UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

Analytical data for samples collected from the West Slope Tetons Roadless Area, Teton County, Wyoming

By

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PLATE

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 resource potential. Results must be made available to the public and be submitted to the President and the Congress. This report presents the results of a geochemical survey of the West Slope Tetons Roadless Area, Teton-Bridger National Forest, Teton County, Wyoming. The West Slope Tetons Roadless Area (54-610) was classified as a further planning area during the Second Roadless Area Review and Evaluation (RARE II) by the U.S. Forest Service, January 1979.

ACKNOWLEDGMENTS

C. M. McDougal provided computer listings from computer data retrieval and manipulation. T. A. Roemer and A. L. Gruzensky performed chemical and fluorometric uranium analyses.

INTRODUCTION

The West Slope Tetons Roadless Area (fig. 1) is situated within the picturesque Bridger-Teton National Forest south of Grand Teton National Park and north of State Highway 22 (the Teton Pass road). This area represents 8600 acres of mountainous terrain on the southeastern flank of the rugged Teton Range.

A geochemical reconnaissance survey was undertaken in August 1982, to provide data that would aid in the evaluation of the mineral resource potential of the West Slope Tetons Roadless Area. A representative sampling of 27 stream sediments, 28 panned concentrates of stream sediments, 7 rocks and 1 soil were taken within and adjacent to the area boundary. Sample localities were plotted on a 1:24,000-scale topographic map (plate 1). All samples taken in the West Slope Tetons study were given the prefix WST and a single letter suffix for sample type differentiation: S, designates soil and stream-sediment samples; P, panned concentrate samples; and R, rock samples. This report presents the analytical data for these samples.

SAMPLE COLLECTION AND PREPARATION

Stream-sediment and panned-concentrate samples were collected from first, second, and third order drainages. In all but one instance both a stream-sediment and panned concentrate of a stream sediment were collected at each location. Finer stream bank and channel material was collected and placed in a 9 x 24 cm paper bag and analyzed as a stream sediment. A full gold pan of unsorted stream sediment was panned down to a heavy-mineral concentrate, which was transferred into a small sealable plastic bag. This heavy-mineral sample was analyzed as a panned concentrate. A soil and seven rock samples were collected along the periphery of a known andesite body on the western edge of the area. These samples were taken to obtain the body's geochemical signature.

Following field collection of the samples, the samples were oven dried at a temperature near 40°C. After drying, the stream sediments were sieved through an 80-mesh stainless-steel sieve and the -80 mesh fraction was analyzed. A small fraction of the panned concentrate was hand ground to a fine powder for analysis. The remainder of the concentrate was reserved for mineral identification. Rock samples were crushed and then pulverized to -150 mesh.

