UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

Geochemical Data for the Fossil Springs Roadless Area, Yavapai, Gila, and Coconino Counties, Arizona

By

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This report is preliminary and has not been reviewed for conformity with U. S. Geological Survey standards and stratigraphic nomenclature.

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CONTENTS

Illustrations

Tables

STUDIES RELATED TO WILDERNESS

Mineral Surveys Related to U.S. Forest Service Roadless Areas

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 of Federal lands to determine their mineral resource potential. Results must be made available to the public and be submitted to the President and Congress. This report presents data of a geochemical survey of the Fossil Springs Roadless Area, in Coconino, Yavapai, and Gila Counties, Arizona. The Fossil Springs Roadless Area was classified as a further planning area, Forest Service Number 03046, during the Second Roadless Area Review and Evaluation (RARE II) of the U.S. Forest Service, January 1979.

INTRODUCTION

This report presents geochemical data determined for 94 samples of stream sediments and rocks collected from the Fossil Springs Roadless Area of about 22 sq. mi, in Yavapai, Gila, and Coconino Counties, central Arizona.

The geology, aeromagnetics, and geochemistry and mineral resource potential of the Fossil Springs Roadless Area are discussed in reports by Weir and Beard (in press), Davis and Weir (in press), and Weir, Beard, and Ellis (1983). The latter report shows in detail the location of all samples but lists data only for samples that were judged to show anomalous trace element concentrations. Table 2 of this report is a complete listing of the analytical data for all 94 samples by sample type and in order of increasing sample number. Missing sample numbers represent specimens collected for other than geochemical purposes.

GEOLOGIC SETTING

The study area includes part of the canyon of Fossil Creek and several tributary canyons that cut the margin of the Colorado Plateau in central Arizona (figure 1). Sedimentary rocks of Paleozoic age, totalling about 3,000 ft, form the chief outcrops north of Fossil Springs (Weir and Beard, in press). The Paleozoic rocks are overlain locally by Cenozoic surficial deposits and volcanic rocks. South of Fossil Springs the volcanic rocks, chiefly basalt and dacitic tuff, thicken abruptly to more than 2,000 ft, covering an ancestral plateau rim, and form the entire canyon wall (Twenter, 1962). The rocks for the most part dip gently north to northeast. Several steep normal faults bound fault blocks in which the rocks dip south or west.

