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Analytical results and sample locality maps of stream-sediment and rock samples from the Cobblestone Creek Area, southeastern Chandler Lake quadrangle, Alaska

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with

Interpretation of the geochemical data

By

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This report is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards and stratigraphic nomenclature. Any use of trade names is for descriptive purposes only and does not imply endorsement by the USGS.

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INTRODUCTION

This report is a compilation and preliminary interpretation of geochemical results from the Cobblestone Creek study area. Sampling for this report was conducted by Arctic Slope Consulting Engineers (ASCE), now the Arctic Slope Consulting Group, during the 1985 and 1986 field seasons. The Cobblestone Creek study area is located in the southeastern Chandler Lake $1^{\circ} \times 3^{\circ}$ quadrangle on the north flank of the Brooks Range (see location map, Plate 1). The Cobblestone Creek study area comprises 1,050 mi^2 (2,717 km^2) of the Arctic Foothills Belt and the adjacent Brooks Range. The study area is located approximately 40 miles (64 km) east of the village of Anaktuvuk Pass; access is limited to air travel.

The topographic relief in the study area ranges from average elevations of 1,000 ft (307 m) in the Arctic Foothills Belt with a maximum elevation of 6,240 ft (1,914 m) in the adjacent mountains of the Brooks Range. The relief in the southern part of the Cobblestone Creek study area is rugged and mountainous with youthful stream drainages. Outcrops are abundant and the stream drainages occasionally contain low shrubs and black willow.

The sharp transition in the topographic relief, as shown on plates 1 and 2, marks the change in the physiographic boundary between the Arctic Foothills Belt and the Arctic Mountains Belt of Wahrfatig (1965). This break in topography, at approximately Township 11 South, delineates the mountain front.

North of the mountain front is the low tundra mantled hills of the Arctic Foothills Belt. The bulk of the sampling is located in the Arctic Foothills Belt of the study area. In the Arctic Foothills Belt, interstream uplands are underlain mostly by Quaternary alluvium and silt, sand, and clay deposits, frost rubble outcrop, and low shrubs and usually have narrow incised drainages. The climate is arctic, with rainfall not exceeding 10 inches (30 cm) per year.

The geochemical data in this report were collected as part of an ASCE project which evaluated the mineral resources of Arctic Slope Regional Corporation (ASRC) lands in the Central Arctic. ASCE collected geochemical samples in conjunction with geologic mapping on ASRC lands in the Cobblestone Creek area. The Cobblestone Creek study area is partly comprised of lands whose mineral rights are owned by the Arctic Slope Regional Corporation (ASRC). The remaining lands are included in The Gates of the Arctic National Preserve and Gates of the Arctic National Park to the south and State of Alaska and federal lands. The geochemical data and geologic observations from the Cobblestone Creek area have been provided to the USGS by ASCE and may contribute to estimates of North Slope hydrocarbon and mineral resources.

The data provided here may also be useful for developing distinctive geochemical signatures for certain geologic units in the Cobblestone Creek study area.

PREVIOUS STUDIES

Reconnaissance geochemical sampling of the Chandler Lake quadrangle has been conducted by the USGS as part of the Alaskan Mineral Resource Assessment Program (AMRAP; Barton and others, 1982; Sutley and others, 1984; Duttweiler, 1986; S.E. Church, written commun., 1987). Geochemical sampling has also taken place throughout the Chandler Lake quadrangle as part of the U.S. Department of Energy National Uranium Resource Evaluation (NURE) program (LASL, 1982). The USGS and NURE geochemical data was used by ASCE to identify the Cobblestone Creek area as one that warranted further study.

The geologic base map used in Plates 1 and 2 is from Kelley (1988) in which previous mapping by Detterman et al. (1963), Patton and Tailleur (1964), Brosge and others (1979), and Hamilton (1979), among others, was compiled along with recent mapping under the AMRAP program (Kelley, 1988). Unpublished mapping by the Alaska Division of Geological and Geophysical Surveys (ADGGS) was also used in the field with permission by C.G. Mull of the ADGGS as part of a joint field program between the ADGGS and ASCE in 1985. The location map, correlation of map units, and map symbols are given on Plate 1 whereas the description of map units is given on Plate 2.

GEOLOGY

Mafic igneous rocks and marine and nonmarine sedimentary rocks of the Cobblestone Creek study area range in age from Devonian through late Cretaceous (see Plate 1 for geologic description of the rock units, summarized from Kelley, 1988). Paleozoic strata crop out in and are generally confined to the rugged Brooks Range mountain crest and front whereas Mesozoic rocks crop out in the Arctic Foothills Belt.

Major rock units forming the main crest and front of the Brooks Range in the Cobblestone Creek study area are the Devonian Hunt Fork Shale, Kanayut Conglomerate, Mississippian Lisburne Group which consists of limestones, siltstones, and shales, Permian Siksikpuk Formation, and Triassic Shublik Formation.

