UNITED STATES DEPARTMENT OF THE INTERIOR

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# Analytical results and sample locality map of stream-sediment, heavy-mineral-concentrate, and rock samples from the Cockscomb and Wahweap Wilderness Study Areas, Kane County, Utah

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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 values, if any. 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 Cockscomb and Wahweap Wilderness Study Areas (UT-040-248 and UT-040-275), Kane County, Utah.

## INTRODUCTION

In April 1986, the U.S. Geological Survey conducted a reconnaissance geochemical survey of the Cockscomb and Wahweap Wilderness Study Areas, Kane County, Utah (fig. 1).

The Cockscomb Wilderness Study Area comprises about 5,100 acres (8 sq mi) and the Wahweap Wilderness Study Area about 70,380 acres (110 sq mi) in Kane County, Utah. The study areas are located in the Colorado Plateaus, west of the Kaiparowits Plateau. Access to the study area is limited to U.S. Highway 89, which passes close to the southern boundary of the areas, and to a number of unpaved roads. In addition, seasonally dry beds of the Paria River and Wahweap Canyon provided supplemental access to the study areas.

The study areas are in the canyonland physiographic subprovince, an area of narrow deep canyons and broad undulating benches. The area is dominated by sedimentary rocks ranging from the Permian Kaibab formation through the Moenave, Kayenta, and Navajo formations. Steeply dipping rocks in the East Kaibab Monocline separate nearly flat-lying strata on the west from nearly flat-lying strata as much as 7,000 ft stratigraphically higher on the east. There is much faulting and fracturing along the monocline. Numerous closely spaced faults trend along the strike of the beds and to the northeast fragment and offset the steeply dipping beds. Local relief is great; elevations range from 1,700 ft in the south to over 2,000 ft in the north.

The climate is arid to semiarid with the Paria River and Wahweap Canyon low erratic sources of water supply.

## 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 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.

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.

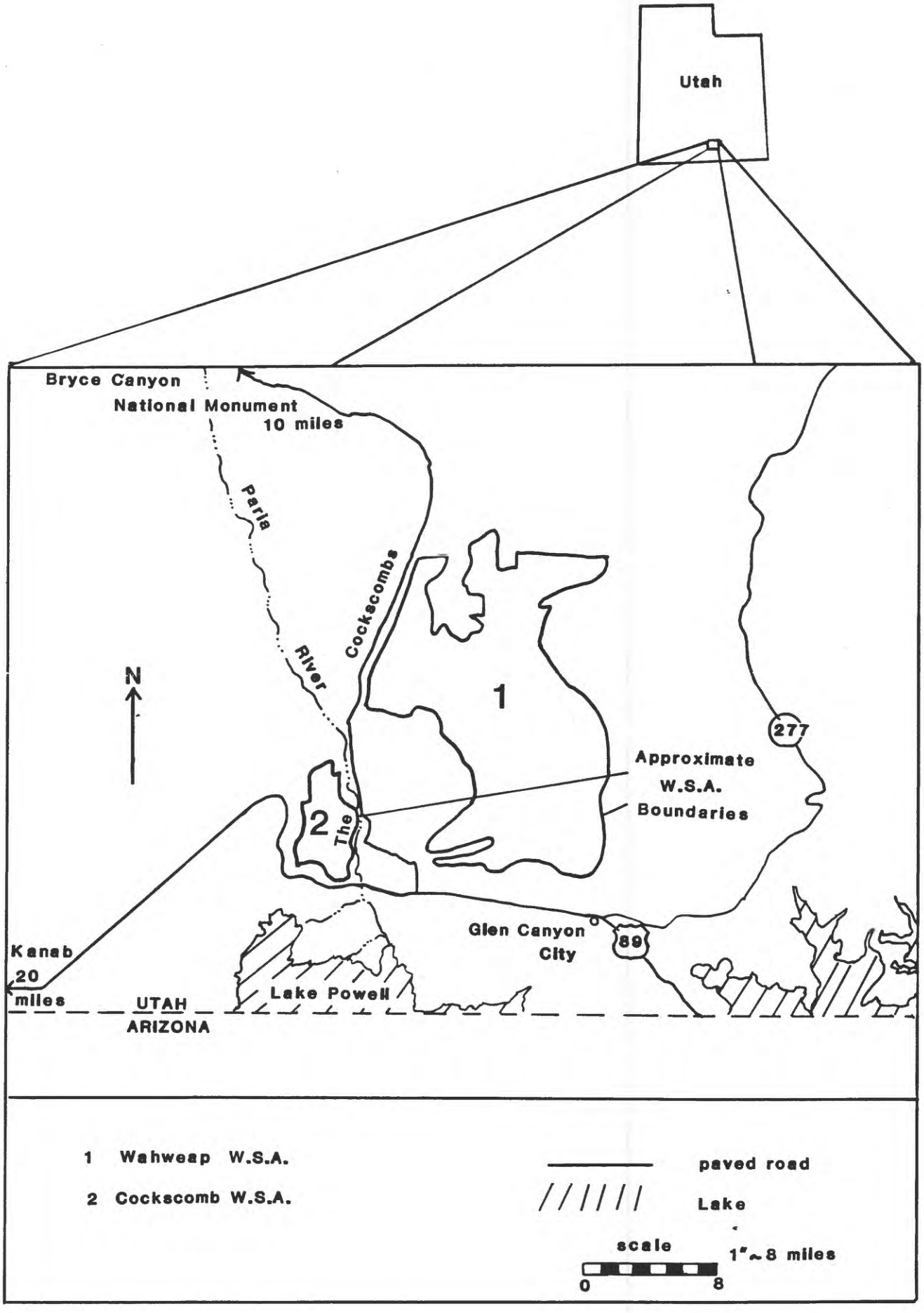


Figure 1. Localities map of stream sediments, heavy-mineral-concentrate, and rock samples from the Cockscomb and Wahweap Wilderness Study Areas, Kane County, Utah.

## Sample Collection

Samples were collected at 20 sites in the Cockscomb Wilderness Study area and 80 sites in the Wahweap Wilderness Study Area (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, and where water was available, water samples were collected. Average sampling density in the Cockscomb Wilderness Study Area was about one sample site per .4 $mi^2$ for the stream sediments and heavy-mineral concentrates. Sampling density in the Wahweap Wilderness Study Area was about one sample site per 1.4 $mi^2$ for the stream sediments and heavy-mineral concentrates, and about one sample site per 12 $mi^2$ for the rocks.

### 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 100 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, altered, and 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 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. 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 0.2 ampere to remove the magnetite and ilmenite, and a current of 0.6 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 Cockscomb and Wahweap Wilderness Study Areas are listed in tables 2-6.

### Chemical methods

Other methods of analysis used on samples from the Cockscomb and Wahweap Wilderness Study Areas are summarized in table 2.

Analytical results for stream-sediment and heavy-mineral-concentrate samples are listed in tables 2 and 3, respectively. Analytical results for stream-sediment, heavy-mineral-concentrate, and rock samples from the Wahweap Wilderness Study Area 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, 1977).

## DESCRIPTION OF DATA TABLES

Tables 2-6 list the results of analyses for the samples of stream sediment, heavy-mineral concentrate, and rock. For the five 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; "ICP" indicates inductively coupled plasma-atomic emission spectroscopy; and "DNA" indicates delayed neutron activation analysis. 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 2-6 in place of an analytical value. Because of the formatting used in the computer program that produced tables 2-6, 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.

## REFERENCES CITED


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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; ICP = inductively coupled plasma spectroscopy; DNA = delayed neutron activation analysis]

| Element or constituent determined | Method | Determination limit (micrograms/ gram or ppm) | Reference |
|---|---|---|---|
| Gold (Au) | AA | 0.05 | Thompson and others, 1968. |
| Arsenic (As) | ICP | 5 or 10 | Crock and others, 1987. |
| Antimony (Sb) | ICP | 2 | |
| Zinc (Zn) | ICP | 5 | |
| Bismuth (Bi) | ICP | 1 | |
| Cadmium (Cd) | ICP | .1 | |
| Thorium (Th) | DNA | | McKown and Millard, 1987. |
| Uranium (U) | DNA | 0.05 or 1 | |

TABLE 3. ANALYTICAL RESULTS OF STREAM SEDIMENTS COLLECTED FROM THE COCKSCOMB WILDERNESS STUDY AREA, UTAH

[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 | Be-ppm s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C001S | 37 4 8 | 111 55 18 | 1.0 | .5 | 3.0 | .15 | 150 | N | N | N | 50 | 300 | 1 |
| C002S | 37 8 32 | 111 53 30 | 1.0 | .5 | 1.5 | .15 | 200 | N | N | N | 30 | 300 | 1 |
| C003S | 37 8 43 | 111 55 28 | 2.0 | 1.0 | 2.0 | .20 | 300 | N | N | N | 70 | 300 | 1 |
| C004S | 37 12 48 | 111 55 54 | 1.0 | .3 | 1.0 | .15 | 300 | N | N | N | 30 | 500 | <1 |
| C005S | 37 9 4 | 111 57 45 | .3 | .2 | .5 | .15 | 150 | N | N | N | 50 | 300 | <1 |
| C006S | 37 9 38 | 111 57 52 | 1.5 | .7 | 1.0 | .50 | 500 | N | N | N | 50 | 1,500 | 1 |
| C007S | 37 10 0 | 111 57 55 | 2.0 | 1.0 | 1.5 | .30 | 500 | N | N | N | 50 | 1,000 | 1 |
| C008S | 37 10 43 | 111 57 53 | 3.0 | 1.0 | 1.5 | .50 | 500 | N | N | N | 50 | 700 | 1 |
| C009S | 37 11 35 | 111 57 58 | 1.0 | .5 | .7 | .15 | 200 | N | N | N | 20 | 500 | 1 |
| C010S | 37 11 3 | 111 58 2 | 2.0 | 1.0 | 1.5 | .20 | 300 | N | N | N | 70 | 500 | 1 |
| C011S | 37 8 8 | 111 57 15 | 1.0 | .3 | .7 | .15 | 200 | N | N | N | 50 | 500 | <1 |
| C100S | 37 9 57 | 111 55 12 | 1.5 | .5 | 1.5 | .15 | 150 | N | N | N | 50 | 300 | <1 |
| C101S | 37 8 49 | 111 55 24 | 1.5 | .7 | 1.0 | .20 | 200 | N | N | N | 30 | 200 | <1 |
| C102S | 37 1 51 | 111 55 22 | .7 | .3 | 1.0 | .15 | 150 | N | N | N | 30 | 300 | <1 |
| C103S | 37 8 19 | 111 55 27 | 1.5 | .7 | 1.0 | .20 | 300 | N | N | N | 50 | 500 | 1 |
| C104S | 37 11 48 | 111 55 51 | 1.0 | .5 | 1.0 | .10 | 300 | N | N | N | 50 | 200 | <1 |
| C105S | 37 9 24 | 111 57 54 | 1.0 | 1.0 | 1.0 | .15 | 300 | N | N | N | 70 | 500 | <1 |
| C106S | 37 10 23 | 111 57 56 | 1.5 | .5 | 1.0 | .20 | 300 | N | N | N | 70 | 2,000 | 1 |
| C107S | 37 10 52 | 111 57 50 | 2.0 | .7 | 1.5 | .20 | 300 | N | N | N | 30 | 500 | <1 |
| C108S | 37 11 28 | 111 57 58 | 1.0 | .5 | 1.0 | .10 | 100 | N | N | N | 50 | 200 | <1 |

