UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

Analytical results and sample locality map for stream-sediment and panned-concentrate samples from the Gospel Hump North Addition to the Frank Church-River of No Return Wilderness, Idaho County, Idaho

By

Roy T. Hopkins, Jr., Theodore A. Roemer,

David L. Kelley, and Gary A. Nowlan

Open-File Report 85-703

1985

CONTENTS

ILLUSTRATIONS

TABLES

STUDIES RELATED TO WILDERNESS

The Wilderness Act (Public Law 88-577, September 3, 1964) and related acts require the U.S. Geological Survey and the U.S. Bureau of Mines to survey certain areas on Federal lands to determine their mineral values if any, that may be present. 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 Gospel Hump North Addition to the Frank Church-River of No Return Wilderness in the Payette National Forest, Idaho County, Idaho. The area was established as a wilderness by Public Law 96-312, July 23, 1980.

INTRODUCTION

In the summer of 1983 the U.S. Geological Survey conducted a reconnaissance geochemical survey of the Gospel Hump North Addition to the Frank Church-River of No Return Wilderness, Idaho County, Idaho.

The Gospel Hump North Addition comprises about 71 mi^2 (184 km^2) in the southwestern part of Idaho County, Idaho (fig. 1). The addition is a strip that is 1-5 mi (1.6-8 km) wide and runs along the south side of the Salmon River for about 23 mi (37 km) downstream from the confluence with the South Fork of the Salmon River and along the west side of the South Fork for about 8 mi (13 km) upstream from the confluence. Included in the study area is a strip of land in the Nezperce National Forest and mostly within the Frank Church-River of No Return Wilderness that lies along the north side of the Salmon River for about 7 mi (11 km) upstream from the confluence with the South Fork. Vehicle access to the vicinity of the portion of the study area south of the Salmon River is by secondary roads from McCall, Idaho, which is on Idaho Route 55, about 60 mi (97 km) southwest of the addition and from Riggins, Idaho, which is on Federal Route 95, about 20 mi (32 km) west of the addition. Vehicle access to that portion of the study area north of the Salmon River is by secondary roads from Elk City, Idaho, which is on Idaho Route 14, about 40 mi (64 km) north of the study area.

Elevation in the study area ranges from less than 2,000 ft (610 m) along the Salmon River at the western tip of the addition to over 6,900 ft (2,100 m) on Mill Point. The study area is extremely rugged; it consists of the gorges formed by the Salmon River and the South Fork of the Salmon River. The slopes of the gorges have been sculptured by the numerous small-to-medium-sized streams that drain the uplands on either side of the gorges. The mouths of the side drainages along the Salmon River are best reached by motor boat on the river. Good foot trails follow near the river edge along some stretches of both the Salmon River and the South Fork. Good foot trails reach into or pass through the interior of the study area in some places. However, access into parts of the study area is difficult because of the extremely steep and rugged terrain.

Precambrian metamorphic rocks underlie most of the western one-third of the study area. Granitic rocks of the Cretaceous Idaho batholith underlie most of the remainder of the study area. Known mineral deposits within the Gospel Hump North Addition are limited almost entirely to placer deposits of gold along the South Fork of the Salmon River. Lode and placer deposits of gold were mined in the past in the Warren and Marshall districts, south of the addition. Mineral resources of parts of the Frank Church-River of No Return Wilderness that adjoin the study area are discussed by Cater and others (1973). A mineral investigation of the Gospel-Hump Wilderness, which adjoins

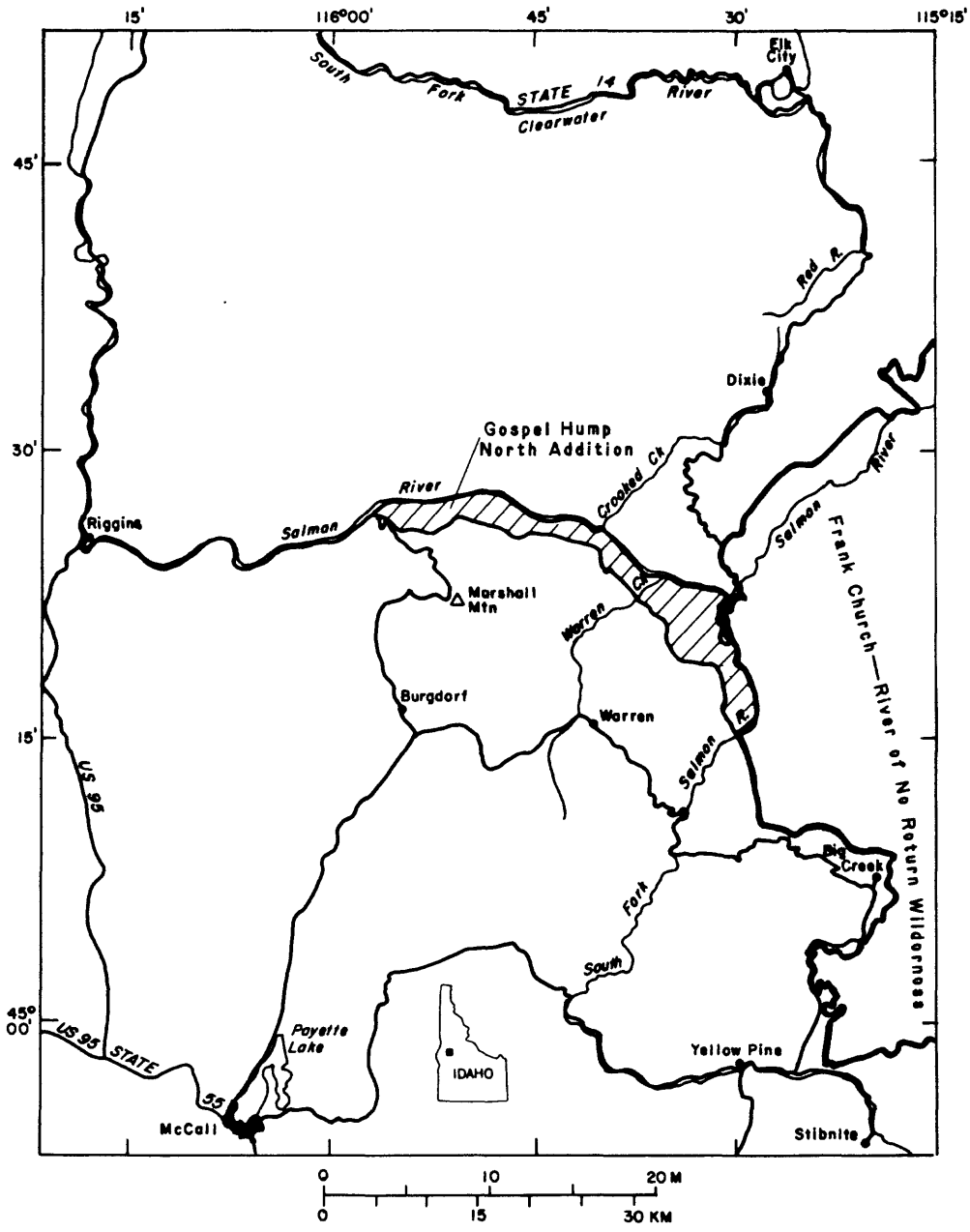

Figure 1. Index map, Gospel Hump North Addition to the Frank Church-River of No Return Wilderness, Idaho County, Idaho.

the study area on the northern side, is described by Esparza and others (1984).