Permian to late Cretaceous marine shale, sandstone, and chert underlies the Arctic Foothills Belt to the north. Triassic to Jurassic age strata are represented by two major rock units: the Shublik and Otuk Formations and an undivided Cretaceous Jurassic-Cretaceous unit consisting of shale, siltstone, and sandstone. Cretaceous strata are represented by seven formations in ascending order: the Torok Formation, Cobblestone sandstone unit, Fortress Mountain, Grandstand Formation, Chandler Formation, and the Seabee Formation. The Seabee Formation occurs along the north edge of the map area shown on Plates 1 and 2. Volcaniclastic components, represented by bentonite and feldspathic fragments, appear in the Ninuluk Formation of late Cretaceous age. Quaternary alluvium and glacial deposits (Hamilton, 1979) overlie much of the Arctic Foothills Belt in the Cobblestone Creek study area.

GEOCHEMICAL SAMPLING PROGRAM

Sample Collection

Analyses of the stream-sediment samples primarily represent the chemistry of the rock material eroded from the drainage basin upstream from each sample site. In addition, absorbed metals may form a large contribution to the elemental concentrations in the stream sediments representing hydromorphic anomalies moved from depth via groundwater system through seeps and springs to the sediments sampled. Information derived from stream-sediment sampling is useful in identifying those basins which contain concentrations of elements that may be related to mineral deposits.

We collected stream-sediment and rock samples at 314 sites (see Plates 1 and 2). The sample population consists of 61 rock samples or 20 percent of the total and 253 stream-sediment samples. Sampling density varies between one sample site per 5 mi^2 (8 km^2) and one sample site per 0.5 mi^2 (0.8 km^2) for the stream-sediment and rock samples. The area of the drainage basins sampled ranged from 0.5 mi^2 (.8 km^2) to about 10 mi^2 (16 km^2).

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 = 1:63,360). Each sample was composited from several localities within an area that may extending as much as 100 ft (30 m) upstream or downstream from the site plotted on the map. Each bulk sample was screened on-site with a 2.0-mm (10-mesh) screen to remove the coarse material.

All rock samples were composites of the outcrop. The rock material was generally fresh with little weathered material included at the majority of the sample locations. Care was taken to collect rock samples that were representative of the outcrop.

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. The minus-10 to plus-80 mesh fractions were saved for the gold analysis if the 80-mesh fraction was less than 20 g.

Rock samples were crushed to pass 80 percent through a 10-mesh sieve. The resultant minus-10-mesh sample was then split to provide a 200-400 g aliquot which was pulverized for analysis using an impact grinder. The final rock powder consisted of 50 percent 150-mesh and 99 percent 80-mesh with greatly reduced pulverizer contamination.

Sample Analysis

The stream-sediment and rock samples were analyzed for 23 to 32 elements using atomic absorption (AAA) and instrumental neutron-activation analysis (INAA) techniques by Steve Simpson, Bondar-Clegg Company, Vancouver, Canada. AAA techniques were used for analysis of copper, lead, manganese and zinc. Cold vapor atomic absorption (CVAA) was used in the analysis of mercury. Samples collected in 1985 were analyzed for 23 elements using INAA procedures. Samples collected in 1986 were analyzed for 25 elements by INAA; in addition, copper, lead, and zinc were analyzed by AAA. The digestion procedures used for the AAA methods are given in Table 1. Selected rock samples in the 1986 data set also were analyzed for mercury and manganese. The elements analyzed in the 1985 and 1986 data sets and their lower limits of determination are listed in Table 1. Analytical results from the rock samples, subdivided by geologic unit, are reported in Tables 2 and 4, and analytical results from the stream-sediment samples are reported in Tables 3 and 5.

Standard AAA methods were used in the study; the CVAA method used was modified from Vaughn and McCarthy (1964). In the INAA procedure, a minimum weighed amount of sample, usually about 5 g, is exposed to a flux of neutrons by inserting it into the core of a nuclear reactor. The elements become radioactive and emit characteristic radiation during subsequent decay. Each element emits a characteristic gamma-ray spectrum and a multi-channel detector is used to sort out these energies. By comparing the spectral peak positions and intensities with standards, the elements can be qualitatively and quantitatively identified. Chemical pre-treatment is not used in the neutron-activation procedure, as this reduces the possibility of losses and contamination.

All sample locations were digitized on a USGS topographic map base. The analytical results were entered into a micro-computer RBASE database file at ASCE. This data base contains both descriptive geological information and analytical data. The geochemical data and the locations were retrieved and sent the USGS for release in this report. The data were converted to a binary form (STATPAC) for statistical analysis and publication. Permission to release these data has been obtained from the Arctic Slope Regional Corporation.

Description of Data Tables

Table 1 lists the limits of determination for the method used in the study during both 1985 and 1986. Analytical results are presented in tables 2-5. Both latitude and longitude, as well as the Universal Transverse Mercator (UTM) locations of sample localities are reported. The sample sites are shown on the sample locality maps (Plates 1 and 2). Zinc was analyzed using both atomic absorption and neutron-activation procedures; these samples are denoted Zn for samples analyzed by atomic absorption and Zn-INAA for analyses by INAA. Elements analyzed, but below the limit of determination are indicated by an N, values for samples which were detected but not quantitatively determined are indicated by the less than (<) symbol, and values for samples which exceeded the upper limit of determination are shown by the greater than (>) symbol. A dash (--) is used where no analysis was done for the element. Elemental concentrations are given in parts per million (ppm).