TABLE 3. ANALYTICAL RESULTS OF STREAM SEDIMENTS COLLECTED FROM THE COCKSCOMB WILDERNESS STUDY AREA, UTAH--Continued

| Sample | 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 | Sn-ppm s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C001S | N | N | 5 | 20 | 10 | 20 | N | N | 10 | 10 | N | 5 | N |
| C002S | N | N | 7 | 30 | 7 | 30 | N | N | 10 | 10 | N | <5 | N |
| C003S | N | N | 10 | 50 | 15 | 30 | N | N | 15 | 20 | N | 7 | N |
| C004S | N | N | 5 | 10 | 5 | N | N | N | 5 | 10 | N | N | N |
| C005S | N | N | N | 10 | 5 | N | N | N | <5 | N | N | N | N |
| C006S | N | N | 5 | 20 | 15 | 50 | N | N | 10 | 15 | N | 7 | N |
| C007S | N | N | 10 | 15 | 30 | 50 | N | N | 7 | 20 | N | 7 | N |
| C008S | N | N | 10 | 20 | 20 | 50 | N | <20 | 5 | 20 | N | 7 | N |
| C009S | N | N | 5 | 10 | 7 | N | N | N | 5 | N | N | N | N |
| C010S | N | N | 10 | 20 | 10 | N | N | N | 7 | 10 | N | 5 | N |
| C011S | N | N | 5 | 10 | 5 | N | N | N | 5 | N | N | N | N |
| C100S | N | N | 7 | 15 | 10 | N | N | N | 7 | <10 | N | N | N |
| C101S | N | N | 7 | 20 | 15 | 30 | N | N | 10 | 10 | N | 5 | N |
| C102S | N | N | 7 | 15 | 7 | N | N | N | 5 | 10 | N | N | N |
| C103S | N | N | 10 | 30 | 15 | 20 | N | <20 | 10 | 15 | N | 7 | N |
| C104S | N | N | 5 | 15 | 5 | N | N | N | 5 | N | N | <5 | N |
| C105S | N | N | 10 | 15 | 15 | N | N | N | 7 | 10 | N | 5 | N |
| C106S | N | N | 10 | 200 | 5 | 70 | N | N | 7 | 10 | N | 5 | N |
| C107S | N | N | 10 | 10 | 20 | 20 | N | N | 10 | 10 | N | 7 | N |
| C108S | N | N | 7 | 10 | 7 | N | N | N | 10 | <10 | N | <5 | N |

TABLE 3. ANALYTICAL RESULTS OF STREAM SEDIMENTS COLLECTED FROM THE COCKSCOMB WILDERNESS STUDY AREA, UTAH--Continued

| Sample | Sr-ppm s | V-ppm s | W-ppm s | Y-ppm s | Zn-ppm s | Zr-ppm s | Th-ppm s | Au-ppm aa | As-ppm ICP | Bi-ppm ICP | Cd-ppm ICP | Sb-ppm ICP | Zn-ppm ICP | Dna-th | Dna-u |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C001S | 200 | 70 | N | 15 | N | 150 | N | <.1 | <5 | <2 | <.1 | <2 | 21 | 6.55 | 2.16 |
| C002S | 100 | 50 | N | 15 | N | 300 | N | <.1 | <5 | <2 | .1 | <2 | 25 | 8.40 | 2.96 |
| C003S | 200 | 70 | N | 20 | N | 200 | N | <.1 | <5 | <2 | .2 | <2 | 38 | 7.59 | 3.04 |
| C004S | 100 | 50 | N | 10 | N | 300 | N | <.1 | <5 | <2 | <.1 | <2 | 9 | 3.00 | 1.43 |
| C005S | N | 15 | N | <10 | N | 300 | N | <.1 | <5 | <2 | <.1 | <2 | 3 | <1.30 | 1.02 |
| C006S | 150 | 70 | N | 20 | N | >1,000 | N | <.1 | <5 | <2 | .2 | <2 | 10 | 8.26 | 2.53 |
| C007S | 200 | 100 | N | 20 | N | 500 | N | <.1 | <5 | <2 | .3 | <2 | 14 | 9.08 | 2.32 |
| C008S | 150 | 100 | N | 30 | N | 700 | N | <.1 | <5 | <2 | .3 | <2 | 15 | 9.87 | 2.49 |
| C009S | 100 | 50 | N | <10 | N | 50 | N | <.1 | <5 | <2 | .1 | <2 | 8 | 3.75 | 1.43 |
| C010S | 150 | 70 | N | 15 | N | 500 | N | <.1 | <5 | <2 | <.1 | <2 | 10 | 6.14 | 1.67 |
| C011S | 100 | 50 | N | <10 | N | 300 | N | <.1 | <5 | <2 | .2 | <2 | 12 | 3.95 | 1.44 |
| C100S | 100 | 50 | N | <10 | N | 200 | N | <.1 | <5 | <2 | .2 | <2 | 19 | 3.98 | 1.47 |
| C101S | 150 | 70 | N | 15 | N | 200 | N | <.1 | 5 | <2 | .3 | <2 | 36 | 6.73 | 2.85 |
| C102S | 100 | 50 | N | 10 | N | 300 | N | <.1 | <5 | <2 | .2 | <2 | 15 | 3.40 | 1.55 |
| C103S | 200 | 70 | N | 20 | N | 200 | N | <.1 | <5 | <2 | .2 | <2 | 24 | 5.51 | 2.58 |
| C104S | 150 | 50 | N | 10 | N | 500 | N | <.1 | <5 | <2 | .2 | <2 | 16 | 3.50 | 1.57 |
| C105S | 150 | 50 | N | 15 | N | 500 | N | <.1 | <5 | <2 | .2 | 2 | 9 | 5.63 | 1.91 |
| C106S | 150 | 70 | N | 20 | N | 1,000 | N | <.1 | <5 | <2 | .1 | <2 | 11 | 5.99 | 1.85 |
| C107S | 200 | 100 | N | 15 | N | 100 | N | <.1 | <5 | <2 | .2 | <2 | 11 | 8.70 | 2.34 |
| C108S | 100 | 30 | N | <10 | N | 150 | N | <.1 | <5 | <2 | .1 | <2 | 10 | 4.58 | 1.28 |

TABLE 4. ANALYTICAL RESULTS OF HEAVY-MINERAL-CONCENTRATE SAMPLES COLLECTED FROM THE COCKSCOMB WILDERNESS STUDY AREA, UTAH

[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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C001C | 37 9 8 | 111 55 18 | .3 | .10 | .5 | .3 | 50 | N | N | N | 30 | >10,000 |
| C002C | 37 8 32 | 111 55 30 | .7 | .15 | .5 | .5 | 70 | N | N | N | 70 | >10,000 |
| C003C | 37 8 43 | 111 55 28 | .3 | .07 | .3 | .3 | 50 | N | N | N | <20 | >10,000 |
| C004C | 37 12 48 | 111 55 51 | 1.5 | <.05 | .2 | .3 | 70 | N | N | N | 20 | >10,000 |
| C005C | 37 9 4 | 111 57 45 | .3 | .05 | <.1 | 1.0 | 70 | N | N | N | 200 | 2,000 |
| C006C | 37 9 38 | 111 57 52 | .2 | .10 | .2 | .3 | 70 | N | N | N | <20 | >10,000 |
| C007C | 37 10 0 | 111 57 55 | .7 | .07 | .3 | .5 | 1,000 | N | N | N | 50 | >10,000 |
| C008C | 37 10 43 | 111 57 53 | .3 | <.05 | .2 | .5 | 70 | N | N | N | 20 | >10,000 |
| C009C | 37 11 35 | 111 57 58 | .5 | .10 | .5 | 1.0 | 100 | N | N | N | 30 | >10,000 |
| C010C | 37 11 3 | 111 58 2 | .3 | .07 | .3 | .5 | 70 | N | N | N | 20 | >10,000 |
| C011C | 37 8 8 | 111 57 15 | 1.0 | .07 | .2 | .3 | 100 | N | N | N | 30 | >10,000 |
| C100C | 37 9 57 | 111 55 12 | .5 | .05 | .3 | .3 | 70 | N | N | N | <20 | >10,000 |
| C101C | 37 8 49 | 111 55 24 | 1.5 | .15 | .3 | .7 | 150 | N | N | N | 20 | >10,000 |
| C102C | 37 8 57 | 111 55 22 | .5 | <.05 | .1 | .3 | 50 | N | N | N | 20 | >10,000 |
| C103C | 37 8 19 | 111 55 27 | .3 | .30 | .5 | .3 | 50 | N | N | N | 20 | >10,000 |
| C104C | 37 11 48 | 111 55 51 | 1.0 | .05 | .3 | 1.0 | 150 | N | N | N | 500 | >10,000 |
| C105C | 37 9 24 | 111 57 54 | .3 | .20 | 1.0 | 1.0 | 100 | N | N | N | 70 | >10,000 |
| C106C | 37 10 23 | 111 57 56 | .5 | .15 | .2 | 1.0 | 70 | N | N | N | 100 | >10,000 |
| C107C | 37 10 52 | 111 57 50 | .2 | .05 | .5 | .5 | 70 | N | N | N | 30 | >10,000 |
| C108C | 37 11 28 | 111 57 58 | .5 | .10 | .5 | 2.0 | 100 | N | N | N | 150 | >10,000 |

TABLE 4. ANALYTICAL RESULTS OF HEAVY-MINERAL-CONCENTRATE SAMPLES COLLECTED FROM THE COCKSCOMB WILDERNESS STUDY AREA, UTAH--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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C001C | N | N | N | N | <20 | <10 | N | N | N | N | 70 | N | 15 |
| C002C | <2 | N | N | 10 | 30 | <10 | 70 | N | N | N | 50 | N | 30 |
| C003C | <2 | N | N | N | <20 | N | 50 | N | N | N | <20 | N | <10 |
| C004C | N | N | N | N | 20 | <10 | N | N | N | N | <20 | N | 15 |
| C005C | <2 | N | N | N | 100 | N | 70 | N | N | N | 20 | N | 50 |
| C006C | <2 | N | N | N | <20 | N | 50 | N | <50 | N | <20 | N | 15 |
| C007C | <2 | N | N | N | 30 | 10 | 70 | N | N | N | 70 | N | 10 |
| C008C | <2 | N | N | N | <20 | <10 | 70 | N | N | N | <20 | N | 15 |
| C009C | <2 | N | N | N | 20 | N | 50 | N | <50 | N | <20 | N | 50 |
| C010C | <2 | N | N | N | <20 | N | 50 | N | N | N | <20 | N | 20 |
| C011C | <2 | N | N | N | <20 | <10 | N | N | N | N | <20 | N | 15 |
| C100C | <2 | N | N | N | <20 | N | N | N | N | N | <20 | N | N |
| C101C | <2 | N | N | N | <20 | 20 | N | N | <50 | N | 70 | N | 15 |
| C102C | <2 | N | N | N | <20 | 20 | N | N | N | N | 100 | N | 15 |
| C103C | <2 | N | N | N | <20 | N | 100 | N | N | N | <20 | N | 10 |
| C104C | <2 | N | N | N | 100 | <10 | 50 | N | <50 | N | N | N | 20 |
| C105C | <2 | N | N | N | 20 | N | 50 | N | N | N | N | N | 15 |
| C106C | <2 | N | N | N | 30 | N | 100 | N | <50 | N | 700 | N | 30 |
| C107C | <2 | N | N | N | N | N | 70 | N | <50 | N | <20 | N | 15 |
| C108C | <2 | N | N | N | 50 | N | 150 | N | 50 | N | 50 | N | 70 |