Samples were collected by G. A. Nowlan, S. C. Rose, and G. P. Pudlik. Analyses were by R. T. Hopkins, Jr., D. L. Kelley, T. A. Roemer, and M. Walter.

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 locality. Such information is useful in identifying those basins which contain concentrations of elements that may be related to mineral deposits. Panned-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 locality. 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.

Sample Collection

Samples were collected at 80 localities (plate 1). At all of the localities, a stream-sediment sample was collected; at most of the localities two panned-concentrate samples were collected. The two panned-concentrate samples will be referred to as the heavy-mineral-concentrate sample and the raw panned-concentrate sample. Sampling density was about 1 sample site per square mile.

Stream-sediment samples

The stream-sediment samples consisted of grab samples 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).

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.

Raw panned-concentrate samples

A heaping 16-inch pan of unscreened alluvium (approximately 20 lbs or 9 kg) was panned until between 2 g and 22 g remained.

Sample Preparation

The stream-sediment samples were oven dried at less than 60°C, 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 oven drying at less than 60°C, 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.

The raw panned-concentrate samples were dried at less than 60°C and then were analyzed for gold without further preparation.

Sample Analysis

Spectrographic method

The stream-sediment and heavy-mineral-concentrate 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 (Ca, Fe, Mg, and Ti) are given in weight percent; all others are given in parts per million (micrograms/gram).

Other Methods

Other methods of analysis used on samples from the Gospel Hump North Addition are summarized in table 2.

Analytical results are listed in tables 3, 4, and 5.

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 3-5 list the analyses for samples of stream sediment, heavy-mineral concentrate, and raw panned concentrate, respectively. For the three tables, the data are arranged so that column 1 contains the USGS-assigned sample identifications. The numeric portions of the identifications correspond to the numbers shown on the locality map (plate 1). Stream-sediment samples were analyzed for As, Cd, Sb, and Zn by both emission spectrography and atomic absorption. The results in table 3 for Cd and Zn are atomic-absorption results. Atomic-absorption results for As and Sb are those under the columns headed by As-a and Sb-a in table 3. A letter "N" in tables 3 and 4 indicates that a given element was looked for but not detected at the lower limit of determination shown for that element in tables 1 and 2. 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. Because of the formatting used in the computer program that produced tables 3 and 4, some of the elements listed in these tables (Ca, Fe, Mg, Ti, Ag, and U) 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. Emission-spectrographic determinations for Cd, Mo, Sn, and Zn in stream-sediment samples and Cd, Mo, and Zn in heavy-mineral-concentrate samples resulted in no detectable amounts at the lower limits of determination shown in table 1; consequently, the results for these determinations have been omitted from tables 3 and 4.

The lower limit of determination for Au by atomic absorption is 0.05 ppm, based on a 10-g sample (table 2). Because the sample weight for raw panned concentrates is variable, the lower limit of determination is variable when reported in terms of ppm (table 5). However, the Au method used for this study will detect 0.5 µg of Au, as reflected in table 5 by the last column (Au per pan, µg).

Latitudes and longitudes listed in tables 3-5 are based on 1:24,000-scale U.S. Geological Survey topographic maps of the Chicken Peak and Fivemile Bar quadrangles and 1:62,500-scale maps of the Burgdorf and Warren quadrangles. The listed coordinates may not conform precisely to the plotted locations in plate 1.

REFERENCES CITED

Cater, F. W., Pinckney, D. M., Hamilton, W. B., Parker, R. L., Weldin, R. D., Close, T. J., Zilka, N. T., Leonard, B. F., and Davis, W. E., 1973, Mineral resources of the Idaho Primitive Area and vicinity, Idaho: U.S. Geological Survey Bulletin 1304, 431 p.

Centanni, F. A., Ross, A. M., and DeSesa, M. A., 1956, Fluorometric determination of uranium: Analytical Chemistry, v. 28, p. 1651.

Esparza, L. E., Olson, J. E., and Willett, S. L., 1984, Mineral investigation of the Gospel-Hump Wilderness, Idaho County, Idaho: U.S. Bureau of Mines Summary Report MLA 2-84, 24 p.

Grimes, D. J., and Marranzino, A. P., 1968, Direct-current arc and alternating-current spark emission spectrographic field methods for the semiquantitative analysis of geologic materials: U.S. Geological Survey Circular 591, 6 p.

Hopkins, D. M., 1977, An improved ion-selective electrode method for the rapid determination of fluorine in rocks and soils: U.S. Geological Survey Journal of Research, v. 5, no. 5, p. 583-593.

Motooka, J. M., and Grimes, D. J., 1976, Analytical precision of one-sixth order semiquantitative spectrographic analyses: U.S. Geological Survey Circular 738, 25 p.

Thompson, C. E., Nakagawa, H. M., and Van Sickle, G. H., 1968, Rapid analysis for gold in geologic materials, in Geological Survey research 1968: U.S. Geological Survey Professional Paper 600-B, p. B130-B132.

VanTrump, George, Jr., and Miesch, A. T., 1976, The U.S. Geological Survey RASS-STATPAC system for management and statistical reduction of geochemical data: Computers and Geosciences, v. 3, p. 475-488.

Viets, J. G., 1978, Determination of silver, bismuth, cadmium, copper, lead, and zinc in geologic materials by atomic absorption spectrometry with tricaprylylmethylammonium chloride: Analytical Chemistry, v. 50, p. 1097-1101.

TABLE 1.--Limits of determination for the spectrographic analysis of 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.--Lower limits of determination for methods other than the spectrographic method

[AA = atomic absorption; SI = specific ion; and F = fluorometry]

Element or constituent determined	Sample Type	Method	Determination limit (ppm)	Reference
Gold (Au)	Raw panned-concentrate	AA	0.05*	Thompson and others, 1968.
Arsenic (As)	Stream sediment	AA	10	Modification of Viets, 1978.
Antimony (Sb)	" "	AA	2	
Zinc (Zn)	" "	AA	5	
Cadmium (Cd)	" "	AA	0.1	
Fluorine (F)	" "	SI	100	Hopkins, 1977.
Uranium (U)	" "	F	0.05	Modification of Centanni and others, 1956.