INTERPRETATION OF THE GEOCHEMICAL DATA

In this section, C.E. Barnwell presents a preliminary interpretation of the geochemical data collected from the Cobblestone Creek study area. This interpretation is limited because of the proprietary nature of work by ASCE. The report incorporates ASCE geochemical data from the Cobblestone area in east-west and north-south traverses, concentrating on (1) geologic units that contained the most favorable geochemical evidence of mineralization, and (2) on NURE sample localities (National Uranium Resource Evaluation; LASL, 1982) that showed anomalous concentrations of selected base and precious metals. Four areas of interest were defined on the basis of the clusters of anomalous samples in the study area: 1) the northwest quadrant, 2) northeast quadrant, 3) southwest quadrant, and 4) southeast quadrant. Each of the quadrants is generally underlain by different geologic formations.

North Cobblestone Area

The North Cobblestone area is that area north of the mountain front. The North Cobblestone area is underlain by Mesozoic and Cenozoic rocks of the Arctic Foothills Belt. Within this area, samples were taken in clusters in the northwest and northeast quadrants (Plate 2). The northwest and northeast quadrants represent geochemical transects of the Torok Formation and Cobblestone sandstone unit as defined in Kelley (1988).

Major rock units of the North Cobblestone area include the Cretaceous Cobblestone sandstone unit (Kcs) which includes sandstone, siltstone, mudstone, conglomerate; the Torok Formation (Kto) which consists of shale, mudstone, siltstone, mudstone, and pebbly siltstone; the Fortress Mountain Formation (Kft) which consists of marine conglomerate and sandstone; the Cretaceous Grandstand Formation (Ktg) which consists of sandstone, shale, and siltstone; the Cretaceous Killik Tongue of Chandler Formation (Kck) which includes conglomerate, siltstone, shale and sandstone, and Niakogon Tongue of the Chandler Formation (Knc) which includes laterally equivalent marine and non-marine sandstones and siltstones respectively. Sandstones of the Niakogon Tongue sometime show heavy iron-oxide staining and contain bentonite beds in the upper part.

Anomalous concentrations of several elements in the NURE and 1985 ASCE data sets drew our attention to the North Cobblestone area for detailed investigation in 1986. The Cobblestone sandstone unit (Kcs) and Torok Formation (Kto) are anomalous with respect to a select group of elements including gold. In this area of generally low background gold values, stream-sediment samples, 3615, 3821, 6412, 6194, 3617 and 6413 contain anomalous gold concentrations of 0.160, 0.045, 0.039, 0.088, 0.040 and 0.037 ppm respectively. All of the above samples were collected in the area mapped as Torok Formation described by Kelley (1988).

The pebbly siltstone facies of the Torok Formation as described by Kelley (1988) is of interest also for its high values of manganese, mercury, and iron. The pebbly siltstone is often dense, and has a gun-blue metallic color in outcrop. Values of 0.18, and 0.22 ppm mercury were found in rock samples 1642 and 1643 respectively. Rock samples 1641, and 1642 are anomalously high in manganese with concentrations greater than 20,000 and 3,200 ppm respectively. Iron concentrations of samples from the pebbly siltstone unit of the Torok Formation are also anomalously high with values of 19, 20, 38, and 29 percent for rock samples 1641, 1642, 1677, and 1656 respectively. Samples of the pebbly siltstone facies of the Torok Formation are generally below the mean values for all samples for copper, zinc, and molybdenum for the entire 1986 data set. These elements are commonly mobilized by hydrothermal solution. The values of copper and molybdenum are also below the abundance values in average crustal rocks suggesting that the high manganese, mercury, and iron content of this rock unit may be syngenetically derived (Rose and others, 1979). However, mercury can be mobilized in tectonically active areas and transported along major faults and mobile rock units (Rose and others, 1979). Generally, geochemical analyses from stream-sediment samples in the area underlain by the Torok Formation are characterized by anomalous cobalt ranging from 30 to 80 ppm, and zinc values slightly above median values ranging from 200 to 500 ppm. Uranium in these samples is generally low, ranging from 2.4 to 3.0 ppm.

A genetic relation of the pebbly siltstone facies of the Torok Formation, as mapped in the Cobblestone area, to the Pebble Shale unit could be significant to tectonic interpretations in this area. The pebbly siltstone facies of the Torok Formation is similar in field appearance and description to the Cretaceous Pebble Shale unit found usually in the North Slope autochthonous sequence (Bird, 1987). Tectonic interpretations including the presence of a rock unit genetically related to the Pebble Shale unit in this part of the Brooks Range may have significance with respect to hydrocarbon resource evaluations. A comparison of the geochemical analysis of the Pebble Shale unit with the geochemical results reported here may help indicate whether these two rock units are related in terms of paleoenvironment and tectonics. Anomalous concentrations of mercury, an element present in tectonically mobile regions, may possibly indicate greater tectonic displacement in this area than was previously considered.