TABLE 4. ANALYTICAL RESULTS OF HEAVY-MINERAL-CONCENTRATE SAMPLES COLLECTED FROM THE COCKSCOMB WILDERNESS STUDY AREA, UTAH--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 | Au-ppm ICP | As-ppm ICP | Bi-ppm ICP | Cd-ppm ICP | Sb-ppm ICP | Zn-ppm ICP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C001C | N | 1,000 | 100 | N | 100 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| C002C | 100 | 10,000 | 70 | N | 200 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| C003C | N | 7,000 | 70 | N | 100 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| C004C | N | 1,500 | 50 | N | 150 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| C005C | 20 | N | 70 | N | 300 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| C006C | N | 3,000 | 50 | N | 150 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| C007C | N | 5,000 | 200 | N | 200 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| C008C | 70 | 2,000 | 100 | N | 200 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| C009C | 20 | 1,500 | 100 | N | 500 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| C010C | N | 3,000 | 100 | N | 300 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| C011C | N | 2,000 | 100 | N | 200 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| C100C | N | >10,000 | 50 | N | 100 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| C101C | 70 | >10,000 | 70 | N | 200 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| C102C | N | >10,000 | 70 | N | 200 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| C103C | N | >10,000 | 50 | N | 100 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| C104C | N | 2,000 | 100 | N | 300 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| C105C | 70 | 2,000 | 100 | N | 300 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| C106C | N | 2,000 | 100 | N | 300 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| C107C | <20 | 2,000 | 100 | N | 200 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| C108C | 70 | 1,000 | 100 | N | 300 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |

TABLE 5. ANALYTICAL RESULTS OF STREAM SEDIMENT SAMPLES COLLECTED FROM THE WAHWEAP WILDERNESS STUDY AREA, UTAH.
[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 | Be-ppm s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WP100S | 37 7 43 | 111 41 17 | 2.0 | 1.00 | 2.0 | .20 | 500 | N | N | N | 70 | 1,500 | 1 |
| WP101S | 37 8 25 | 111 41 39 | .5 | .20 | 1.0 | .10 | 150 | N | N | N | 30 | 200 | <1 |
| WP102S | 37 8 30 | 111 41 31 | 2.0 | 1.50 | 10.0 | .20 | 200 | N | N | N | 70 | 200 | 1 |
| WP103S | 37 9 10 | 111 42 1 | 1.0 | 1.00 | 3.0 | .20 | 300 | N | N | N | 50 | 300 | <1 |
| WP104S | 37 9 30 | 111 42 35 | 1.5 | 1.00 | 3.0 | .20 | 300 | N | N | N | 50 | 500 | 1 |
| WP105S | 37 10 45 | 111 42 45 | 1.5 | 1.00 | 3.0 | .15 | 200 | N | N | N | 50 | 300 | 1 |
| WP106S | 37 10 40 | 111 42 46 | 1.0 | 1.00 | 3.0 | .20 | 300 | N | N | N | 30 | 500 | 1 |
| WP107S | 37 9 50 | 111 42 29 | 2.0 | 1.00 | 3.0 | .20 | 300 | N | N | N | 50 | 500 | 1 |
| WP108S | 37 10 45 | 111 42 52 | 1.5 | 1.00 | 3.0 | .15 | 150 | N | N | N | 50 | 200 | 1 |
| WP109S | 37 11 18 | 111 42 57 | 1.5 | 1.00 | 2.0 | .20 | 200 | N | N | N | 50 | 300 | 1 |
| WP110S | 37 11 30 | 111 42 48 | 2.0 | 1.00 | 3.0 | .20 | 300 | N | N | N | 30 | 500 | <1 |
| WP111S | 37 12 22 | 111 42 2 | 1.5 | .70 | 1.5 | .20 | 500 | N | N | N | 50 | 500 | 1 |
| WP112S | 37 12 29 | 111 42 5 | 1.5 | 1.00 | 2.0 | .15 | 500 | N | N | N | 30 | 1,500 | 1 |
| WP113S | 37 11 45 | 111 42 39 | 1.5 | .70 | 1.5 | .15 | 300 | N | N | N | 30 | 1,500 | <1 |
| WP114S | 37 12 5 | 111 42 45 | 2.0 | 2.00 | 7.0 | .50 | 700 | N | N | N | 20 | 1,500 | <1 |
| WP115S | 37 43 0 | 111 12 20 | 1.5 | .70 | 2.0 | .15 | 300 | N | N | N | 50 | 300 | 1 |
| WP116S | 37 43 55 | 111 12 52 | 1.5 | .70 | 1.5 | .30 | 500 | N | N | N | 70 | 1,500 | 1 |
| WP117S | 37 43 35 | 111 13 5 | 1.5 | .70 | 2.0 | .20 | 200 | N | N | N | 30 | 1,000 | 1 |
| WP118S | 37 43 55 | 111 14 48 | 1.0 | 1.00 | 2.0 | .10 | 300 | N | N | N | 20 | 1,000 | 1 |
| WP119S | 37 44 10 | 111 13 32 | 1.0 | 1.00 | 3.0 | .20 | 300 | N | N | N | 50 | 500 | 1 |
| WP120S | 37 44 19 | 111 13 25 | 1.5 | .70 | 1.5 | .15 | 200 | N | N | N | 30 | 1,500 | <1 |
| WP121S | 37 44 30 | 111 13 35 | 2.0 | 1.00 | 2.0 | .20 | 300 | N | N | N | 70 | 500 | 1 |
| WP122S | 37 44 35 | 111 13 41 | 2.0 | 2.00 | 7.0 | .20 | 500 | N | N | N | 50 | 2,000 | 1 |
| WP123S | 37 46 23 | 111 15 3 | 1.5 | 1.00 | 2.0 | .20 | 300 | N | N | N | 30 | 700 | 1 |
| WP124S | 37 45 55 | 111 15 30 | 1.5 | 1.00 | 2.0 | .20 | 500 | N | N | N | 50 | 1,000 | 1 |
| WP125S | 37 46 15 | 111 16 17 | 1.5 | 1.00 | 3.0 | .20 | 300 | N | N | N | 30 | 700 | 1 |
| WP126S | 37 46 12 | 111 16 25 | 1.5 | 2.00 | 5.0 | .20 | 500 | N | N | N | 50 | 1,500 | 1 |
| WP127S | 37 46 48 | 111 16 19 | 1.5 | 1.00 | 2.0 | .20 | 300 | N | N | N | 50 | 500 | 1 |
| WP128S | 37 47 32 | 111 16 41 | 1.5 | 1.00 | 2.0 | .20 | 300 | N | N | N | 50 | 1,000 | 1 |
| WP129S | 37 47 43 | 111 17 0 | 1.5 | 1.00 | 2.0 | .20 | 500 | N | N | N | 30 | 300 | 1 |
| WP130S | 37 17 5 | 111 47 32 | 1.5 | 1.50 | 3.0 | .20 | 300 | N | N | N | 50 | 1,000 | <1 |
| WP131S | 37 18 55 | 111 45 58 | 2.0 | 1.50 | 3.0 | .20 | 300 | N | N | N | 30 | 500 | 1 |
| WP132S | 37 19 18 | 111 46 30 | 1.0 | 1.50 | 5.0 | .15 | 300 | N | N | N | 30 | 500 | <1 |
| WP133S | 37 30 52 | 111 45 11 | 1.5 | 2.00 | 7.0 | .15 | 500 | N | N | N | 30 | 500 | <1 |
| WP134S | 37 20 33 | 111 47 0 | 1.0 | 2.00 | 5.0 | .20 | 300 | N | N | N | 100 | 1,500 | <1 |
| WP135S | 37 21 15 | 111 47 12 | .7 | 1.50 | 3.0 | .15 | 200 | N | N | N | 70 | 200 | <1 |
| WP136S | 37 21 35 | 111 47 20 | 1.5 | 2.00 | 5.0 | .30 | 500 | N | N | N | 30 | 1,000 | 1 |
| WP137S | 37 22 25 | 111 48 13 | 2.0 | 2.00 | 5.0 | .20 | 700 | N | N | N | 50 | 1,000 | 1 |
| WP138S | 37 9 17 | 111 43 23 | .5 | .15 | 1.0 | .10 | 100 | N | N | N | 100 | 300 | 1 |
| WP139S | 37 14 9 | 111 48 0 | 1.0 | 1.50 | 2.0 | .30 | 500 | N | N | N | 50 | 1,000 | 1 |
| WP140S | 37 14 58 | 111 48 25 | 1.5 | .70 | 2.0 | .15 | 200 | 1.0 | N | N | 50 | 300 | 1 |
| WP141S | 37 14 49 | 111 46 18 | 1.0 | .70 | 2.0 | .15 | 200 | 7.0 | N | N | 30 | 200 | <1 |
| WP142S | 37 14 55 | 111 46 12 | 1.5 | .70 | 1.5 | .15 | 300 | <.5 | N | N | 30 | 700 | 1 |
| WP143S | 37 14 18 | 111 45 37 | 1.0 | .70 | 1.0 | .15 | 500 | 2.0 | N | N | 30 | 300 | <1 |
| WP144S | 37 21 46 | 111 44 33 | 1.0 | 1.00 | 3.0 | .10 | 300 | <.5 | N | N | 50 | 300 | 1 |

TABLE 5. ANALYTICAL RESULTS OF STREAM SEDIMENT SAMPLES COLLECTED FROM THE WAHWEAP WILDERNESS STUDY AREA, UTAH.--Continued

