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 Palen-McCoy Wilderness Study Area (CDCA 325), Riverside 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 Palen-McCoy Wilderness Study Area, California Desert Conservation Area (CDCA 325), Riverside County, California.

INTRODUCTION

In March, 1982 the U.S. Geological Survey conducted a reconnaissance geochemical survey of the Palen-McCoy Wilderness Study Area, Riverside County, California.

The Palen-McCoy Wilderness Study Area comprises about 130 mi^2 (338 km^2) in the east-central area of Riverside County, California, and lies about 9 mi (15 km) east of Desert Center on Interstate 10 (see figure 1). Access to the study area is provided on unimproved dirt roads originating from Interstate 10 just to the south of the study area.

The Palen-McCoy Wilderness Study Area comprises the southern half of the Palen Mountains and the alluvial valley between the Palen and McCoy ranges. The southern half of the Palen Mountains is underlain almost entirely by the Cretaceous McCoy Mountains Formation and predominantly consists of light gray mudstone and volcanic arenite in this area (Pelka, 1973). Andesite and diorite of Mesozoic(?) age have been thrust over the McCoy Mountains Formation at the southern tip of the Palen Mountains.

The topographic relief in the study area is about 3,200 ft (975 m), with a maximum elevation of 3,623 ft (1,104 m). The ground surface is mountainous terrain in the north west portion of the study area which grades to alluvial-filled valleys to the south-east. The climate is arid to semiarid.

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 provide information about the chemistry of a limited number of minerals in rock material eroded from the drainage basin upstream from each sample site. The selective concentration of minerals, many of which are ore-related, permits determination of some elements that are not easily detected in stream-sediment samples.

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

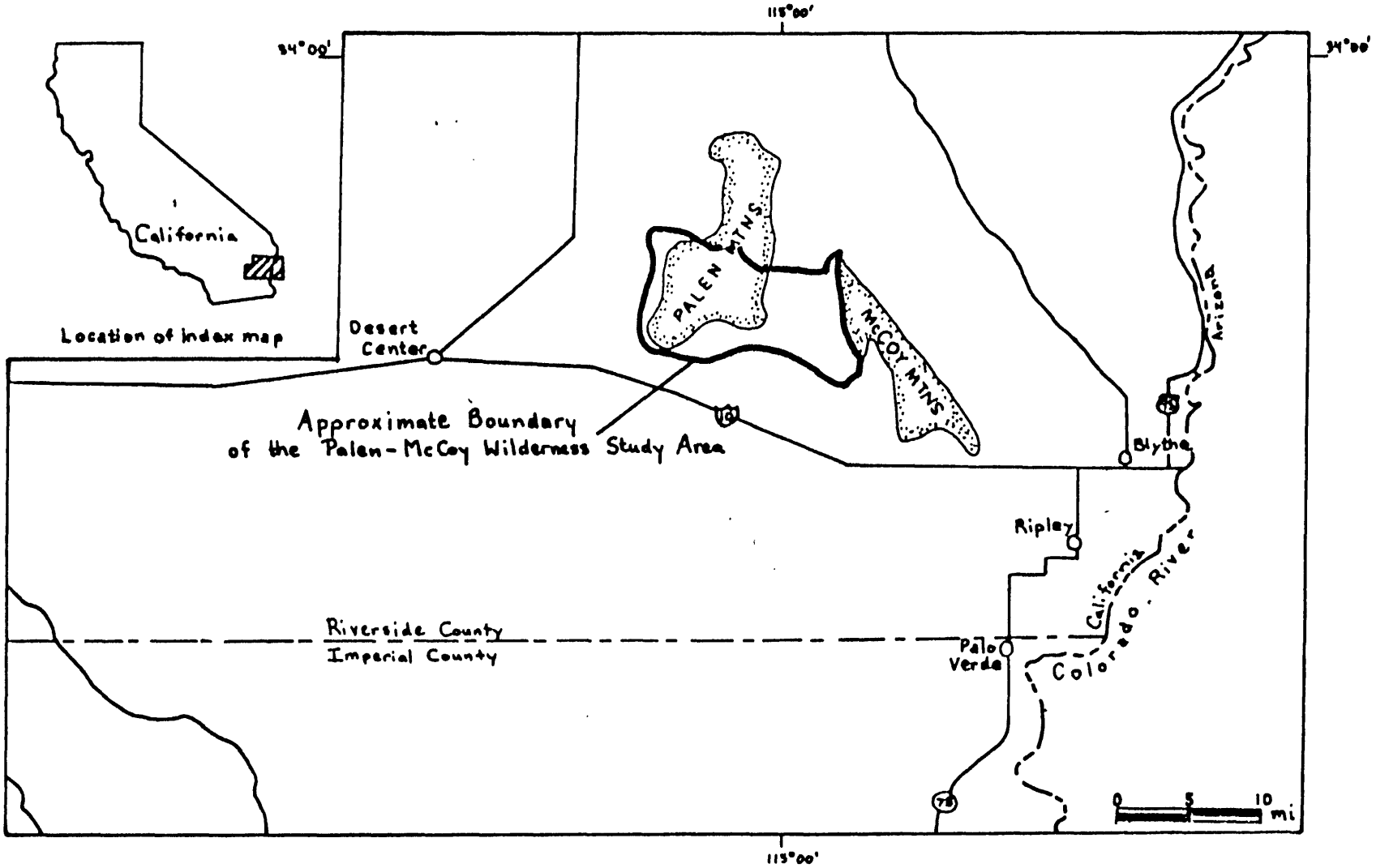

Figure 1. Index map of the Palen-McCoy Wilderness Study Area, Riverside County, California.

information about the major- and trace-element assemblages associated with a mineralizing system.

Sample Collection

Samples were collected at 79 sites (plate 1). At nearly all of those sites, both a stream-sediment sample and a heavy-mineral-concentrate sample were collected. Where suitable outcrop was available, rock samples were collected. Sampling density was about 1 sample site per 1.6 mi^2 for the stream sediments and heavy-mineral concentrates, and about 1 sample site per 5 mi^2 for the rocks. The area of the drainage basins sampled ranged from .5 mi^2 to 3 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 = 1:62,500). 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 outcrops or exposures in the vicinity of the plotted site location. Samples were collected from unaltered and/or altered and/or mineralized rocks.

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.

After air drying, bromoform (specific gravity 2.8) was used to remove the remaining quartz and feldspar from the heavy-mineral-concentrate samples that had been panned in the field. The resultant heavy mineral sample was separated into three fractions using a large electromagnet (in this case a modified Frantz Isodynamic Separator). The most magnetic material, primarily magnetite, was not analyzed. The second fraction, largely ferromagnesian silicates and iron oxides, was saved for analysis/archival storage. The third fraction (the least magnetic material including 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. These magnetic separates are the same separates that would be produced by using a Frantz Isodynamic Separator set at a slope of 15° and a tilt of 10° with a current of 0.1 ampere to remove the magnetite and

ilmenite, and a current of 1.0 ampere to split the remainder of the sample into paramagnetic and nonmagnetic fractions.

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

Sample Analysis

Spectrographic method

The stream-sediment, heavy-mineral-concentrate, and rock samples were analyzed 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 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 Palen-McCoy Wilderness Study Area are listed in tables 4-6.