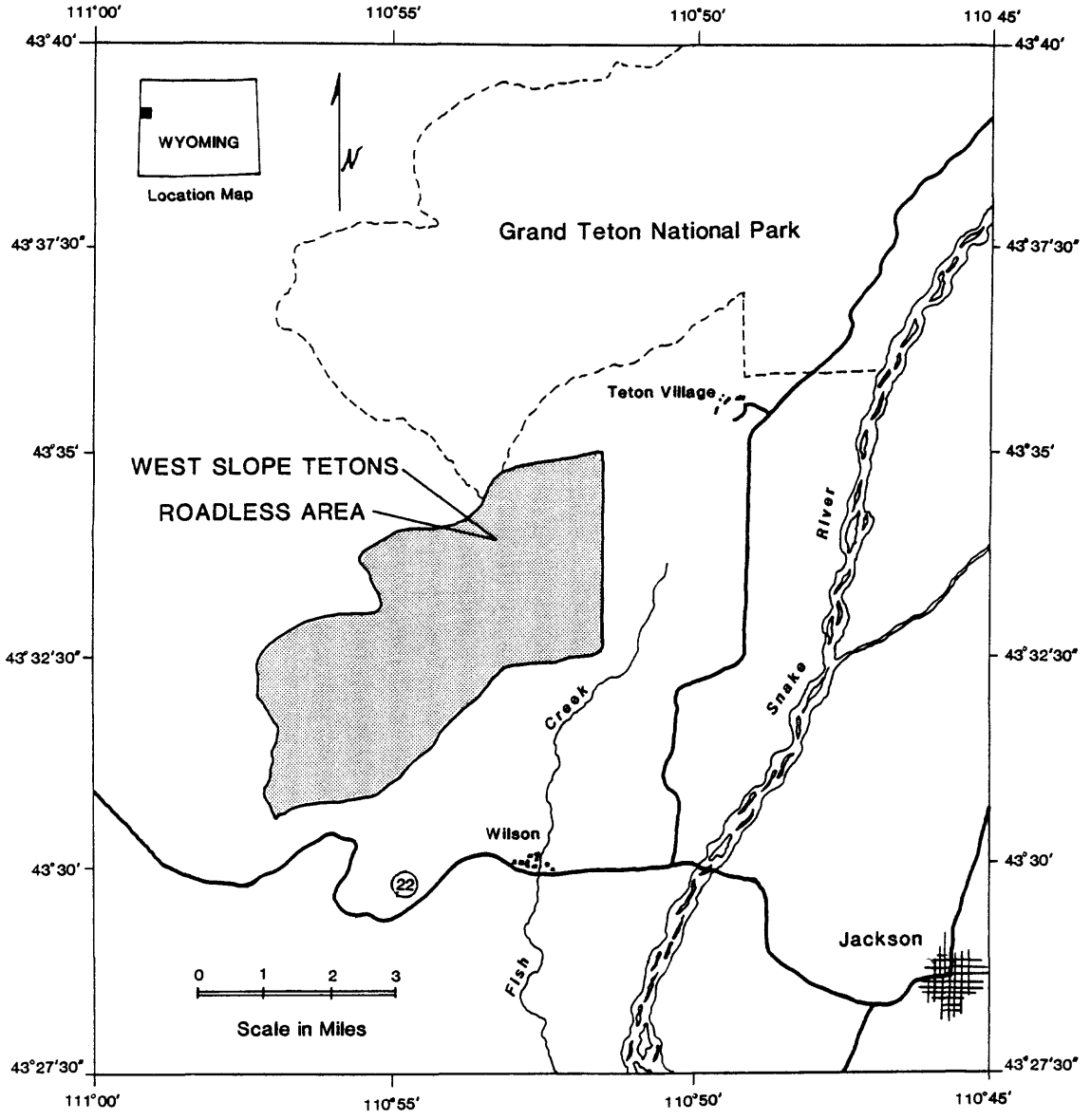

Figure 1.--Index map showing location of the West Slope Tetons Roadless Area, Wyoming.

ANALYTICAL METHODS

The prepared stream-sediment, soil, panned concentrate, and rock samples were analyzed for 31 elements by a semiquantitative, emission spectrographic method (Grimes and Marranzino, 1968). Spectrographic results were obtained by visual comparison of spectra derived from the sample against spectra obtained from standards made from pure oxides and carbonates. Standard concentrations are geometrically spaced over any given order of magnitude of concentration as follows: 100, 50, 20, 10, and so forth. Samples whose concentrations are estimated to fall between those values are assigned values of 70, 30, 15, and so forth. The precision of the analytical method is approximately plus or minus one reporting unit at the 83 percent confidence level and plus or minus two reporting units at the 96 percent confidence level (Motooka and Grimes, 1976).

The stream-sediment samples were also analyzed by atomic absorption spectrometry for As, Zn, Cd, Bi, and Sb using a method modified from Viets (1978), and for uranium using a fluorometric method described by Miller and others, (1979). Values determined for the major elements (Mg, Ca, Fe, and Ti) are given in weight percent; all others are given in parts per million (micrograms/gram).

DATA EXPLANATION

In tables 1-3, each column heading contains the element being analyzed; the value of the reading in either pct. (percent) or ppm (parts per million); the type of analyses performed s (spectrophotometry), aa (atomic absorption) and Fl (fluorometry); and following the s, aa, or fl in parentheses is the lower limit of detection for the specific element with that particular analytical method. Also in these same tables the location co-ordinates (latitude and longitude) are given in degrees, minutes, and seconds.

REFERENCES CITED

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.

Miller, W. R., McHugh, J. B., and Ficklin, W. H., 1979, Possible uranium mineralization, Mineral Mountains, Utah: U.S. Geological Survey Open-File Report 79-1354, 44 p.

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.

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. Analytical data for stream sediment and soil samples from the West Slope Tetons Roadless Area, Wyoming.