*Based on a 10-g sample

Table 3.--Analyses of stream-sediment samples, Gospel Hump North Addition, River of No Return Wilderness, Idaho
[N, not detected; <, detected but below the limit of determination shown; >, determined to be greater than the value shown]

Sample	Latitude	Longitude	Ca	Fe	Mg	Ti	Ag	As	As-a	Au	B	Ba	Be	Bi	Cd	Co	Cr	Cu	F
IA2006	45 20 39	115 31 13	1.0	1.5	.3	.20	N	N	N	N	30	500	5.0	N	N	5	30	7	<100
IA2007A	45 20 34	115 30 54	1.5	10.0	.5	1.00	N	N	25	N	20	700	1.0	N	N	5	100	7	<100
IA2007B	45 20 34	115 30 54	1.0	3.0	.5	.50	2.0	200	185	N	50	700	3.0	N	N	<5	30	10	<100
IA2008	45 21 28	115 31 25	1.0	1.5	.3	>1.00	N	N	N	N	10	500	3.0	N	N	<5	10	<5	<100
IA2009	45 21 19	115 31 12	1.5	3.0	.5	.50	N	N	N	N	30	1,000	2.0	N	N	<5	30	<5	<100
IA2010	45 21 55	115 31 24	1.0	2.0	.3	.30	N	N	N	N	20	700	5.0	N	N	<5	30	7	<100
IA2011	45 22 15	115 30 49	1.0	3.0	.5	.50	.7	N	25	N	70	1,000	2.0	N	N	<5	50	7	300
IA2012	45 23 1	115 33 6	1.5	3.0	.7	.30	N	N	N	N	30	700	3.0	N	N	5	20	10	<100
IA2013	45 23 38	115 35 6	1.0	2.0	.5	.30	N	N	N	N	30	700	5.0	N	N	<5	30	<5	<100
IA2014	45 23 43	115 35 40	1.5	2.0	.5	.30	N	N	20	N	15	1,000	1.5	N	N	<5	20	5	N
IA2015	45 26 38	115 43 4	1.5	3.0	1.0	.70	N	N	N	N	100	700	2.0	N	N	10	100	30	<100
IA2016	45 25 28	115 39 6	2.0	10.0	1.5	>1.00	N	N	N	N	30	500	2.0	N	N	15	70	20	<100
IA2017	45 24 2	115 37 15	1.5	3.0	.5	.30	N	N	20	N	30	1,000	3.0	N	N	<5	30	10	<100
IA2051	45 15 31	115 32 17	1.5	3.0	.7	.30	N	N	N	N	20	1,000	3.0	N	N	5	30	7	<100
IA2052	45 15 31	115 32 20	1.5	2.0	1.0	.30	N	N	N	N	20	1,000	3.0	N	N	<5	30	7	<100
IA2061	45 15 14	115 30 35	1.0	3.0	.5	.20	N	N	N	N	30	700	5.0	N	N	N	30	20	<100
IA2062	45 15 19	115 30 3	.5	1.5	.2	.10	N	N	N	N	20	500	3.0	N	N	<5	20	5	N
IA2063	45 16 8	115 28 33	1.5	1.5	.5	.30	N	N	N	N	70	500	5.0	N	N	<5	20	15	<100
IA2064	45 25 1	115 54 32	2.0	3.0	1.5	.70	N	N	N	N	30	500	3.0	N	N	10	100	15	<100
IA2065	45 26 6	115 56 14	3.0	5.0	2.0	.70	N	N	N	N	20	500	2.0	N	N	15	100	20	400
IA2066	45 26 4	115 56 17	2.0	3.0	1.5	.50	N	N	N	N	20	700	3.0	N	N	7	50	10	300
IA2067	45 17 32	115 28 40	1.5	3.0	.7	.50	N	N	<5	N	30	70	5.0	N	N	7	50	10	300
IA2068	45 16 41	115 28 22	1.5	3.0	1.0	.30	N	N	N	N	30	700	5.0	N	N	7	50	15	<100
IA2069	45 18 35	115 29 26	1.5	3.0	.7	.50	N	N	10	N	30	700	3.0	N	N	7	50	15	<100
IA2083	45 17 45	115 31 37	1.0	3.0	.7	.70	N	N	N	N	30	300	5.0	N	N	10	50	20	<100
IA2084	45 18 19	115 32 1	1.0	3.0	.7	.30	N	N	N	N	20	700	3.0	N	N	5	30	15	<100
IA2085	45 18 19	115 32 3	1.5	3.0	.7	.70	N	N	N	N	20	1,000	3.0	N	N	7	50	10	<100
IA2086	45 19 21	115 32 49	1.0	1.5	.3	.20	N	N	5	N	30	700	5.0	N	.1	<5	20	7	<100
IA2087	45 19 36	115 32 17	1.0	2.0	.7	.20	N	N	N	N	30	500	5.0	N	N	<5	50	7	<100
IA2088	45 22 14	115 38 10	1.5	1.5	.7	.30	N	N	10	N	50	700	3.0	N	N	5	20	10	N
IA2089	45 22 10	115 38 9	1.0	2.0	.3	.20	N	N	35	N	30	700	3.0	N	N	5	15	5	<100
IA2090	45 22 36	115 37 18	1.0	2.0	.5	.20	N	N	30	N	20	700	3.0	N	N	5	30	7	<100
IA2091	45 22 36	115 37 14	1.5	3.0	.7	.50	N	N	20	N	20	700	3.0	N	N	7	30	7	<100
IA2092	45 19 18	115 31 29	1.0	2.0	.5	.20	N	N	N	N	20	700	3.0	N	N	<5	30	7	<100
IA2093	45 19 16	115 31 29	1.0	2.0	.5	.30	N	N	N	N	15	700	3.0	N	N	5	30	10	300
IA2094	45 19 31	115 31 23	1.0	2.0	.5	.30	N	N	N	N	30	700	5.0	N	N	5	50	7	<100
IA2109	45 20 52	115 34 3	1.0	2.0	.3	.20	N	N	N	N	30	1,000	3.0	N	N	<5	15	7	<100
IA2110	45 21 24	115 33 12	1.0	2.0	.5	.20	N	N	N	N	20	700	5.0	N	N	<5	15	5	<100
IA2111	45 21 22	115 33 12	1.0	1.5	.3	.15	N	N	N	N	20	700	5.0	N	N	<5	15	7	<100
IA3001	45 27 5	115 56 50	2.0	3.0	1.0	.70	N	N	N	N	20	1,000	2.0	N	N	7	70	10	600
IA3002	45 27 23	115 56 12	3.0	3.0	3.0	.70	N	N	N	N	20	1,000	1.5	N	N	10	100	15	400
IA3003	45 27 28	115 56 11	1.5	5.0	1.0	1.00	N	N	N	N	50	1,000	2.0	N	N	50	100	30	<100
IA3004	45 27 27	115 52 47	3.0	5.0	2.0	.70	N	N	N	N	70	1,000	2.0	N	N	20	150	20	300
IA3005	45 27 32	115 52 38	1.5	3.0	1.0	.70	N	N	10	N	30	1,000	2.0	N	N	20	200	30	400
IA3006	45 27 37	115 51 29	2.0	5.0	2.0	.50	20.0	N	65	N	500	700	2.0	N	1.6	10	100	50	400
IA3007	45 27 40	115 51 21	1.0	3.0	1.0	.50	N	N	N	N	20	700	<1.0	N	N	7	150	15	<100
IA3008	45 27 55	115 49 51	1.5	3.0	3.0	.70	N	N	N	N	100	1,000	2.0	N	N	7	70	20	300
IA3009	45 27 59	115 49 47	1.5	5.0	1.0	1.00	N	N	20	N	30	1,000	1.5	10	N	20	150	30	<100
IA3010	45 27 58	115 48 42	1.5	3.0	1.0	.50	N	N	N	N	70	500	3.0	N	N	5	20	20	<100
IA3011	45 28 2	115 48 40	1.5	3.0	.7	1.00	N	N	<5	N	30	500	1.0	N	.1	10	100	20	200