Chemical Methods

Other methods of analysis used on rock samples from the Palen-McCoy Wilderness Study Area are summarized in table 2.

A generalized description of rock samples and the formation from which they were collected within the Palen-McCoy Wilderness Study Area is provided in table 3. Analytical results for stream-sediment, heavy-mineral-concentrate, and rock samples are listed in tables 4, 5, and 6, 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, 1976).

DESCRIPTION OF DATA TABLES

Tables 4-6 list the analyses for the samples of stream sediment, heavy-mineral concentrate, and rock, 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 maps (plate 1). Columns in which the element headings show the letter "s"

below the element symbol are emission spectrographic analyses; "aa" indicates atomic absorption 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 table 1. If an element was observed but was below the lowest reporting value, a "less than" symbol (<) was entered in the tables in front of the lower limit of determination. 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 4-6 in place of an analytical value. Because of the formatting used in the computer program that produced tables 4-6, 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.

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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 based on a 5-mg sample, and are therefore two reporting intervals 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

[AA = atomic absorption; I = instrumental; SI = specific ion; S = spectrophotometry; and F = fluorometry]

Element or constituent determined	Sample Type	Method	Determination limit (micrograms/ gram or ppm)	Reference
Gold (Au)		AA	0.05	Thompson and others, 1968
Mercury (Hg)		I	0.02	Modification of McNerney and others, 1972, and Vaughn, and McCarthy, 1964.
Arsenic (As)		AA	5 or 10	Modification of Viets, 1978
Antimony (Sb)		AA	2	
Zinc (Zn)		AA	5	
Bismuth (Bi)		AA	1	
Cadmium (Cd)		AA	0.1	

Table 3.--Generalized description of rock samples, Palen-McCoy Wilderness Study Area

Sample Number	Formation	Density
PM004R	McCoy Mountains Formation	volcanic arenite
PM006R	---------Do----------	quartz vein
PM011R1	---------Do----------	quartz vein
PM011R2	---------Do----------	quartz arenite
PM013R	---------Do----------	conglomerate
PM016R	---------Do----------	volcanic arenite
PM026R	---------Do----------	quartz arenite
PM030R	---------Do----------	quartz arenite
PM036R	---------Do----------	mudstone
PM037R	---------Do----------	quartzite
PM043R	---------Do----------	siltstone
PM045R	---------Do----------	quartz arenite
PM049R	---------Do----------	quartz arenite
PM051R	---------Do----------	quartz arenite
PM055R	---------Do----------	quartzite
PM060R	---------Do----------	quartz arenite
PM065R	---------Do----------	quartzite
PM068R	---------Do----------	quartz arenite
PM074R	---------Do----------	mudstone
PM076R	---------Do----------	quartzite
PM079R	---------Do----------	quartzite
PM080R1	---------Do----------	pyroxene diorite
PM080R2	---------Do----------	pyroxene diorite
PM080R3	---------Do----------	quartzite
PM080R4	---------Do----------	quartzite
PM081R	---------Do----------	pyrophyllite

Table 4.--Analytical data for stream sediments from the Palen-McCoy Wilderness Study Area, Riverside County, California

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
PM001	33 44 25	115 8 20	3	1.0	2.0	.3	500	<.5	N	N	30	500
PM002	33 44 35	115 8 25	2	1.0	2.0	.5	500	N	N	N	20	500
PM003	33 44 55	115 8 0	2	1.0	2.0	.5	500	N	N	N	30	500
PM004	33 45 15	115 7 55	5	1.0	2.0	.5	700	N	N	N	15	500
PM005	33 45 30	115 8 15	2	1.0	1.0	.5	500	N	N	N	15	500
PM006	33 45 35	115 8 35	2	1.0	1.0	.3	500	N	N	N	20	500
PM007	33 46 0	115 6 25	2	1.0	1.0	.3	500	N	N	N	20	500
PM008	33 46 0	115 6 15	5	1.0	2.0	.5	700	N	N	N	20	500
PM009	33 46 0	115 6 10	5	1.0	2.0	.3	500	N	N	N	20	500
PM010	33 46 15	115 6 20	5	1.0	2.0	.3	500	N	N	N	10	500
PM011	33 46 35	115 6 45	2	1.0	2.0	.3	500	N	N	N	10	300
PM012	33 46 45	115 7 5	3	1.0	1.0	.3	500	N	N	N	10	500
PM013	33 46 30	115 7 15	3	1.0	2.0	.3	500	N	N	N	20	500
PM014	33 46 55	115 7 30	3	1.0	1.0	.3	500	N	N	N	20	500
PM015	33 47 25	115 6 45	3	1.0	1.0	.3	500	N	N	N	20	700
PM016	33 47 30	115 6 40	2	1.0	1.0	.3	500	N	N	N	10	500
PM017	33 48 25	115 7 35	2	1.0	1.0	.3	500	N	N	N	15	700
PM018	33 48 35	115 7 35	5	1.0	1.0	.3	500	N	N	N	15	700
PM019	33 46 20	115 8 45	3	1.0	1.0	.3	500	<.5	N	N	20	700
PM020	33 46 50	115 8 45	3	1.0	1.0	.3	500	N	N	N	50	500
PM021	33 47 20	115 8 10	3	1.0	1.0	.3	500	N	N	N	50	500
PM022	33 47 55	115 7 50	2	.5	.7	.2	300	N	N	N	15	300
PM023	33 48 15	115 8 15	5	1.0	2.0	.3	500	N	N	N	30	700
PM024	33 49 0	115 8 30	2	1.0	1.0	.2	700	N	N	N	20	500
PM025	33 49 20	115 8 20	2	1.0	1.0	.3	700	N	N	N	15	500
PM026	33 49 15	115 7 20	2	1.0	1.0	.3	700	.5	N	N	15	500
PM027	33 49 15	115 7 0	2	1.0	1.0	.3	500	N	N	N	50	500
PM028	33 49 10	115 6 35	2	1.0	1.0	.3	500	N	N	N	50	500
PM029	33 44 0	115 9 0	2	1.0	1.0	.3	500	N	N	N	20	500
PM030	33 43 45	115 8 35	5	2.0	2.0	.3	700	N	N	N	100	500
PM031	33 43 30	115 8 30	2	1.0	1.0	.3	500	N	N	N	30	500
PM032	33 43 20	115 8 25	2	1.0	1.0	.2	500	N	N	N	30	500
PM033	33 43 45	115 7 30	5	1.0	2.0	.3	700	N	N	N	30	500
PM034	33 42 55	115 7 20	2	1.0	2.0	.2	700	N	N	N	20	500
PM035	33 43 55	115 7 20	3	1.0	2.0	.3	500	N	N	N	70	700
PM036	33 44 0	115 7 0	3	1.0	2.0	.2	500	N	N	N	50	700
PM037	33 44 20	115 6 30	2	1.0	2.0	.3	500	N	N	N	20	500
PM038	33 44 25	115 6 55	3	1.0	2.0	.3	500	N	N	N	30	500
PM039	33 44 15	115 6 0	2	1.0	2.0	.2	500	N	N	N	20	700
PM040	33 44 10	115 5 55	3	1.0	2.0	.2	500	N	N	N	20	700
PM041	33 44 10	115 6 10	3	1.0	2.0	.2	500	N	N	N	20	700
PM042	33 43 30	115 5 40	3	1.0	2.0	.2	500	N	N	N	20	700
PM043	33 43 35	115 5 30	2	1.0	2.0	.2	500	N	N	N	100	700
PM044	33 43 55	115 5 10	3	1.0	2.0	.3	500	N	N	N	30	700
PM045	33 44 10	115 5 0	2	1.0	2.0	.2	500	N	N	N	30	700