(The following qualifiers are used in reporting spectrographic data: --, no determination made; N, concentration less than detection limit; <, detected, but present at a concentration less than the value reported; >, element present at a concentration greater than the upper calibration limit; and H, interfering spectra render analytical lines unusable.)

Sample	Latitude	Longitude	Fe-pct. s(.05)	Mg-pct. s(.02)	Ca-pct. s(.05)	Ti-pct. s(.002)	Mn-ppm s(10)	Ag-ppm s(.5)	As-ppm s(200)	Au-ppm s(10)	B-ppm s(10)	Ba-ppm s(20)	Be-ppm s(1)
WST108S	43 32 41	110 56 40	3.0	1.0	1.0	.50	1,000	N	N	N	70	500	1.0
WST901S	43 31 4	110 55 2	2.0	.7	.7	.30	500	N	N	N	70	200	<1.0
WST903S	43 30 48	110 55 2	1.0	2.0	2.0	.20	150	N	N	N	70	100	<1.0
WST907S	43 32 32	110 51 48	1.0	2.0	5.0	.15	300	N	N	N	70	100	<1.0
WST909S	43 32 28	110 51 48	1.0	2.0	7.0	.15	200	N	N	N	30	50	<1.0
WST911S	43 35 26	110 50 24	3.0	2.0	2.0	1.00	700	N	N	N	100	300	1.0
WST935S	43 34 33	110 50 25	5.0	1.5	1.5	1.00	1,500	N	N	N	50	300	1.5
WST937S	43 33 37	110 52 58	5.0	2.0	3.0	.70	500	N	N	N	30	300	1.0
WST939S	43 33 35	110 53 0	5.0	3.0	5.0	.50	500	N	N	N	100	300	1.5
WST941S	43 34 4	110 52 18	7.0	1.5	1.5	.70	700	N	N	N	70	500	1.5
WST943S	43 33 50	110 51 30	5.0	1.5	1.5	.70	1,000	N	N	N	30	500	1.5
WST945S	43 32 45	110 52 20	1.0	2.0	5.0	.15	500	N	N	N	50	200	<1.0
WST947S	43 32 5	110 53 10	.7	2.0	7.0	.15	20	N	N	N	50	100	<1.0
WST949S	43 32 3	110 53 10	1.5	1.0	1.5	.30	700	N	N	N	150	300	<1.0
WST951S	43 32 7	110 52 55	1.0	1.5	3.0	.20	200	N	N	N	70	200	1.0
WST969S	43 30 4	110 56 15	1.0	2.0	7.0	.15	300	N	N	N	150	200	2.0
WST971S	43 30 15	110 56 4	1.5	2.0	5.0	.20	500	N	N	N	100	200	1.5
WST973S	43 30 21	110 55 17	1.0	1.5	5.0	.20	200	N	N	N	30	200	1.0
WST975S	43 34 55	110 51 45	3.0	1.5	1.5	.50	700	N	N	N	70	300	2.0
WST977S	43 34 52	110 51 45	3.0	1.0	1.5	.50	700	N	N	N	100	500	2.0
WST979S	43 34 22	110 51 47	3.0	1.5	1.5	.70	1,000	N	N	N	30	300	1.0
WST981S	43 34 12	110 51 8	3.0	1.5	2.0	.70	1,000	N	N	N	30	300	1.0
WST983S	43 34 36	110 50 25	5.0	1.5	2.0	1.00	700	N	N	N	30	200	<1.0
WST985S	43 33 15	110 51 19	5.0	2.0	7.0	.50	500	N	N	N	30	300	1.5
WST987S	43 32 22	110 54 58	1.5	.5	.7	.20	1,500	N	N	N	70	200	<1.0
WST989S	43 31 42	110 54 15	1.5	.7	1.5	.30	1,500	N	N	N	70	300	<1.0
WST991S	43 32 12	110 52 59	2.0	1.0	2.0	.30	100	N	N	N	70	200	<1.0
WST993S	43 32 14	110 52 56	2.0	1.5	2.0	.30	500	N	N	N	70	300	1.5

Table 1. Analytical data for stream sediment and soil samples from the West Slope Tetons Roadless Area, Wyoming -- continued.