Table 3.--Analyses of stream-sediment samples, Gospel Hump North Addition, River of No Return Wilderness, Idaho--Continued

Sample	La	Mn	Nb	Ni	Pb	Sb	Sb-a	Sc	Sr	Th	U	V	W	Y	Zn	Zr
IA2006	20	700	<20	10	30	N	<1	<5	500	N	24.00	30	N	50	40	100
IA2007A	>1,000	1,500	<20	5	50	N	27	<5	300	200	12.00	150	50	1,500	35	>1,000
IA2007B	500	700	<20	5	70	200	60	<5	500	N	6.70	50	70	200	35	700
IA2008	50	500	<20	7	30	N	N	N	500	N	2.60	15	N	70	30	150
IA2009	500	700	<20	7	50	N	10	<5	700	N	2.60	70	<50	150	30	700
IA2010	30	300	<20	7	20	N	N	<5	500	N	9.40	50	N	50	50	150
IA2011	700	1,000	<20	<5	50	150	50	<5	300	N	3.50	70	100	200	60	1,000
IA2012	100	700	<20	10	30	N	N	5	500	N	8.30	50	N	50	55	200
IA2013	150	700	<20	7	30	N	N	<5	500	N	11.20	30	N	100	25	100
IA2014	1,000	700	N	7	50	N	1	N	500	N	5.10	20	N	300	20	700
IA2015	150	700	<20	15	30	N	1	<5	300	N	13.00	70	N	70	30	1,000
IA2016	500	1,000	70	20	20	N	N	<5	300	N	2.00	150	N	100	25	700
IA2017	150	1,000	<20	10	30	N	N	5	500	N	8.40	50	N	100	45	150
IA2051	50	1,000	<20	7	30	N	N	<5	500	N	27.00	30	N	100	40	150
IA2052	200	500	<20	10	30	N	N	<5	500	N	5.10	20	N	70	50	200
IA2061	100	700	<20	10	50	N	1	5	500	N	20.00	20	N	100	50	150
IA2062	20	300	<20	7	30	N	N	<5	300	N	6.30	20	N	30	35	50
IA2063	20	300	<20	10	30	N	1	7	300	N	23.00	50	N	30	35	150
IA2064	150	700	<20	20	30	N	1	15	500	N	3.00	100	N	50	45	500
IA2065	70	700	<20	20	30	N	N	20	500	N	8.60	150	N	50	75	300
IA2066	50	700	<20	15	30	N	N	10	500	N	3.50	100	N	50	45	500
IA2067	30	500	<20	15	50	N	N	5	500	N	9.50	50	N	50	35	300
IA2068	30	700	<20	20	30	N	N	5	500	N	28.00	50	N	70	40	300
IA2069	30	500	20	20	50	N	N	7	500	N	26.00	70	N	50	55	300
IA2083	30	700	20	20	20	N	N	7	300	N	57.00	100	N	70	35	300
IA2084	50	700	20	10	30	N	N	5	500	N	18.00	50	N	70	45	200
IA2085	300	700	<20	20	30	N	N	5	500	N	69.00	50	N	150	38	700
IA2086	150	70	<20	10	50	N	N	<5	500	N	12.00	30	N	70	40	150
IA2087	50	500	<20	15	50	N	N	5	500	N	5.80	30	N	100	35	100
IA2088	100	1,000	20	10	50	N	1	5	500	N	3.20	30	N	70	60	150
IA2089	200	700	<20	10	50	N	2	<5	500	N	3.50	30	N	50	35	300
IA2090	200	500	30	7	50	N	2	<5	500	N	2.50	30	N	100	40	200
IA2091	150	500	20	15	30	N	1	5	500	N	6.10	50	N	100	35	500
IA2092	70	700	<20	10	30	N	N	<5	500	N	9.10	30	N	70	45	150
IA2093	300	700	<20	10	30	N	N	5	500	N	9.50	50	N	100	40	200
IA2094	100	500	20	10	30	N	N	5	500	N	11.00	50	N	150	45	200
IA2109	100	700	<20	7	50	N	N	<5	500	N	9.50	30	N	100	45	150
IA2110	50	700	<20	7	50	N	N	<5	300	N	5.50	20	N	50	25	50
IA2111	100	700	<20	7	30	N	N	N	500	N	18.00	20	N	100	40	150
IA3001	70	700	<20	10	30	N	1	7	500	N	2.10	100	N	50	45	1,000
IA3002	30	700	<20	30	30	N	N	7	500	N	1.70	150	N	50	55	200
IA3003	200	1,000	20	15	50	N	2	7	500	N	2.90	150	N	100	65	1,000
IA3004	30	700	<20	50	20	N	N	10	500	N	2.50	150	N	20	60	200
IA3005	50	500	20	15	30	N	2	7	300	N	2.30	100	N	70	65	1,000
IA3006	30	700	<20	30	700	100	57	7	200	N	3.00	100	150	30	65	500
IA3007	30	700	<20	10	30	N	1	5	200	N	.97	50	N	20	45	100
IA3008	100	700	20	15	20	N	2	7	200	N	5.80	70	N	100	35	500
IA3009	300	1,000	20	7	50	N	8	7	300	N	4.60	15	N	150	65	>1,000
IA3010	100	700	<20	10	10	N	1	7	200	N	7.00	70	N	70	35	500
IA3011	300	700	<20	7	50	N	2	7	300	N	3.70	100	N	150	55	1,000