Table 4.--Analytical data for stream sediments from the Palen-McCoy Wilderness Study Area, Riverside 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	Sc-ppm s
PM001	1	N	N	15	50	15	70	N	N	20	20	N	10
PM002	1	N	N	15	50	15	50	N	N	20	20	N	15
PM003	1	N	N	15	30	10	50	N	N	20	15	N	10
PM004	2	N	N	15	30	15	50	N	N	20	30	N	10
PM005	1	N	N	15	30	15	100	N	N	20	20	N	10
PM006	1	N	N	10	30	15	50	N	N	15	20	N	10
PM007	2	N	N	15	70	15	50	N	N	20	30	N	10
PM008	2	N	N	15	50	20	50	N	N	20	30	N	10
PM009	1	N	N	15	50	20	50	N	N	20	20	N	10
PM010	1	N	N	15	50	15	50	N	N	30	30	N	10
PM011	1	N	N	10	20	15	20	N	N	15	20	N	7
PM012	1	N	N	10	20	15	70	N	N	20	15	N	7
PM013	2	N	N	15	50	20	100	N	N	20	20	N	10
PM014	2	N	N	10	30	15	70	N	N	10	20	N	7
PM015	2	N	N	10	50	15	50	N	N	15	20	N	7
PM016	1	N	N	10	50	10	30	N	N	10	20	N	10
PM017	1	N	N	10	50	10	50	N	N	10	20	N	10
PM018	1	N	N	15	70	10	30	N	N	20	50	N	10
PM019	2	N	N	15	50	15	70	N	N	20	20	N	10
PM020	2	N	N	15	70	15	50	N	N	20	20	N	10
PM021	2	N	N	15	50	20	50	N	N	20	20	N	10
PM022	2	N	N	10	30	15	20	N	N	10	15	N	7
PM023	1	N	N	15	50	15	50	N	N	20	20	N	10
PM024	2	N	N	15	70	20	20	N	N	20	30	N	7
PM025	1	N	N	15	70	15	20	N	N	10	20	N	5
PM026	1	N	N	10	70	15	20	N	N	10	20	N	5
PM027	1	N	N	15	70	10	50	N	N	20	20	N	5
PM028	1	N	N	15	70	15	20	N	N	20	30	N	5
PM029	1	N	N	10	50	10	20	N	N	15	20	N	5
PM030	1	N	N	15	50	20	50	N	N	20	20	N	10
PM031	1	N	N	10	50	15	20	N	N	5	20	N	5
PM032	1	N	N	10	30	20	20	N	N	5	15	N	5
PM033	1	N	N	15	50	15	50	N	N	20	15	N	10
PM034	2	N	N	10	50	15	20	N	N	10	20	N	7
PM035	2	N	N	15	50	10	50	N	N	20	20	N	7
PM036	2	N	N	15	70	15	50	N	N	20	30	N	10
PM037	2	N	N	15	50	15	50	N	N	20	30	N	10
PM038	2	N	N	20	50	20	30	N	N	20	50	N	10
PM039	2	N	N	10	50	15	20	N	N	10	20	N	7
PM040	2	N	N	20	50	15	20	N	N	20	30	N	10
PM041	2	N	N	15	50	15	20	N	N	20	30	N	10
PM042	2	N	N	15	70	15	20	N	N	10	30	N	10
PM043	2	N	N	15	50	10	200	N	N	20	30	N	10
PM044	2	N	N	15	50	20	20	N	N	20	30	N	10
PM045	2	N	N	15	50	15	50	N	N	20	30	N	10

Table 4.--Analytical data for stream sediments from the Palen-McCoy Wilderness Study Area, Riverside County, California

Sample	Sn-ppm s	Sr-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s
PM001	N	200	70	N	20	<200	100	N
PM002	N	200	70	N	20	<200	200	N
PM003	N	200	70	N	20	<200	300	N
PM004	N	200	70	N	20	<200	200	N
PM005	N	200	70	N	30	<200	200	N
PM006	N	200	50	N	20	<200	200	N
PM007	N	200	50	N	30	<200	200	N
PM008	N	300	150	N	50	<200	200	N
PM009	N	200	50	N	20	<200	200	N
PM010	N	200	70	N	50	<200	500	N
PM011	N	200	50	N	20	<200	200	N
PM012	N	200	50	N	20	<200	200	N
PM013	N	200	50	N	30	<200	200	N
PM014	N	300	50	N	20	<200	200	N
PM015	N	200	70	N	50	<200	200	N
PM016	N	100	70	N	20	<200	200	N
PM017	N	300	70	N	30	<200	200	N
PM018	N	300	70	N	20	<200	200	N
PM019	N	300	50	N	30	<200	200	N
PM020	N	300	50	N	30	<200	200	N
PM021	N	300	50	N	30	<200	500	N
PM022	N	150	30	N	20	<200	200	N
PM023	N	300	70	N	50	<200	200	N
PM024	N	300	70	N	20	<200	200	N
PM025	N	200	50	N	20	<200	200	N
PM026	N	200	50	N	20	<200	200	N
PM027	N	500	50	N	20	<200	200	N
PM028	N	500	100	N	20	<200	200	N
PM029	N	500	100	N	20	<200	300	N
PM030	N	500	150	N	20	<200	200	N
PM031	N	200	100	N	20	<200	100	N
PM032	N	200	50	N	20	<200	50	N
PM033	N	200	100	N	30	<200	200	N
PM034	N	200	70	N	20	<200	100	N
PM035	N	200	70	N	20	<200	300	N
PM036	N	200	70	N	20	<200	150	N
PM037	N	200	70	N	20	<200	150	N
PM038	N	200	70	N	20	<200	200	N
PM039	N	200	70	N	20	<200	200	N
PM040	N	200	70	N	30	<200	500	N
PM041	N	200	70	N	20	<200	150	N
PM042	N	200	70	N	20	<200	100	N
PM043	N	200	100	N	20	<200	100	N
PM044	N	200	100	N	20	<200	200	N
PM045	N	200	70	N	20	<200	150	N