Anomalous lead-zinc-barium or copper-lead-zinc suites typical of massive sulfide provinces were not found in any of our samples in the North Cobblestone area. Zinc values greater than the 99^{th} percentile in samples 3842 and 3849 may be related to the Cretaceous Cobblestone sandstone unit, but the high zinc concentrations may also be associated with the iron-rich seeps from which the samples were taken.

South Cobblestone Area

The South Cobblestone area is south of the mountain front (Plate 1). Paleozoic and lessor Mesozoic rocks form the crest of the mountains while Permian, Jurassic and Triassic rocks dominate outcroppings in the mountain front.

Dominant rock units in the South Cobblestone area consist of the Jurassic and Triassic Otuk and Shublik Formations (JTos and Jto) which consists of shale, chert, and limestone members; Jurassic to Cretaceous undivided strata (KJu, KJsh, KJsd, and KJcgl) which consists of sandstone and shale, conglomerate, tuffaceous sandstone, and volcaniclastic breccia; and Cretaceous Fortress Mountain Formation (Kft) which consists of conglomerates, sandstones, and siltstones. The Paleozoic is represented by the following major rock units: the Ear Peak (Dken), Shainin Lake (Dks), and Stuver (MDks) Members of the Devonian Kanayut Conglomerate (MDku) which consists of conglomerate, conglomeratic sandstone and sandstone; Upper Devonian Hunt Fork Shale (Dhs) and Noatak Sandstone (Dken) which consists of sandstone and limestone; Mississippian Kayak Shale (Mk); Mississippian Alapah Limestone and Wachsmuth Limestone of the Lisburne Group (Ml); and Permian Siksikpuk Formation (Ps) and Triassic Shublik Formation (Ts).

Two zones of elements having anomalous concentrations of several elements occur in the southern Cobblestone area: (1) a barium-copper-uranium-zinc zone in an area approximately 0.5 to 1 mi (0.8-1.6 km) north of the mountain front, and (2) two spatially separated but geochemically related clusters of samples containing anomalous concentrations of gold. The barium-rich zone appears to be related to the Siksikpuk Formation. Metz and others (1979) have reported high concentrations of barium in both the Siksikpuk Formation and the upper part of the Lisburne Group. High barium concentrations appear in the Permian Siksikpuk Formation throughout the north-flank of the Brooks Range and may be indicative of transition from euxinic to more oxygenated conditions at that time. Samples of shale taken proximal to exposures of the Triassic Otuk Formation are characteristically distinguished by relatively high values of copper (48-88 ppm), zinc (200-600 ppm), and uranium (7.0-11.0 ppm). The anomalous gold concentrations found in the upper Kuhsuhman Creek drainage are from rock samples of the upper stratigraphic part of the Hunt Fork Shale (Dhs) near its contact with the Ear Peak Member of the Kanayut Conglomerate. Rock samples 1634 and 1635 from the upper part of the Kanuyut Conglomerate are anomalously high in manganese with values of 2,000 and 2,200 ppm respectively. The iron concentration from sample 1635 from the upper part of the Kanuyut Conglomerate is also anomalously high at 21 percent. Chert samples 1668 and 1663 from the Otuk Formation contain high concentrations of iron at 29 and 31 percent respectively. The association of anomalous concentrations of gold with the upper Hunt Fork Shale and the Ear Peak member of the Kanayut Conglomerate was observed in stream-sediment samples in (1) the upper part of Kuhsuhman Creek and (2) a zone in the upper part of Itikmalakpak Creek (Plate 1). The maximum value of gold detected was 0.11 ppm. The gold anomalies do not appear to associated with typical epigenetic or exhalative gold mineralization suites, (Rose and others, 1987, p. 106). Values for arsenic, silver, antimony, selenium, and uranium typically associated with epigenetic and exhalative gold mineralization are below the median values at the Kuhsuhman

Creek and Itikmalakpak Creek locations. Although many of these elements can be found at low concentrations in paleo-gold placer deposits, silver is usually present above mean values in gold placer deposits (Boyle, 1987). The lack of anomalous silver values in these locations indicates a low potential for gold deposits.

Anomalous values of zinc greater than the 98^{th} percentile appear to be closely related to outcrops of Kayak Shale in the headwaters of Cobblestone Creek and Itkimalakpak Creek.

