDY

Sample Collection

We collected 194 samples (plate 1) consisting of 76 stream-sediment samples, 31 panned-concentrate samples, 83 rock samples, and 4 water samples (Tables 3-6) for a sampling density of 1 sample per 1 mi^2 for the stream sediment samples, and about 1 sample per 2 mi^2 for the rock. The drainage basins ranged from 1/2 to 5 mi^2.

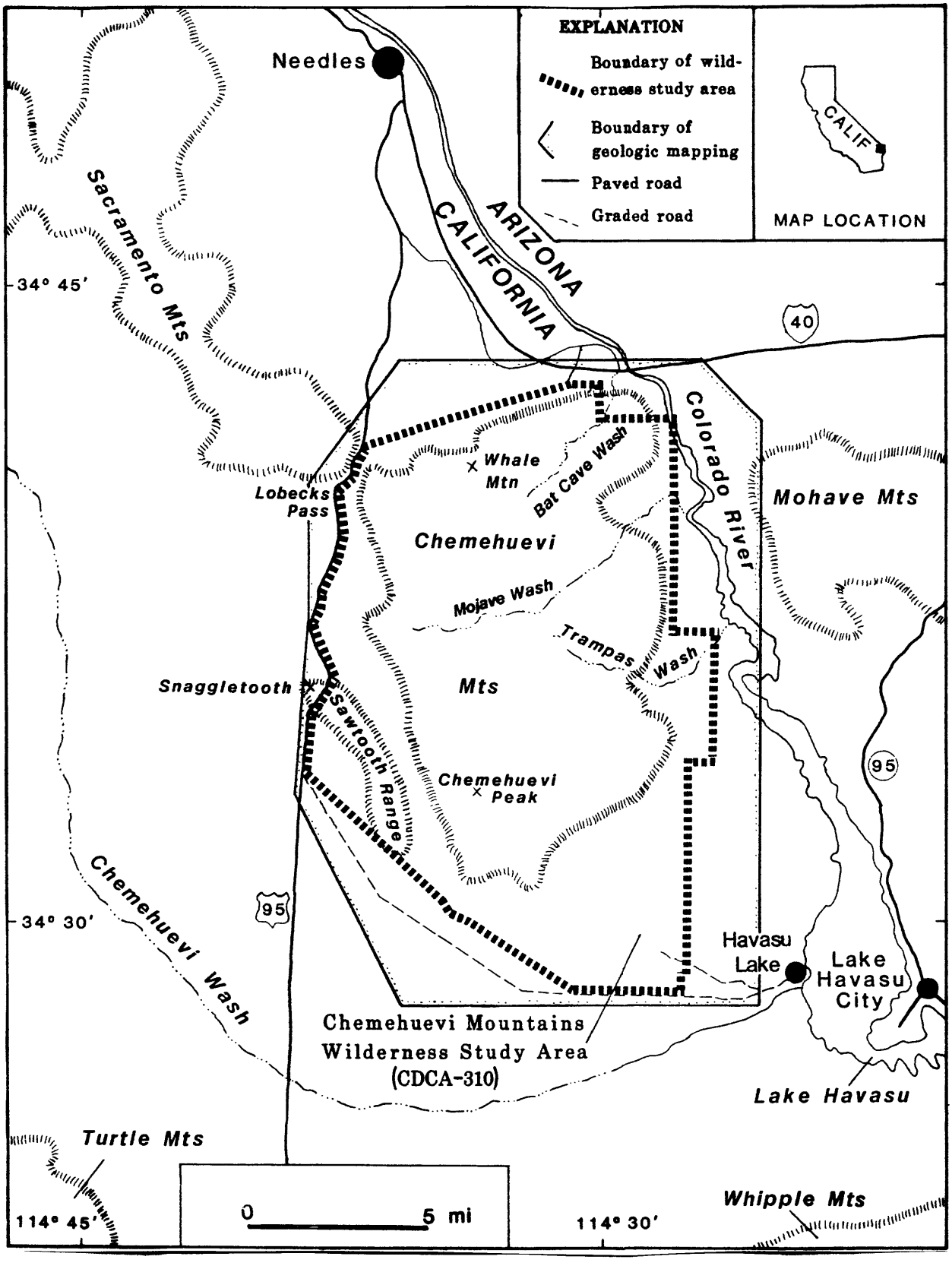

Figure 1.--Location map of the Chemehuevi Mountains Wilderness Study Area, San Bernardino County, California.

Stream-sediment samples

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.

The stream-sediment samples consisted of 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 150 ft from the site plotted on the map.

Heavy-mineral-concentrate samples

We panned heavy-mineral-concentrate samples from drainages having two or more first-order streams. Collection was intentionally biased by selection of material from points of natural concentration of heavy minerals by stream processes. The material selected was panned until most of the quartz, feldspar, organic material, and clay-sized material was removed. The sample was air dried.

Rock samples

We collected rock samples from outcrops or exposures in the vicinity of the plotted site location. Most samples were collected from unaltered rock. Rock samples provide information on elements in rocks that have not been affected by alteration or mineralization. In addition, some altered and(or) mineralized rocks were collected.

Water samples

We collected water samples from four springs. A 500-mL sample was taken at each site and stored in a new untreated plastic bottle. In addition, a 200-mL sample was filtered through a 0.45-micrometer filter, was acidified with reagent-grade concentrated nitric acid to pH 2, and was stored in an acid-rinsed polyethylene bottle.

Sample Preparation

Only the stream-sediment samples required extensive preparation. Rock samples were simply crushed and then pulverized with ceramic plates to less than 0.15 mm. Water samples required no preparation beyond that done in the process of collecting them.

The samples were air dried and sieved through an 80-mesh sieve using stainless steel sieves. The portion of the sediment passing through the sieve was split and a representative fraction was saved for analysis.

Panned-concentrates were air-dried and examined to determine mineral composition. A small split of each sample was separated and hand-ground for spectrographic analysis. The entire remainder of each concentrate was saved for analysis.

Sample Analysis

Spectrographic method

We analyzed the stream-sediment, heavy-mineral-concentrate, and rock samples for 31 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 unit at the 83 percent confidence level and plus or minus two reporting units 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).

Chemical methods

Other methods of analysis used on samples from the Chemehuevi Mountains Wilderness Study Area are summarized in Table 2.

Analytical results for stream sediments, panned concentrates, rocks, and waters are given in Tables 3-6, respectively.

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

[The spectrographic limits of determination for heavy-mineral-concentrate samples are two reporting units higher than the limits given for rocks and stream sediments]

Elements	Lower determination limit	Upper determination limit
	Percent	
Iron (Fe)	0.05	20
Magnesium (Mg)	.02	10
Calcium (Ca)	.05	20
Titanium (Ti)	.002	1
	Parts per million	
Manganese (Mn)	10	5,000
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)	5	2,000
Chromium (Cr)	10	5,000
Copper (Cu)	5	20,000
Lanthanum (La)	20	1,000
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
Vanadium (V)	10	10,000
Tungsten (W)	50	10,000
Yttrium (Y)	10	2,000
Zinc (Zn)	200	10,000
Zirconium (Zr)	10	1,000
Thorium (Th)	100	2,000

Table 2.--Chemical methods used

Sample type	Constituent determined	Analytical method	Determination limit[1] micrograms/ gram or ppms1	Analyst	Reference
Rocks	Cu, Pb, Zn	AA	5	W. L. Campbell	Modification of Viets, 1978
	Hg	Instrumental	0.02	Gray/ Fairfield	McNerney and others, 1972; Vaughn and McCarthy, 1964
	Au	AA	0.05	W. L. Campbell	Thompson and others, 1968
	Ag	AA	.05	W. L. Campbell	Modification of Viets, 1978
	Cd	AA	0.1	W. L. Campbell	Modification of Viets, 1978
	U, Th	Neutron activation	variable	USGS Analytical Laboratories	Millard and Keaten, 1982
Sediments	Cu, Pb, Zn	AA	5	W. L. Campbell	Modification of Viets, 1978
	Ag	AA	.05	W. L. Campbell	Modification of Viets, 1978
	Cd	AA	0.1	W. L. Campbell	Modification of Viets, 1978
	U, Th	Neutron activation	variable	USGS Analytical Laboratories	Millard and Keaten, 1982
Concentrates	Au	AA	0.05	W. L. Campbell	Thompson and others, 1968
Water[2]	Cu, Zn,	AA	1 µg/L	J. B. McHugh	Miller and others, 1982
	U	Flourometry	.10 µg/L	J. B. McHugh	Scintrex Corp, 1978
	F^-, Cl^-	Ion Chromatography	.01 mg/L	J. B. McHugh	Miller and others, 1982
	$SO_4^=$	Ion Chromatography	.1 mg/L	J. B. McHugh	Miller and others, 1982
	Specific Conductance	Conductivity Bridge	N/A	J. B. McHugh	Miller and others, 1982

[1]The determination limit is dependent upon sample weight. Given limits imply use of sample weight required by method. Higher limits of determination result from using less than required sample weight.