Table 4.--Analytical data for stream sediments from the Palen-McCoy Wilderness Study Area, Riverside 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	Ba-ppm s
PM046	33 44 10	115 4 35	3	1.0	2.0	.2	500	N	N	N	20	700
PM047	33 44 15	115 4 30	2	.7	1.0	.2	500	N	N	N	20	700
PM048	33 44 25	115 4 15	3	1.0	1.0	.2	500	N	N	N	15	500
PM049	33 45 25	115 4 45	5	1.0	1.0	.2	500	N	N	N	15	500
PM050	33 45 25	115 4 25	5	1.0	1.0	.2	500	N	N	N	10	500
PM051	33 46 25	115 4 45	3	1.0	1.0	.2	500	N	N	N	20	500
PM052	33 46 20	115 4 45	3	1.0	1.0	.2	700	N	N	N	10	500
PM053	33 45 30	115 3 45	2	1.0	1.0	.3	500	N	N	N	10	500
PM054	33 44 55	115 3 20	3	1.0	1.0	.3	500	N	N	N	20	500
PM055	33 43 20	115 1 35	3	1.0	1.0	.3	500	N	N	N	10	500
PM056	33 49 0	115 6 25	3	.5	1.0	.3	700	N	N	N	10	500
PM057	33 48 55	115 6 30	3	1.0	1.0	.3	500	N	N	N	20	500
PM058	33 49 15	115 6 0	3	1.0	1.0	.3	700	N	N	N	10	500
PM059	33 49 0	115 5 35	3	.5	1.0	.5	700	N	N	N	30	500
PM060	33 48 25	115 4 50	3	1.0	1.0	.3	500	N	N	N	20	500
PM061	33 48 30	115 4 45	3	1.0	1.0	.3	700	N	N	N	20	500
PM062	33 41 50	115 4 30	3	1.0	1.0	.3	500	N	N	N	20	500
PM063	33 47 25	115 4 30	3	1.0	1.0	.3	500	N	N	N	20	500
PM064	33 47 20	115 4 35	2	.5	1.0	.2	500	N	N	N	20	500
PM065	33 47 25	115 4 40	2	.5	1.0	.2	500	N	N	N	20	500
PM066	33 43 50	115 2 45	2	.5	1.0	.2	500	N	N	N	20	300
PM067	33 43 40	115 2 20	2	.5	1.0	.2	500	N	N	N	20	300
PM068	33 44 0	115 1 25	2	.5	1.0	.2	500	N	N	N	20	300
PM069	33 44 20	115 1 0	2	.5	1.0	.2	500	N	N	N	20	300
PM070	33 44 40	115 0 30	5	.5	1.0	.3	500	N	N	N	20	300
PM071	33 46 10	115 1 10	2	.5	1.0	.2	500	N	N	N	10	300
PM072	33 46 15	115 1 10	2	.7	1.0	.2	500	N	N	N	20	300
PM073	33 45 10	115 0 25	3	.7	1.0	.3	500	N	N	N	10	300
PM074	33 47 30	115 2 30	3	1.0	1.0	.5	700	N	N	N	30	500
PM075	33 42 45	115 6 30	3	1.0	1.0	.5	500	N	N	N	30	500
PM076	33 46 30	115 2 10	3	1.0	1.0	.5	500	<.5	N	N	30	500
PM077	33 46 20	115 1 55	3	1.0	1.0	.3	500	N	N	N	20	500
PM078	33 47 35	115 2 10	3	1.0	1.0	.3	500	N	N	N	30	500
PM079	33 46 15	115 2 35	3	1.0	1.0	.3	500	N	N	N	30	500

Table 4.--Analytical data for stream sediments from the Palen-McCoy Wilderness Study Area, Riverside County, California--continued

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	Sc-ppm s
PM046	2	N	N	15	50	15	20	N	N	10	20	N	10
PM047	2	N	N	10	50	15	20	N	N	10	30	N	10
PM048	2	N	N	10	50	15	50	N	N	10	30	N	15
PM049	2	N	N	10	50	15	50	N	N	20	20	N	15
PM050	2	N	N	10	50	20	30	N	N	10	20	N	15
PM051	2	N	N	15	50	15	200	N	N	20	30	N	15
PM052	2	N	N	15	50	15	50	N	N	20	30	N	15
PM053	2	N	N	10	50	15	20	N	N	20	30	N	10
PM054	2	N	N	15	50	15	50	N	N	10	50	N	15
PM055	2	N	N	15	50	15	50	N	<20	20	30	N	15
PM056	1	N	N	15	30	15	50	N	N	10	20	N	10
PM057	1	N	N	15	30	15	50	N	N	20	20	N	15
PM058	1	N	N	15	30	15	30	N	N	10	20	N	10
PM059	1	N	N	15	30	15	30	N	N	10	20	N	15
PM060	2	N	N	15	30	15	100	N	N	10	20	N	15
PM061	1	N	N	15	30	15	50	N	N	10	20	N	15
PM062	2	N	N	15	30	15	50	N	N	10	30	N	10
PM063	1	N	N	15	30	15	50	N	N	10	20	N	10
PM064	2	N	N	15	20	20	30	N	N	10	20	N	10
PM065	2	N	N	15	20	15	30	N	N	10	20	N	10
PM066	2	N	N	15	30	15	50	N	N	10	30	N	10
PM067	2	N	N	10	20	15	30	N	N	10	30	N	10
PM068	2	N	N	10	20	15	200	N	N	10	20	N	10
PM069	2	N	N	10	20	15	50	N	N	10	20	N	10
PM070	2	N	N	15	50	15	100	N	<20	10	20	N	10
PM071	2	N	N	10	30	15	50	N	N	10	20	N	10
PM072	2	N	N	10	20	15	20	N	N	10	20	N	7
PM073	2	N	N	10	50	15	50	N	20	10	30	N	10
PM074	2	N	N	15	50	20	50	N	N	20	20	N	10
PM075	2	N	N	10	50	15	20	N	N	10	20	N	10
PM076	2	N	N	15	30	15	50	N	N	10	30	N	10
PM077	2	N	N	15	50	15	50	N	N	10	50	N	7
PM078	2	N	N	15	30	15	50	N	N	10	20	N	10
PM079	2	N	N	15	50	15	50	N	N	10	50	N	10

Table 4.--Analytical data for stream sediments from the Palen-McCoy Wilderness Study Area, Riverside County, California--continued

Sample	Sn-ppm s	Sr-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s
PM046	N	200	70	N	20	<200	150	N
PM047	N	200	70	N	50	<200	100	N
PM048	N	100	50	N	30	<200	200	N
PM049	N	200	70	N	30	<200	200	N
PM050	N	300	70	N	30	<200	200	N
PM051	N	200	70	N	30	<200	200	N
PM052	N	200	70	N	30	<200	200	N
PM053	N	150	70	N	30	<200	200	N
PM054	N	200	70	N	30	<200	200	N
PM055	N	200	70	N	30	<200	200	N
PM056	N	200	70	N	20	<200	200	N
PM057	N	300	70	N	20	<200	200	N
PM058	N	200	70	N	20	<200	200	N
PM059	N	200	70	N	20	<200	200	N
PM060	N	200	70	N	30	<200	200	N
PM061	N	200	70	N	20	<200	200	N
PM062	N	150	70	N	20	<200	200	N
PM063	N	200	70	N	20	<200	200	N
PM064	N	150	50	N	20	<200	200	N
PM065	N	100	50	N	20	<200	200	N
PM066	N	100	50	N	20	<200	200	N
PM067	N	200	50	N	20	<200	200	N
PM068	N	100	50	N	20	<200	200	N
PM069	N	200	50	N	20	<200	200	N
PM070	N	200	50	N	50	<200	200	N
PM071	N	100	50	N	20	<200	200	N
PM072	N	100	50	N	20	<200	200	N
PM073	N	100	50	N	20	<200	200	N
PM074	N	100	70	N	50	<200	200	N
PM075	N	300	70	N	30	<200	200	N
PM076	N	100	70	N	50	<200	200	N
PM077	N	100	50	N	30	<200	200	N
PM078	N	100	70	N	30	<200	200	N
PM079	N	100	70	N	30	<200	200	N