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Table 1. Lower limits of detection and analytical methods used for rock and stream-sediment samples collected from the Cobblestone Creek study area, Chandler Lake quadrangle, Alaska

[INAA, instrumental neutron activation analysis; AAA, flame atomic absorption analysis using HNO_3-HCl digestion; CVAA, cold vapor atomic absorption analysis using HNO_3-HCl digestion; all concentrations in parts per million; -- no values determined in samples submitted for that year]

Element		Analytical Method	Lower limit of Detection[1] 1985	1986
Antimony	(Sb)	INAA	0.2	0.2
Arsenic	(As)	INAA	1	1
Barium	(Ba)	INAA	100	100
Cadmium	(Cd)	INAA	5	10
Cesium	(Cs)	INAA	--	1
Chromium	(Cr)	INAA	50	50
Cobalt	(Co)	INAA	10	10
Copper	(Cu)	AAA	1	1
Europium	(Eu)	INAA	--	2
Gold	(Au)	INAA	.005	.005
Hafnium	(Hf)	INAA	2	2
Iridium	(Ir)	INAA	.1	.1
Iron	(Fe)	INAA	5000	5000
Lanthanum	(La)	INAA	5	5
Lead	(Pb)	AAA	2	2
Manganese	(Mn)	AAA	--	1
Mercury	(Hg)	CVAA	--	.005
Molybdenum	(Mo)	INAA	2	2
Nickel	(Ni)	INAA	50	50
Rubidium	(Rb)	INAA	--	10
Scandium	(Sc)	INAA	--	.5
Selenium	(Se)	INAA	10	10
Silver	(Ag)	INAA	5	5
Sodium	(Na)	INAA	500	--
Tantalum	(Ta)	INAA	1	1
Terbium	(Tb)	INAA	--	1
Thorium	(Th)	INAA	.5	.5
Tungsten	(W)	INAA	2	2
Uranium	(U)	INAA	.5	.5
Ytterbium	(Yb)	INAA	--	5
Zinc	(Zn)	INAA	200	--
Zinc	(Zn)	AAA	5	5

[1]Determinations by Bondar-Clegg & Co., Ltd., Vancouver, Canada

Table 2. Analytical results from rock samples collected in 1985 from the Cobblestone Creek study area, Chandler Lake quadrangle, Alaska

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

Sample	Latitude	Longitude	Au	Sb	As	Ba	Cd	Cr	Co	Cu	Hf	Fe
Hunt Fork Shale												
1732	68 19 45	150 31 20	.005	1	16	1,100	<5	150	20	47	4	60,000
1732B	68 19 45	150 31 20	<.005	.5	10	410	<5	<50	<10	9	<2	410,000
1733	68 19 28	150 31 10	<.005	.4	4	750	<5	<50	<10	11	<2	50,000
Kanayut Conglomerate												
1728	68 19 11	150 29 36	.008	1.3	22	780	<5	160	25	46	4	62,000
1728B	68 19 11	150 29 36	<.005	.9	9	460	<5	130	11	9	3	38,000
1729	68 19 26	150 29 37	<.005	1.2	16	1,400	<5	120	21	48	5	58,000
1729B	68 19 26	150 29 37	<.005	.6	5	500	<5	230	10	13	7	31,000
1730	68 19 34	150 29 54	.006	1	17	1,700	<5	200	21	53	5	55,000
1730B	68 19 34	150 29 54	<.005	1.8	39	250	<5	180	<10	13	3	42,000
Lisburne Group												
1736	68 20 2	150 30 7	<.005	1.1	3	460	<5	160	19	14	12	66,000
1737	68 20 10	150 30 29	<.005	2.4	89	370	<5	340	<10	51	6	21,000
1746	68 23 35	150 26 41	<.005	.5	2	5,400	<5	61	<10	14	<2	330,000
1747	68 23 34	150 26 41	<.005	.7	4	520	<5	140	<10	10	12	22,000
1748	68 23 34	150 26 41	<.005	.7	4	280	<5	120	<10	13	9	29,000
1749	68 23 34	150 26 42	<.005	.7	<1	>30,000	<5	<50	<10	4	<2	120,000
1761	68 24 4	150 16 46	<.005	.9	64	2,200	8	<50	<10	7	<2	200,000
Kayak Shale												
1733B	68 19 28	150 31 18	.007	1.1	15	1,000	<5	150	23	47	4	63,000
1733C	68 19 28	150 31 18	<.005	.7	7	550	<5	210	11	20	10	34,000
1734	68 19 28	150 30 25	<.005	1.8	18	1,400	<5	260	12	24	3	91,000
Siksikpuk Formation												
1511	68 23 31	150 23 41	.008	.4	5	>14,000	<5	<50	<10	13	<2	31,000
1512	68 23 36	150 23 40	<.011	.3	<6	>30,000	<12	78	<10	5	3	14,000
1513	68 23 38	150 23 29	<.005	.9	22	9,400	<5	150	<10	14	<2	350,000
1517	68 23 19	150 23 35	.005	.4	4	3,400	<5	<50	<10	9	<2	9,000
1518	68 23 43	150 23 47	<.005	1.1	18	400	<6	160	<10	17	<2	410,000
1519	68 23 54	150 23 42	.007	.7	9	1,900	<5	<50	<10	10	<2	12,000
1520	68 24 32	150 24 43	.006	.7	4	6,900	<5	<50	<10	8	2	310,000
1521	68 23 19	150 26 9	<.01	.3	<5	>30,000	<11	<50	<10	13	4	22,000
1521B	68 23 19	150 26 9	.007	1.1	9	2,500	<5	110	<10	48	<2	19,000
1750	68 23 34	150 26 42	.018	1.6	12	1,200	<5	120	<10	36	6	38,000
1764	68 24 44	150 12 16	<.005	.6	9	320	<5	<50	<10	12	2	14,000