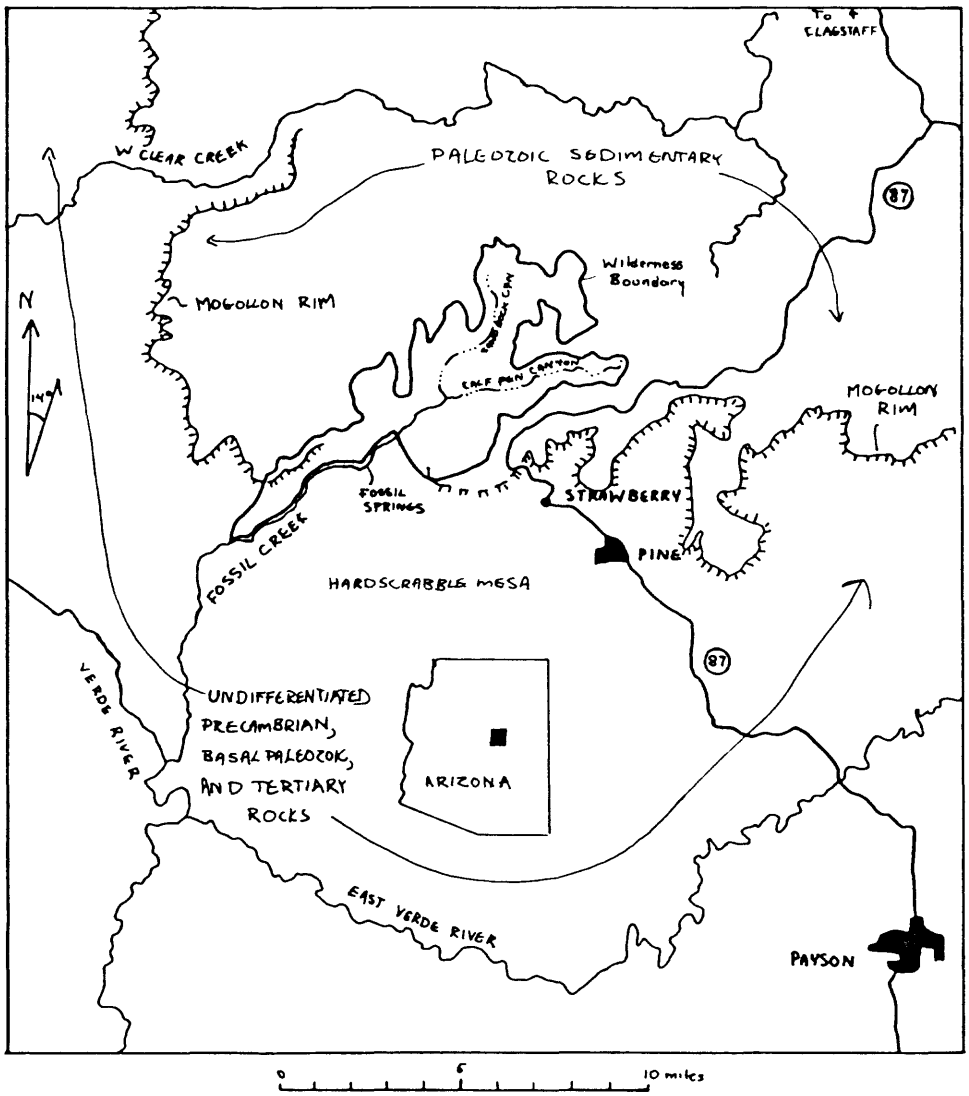

Figure 1. Map showing location and simplified geology of the Fossil Springs Roadless Area, Ariz. North of the Mogollon Rim, outcrops are mainly near-horizontal Paleozoic sedimentary rocks and Tertiary volcanic rocks. South of the Rim outcrops are chiefly Precambrian igneous and metamorphic rocks, Paleozoic sedimentary rocks, and Tertiary volcanic and sedimentary rocks.

METHODS

A total of 94 samples from 59 locations (table 1, fig. 2) were collected in the Fossil Springs Roadless Area with the objective of detecting major anomalies that indicate potential mineral resources (Weir, Beard, and Ellis. 1983).

Sampling procedures

Fifty-one (51) samples of modern sediment were collected from stream beds at 33 sites in the area. The heavy minerals of 16 of these samples were concentrated by panning in the field. Thirty-two (32) rock samples were collected from outcrops to represent the variety of sedimentary and volcanic rocks in the area. In addition, 11 samples of weakly radioactive, copper-bearing carbonaceous rock were collected from prospects in and near the area. Four of these samples of mineralized rock were concentrated in the field by hand picking for visible copper mineralization.

Analytical methods

Semiquantitative spectrographic analyses of the silt fraction (less-than-80 mesh) of the 94 samples of stream sediments, panned concentrates (non-magnetic fraction) and rocks were made by D. E. Detra using the six-step, semi-quantitative emission-spectrographic technique of Grimes and Marranzino (1968) for 31 elements. The spectrographic data were reported to the nearest number in the series 1, 0.7, 0.5, 0.3, 0.2, 0.15, 0.1 ..., which represent approximate midpoints of group data on a geometric scale. The radioactivity of the 52 samples was measured in terms of eU by J. C. Negri.