Table 5.--Analytical data for nonmagnetic heavy-mineral concentrates from the Palen-McCoy Wilderness Study Area, Riverside County, California

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
PM001C	33 44 25	115 8 20	1.5	.50	15	>2	500	N	N	N	20	200
PM002C	33 44 35	115 8 25	2.0	.50	15	>2	700	N	N	N	N	2,000
PM003C	33 44 55	115 8 0	1.5	1.00	20	>2	1,000	N	N	N	<20	700
PM004C	33 45 15	115 7 55	2.0	.30	7	>2	500	N	N	N	N	300
PM005C	33 45 30	115 8 15	.7	.30	10	>2	300	N	N	N	N	1,500
PM007C	33 46 0	115 6 25	3.0	.50	10	>2	500	N	N	N	N	300
PM008C	33 46 0	115 6 15	1.0	.70	20	>2	700	N	N	N	N	300
PM009C	33 46 0	115 6 10	1.5	.50	7	>2	1,000	N	N	N	N	200
PM010C	33 46 15	115 6 20	1.5	.50	5	>2	300	N	N	N	N	700
PM011C	33 46 35	115 6 45	1.5	.30	5	>2	500	N	N	N	N	150
PM012C	33 46 45	115 7 5	1.5	1.00	30	>2	500	N	N	N	N	700
PM013C	33 46 30	115 7 15	1.5	1.00	30	>2	1,000	N	N	N	N	2,000
PM014C	33 46 55	115 7 30	1.0	.50	10	>2	500	N	N	N	20	50
PM015C	33 47 25	115 6 45	1.0	.50	10	2	500	N	N	N	N	300
PM016C	33 47 30	115 6 40	1.5	1.00	15	>2	1,000	N	N	N	N	500
PM017C	33 48 25	115 7 35	1.5	1.50	30	>2	1,000	N	N	N	20	1,000
PM018C	33 48 35	115 7 35	2.0	.50	10	2	500	N	N	N	N	1,500
PM019C	33 46 20	115 8 45	1.5	1.00	30	>2	1,000	N	N	N	30	300
PM020C	33 46 50	115 8 45	1.5	.30	7	>2	500	N	N	N	<20	150
PM021C	33 47 20	115 8 10	2.0	.30	10	>2	700	N	N	N	<20	150
PM022C	33 47 55	115 7 50	1.0	.70	20	>2	700	N	N	N	<20	200
PM023C	33 48 15	115 8 15	5.0	.50	7	>2	700	N	N	N	<20	1,000
PM024C	33 49 0	115 8 30	.7	.70	10	>2	500	N	N	N	N	200
PM025C	33 49 20	115 8 20	1.0	.70	10	>2	700	N	N	N	N	2,000
PM026C	33 49 15	115 7 20	1.0	1.00	20	>2	700	N	N	N	N	300
PM027C	33 49 15	115 7 0	1.0	.70	10	>2	700	N	N	N	<20	200
PM028C	33 49 40	115 6 35	1.0	1.00	10	>2	700	N	N	N	20	2,000
PM029C	33 44 0	115 9 0	.7	.30	15	>2	500	N	N	N	N	150
PM030C	33 43 45	115 8 35	1.0	.50	10	>2	500	N	N	N	<20	5,000
PM032C	33 43 20	115 8 25	.7	.15	10	>2	500	N	N	N	N	7,000
PM033C	33 43 45	115 7 30	1.5	1.50	50	>2	700	N	N	N	30	>10,000
PM034C	33 42 55	115 7 20	1.5	.70	20	>2	700	N	N	N	N	5,000
PM035C	33 43 55	115 7 20	2.0	.70	30	>2	700	N	N	N	<20	1,000
PM036C	33 44 0	115 7 0	1.0	.20	10	>2	300	N	N	N	<20	1,000
PM037C	33 44 20	115 6 30	1.5	.50	7	>2	700	N	N	N	N	100
PM038C	33 44 25	115 6 55	1.5	.50	10	>2	500	N	N	N	<20	150
PM039C	33 44 15	115 6 0	2.0	1.00	15	>2	1,000	N	N	N	N	700
PM040C	33 44 10	115 5 55	2.0	.70	15	>2	1,000	N	N	N	N	50
PM041C	33 44 10	115 6 10	1.5	.50	5	>2	700	N	N	N	N	300
PM042C	33 43 30	115 5 40	2.0	.70	7	>2	1,000	N	N	N	50	150
PM043C	33 43 35	115 5 30	1.0	.50	3	2	300	N	N	N	N	500
PM044C	33 43 55	115 5 10	1.5	1.00	30	>2	1,000	N	N	N	N	1,500
PM045C	33 44 10	115 5 0	1.5	1.00	30	>2	1,000	N	N	N	N	300
PM046C	33 44 10	115 4 35	2.0	2.00	50	>2	2,000	N	N	N	20	500
PM047C	33 44 15	115 4 30	1.5	.50	10	>2	1,000	N	N	N	<20	300

Table 5.--Analytical data for nonmagnetic heavy-mineral concentrates from the Palen-McCoy Wilderness Study Area, Riverside 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	Sc-ppm s
PM001C	N	N	N	<10	50	10	200	<10	50	<10	70	N	<10
PM002C	N	N	N	<10	50	15	300	N	50	<10	70	N	<10
PM003C	N	N	N	N	100	N	300	<10	<50	10	150	N	50
PM004C	N	N	N	<10	70	<10	150	70	<50	N	500	N	10
PM005C	N	20	N	N	20	N	300	N	50	N	50	N	<10
PM007C	N	N	N	15	70	15	200	<10	50	<10	70	N	20
PM008C	N	N	N	N	100	N	200	<10	50	<10	100	N	50
PM009C	N	N	N	10	50	15	300	<10	50	N	500	N	20
PM010C	N	N	N	10	50	15	200	<10	<50	<10	70	N	30
PM011C	N	N	N	N	50	10	200	N	<50	N	70	N	30
PM012C	N	N	N	N	100	<10	200	N	<50	<10	100	N	50
PM013C	N	N	N	10	70	10	300	N	50	<10	100	N	30
PM014C	N	N	N	N	50	<10	300	N	50	N	70	N	20
PM015C	N	N	N	N	70	10	200	N	<50	N	150	N	20
PM016C	N	N	N	<10	70	15	500	N	50	N	70	N	20
PM017C	N	N	N	<10	100	10	500	<10	50	<10	100	N	30
PM018C	N	N	N	N	50	<10	300	N	50	N	50	N	15
PM019C	N	N	N	N	70	15	700	15	50	<10	100	N	30
PM020C	N	N	N	N	50	<10	500	N	<50	<10	150	N	20
PM021C	N	N	N	<10	30	15	500	N	50	N	70	N	30
PM022C	N	N	N	N	70	20	500	N	<50	<10	100	N	50
PM023C	N	N	N	<10	50	15	300	N	<50	N	70	N	15
PM024C	N	N	N	N	50	20	500	N	50	N	70	N	20
PM025C	N	N	N	N	70	15	700	N	50	N	70	N	30
PM026C	N	N	N	N	100	15	700	<10	50	N	70	N	30
PM027C	N	N	N	N	50	<10	500	N	<50	N	70	N	30
PM028C	N	N	N	N	50	10	500	N	50	<10	50	N	20
PM029C	N	N	N	N	30	15	700	N	50	N	500	N	15
PM030C	2	N	N	N	20	<10	700	N	50	N	300	N	15
PM032C	N	N	N	N	70	<10	500	N	<50	N	100	N	20
PM033C	N	N	N	N	70	N	300	N	<50	N	1,500	N	50
PM034C	N	N	N	N	50	<10	200	N	<50	<10	100	N	50
PM035C	N	N	N	N	100	N	500	<10	<50	N	150	N	50
PM036C	N	N	N	<10	20	N	500	N	50	N	70	N	15
PM037C	N	N	N	<10	70	<10	500	N	70	N	150	N	20
PM038C	N	N	N	<10	50	20	500	<10	<50	N	300	N	30
PM039C	N	N	N	10	100	20	700	10	70	N	100	N	50
PM040C	N	N	N	15	70	20	700	15	70	N	100	N	30
PM041C	N	N	N	20	70	15	700	10	50	<10	200	N	30
PM042C	N	N	N	15	100	15	700	10	100	N	70	N	20
PM043C	N	N	N	N	50	N	100	N	<50	N	100	N	50
PM044C	N	N	N	N	20	30	500	10	50	<10	100	N	20
PM045C	N	N	N	N	70	N	700	10	<50	<10	100	N	50
PM046C	N	N	N	<10	150	15	1,000	15	50	10	200	N	50
PM047C	N	N	N	<10	100	<10	700	<10	50	N	50	N	30