[2]Untreated water samples were analyzed for anions, U, pH, and specific conductance. Filtered and acidified water samples were analyzed for Cu and Zn.

ROCK ANALYSIS STORAGE SYSTEM

Upon completion of all analytical work, the analytical results were entered into a computer-based file called RASS (Rock Analysis Storage System). This RASS file contains both descriptive geological information and analytical data. Any or all of this information may be retrieved and converted to a standard form (STATPAC) for computerized statistical analysis or publication (VanTrump and Miesch, 1976).

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Table 3.-- Analytical data for stream sediments from the Chemehuevi Mountains Wilderness Study Area, San Bernardino County, California

[N, not detected; <, detected but below the limit of determination shown; >, determined to be greater than the value shown.]
[Atomic absorption analyses were conducted on selected samples for Bi and Sb but all values were below the lower detection limit (1ppm).]

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
CH001S	34 40 59	114 36 55	7.0	1.5	3	>1.0	1,500	N	N	N	20
CH002S	34 41 30	114 35 27	5.0	2.0	5	1.0	1,000	N	N	N	50
CH003S	34 41 33	114 34 47	5.0	2.0	3	1.0	1,000	N	N	N	70
CH004S	34 41 35	114 34 40	7.0	3.0	5	1.0	1,000	N	N	N	70
CH005S	34 42 3	114 33 34	7.0	3.0	7	1.0	1,000	N	N	N	70
CH006S	34 42 12	114 32 53	7.0	3.0	5	1.0	1,000	N	N	N	50
CH007S	34 42 28	114 31 40	3.0	2.0	5	.7	1,000	N	N	N	70
CH008S	34 42 33	114 31 1	5.0	3.0	5	.7	700	N	N	N	100
CH009S	34 42 40	114 29 44	7.0	3.0	5	.7	1,000	N	N	N	70
CH010S	34 33 32	114 38 30	3.0	2.0	3	.5	1,000	N	N	N	30
CH011S	34 31 50	114 36 28	5.0	2.0	5	.7	1,000	N	N	N	70
CH012S	34 32 13	114 36 35	3.0	2.0	5	.7	1,000	N	N	N	70
CH013S	34 33 39	114 37 0	3.0	2.0	3	.7	1,000	N	N	N	30
CH014S	34 34 15	114 37 21	5.0	2.0	5	.7	1,000	N	N	N	30
CH015S	34 34 23	114 37 14	7.0	2.0	3	.7	1,000	N	N	N	50
CH016S	34 36 23	114 26 56	5.0	3.0	7	.7	700	N	N	N	30
CH017S	34 36 57	114 26 38	5.0	3.0	5	.7	700	N	N	N	70
CH018S	34 35 27	114 28 16	3.0	2.0	5	.7	1,000	N	N	N	70
CH019S	34 35 19	114 28 18	5.0	2.0	3	.7	1,000	N	N	N	70
CH020S	34 36 2	114 29 51	5.0	3.0	5	.7	1,000	N	N	N	50
CH021S	34 36 5	114 29 55	5.0	3.0	5	.7	1,000	N	N	N	50
CH022S	34 36 17	114 31 0	3.0	2.0	5	.5	700	N	N	N	70
CH023S	34 37 17	114 33 21	5.0	2.0	5	.7	700	N	N	N	70
CH024S	34 37 12	114 33 25	5.0	2.0	5	1.0	700	N	N	N	50
CH025S	34 38 50	114 34 30	3.0	2.0	5	.7	1,000	.5	N	N	50
CH026S	34 38 52	114 34 25	3.0	2.0	5	.7	1,000	N	N	N	70
CH027S	34 39 11	114 34 37	5.0	2.0	5	.7	1,000	N	N	N	70
CH028S	34 39 15	114 34 39	3.0	2.0	7	.7	700	N	N	N	50
CH029S	34 40 4	114 34 13	5.0	2.0	3	.7	1,000	N	N	N	50
CH030S	34 41 2	114 33 25	5.0	2.0	5	.7	1,000	N	N	N	50
CH031S	34 36 0	114 32 26	5.0	1.5	5	.7	700	N	N	N	70
CH032S	34 34 43	114 33 0	3.0	2.0	3	.5	1,000	N	N	N	50
CH033S	34 35 8	114 32 11	5.0	2.0	3	.5	1,000	N	N	N	50
CH034S	34 34 37	114 32 32	3.0	2.0	20	.5	1,000	N	N	N	70
CH035S	34 35 59	114 33 4	3.0	2.0	3	.7	1,000	N	N	N	70
CH036S	34 36 5	114 33 6	3.0	2.0	5	.7	1,000	N	N	N	70
CH037S	34 40 53	114 31 0	5.0	2.0	5	.7	1,000	N	N	N	70
CH038S	34 41 7	114 31 7	5.0	2.0	5	.7	1,000	N	N	N	70
CH039S	34 41 20	114 30 28	5.0	2.0	5	.7	1,000	N	N	N	70
CH040S	34 40 3	114 30 5	5.0	2.0	5	.7	1,000	N	N	N	70
CH041S	34 35 40	114 34 0	3.0	1.5	5	.7	700	<.5	N	N	30
CH042S	34 36 55	114 37 54	3.0	1.5	3	.7	1,000	N	N	N	20
CH043S	34 35 50	114 37 43	7.0	2.0	5	1.0	1,000	N	N	N	20
CH044S	34 34 58	114 37 42	5.0	2.0	3	.7	1,000	N	N	N	15
CH045S	34 32 34	114 37 20	5.0	2.0	5	.7	700	N	N	N	20

Table 3.-- Analytical data for stream sediments from the Chemehuevi Mountains Wilderness Study Area, San Bernardino County, California

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
CH001S	700	<1.0	N	N	10	100	30	100	N	20
CH002S	1,000	1.0	N	N	20	100	30	100	N	<20
CH003S	1,000	1.5	N	N	15	70	30	70	N	<20
CH004S	1,500	1.0	N	N	15	100	30	100	N	20
CH005S	1,500	<1.0	N	N	30	100	30	150	N	<20
CH006S	1,000	1.0	N	N	30	200	50	150	N	<20
CH007S	1,000	1.5	N	N	10	100	30	70	N	<20
CH008S	1,000	1.5	N	N	10	100	30	70	N	<20
CH009S	1,000	1.0	N	N	15	100	30	100	N	<20
CH010S	1,000	1.5	N	N	7	100	20	50	N	<20
CH011S	2,000	1.5	N	N	10	100	30	70	N	<20
CH012S	1,500	1.5	N	N	10	100	30	50	N	<20
CH013S	1,000	1.5	N	N	10	100	30	300	N	<20
CH014S	1,000	1.5	N	N	10	100	20	200	N	<20
CH015S	1,000	1.5	N	N	10	100	30	150	N	<20
CH016S	1,500	1.5	N	N	10	100	20	70	N	<20
CH017S	1,500	1.0	N	N	10	150	30	70	N	<20
CH018S	1,000	1.5	N	N	10	100	30	50	N	<20
CH019S	1,000	1.0	N	N	10	100	30	70	N	<20
CH020S	1,000	1.0	N	N	15	100	30	70	N	<20
CH021S	1,000	1.0	N	N	10	100	30	50	N	20
CH022S	1,000	1.5	N	N	10	70	20	50	N	<20
CH023S	1,500	1.0	N	N	10	100	30	150	N	<20
CH024S	1,000	2.0	N	N	15	100	30	70	N	<20
CH025S	5,000	1.5	N	N	15	100	700	50	N	<20
CH026S	1,000	1.5	N	N	10	100	30	50	N	<20
CH027S	1,500	1.5	N	N	15	100	30	50	N	<20
CH028S	1,500	2.0	N	N	10	100	20	50	N	<20
CH029S	1,500	1.5	N	N	15	100	30	70	N	20
CH030S	1,500	1.5	N	N	15	100	30	70	N	<20
CH031S	1,500	1.5	N	N	15	100	20	70	N	<20
CH032S	1,000	2.0	N	N	15	100	30	30	N	<20
CH033S	1,500	2.0	N	N	15	100	30	70	N	20
CH034S	1,000	1.0	N	N	10	100	20	50	N	<20
CH035S	1,000	2.0	N	N	10	70	20	50	N	<20
CH036S	1,000	2.0	N	N	15	70	30	70	N	<20
CH037S	1,000	2.0	N	N	15	70	30	50	N	<20
CH038S	1,500	1.5	N	N	15	100	30	50	N	<20
CH039S	1,000	1.5	N	N	10	100	30	70	N	<20
CH040S	1,000	1.5	N	N	10	100	30	50	N	20
CH041S	1,000	1.5	N	N	10	100	30	50	N	<20
CH042S	700	1.5	N	N	10	70	30	50	N	<20
CH043S	700	1.5	N	N	10	150	30	50	N	20
CH044S	700	1.5	N	N	10	100	30	50	N	N
CH045S	700	1.5	N	N	10	100	30	50	N	<20