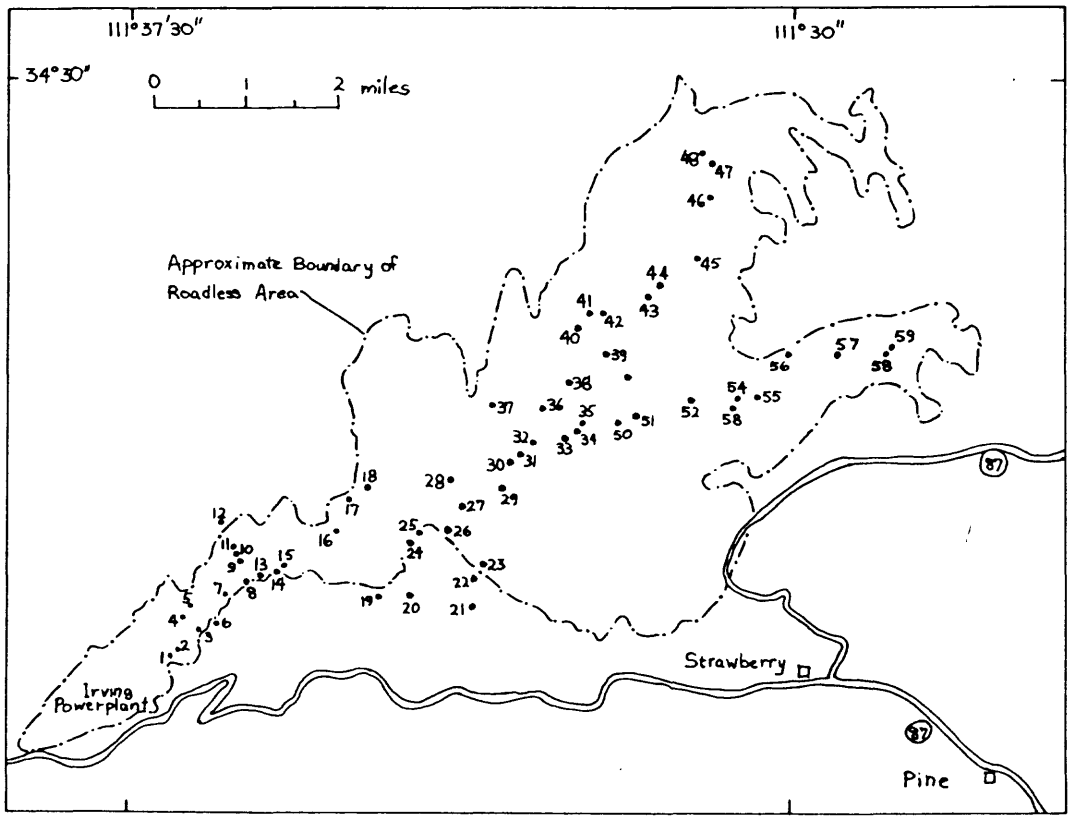

Figure 2. Sample location map of the Fossil Springs Roadless Area, Ariz. (See Weir, Beard, and Ellis, 1983, for details).

Table 1. Index of sample location shown on figure 2.

Location Nos.	Sample Nos.	Location Nos.	Sample Nos.	Location Nos.	Samples Nos.
1.	FC71S	26.	FC61S, FC61P	51.	FC8S, FC8P
2.	B8TU, B8TM, B8TL	27.	FC62S, FC62P	52.	FC7S
3.	R1	28.	FC36M, FC37M, R9L, R9L2, R9c1, R9c2	53.	FC6S
4.	B6D	29.	FC63S, FC63P	54.	FC4S, FC4P
5.	B7TU, B7TM, B7TL	30.	FC64S	55.	FC5S, FC5P
6.	FC72S	31.	FC65S	56.	R7
7.	FC73S	32.	FC66S, FC66P	57.	FC3S, FC3P
8.	FC74S	33.	FC67S	58.	FC2S, FC2P
9.	R2	34.	FC10R	59.	FC1S, FC1P
10.	R3	35.	FC70S		
11.	R4	36.	FC11R		
12.	R5	37.	FC12R		
13.	FC75S, FC13P	38.	FC68S		
14.	FC76S	39.	B5T		
15.	R8m, R8a, R8c, Rcm	40.	FC58S		
16.	B1T, B2T	41.	FC57S		
17.	B3T, B4T	42.	FC56S		
18.	BTG	43.	FC55S, FC55P		
19.	BTB, BTC, BTD	44.	FC54S		
20.	FC38R	45.	FC53S		
21.	FC31M, FC32M	46.	FC52S, FC52P		
22.	FC35M	47.	FC51S		
23.	FC33M, FC34M	48.	FC50S, FC50P		
24.	FC59S, FC59P	49.	R6		
25.	FC60S, FC60P	50.	FC9S		

DISCUSSION

The mineral resource potential of the Fossil Springs Roadless Area, central Arizona, is low (Weir, Beard, and Ellis, 1983). Analyses of samples obtained during the study show unresolved geochemical anomalies in the area; the anomaly suites suggest possible barite vein deposits and contamination from an unknown ultramafic source. Light-gray conglomerate and carbonaceous shale in the Supai Formation, near the central part of the roadless area, contain discontinuous, spotty copper mineralization, and coaly layers within the shale are radioactive. Construction materials present within the roadless area--chiefly basalt, sandstone, limestone, and dolomite--are readily available in abundance in adjacent areas. The oil and gas potential is low; the only producing wells in Arizona tap formations not present in the Fossil Springs Roadless Area.