| Sample | 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 | Sn-ppm s | Sr-ppm s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WP100S | N | N | 10 | 30 | 20 | 100 | N | N | 20 | 20 | N | 10 | N | 200 |
| WP101S | N | N | 5 | <10 | <5 | N | N | N | <5 | N | N | N | N | 100 |
| WP102S | N | N | 10 | 50 | 15 | 50 | N | N | 20 | 15 | N | 10 | N | 300 |
| WP103S | N | N | 7 | 30 | 10 | 50 | N | N | 7 | N | N | N | N | 200 |
| WP104S | N | N | 10 | 50 | 15 | 70 | N | N | 10 | 15 | N | 7 | N | 200 |
| WP105S | N | N | 10 | 50 | 15 | 20 | N | N | 15 | 15 | N | 7 | N | 200 |
| WP106S | N | N | 10 | 30 | 10 | 20 | N | N | 10 | 10 | N | <5 | N | 150 |
| WP107S | N | N | 10 | 70 | 20 | 70 | N | N | 15 | 20 | N | 7 | N | 300 |
| WP108S | N | N | 10 | 70 | 20 | 20 | N | N | 20 | 15 | N | 7 | N | 200 |
| WP109S | N | N | 10 | 50 | 20 | 30 | N | N | 20 | 20 | N | 7 | N | 150 |
| WP110S | N | N | 10 | 70 | 20 | 50 | N | N | 20 | 20 | N | 10 | N | 300 |
| WP111S | N | N | 10 | 20 | 15 | 50 | N | N | 15 | 20 | N | 7 | N | 100 |
| WP112S | N | N | 10 | 20 | 15 | 50 | N | N | 15 | 15 | N | 5 | N | 150 |
| WP113S | N | N | 10 | 20 | 10 | 20 | N | N | 10 | 10 | N | <5 | N | 100 |
| WP114S | N | N | 10 | 500 | 10 | 50 | N | N | 10 | 15 | N | 7 | N | 200 |
| WP115S | N | N | 10 | 30 | 10 | 30 | N | N | 10 | 10 | N | 5 | N | 100 |
| WP116S | N | N | 10 | 50 | 10 | 150 | N | N | 10 | 30 | N | 7 | N | 100 |
| WP117S | N | N | 10 | 30 | 10 | 30 | N | N | 10 | 10 | N | 7 | N | 100 |
| WP118S | N | N | 5 | 15 | 10 | N | N | N | 5 | 10 | N | 5 | N | 100 |
| WP119S | N | N | 10 | 20 | 10 | 50 | N | N | 10 | 10 | N | 5 | N | 100 |
| WP120S | N | N | 10 | 70 | 10 | N | N | N | 10 | <10 | N | <5 | N | 100 |
| WP121S | N | N | 10 | 50 | 15 | 200 | N | <20 | 10 | 15 | N | <5 | N | N |
| WP122S | N | N | 10 | 30 | 15 | 20 | N | N | 15 | 10 | N | 5 | N | 200 |
| WP123S | N | N | 10 | 30 | 15 | 20 | N | N | 15 | <10 | N | 5 | N | 100 |
| WP124S | N | N | 10 | 100 | 10 | 70 | N | N | 10 | 15 | N | 5 | N | 100 |
| WP125S | N | N | 10 | 30 | 15 | 50 | N | N | 15 | 15 | N | 5 | N | 100 |
| WP126S | N | N | 10 | 20 | 15 | 50 | N | N | 20 | 15 | N | 5 | N | 150 |
| WP127S | N | N | 10 | 20 | 15 | 20 | N | N | 15 | 10 | N | 7 | N | 100 |
| WP128S | N | N | 10 | 20 | 10 | 20 | N | N | 15 | 10 | N | 5 | N | 100 |
| WP129S | N | N | 10 | 20 | 10 | 70 | N | N | 15 | <10 | N | 7 | N | 150 |
| WP130S | N | N | 10 | 20 | 10 | 20 | N | N | 15 | 10 | N | 5 | N | 100 |
| WP131S | N | N | 10 | 30 | 10 | 100 | N | N | 15 | 10 | N | 5 | N | 100 |
| WP132S | N | N | 10 | 20 | 10 | N | N | N | 10 | 10 | N | <5 | N | 100 |
| WP133S | N | N | 10 | 30 | 10 | 20 | N | N | 15 | 15 | N | 5 | N | 150 |
| WP134S | N | N | 10 | 30 | 10 | N | N | N | 10 | 10 | N | <5 | N | 100 |
| WP135S | N | N | 10 | 20 | 7 | 30 | N | N | 10 | <10 | N | <5 | N | 100 |
| WP136S | N | N | 10 | 70 | 10 | 50 | N | N | 15 | 15 | N | 7 | N | 200 |
| WP137S | N | N | 10 | 30 | 15 | 20 | N | <20 | 10 | 15 | N | 7 | N | 150 |
| WP138S | N | N | N | 10 | <5 | 20 | N | N | N | <10 | N | N | N | 100 |
| WP139S | N | N | 10 | 20 | 10 | 20 | N | N | 15 | 10 | N | 7 | N | 150 |
| WP140S | N | N | 10 | 20 | 10 | 20 | N | N | 15 | 10 | N | <5 | N | 150 |
| WP141S | N | N | 10 | 70 | 10 | 100 | N | N | 15 | 15 | N | 5 | N | 100 |
| WP142S | N | N | 10 | 15 | 7 | 50 | N | N | 5 | 10 | N | 5 | N | 150 |
| WP143S | N | N | 10 | 50 | 10 | 30 | N | N | 7 | 10 | N | 5 | N | 100 |
| WP144S | N | N | 10 | 15 | 10 | 50 | N | N | 10 | 10 | N | <5 | N | 200 |

TABLE 5. ANALYTICAL RESULTS OF STREAM SEDIMENT SAMPLES COLLECTED FROM THE WAHWEAP WILDERNESS STUDY AREA, UTAH.--Continued

| Sample | V-ppm s | W-ppm s | Y-ppm s | Zn-ppm s | Zr-ppm s | Th-ppm s | Au-ppm aa | As-ppm ICP | Bi-ppm ICP | Cd-ppm ICP | Sb-ppm ICP | Zn-ppm ICP | Dna-th | Dna-u |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WP100S | 100 | N | 30 | N | 300 | N | <.1 | 6 | <2 | .4 | <2 | 42 | 16.40 | 3.990 |
| WP101S | 20 | N | <10 | N | 200 | N | <.1 | <5 | <2 | .2 | <2 | 8 | 4.37 | 1.000 |
| WP102S | 100 | N | 20 | N | 300 | N | <.1 | <5 | <2 | .5 | <2 | 46 | 11.20 | 3.830 |
| WP103S | 100 | N | 10 | N | 300 | N | <.1 | <5 | <2 | .3 | <2 | 21 | 5.44 | 2.080 |
| WP104S | 70 | N | 30 | N | 700 | N | <.1 | 5 | <2 | .6 | <2 | 45 | 12.70 | 3.540 |
| WP105S | 70 | N | 20 | N | 200 | N | <.1 | <5 | <2 | .6 | <2 | 51 | 14.60 | 3.670 |
| WP106S | 50 | N | 15 | N | 100 | N | <.1 | 5 | <2 | .5 | 3 | 31 | 7.57 | 2.560 |
| WP107S | 50 | N | 20 | N | 500 | N | <.1 | 6 | <2 | .6 | <2 | 48 | 13.90 | 3.830 |
| WP108S | 70 | N | 30 | N | 100 | N | <.1 | 6 | <2 | .5 | <2 | 55 | 2,564.00 | 2,564.000 |
| WP109S | 70 | N | 20 | N | 200 | N | <.1 | <5 | <2 | .6 | <2 | 52 | 13.90 | 3.700 |
| WP110S | 100 | N | 30 | N | 500 | N | <.1 | <5 | <2 | .6 | <2 | 53 | 12.50 | 3.720 |
| WP111S | 70 | N | 20 | N | 500 | N | <.1 | <5 | <2 | .5 | <2 | 41 | 10.40 | 3.070 |
| WP112S | 70 | N | 20 | N | 300 | N | <.1 | <5 | <2 | .5 | <2 | 37 | 10.90 | 3.070 |
| WP113S | 50 | N | 15 | N | 200 | N | <.1 | <5 | <2 | .4 | <2 | 33 | 2,564.00 | 2,564.000 |
| WP114S | 100 | N | 20 | N | 200 | N | <.1 | 6 | <2 | .7 | 3 | 33 | 8.86 | 2.810 |
| WP115S | 50 | N | 20 | N | 200 | N | <.1 | <5 | <2 | .4 | <2 | 36 | 9.43 | 3.190 |
| WP116S | 50 | N | 30 | N | >1,000 | N | <.1 | <5 | <2 | .5 | 2 | 37 | 62.90 | 9.530 |
| WP117S | 70 | N | 20 | 200 | 500 | N | <.1 | <5 | <2 | .5 | <2 | 36 | 16.60 | 3.930 |
| WP118S | 50 | N | 20 | N | 1,000 | N | <.1 | 6 | <2 | .4 | 2 | 20 | 13.00 | 3.420 |
| WP119S | 70 | N | 20 | N | 300 | N | <.1 | <5 | <2 | .4 | 2 | 28 | 11.50 | 3.090 |
| WP120S | 50 | N | 20 | N | 700 | N | <.1 | <5 | <2 | .4 | <2 | 34 | 13.70 | 3.680 |
| WP121S | 50 | N | 30 | N | 1,000 | N | <.1 | <5 | <2 | .4 | 2 | 34 | 35.10 | 5.680 |
| WP122S | 100 | N | 70 | N | 200 | N | <.1 | 6 | <2 | .6 | 3 | 35 | 5.70 | 2.800 |
| WP123S | 70 | N | 15 | N | 500 | N | <.1 | <5 | <2 | .5 | 2 | 38 | 14.20 | 3.720 |
| WP124S | 70 | N | 30 | N | 1,000 | N | <.1 | <5 | <2 | .4 | <2 | 31 | 8.28 | 3.100 |
| WP125S | 70 | N | 150 | N | 200 | N | <.1 | <5 | <2 | .4 | <2 | 30 | 5.77 | 2.390 |
| WP126S | 70 | N | 20 | N | 150 | N | <.1 | 6 | <2 | .6 | 3 | 37 | 6.56 | 2.570 |
| WP127S | 70 | N | 20 | N | 200 | N | <.1 | <5 | <2 | .4 | <2 | 37 | 11.10 | 2.900 |
| WP128S | 70 | N | 15 | N | 200 | N | <.1 | <5 | <2 | .6 | 2 | 37 | 9.21 | 2.940 |
| WP129S | 70 | N | 20 | N | 300 | N | <.1 | <5 | <2 | .4 | 3 | 32 | 8.88 | 3.020 |
| WP130S | 70 | N | 20 | N | 200 | N | <.1 | <5 | <2 | .4 | 3 | 29 | 8.30 | 2.420 |
| WP131S | 70 | N | 20 | N | >1,000 | N | <.1 | <5 | <2 | .4 | 3 | 33 | 12.30 | 2.720 |
| WP132S | 50 | N | 20 | N | 700 | N | <.1 | <5 | 2 | .4 | 3 | 21 | 5.47 | 2.140 |
| WP133S | 70 | N | 10 | N | 200 | N | <.1 | <5 | <2 | .6 | 3 | 37 | 7.59 | 2.170 |
| WP134S | 70 | N | 10 | N | 1,000 | N | <.1 | <5 | <2 | .5 | 4 | 29 | 7.13 | 2.140 |
| WP135S | 50 | N | 15 | N | 700 | N | <.1 | 5 | <2 | .3 | 4 | 21 | 4.10 | 1.910 |
| WP136S | 100 | N | 20 | N | 1,000 | N | <.1 | 6 | <2 | .6 | 3 | 33 | 8.67 | 2.360 |
| WP137S | 100 | N | 20 | N | 500 | N | <.1 | 5 | <2 | .6 | 2 | 41 | 8.78 | 2.720 |
| WP138S | 20 | N | 10 | N | 500 | N | <.1 | <5 | <2 | .1 | <2 | 7 | 3.60 | 1.210 |
| WP139S | 70 | N | 20 | N | 300 | N | <.1 | <5 | <2 | .4 | <2 | 37 | 10.40 | 2.850 |
| WP140S | 70 | N | 20 | N | 200 | N | <.1 | <5 | <2 | .4 | <2 | 36 | 12.20 | 3.210 |
| WP141S | 50 | N | 30 | N | 300 | N | <.1 | <5 | <2 | .4 | <2 | 36 | 13.30 | 3.090 |
| WP142S | 50 | N | 100 | N | 500 | N | <.1 | <5 | <2 | .4 | 2 | 38 | 15.30 | 3.860 |
| WP143S | 50 | N | 20 | N | 500 | N | <.1 | <5 | <2 | .4 | <2 | 33 | 22.70 | 4.280 |
| WP144S | 70 | N | 20 | N | 100 | N | <.1 | 5 | <2 | .7 | 4 | 41 | 8.61 | 2.630 |