Table 3.-- Analytical data for stream sediments from the Chemehuevi Mountains Wilderness Study Area, San Bernardino County, California

Sample	Ni-ppm s	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
CH001S	20	50	N	15	N	200	150	N	100	N
CH002S	50	50	N	20	N	300	150	N	70	N
CH003S	50	70	N	15	N	300	150	N	50	N
CH004S	50	70	N	20	N	500	150	N	70	N
CH005S	70	50	N	20	N	500	200	N	70	N
CH006S	70	50	N	20	N	500	200	N	70	N
CH007S	50	50	N	15	N	500	100	N	50	N
CH008S	50	70	N	15	N	500	150	N	50	N
CH009S	30	50	N	20	N	300	150	N	70	N
CH010S	20	50	N	10	N	500	70	N	50	N
CH011S	30	70	N	15	N	500	150	N	70	N
CH012S	30	150	N	15	N	500	150	N	70	N
CH013S	30	70	N	15	N	500	150	N	70	N
CH014S	20	50	N	15	N	500	150	N	150	N
CH015S	30	70	N	15	N	300	200	N	70	N
CH016S	30	50	N	15	N	500	150	N	100	N
CH017S	50	70	N	15	N	500	150	N	70	N
CH018S	30	50	N	10	N	500	150	N	70	N
CH019S	30	50	N	15	N	500	150	N	70	N
CH020S	30	50	N	15	N	500	150	N	70	N
CH021S	30	50	N	15	N	500	100	N	70	N
CH022S	20	70	N	10	N	500	100	N	50	N
CH023S	20	70	N	10	N	500	150	N	70	N
CH024S	30	70	N	10	N	500	150	N	50	N
CH025S	30	100	N	10	N	500	150	N	50	N
CH026S	20	70	N	10	N	500	150	N	50	N
CH027S	30	70	N	15	N	500	150	N	50	N
CH028S	20	70	N	10	N	500	100	N	50	N
CH029S	30	70	N	15	N	300	150	N	70	N
CH030S	50	70	N	20	N	500	150	N	100	N
CH031S	30	50	N	10	N	300	150	N	70	N
CH032S	30	100	N	15	N	500	100	N	70	N
CH033S	50	70	N	15	N	500	150	N	150	N
CH034S	50	70	N	10	N	700	100	N	30	N
CH035S	30	70	N	10	N	500	150	N	50	N
CH036S	30	70	N	15	N	500	150	N	50	N
CH037S	30	70	N	15	N	500	150	N	70	N
CH038S	50	70	N	15	N	500	200	N	70	N
CH039S	30	70	N	15	N	300	150	N	70	N
CH040S	50	50	N	15	N	500	150	N	70	N
CH041S	20	50	N	10	N	500	70	N	30	N
CH042S	20	30	N	20	N	300	100	N	50	N
CH043S	20	30	N	20	N	300	100	N	70	N
CH044S	30	30	N	15	N	500	150	N	50	N
CH045S	15	30	N	15	N	500	100	N	50	N

Table 3.-- Analytical data for stream sediments from the Chemehuevi Mountains Wilderness Study Area, San Bernardino County, California

Sample	Zr-ppm s	Th-ppm s	Cu-ppm aa	Pb-ppm aa	Zn-ppm aa	Ag-ppm aa	Cd-ppm aa	N-ACT TH	N-ACT U
CH001S	1,000	N	--	--	80	--	--	--	--
CH002S	500	N	--	--	65	--	--	--	--
CH003S	500	N	--	--	65	--	--	--	--
CH004S	700	N	--	--	65	--	--	--	--
CH005S	700	N	--	--	55	--	--	--	--
CH006S	700	N	--	--	50	--	--	--	--
CH007S	300	N	--	--	50	--	--	--	--
CH008S	700	N	--	--	60	--	--	--	--
CH009S	700	N	--	--	50	--	--	--	--
CH010S	200	N	--	--	55	--	--	--	--
CH011S	500	N	--	--	65	--	--	--	--
CH012S	700	N	--	--	60	--	--	--	--
CH013S	700	N	--	--	60	--	--	--	--
CH014S	500	<100	--	--	60	--	--	--	--
CH015S	1,000	N	--	--	60	--	--	--	--
CH016S	500	N	--	--	65	--	--	--	--
CH017S	700	N	--	--	65	--	--	--	--
CH018S	300	N	--	--	70	--	--	--	--
CH019S	700	150	--	--	65	--	--	--	--
CH020S	500	N	--	--	75	--	--	--	--
CH021S	500	N	--	--	65	--	--	--	--
CH022S	300	N	--	--	55	--	--	--	--
CH023S	700	N	--	--	65	--	--	--	--
CH024S	500	N	--	--	65	--	--	--	--
CH025S	500	N	--	--	80	--	--	--	--
CH026S	500	N	--	--	50	--	--	--	--
CH027S	300	N	--	--	55	--	--	--	--
CH028S	500	N	--	--	50	--	--	--	--
CH029S	700	N	--	--	60	--	--	--	--
CH030S	700	N	--	--	50	--	--	--	--
CH031S	500	N	--	--	50	--	--	--	--
CH032S	300	N	--	--	70	--	--	--	--
CH033S	300	N	--	--	70	--	--	--	--
CH034S	200	N	--	--	45	--	--	--	--
CH035S	500	N	--	--	65	--	--	--	--
CH036S	700	N	--	--	70	--	--	--	--
CH037S	700	N	--	--	60	--	--	--	--
CH038S	500	N	--	--	55	--	--	--	--
CH039S	700	N	--	--	55	--	--	--	--
CH040S	700	N	--	--	65	--	--	--	--
CH041S	200	N	5	25	6	.10	.30	--	--
CH042S	500	N	4	10	4	.10	.20	--	--
CH043S	300	N	3	10	3	N	.15	--	--
CH044S	200	N	4	15	4	.15	.20	--	--
CH045S	500	N	3	10	3	.10	.50	--	--

Table 3.-- Analytical data for stream sediments from the Chemehuevi Mountains Wilderness Study Area, San Bernardino County, California--continued

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
CH046S	34 29 13	114 32 27	5.0	2.0	3	.7	1,000	N	N	N	15
CH047S	34 28 21	114 30 2	3.0	1.5	3	.7	1,000	N	N	N	15
CH048S	34 32 56	114 35 0	3.0	2.0	3	.7	1,000	N	N	N	30
CH049S	34 32 11	114 34 29	5.0	2.0	3	1.0	1,000	N	N	N	20
CH050S	34 31 39	114 34 11	5.0	1.5	3	.7	1,000	N	N	N	20
CH051S	34 31 48	114 32 22	3.0	2.0	3	.7	1,000	N	N	N	30
CH052S	34 30 56	114 31 14	3.0	2.0	3	.5	1,000	N	N	N	20
CH053S	34 32 0	114 30 10	7.0	2.0	3	1.0	1,000	N	N	N	20
CH054S	34 28 21	114 28 24	5.0	2.0	3	.7	1,000	N	N	N	15
CH055S	34 29 10	114 28 47	7.0	2.0	3	.7	1,000	N	N	N	20
CH056S	34 29 13	114 27 43	3.0	2.0	5	.7	1,000	N	N	N	30
CH057S	34 33 55	114 27 38	7.0	2.0	3	1.0	1,000	N	N	N	20
CH058S	34 34 18	114 27 23	5.0	3.0	3	.7	1,000	N	N	N	30
CH059S	34 34 43	114 27 57	5.0	2.0	3	.7	1,000	N	N	N	15
CH060S	34 34 50	114 29 28	7.0	2.0	3	.7	1,500	N	N	N	15
CH061S	34 34 20	114 30 26	5.0	2.0	3	.7	1,000	N	N	N	30
CH062S	34 38 59	114 36 30	5.0	1.5	5	.7	1,000	N	N	N	50
CH063S	34 38 6	114 27 15	3.0	2.0	5	.7	1,000	N	N	N	70
CH064S	34 37 38	114 26 58	1.5	1.0	3	.5	500	N	N	N	70
CH065S	34 37 14	114 27 1	5.0	2.0	3	.7	1,000	N	N	N	30
CH066S	34 41 49	114 28 18	7.0	1.5	5	.7	1,500	N	N	N	10
CH067S	34 41 7	114 29 22	15.0	1.5	3	1.0	2,000	N	N	N	N
CH068S	34 40 49	114 28 16	15.0	1.0	3	1.0	700	N	N	N	N
CH069S	34 40 12	114 27 59	7.0	1.5	3	1.0	1,000	N	N	N	<10
CH070S	34 40 0	114 27 46	7.0	1.5	5	1.0	1,000	N	N	N	<10
CH071S	34 39 42	114 28 26	5.0	1.0	5	.7	700	N	N	N	20
CH072S	34 39 49	114 28 0	10.0	1.0	3	1.0	1,500	N	N	N	N
CH073S	34 38 58	114 28 3	15.0	1.5	3	1.0	2,000	N	N	N	N
CH074S	34 32 1	114 27 52	15.0	1.0	3	.5	2,000	N	N	N	N
CH075S	34 31 41	114 27 49	10.0	1.5	3	.7	1,500	N	N	N	N
CH076S	34 31 32	114 27 46	20.0	1.5	3	.7	2,000	N	N	N	N