Table 5.--Analytical data for nonmagnetic heavy-mineral concentrates from the Palen-McCoy Wilderness Study Area, Riverside County, California

Sample	Sn-ppm s	Sr-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s
PM001C	20	200	200	N	500	N	>2,000	N
PM002C	30	700	300	N	700	N	>2,000	N
PM003C	70	700	300	N	1,000	N	>2,000	N
PM004C	30	500	100	N	500	N	>2,000	N
PM005C	30	N	150	<100	500	N	>2,000	N
PM007C	30	N	200	N	700	N	>2,000	N
PM008C	50	N	200	N	700	N	>2,000	N
PM009C	30	N	200	N	700	N	>2,000	N
PM010C	20	N	150	N	700	N	>2,000	N
PM011C	30	N	200	N	700	N	>2,000	N
PM012C	30	N	200	N	1,000	N	>2,000	N
PM013C	50	<200	200	N	1,000	N	>2,000	N
PM014C	30	N	200	N	700	N	>2,000	N
PM015C	20	N	150	N	700	N	>2,000	N
PM016C	30	N	200	N	700	N	>2,000	N
PM017C	70	N	200	N	700	N	>2,000	N
PM018C	30	N	200	N	500	N	>2,000	N
PM019C	100	N	500	N	1,000	N	>2,000	N
PM020C	30	N	300	N	700	N	>2,000	N
PM021C	50	N	300	N	700	N	>2,000	N
PM022C	30	N	300	N	1,000	N	>2,000	N
PM023C	30	1,000	300	N	500	N	>2,000	N
PM024C	30	N	300	N	700	N	>2,000	N
PM025C	50	N	500	N	1,000	N	>2,000	N
PM026C	70	N	500	N	1,000	N	>2,000	N
PM027C	30	N	300	N	700	N	>2,000	N
PM028C	30	N	200	N	700	N	>2,000	N
PM029C	30	N	700	N	700	N	>2,000	N
PM030C	30	N	300	N	700	N	>2,000	N
PM032C	30	10,000	200	N	700	N	>2,000	N
PM033C	30	5,000	500	N	1,000	N	>2,000	N
PM034C	30	>10,000	300	N	1,000	N	>2,000	N
PM035C	70	N	300	N	1,000	N	>2,000	N
PM036C	30	N	300	N	700	N	>2,000	N
PM037C	50	N	300	N	700	N	>2,000	N
PM038C	30	<200	300	N	700	N	>2,000	N
PM039C	100	N	500	N	1,000	N	>2,000	N
PM040C	70	N	300	N	1,000	N	>2,000	N
PM041C	50	N	300	N	1,000	N	>2,000	N
PM042C	70	N	300	N	1,000	N	>2,000	N
PM043C	N	N	150	N	150	N	>2,000	N
PM044C	30	N	300	N	700	N	>2,000	N
PM045C	50	N	300	N	1,000	N	>2,000	N
PM046C	150	N	500	N	1,000	N	>2,000	N
PM047C	70	N	300	N	700	N	>2,000	N

Table 5.--Analytical data for nonmagnetic heavy-mineral concentrates from the Palen-McCoy Wilderness Study Area, Riverside 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	Ba-ppm s
PM048C	33 44 25	115 4 15	1.5	.70	15	>2	1,000	N	N	N	N	200
PM049C	33 45 25	115 4 45	2.0	.50	7	>2	1,500	N	N	N	20	100
PM050C	33 45 25	115 4 25	5.0	2.00	50	>2	5,000	N	N	N	<20	500
PM051C	33 46 25	115 4 45	.5	.15	5	>2	300	N	N	N	20	1,500
PM052C	33 46 20	115 4 45	.7	.20	10	>2	500	N	N	N	20	1,000
PM053C	33 45 30	115 3 45	.5	.20	7	>2	500	N	N	N	20	1,000
PM054C	33 44 55	115 3 20	.5	.15	7	>2	300	N	N	N	20	200
PM055C	33 43 20	115 1 35	.7	.30	10	>2	500	N	N	N	<20	200
PM056C	33 49 0	115 6 25	.7	.15	5	>2	500	N	N	N	20	700
PM057C	33 48 55	115 6 30	1.0	.30	7	>2	500	N	N	N	50	1,000
PM058C	33 49 15	115 6 0	.7	.20	5	>2	700	N	N	N	30	300
PM059C	33 49 0	115 5 35	.5	.15	5	>2	500	N	N	N	30	500
PM060C	33 48 25	115 4 50	.7	.30	10	>2	500	N	N	N	20	300
PM061C	33 48 30	115 4 45	1.5	.20	10	>2	500	N	N	N	20	500
PM062C	33 47 50	115 4 30	1.0	.20	7	>2	500	N	N	N	20	300
PM063C	33 47 25	115 4 30	.5	.20	15	>2	300	N	N	N	30	5,000
PM064C	33 47 20	115 4 35	.5	.20	7	>2	300	N	N	N	<20	1,000
PM065C	33 47 25	115 4 40	.5	.20	10	>2	700	N	N	N	<20	150
PM066C	33 43 50	115 2 45	.5	.15	7	>2	300	N	N	N	30	200
PM067C	33 43 40	115 2 20	.5	.15	7	>2	300	N	N	N	30	300
PM068C	33 44 0	115 1 25	.7	.20	7	>2	500	N	N	N	20	200
PM069C	33 44 20	115 1 0	1.0	.20	5	>2	500	N	N	N	30	300
PM070C	33 44 40	115 0 30	.7	.20	7	>2	500	N	N	N	20	500
PM071C	33 46 10	115 1 10	.7	.20	7	>2	500	N	N	N	20	1,500
PM072C	33 46 15	115 1 10	.7	.20	7	>2	500	N	N	N	20	300
PM073C	33 45 10	115 0 25	.7	.30	7	>2	500	N	N	N	20	500
PM074C	33 47 30	115 2 30	.7	.30	10	>2	500	N	N	N	50	200
PM075C	33 42 45	115 6 30	.7	.15	10	>2	300	N	N	N	30	7,000
PM076C	33 46 30	115 2 10	.7	.30	7	>2	500	N	N	N	20	200
PM077C	33 46 20	115 1 55	.7	.30	7	>2	500	N	N	N	20	300
PM078C	33 47 35	115 2 10	.7	.30	7	>2	500	N	N	N	30	200
PM079C	33 46 15	115 2 30	1.0	.50	10	>2	700	N	N	N	30	500