Sample	Bi-ppm s(10)	Cd-ppm s(20)	Co-ppm s(5)	Cr-ppm s(10)	Cu-ppm s(5)	La-ppm s(20)	Mo-ppm s(5)	Nb-ppm s(20)	Ni-ppm s(5)	Pb-ppm s(10)	Sb-ppm s(100)	Sc-ppm s(5)	Sn-ppm s(10)	Sr-ppm s(100)
WST108S	N	N	10	100	50	30	7	<20	30	70	N	10	N	100
WST901S	N	N	7	30	15	20	N	N	15	20	N	5	N	N
WST903S	N	N	N	20	10	30	N	N	10	20	N	<5	N	N
WST907S	N	N	<5	30	10	30	N	N	10	20	N	<5	N	N
WST909S	N	N	N	30	7	20	N	N	7	15	N	<5	N	N
WST911S	N	N	10	70	30	20	N	<20	20	30	N	10	N	<100
WST935S	N	N	10	100	20	30	N	<20	20	50	N	10	N	N
WST937S	N	N	10	150	20	30	N	<20	10	20	N	10	N	N
WST939S	N	N	10	100	20	20	N	N	20	30	N	7	N	N
WST941S	N	N	10	100	20	30	N	<20	30	30	N	10	N	<100
WST943S	N	N	10	70	20	30	N	<20	20	30	N	10	N	N
WST945S	N	N	<5	100	7	20	N	N	10	20	N	<5	N	N
WST947S	N	N	<5	30	10	20	N	N	7	20	N	<5	N	N
WST949S	N	N	7	70	15	20	N	<20	20	30	N	5	N	N
WST951S	N	N	5	30	7	30	N	<20	7	30	N	5	N	N
WST969S	N	N	5	30	7	20	N	N	7	20	N	5	N	<100
WST971S	N	N	5	30	15	20	N	N	10	50	N	5	N	<100
WST973S	N	N	5	50	10	20	N	N	10	30	N	<5	N	N
WST975S	N	N	10	70	20	30	N	<20	15	30	N	10	N	N
WST977S	N	N	10	70	20	30	N	<20	15	30	N	10	N	<100
WST979S	N	N	10	30	30	50	N	<20	15	50	N	10	N	<100
WST981S	N	N	15	50	30	150	N	<20	15	50	N	10	N	N
WST983S	N	N	10	30	30	100	N	20	15	20	N	10	N	N
WST985S	N	N	10	50	20	70	N	<20	20	20	N	10	N	N
WST987S	N	N	5	50	15	20	N	<20	20	30	N	5	N	N
WST989S	N	N	7	150	20	20	N	<20	20	30	N	5	N	N
WST991S	N	N	7	50	15	30	N	<20	15	20	N	5	N	N
WST993S	N	N	7	50	20	20	N	<20	15	50	N	5	N	<100

Table 1. Analytical data for stream sediment and soil samples from the West Slope Tetons Roadless Area, Wyoming -- continued

Sample	V-ppm s(10)	W-ppm s(50)	Y-ppm s(10)	Zn-ppm s(200)	Zr-ppm s(10)	Th-ppm s(100)	As-ppm aa(5)	Zn-ppm aa(5)	Cd-ppm aa(.1)	Bi-ppm aa(1)	Sb-ppm aa(2)	U-ppm fl(.05)
WST108S	150	N	50	N	300	N	N	--	--	--	--	--
WST901S	70	N	20	N	200	N	N	85	1.0	N	N	.45
WST903S	50	N	15	N	150	N	N	60	.5	N	N	.50
WST907S	50	N	15	N	150	N	N	85	1.0	N	N	.75
WST909S	50	N	10	N	200	N	N	50	1.0	N	N	1.00
WST911S	70	N	30	N	300	N	N	55	.3	N	N	1.00
WST935S	100	N	70	N	200	N	N	140	.6	N	N	3.60
WST937S	50	N	70	N	300	N	10	120	.4	N	N	1.20
WST939S	50	<50	30	N	200	N	5	75	.3	N	N	.65
WST941S	70	N	70	N	300	N	N	120	.4	N	N	2.10
WST943S	50	N	70	N	150	N	N	110	.4	N	N	2.20
WST945S	30	N	15	N	100	N	N	75	1.7	N	N	1.40
WST947S	30	N	15	N	500	N	N	45	.9	N	N	.70
WST949S	30	N	20	N	300	N	N	100	2.0	N	N	.85
WST951S	30	N	15	N	100	N	N	60	.5	N	N	.40
WST969S	20	N	15	N	150	N	5	50	.2	N	N	.40
WST971S	30	N	20	N	150	N	5	110	.7	N	N	.45
WST973S	30	N	15	N	300	N	N	55	.6	N	N	.45
WST975S	70	N	50	N	100	N	N	80	.5	N	N	3.20
WST977S	70	N	50	N	100	N	N	80	.4	N	N	3.50
WST979S	70	N	70	<200	300	N	5	170	.7	N	N	3.60
WST981S	70	N	150	N	500	N	N	130	.5	N	N	4.00
WST983S	150	N	100	N	500	N	N	75	.5	N	N	6.60
WST985S	50	N	70	N	150	N	N	70	.2	N	N	.70
WST987S	50	N	20	200	150	N	N	190	5.1	N	N	1.00
WST989S	70	N	20	<200	150	N	N	150	4.2	N	N	1.80
WST991S	50	N	15	N	200	N	N	60	.4	N	N	.40
WST993S	70	N	20	N	200	N	N	110	1.0	N	N	.55