Table 3.-- Analytical data for stream sediments from the Chemehuevi Mountains Wilderness Study Area, San Bernardino County, California--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
CH046S	1,000	1.5	N	N	10	100	30	50	N	20
CH047S	1,000	1.5	N	N	7	70	20	50	N	<20
CH048S	1,500	1.5	N	N	7	100	30	50	N	<20
CH049S	2,000	1.5	N	N	10	200	30	70	N	20
CH050S	3,000	1.5	N	N	10	150	30	50	N	<20
CH051S	2,000	1.5	N	N	10	100	30	50	N	<20
CH052S	1,500	1.5	N	N	10	100	30	50	N	<20
CH053S	2,000	1.5	N	N	15	150	30	50	N	<20
CH054S	1,500	1.5	N	N	10	100	30	50	N	<20
CH055S	1,500	1.5	N	N	10	150	30	50	N	<20
CH056S	1,000	1.5	N	N	10	100	30	50	N	<20
CH057S	2,000	1.5	N	N	15	200	30	70	N	<20
CH058S	1,000	1.5	N	N	10	150	30	70	N	<20
CH059S	1,500	1.5	N	N	10	150	30	70	N	<20
CH060S	1,500	1.5	N	N	15	300	30	70	N	<20
CH061S	1,500	1.5	N	N	10	100	30	50	N	N
CH062S	1,000	1.5	N	N	10	70	30	70	N	<20
CH063S	1,000	1.5	N	N	10	150	30	50	N	<20
CH064S	700	1.5	N	N	7	70	15	30	N	<20
CH065S	1,000	1.5	N	N	15	100	30	50	<5	<20
CH066S	200	<1.0	N	N	10	100	30	100	N	N
CH067S	200	<1.0	N	N	30	100	70	150	N	20
CH068S	300	<1.0	N	N	10	100	50	300	N	20
CH069S	700	1.0	N	N	15	100	50	200	N	<20
CH070S	1,000	1.0	N	N	10	100	30	100	N	<20
CH071S	2,000	1.0	N	N	10	70	20	150	N	N
CH072S	3,000	1.5	N	N	20	70	50	30	N	<20
CH073S	2,000	1.0	N	N	30	150	70	200	N	<20
CH074S	2,000	<1.0	N	N	30	500	50	200	N	N
CH075S	5,000	<1.0	N	N	50	300	50	200	N	20
CH076S	5,000	1.0	N	N	30	300	50	300	N	<20

Table 3.-- Analytical data for stream sediments from the Chemehuevi Mountains Wilderness Study Area, San Bernardino County, California--continued

Sample	Ni-ppm s	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
CH046S	30	30	N	15	N	500	100	N	50	N
CH047S	20	30	N	10	N	300	100	N	30	N
CH048S	20	50	N	10	N	500	70	N	50	N
CH049S	50	70	N	15	N	500	100	N	70	N
CH050S	50	50	N	15	N	500	150	N	30	N
CH051S	30	50	N	15	N	500	100	N	30	N
CH052S	30	50	N	10	N	500	100	N	30	N
CH053S	70	50	N	15	N	500	100	N	50	N
CH054S	30	30	N	15	N	500	150	N	30	N
CH055S	30	50	N	15	N	500	150	N	30	N
CH056S	30	50	N	15	N	500	150	N	30	N
CH057S	50	50	N	15	N	500	200	N	50	N
CH058S	50	50	N	15	N	500	150	N	30	N
CH059S	50	50	N	15	N	500	150	N	70	N
CH060S	30	50	N	15	N	500	150	N	70	N
CH061S	30	50	N	15	N	500	100	N	30	N
CH062S	20	30	N	15	N	500	150	N	30	N
CH063S	50	50	N	15	N	500	100	N	30	N
CH064S	15	30	N	5	N	200	70	N	20	N
CH065S	30	30	N	15	N	300	100	N	30	N
CH066S	20	30	N	20	N	300	150	N	70	N
CH067S	20	70	N	20	N	300	200	N	100	N
CH068S	30	50	N	20	N	300	200	N	100	N
CH069S	30	70	N	20	N	500	200	N	70	N
CH070S	30	100	N	20	N	500	150	N	70	N
CH071S	15	50	N	15	N	500	200	N	70	N
CH072S	30	50	N	20	N	300	200	N	70	N
CH073S	30	70	N	30	N	500	200	N	100	N
CH074S	50	70	N	10	N	300	300	N	70	N
CH075S	50	150	N	15	N	500	300	N	70	N
CH076S	30	70	N	10	N	500	300	N	150	N

Table 3.-- Analytical data for stream sediments from the Chemehuevi Mountains Wilderness Study Area, San Bernardino County, California--continued

Sample	Zr-ppm s	Th-ppm s	Cu-ppm aa	Pb-ppm aa	Zn-ppm aa	Ag-ppm aa	Cd-ppm aa	N-ACT TH	N-ACT U
CH046S	300	N	3	10	3	N	.15	--	--
CH047S	500	N	2	15	3	N	.15	--	--
CH048S	300	N	3	15	4	N	.25	--	--
CH049S	300	N	4	45	5	N	.25	--	--
CH050S	500	N	3	75	4	N	.20	--	--
CH051S	300	N	3	35	3	N	.20	--	--
CH052S	300	N	2	15	2	N	.20	--	--
CH053S	300	N	2	20	3	.05	.25	--	--
CH054S	200	N	3	20	3	.08	.20	--	--
CH055S	300	N	3	15	4	.05	.20	--	--
CH056S	500	N	3	15	3	N	.20	--	--
CH057S	300	N	3	30	4	.75	.25	--	--
CH058S	300	N	4	25	5	.09	.40	--	--
CH059S	300	N	3	20	3	.10	.25	--	--
CH060S	500	N	3	15	3	.07	.15	--	--
CH061S	300	N	3	15	3	N	.25	--	--
CH062S	500	N	3	9	3	N	.20	--	--
CH063S	300	N	4	8	5	N	.10	--	--
CH064S	500	N	2	6	3	N	.20	--	--
CH065S	700	N	3	10	4	N	.20	--	--
CH066S	300	N	--	--	--	--	--	34.3	5.60
CH067S	1,000	N	--	--	--	--	--	59.5	9.64
CH068S	300	N	--	--	--	--	--	52.8	8.73
CH069S	150	N	--	--	--	--	--	65.1	9.49
CH070S	300	N	--	--	--	--	--	40.8	5.89
CH071S	500	N	--	--	--	--	--	18.5	3.26
CH072S	300	N	--	--	--	--	--	44.9	8.33
CH073S	150	N	--	--	--	--	--	48.6	9.00
CH074S	300	<100	--	--	--	--	--	309.0	59.00
CH075S	300	N	--	--	--	--	--	92.6	14.80
CH076S	1,000	N	--	--	--	--	--	216.0	36.60

Table 4.-- Analytical data for panned concentrates from the Chemehuevi Mountains Wilderness Study Area, San Bernardino County, California