Table 5.--Analytical data for nonmagnetic heavy-mineral concentrates from the Palen-McCoy Wilderness Study Area, Riverside County, California--continued

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	Sc-ppm s
PM043C	N	N	N	N	50	10	700	10	100	N	150	N	30
PM049C	N	N	N	<10	70	10	500	<10	<50	<10	200	N	30
PM050C	N	N	N	15	200	20	1,000	10	50	<10	1,000	N	50
PM051C	N	N	N	10	<20	<10	200	50	100	<10	150	N	10
PM052C	N	N	N	10	20	<10	700	15	150	<10	70	N	10
PM053C	N	N	N	<10	<20	<10	300	10	150	<10	50	N	<10
PM054C	<2	N	N	<10	<20	<10	500	15	100	<10	1,000	N	<10
PM055C	N	N	N	<10	30	<10	700	15	200	<10	70	N	15
PM056C	N	N	N	10	<20	<10	200	N	50	<10	70	N	15
PM057C	N	N	N	10	50	<10	500	N	100	10	50	N	10
PM058C	N	N	N	10	<20	15	200	<10	150	<10	70	N	<10
PM059C	N	N	N	10	<20	10	200	<10	70	<10	30	N	<10
PM060C	N	N	N	10	20	<10	700	10	100	<10	70	N	10
PM061C	N	N	N	10	20	10	500	10	100	<10	70	N	15
PM062C	N	N	N	15	30	<10	200	10	100	<10	70	N	15
PM063C	N	N	N	<10	50	<10	700	10	150	<10	150	N	10
PM064C	N	N	N	<10	30	<10	300	<10	70	<10	50	N	10
PM065C	N	N	N	<10	50	<10	700	15	150	<10	70	N	20
PM066C	N	N	N	10	20	<10	500	15	100	<10	50	N	10
PM067C	N	N	N	<10	30	<10	300	15	100	<10	30	N	10
PM068C	N	N	N	<10	30	10	300	15	150	<10	50	N	<10
PM069C	N	N	N	15	50	10	700	15	150	<10	50	N	10
PM070C	N	N	N	10	30	<10	700	10	150	<10	30	N	<10
PM071C	N	N	N	10	50	<10	700	15	200	<10	50	N	10
PM072C	N	N	N	10	50	<10	500	15	200	<10	70	N	10
PM073C	N	N	N	10	50	10	700	15	100	<10	70	N	<10
PM074C	N	N	N	15	30	<10	300	15	150	<10	70	N	<10
PM075C	N	N	N	<10	50	20	500	10	100	<10	300	N	<10
PM076C	N	N	N	10	50	<10	150	<10	150	<10	50	N	<10
PM077C	<2	N	N	10	50	<10	200	10	200	<10	70	N	10
PM078C	N	N	N	15	30	<10	200	10	100	<10	150	N	<10
PM079C	N	N	N	15	50	10	300	15	200	10	100	N	<10

Table 5.--Analytical data for nonmagnetic heavy-mineral concentrates from the Palen-McCoy Wilderness Study Area, Riverside County, California--continued

Sample	Sn-ppm s	Sr-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s
PM048C	70	N	300	N	700	N	>2,000	N
PM049C	30	N	200	N	700	N	>2,000	N
PM050C	100	300	300	N	1,000	N	>2,000	N
PM051C	30	<200	200	100	300	N	>2,000	<200
PM052C	70	N	300	N	700	N	>2,000	200
PM053C	50	N	150	N	500	N	>2,000	<200
PM054C	30	N	200	N	700	N	>2,000	500
PM055C	100	N	300	N	1,000	N	>2,000	500
PM056C	30	N	150	N	500	N	>2,000	300
PM057C	30	1,000	150	N	500	N	>2,000	N
PM058C	30	200	150	N	300	N	>2,000	N
PM059C	30	200	200	<100	300	N	>2,000	300
PM060C	50	N	200	N	700	N	>2,000	<200
PM061C	50	300	200	N	700	N	>2,000	200
PM062C	30	N	150	<100	1,000	N	>2,000	<200
PM063C	50	1,000	500	N	500	N	>2,000	N
PM064C	30	<200	150	N	500	N	>2,000	N
PM065C	100	N	200	N	700	N	>2,000	200
PM066C	70	N	200	N	500	N	>2,000	500
PM067C	70	1,000	200	N	500	N	>2,000	<200
PM068C	100	N	200	N	700	N	>2,000	300
PM069C	70	N	200	N	500	N	>2,000	300
PM070C	70	N	200	N	700	N	>2,000	700
PM071C	100	N	200	N	700	N	>2,000	1,000
PM072C	70	N	150	N	1,000	N	>2,000	500
PM073C	100	N	200	N	700	N	>2,000	700
PM074C	50	N	200	N	700	N	>2,000	<200
PM075C	50	>10,000	200	N	500	1,000	>2,000	N
PM076C	30	500	100	N	700	N	>2,000	N
PM077C	70	N	150	N	700	N	>2,000	1,000
PM078C	30	500	150	100	700	N	>2,000	N
PM079C	50	300	100	N	1,000	N	>2,000	200

Table 6.--Analytical data for rocks from the Palen-McCoy Wilderness Study Area, Riverside County, California