REFERENCES

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	Fe	Mg	Ca	Tl	Mn	Ag	As	Au	B	Ba	Be	Bi	Cd	Co	Cr	Cu	La	Mo	Nb	Ni	Pb	Sb	Sc	Sn	Sr	Th	V	W	Y	Zn	Zr	eU	
Lower limit of determination																																	
	.05	.02	.05	.002	10	.5	200	10	10	20	1	10	20	5	10	5	20	5	20	5	10	100	5	10	100		10	50	10	200	10		
Sample No.	Percent				Parts per million																												Remarks
Rocks																																	
B1T	10.0	5.0	5.0	G1	1000	N	N	N	10	700	1.0	N	N	70	70	100	50	N	20	150	10	N	20	N	1000	N	100	N	20	N	100	L(20)	dacitic tuff
B2T	2.0	1.0	1.0	.15	700	N	N	N	50	300	1.5	N	N	10	50	20	20	5	20	20	30	N	7	N	100	N	50	N	20	N	70	20	dacitic tuff
B3T	1.0	1.5	1.5	.2	500	N	N	N	50	500	2.0	N	N	15	50	20	20	N	20	30	50	N	5	N	150	N	30	N	15	N	50	L(20)	basaltic tuff
B4T	5.0	3.0	2.0	.5	500	N	N	N	N	300	1.0	N	N	100	300	70	50	N	L	200	L	N	20	N	300	N	70	N	10	N	50	L(20)	dacitic tuff
B5T	5.0	2.0	10.0	.7	500	N	N	N	20	700	1.0	N	N	50	200	100	50	N	L	100	20	N	20	N	500	N	100	N	20	N	70	L(20)	dacitic tuff, upper part
B7TU	2.0	1.5	1.5	.2	700	N	N	N	20	500	2.0	N	N	20	100	20	20	N	20	50	30	N	10	N	200	N	50	N	20	N	50	L(20)	dacitic tuff, middle part
B7TM	5.0	3.0	3.0	.3	500	N	N	N	15	200	1.0	N	N	50	150	50	L	N	20	100	20	N	15	N	200	N	70	N	20	N	50	L(20)	dacitic tuff, lower part
B7TL	15.0	7.0	15.0	G1.0	2000	N	N	N	10	3000	1.0	N	N	70	1500	200	70	N	20	500	N	N	50	N	1000	N	200	N	30	N	100	L(20)	dacitic tuff, upper part
B8TU	5.0	7.0	5.0	.3	500	N	N	N	L	300	1.0	N	N	20	150	100	L	N	L	70	20	N	20	N	200	N	50	N	20	N	50	L(20)	dacitic tuff, middle part
B8TM	1.0	1.0	1.0	.15	1000	N	N	N	50	200	2.0	N	N	5	20	20	20	5	30	20	50	N	7	N	100	N	20	N	20	N	50	L(20)	dacitic tuff, lower part
B8TL	5.0	2.0	2.0	.5	1000	N	N	N	50	500	2.0	N	N	30	200	70	50	L	20	100	30	N	30	N	300	N	70	N	30	N	70	L(20)	Basaltic dike in Tertiary gravel deposit
B7B	10.0	2.0	3.0	.7	700	N	N	N	20	500	1.0	N	N	50	100	100	20	N	N	100	20	N	50	N	300	N	200	N	20	N	70	L(20)	Precambrian clast in Tertiary gravel deposit
B7C	1.0	.2	.5	.1	100	N	N	N	20	700	1.5	N	N	N	N	15	50	N	N	10	30	N	N	N	500	N	70	N	20	N	100	L(20)	Precambrian clast in Tertiary gravel deposit
B7D	1.0	.2	.2	.2	200	N	N	N	50	1500	2	N	N	N	N	20	70	7	L	5	50	N	7	N	L	N	100	N	70	N	200	L(20)	Sand matrix from Tertiary gravel deposit
B7G	3.0	1.0	1.0	.5	500	N	N	N	50	1000	2.0	N	N	15	50	50	70	N	N	50	30	N	30	N	200	N	150	N	30	N	100	L(20)	Dacite
B6D	5.0	2.0	2.0	.3	700	N	N	N	30	1000	1.5	N	N	7	L	30	100	N	20	15	30	N	20	N	1000	N	100	N	15	N	70	L(20)	Limestone unit above Fort Apache Member of Supai Formation
FC11R	.3	10.0	20.0	.02	2000	N	N	N	10	100	1.0	N	20	5	20	20	N	N	N	5	50	N	N	N	L	N	20	N	10	300	50	L(20)	Basalt; sample from rim of Fossil Creek
FC12R	20.0	10.0	7.0	G1.0	1500	N	N	N	10	700	1.0	N	N	100	1000	200	20	N	L	300	N	N	100	N	700	N	200	N	30	N	70	L(20)	Volcanic breccia
FC10R	10.0	7.0	10.0	1.0	1000	N	N	N	20	1500	1.0	N	N	70	1000	100	50	N	20	200	L	N	70	N	1000	N	200	N	20	N	100	L(20)	Limestone from Naco Formation
FC38R	.5	1.0	G20	.1	1000	N	N	N	70	50	L	N	N	10	70	L	L	N	N	20	15	N	10	N	1000	N	50	N	20	N	50	L(20)	Basalt, sample from bottom of Fossil Creek Canyon