TABLE 5. ANALYTICAL RESULTS OF STREAM SEDIMENT SAMPLES COLLECTED FROM THE WAHWEAP WILDERNESS STUDY AREA, UTAH.--Continued

| Sample | Latitude | Longitude | Fe-pct. | Mg-pct. | Ca-pct. | Ti-pct. | Mn-ppm | Ag-ppm | As-ppm | Au-ppm | B-ppm | Ba-ppm | Be-ppm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | s | s | s | s | s | s | s | s | s | s | s |
| WP145S | 37 21 50 | 111 44 37 | 1.5 | 2.00 | 5.0 | .15 | 300 | 1.0 | N | N | 30 | 500 | <1 |
| WP146S | 37 18 53 | 111 51 13 | 1.0 | .70 | 2.0 | .15 | 200 | N | N | N | 30 | 200 | <1 |
| WP147S | 37 17 42 | 111 51 15 | .7 | 1.50 | 2.0 | .07 | 150 | N | N | N | 20 | 200 | <1 |
| WP148S | 37 17 39 | 111 51 9 | .7 | 1.00 | 2.0 | .10 | 150 | N | N | N | 50 | 500 | <1 |
| WP149S | 37 17 2 | 111 51 3 | .7 | 1.00 | 2.0 | .15 | 200 | N | N | N | 30 | 500 | <1 |
| WP150S | 37 16 26 | 111 51 18 | .7 | 1.00 | 2.0 | .10 | 200 | N | N | N | 20 | 200 | <1 |
| WP151S | 37 15 32 | 111 51 0 | 1.5 | 1.00 | 3.0 | .20 | 300 | N | N | N | 50 | 700 | <1 |
| WP152S | 37 15 15 | 111 50 52 | 1.0 | .70 | 2.0 | .15 | 300 | N | N | N | 20 | 300 | <1 |
| WP153S | 37 11 40 | 111 47 22 | 1.5 | .70 | 1.5 | .20 | 150 | N | N | N | 70 | 200 | 1 |
| WP154S | 37 10 15 | 111 47 26 | 2.0 | .70 | 5.0 | .20 | 300 | N | N | N | 50 | 300 | <1 |
| WP155S | 37 9 52 | 111 46 23 | 1.0 | .50 | 2.0 | .15 | 150 | N | N | N | 50 | 200 | 1 |
| WP156S | 37 9 28 | 111 48 5 | 1.0 | .70 | 2.0 | .15 | 500 | N | N | N | 30 | 300 | 1 |
| WP157S | 37 9 34 | 111 48 45 | .7 | .50 | 1.0 | .15 | 150 | N | N | N | 50 | 200 | <1 |
| WP158S | 37 5 46 | 111 46 42 | 1.5 | 1.00 | 2.0 | .20 | 300 | N | N | N | 30 | 300 | <1 |
| WP159S | 37 8 16 | 111 45 23 | .7 | .50 | 1.0 | .10 | 500 | N | N | N | 50 | 300 | <1 |
| WP160S | 37 8 6 | 111 45 42 | 2.0 | 1.00 | 2.0 | .20 | 300 | N | N | N | 70 | 500 | <1 |
| WP161S | 37 7 58 | 111 45 52 | 1.5 | .70 | 2.0 | .10 | 300 | N | N | N | 20 | 300 | <1 |
| WP162S | 37 7 53 | 111 45 56 | 1.0 | .50 | 1.0 | .10 | 200 | N | N | N | 70 | 200 | <1 |
| WP163S | 37 6 52 | 111 42 5 | 3.0 | .70 | 1.5 | .30 | 500 | N | N | N | 30 | 500 | 1 |
| WP164S | 37 21 50 | 111 43 25 | .7 | .70 | 1.5 | .15 | 200 | N | N | N | 30 | 200 | <1 |
| WP165S | 37 21 52 | 111 43 20 | 1.5 | 2.00 | 5.0 | .15 | 300 | N | N | N | 30 | 1,500 | 1 |
| WP166S | 37 21 50 | 111 44 30 | 1.5 | 2.00 | 7.0 | .15 | 300 | N | N | N | 70 | 1,000 | 1 |
| WP167S | 37 21 51 | 111 45 5 | 1.0 | 1.00 | 3.0 | .15 | 150 | N | N | N | 50 | 1,000 | <1 |
| WP168S | 37 20 8 | 111 45 15 | .7 | 1.00 | 2.0 | .10 | 100 | N | N | N | 30 | 200 | <1 |
| WP169S | 37 21 38 | 111 47 15 | 2.0 | 2.00 | 5.0 | .15 | 500 | N | N | N | 50 | 500 | 1 |
| WP170S | 37 21 9 | 111 46 43 | 2.0 | 2.00 | 5.0 | .15 | 300 | N | N | N | 50 | 200 | <1 |
| WP171S | 37 21 3 | 111 46 37 | 1.0 | 1.50 | 2.0 | .15 | 200 | N | N | N | 30 | 150 | <1 |
| WP172S | 37 20 18 | 111 46 58 | 1.0 | 1.50 | 3.0 | .10 | 100 | N | N | N | 70 | 150 | <1 |
| WP173S | 37 11 45 | 111 40 2 | 1.5 | .50 | 1.0 | .30 | 700 | N | N | N | 30 | 700 | <1 |
| WP174S | 37 11 0 | 111 40 5 | 1.5 | .50 | 1.0 | .30 | 300 | N | N | N | 30 | 1,000 | <1 |
| WP175S | 37 10 35 | 111 40 10 | 1.5 | .70 | 2.0 | .20 | 300 | N | N | N | 30 | 300 | <1 |
| WP176S | 37 10 19 | 111 40 9 | 2.0 | 1.00 | 2.0 | .20 | 200 | N | N | N | 50 | 300 | 1 |
| WP177S | 37 9 47 | 111 39 49 | 1.5 | 1.00 | 2.0 | .15 | 300 | N | N | N | 30 | 700 | <1 |
| WP178S | 37 9 8 | 111 39 50 | 1.5 | .50 | 1.0 | .20 | 300 | N | N | N | 50 | 200 | <1 |
| WP179S | 37 7 0 | 111 41 22 | 1.5 | 1.00 | 3.0 | .20 | 300 | N | N | N | 50 | 500 | 1 |

TABLE 5. ANALYTICAL RESULTS OF STREAM SEDIMENT SAMPLES COLLECTED FROM THE WAHWEAP WILDERNESS STUDY AREA, UTAH.--Continued

| Sample | 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 | Sn-ppm s | Sr-ppm s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WP145S | N | N | 10 | 20 | 10 | 50 | N | N | 10 | 10 | N | 5 | N | 200 |
| WP146S | N | N | 5 | 20 | 7 | N | N | N | 5 | N | N | <5 | N | 100 |
| WP147S | N | N | 5 | 20 | 10 | N | N | N | 7 | N | N | <5 | N | 150 |
| WP148S | N | N | 5 | 20 | 5 | 20 | N | N | 7 | <10 | N | <5 | N | 100 |
| WP149S | N | N | 5 | 20 | 5 | 30 | N | N | 5 | <10 | N | <5 | N | 100 |
| WP150S | N | N | 7 | 15 | 7 | 20 | N | N | 7 | 10 | N | <5 | N | 100 |
| WP151S | N | N | 10 | 70 | 10 | 20 | N | N | 15 | 10 | N | 5 | N | 150 |
| WP152S | N | N | 7 | 20 | 7 | 20 | N | N | 5 | 15 | N | 7 | N | 100 |
| WP153S | N | N | 10 | 50 | 15 | 30 | N | N | 20 | 10 | N | 7 | N | 200 |
| WP154S | N | N | 10 | 50 | 15 | 50 | N | N | 20 | 15 | N | 5 | N | 500 |
| WP155S | N | N | 7 | 10 | 7 | N | N | N | 7 | <10 | N | 5 | N | 200 |
| WP156S | N | N | 7 | 15 | 7 | 20 | N | N | 5 | <10 | N | 5 | N | 200 |
| WP157S | N | N | 5 | 10 | 5 | 30 | N | N | N | N | N | N | N | 100 |
| WP158S | N | N | 7 | 20 | 7 | N | N | N | 5 | 10 | N | N | N | 150 |
| WP159S | N | N | 5 | 10 | <5 | N | N | N | <5 | N | N | N | N | 150 |
| WP160S | N | N | 7 | 70 | 20 | 20 | N | <20 | 10 | 15 | N | 5 | N | 150 |
| WP161S | N | N | 10 | 50 | 5 | 150 | N | N | 10 | N | N | N | N | 150 |
| WP162S | N | N | 5 | 10 | 7 | N | N | N | N | N | N | N | N | 100 |
| WP163S | N | N | 7 | 20 | 10 | 150 | N | N | 5 | 10 | N | 7 | N | 100 |
| WP164S | N | N | 5 | 15 | 7 | N | N | N | 5 | N | N | N | N | 100 |
| WP165S | N | N | 7 | 20 | 10 | 20 | N | N | 15 | 10 | N | 5 | N | 150 |
| WP166S | N | N | 7 | 70 | 10 | 20 | N | N | 15 | 10 | N | 5 | N | 150 |
| WP167S | N | N | 5 | 15 | 10 | 20 | N | N | 5 | N | N | <5 | N | 150 |
| WP168S | N | N | 5 | 10 | <5 | N | N | N | 5 | N | N | N | N | 100 |
| WP169S | N | N | 10 | 30 | 15 | 20 | N | N | 20 | 15 | N | 7 | N | 150 |
| WP170S | N | N | 10 | 50 | 20 | 20 | N | N | 20 | 15 | N | 7 | N | 100 |
| WP171S | N | N | 5 | 20 | 10 | N | N | N | 10 | 10 | N | 5 | N | 100 |
| WP172S | N | N | 5 | 30 | 5 | N | N | N | 5 | N | N | <5 | N | N |
| WP173S | N | N | 10 | 50 | 10 | 50 | N | N | 10 | 10 | N | 7 | N | 150 |
| WP174S | N | N | 10 | 30 | 15 | 200 | N | N | 20 | 20 | N | 7 | N | 100 |
| WP175S | N | N | 10 | 30 | 20 | 30 | N | N | 15 | 15 | N | 7 | N | 100 |
| WP176S | N | N | 15 | 70 | 30 | 20 | N | N | 30 | 15 | N | 10 | N | 100 |
| WP177S | N | N | 10 | 30 | 15 | 20 | N | N | 20 | 15 | N | 7 | N | 100 |
| WP178S | N | N | 15 | 20 | 10 | 30 | N | N | 20 | 15 | N | 7 | N | 100 |
| WP179S | N | N | 10 | 30 | 7 | 50 | N | N | 10 | 10 | N | 5 | N | 150 |

TABLE 5. ANALYTICAL RESULTS OF STREAM SEDIMENT SAMPLES COLLECTED FROM THE WAHWEAP WILDERNESS STUDY AREA, UTAH.--Continued