Table 2. Analytical data for panned concentrate samples from the West Slope Tetons Roadless Area, Wyoming.

(The following qualifiers are used in reporting spectrographic data: --, no determination made; N, concentration less than detection limit; <, detected, but present at a concentration less than the value reported; >, element present at a concentration greater than the upper calibration limit; and H, interfering spectra render analytical lines unusable.)

Sample	Latitude	Longitude	Fe-pct. s(.1)	Mg-pct. s(.05)	Ca-pct. s(.1)	Ti-pct. s(.005)	Mn-ppm s(20)	Ag-ppm s(1)	As-ppm s(500)	Au-ppm s(20)	B-ppm s(20)	Ba-ppm s(50)
WST900P	43 31 4	110 55 2	1.0	.15	.2	.10	70	N	N	N	N	<50
WST902P	43 30 48	110 55 2	2.0	1.00	1.5	.20	500	N	N	N	70	50
WST904P	43 31 27	110 54 38	1.0	.50	2.0	.05	150	1	N	N	N	<50
WST906P	43 32 32	110 51 48	10.0	1.00	5.0	.70	1,000	N	N	N	70	<50
WST908P	43 32 28	110 51 48	5.0	2.00	5.0	1.00	500	N	N	N	50	<50
WST910P	43 35 26	110 50 24	15.0	1.50	3.0	>2.00	2,000	N	N	N	50	<50
WST934P	43 34 33	110 50 25	7.0	1.50	5.0	2.00	2,000	N	N	N	N	50
WST936P	43 33 37	110 52 58	10.0	.70	3.0	1.00	700	N	N	N	<20	150
WST938P	43 33 35	110 53 0	15.0	1.00	5.0	1.00	700	N	N	N	20	150
WST940P	43 34 4	110 52 18	20.0	.70	3.0	>2.00	2,000	N	N	N	N	50
WST942P	43 33 50	110 51 30	30.0	.70	2.0	>2.00	3,000	N	N	N	N	<50
WST944P	43 32 45	110 52 20	.7	1.50	10.0	.10	100	N	N	N	70	<50
WST946P	43 32 5	110 53 10	.7	5.00	10.0	.05	100	N	N	N	50	<50
WST948P	43 32 3	110 53 10	7.0	.50	5.0	1.00	500	N	N	N	30	<50
WST950P	43 32 7	110 52 55	10.0	.50	1.5	2.00	1,000	N	N	N	70	<50
WST968P	43 30 4	110 56 15	7.0	3.00	10.0	.50	700	N	N	N	150	200
WST970P	43 30 15	110 56 4	7.0	1.00	5.0	.30	500	N	N	N	70	200
WST972P	43 30 21	110 55 17	1.0	.70	1.5	.30	150	N	N	N	20	<50
WST974P	43 34 55	110 51 45	10.0	2.00	5.0	2.00	1,500	N	N	N	N	50
WST976P	43 34 52	110 51 45	10.0	2.00	5.0	2.00	2,000	N	N	N	N	<50
WST978P	43 34 22	110 51 47	10.0	1.00	5.0	2.00	3,000	N	N	N	N	<50
WST980P	43 34 12	110 51 8	20.0	1.50	3.0	>2.00	3,000	N	N	N	N	50
WST982P	43 34 36	110 50 25	20.0	1.50	3.0	>2.00	2,000	N	N	N	N	50
WST984P	43 33 15	110 51 19	7.0	2.00	5.0	.70	700	N	N	N	N	300
WST986P	43 32 22	110 54 58	10.0	1.50	7.0	.20	1,500	2	N	N	20	70
WST988P	43 31 42	110 54 15	10.0	2.00	15.0	.20	5,000	2	N	N	30	200
WST990P	43 32 12	110 52 59	10.0	1.00	3.0	1.00	1,000	N	N	N	20	150
WST992P	43 32 14	110 52 56	7.0	1.50	5.0	1.00	1,000	N	N	N	30	100