R1	10.0	10.0	3.0	.7	1000	N	N	N	20	300	L	N	N	70	1000	70	N	N	L	150	10	N	30	N	300	N	150	N	30	N	70		Basalt, sample from middle of volcanic pile
R2	10.0	5.0	5.0	1.0	1000	N	N	N	10	500	L	N	N	70	700	70	N	N	L	150	10	N	50	N	500	N	200	N	50	N	70		Lapilli tuff, dacitic
R3	2.0	2.0	1.5	.2	1000	L	N	N	100	700	3.0	N	N	15	150	20	50	L	70	20	100	N	10	N	150	N	70	N	30	N	70		Lapilli tuff, dacitic
R3A	2.0	1.5	1.0	.2	1000	N	N	N	100	700	3.0	N	N	10	100	50	50	N	70	15	100	N	10	N	150	N	70	N	50	N	70		Basalt, sample from middle of volcanic pile
R4	5.0	3.0	5.0	.7	1000	N	N	N	20	3000	1.0	N	N	30	700	70	150	N	50	150	50	N	20	N	1000	N	150	N	50	N	200		Basalt, sample from rim of Fossil Creek
R5	10.0	7.0	7.0	1.0	1000	N	N	N	10	2000	1.0	N	N	70	500	70	70	N	50	200	30	N	30	N	700	N	200	N	50	N	100		Coconino Sandstone
R6	.5	.15	.1	.05	70	N	N	N	50	300	L	N	N	N	L	L	N	N	N	10	L	N	N	N	N	N	15	N	L	N	50		Coconino Sandstone
R7	.3	.05	L	.02	30	1.0	N	N	30	L	N	N	N	N	N	5	N	N	N	5	N	N	N	N	N	N	15	N	L	N	20		Matrix of tuff, dacitic, from bottom of canyon
R8m	3.0	1.0	1.5	.2	1000	N	N	N	100	500	5	N	N	10	100	20	N	N	70	50	70	N	10	N	200	N	70	N	30	N	50		Airfall tuff, dacitic, from bottom of canyon
R8a	2.0	1.5	1.0	.3	1500	N	N	N	100	700	5	N	N	7	70	15	50	N	70	30	70	N	10	N	200	N	50	N	50	N	70		Precambrian (?) clast from dacitic tuff
R8c	5.0	1.5	2.0	.5	1000	N	N	N	70	1500	1.0	N	N	15	L	7	50	N	N	15	20	N	10	N	700	N	100	N	15	N	70		Matrix surrounding Precambrian(?) clast
R8cm	1.5	.7	3.0	.1	2000	N	N	N	150	500	5	N	N	10	30	15	L	N	100	20	100	N	10	N	150	N	50	N	50	N	70		
Mineralized rocks from Supai Formation																																	
R9L	1.0	2	G(20)	.05	2000	.7	N	N	30	100	L	N	N	7	50	500	L	N	N	5	100	N	5	N	1000	N	30	N	50	N	50		Fetid limestone, carbonaceous
R9L2	1.0	.7	20	.2	300	N	N	N	100	300	1.0	N	N	5	100	15	L	N	N	15	15	N	5	N	150	N	50	N	30	N	300		Limestone, carbonaceous
R9c1	3.0	2.0	5	.7	200	1.0	N	N	300	500	5	N	N	10	200	2000	70	7	L	50	30	N	20	N	200	N	150	N	70	N	100		Shale, carbonaceous, visible copper mineralization
R9c2	2.0	1.5	10	.7	500	N	N	N	200	700	1.5	N	N	10	150	30	50	N	L	30	15	N	15	N	150	N	70	N	50	N	300		Shale, carbonaceous, calcareous
FC31M	1.0	.7	G20	.02	5000	N	N	N	10	100	1	N	100	10	20	200	70	10	N	10	20	N	N	N	500	N	20	N	70	1000	20	L(20)	Limestone, dark grey
FC32M	3.0	1.5	7	1.0	100	N	N	N	200	300	2	N	N	30	150	700	50	N	L	100	10	N	20	N	100	N	100	N	30	N	500	L(20)	Shale, carbonaceous
FC33M	10.0	.1	2	.2	100	100	200	N	100	500	1.5	N	N	50	20G20000	N	50	N	100	50	N	7	N	L	N	50	N	30	N	100	50	Sandstone, shale, hand-picked for visible mineralization
FC34M	1.0	1.0	10	1.0	200	2	N	N	200	300	2	N	N	15	100	10000	50	N	L	50	20	N	20	N	150	N	100	N	30	N	700	L(20)	Shale, carbonaceous
FC35M	5.0	1.0	7	.5	200	10	N	N	500	2000	10	N	L	20	50G20000	70	100	L	70	100	N	20	N	300	N	100	N	70	N	70	20	Shale, carbonaceous, hand-picked for visible mineralization
FC36M	7.0	2.0	5	G1	100	1	N	N	500	700	2	N	N	50	150	10000	70	20	L	100	20	N	30	N	100	N	150	N	70	N	500	L(20)	Shale, carbonaceous, hand-picked for visible mineralization
FC37M	5.0	.7	2	.5	2000	2	N	N	200	500	7	N	N	150	50G20000		20	15	N	300	30	N	15	N	100	N	70	N	70	N	70	L(20)	