[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	Ba-ppm s
CH001P	34 34 52	114 33 10	20.0	1.50	3	>2	3,000	N	N	N	20	700
CH002P	34 41 57	114 33 32	20.0	3.00	7	>2	2,000	N	N	N	N	700
CH003P	34 42 40	114 29 44	20.0	2.00	7	>2	2,000	N	N	N	N	500
CH004P	34 35 45	114 27 15	15.0	2.00	7	2	3,000	N	N	N	N	700
CH005P	34 41 49	114 28 18	7.0	.70	20	>2	1,000	N	N	N	50	3,000
CH006P	34 41 7	114 29 22	1.5	.30	20	>2	1,000	N	N	N	20	1,500
CH007P	34 40 49	114 28 16	1.0	.30	20	>2	700	N	N	N	N	5,000
CH008P	34 40 12	114 27 59	1.5	.50	20	>2	700	N	N	N	30	10,000
CH009P	34 40 0	114 27 46	1.5	.30	15	>2	700	N	N	N	70	>10,000
CH010P	34 39 42	114 28 26	1.5	.50	20	>2	700	N	N	N	50	>10,000
CH011P	34 39 49	114 28 0	1.5	.20	10	2	700	300	N	N	20	>10,000
CH012P	34 38 58	114 28 3	1.0	.30	15	>2	500	N	N	N	30	>10,000
CH013P	34 32 1	114 27 52	1.0	.30	15	>2	700	N	N	N	20	>10,000
CH014P	34 31 41	114 27 49	1.0	.30	15	>2	1,000	N	N	N	20	>10,000
CH015P	34 31 32	114 27 46	.7	.30	15	>2	700	N	N	N	30	>10,000
CH016P	34 41 22	114 34 58	.5	.15	15	>2	300	N	N	N	20	5,000
CH017P	34 37 57	114 35 32	.7	.20	20	>2	300	N	N	N	20	>5,000
CH018P	34 38 56	114 34 57	.7	.15	10	>2	300	N	N	N	N	>5,000
CH019P	34 39 10	114 35 58	.5	.15	15	>2	300	N	N	N	N	>5,000
CH020P	34 39 2	114 36 34	.7	.15	7	>2	300	N	N	N	20	>5,000
CH021P	34 32 8	114 30 29	.5	.20	15	2	500	N	N	N	20	>5,000
CH022P	34 32 11	114 30 24	.3	.10	10	>2	300	N	N	N	20	>5,000
CH023P	34 33 18	114 35 17	1.0	.20	5	2	300	N	N	N	20	5,000
CH024P	34 37 38	114 32 58	1.0	.15	15	>2	500	N	N	N	20	>5,000
CH025P	34 37 20	114 32 53	.7	.15	15	>2	300	N	N	N	N	>5,000
CH026P	34 39 56	114 28 10	1.0	.20	10	2	300	N	N	N	50	>5,000
CH027P	34 38 28	114 29 55	1.0	.20	20	>2	700	N	N	N	N	>5,000
CH028P	34 35 0	114 28 59	.5	.20	30	>2	1,000	N	N	N	N	>5,000
CH029P	34 35 31	114 33 28	.5	.15	30	>2	700	N	N	N	N	>5,000
CH030P	34 36 49	114 33 48	.2	.10	10	2	300	N	N	N	N	>5,000
CH031P	34 38 57	114 29 26	.5	.15	15	>2	500	N	N	N	20	>5,000

Table 4.-- Analytical data for panned concentrates from the Chemehuevi Mountains Wilderness Study Area, San Bernardino County, California

Sample	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
CH001P	<2	N	N	30	150	70	150	N	150	30	70	N
CH002P	<2	N	N	50	200	150	200	N	70	50	70	N
CH003P	<2	N	N	70	150	100	700	N	70	30	70	N
CH004P	2	N	N	30	700	70	700	N	50	50	100	N
CH005P	N	N	N	10	150	20	700	15	100	30	100	N
CH006P	N	N	N	10	50	30	700	15	100	10	700	N
CH007P	N	N	N	10	70	10	700	N	<50	10	70	N
CH008P	N	N	N	15	100	50	700	10	70	10	150	N
CH009P	<2	N	N	10	100	20	500	N	50	20	100	N
CH010P	N	N	N	10	150	30	700	10	70	20	200	N
CH011P	<2	N	N	10	30	50	200	100	<50	20	5,000	N
CH012P	N	N	N	10	100	30	300	10	<50	10	2,000	N
CH013P	N	N	N	15	100	30	700	15	50	20	1,500	N
CH014P	N	N	N	15	100	50	700	N	70	20	1,000	N
CH015P	N	N	N	10	70	20	700	N	50	30	500	N
CH016P	N	N	N	N	50	20	1,000	N	<50	10	100	N
CH017P	N	N	N	<10	30	20	700	N	70	10	70	N
CH018P	N	N	N	N	20	20	700	N	150	10	20	N
CH019P	N	N	N	N	50	20	700	N	100	10	50	N
CH020P	<2	N	N	N	30	10	200	N	70	10	70	N
CH021P	N	N	N	<10	100	20	500	N	50	10	700	N
CH022P	N	N	N	<10	30	<10	500	N	50	10	1,000	N
CH023P	<2	N	N	N	50	<10	500	N	50	10	150	N
CH024P	N	N	N	<10	50	30	700	N	70	10	70	N
CH025P	N	N	N	N	50	20	700	N	150	10	20	N
CH026P	N	N	N	N	50	20	200	50	<50	10	700	N
CH027P	N	N	N	N	50	30	700	100	70	10	70	N
CH028P	N	N	N	N	70	20	700	N	150	10	300	N
CH029P	N	N	N	N	50	20	500	N	150	10	200	N
CH030P	N	N	N	N	50	<10	200	N	70	10	20	N
CH031P	N	N	N	N	50	30	300	N	150	10	70	N

Table 4.-- Analytical data for panned concentrates from the Chemehuevi Mountains Wilderness Study Area, San Bernardino County, California

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	Th-ppm s	Au-ppm aa
CH001P	30	N	N	700	N	150	N	>2,000	N	N
CH002P	50	N	700	700	N	200	N	2,000	N	N
CH003P	30	N	300	700	N	200	N	700	N	N
CH004P	30	N	500	300	N	200	N	1,000	N	N
CH005P	20	70	N	500	N	1,000	N	>2,000	N	N
CH006P	20	100	N	300	N	1,000	N	>2,000	N	N
CH007P	20	50	300	150	N	700	N	>2,000	N	N
CH008P	20	50	700	300	N	700	N	>2,000	200	N
CH009P	20	20	1,500	150	N	500	N	>2,000	N	N
CH010P	20	30	1,000	200	N	700	N	>2,000	N	N
CH011P	20	N	7,000	150	150	700	N	>2,000	N	N
CH012P	70	<20	5,000	500	500	1,000	N	>2,000	N	N
CH013P	20	30	7,000	300	<100	700	N	>2,000	1,500	N
CH014P	20	30	10,000	300	N	700	N	>2,000	700	N
CH015P	20	30	1,500	200	N	500	N	>2,000	N	N
CH016P	30	20	N	200	N	1,000	N	>2,000	N	--
CH017P	10	30	1,000	200	N	300	N	>2,000	N	--
CH018P	10	20	7,000	200	N	300	N	>2,000	N	--
CH019P	10	30	3,000	200	N	300	N	>2,000	N	--
CH020P	10	N	1,000	150	N	200	N	>2,000	N	--
CH021P	15	N	1,500	300	N	300	N	>2,000	200	--
CH022P	10	20	3,000	300	N	300	N	>2,000	200	--
CH023P	20	N	N	100	200	500	N	>2,000	<200	--
CH024P	30	50	700	150	N	500	N	>2,000	<200	--
CH025P	15	20	7,000	150	N	300	N	>2,000	N	--
CH026P	20	N	5,000	150	N	500	N	>2,000	N	--
CH027P	50	50	300	150	N	700	N	>2,000	<200	--
CH028P	20	70	500	200	N	700	N	>2,000	N	--
CH029P	20	70	700	200	N	700	N	>2,000	N	--
CH030P	10	N	3,000	100	N	300	N	>2,000	N	--
CH031P	20	30	1,000	200	N	500	N	>2,000	200	--

Table 5.-- Analytical data for rocks from the Chemehuevi Mountains Wilderness Study Area, San Bernardino County, California

[N, not detected; <, detected but below the limit of determination shown; >, determined to be greater than the value shown.]
[Atomic absorption analyses were conducted on selected samples for Bi and Sb but all values were below the lower detection limit (1ppm). Spectophotometric determinations were made for W on similar samples, with all values either at or below the lower detection limit (1ppm).]