| Sample | V-ppm s | W-ppm s | Y-ppm s | Zn-ppm s | Zr-ppm s | Th-ppm s | Au-ppm aa | As-ppm ICP | Bi-ppm ICP | Cd-ppm ICP | Sb-ppm ICP | Zn-ppm ICP | Dna-th | Dna-u |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WP145S | 70 | N | 15 | N | 200 | N | <.1 | <5 | <2 | .6 | 4 | 38 | 7.95 | 2.450 |
| WP146S | 70 | N | 15 | N | 1,000 | N | <.1 | 6 | <2 | .4 | 3 | 31 | 5.68 | 2.360 |
| WP147S | 50 | N | 20 | N | 50 | N | <.1 | 6 | <2 | .5 | 4 | 26 | 5.02 | 1.820 |
| WP148S | 50 | N | 15 | N | 200 | N | <.1 | <5 | <2 | .4 | 4 | 25 | 4.10 | 2.190 |
| WP149S | 70 | N | 15 | N | 500 | N | <.1 | <5 | <2 | .3 | 3 | 24 | 6.30 | 2.280 |
| WP150S | 50 | N | 15 | N | 100 | N | <.1 | <5 | <2 | .3 | 3 | 23 | 4.90 | 2.090 |
| WP151S | 100 | N | 20 | N | 200 | N | <.1 | <5 | <2 | .4 | 2 | 35 | 10.50 | 3.210 |
| WP152S | 50 | N | 20 | N | 150 | N | <.1 | <5 | <2 | .4 | 3 | 31 | 7.51 | 2.550 |
| WP153S | 100 | N | 20 | N | 200 | N | <.1 | <5 | <2 | .5 | <2 | 56 | 16.40 | 4.140 |
| WP154S | 100 | N | 30 | N | 700 | N | <.1 | <5 | <2 | .6 | <2 | 47 | 16.90 | 3.860 |
| WP155S | 70 | N | 15 | N | 200 | N | <.1 | <5 | <2 | .3 | <2 | 27 | 7.99 | 2.890 |
| WP156S | 70 | N | 20 | N | 500 | N | <.1 | <5 | <2 | .4 | <2 | 31 | 9.94 | 2.780 |
| WP157S | 30 | N | 15 | N | 500 | N | <.1 | <5 | <2 | .2 | <2 | 18 | 5.20 | 2.220 |
| WP158S | 50 | N | 15 | N | 200 | N | <.1 | <5 | <2 | .3 | <2 | 24 | 7.62 | 2.130 |
| WP159S | 30 | N | 10 | N | 300 | N | <.1 | <5 | <2 | <.1 | <2 | 6 | 2.60 | .866 |
| WP160S | 70 | N | 30 | N | >1,000 | N | <.1 | 6 | <2 | .2 | <2 | 23 | 11.20 | 3.330 |
| WP161S | 50 | N | 20 | N | 700 | N | <.1 | <5 | <2 | .3 | <2 | 23 | 14.00 | 2.850 |
| WP162S | 30 | N | 15 | N | 1,000 | N | <.1 | <5 | <2 | .1 | <2 | 12 | 3.00 | 1.290 |
| WP163S | 150 | N | 50 | N | 700 | N | <.1 | <5 | <2 | .5 | <2 | 34 | 12.80 | 3.390 |
| WP164S | 30 | N | 15 | N | 500 | N | <.1 | <5 | <2 | .2 | <2 | 21 | 3.80 | 1.760 |
| WP165S | 70 | N | 20 | N | 500 | N | <.1 | <5 | <2 | .5 | 4 | 31 | -- | -- |
| WP166S | 70 | N | 20 | N | 500 | N | <.1 | 6 | <2 | .5 | 4 | 28 | 4.90 | 2.140 |
| WP167S | 50 | N | 15 | N | 1,000 | N | <.1 | <5 | <2 | .4 | <2 | 23 | 5.29 | 2.180 |
| WP168S | 50 | N | 10 | N | 500 | N | <.1 | <5 | <2 | .3 | 3 | 19 | 4.75 | 1.890 |
| WP169S | 100 | N | 15 | N | 500 | N | <.1 | 8 | <2 | .6 | 3 | 39 | 5.00 | 2.570 |
| WP170S | 70 | N | 20 | N | 700 | N | <.1 | 6 | <2 | .5 | 3 | 35 | 6.66 | 2.520 |
| WP171S | 70 | N | 20 | N | 1,000 | N | <.1 | 6 | <2 | .5 | 3 | 31 | 5.66 | 2.600 |
| WP172S | 50 | N | 10 | N | 700 | N | <.1 | <5 | <2 | .4 | 3 | 22 | 2.30 | 1.860 |
| WP173S | 70 | N | 20 | N | >1,000 | N | <.1 | <5 | <2 | .4 | <2 | 35 | 18.30 | 4.750 |
| WP174S | 100 | N | 50 | N | 700 | <100 | <.1 | 5 | <2 | .6 | <2 | 44 | 21.80 | 4.630 |
| WP175S | 100 | N | 30 | N | >1,000 | N | <.1 | <5 | <2 | .6 | 2 | 46 | 15.20 | 3.670 |
| WP176S | 100 | N | 20 | N | 700 | N | <.1 | 7 | <2 | .9 | 3 | 61 | 15.80 | 4.330 |
| WP177S | 70 | N | 20 | N | 500 | N | <.1 | 7 | <2 | .7 | <2 | 54 | 16.10 | 3.410 |
| WP178S | 50 | N | 20 | N | 700 | N | <.1 | <5 | <2 | .5 | <2 | 41 | 14.80 | 3.300 |
| WP179S | 70 | N | 15 | N | >1,000 | N | <.1 | 8 | <2 | .5 | 3 | 29 | 6.79 | 2.140 |

TABLE 6. ANALYTICAL RESULTS OF HEAVY-MINERAL-CONCENTRATE SAMPLES COLLECTED FROM THE WAHWEAP WILDERNESS STUDY AREA, UTAH

[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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WP100C | 37 7 43 | 111 41 17 | .20 | .10 | .30 | 1.00 | 30 | N | N | N | 20 | >10,000 |
| WP101C | 37 8 25 | 111 41 39 | .30 | <.05 | .15 | 1.00 | 70 | N | N | N | 20 | >10,000 |
| WP102C | 37 8 30 | 111 41 31 | .50 | .15 | .50 | .30 | 100 | N | N | N | 20 | >10,000 |
| WP103C | 37 9 10 | 111 42 1 | .30 | .30 | .50 | 1.50 | 70 | N | N | N | 50 | >10,000 |
| WP104C | 37 9 30 | 111 42 35 | .70 | .10 | .20 | .30 | 50 | N | N | N | <20 | >10,000 |
| WP105C | 37 10 45 | 111 42 45 | .20 | <.05 | .20 | .15 | 20 | N | N | N | <20 | >10,000 |
| WP106C | 37 10 40 | 111 42 46 | .70 | 1.00 | 2.00 | .50 | 100 | N | N | N | 30 | >10,000 |
| WP107C | 37 9 50 | 111 42 29 | .20 | .15 | .10 | .20 | 20 | N | N | N | 20 | >10,000 |
| WP108C | 37 10 45 | 111 42 52 | .50 | .30 | .50 | .50 | 30 | N | N | N | 20 | >10,000 |
| WP109C | 37 11 18 | 111 42 57 | .50 | .50 | .50 | .70 | 70 | N | N | N | 20 | >10,000 |
| WP110C | 37 11 30 | 111 42 48 | .30 | .20 | .50 | .50 | 70 | N | N | N | 20 | >10,000 |
| WP111C | 37 12 22 | 111 42 2 | .50 | .50 | .50 | .50 | 100 | N | N | N | 30 | >10,000 |
| WP112C | 37 12 29 | 111 42 5 | .15 | .10 | .30 | .30 | 30 | N | N | N | 20 | >10,000 |
| WP114C | 37 12 5 | 111 42 45 | .50 | 1.00 | 1.50 | .30 | 70 | N | N | N | 20 | >10,000 |
| WP115C | 37 43 0 | 111 12 20 | .30 | .70 | .70 | .50 | 70 | N | N | N | 20 | >10,000 |
| WP116C | 37 43 55 | 111 12 52 | .20 | .10 | .70 | 2.00 | 100 | N | N | N | 30 | >10,000 |
| WP117C | 37 43 38 | 111 13 5 | .20 | .30 | .70 | 1.00 | 70 | N | N | N | 30 | >10,000 |
| WP118C | 37 43 55 | 111 14 48 | .20 | .30 | .70 | .70 | 70 | N | N | N | 30 | >10,000 |
| WP119C | 37 44 10 | 111 13 32 | .20 | .15 | .50 | .50 | 50 | N | N | N | 20 | >10,000 |
| WP120C | 37 44 19 | 111 13 25 | .30 | .10 | <.10 | 1.00 | 70 | N | N | N | 70 | >10,000 |
| WP121C | 37 44 30 | 111 13 35 | .30 | .50 | .30 | >2.00 | 70 | N | N | N | 20 | >10,000 |
| WP122C | 37 11 35 | 111 13 41 | 2.00 | 1.00 | 2.00 | 2.00 | 200 | N | N | N | 50 | >10,000 |
| WP123C | 37 46 23 | 111 15 3 | .50 | .20 | .20 | .70 | 50 | N | N | N | 20 | >10,000 |
| WP124C | 37 45 55 | 111 15 30 | .70 | .20 | .20 | .30 | 100 | N | N | N | 20 | >10,000 |
| WP125C | 37 46 15 | 111 16 17 | .50 | 1.00 | 2.00 | .50 | 150 | N | N | N | 30 | >10,000 |
| WP126C | 37 46 12 | 111 16 25 | .70 | 1.50 | 1.50 | .70 | 100 | N | N | N | 30 | >10,000 |
| WP127C | 37 46 48 | 111 16 19 | .50 | .70 | .50 | .50 | 50 | N | N | N | 20 | >10,000 |
| WP128C | 37 47 32 | 111 16 41 | .30 | 1.00 | 3.00 | .50 | 100 | N | N | N | 20 | >10,000 |
| WP129C | 37 47 43 | 111 17 0 | .70 | .70 | 2.00 | 1.50 | 70 | N | N | N | 50 | >10,000 |
| WP130C | 37 17 5 | 111 47 32 | .20 | .15 | .50 | .70 | 50 | N | N | N | 20 | >10,000 |
| WP131C | 37 18 55 | 111 45 58 | .50 | .50 | 1.00 | .50 | 70 | N | N | N | <20 | >10,000 |
| WP132C | 37 19 18 | 111 46 30 | .70 | 1.00 | 1.50 | .70 | 100 | N | N | N | 20 | >10,000 |
| WP133C | 37 20 52 | 111 45 11 | .50 | .30 | 1.00 | .30 | 50 | N | N | N | <20 | >10,000 |
| WP134C | 37 20 33 | 111 47 0 | .30 | 1.50 | 3.00 | 2.00 | 70 | N | N | N | 50 | >10,000 |
| WP135C | 37 21 15 | 111 47 12 | .30 | 3.00 | 7.00 | 1.00 | 70 | N | N | N | 30 | >10,000 |
| WP136C | 37 21 35 | 111 47 20 | 1.00 | 1.50 | 3.00 | .70 | 150 | N | N | N | 20 | >10,000 |
| WP137C | 37 22 25 | 111 48 13 | .70 | 1.00 | 2.00 | 1.00 | 100 | N | N | N | 70 | >10,000 |
| WP138C | 37 9 17 | 111 43 23 | .20 | <.05 | <.10 | .70 | 200 | N | N | N | 70 | >10,000 |
| WP139C | 37 14 9 | 111 48 0 | .20 | .50 | 1.00 | 2.00 | 50 | N | N | N | 30 | >10,000 |
| WP140C | 37 14 58 | 111 48 25 | .70 | .20 | 1.00 | 1.00 | 70 | N | N | N | 30 | >10,000 |
| WP141C | 37 14 49 | 111 46 18 | .30 | .50 | .70 | 1.50 | 100 | N | N | N | 30 | >10,000 |
| WP142C | 37 14 55 | 111 49 12 | .70 | .70 | 1.00 | 1.00 | 70 | N | N | N | 30 | >10,000 |
| WP143C | 37 14 18 | 111 45 37 | .50 | .30 | .30 | >2.00 | 100 | N | N | N | 50 | >10,000 |
| WP144C | 37 21 46 | 111 44 33 | .70 | 1.00 | 1.50 | .70 | 100 | N | N | N | 50 | >10,000 |
| WP145V | 37 21 50 | 111 44 37 | .70 | 2.00 | 3.00 | 1.00 | 150 | N | N | N | 50 | >10,000 |