G = Greater than value shown. N = Not detected at limit of detection. L = Detected, but below limit of determination, or below value shown.

TABLE 2. SEMIQUANTITATIVE SPECTROGRAPHIC AND RADIOMETRIC ANALYSES OF SAMPLES OF STREAM SEDIMENTS AND ROCKS FROM FOSSIL SPRINGS ROADLESS AREA, ARIZONA

Sample No.	Fe	Mg	Ca	Ti	Mn	Ag	As	Au	B	Ba	Be	Bi	Cd	Co	Cr	Cu	La	Mo	Nb	Ni	Pb	Sb	Sc	Sn	Sr	Th	V	W	Y	Zn	Zr	eU	Remarks
	Percent				Parts per million																											
Lower limit of determination	.05	.02	.05	.002	10	.5	200	10	10	20	1	10	20	5	10	5	20	5	20	5	10	100	5	10	100		10	50	10	200	10		
Stream Sediments																																	
FC1S	2.0	1.0	1.5	.3	200	L	N	N	70	300	1.5	N	N	20	100	15	20	N	N	70	L	N	5	N	100	N	50	N	10	N	700	L(20)	Unmapped modern stream sediment
FC2S	.7	.5	1.0	.3	100	N	N	N	100	300	1.0	N	N	7	30	10	20	N	N	20	15	N	L	N	100	N	50	N	10	N	200	L(20)	Unmapped modern stream sediment
FC3S	1.0	1.5	2.0	.3	200	N	N	N	100	200	1.0	N	N	20	70	20	20	N	N	50	10	N	5	N	100	N	50	N	15	N	200	L(20)	Unmapped modern stream sediment
FC4S	1.0	1.5	3.0	.3	200	N	N	N	150	300	1.5	N	N	15	50	10	20	N	N	50	L	N	5	N	100	N	50	N	20	N	500	L(20)	Unmapped modern stream sediment
FC5S	.5	1.0	1.5	.15	200	N	N	N	70	150	1.0	N	N	7	20	7	N	N	N	15	L	N	N	N	100	N	20	N	10	N	150	L(20)	Unmapped modern stream sediment
FC6S	1.5	2.0	2.0	.3	150	N	N	N	100	200	1.0	N	N	15	70	15	20	N	N	50	10	N	7	N	L	N	50	N	20	N	300	L(20)	Unmapped modern stream sediment
FC7S	1.0	1.0	2.0	.5	200	N	N	N	150	200	1.0	N	N	10	50	10	20	N	N	20	10	N	5	N	100	N	50	N	30	N	500	L(20)	Unmapped modern stream sediment
FC8S	1.5	1.5	2.0	.5	200	N	N	N	100	300	1.5	N	N	10	70	10	20	N	N	20	10	N	7	N	150	N	50	N	20	N	500	L(20)	Unmapped modern stream sediment
FC9S	1.0	1.0	1.5	.3	100	N	N	N	70	300	1.0	N	N	7	30	7	20	N	N	15	10	N	L	N	100	N	30	N	15	N	200	L(20)	Unmapped modern stream sediment
FC50S	3.0	1.0	1.0	1.0	700	.5	N	N	100	500	1.5	N	N	50	150	70	30	N	L	100	20	N	10	N	150	N	100	N	20	N	500	L(20)	Unmapped modern stream sediment
FC51S	.7	.7	1.0	.2	150	L	N	N	70	200	1.0	N	N	20	150	10	N	N	N	50	10	N	L	N	N	N	30	N	15	N	150	L(20)	Unmapped modern stream sediment
FC52S	.5	.5	1.5	.15	100	.7	N	N	70	200	1.0	N	N	10	50	7	20	N	N	10	L	N	N	N	100	N	20	N	10	N	500	L(20)	Unmapped modern stream sediment
FC53S	.7	.7	1.0	.2	100	N	N	N	70	200	L	N	N	7	50	10	L	N	N	20	L	N	L	N	N	N	20	N	L	N	100	L(20)	Unmapped modern stream sediment
FC54S	.7	1.0	2.0	.3	200	L	N	N	70	200	1.0	N	N	10	30	10	L	N	N	20	10	N	5	N	N	N	30	N	10	N	500	L(20)	Unmapped modern stream sediment
FC55S	.5	.7	1.5	.2	150	N	N	N	70	200	1.0	N	N	10	70	7	L	N	N	20	10	N	5	N	L	N	30	N	30	N	500	L(20)	Unmapped modern stream sediment