Table 3.--Analyses of stream-sediment samples, Gospel Hump North Addition, River of No Return Wilderness, Idaho--Continued

Sample	Latitude	Longitude	Ca	Fe	Mg	Ti	Ag	As	As-a	Au	B	Ba	Be	Bi	Cd	Co	Cr	Cu	F
IA3012	45 27 44	115 47 8	1.0	3.0	1.0	.50	N	N	N	N	70	300	2.0	N	.2	10	50	20	400
IA3013	45 27 44	115 46 54	1.5	3.0	.7	.70	N	N	<5	N	50	500	1.5	N	.1	10	100	20	300
IA3014	45 26 51	115 45 39	2.0	3.0	1.5	1.00	N	N	N	N	50	500	3.0	N	.1	10	30	10	300
IA3015	45 25 36	115 44 21	1.5	3.0	1.5	.70	N	N	N	N	100	300	3.0	N	.1	10	30	10	300
IA3016	45 25 35	115 44 25	3.0	3.0	3.0	.70	N	N	N	N	70	700	3.0	N	.1	7	50	7	500
IA3017	45 26 36	115 44 17	3.0	5.0	3.0	1.00	N	N	N	N	100	500	3.0	N	.1	10	30	10	400
IA3018	45 26 33	115 42 6	1.0	15.0	.5	.30	N	N	N	N	50	500	3.0	N	.2	5	15	10	300
IA3019	45 26 7	115 40 52	1.5	3.0	.7	.50	N	N	N	N	20	700	3.0	N	.2	10	20	10	300
IA3020	45 24 27	115 37 43	1.5	3.0	.5	.30	N	N	<5	N	30	700	3.0	N	.2	5	20	7	400
IA3021	45 23 3	115 32 46	1.5	3.0	.7	.30	N	N	N	N	30	1,000	5.0	N	.2	7	50	20	400
IA3022	45 26 2	115 40 8	2.0	3.0	2.0	.70	N	N	N	N	70	700	3.0	N	.2	7	30	10	400
IA3023	45 27 33	115 25 33	1.0	3.0	1.0	.50	N	N	N	N	20	700	5.0	N	.2	7	150	10	400
IA3024	45 27 20	115 25 56	1.0	2.0	.7	.50	N	N	N	N	10	500	5.0	N	.2	7	70	10	400
IA3025	45 26 32	115 26 36	1.0	2.0	.7	.50	N	N	N	N	15	500	5.0	N	.2	5	70	7	400
IA3026	45 26 3	115 27 30	1.0	2.0	.7	.30	N	N	N	N	15	700	5.0	N	.2	7	100	15	300
IA3027	45 25 48	115 27 38	1.5	2.0	.7	.30	N	N	N	N	30	500	5.0	N	.2	7	50	15	300
IA3028	45 25 6	115 27 53	1.0	2.0	.5	.30	N	N	N	N	20	700	5.0	N	.1	<5	20	7	200
IA3029	45 23 51	115 29 13	1.0	3.0	.5	.30	N	N	N	N	70	500	5.0	N	.3	7	30	30	400
IA3097	45 24 6	115 31 46	1.0	18.0	1.0	.20	N	N	N	N	15	700	5.0	N	.1	<5	30	5	100
IA3118	45 25 13	115 51 53	1.5	3.0	1.0	.70	N	N	N	N	70	500	3.0	N	.3	10	70	15	300
IA3119	45 25 12	115 51 47	1.5	3.0	1.0	.50	100.0	200	130	15	50	500	2.0	N	3.7	10	70	70	200
IA3120	45 25 51	115 51 26	1.5	3.0	1.0	.50	70.0	<200	100	N	70	500	2.0	N	2.4	10	70	70	200
IA3121	45 25 49	115 47 6	3.0	3.0	2.0	.50	N	N	N	N	100	1,000	2.0	N	.2	7	70	15	200
IA3122	45 25 45	115 46 58	2.0	3.0	1.5	.70	N	N	N	N	50	700	2.0	N	.1	7	70	7	400
IA3123	45 24 33	115 44 12	1.5	3.0	2.0	.70	N	N	N	N	150	1,000	10.0	N	.1	7	70	20	300
IA3124	45 24 34	115 44 19	3.0	3.0	2.0	.70	N	N	N	N	100	1,000	3.0	N	.1	7	50	10	400
IA3125	45 24 32	115 44 21	3.0	5.0	5.0	>1.00	N	N	N	N	150	700	1.5	N	N	10	100	15	500
IA3128	45 22 43	115 34 59	1.5	3.0	.5	.30	N	N	N	N	20	700	3.0	N	.1	<5	30	5	300
IA3129	45 22 44	115 34 52	1.5	2.0	.5	.30	N	N	N	N	30	700	3.0	N	.1	5	20	<5	200
IA3155	45 24 47	115 40 15	2.0	5.0	1.5	1.00	N	N	N	N	50	700	2.0	N	.1	10	70	15	300
IA3156	45 25 5	115 40 54	2.0	3.0	1.5	.50	N	N	N	N	70	700	2.0	N	.1	7	70	20	400

Table 3.--Analyses of stream-sediment samples, Gospel Hump North Addition, River of No Return Wilderness, Idaho--Continued