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
CH001R	34 34 16	114 37 16	5.00	.70	3.00	.700	500	N	N	N	15
CH002R	34 35 46	114 27 43	3.00	1.00	3.00	.700	1,000	N	N	N	50
CH003R	34 35 51	114 28 56	10.00	5.00	5.00	1.000	1,500	N	N	N	10
CH004R	34 35 51	114 28 56	.30	.10	.50	.030	150	N	N	N	10
CH005R	34 36 0	114 29 40	1.50	.70	1.50	.300	300	N	N	N	15
CH006R	34 36 2	114 29 56	.70	.10	.70	.050	150	N	N	N	10
CH007R	34 36 2	114 29 56	2.00	.07	.15	.050	70	<.5	N	N	10
CH008R	34 37 16	114 33 26	1.50	.70	1.50	.200	300	N	N	N	15
CH009R	34 33 11	114 33 44	.50	2.00	3.00	.700	1,000	N	N	N	15
CH010R	34 41 6	114 26 16	1.50	.30	.20	.200	30	N	N	N	50
CH011R	34 39 8	114 33 15	1.50	.70	1.00	.150	200	N	N	N	<10
CH012R	34 38 47	114 34 21	2.00	1.00	1.50	.500	500	N	N	N	15
CH013R	34 38 47	114 34 21	.70	.15	15.00	.070	5,000	<.5	N	N	10
CH014R	34 38 47	114 34 21	1.50	.20	1.00	.150	150	N	N	N	N
CH015R	34 41 5	114 32 26	5.00	5.00	3.00	1.000	700	N	N	N	<10
CH016R	34 40 27	114 33 40	.30	.05	.70	.015	50	N	N	N	10
CH017R	34 40 33	114 33 30	3.00	2.00	3.00	.700	700	N	N	N	10
CH018R	34 36 40	114 33 46	5.00	3.00	3.00	1.000	1,000	N	N	N	10
CH019R	34 33 17	114 30 45	.50	.20	.70	.050	150	<.5	N	N	10
CH020R	34 33 52	114 29 57	2.00	.50	1.50	.150	300	N	N	N	10
CH021R	34 34 33	114 34 48	5.00	3.00	3.00	.700	700	N	N	N	<10
CH022R	34 40 50	114 31 6	3.00	2.00	2.00	.500	1,000	N	N	N	<10
CH023R	34 29 10	114 28 48	1.00	.50	3.00	.200	300	N	N	N	30
CH024R	34 38 5	114 27 18	2.00	.70	10.00	.300	500	N	N	N	<10
CH025R	34 38 7	114 27 6	.70	.30	.30	.150	200	N	N	N	50
CH026R	34 42 35	114 31 2	2.00	.70	3.00	.500	300	N	N	N	10
CH027R	34 42 25	114 31 45	3.00	1.00	3.00	.700	700	N	N	N	50
CH028R	34 40 0	114 37 30	5.00	1.00	2.00	1.000	1,000	N	N	N	N
CH029R	34 39 53	114 37 27	5.00	3.00	3.00	.700	1,000	N	N	N	N
CH030R	34 39 32	114 37 22	.20	.07	2.00	.007	100	3.0	N	N	20
CH031R	34 32 4	114 30 7	1.50	1.00	1.50	.300	300	N	N	N	15
CH032R	34 33 10	114 33 49	3.00	1.50	10.00	.500	500	N	N	N	10
CH032RA	34 33 10	114 33 49	10.00	7.00	7.00	1.000	1,500	N	N	N	N
CH033R	34 33 24	114 35 53	3.00	.15	1.50	.300	700	N	N	N	10
CH034R	34 33 57	114 34 39	1.50	.70	1.00	.300	300	N	N	N	<10
CH035R	34 33 57	114 34 39	10.00	2.00	5.00	1.000	1,500	N	N	N	N
CH036R	34 37 34	114 33 25	1.00	.70	1.00	.300	500	N	N	N	15
CH037R	34 37 33	114 33 24	3.00	1.00	.70	.300	700	N	N	N	N
CH038R	34 37 36	114 33 22	7.00	3.00	7.00	.700	1,500	N	N	N	N
CH039R	34 39 38	114 27 55	5.00	.30	1.50	.500	500	2.0	N	N	20
CH040R	34 39 40	114 28 7	3.00	5.00	20.00	.100	3,000	700.0	N	N	N
CH041R	34 38 36	114 29 58	3.00	.30	5.00	.500	1,500	5.0	N	N	15
CH042R	34 40 59	114 28 47	1.00	.30	3.00	.150	500	.7	N	N	N
CH043R	34 35 0	114 29 7	.30	.20	2.00	.070	200	N	N	N	10
CH044R	34 35 0	114 29 7	7.00	3.00	5.00	1.000	1,500	N	N	N	N

Table 5.-- Analytical data for rocks from the Chemehuevi Mountains Wilderness Study Area, San Bernardino County, California

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
CH001R	500	2.0	N	N	7	10	15	100	7	20	<5
CH002R	700	1.0	N	N	10	70	15	50	N	N	30
CH003R	300	<1.0	N	N	30	500	50	30	N	<20	100
CH004R	700	1.5	N	N	N	10	<5	<20	N	N	5
CH005R	1,500	1.5	N	N	5	<10	<5	30	<5	<20	5
CH006R	700	1.0	N	N	<5	10	300	20	N	N	<5
CH007R	1,000	1.5	N	N	<5	10	1,500	20	N	<20	5
CH008R	1,500	1.5	N	N	5	10	7	50	N	N	<5
CH009R	1,500	1.0	N	N	15	150	20	50	N	<20	50
CH010R	500	1.5	N	N	N	10	7	50	N	20	<5
CH011R	1,000	1.5	N	N	5	15	10	20	N	N	5
CH012R	2,000	1.5	N	N	7	15	15	50	N	<20	5
CH013R	>5,000	1.5	N	N	N	10	700	150	5	N	5
CH014R	1,000	1.5	N	N	5	10	70	150	N	20	5
CH015R	1,000	1.5	N	N	15	150	10	150	N	<20	70
CH016R	300	1.5	N	N	N	10	<5	<20	N	N	5
CH017R	700	1.0	N	N	10	50	10	30	N	N	30
CH018R	2,000	<1.0	N	N	15	200	30	50	N	20	70
CH019R	1,500	1.5	N	N	<5	10	20	<20	N	N	5
CH020R	1,500	1.5	N	N	<5	10	7	70	N	N	5
CH021R	2,000	1.0	N	N	15	150	30	50	N	<20	70
CH022R	500	1.5	N	N	10	50	10	20	N	<20	20
CH023R	1,000	2.0	N	N	<5	10	5	50	N	<20	5
CH024R	1,000	1.0	N	N	7	50	15	20	N	N	15
CH025R	300	2.0	N	N	5	15	5	30	10	<20	7
CH026R	1,000	2.0	N	N	7	20	10	30	N	<20	15
CH027R	1,500	1.5	N	N	7	10	15	70	<5	<20	<5
CH028R	1,500	1.5	N	N	10	10	20	70	N	<20	<5
CH029R	1,000	1.0	N	N	30	100	30	30	N	<20	100
CH030R	300	5.0	N	N	N	10	30	20	N	N	5
CH031R	700	3.0	N	N	<5	20	15	30	N	<20	10
CH032R	1,500	1.5	N	N	7	30	20	30	N	<20	15
CH032RA	1,000	<1.0	N	N	50	500	100	50	N	20	200
CH033R	1,000	2.0	N	N	10	20	15	50	N	<20	10
CH034R	1,500	2.0	N	N	5	10	<5	30	N	<20	5
CH035R	1,500	1.5	N	N	20	10	30	70	N	<20	5
CH036R	1,500	1.5	N	N	5	20	15	30	N	N	7
CH037R	2,000	1.5	N	N	7	30	10	30	N	<20	10
CH038R	1,000	1.0	N	N	30	200	70	30	N	N	70
CH039R	1,500	2.0	N	30	5	20	50	30	N	<20	5
CH040R	100	<1.0	N	300	15	20	1,000	<20	N	<20	20
CH041R	1,500	3.0	N	N	<5	10	20	30	N	<20	<5
CH042R	150	2.0	N	N	N	10	7	300	N	N	5
CH043R	1,000	1.5	N	N	N	10	<5	20	N	N	5
CH044R	1,500	<1.0	N	N	15	100	50	50	N	<20	70

Table 5.-- Analytical data for rocks from the Chemehuevi Mountains Wilderness Study Area, San Bernardino County, California

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
CH001R	50	N	10	10	<100	50	N	70	N	300	<100
CH002R	50	N	7	N	200	70	N	15	N	150	N
CH003R	30	N	30	N	300	200	N	50	N	100	N
CH004R	30	N	<5	N	150	15	N	10	N	30	N
CH005R	30	N	<5	N	500	50	N	30	N	300	N
CH006R	20	N	<5	N	150	15	N	10	N	150	N
CH007R	30	N	<5	N	300	20	N	<10	N	70	N
CH008R	30	N	<5	N	500	30	N	15	N	150	N
CH009R	30	N	10	N	700	150	N	20	N	200	N
CH010R	30	N	7	N	N	50	N	30	N	300	N
CH011R	30	N	<5	N	500	30	N	10	N	70	N
CH012R	30	N	5	N	500	70	N	15	N	200	N
CH013R	20	N	N	N	300	70	N	30	N	50	N
CH014R	20	N	N	N	200	30	N	15	N	150	N
CH015R	20	N	10	N	700	100	N	30	N	200	N
CH016R	30	N	N	N	150	10	N	15	N	10	N
CH017R	50	N	7	N	700	70	N	20	N	100	N
CH018R	30	N	15	N	700	150	N	30	N	200	N
CH019R	50	N	N	N	500	10	N	N	N	10	N
CH020R	50	N	5	N	500	20	N	20	N	150	N
CH021R	50	N	15	N	500	150	N	30	N	150	N
CH022R	15	N	15	N	300	100	N	30	N	150	N
CH023R	50	N	5	N	300	30	N	10	N	150	N
CH024R	30	N	5	N	500	50	N	15	N	100	N
CH025R	30	N	<5	N	N	20	N	10	N	100	N
CH026R	70	N	5	N	700	70	N	20	N	150	N
CH027R	70	N	15	N	500	50	N	70	N	200	N
CH028R	30	N	20	N	500	100	N	100	N	300	N
CH029R	30	N	15	N	500	150	N	20	N	300	N
CH030R	20	N	N	N	200	<10	N	N	N	10	N
CH031R	70	N	<5	N	500	30	N	20	N	150	N
CH032R	70	N	5	N	1,500	100	N	20	N	300	N
CH032RA	70	N	20	N	700	300	N	30	N	300	N
CH033R	50	N	5	N	1,000	70	N	30	N	200	N
CH034R	30	N	<5	N	500	50	N	15	N	150	N
CH035R	30	N	30	N	500	150	N	150	N	200	N
CH036R	30	N	5	N	300	50	N	15	N	150	N
CH037R	30	N	5	N	500	70	N	15	N	200	N
CH038R	10	N	20	N	300	200	N	30	N	100	N
CH039R	70	N	20	N	100	30	N	100	1,000	500	N
CH040R	10,000	N	5	N	300	70	N	20	>10,000	30	N
CH041R	150	N	20	N	300	10	N	70	N	300	N
CH042R	30	N	<5	N	700	50	N	15	N	70	N
CH043R	30	N	<5	N	300	15	N	15	N	20	N
CH044R	20	N	20	N	500	200	N	20	N	200	N