FC56S	.5	.5	1.5	.2	100	L	N	N	70	200	1.0	N	N	7	20	7	L	N	N	15	10	N	L	N	L	N	20	N	10	N	200	L(20)	Unmapped modern stream sediment
FC57S	1.0	1.0	2.0	.3	200	N	N	N	100	300	1.0	N	N	10	50	10	20	N	N	20	10	N	7	N	100	N	30	N	20	N	500	L(20)	Unmapped modern stream sediment
FC58S	5.0	1.5	2.0	.5	500	N	N	N	100	500	1.5	N	N	50	150	50	20	N	N	100	15	N	15	N	100	N	70	N	20	N	500	L(20)	Unmapped modern stream sediment
FC59S	7.0	2.0	10.0	1.0	1000	N	N	N	100	700	1.5	N	N	70	200	70	50	N	L	200	15	N	20	N	200	N	150	N	30	N	500	L(20)	Unmapped modern stream sediment
FC60S	1.5	2.0	15.0	.3	300	N	N	N	70	300	1.0	N	N	15	100	15	30	N	N	50	10	N	10	N	200	N	50	N	15	N	200	L(20)	Unmapped modern stream sediment
FC61S	1.0	1.5	10.0	.2	300	N	N	N	50	300	1.0	N	N	10	70	100	L	N	N	20	10	N	7	N	100	N	20	N	15	N	200	L(20)	Unmapped modern stream sediment
FC62S	5.0	2.0	7.0	.5	500	N	N	N	100	700	1.5	N	N	50	200	70	50	N	L	150	15	N	20	N	300	N	70	N	30	N	500	L(20)	Unmapped modern stream sediment
FC63S	.7	1.0	5.0	.3	200	N	N	N	50	200	1.0	N	N	10	50	10	20	N	N	15	L	N	5	N	L	N	20	N	15	N	700	L(20)	Unmapped modern stream sediment
FC64S	1.5	2.0	5.0	1.0	300	N	N	N	100	200	1.5	N	N	20	100	20	L	L	L	30	15	N	7	N	150	N	70	N	30	N	700	L(20)	Unmapped modern stream sediment
FC65S	1.0	1.0	3.0	.7	200	N	N	N	100	200	1.5	N	N	10	100	10	L	N	L	20	15	N	5	N	100	N	50	N	20	N	700	L(20)	Unmapped modern stream sediment
FC66S	.5	.5	1.0	.2	70	N	N	N	30	100	1.0	N	N	5	30	5	N	N	N	10	L	N	N	N	N	N	10	N	10	N	700	L(20)	Unmapped modern stream sediment
FC67S	3.0	2.0	5.0	1.0	200	N	N	N	100	500	1.5	N	N	50	200	50	20	N	L	100	20	N	10	N	200	N	50	N	20	N	500	L(20)	Unmapped modern stream sediment
FC68S	1.0	1.0	2.0	1.0	150	N	N	N	100	300	1.0	N	N	15	70	15	N	N	L	20	10	N	7	N	100	N	30	N	15	N	500	L(20)	Unmapped modern stream sediment
FC70S	1.0	1.0	2.0	1.0	150	N	N	N	100	200	1.0	N	N	15	100	15	N	N	L	20	L	N	7	N	100	N	50	N	15	N	700	L(20)	Unmapped modern stream sediment
FC71S	7.0	2.0	3.0	G1.0	1000	N	N	N	100	700	1.0	N	N	70	200	70	20	N	20	150	20	N	20	N	500	N	200	N	20	N	500	L(20)	Unmapped modern stream sediment
FC72S	15.0	7.0	7.0	G1.0	2000	N	N	N	70	300	1.0	N	N	100	700	200	L	N	L	300	30	N	20	N	500	N	200	N	30	N	150	L(20)	Unmapped modern stream sediment
FC73S	10.0	3.0	7.0	1.0	2000	N	N	N	50	500	L	N	N	70	500	200	L	N	10	200	30	N	20	N	500	N	200	N	30	N	150	L(20)	Unmapped modern stream sediment
FC74S	15.0	7.0	10.0	G1.0	2000	N	N	N	100	700	1.0	N	N	100	700	150	30	N	20	200	30	N	30	N	700	N	200	N	30	N	500	L(20)	Unmapped modern stream sediment
FC75S	10.0	2.0	2.0	1.0	1000	N	N	N	50	200	1.0	N	N	70	500	150	L	N	L	150	15	N	20	N	300	N	150	N	20	N	200	L(20)	Unmapped modern stream sediment
FC76S	7.0	3.0	7.0	1.0	2000	N	N	N	100	700	1.0	N	N	70	500	100	50	N	20	200	50	N	20	N	500	N	150	N	30	N	500	L(20)	Unmapped modern stream sediment