Table 2. Analytical results from rock samples collected in 1985 from the Cobblestone Creek study area, Chandler Lake quadrangle, Alaska--Continued

Sample	La	Pb	Mo	Ni	Na	Th	W	U	Utme	Utmn
Hunt Fork Shale										
1732	21	10	<2	<50	19,000	4.7	<2	2.6	602,988	7,581,443
1732B	22	8	<2	<50	800	3.7	<2	1.5	602,988	7,581,443
1733	12	5	4	<50	4,600	2.1	2	3.6	602,131	7,580,922
Kanayut Conglomerate										
1728	18	12	<2	57	17,000	4.1	<2	2.3	603,322	7,580,427
1728B	25	8	<2	<50	5,400	6.8	<2	2.3	603,322	7,580,427
1729	31	8	<2	55	17,000	5.9	<2	2.5	603,293	7,580,907
1729B	25	3	<2	<50	4,800	8	<2	2.7	603,293	7,580,907
1730	22	8	<2	54	20,000	4.7	<2	2.3	603,087	7,581,138
1730B	29	10	<2	<50	4,800	8.1	<2	2.9	603,087	7,581,138
Lisburne Group										
1736	42	<2	<2	55	700	14	<2	4.9	602,908	7,582,008
1737	29	5	<2	<50	600	10	3	4.5	602,638	7,582,492
1746	18	7	<2	<50	1,500	4.4	<2	2.6	604,984	7,580,689
1747	36	9	<2	<50	16,000	10	<2	2.9	604,985	7,580,664
1748	36	14	<2	<50	17,000	11	<2	2.8	604,985	7,580,664
1749	7	6	<4	<50	800	1	<2	44	604,974	7,580,657
1751	12	46	<2	<50	1,000	1.2	<2	<.5	611,732	7,580,864
Kayak Shale										
1733B	26	10	<2	52	20,000	4.5	<2	2.3	602,131	7,580,922
1733C	44	9	<2	<50	1,100	13	<2	4.2	602,131	7,580,922
1734	21	32	<2	<50	500	4.8	<2	2.2	602,738	7,580,918
Siksikpuk Formation										
1511	13	5	4	<50	2,300	2.1	<2	5.3	607,040	7,588,642
1512	15	3	<7	<50	<1,600	<.6	<12	<1.2	606,952	7,588,800
1513	8	2	36	<50	1,300	2	<2	2.3	607,178	7,588,872
1517	9	4	<2	<50	2,000	1.8	<2	3.1	607,130	7,588,269
1518	7	6	16	<50	1,100	1.9	<2	1.2	606,959	7,589,001
1519	12	6	12	<50	2,000	2.5	<2	7.1	606,999	7,589,372
1520	11	6	<2	<50	900	2.8	<2	1	606,257	7,590,505
1521	8	9	<6	<50	<1,200	1.6	19	<1.1	605,377	7,588,203
1521B	24	7	11	54	5,000	3.6	<2	9.2	605,377	7,588,203
1750	33	15	<2	<50	2,100	12	3	4.9	604,974	7,580,660
1764	12	7	12	<50	3,700	2.8	<2	6.5	614,755	7,591,253

Table 3. Analytical results from stream-sediment samples collected in 1985 from the Cobblestone Creek study area, Chandler Lake quadrangle, Alaska