Table 5.-- Analytical data for rocks from the Chemehuevi Mountains Wilderness Study Area, San Bernardino County, California

Sample	Au-ppm aa	Cu-ppm aa	Pb-ppm aa	Zn-ppm aa	Ag-ppm aa	Cd-ppm aa	Hg-INST	N-ACT TH	N-ACT U
CH001R	--	2	15	3	.10	.20	--	--	--
CH002R	--	2	9	2	.10	.08	--	--	--
CH003R	--	3	5	5	.10	.05	--	--	--
CH004R	--	1	5	2	.10	N	--	--	--
CH005R	--	1	1	1	N	N	--	--	--
CH006R	--	800	3	450	.40	.10	--	--	--
CH007R	--	>1,000	2	>1,000	.10	.06	--	--	--
CH008R	--	2	2	3	.08	.05	--	--	--
CH009R	--	5	10	6	.20	.15	--	--	--
CH010R	--	2	9	3	.15	.08	--	--	--
CH011R	--	2	2	2	.10	.09	--	--	--
CH012R	--	3	4	4	.10	.06	--	--	--
CH013R	--	>1,000	10	800	.25	.95	--	--	--
CH014R	--	5	3	5	.10	.06	--	--	--
CH015R	--	2	2	1	N	.06	--	--	--
CH016R	--	2	1	1	N	N	--	--	--
CH017R	--	6	2	7	N	.06	--	--	--
CH018R	--	4	5	4	.09	.08	--	--	--
CH019R	--	4	7	4	.15	.07	--	--	--
CH020R	--	2	7	2	.15	.07	--	--	--
CH021R	--	3	10	4	.05	.10	--	--	--
CH022R	--	2	9	2	.09	.07	--	--	--
CH023R	--	1	5	1	N	.60	--	--	--
CH024R	--	1	2	1	.08	.07	--	--	--
CH025R	--	1	1	2	N	.06	--	--	--
CH026R	N	4	20	5	2.70	.15	.02	--	--
CH027R	N	4	9	25	.15	.15	.04	--	--
CH028R	N	4	4	8	.07	.15	<.02	--	--
CH029R	N	7	6	7	.20	.15	<.02	--	--
CH030R	N	15	7	2	.35	.15	.40	--	--
CH031R	N	7	10	5	.10	.10	.16	--	--
CH032R	N	9	5	8	.09	.10	.06	--	--
CH032RA	N	20	15	10	.15	.09	.04	--	--
CH033R	N	4	6	10	.10	.15	.02	--	--
CH034R	N	5	5	3	.25	.08	<.02	--	--
CH035R	N	15	5	65	.10	.15	<.02	--	--
CH036R	N	3	6	5	.08	.10	.02	--	--
CH037R	N	3	5	5	.15	.10	.02	--	--
CH038R	N	35	8	25	.15	.06	.04	--	--
CH039R	.05	15	35	290	.40	30.00	.04	--	--
CH040R	.10	400	---	350	>100.00	4.50	8.50	--	--
CH041R	N	6	35	10	1.80	.15	.14	--	--
CH042R	N	3	10	3	.40	.08	.08	--	--
CH043R	N	2	7	1	.25	.08	.04	--	--
CH044R	N	5	5	6	.15	N	.02	--	--

Table 5.-- Analytical data for rocks from the Chemehuevi Mountains Wilderness Study Area, San Bernardino County, California--continued

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
CH045R	34 35 0	114 29 7	.30	.15	.70	.030	70	.7	N	N	10
CH046R	34 35 33	114 33 32	1.50	.70	1.50	.300	500	N	N	N	10
CH047R	34 35 36	114 33 33	.70	.15	.50	.150	500	N	N	N	N
CH048R	34 36 40	114 33 46	.30	.10	.70	.050	200	N	N	N	N
CH049R	34 36 40	114 33 46	3.00	1.50	2.00	.500	1,000	N	N	N	<10
CH050R	34 37 0	114 32 46	1.00	.15	2.00	.100	300	N	N	N	<10
CH051R	34 35 53	114 31 53	.20	.05	.50	.050	20	N	N	N	N
CH052R	34 38 55	114 29 22	3.00	.20	1.50	.300	700	N	N	N	20
CH053R	34 36 30	114 29 8	1.00	.30	2.00	.070	1,000	N	N	N	<10
J81CH19	34 37 44	114 33 45	1.00	.30	15.00	.150	2,000	N	N	N	<10
J81CH24	34 31 22	114 31 18	.50	.20	20.00	.015	5,000	N	N	N	N
J81CH25	34 31 18	114 31 20	.50	.30	>20.00	.020	>5,000	N	N	N	<10
J81CH26	34 31 17	114 31 12	2.00	.50	.70	.200	200	<.5	N	N	10
J81CH56	34 39 37	114 31 14	7.00	.30	3.00	.100	200	.5	N	N	20
J82CH25A	34 39 36	113 28 16	1.50	.30	5.00	.020	1,500	7.0	N	N	10
J82CH25B	34 39 36	114 28 16	10.00	.30	2.00	.700	200	3.0	N	N	50
J82CH25C	34 39 36	114 28 16	10.00	.50	5.00	1.000	200	3.0	N	N	30
J82CH42	34 41 6	114 31 33	20.00	.20	.50	.150	30	.7	N	N	30
J82CH67A	34 36 3	114 30 57	.70	.07	.15	.100	100	3.0	N	N	N
J82CH74	34 36 47	114 36 50	1.00	.20	.30	.030	500	15.0	N	N	N
J82CH86	34 41 13	114 36 31	3.00	.30	1.50	.150	1,500	5.0	N	N	20
J82CH91	34 28 54	114 29 36	5.00	1.50	3.00	.700	500	N	N	N	10
J82CH94A	34 29 41	114 29 15	.10	1.00	15.00	.020	100	N	N	N	30
J82CH94B	34 29 37	114 29 14	.10	.03	1.00	<.002	5,000	N	N	N	150
J82CH96	34 29 33	114 29 8	3.00	.70	.50	.500	500	N	N	N	15
J82CH100	34 36 2	114 29 56	.30	.05	.15	.100	10	5.0	N	N	N
J82CH109	34 35 56	114 28 17	1.50	.50	1.00	.500	100	N	N	N	50
J82CH189	34 39 41	114 36 16	1.50	<.02	.50	.010	150	5.0	N	10	10
H9CH288D	34 32 22	114 38 11	.05	<.02	<.05	.002	10	N	N	N	100
H9CH288H	34 32 22	114 38 11	.10	.10	.05	.030	10	N	N	N	30
P80CH48	34 35 33	114 34 7	.30	.50	5.00	.030	300	.7	N	N	<10
P80CH56	34 35 49	114 28 53	3.00	.30	2.00	.200	300	N	N	N	10
P80CH58	34 39 32	114 37 23	3.00	1.00	1.00	.050	300	1.0	N	N	15
CH0010	34 36 2	114 29 56	1.00	.30	.50	.150	300	N	N	N	N
CH0020	34 41 5	114 26 17	1.00	.20	.10	.300	70	.5	N	N	50
CH0040	34 39 32	114 37 22	5.00	1.00	2.00	.015	700	10.0	N	N	30
CH0050	34 39 38	114 27 55	.50	.05	.70	.015	50	70.0	N	N	20
CH0060	34 38 47	114 34 21	1.00	.03	.20	.030	70	10.0	N	50	20
CH0070	34 36 30	114 29 8	1.50	.05	.10	.005	70	7.0	N	N	70