Sample	La	Mn	Nb	Ni	Pb	Sb	Sb-a	Sc	Sr	Th	U	V	W	Y	Zn	Zr
IA3012	70	500	<20	20	20	N	N	7	200	N	1.10	70	N	50	40	300
IA3013	300	700	<20	7	30	N	N	7	300	N	2.10	70	N	70	45	1,000
IA3014	300	700	<20	15	30	N	N	7	500	N	4.40	70	N	70	20	700
IA3015	50	700	<20	15	20	N	N	7	200	N	7.50	70	N	50	25	500
IA3016	70	700	20	15	15	N	N	7	200	N	2.70	70	N	30	20	300
IA3017	100	1,000	20	20	20	N	N	7	150	N	4.70	70	N	100	20	700
IA3018	150	700	<20	10	20	N	N	5	500	N	1.40	50	N	70	30	200
IA3019	100	1,500	<20	15	30	N	N	7	500	N	4.50	70	N	70	50	150
IA3020	200	700	<20	10	30	N	N	5	500	N	5.70	30	N	100	35	300
IA3021	150	700	<20	20	30	N	N	7	500	N	16.00	50	N	70	45	200
IA3022	200	1,000	<20	15	30	N	N	7	500	N	4.40	100	N	200	30	500
IA3023	50	700	20	30	30	N	N	7	200	N	8.40	70	N	100	25	300
IA3024	30	1,000	30	20	30	N	N	7	300	N	17.00	70	N	50	30	500
IA3025	30	1,000	<20	20	20	N	N	5	200	N	45.00	70	N	50	30	200
IA3026	20	1,000	<20	20	30	N	N	5	300	N	34.00	50	N	50	30	150
IA3027	30	1,000	<20	15	50	N	N	7	300	N	33.00	70	N	30	30	150
IA3028	50	1,000	<20	10	30	N	N	<5	300	N	13.00	30	N	70	20	150
IA3029	20	700	<20	15	30	N	N	7	300	N	24.00	70	N	30	90	200
IA3097	30	1,000	<20	10	30	N	N	<5	500	N	7.40	30	N	50	15	70
IA3118	30	700	<20	20	30	N	2	10	300	N	4.70	100	N	30	55	500
IA3119	20	700	<20	20	1,000	200	96	5	200	N	2.50	150	500	20	85	500
IA3120	30	700	<20	20	700	200	68	7	300	N	3.10	100	500	50	70	500
IA3121	70	70	<20	15	30	N	N	7	300	N	6.20	70	N	30	25	150
IA3122	300	700	20	15	15	N	N	7	300	N	2.80	100	N	50	25	500
IA3123	30	500	20	20	20	N	N	7	150	N	6.30	100	N	50	20	500
IA3124	30	700	30	10	20	N	N	5	150	N	3.10	70	N	50	20	300
IA3125	100	1,000	70	20	15	N	N	10	150	N	1.40	100	N	70	20	700
IA3128	30	700	<20	10	30	N	N	5	500	N	2.80	50	N	50	30	200
IA3129	150	700	<20	10	50	N	N	<5	500	N	1.90	30	N	30	25	150
IA3155	100	1,000	50	15	20	N	N	7	500	N	1.40	100	N	70	25	500
IA3156	50	700	20	15	30	N	N	7	500	N	4.30	100	N	70	35	200

Table 4.--Analyses of heavy-mineral-concentrate samples, Gospel Hump North Addition, River of No Return Wilderness, Idaho

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

Sample	Latitude	Longitude	Ca	Fe	Mg	Ti	Ag	As	Au	B	Ba	Be	Bi	Co	Cr	Cu	La
IH2006	45 20 39	115 31 13	30	.30	.05	2.0	1,500	N	500	N	N	N	N	N	<20	N	300
IH2007	45 20 34	115 30 54	20	.20	.05	2.0	N	N	N	N	<50	N	N	N	N	N	500
IH2008	45 21 28	115 31 25	7	.15	.20	2.0	N	N	N	30	1,500	N	N	N	50	N	2,000
IH2009	45 21 19	115 31 12	15	.15	.50	>2.0	N	N	N	70	150	N	20	N	70	N	200
IH2010	45 21 55	115 31 24	20	.70	.15	2.0	N	N	N	N	100	N	500	N	20	N	500
IH2011	45 22 15	115 30 49	20	.10	.70	>2.0	300	N	500	N	700	N	<20	N	70	10	150
IH2012	45 23 1	115 33 6	20	.20	.15	>2.0	70	N	N	N	100	<2	200	N	70	N	300
IH2013	45 23 38	115 35 6	15	.50	.10	>2.0	N	N	N	N	N	N	500	N	150	N	200
IH2014	45 23 43	115 35 40	3	.70	<.05	>2.0	200	N	200	N	N	N	N	N	200	N	50
IH2015	45 26 38	115 43 4	15	.70	.20	>2.0	N	N	N	300	300	N	200	<10	150	N	70
IH2016	45 25 28	115 39 6	20	1.00	1.00	>2.0	50	N	100	100	<50	<2	N	N	200	N	200
IH2017	45 24 2	115 37 15	50	.30	.05	1.0	N	N	N	<20	<50	N	N	N	N	N	700
IH2051	45 15 31	115 32 17	30	.50	.30	>2.0	N	N	N	<20	150	N	N	<10	30	N	700
IH2052	45 15 31	115 32 20	50	1.50	5.00	2.0	N	N	N	N	<50	<2	200	N	20	N	70
IH2061	45 15 14	115 30 35	20	.50	1.00	1.5	N	N	N	N	200	N	>2,000	N	100	10	700
IH2062	45 15 19	115 30 3	15	.70	.20	2.0	N	N	N	N	1,000	N	>2,000	N	<20	10	2,000
IH2064	45 25 1	115 54 32	15	.20	.05	>2.0	N	N	N	20	50	N	70	N	200	N	150
IH2066	45 26 4	115 56 17	15	.20	<.05	>2.0	N	N	N	30	50	N	N	N	150	N	100
IH2067	45 17 32	115 28 40	30	.20	.05	>2.0	N	N	N	N	N	N	N	N	50	N	150
IH2068	45 16 41	115 28 22	20	.20	.07	>2.0	N	N	N	N	300	N	N	N	50	N	100
IH2069	45 18 35	115 29 26	30	.20	.07	>2.0	N	N	N	N	50	N	150	N	50	N	300
IH2084	45 18 19	115 32 1	20	.30	.05	>2.0	100	N	1,000	N	5,000	N	300	N	70	N	100
IH2085	45 18 19	115 32 3	20	.20	.70	>2.0	7	N	N	N	<50	N	1,000	N	100	N	200
IH2086	45 19 21	115 32 49	30	.30	.05	>2.0	N	N	N	N	<50	N	700	N	50	N	2,000
IH2088	45 22 14	115 38 10	20	.30	.15	2.0	N	N	N	N	10,000	N	20	N	20	N	70
IH2089	45 22 10	115 38 9	3	.10	<.05	>2.0	300	N	150	N	50	N	N	N	150	<10	100
IH2090	45 22 36	115 37 18	3	.10	.05	>2.0	200	N	300	30	<50	N	N	N	200	150	300
IH2091	45 22 36	115 37 14	15	.50	.30	>2.0	N	N	N	N	<50	N	N	N	150	N	70
IH2092	45 19 18	115 31 29	20	.30	.05	2.0	N	N	N	N	<50	N	N	N	<20	N	1,000
IH2093	45 19 16	115 31 29	30	.70	.20	>2.0	N	N	N	N	150	N	N	N	20	N	150
IH2094	45 19 31	115 31 23	50	.70	.07	1.0	N	N	N	N	<50	N	N	N	<20	N	500
IH2110	45 21 24	115 33 12	20	.70	.07	2.0	N	N	N	<20	50	<2	N	N	20	20	300
IH2111	45 21 22	115 33 12	15	2.00	.20	>2.0	N	N	N	20	100	N	N	N	20	<10	2,000
IH3001	45 27 5	115 56 50	15	<.10	<.05	>2.0	N	N	N	N	100	N	N	N	70	N	70
IH3002	45 27 23	115 56 12	20	.10	1.50	>2.0	N	N	N	50	200	N	N	N	100	N	100
IH3003	45 27 28	115 56 11	20	.10	.15	>2.0	N	N	N	<20	700	<2	70	N	100	N	100
IH3004	45 27 27	115 52 47	15	.20	1.00	>2.0	N	N	N	70	200	N	N	N	200	N	70
IH3005	45 27 32	115 52 38	20	.15	.30	>2.0	N	N	N	50	700	<2	500	N	70	N	150
IH3006	45 27 37	115 51 29	20	<.10	.15	>2.0	150	N	150	70	10,000	N	700	N	100	<10	50
IH3007	45 27 40	115 51 21	20	.20	.50	>2.0	N	N	N	30	500	N	50	N	150	N	150
IH3008	45 27 55	115 49 51	30	N	.10	>2.0	N	N	N	100	1,500	N	20	N	100	N	70
IH3009	45 27 59	115 49 47	20	.15	.15	>2.0	N	N	N	<20	500	N	100	N	100	N	70
IH3010	45 27 58	115 48 42	20	N	.07	>2.0	N	N	N	3,000	N	N	N	N	150	N	70
IH3011	45 28 2	115 48 40	5	<.10	.05	2.0	500	N	1,000	N	2,000	N	300	15	30	N	50
IH3012	45 27 44	115 47 8	20	<.10	.15	>2.0	N	N	70	20	70	N	N	N	150	N	70
IH3013	45 27 44	115 46 54	2	<.10	.10	>2.0	N	N	N	N	200	N	500	N	100	<10	50
IH3014	45 26 51	115 45 39	20	<.10	.20	>2.0	N	N	N	<20	5,000	N	N	N	150	N	100
IH3015	45 25 36	115 44 21	20	N	.10	>2.0	N	N	N	50	300	N	N	N	150	N	50
IH3016	45 25 35	115 44 25	15	.20	2.00	>2.0	N	N	N	20	300	N	N	N	70	N	70
IH3017	45 26 36	115 44 17	20	.20	3.00	>2.0	N	N	N	50	300	N	N	N	100	N	100