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

Sample	Latitude	Longitude	Au	Sb	As	Ba	Cd	Cs	Cr	Co	Cu	Hf	Fe	La	Pb	Mo
3601	68 33 35	150 7 47	<.005	.9	11	1,200	5	7	140	14	30	4	41,000	25	14	<2
3602	68 33 45	150 7 53	<.005	.8	10	1,300	5	5	160	16	31	5	42,000	23	13	<2
3603	68 33 52	150 8 3	.005	.7	12	1,000	5	4	170	11	23	4	38,000	19	8	<2
3604	68 34 5	150 6 22	<.005	.8	11	1,100	5	4	200	14	26	4	43,000	23	11	<2
3605	68 34 13	150 5 19	<.005	.6	11	1,000	5	3	170	18	19	5	41,000	21	12	<2
3606	68 34 12	150 4 54	<.005	.8	16	860	5	4	170	17	19	5	50,000	24	14	<2
3607	68 33 48	150 4 57	<.005	.7	19	760	5	3	150	17	16	5	46,000	21	9	<2
3608	68 33 18	150 5 40	<.005	.8	12	530	5	4	100	18	15	5	47,000	26	14	<2
3721	68 18 41	151 5 13	.024	.8	8	170	<5	--	<50	<10	14	<2	18,000	23	13	<2
3722	68 19 11	151 6 38	.024	.6	4	<100	<5	--	<50	<10	9	<2	10,000	27	7	<2
3723	68 20 21	151 8 30	.045	.5	5	140	<5	--	<50	<10	7	<2	12,000	15	6	<2
3724	68 20 1	151 12 16	.005	.4	6	190	<5	--	<50	<10	7	<2	14,000	17	6	<2
3725	68 19 55	161 11 55	<.005	.6	4	140	<5	--	<50	<10	7	2	14,000	19	5	<2
3726	68 18 51	151 11 19	.01	.5	14	260	<5	--	76	13	12	3	35,000	31	11	<2
3727	68 20 19	151 14 56	.005	.9	11	4,300	<5	--	120	<10	30	4	42,000	36	13	<2
3729	68 18 6	151 15 56	<.005	1	8	460	<5	--	71	11	21	3	29,000	24	9	<2
3731	68 17 2	151 14 55	<.005	.7	9	630	<5	--	56	<10	15	2	22,000	19	7	<2
3732	68 16 4	151 13 56	.013	.7	5	2,900	<5	--	53	<10	13	<2	14,000	18	8	<2
3741	68 11 8	151 15 38	.007	.5	2	<100	<5	--	<50	<10	8	<2	<5,000	10	<2	<2
3835	68 30 52	150 21 7	<.005	1.3	33	1,200	<10	6	140	23	55	5	56,000	28	9	5
3871	68 25 5	150 19 33	<.005	2.4	12	360	<10	4	86	16	30	5	57,000	30	12	<2
6121	68 24 2	150 12 31	.007	.6	6	370	<5	--	240	<10	10	10	32,000	26	8	<2
6161	68 24 8	150 22 53	.008	4	30	3,500	<5	--	140	21	72	6	56,000	44	20	12
6162	68 24 16	150 22 44	.01	2.3	40	2,600	<5	--	110	50	136	7	66,000	52	36	<2
6163	68 24 25	150 22 10	<.005	1.6	16	4,200	<5	--	160	14	49	6	50,000	42	18	<2
6164	68 24 35	150 22 2	.008	2.2	37	3,300	<5	--	100	46	136	5	71,000	49	36	<2
6165	68 24 48	150 22 44	.016	1.3	19	1,700	<5	--	140	23	57	5	57,000	27	17	<2
6166	68 25 25	150 23 44	<.005	1.7	19	9,300	<5	--	110	14	43	4	45,000	35	12	4
6169	68 23 47	150 12 10	<.005	.4	6	150	<5	--	<50	<10	8	<2	15,000	10	5	<2
6170	68 24 2	150 11 54	<.005	.4	2	<100	<5	--	<50	<10	4	<2	<5,000	9	<2	<2
6172	68 24 23	150 12 15	<.005	1.3	13	530	<5	--	76	<10	16	4	25,000	30	5	<2
6173	68 24 13	150 12 46	<.005	.3	3	<100	<5	--	<50	<10	5	<2	8,000	13	3	<2
6183	68 24 33	150 18 33	.014	1.2	7	1,300	<5	--	94	14	25	6	32,000	35	16	<2
6184	68 26 54	150 17 54	.017	4.5	33	2,300	<5	--	170	18	71	5	43,000	45	18	26
6185	68 26 41	150 15 32	.014	1.2	8	1,600	<5	--	150	<10	36	5	44,000	41	17	<2
6186	68 26 45	150 14 26	.073	1.2	9	1,700	<5	--	120	12	32	5	47,000	34	16	<2
6187	68 26 47	150 13 45	.056	.9	9	640	<5	--	81	<10	32	3	34,000	28	13	<2
6189	68 26 58	150 9 1	.032	.9	14	1,400	<5	--	99	24	38	5	56,000	31	15	<2
6190	68 27 11	150 7 29	.01	.9	17	1,000	<5	--	120	21	39	4	58,000	27	16	<2
6191	68 28 26	150 5 49	.01	1	10	770	<5	--	160	14	22	7	48,000	27	15	<2
6192	68 31 22	150 13 57	.032	1	12	690	<5	--	87	27	31	2	68,000	29	18	<2
6193	68 32 37	150 12 15	.02	1.4	27	4,000	<5	--	180	28	64	6	59,000	45	21	<2
6194	68 32 21	150 10 43	.080	1.2	20	1,400	6	--	150	33	38	5	60,000	31	15	<2
6195	68 34 11	150 12 0	.011	1	23	1,100	<5	--	150	19	32	4	57,000	28	14	<2
6196	68 31 13	150 25 32	.024	1.6	49	910	<5	--	140	30	46	6	76,000	39	21	<2
6197	68 31 53	150 24 54	.016	1.2	30	840	<5	--	180	33	27	5	78,000	31	15	<2
6198	68 31 32	150 28 46	.017	1.1	17	830	<5	--	160	27	49	5	71,000	41	16	<2
6199	68 32 8	150 28 1	.008	.9	17	820	<5	--	170	21	40	5	66,000	36	19	<2
6200	68 30 44	150 20 24	.015	2	55	810	11	--	140	41	46	5	74,000	35	19	<2
6201	68 11 41	151 15 34	.017	.5	3	<100	<5	--	<50	<10	8	<2	5,000	13	3	<2
6202	68 12 24	151 14 19	.04	1.5	9	400	<5	--	81	15	26	5	34,000	33	18	<2
6203	68 13 3	151 14 17	.01	1.2	6	390	<5	--	78	11	22	5	32,000	30	6	<2
6204	68 13 20	151 14 16	.079	2.5	24	370	<5	--	110	25	59	5	59,000	32	8	<2
6205	68 13 11	151 15 40	.045	2.2	15	440	<5	--	100	29	39	7	35,000	29	11	<2
6206	68 12 40	151 15 43	.05	2.1	16	800	<5	--	90	21	36	8	48,000	32	10	<2
6207	68 12 15	151 16 13	.034	1.3	14	560	<5	--	[illegible]	19	30	6	43,000	41	13	<2
6208	68 11 55	151 17 53	<.005	.3	8	150	6	--	<50	<10	10	<2	20,000	18	8	<2
6399	68 13 53	151 14 40	.009	2.4	23	350	<5	--	110	25	51	5	56,000	34	7	<2
6400	68 13 49	151 16 17	.01	2	14	380	<5	--	90	25	40	6	38,000	28	13	<2
6411	68 30 42	151 3 12	.02	.7	5	370	<5	--	60	17	5	4	32,000	16	4	<2