Table 2. Analytical data for panned concentrate samples from the West Slope Tetons Roadless Area, Wyoming -- continued.

Sample	Be-ppm s(2)	Bi-ppm s(20)	Cd-ppm s(50)	Co-ppm s(10)	Cr-ppm s(20)	Cu-ppm s(10)	La-ppm s(50)	Mo-ppm s(10)	Nb-ppm s(50)	Ni-ppm s(10)	Pb-ppm s(20)
WST900P	N	N	N	N	<20	<10	50	N	N	<10	20
WST902P	<2	N	N	<10	20	10	50	N	N	10	30
WST904P	N	N	N	N	30	10	70	N	N	20	20
WST906P	N	N	N	<10	30	20	100	15	N	10	50
WST908P	N	N	N	<10	20	<10	70	<10	N	10	20
WST910P	<2	N	N	20	70	30	70	N	<50	7	30
WST934P	<2	N	N	20	70	30	50	N	<50	50	30
WST936P	<2	N	N	15	30	30	200	N	<50	15	30
WST938P	2	N	N	20	50	50	70	N	N	15	50
WST940P	N	N	N	20	50	50	70	N	<50	15	20
WST942P	N	N	N	20	50	50	100	N	<50	15	20
WST944P	N	N	N	N	30	<10	70	N	N	<10	20
WST946P	N	N	N	N	20	10	50	N	N	<10	20
WST948P	N	N	N	15	50	30	50	15	<50	70	50
WST950P	<2	N	N	15	70	700	70	20	<50	20	30
WST968P	2	N	N	20	50	50	50	N	N	50	50
WST970P	2	N	N	15	50	30	50	<10	N	30	300
WST972P	N	N	N	<10	200	10	50	N	N	20	<20
WST974P	2	N	N	20	70	20	50	N	<50	20	<20
WST976P	<2	N	N	20	50	30	70	N	50	30	<20
WST978P	N	N	N	20	100	30	200	N	70	20	50
WST980P	N	N	N	20	70	50	200	N	<50	20	70
WST982P	N	N	N	20	30	30	200	N	50	20	30
WST984P	2	N	N	15	30	20	70	N	<50	15	20
WST986P	N	N	N	20	150	500	70	70	N	150	700
WST988P	<2	N	N	30	700	100	150	50	N	150	100
WST990P	2	N	N	20	70	20	70	10	<50	50	30
WST992P	3	N	N	20	70	20	100	N	<50	30	50

Table 2. Analytical data for panned concentrate samples from the West Slope Tetons Roadless Area, Wyoming -- continued.