TABLE 6. ANALYTICAL RESULTS OF HEAVY-MINERAL-CONCENTRATE SAMPLES COLLECTED FROM THE WAHWEAP WILDERNESS STUDY AREA, UTAH--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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WP100C | <2 | N | N | N | <20 | N | -- | N | N | N | N | N | -- |
| WP101C | N | N | N | N | <20 | <10 | -- | N | N | N | N | N | -- |
| WP102C | <2 | N | N | N | 30 | 50 | -- | N | N | N | N | N | -- |
| WP103C | <2 | N | N | N | 20 | 150 | -- | N | <50 | N | N | N | -- |
| WP104C | <2 | N | N | N | <20 | 70 | -- | N | N | N | N | N | -- |
| WP105C | <2 | N | N | N | <20 | N | -- | N | N | N | N | N | -- |
| WP106C | 7 | N | N | N | 30 | 70 | -- | N | N | N | N | N | -- |
| WP107C | N | N | N | N | <20 | N | -- | N | N | N | N | N | -- |
| WP108C | <2 | N | N | N | <20 | N | -- | N | N | N | N | N | -- |
| WP109C | <2 | N | N | N | <20 | 200 | -- | N | N | N | 70 | N | -- |
| WP110C | <2 | N | N | N | <20 | 50 | -- | N | N | N | 20 | N | -- |
| WP111C | <2 | N | N | N | <20 | 100 | -- | N | N | N | <20 | N | -- |
| WP112C | <2 | N | N | N | <20 | 50 | -- | N | N | N | N | N | -- |
| WP114C | <2 | N | N | N | 20 | N | -- | N | N | N | N | N | -- |
| WP115C | <2 | N | N | N | 20 | N | -- | N | N | N | N | N | -- |
| WP116C | <2 | N | N | N | 20 | 500 | -- | N | N | N | 70 | N | -- |
| WP117C | <2 | N | N | N | <20 | 300 | -- | N | N | N | 50 | N | -- |
| WP118C | <2 | N | N | N | 50 | 200 | -- | N | N | N | 50 | N | -- |
| WP119C | N | N | N | N | <20 | 50 | -- | N | N | N | N | N | -- |
| WP120C | <2 | N | N | N | <20 | 300 | -- | N | N | N | N | N | -- |
| WP121C | <2 | N | N | 10 | <20 | N | 1,500 | N | N | N | 70 | N | -- |
| WP122C | <2 | N | N | 10 | 20 | N | 300 | N | 50 | N | <20 | N | -- |
| WP123C | <2 | N | N | N | 50 | N | 300 | N | <50 | N | 20 | N | -- |
| WP124C | <2 | N | N | N | 50 | <10 | 200 | N | N | N | <20 | N | -- |
| WP125C | <2 | N | N | N | 30 | <10 | 100 | N | N | N | N | N | -- |
| WP126C | N | N | N | N | 20 | <10 | 50 | N | N | N | N | N | -- |
| WP127C | N | N | N | N | 20 | N | 150 | N | N | N | <20 | N | -- |
| WP128C | <2 | N | N | N | 20 | N | 150 | N | N | N | 50 | N | -- |
| WP129C | <2 | N | N | 10 | 30 | N | 300 | N | <50 | N | N | N | -- |
| WP130C | <2 | N | N | N | 20 | N | 100 | N | <50 | N | N | N | -- |
| WP131C | N | N | N | N | 20 | N | 100 | N | N | N | N | N | -- |
| WP132C | N | N | N | N | 30 | N | 150 | N | N | <10 | N | N | -- |
| WP133C | N | N | N | N | <20 | N | N | N | N | N | N | N | -- |
| WP134C | N | N | N | N | <20 | N | 50 | N | N | N | N | N | -- |
| WP135C | N | N | N | N | 20 | <10 | 70 | N | N | N | N | N | -- |
| WP136C | N | N | N | N | 20 | N | 150 | N | <50 | N | <20 | N | -- |
| WP137C | N | N | N | N | 20 | N | 150 | N | 50 | N | N | N | -- |
| WP138C | N | N | N | N | 20 | <10 | 50 | N | N | N | N | N | -- |
| WP139C | <2 | N | N | N | 20 | N | 200 | N | 50 | N | 70 | N | -- |
| WP140C | <2 | N | N | N | 30 | N | 300 | N | <50 | N | 100 | N | -- |
| WP141C | <2 | N | N | N | 20 | N | 700 | N | N | N | 30 | N | -- |
| WP142C | N | N | N | N | 20 | N | 150 | N | 50 | N | 20 | N | -- |
| WP143C | <2 | N | N | N | 20 | N | 500 | N | 50 | N | 20 | N | -- |
| WP144C | <2 | N | N | N | <20 | N | 150 | N | N | N | N | N | -- |
| WP145V | N | N | N | N | <20 | N | 100 | N | <50 | N | N | N | -- |

TABLE 6. ANALYTICAL RESULTS OF HEAVY-MINERAL-CONCENTRATE SAMPLES COLLECTED FROM THE WAHWEAP WILDERNESS STUDY AREA, UTAH--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 | Au-ppm aa | As-ppm ICP | Bi-ppm ICP | Cd-ppm ICP | Sb-ppm ICP | Zn-ppm ICP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WP100C | 50 | 10,000 | 50 | N | 100 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP101C | 100 | 7,000 | 50 | N | 150 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP102C | N | >10,000 | 30 | N | 100 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP103C | N | >10,000 | 70 | N | 200 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP104C | N | >10,000 | 50 | N | 100 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP105C | N | >10,000 | 30 | N | 30 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP106C | N | 2,000 | 70 | N | 200 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP107C | N | >10,000 | 20 | N | 100 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP108C | N | >10,000 | 30 | N | 70 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP109C | 150 | >10,000 | 50 | N | 200 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP110C | N | >10,000 | 50 | N | 100 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP111C | N | 1,000 | 50 | N | 200 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP112C | 100 | 10,000 | 30 | N | 70 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP114C | N | 2,000 | 50 | N | 100 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP115C | N | 1,500 | 30 | N | 100 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP116C | 100 | 2,000 | 150 | N | 300 | N | >2,000 | <200 | -- | -- | -- | -- | -- | -- |
| WP117C | N | 1,000 | 50 | N | 300 | N | >2,000 | <200 | -- | -- | -- | -- | -- | -- |
| WP118C | N | 2,000 | 50 | N | 200 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP119C | 70 | 5,000 | 50 | N | 200 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP120C | 20 | 1,000 | 50 | N | 200 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP121C | 500 | 700 | 100 | N | 200 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP122C | N | 1,000 | 150 | N | 200 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP123C | 70 | 700 | 50 | N | 150 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP124C | N | 1,500 | 50 | N | 150 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP125C | N | 3,000 | 50 | N | 100 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP126C | N | 700 | 50 | N | 100 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP127C | N | 700 | 20 | N | 200 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP128C | N | 1,500 | 50 | N | 200 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP129C | <20 | 1,000 | 100 | N | 300 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP130C | <20 | 3,000 | 70 | N | 150 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP131C | N | 2,000 | 50 | N | 150 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP132C | N | 2,000 | 100 | N | 300 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP133C | N | 5,000 | 50 | N | 50 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP134C | N | 1,000 | 70 | N | 300 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP135C | 20 | 700 | 70 | N | 200 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP136C | N | 1,500 | 100 | N | 100 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP137C | N | 700 | 70 | N | 100 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP138C | 70 | 1,000 | 50 | N | 100 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP139C | 70 | 700 | 70 | N | 200 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP140C | N | 1,000 | 50 | N | 200 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP141C | 70 | 1,000 | 100 | N | 300 | N | >2,000 | <200 | -- | -- | -- | -- | -- | -- |
| WP142C | N | 1,500 | 50 | N | 200 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP143C | 100 | 700 | 150 | N | 300 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP144C | N | 2,000 | 70 | N | 150 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP145V | N | 2,000 | 100 | N | 200 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |

TABLE 6. ANALYTICAL RESULTS OF HEAVY-MINERAL-CONCENTRATE SAMPLES COLLECTED FROM THE WAHWEAP WILDERNESS STUDY AREA, UTAH--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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WP146C | 37 18 53 | 111 51 13 | .20 | 1.00 | 1.00 | .50 | 30 | N | N | N | 3[illegible] | >10,000 |
| WP147C | 37 17 42 | 111 51 15 | .20 | 3.00 | 3.00 | .20 | 50 | N | N | N | 3[illegible] | >10,000 |
| WP148C | 37 17 39 | 111 51 9 | .50 | 2.00 | 3.00 | .30 | 70 | N | N | N | 2[illegible] | >10,000 |
| WP149C | 37 17 2 | 111 51 3 | .20 | 1.50 | 1.50 | .50 | 50 | N | N | N | 2[illegible] | >10,000 |
| WP150C | 37 16 26 | 111 51 18 | .30 | 1.00 | 2.00 | 1.00 | 50 | N | N | N | 3[illegible] | >10,000 |
| WP151C | 37 15 32 | 111 51 0 | .30 | .70 | 1.00 | .50 | 50 | N | N | N | 3[illegible] | >10,000 |
| WP152C | 37 15 15 | 111 50 52 | .50 | 1.00 | 1.50 | .20 | 70 | N | N | N | 3[illegible] | >10,000 |
| WP153C | 37 11 40 | 111 47 22 | .50 | .20 | .30 | >2.00 | 100 | N | N | N | 2[illegible] | >10,000 |
| WP154C | 37 10 15 | 111 47 26 | .30 | .15 | .20 | 1.00 | 70 | N | N | N | 2[illegible] | >10,000 |
| WP155C | 37 9 52 | 111 46 23 | .30 | .20 | .30 | .30 | 30 | N | N | N | 2[illegible] | >10,000 |
| WP156C | 37 9 28 | 111 48 5 | .30 | .30 | .30 | 1.50 | 50 | N | N | N | 3[illegible] | >10,000 |
| WP157C | 37 9 34 | 111 45 45 | .50 | .10 | <.10 | .30 | 70 | N | N | N | 150 | >10,000 |
| WP158C | 37 8 46 | 111 46 42 | .50 | .70 | .70 | 1.50 | 50 | N | N | N | 2[illegible] | >10,000 |
| WP159C | 37 8 16 | 111 45 23 | .70 | .15 | <.10 | 2.00 | 2,000 | N | N | N | 500 | >10,000 |
| WP160C | 37 8 6 | 111 45 42 | .30 | .30 | .30 | >2.00 | 100 | N | N | N | 2[illegible] | >10,000 |
| WP161C | 37 7 58 | 111 45 52 | .20 | .15 | .30 | .50 | 70 | N | N | N | 3[illegible] | >10,000 |
| WP162C | 37 7 53 | 111 45 56 | 1.00 | .10 | .10 | .70 | 300 | N | N | N | 200 | >10,000 |
| WP163C | 37 6 52 | 111 42 5 | .30 | .20 | .50 | 1.00 | 70 | N | N | N | 5[illegible] | >10,000 |
| WP164C | 37 21 50 | 111 43 25 | .30 | .70 | 1.00 | 2.00 | 100 | N | N | N | 1[illegible]0 | 3,000 |
| WP165C | 37 21 52 | 111 43 20 | .50 | 2.00 | 3.00 | .50 | 100 | N | N | N | 1[illegible]0 | >10,000 |
| WP166C | 37 21 50 | 111 44 30 | .30 | 1.50 | 2.00 | 1.00 | 100 | N | N | N | 1[illegible]0 | >10,000 |
| WP167C | 37 20 51 | 111 45 5 | .70 | 1.00 | 2.00 | 1.00 | 100 | N | N | N | 5[illegible] | >10,000 |
| WP168C | 37 20 8 | 111 45 15 | 1.50 | .70 | 1.00 | .50 | 70 | N | N | N | 7[illegible] | >10,000 |
| WP169C | 37 21 38 | 111 47 15 | 1.50 | 2.00 | 5.00 | .70 | 200 | N | N | N | 1[illegible]0 | >10,000 |
| WP170C | 37 21 9 | 111 46 43 | .50 | .70 | .70 | 1.00 | 70 | N | N | N | 3[illegible] | >10,000 |
| WP171C | 37 21 3 | 111 46 37 | .70 | 1.00 | 1.50 | 2.00 | 70 | N | N | N | 7[illegible] | >10,000 |
| WP172C | 37 20 18 | 111 46 58 | .50 | 1.50 | 2.00 | 1.50 | 150 | N | N | N | 7[illegible] | >10,000 |
| WP173C | 37 11 45 | 111 40 2 | .30 | 1.00 | <.10 | 1.00 | 70 | N | N | N | 5[illegible] | >10,000 |
| WP174C | 37 11 0 | 111 40 5 | .30 | .05 | .20 | 1.00 | 100 | N | N | N | 5[illegible] | >10,000 |
| WP175C | 37 10 35 | 111 40 10 | 2.00 | .50 | .70 | 1.50 | 200 | N | N | N | 150 | >10,000 |
| WP176C | 37 10 19 | 111 40 9 | 1.00 | 1.00 | 1.50 | .70 | 200 | N | N | N | 2[illegible] | >10,000 |
| WP177C | 37 9 47 | 111 39 49 | .70 | 1.00 | 1.00 | 1.50 | 100 | N | N | N | 5[illegible] | >10,000 |
| WP178C | 37 9 8 | 111 39 50 | .30 | .10 | .10 | 1.00 | 50 | N | N | N | <2[illegible] | >10,000 |
| WP179C | 37 7 0 | 111 41 22 | 1.00 | .70 | 1.00 | 1.00 | 150 | N | N | N | 2[illegible] | >10,000 |