Pan-concentrates of Stream Sediments																																	
FC1P	3.0	5.0	7.0	G2	300	N	N	N	500	G10000	50	N	N	100	2000	1000	500	N	L	150	50	N	70	N	N	L	100	N	200	N	G2000		Unmapped modern stream sediment, panned in the field
FC2P	1.0	.1	.5	G2	150	N	N	N	200	G10000	70	N	N	10	150	300	100	N	N	L	30	N	50	N	N	N	70	N	500	N	G2000		Unmapped modern stream sediment, panned in the field
FC3P	1.5	2.0	2.0	G2	200	N	N	N	200	2000	50	N	N	20	500	200	50	N	L	50	100	N	20	N	N	N	100	N	200	N	G2000		Unmapped modern stream sediment, panned in the field
FC4P	2.0	1.5	3.0	G2	500	N	N	N	100	G10000	50	N	N	15	150	2000	70	N	L	10	30	N	20	20	N	N	150	N	200	N	G2000		Unmapped modern stream sediment, panned in the field
FC5P	3.0	2.0	2.0	G2	300	N	N	N	500	G10000	70	N	N	50	2000	200	150	15	L	70	50	N	70	N	500	N	200	N	1000	N	G2000		Unmapped modern stream sediment, panned in the field
FC8P	7.0	10.0	15.0	2	700	N	N	N	200	10000	30	N	N	150	5000	100	50	N	N	300	L	N	100	N	N	N	300	N	200	N	G2000		Unmapped modern stream sediment, panned in the field
FC13P	2.0	2.0	10.0	2.0	1000	N	N	N	50	500	N	N	N	20	700	200	150	N	50	150	30	N	30	N	500	N	300	N	200	N	G2000		Unmapped modern stream sediment, panned in the field
FC50P	5.0	2.0	7.0	G2	500	N	N	N	300	1000	30	N	N	50	500	150	50	N	L	100	30	N	20	N	N	N	150	N	150	N	G2000		Unmapped modern stream sediment, panned in the field
FC52P	20.0	1.0	1.5	G2	1500	N	N	N	2000	7000	50	N	N	70	3000	1000	100	10	L	150	200	N	50	N	N	N	500	N	500	N	G2000		Unmapped modern stream sediment, panned in the field
FC55P	2.0	2.0	2.0	G2	200	N	N	N	300	3000	50	N	N	20	1000	100	70	N	L	50	30	N	30	N	N	N	100	N	300	N	300		Unmapped modern stream sediment, panned in the field
FC59P	10.0	10.0	20.0	2	1000	N	N	N	20	200	L	N	N	200	5000	30	50	N	N	300	N	N	100	N	300	N	500	N	20	N	G2000		Unmapped modern stream sediment, panned in the field
FC60P	10.0	10.0	15.0	1.5	1500	N	N	N	50	G10000	7	N	N	100	3000	50	70	N	N	150	30	N	70	N	1000	N	300	N	70	N	G2000		Unmapped modern stream sediment, panned in the field
FC61P	7.0	7.0	15.0	1.5	500	N	N	N	70	G10000	20	N	N	100	3000	15000	70	L	N	150	70	N	50	N	700	N	200	N	100	N	100		Unmapped modern stream sediment, panned in the field
FC62P	7.0	10.0	20.0	1.5	500	N	N	N	20	1500	N	N	N	150	7000	500	50	N	N	300	N	N	100	N	200	N	300	N	20	N	G2000		Unmapped modern stream sediment, panned in the field
FC63P	7.0	10.0	20.0	2.0	1000	10	N	N	50	G10000	30	N	N	150	3000	200	50	N	N	300	L	N	100	N	500	N	300	N	100	N	G2000		Unmapped modern stream sediment, panned in the field
FC66P	2.0	1.5	1.0	G2	2000	N	N	N	1000	G10000	100	N	N	20	1000	100	50	N	L	50	70	N	70	N	N	N	100	N	1000	N	G2000		Unmapped modern stream sediment, panned in the field