Table 4.--Analyses of heavy-mineral-concentrate samples, Gospel Hump North Addition, River of No Return Wilderness, Idaho--Continued

Sample	Mn	Nb	Ni	Pb	Sb	Sc	Sn	Sr	Th	V	W	Y	Zr
IH2006	1,500	100	N	70	N	50	30	N	N	150	<100	3,000	>2,000
IH2007	1,000	<50	<10	50	N	50	N	N	N	70	700	2,000	>2,000
IH2008	200	N	N	50	N	50	N	N	<200	150	500	1,500	>2,000
IH2009	300	N	N	50	N	50	30	N	N	150	1,500	1,500	>2,000
IH2010	1,000	<50	N	100	N	50	N	N	N	70	500	2,000	>2,000
IH2011	300	N	N	200	N	50	30	N	N	100	1,500	1,000	>2,000
IH2012	500	N	N	70	N	50	20	N	N	70	200	1,500	>2,000
IH2013	700	50	N	70	N	20	500	N	N	200	300	1,500	>2,000
IH2014	300	70	<10	200	N	70	500	N	N	200	300	1,000	>2,000
IH2015	500	150	N	50	N	50	200	N	N	200	100	1,000	>2,000
IH2016	500	200	N	20	N	10	70	N	N	300	500	500	>2,000
IH2017	1,500	<50	N	500	N	20	1,000	N	N	30	200	3,000	>2,000
IH2051	1,500	50	N	70	N	20	30	N	N	70	3,000	2,000	>2,000
IH2052	1,000	N	N	50	N	10	N	N	N	50	5,000	700	>2,000
IH2061	1,500	N	N	300	N	15	200	N	N	30	2,000	700	>2,000
IH2062	1,500	N	N	500	N	20	N	N	N	30	1,000	1,000	>2,000
IH2064	300	<50	N	50	N	20	70	N	N	200	150	700	>2,000
IH2066	300	70	N	<20	N	20	50	N	N	150	N	700	>2,000
IH2067	500	100	N	20	N	15	N	700	N	150	<100	1,000	>2,000
IH2068	500	<50	<10	50	N	15	N	<200	N	100	1,000	1,000	>2,000
IH2069	700	150	N	30	N	10	<20	300	N	150	5,000	1,000	>2,000
IH2084	700	70	N	100	N	20	50	N	N	150	700	1,000	>2,000
IH2085	700	50	N	100	N	20	50	N	N	150	2,000	1,500	>2,000
IH2086	2,000	<50	N	300	N	20	20	N	N	70	1,000	3,000	>2,000
IH2088	700	N	<10	20	N	20	100	N	N	70	N	1,500	>2,000
IH2089	300	<50	N	300	N	100	1,000	N	N	150	150	1,000	>2,000
IH2090	500	70	N	50	N	150	100	N	N	200	200	1,000	>2,000
IH2091	500	100	N	50	N	30	20	N	N	150	150	700	>2,000
IH2092	1,000	<50	N	50	N	70	N	N	N	50	1,500	2,000	>2,000
IH2093	1,000	<50	N	50	N	20	N	N	N	100	1,500	2,000	>2,000
IH2094	2,000	50	N	<20	N	15	N	N	N	20	100	3,000	>2,000
IH2110	2,000	50	N	20	N	10	150	N	N	70	N	2,000	>2,000
IH2111	5,000	<50	N	30	N	70	N	N	N	70	300	5,000	>2,000
IH3001	300	N	N	20	N	70	200	N	N	150	<100	1,500	>2,000
IH3002	300	200	N	200	N	10	100	N	N	200	100	700	>2,000
IH3003	200	N	N	100	N	50	70	N	N	100	150	1,000	>2,000
IH3004	300	100	N	30	N	<10	70	N	N	200	300	300	>2,000
IH3005	300	N	N	100	N	15	N	N	N	100	200	1,000	>2,000
IH3006	200	<50	N	7,000	N	<10	<20	1,000	N	500	7,000	500	>2,000
IH3007	300	<50	N	150	N	10	150	N	N	150	500	1,000	>2,000
IH3008	500	150	<10	30	N	N	30	N	N	200	150	1,000	>2,000
IH3009	200	N	N	200	N	15	500	N	N	100	200	1,000	>2,000
IH3010	500	150	N	30	N	10	70	N	N	500	<100	1,000	>2,000
IH3011	100	N	N	100	N	15	500	N	N	50	200	1,000	>2,000
IH3012	500	100	N	50	N	10	300	N	N	150	<100	1,000	>2,000
IH3013	100	N	N	150	N	70	300	N	N	100	200	1,500	>2,000
IH3014	300	70	N	<20	N	10	30	<200	N	150	150	700	>2,000
IH3015	500	150	N	20	N	<10	30	N	N	200	1,500	500	>2,000
IH3016	500	70	N	<20	N	<10	50	<200	N	150	1,000	300	>2,000
IH3017	500	100	N	<20	N	<10	70	<200	N	200	200	300	2,000