Table 5.-- Analytical data for rocks from the Chemehuevi Mountains Wilderness Study Area, San Bernardino County, California--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
CH045R	1,500	1.5	N	N	N	10	15	<20	N	N	5
CH046R	1,500	1.5	N	N	5	50	15	30	N	<20	7
CH047R	700	2.0	N	N	N	<10	N	20	N	<20	5
CH048R	500	3.0	N	N	<5	10	<5	20	N	20	5
CH049R	2,000	2.0	N	N	7	20	30	150	N	20	15
CH050R	500	1.5	N	N	<5	20	<5	20	N	<20	5
CH051R	50	1.0	N	N	N	15	<5	20	N	N	5
CH052R	2,000	1.5	N	N	5	15	15	30	N	<20	<5
CH053R	1,000	<1.0	N	N	<5	10	50	20	N	N	10
J81CH19	3,000	N	N	N	N	N	10	200	N	N	<5
J81CH24	700	N	N	N	N	N	<5	N	N	N	N
J81CH25	300	N	N	N	N	N	<5	50	N	N	N
J81CH26	500	1.0	N	N	5	10	30	70	N	N	<5
J81CH56	100	1.5	N	N	10	10	20,000	N	100	N	5
J82CH25A	70	1.0	N	N	5	N	1,000	N	N	N	5
J82CH25B	500	1.0	N	N	15	50	300	100	15	<20	10
J82CH25C	500	1.5	N	N	5	N	500	20	70	N	<5
J82CH42	1,000	N	N	N	700	20	200	N	70	N	30
J82CH67A	500	<1.0	N	N	<5	15	20,000	20	N	N	5
J82CH74	20	N	70	N	20	30	5,000	<20	30	N	30
J82CH86	200	1.0	N	N	700	30	10,000	30	N	N	70
J82CH91	1,000	<1.0	N	N	15	15	70	30	N	N	20
J82CH94A	20	N	N	N	N	15	15	20	N	N	N
J82CH94B	200	<1.0	N	N	<5	10	15	N	7	N	5
J82CH96	1,500	1.5	N	N	5	10	30	100	N	20	5
J82CH100	1,000	<1.0	N	N	N	<10	>20,000	<20	N	N	<5
J82CH109	700	1.5	N	N	<5	<10	200	20	7	N	<5
J82CH189	1,500	1.0	N	N	N	<10	20,000	N	<5	N	<5
H9CH288D	50	<1.0	N	N	<5	<10	5	N	N	N	<5
H9CH288H	50	<1.0	N	N	N	10	<5	N	<5	N	<5
P80CH48	200	<1.0	N	N	5	20	200	N	N	N	20
P80CH56	1,000	1.0	<10	N	N	<10	7	N	N	N	<5
P80CH58	500	3.0	<10	N	50	300	10,000	N	10	N	150
CH0010	1,500	1.0	N	N	7	20	7,000	30	<5	N	<5
CH0020	1,000	1.5	N	N	5	30	3,000	30	N	<20	<5
CH0040	700	5.0	70	N	70	100	15,000	20	50	N	200
CH0050	50	2.0	50	30	N	10	5,000	20	10	N	<5
CH0060	>5,000	3.0	<10	N	N	10	20,000	20	N	N	5
CH0070	500	N	10	N	N	10	>20,000	<20	N	N	5

Table 5.-- Analytical data for rocks from the Chemehuevi Mountains Wilderness Study Area, San Bernardino County, California--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
CH045R	100	N	N	N	300	10	N	N	N	15	N
CH046R	50	N	7	N	500	70	N	15	N	150	N
CH047R	50	N	15	N	200	15	N	20	N	30	N
CH048R	70	N	5	N	200	20	N	30	N	70	N
CH049R	50	N	7	N	700	100	N	20	N	200	N
CH050R	30	N	5	N	1,000	30	N	10	N	150	N
CH051R	15	N	<5	N	300	15	N	15	N	30	N
CH052R	20	N	10	N	150	50	N	50	N	200	N
CH053R	50	N	<5	N	200	30	N	70	N	70	N
J81CH19	10	N	--	N	500	70	N	100	N	200	N
J81CH24	<10	N	--	N	300	20	N	70	N	<10	N
J81CH25	<10	N	--	N	1,500	10	N	15	N	10	N
J81CH26	20	N	--	N	100	100	N	20	N	700	N
J81CH56	N	N	--	N	100	70	N	20	N	30	N
J82CH25A	200	N	--	N	100	15	N	20	N	N	N
J82CH25B	70	N	--	N	300	150	N	50	N	700	N
J82CH25C	20	N	--	N	500	100	N	30	N	30	N
J82CH42	15	N	--	N	100	300	N	N	N	150	N
J82CH67A	20	N	5	N	300	50	N	<10	N	100	N
J82CH74	20	N	<5	N	N	100	N	N	N	10	N
J82CH86	150	N	5	N	500	70	N	20	N	30	N
J82CH91	20	N	10	N	700	150	N	20	N	100	N
J82CH94A	N	N	N	N	1,000	50	N	N	N	15	N
J82CH94B	N	N	N	N	N	15	N	N	N	<10	N
J82CH96	30	N	5	N	700	100	N	30	N	200	N
J82CH100	30	N	<5	N	300	50	N	N	N	100	N
J82CH109	50	N	5	N	500	100	N	20	N	100	N
J82CH189	10	N	N	N	N	20	N	<10	N	<10	N
H9CH288D	<10	N	N	N	<100	70	N	<10	N	<10	N
H9CH288H	<10	N	N	N	N	200	N	<10	N	20	N
P80CH48	N	N	N	N	200	10	N	<10	N	<10	N
P80CH56	10	N	<5	N	1,000	70	N	20	N	100	N
P80CH58	10	N	20	N	100	70	<50	20	N	<10	N
CH0010	50	N	<5	N	150	20	N	70	N	200	N
CH0020	150	N	20	N	150	30	N	100	N	500	N
CH0040	100	N	7	N	200	100	N	<10	200	100	N
CH0050	>20,000	300	N	N	N	15	N	N	3,000	20	N
CH0060	200	N	N	N	3,000	50	N	N	N	15	N
CH0070	20	N	N	N	N	70	N	N	N	10	N

Table 5.-- Analytical data for rocks from the Chemehuevi Mountains Wilderness Study Area, San Bernardino County, California--continued

Sample	Au-ppm aa	Cu-ppm aa	Pb-ppm aa	Zn-ppm aa	Ag-ppm aa	Cd-ppm aa	Hg-INST	N-ACT TH	N-ACT U
CH045R	N	3	5	1	.15	.06	.04	--	--
CH046R	N	3	5	4	.10	.05	.02	--	--
CH047R	N	10	9	1	.45	.06	N	--	--
CH048R	N	2	5	1	.10	.06	N	--	--
CH049R	.05	10	8	8	.10	.10	<.02	--	--
CH050R	N	2	4	1	.10	.06	N	--	--
CH051R	N	2	8	N	.10	N	<.02	--	--
CH052R	.06	6	6	15	.20	.01	<.02	--	--
CH053R	N	15	8	2	.10	.10	.06	--	--
J81CH19	--	--	--	--	--	--	--	--	--
J81CH24	--	--	--	--	--	--	--	--	--
J81CH25	--	--	--	--	--	--	--	--	--
J81CH26	--	--	--	--	--	--	--	--	--
J81CH56	--	--	--	--	--	--	--	--	--
J82CH25A	--	--	--	--	--	--	--	--	--
J82CH25B	--	--	--	--	--	--	--	--	--
J82CH25C	--	--	--	--	--	--	--	--	--
J82CH42	--	--	--	--	--	--	--	--	--
J82CH67A	N	--	--	--	--	--	3.10	--	--
J82CH74	N	--	--	--	--	--	7.50	--	--
J82CH86	N	--	--	--	--	--	5.00	--	--
J82CH91	N	--	--	--	--	--	1.00	--	--
J82CH94A	N	--	--	--	--	--	1.10	--	--
J82CH94B	N	--	--	--	--	--	1.80	--	--
J82CH96	N	--	--	--	--	--	2.60	--	--
J82CH100	N	--	--	--	--	--	3.00	--	--
J82CH109	N	--	--	--	--	--	2.90	--	--
J82CH189	--	--	--	--	--	--	--	--	--
H9CH288D	--	--	--	--	--	--	--	--	--
H9CH288H	--	--	--	--	--	--	--	--	--
P80CH48	--	--	--	--	--	--	--	--	--
P80CH56	--	--	--	--	--	--	--	--	--
P80CH58	--	--	--	--	--	--	--	--	--
CH0010	N	--	--	--	--	--	--	27.1	4.55
CH0020	N	--	--	--	--	--	--	30.8	9.76
CH0040	<.05	--	--	--	--	--	--	--	--
CH0050	.10	--	--	--	--	--	--	--	--
CH0060	30.00	--	--	--	--	--	--	--	--
CH0070	1.50	--	--	--	--	--	--	--	--

Table 6.--Analytical data for waters from the Chemehuevi Mountains Wilderness Study Area, San Bernardino County, California

Sample Number	Latitude	Longitude	Cu (µg/L)	U (µg/L)	Zn (µg/L)	$SO_4^=$ (mg/L)	F^- (mg/L)	Cl^- (mg/L)	Specific Conductance (µmhos/cm)
CH001W	34 34 42	114 33 03	2.5	.26	3	15	.35	7.3	220
CH002W	34 34 36	114 32 30	1.8	42	6	260	4.5	190	1420
CH003W	34 35 40	114 40 00	3.7	36	16	182	3.1	130	1020
CH004W	34 38 05	114 27 18	5.0	2.6	15	710	18	1300	6000