Sample	Sb-ppm s(200)	Sc-ppm s(10)	Sn-ppm s(20)	Sr-ppm s(200)	V-ppm s(20)	W-ppm s(100)	Y-ppm s(20)	Zn-ppm s(500)	Zr-ppm s(20)	Th-ppm s(200)
WST900P	N	N	N	N	50	N	<20	N	2,000	N
WST902P	N	<10	N	N	70	N	<20	N	2,000	N
WST904P	N	N	N	N	50	N	30	N	50	N
WST906P	N	<10	N	N	200	N	70	N	1,000	N
WST908P	N	<10	N	N	100	N	50	N	>2,000	N
WST910P	N	15	N	N	150	<100	100	N	>2,000	N
WST934P	N	15	N	N	150	N	500	N	300	N
WST936P	N	15	N	N	20	N	200	N	700	N
WST938P	N	10	N	N	50	N	100	N	200	N
WST940P	N	10	N	N	500	N	200	N	500	N
WST942P	N	10	N	N	300	<100	300	N	700	N
WST944P	N	<10	N	N	<20	N	50	N	1,000	N
WST946P	N	<10	N	N	<20	N	20	N	500	N
WST948P	N	15	N	N	150	N	150	N	>2,000	N
WST950P	N	15	N	N	200	N	50	N	500	N
WST968P	N	10	N	N	70	N	30	N	700	N
WST970P	N	10	N	N	150	N	30	N	500	N
WST972P	N	<10	N	N	70	N	<20	N	1,500	N
WST974P	N	20	N	N	200	N	70	N	300	N
WST976P	N	30	N	N	300	N	150	N	700	N
WST978P	N	20	N	N	200	N	200	N	2,000	N
WST980P	N	15	N	N	500	N	700	N	1,000	N
WST982P	N	20	N	N	300	N	200	N	70	N
WST984P	N	10	N	N	70	N	50	N	30	N
WST986P	N	<10	N	<200	500	N	150	500	700	N
WST988P	N	<10	N	500	200	N	200	700	100	N
WST990P	N	10	N	N	200	N	50	N	300	N
WST992P	N	10	N	N	100	N	50	N	1,000	N

Table 3. Analytical data for rock samples from the West Slope Tetons Roadless Area, Wyoming.

(The following qualifiers are used in reporting spectrographic data: --, no determination made; N, concentration less than detection limit; <, detected, but present at a concentration less than the value reported; >, element present at a concentration greater than the upper calibration limit; and H, interfering spectra render analytical lines unusable.)

Sample	Latitude	Longitude	Fe-pct. s(.05)	Mg-pct. s(.02)	Ca-pct. s(.05)	Ti-pct. s(.002)	Mn-ppm s(10)	Ag-ppm s(.5)	As-ppm s(200)	Au-ppm s(10)	B-ppm s(10)	Ba-ppm s(20)
WST101R	43 31 35	110 56 59	7.0	7.0	10.0	.7	1,000	N	N	N	N	1,000
WST102R	43 31 43	110 56 58	7.0	7.0	10.0	.7	1,500	N	N	N	N	1,000
WST103R	43 31 56	110 56 47	7.0	7.0	10.0	.5	1,500	N	N	N	N	1,000
WST104R	43 31 36	110 56 40	2.0	.3	.7	.5	500	N	N	N	30	1,500
WST105R	43 32 0	110 56 47	5.0	7.0	10.0	.5	1,500	N	N	N	N	1,000
WST106R	43 32 12	110 56 53	1.5	1.5	3.0	.2	1,000	N	N	N	20	500
WST107R	43 32 28	110 57 0	3.0	7.0	7.0	.5	1,000	N	N	N	N	700

Sample	Be-ppm s(1)	Bi-ppm s(10)	Cd-ppm s(20)	Co-ppm s(5)	Cr-ppm s(10)	Cu-ppm s(5)	La-ppm s(20)	Mo-ppm s(5)	Nb-ppm s(20)	Ni-ppm s(5)	Pb-ppm s(10)
WST101R	<1	N	N	30	300	50	30	N	N	150	30
WST102R	<1	N	N	50	500	50	20	N	N	200	30
WST103R	<1	N	N	50	300	50	30	N	N	150	30
WST104R	5	N	N	5	70	20	30	N	30	50	70
WST105R	<1	N	N	50	500	70	30	N	N	150	20
WST106R	5	N	N	7	70	15	20	N	20	30	70
WST107R	<1	N	N	30	300	30	20	N	N	150	20

Sample	Sb-ppm s(100)	Sc-ppm s(5)	Sn-ppm s(10)	Sr-ppm s(100)	V-ppm s(10)	W-ppm s(50)	Y-ppm s(10)	Zn-ppm s(200)	Zr-ppm s(10)	Th-ppm s(100)
WST101R	N	30	N	500	150	N	30	N	150	N
WST102R	N	30	N	500	200	N	30	N	100	N
WST103R	N	30	N	500	200	N	30	N	100	N
WST104R	N	5	10	150	50	N	100	N	300	N
WST105R	N	30	N	700	200	N	30	N	100	N
WST106R	N	10	N	100	70	N	70	N	100	N
WST107R	N	30	N	500	200	N	20	N	100	N