Table 4.--Analyses of heavy-mineral-concentrate samples, Gospel Hump North Addition, River of No Return Wilderness, Idaho--Continued

Sample	Latitude	Longitude	Ca	Fe	Mg	Ti	Ag	As	Au	B	Ba	Be	Bi	Co	Cr	Cu	La
IH3018	45 26 33	115 42 6	50	.50	.50	2.0	N	N	N	N	200	N	N	N	200	N	300
IH3019	45 26 7	115 40 52	50	.30	.20	1.0	N	N	N	30	50	N	N	N	N	N	500
IH3020	45 24 27	115 37 43	50	.20	.07	.7	N	N	N	N	<50	N	50	N	N	N	500
IH3021	45 23 3	115 32 46	20	.20	.15	>2.0	N	N	N	N	<50	N	70	N	70	N	70
IH3022	45 26 2	115 40 8	30	.20	2.00	>2.0	N	N	N	30	200	N	N	N	50	<10	70
IH3023	45 27 33	115 25 33	20	.10	.15	>2.0	2	N	<20	70	N	N	N	<10	200	N	100
IH3024	45 27 20	115 25 56	30	<.10	.07	>2.0	N	N	N	N	N	<2	N	N	70	N	70
IH3025	45 26 32	115 26 36	50	.10	.07	>2.0	N	N	N	N	N	N	N	N	150	N	100
IH3026	45 26 3	115 27 30	20	.50	.10	>2.0	N	N	N	N	<50	N	N	N	50	N	70
IH3027	45 25 48	115 27 38	15	.50	.15	>2.0	200	N	200	N	<50	N	N	N	70	15	70
IH3028	45 25 6	115 27 53	30	1.00	.07	>2.0	N	N	N	N	50	N	<20	N	100	N	200
IH3097	45 24 6	115 31 46	20	.30	.05	2.0	N	N	N	N	70	<2	N	N	30	<10	100
IH3118	45 25 13	115 51 53	20	<.10	.05	>2.0	N	N	N	50	<50	N	N	N	200	10	70
IH3119	45 25 12	115 51 47	15	.10	.15	>2.0	300	2,000	50	20	50	N	N	N	200	1,000	100
IH3120	45 25 51	115 51 26	15	.20	.15	>2.0	200	1,500	70	150	<50	N	N	N	200	700	200
IH3121	45 25 49	115 47 6	20	2.00	10.00	2.0	N	N	N	100	>10,000	N	N	N	50	15	150
IH3122	45 25 45	115 46 58	20	.15	.70	>2.0	200	N	300	20	2,000	N	N	N	100	N	100
IH3123	45 24 33	115 44 12	5	<.10	1.50	>2.0	N	N	N	200	2,000	N	N	<10	500	N	<50
IH3124	45 24 34	115 44 19	20	1.00	7.00	2.0	N	N	N	150	5,000	<2	N	N	N	N	<50
IH3125	45 24 32	115 44 21	20	3.00	15.00	2.0	N	N	N	100	<50	N	N	<10	20	N	70
IH3128	45 22 43	115 34 59	30	<.10	.20	>2.0	N	N	N	N	100	N	N	N	200	N	300
IH3155	45 24 47	115 40 15	20	<.10	.70	>2.0	N	N	N	50	<50	N	N	N	200	N	200
IH3156	45 25 5	115 40 54	30	1.00	7.00	>2.0	N	N	N	200	200	<2	N	N	50	N	70

Table 4.--Analyses of heavy-mineral-concentrate samples, Gospel Hump North Addition, River of No Return Wilderness, Idaho--Continued

Sample	Mn	Nb	Ni	Pb	Sb	Sc	Sn	Sr	Th	V	W	Y	Zr
IH3018	2,000	<50	N	50	N	20	N	200	N	70	N	2,000	>2,000
IH3019	2,000	<50	N	70	N	15	N	N	N	50	N	3,000	>2,000
IH3020	3,000	N	N	50	N	20	70	N	N	50	N	3,000	>2,000
IH3021	300	N	N	100	N	50	150	N	N	70	700	2,000	>2,000
IH3022	500	<50	N	1,000	N	15	300	<200	N	100	500	700	>2,000
IH3023	300	150	N	150	N	15	50	N	N	150	1,000	1,000	>2,000
IH3024	300	50	N	50	N	<10	150	<200	N	150	500	1,000	>2,000
IH3025	700	70	N	20	N	<10	30	N	N	100	150	2,000	>2,000
IH3026	700	50	N	30	N	10	<20	<200	N	70	<100	1,000	>2,000
IH3027	1,000	50	N	70	N	<10	30	N	N	100	700	700	>2,000
IH3028	1,500	50	N	20	N	70	200	<200	N	100	5,000	1,000	>2,000
IH3097	1,000	N	N	50	N	30	<20	N	N	30	5,000	1,000	>2,000
IH3118	300	70	N	5,000	N	10	50	N	N	500	300	1,000	>2,000
IH3119	300	70	N	50,000	3,000	<10	150	2,000	N	1,000	7,000	500	>2,000
IH3120	300	100	N	1,500	1,500	<10	70	700	N	700	10,000	500	>2,000
IH3121	700	<50	<10	200	N	N	N	700	N	150	500	100	1,500
IH3122	500	150	N	100	N	N	70	500	N	200	500	700	>2,000
IH3123	300	300	N	50	N	N	100	N	N	500	150	300	>2,000
IH3124	700	70	<10	20	N	N	N	300	N	100	N	70	700
IH3125	700	50	<10	20	N	N	N	N	N	100	500	70	1,000
IH3128	1,000	70	N	20	N	<10	70	N	N	200	1,000	2,000	>2,000
IH3155	500	300	N	<20	N	N	70	N	N	200	100	700	>2,000
IH3156	1,000	70	N	20	N	N	<20	<200	N	100	N	500	>2,000