TABLE 6. ANALYTICAL RESULTS OF HEAVY-MINERAL-CONCENTRATE SAMPLES COLLECTED FROM THE WAHWEAP WILDERNESS STUDY AREA, UTAH--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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WP146C | N | N | N | N | <20 | N | N | N | N | N | N | N | -- |
| WP147C | N | N | N | N | <20 | N | N | N | N | N | N | N | -- |
| WP148C | <2 | N | N | N | 50 | N | 100 | N | <50 | N | 20 | N | -- |
| WP149C | N | N | N | N | <20 | N | 150 | N | N | N | <20 | N | -- |
| WP150C | <2 | N | N | N | 30 | N | 150 | N | <50 | N | 70 | N | -- |
| WP151C | N | N | N | N | <20 | N | 150 | N | N | N | 20 | N | -- |
| WP152C | <2 | N | N | N | <20 | N | 50 | N | N | N | <20 | N | -- |
| WP153C | <2 | N | N | N | 30 | N | 150 | N | N | N | 20 | N | -- |
| WP154C | <2 | N | N | N | 20 | N | 150 | N | <50 | N | 20 | N | -- |
| WP155C | <2 | N | N | N | 20 | N | N | N | N | N | 30 | N | -- |
| WP156C | <2 | N | N | N | <20 | N | 300 | N | N | N | 20 | N | -- |
| WP157C | N | N | N | N | <20 | N | N | N | N | N | 20 | N | -- |
| WP158C | <2 | N | N | 10 | 20 | N | 100 | N | <50 | 10 | 20 | N | -- |
| WP159C | N | N | N | N | 150 | N | N | N | N | N | N | N | -- |
| WP160C | N | N | N | 10 | 30 | N | 200 | N | <50 | 15 | N | N | -- |
| WP161C | <2 | N | N | N | <20 | N | 150 | N | N | N | 20 | N | -- |
| WP162C | N | N | N | N | 20 | N | N | N | N | N | N | N | -- |
| WP163C | <2 | N | N | N | 20 | N | 100 | N | <50 | N | 50 | N | -- |
| WP164C | <2 | N | N | N | 20 | N | 150 | N | N | N | 20 | N | -- |
| WP165C | <2 | N | N | N | 20 | N | 100 | N | N | N | 20 | N | -- |
| WP166C | <2 | N | N | N | 20 | N | 100 | N | <50 | N | N | N | -- |
| WP167C | <2 | N | N | N | 30 | N | 100 | N | N | N | 20 | N | -- |
| WP168C | <2 | N | N | N | 30 | <10 | 150 | N | N | 10 | 20 | N | -- |
| WP169C | <2 | N | N | N | 50 | <10 | 150 | N | N | N | 30 | N | -- |
| WP170C | N | N | N | N | <20 | N | 70 | N | N | N | N | N | -- |
| WP171C | N | N | N | 10 | 30 | N | 100 | N | N | N | 20 | N | -- |
| WP172C | N | N | N | N | 30 | N | 100 | N | N | N | N | N | -- |
| WP173C | <2 | N | N | N | 100 | N | 700 | N | N | N | 30 | N | -- |
| WP174C | <2 | N | N | N | 30 | N | 200 | N | <50 | N | 50 | N | -- |
| WP175C | <2 | N | N | N | 30 | 50 | >2,000 | N | 50 | N | 100 | N | -- |
| WP176C | <2 | N | N | 10 | 100 | <10 | 500 | N | <50 | N | 50 | N | -- |
| WP177C | <2 | N | N | N | 20 | N | 200 | N | <50 | N | 20 | N | -- |
| WP178C | <2 | N | N | N | 20 | N | 200 | N | <50 | N | 20 | N | -- |
| WP179C | N | N | N | N | 20 | N | 200 | N | <50 | N | <20 | N | -- |

TABLE 6. ANALYTICAL RESULTS OF HEAVY-MINERAL-CONCENTRATE SAMPLES COLLECTED FROM THE WAHWEAP WILDERNESS STUDY AREA, UTAH--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 | Au-ppm aa | As-ppm ICP | Bi-ppm ICP | Cd-ppm ICP | Sb-ppm ICP | Zn-ppm ICP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WP146C | N | 700 | 20 | N | 200 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP147C | N | 700 | 20 | N | 50 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP148C | N | 1,000 | 50 | N | 100 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP149C | N | 1,500 | 50 | N | 200 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP150C | N | 2,000 | 70 | N | 150 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP151C | N | 2,000 | 30 | N | 150 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP152C | N | 2,000 | 30 | N | 100 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP153C | 50 | >10,000 | 70 | N | 150 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP154C | N | >10,000 | 70 | N | 150 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP155C | N | >10,000 | 20 | N | 70 | N | >2,000 | <200 | -- | -- | -- | -- | -- | -- |
| WP156C | N | 3,000 | 30 | N | 200 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP157C | N | 700 | 20 | N | 70 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP158C | 50 | 1,500 | 50 | N | 200 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP159C | 20 | 700 | 70 | N | 200 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP160C | N | 2,000 | 70 | N | 500 | N | >2,000 | <200 | -- | -- | -- | -- | -- | -- |
| WP161C | 30 | 1,500 | 50 | N | 100 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP162C | 20 | 700 | 70 | N | 300 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP163C | N | 1,500 | 70 | N | 200 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP164C | N | 500 | 100 | N | 300 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP165C | N | 1,000 | 50 | N | 100 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP166C | N | 2,000 | 70 | N | 300 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP167C | N | 5,000 | 70 | N | 300 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP168C | N | 1,000 | 50 | N | 200 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP169C | N | 1,000 | 100 | N | 150 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP170C | N | 1,000 | 70 | N | 200 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP171C | 50 | 1,500 | 100 | N | 300 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP172C | <20 | 1,000 | 100 | N | 500 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP173C | 100 | 2,000 | 70 | N | 500 | N | >2,000 | 200 | -- | -- | -- | -- | -- | -- |
| WP174C | <20 | 2,000 | 70 | N | 200 | N | >2,000 | <200 | -- | -- | -- | -- | -- | -- |
| WP175C | 20 | 1,500 | 100 | N | 500 | N | >2,000 | 200 | -- | -- | -- | -- | -- | -- |
| WP176C | N | 2,000 | 70 | N | 200 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP177C | 20 | 2,000 | 100 | N | 200 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP178C | N | 1,500 | 70 | N | 150 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |
| WP179C | N | 2,000 | 100 | N | 200 | N | >2,000 | N | -- | -- | -- | -- | -- | -- |

TABLE 7. ANALYTICAL RESULTS OF ROCK SAMPLES COLLECTED FROM THE WAHWEAP WILDERNESS STUDY AREA, UTAH

[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 | Be-ppm s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WP103R | 37 9 10 | 111 42 1 | 5.0 | 1.0 | 3.00 | .15 | 500 | N | N | N | 50 | 200 | 1.0 |
| WP107R | 37 9 50 | 111 42 29 | .7 | .3 | <.05 | .20 | 20 | N | N | N | 100 | 100 | 5.0 |
| WP114R | 37 12 5 | 111 42 45 | 2.0 | .5 | 1.00 | .15 | 200 | N | N | N | 70 | 500 | <1.0 |
| WP117R | 37 43 38 | 111 13 5 | 3.0 | .1 | .10 | .15 | 30 | N | N | N | 30 | 500 | <1.0 |
| WP123R | 37 46 23 | 111 15 3 | 20.0 | 1.0 | 5.00 | .15 | 2,000 | N | N | N | 30 | 200 | 3.0 |
| WP138R | 37 9 17 | 111 43 23 | 1.5 | .7 | 7.00 | .05 | 300 | N | N | N | 20 | 100 | 1.0 |
| WP173R | 37 11 45 | 111 40 2 | 2.0 | .5 | 2.00 | .10 | 2,000 | N | N | N | 20 | 500 | <1.0 |
| WP178AR | 37 9 8 | 111 39 50 | 1.5 | .5 | .10 | .50 | 30 | N | N | N | 100 | 300 | 1.5 |
| WP178BR | 37 9 8 | 111 39 50 | 20.0 | .7 | 1.50 | .20 | 1,500 | N | 200 | N | 20 | 300 | 1.0 |

TABLE 7. ANALYTICAL RESULTS OF ROCK SAMPLES COLLECTED FROM THE WAHWEAP WILDERNESS STUDY AREA, UTAH--Continued

| Sample | 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 | Sn-ppm s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WP103R | N | N | 20 | 20 | 15 | N | N | <20 | 7 | N | N | 7 | N |
| WP107R | N | N | 15 | 30 | 50 | N | N | <20 | 30 | N | N | 10 | N |
| WP114R | N | N | 10 | 50 | 20 | N | N | N | 30 | N | N | 7 | N |
| WP117R | N | N | N | 20 | 5 | 100 | N | N | N | 20 | N | 5 | N |
| WP123R | N | N | N | 50 | 20 | 20 | N | N | 10 | 10 | N | 5 | N |
| WP138R | N | N | 10 | N | N | N | N | N | N | N | N | N | N |
| WP173R | N | N | 7 | 15 | 5 | 30 | 10 | N | 10 | 15 | N | N | N |
| WP178AR | N | N | 7 | 70 | 20 | 50 | N | 20 | 20 | 20 | N | 10 | N |
| WP178BR | N | N | 10 | 30 | 10 | 100 | N | <20 | 15 | N | N | 10 | N |

TABLE 7. ANALYTICAL RESULTS OF ROCK SAMPLES COLLECTED FROM THE WAHWEAP WILDERNESS STUDY AREA, UTAH--Continued

| Sample | Sr-ppm s | V-ppm s | W-ppm s | Y-ppm s | Zn-ppm s | Zr-ppm s | Th-ppm s | Au-ppm aa | As-ppm ICP | Bi-ppm ICP | Cd-ppm ICP | Sb-ppm ICP | Zn-ppm ICP | Dna-th | Dna-u |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WP103R | N | 70 | N | 20 | N | 700 | N | <.1 | <5 | <2 | .5 | <2 | 64 | 4.50 | 1.63 |
| WP107R | N | 50 | N | 30 | N | 200 | N | <.1 | <5 | <2 | 2.1 | <2 | 97 | 18.40 | 9.17 |
| WP114R | N | 100 | N | 15 | N | 200 | N | <.1 | <5 | <2 | .4 | <2 | 100 | 3.30 | 1.85 |
| WP117R | 100 | 30 | N | 20 | N | 700 | N | <.1 | 29 | <2 | <.1 | <2 | 12 | 7.99 | 2.21 |
| WP123R | N | 70 | N | 20 | N | 50 | N | <.1 | <5 | 3 | 4.6 | <2 | 44 | 6.12 | 2.02 |
| WP138R | N | 30 | N | <10 | N | 1,000 | N | <.1 | <5 | <2 | .2 | <2 | 33 | <1.60 | .43 |
| WP173R | 100 | 50 | N | 15 | N | 100 | N | <.1 | 15 | <2 | .1 | <2 | 9 | <1.90 | 1.37 |
| WP178AR | N | 150 | N | 20 | N | 200 | N | <.1 | <5 | <2 | .2 | <2 | 51 | 22.80 | 4.54 |
| WP178BR | N | 70 | N | 100 | N | 300 | N | <.1 | 330 | <2 | 1.3 | <2 | 42 | 12.90 | 3.24 |