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
PM004R	33 45 15	115 7 55	7.00	1.00	5.0	.500	1,000	N	N	N	50	2,000
PM006R	33 45 35	115 8 35	.05	.05	.1	.007	300	N	N	N	20	150
PM011R1	33 46 35	115 6 45	.05	.03	.1	.003	200	N	N	N	20	70
PM011R2	33 46 35	115 6 45	7.00	1.50	1.5	.500	1,000	N	N	N	30	700
PM013R	33 46 30	115 7 15	7.00	1.00	7.0	.700	2,000	N	N	N	30	500
PM016R	33 47 30	115 6 40	7.00	2.00	5.0	1.000	2,000	N	N	N	150	1,000
PM026R	33 49 15	115 7 20	7.00	5.00	7.0	.700	3,000	N	N	N	100	1,000
PM030R	33 43 45	115 8 35	10.00	7.00	15.0	>1.000	>5,000	N	N	N	200	1,000
PM036R	33 44 0	115 7 0	7.00	3.00	2.0	>1.000	2,000	N	N	N	300	2,000
PM037R	33 44 20	115 6 30	7.00	5.00	7.0	1.000	2,000	N	N	N	200	2,000
PM043R	33 43 35	115 5 30	10.00	1.50	5.0	>1.000	1,500	N	N	N	200	500
PM045R	33 44 10	115 5 0	7.00	1.50	5.0	1.000	2,000	N	N	N	30	2,000
PM049R	33 45 25	115 4 45	5.00	1.00	3.0	.500	1,000	N	N	N	30	2,000
PM051R	33 46 25	115 4 45	10.00	3.00	2.0	>1.000	1,500	N	N	N	50	500
PM055R	33 43 20	115 1 35	10.00	2.00	1.5	.700	2,000	N	N	N	20	700
PM060R	33 48 25	115 4 15	5.00	.70	>20.0	.200	5,000	N	N	N	20	500
PM065R	33 47 25	115 4 40	7.00	1.00	1.0	1.000	2,000	N	N	N	200	5,000
PM068R	33 44 0	115 1 25	5.00	1.50	.7	.300	500	N	N	N	70	1,000
PM074R	33 47 30	115 2 30	10.00	5.00	1.0	>1.000	1,000	N	N	N	100	2,000
PM076R	33 46 30	115 2 10	7.00	5.00	20.0	.700	3,000	N	N	N	70	700
PM079R	33 46 15	115 2 30	7.00	3.00	.2	1.000	700	N	N	N	200	1,500
PM080R1	33 42 50	115 6 50	15.00	3.00	10.0	>1.000	1,000	N	N	N	150	100
PM080R2	33 42 50	115 6 50	10.00	7.00	7.0	>1.000	2,000	N	N	N	100	150
PM080R3	33 42 50	115 6 50	20.00	5.00	20.0	.100	2,000	N	N	N	300	100
PM080R4	33 42 50	115 6 50	>20.00	2.00	15.0	.500	1,500	N	N	N	70	<20
PM081R	33 44 15	115 9 15	10.00	.10	.1	.700	15	N	N	N	50	20

Table 6.--Analytical data for rocks from the Palen-McCoy Wilderness Study Area, Riverside 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	Sc-ppm s
PM004R	<5	N	N	15	70	5	200	5	<20	20	50	N	--
PM006R	N	N	N	N	N	N	100	N	N	N	N	N	--
PM011R1	N	N	N	N	10	N	100	N	N	N	N	N	--
PM011R2	<5	N	N	15	70	<5	100	N	<20	30	50	N	--
PM013R	N	N	N	10	50	20	150	<5	20	10	100	N	--
PM016R	<5	N	N	15	100	15	200	N	20	30	100	N	--
PM026R	N	N	N	15	50	70	100	N	<20	20	20	N	--
PM030R	N	N	N	100	300	30	100	N	N	70	50	N	--
PM036R	N	N	N	30	200	<5	100	N	<20	50	10	N	--
PM037R	N	N	N	20	150	50	100	N	<20	30	50	N	--
PM043R	N	N	N	70	200	5	100	N	<20	30	20	N	--
PM045R	N	N	N	10	100	10	200	N	<20	20	50	N	--
PM049R	7	N	N	10	50	7	300	N	30	10	70	N	--
PM051R	5	N	N	20	200	10	150	N	20	50	10	N	--
PM055R	5	N	N	20	150	30	100	N	20	30	10	N	--
PM060R	N	N	N	5	30	5	100	N	N	15	10	N	--
PM065R	<5	N	N	15	100	5	200	N	20	30	70	N	--
PM068R	7	N	N	N	70	20	500	N	50	10	20	N	--
PM074R	N	N	N	20	150	50	70	N	20	30	N	N	--
PM076R	5	N	N	15	100	30	300	N	20	20	100	N	--
PM079R	5	N	N	20	150	20	100	N	20	30	10	N	--
PM080R1	N	N	N	15	150	5	200	N	<20	50	N	N	--
PM080R2	N	N	N	30	150	7	100	N	<20	50	10	N	N
PM080R3	<5	N	N	15	20	700	1,000	N	N	30	N	N	N
PM080R4	N	N	N	20	70	5	500	N	N	200	N	N	N
PM081R	N	N	N	N	N	10	100	7	20	5	150	N	N

Table 6.--Analytical data for rocks from the Palen-McCoy Wilderness Study Area, Riverside County, California

Sample	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	Hg-ppm inst	As-ppm aa	Zn-ppm aa	Cd-ppm aa
PM004R	N	200	200	N	70	N	--	N	N	.02	5	40	N
PM006R	N	N	15	N	N	N	--	N	.05	<.02	5	<5	N
PM011R1	N	N	10	N	N	N	--	N	<.05	<.02	<5	N	N
PM011R2	N	300	200	N	50	N	--	N	N	<.02	<5	45	N
PM013R	N	1,000	150	N	70	N	--	N	N	<.02	5	45	N
PM016R	N	700	200	N	70	N	--	N	N	<.02	5	80	N
PM026R	N	200	150	N	100	N	--	N	N	<.02	<5	100	N
PM030R	N	2,000	500	N	100	200	--	N	N	<.02	10	110	N
PM036R	N	500	300	N	50	<200	--	N	N	.02	10	130	N
PM037R	N	700	300	N	70	N	--	N	N	<.02	10	85	N
PM043R	N	1,000	300	N	50	N	--	N	N	<.02	5	45	N
PM045R	N	500	200	N	50	N	--	N	N	<.02	40	70	N
PM049R	20	300	100	N	150	N	--	<100	N	<.02	<5	35	N
PM051R	N	100	300	N	100	N	--	N	N	<.02	10	100	N
PM055R	N	100	200	N	50	N	--	N	N	.02	5	85	N
PM060R	N	1,000	100	N	100	N	--	N	N	<.02	25	25	.1
PM065R	N	300	200	N	70	N	--	N	N	<.02	5	90	N
PM068R	N	N	150	N	100	N	--	N	N	<.02	15	25	N
PM074R	N	N	200	N	100	N	--	N	N	<.02	5	100	N
PM076R	N	100	200	N	150	N	--	N	<.05	<.02	5	60	N
PM079R	N	N	150	N	100	N	--	N	N	<.02	15	70	N
PM080R1	N	700	1,000	N	100	N	--	N	N	<.02	10	5	N
PM080R2	--	500	700	N	100	N	--	N	N	<.02	10	40	N
PM080R3	--	1,500	>10,000	N	200	N	--	N	N	<.02	5	5	N
PM080R4	--	300	>10,000	N	200	N	--	N	N	<.02	35	35	N
PM081R	--	5,000	300	N	15	N	--	N	<.05	<.02	5	<5	N

Table 6.--Analytical data for rocks from the Palen-McCoy Wilderness Study Area, Riverside County, California

Sample	Bi-ppm aa	Sb-ppm aa
PM004R	N	N
PM006R	N	N
PM011R1	N	N
PM011R2	N	N
PM013R	N	N
PM016R	N	N
PM026R	N	N
PM030R	N	N
PM036R	N	N
PM037R	N	N
PM043R	N	1
PM045R	N	N
PM049R	N	N
PM051R	N	N
PM055R	N	N
PM060R	N	N
PM065R	N	N
PM068R	N	N
PM074R	N	N
PM076R	N	N
PM079R	N	N
PM080R1	N	N
PM080R2	N	N
PM080R3	N	N
PM080R4	N	N
PM081R	N	N