Table 3. Analytical results from stream-sediment samples collected in 1985 from the Cobblestone Creek study area, Chandler Lake quadrangle, Alaska--Continued

Sample	Ni	Pb	Sc	Se	Ag	Na	Th	W	U	Zn	Zn-INAA	UTME	UTMN
3601	<50	89	13	<10	<5	--	7.5	<2	2.5	110	--	617,060	7,607,831
3602	53	81	14	<10	<5	--	6.6	<2	2.4	101	--	616,975	7,608,129
3603	<50	61	12	<10	<5	--	5.1	<2	1.9	102	--	616,848	7,608,337
3604	<50	64	13	<10	<5	--	5.7	<2	2.1	104	--	617,976	7,608,777
3605	<50	50	11	<10	<5	--	5.4	<2	2	94	--	618,682	7,609,074
3606	<50	64	12	<10	<5	--	7	<2	2.4	95	--	616,955	7,609,069
3607	<50	50	10	<10	<5	--	5.5	<2	2	101	--	616,964	7,608,318
3608	<50	91	12	<10	<5	--	7.4	<2	2.5	112	--	616,522	7,607,372
3721	<50	--	--	<10	<5	1,200	4.9	<2	3.6	--	<200	578,897	7,570,631
3722	<50	--	--	<10	<5	900	2.8	<2	3.6	--	<200	577,896	7,579,512
3723	<50	--	--	<10	<5	1,100	2.9	<2	2.3	--	<200	576,544	7,581,645
3724	<50	--	--	<10	<5	1,200	2.8	<2	2.3	--	<200	573,972	7,580,954
3725	<50	--	--	<10	<5	900	2.9	<2	2.7	--	<200	574,224	7,580,789
3726	<50	--	--	<10	<5	1,800	7.5	<2	2.9	--	<200	574,696	7,578,820
3727	61	--	--	<10	<5	1,400	8.1	<2	4.5	--	240	572,125	7,581,446
3729	<50	--	--	<10	<5	1,400	6.3	<2	3.2	--	<200	571,562	7,577,337
3731	<50	--	--	<10	<5	1,600	4.4	<2	2.3	--	<200	572,313	7,575,347
3732	<50	--	--	<10	<5	1,600	3	<2	2.9	--	<200	573,041	7,573,585
3741	<50	--	--	<10	<5	600	.8	<2	3.6	--	<200	572,136	7,564,385
3835	59	88	20	<10	<5	--	7.2	<2	2.9	150	<200	608,213	7,602,369
3871	<50	61	10	<10	<5	--	8.6	<2	3.4	82	<200	609,746	7,591,664
6121	<50	--	--	<10	<5	15,000	6.4	<2	2.5	--	<200	614,648	7,589,926
6161	66	--	--	<10	<5	10,000	12	<2	8	--	260	607,542	7,589,805
6162	120	--	--	<10	<5	11,000	13	2	4.5	--	240	607,638	7,590,056
6163	60	--	--	<10	<5	5,800	12	<2	5.7	--	<200	608,016	7,590,350
6164	75	--	--	<10	<5	11,000	13	<2	4.3	--	<200	608,089	7,590,674
6165	<50	--	--	<10	<5	17,000	6.4	<2	2.8	--	220	607,599	7,591,054
6166	<50	--	--	<10	<5	7,800	9	<2	5.3	--	<200	606,857	7,592,179
6169	<50	--	--	<10	<5	1,500	3.7	<2	3.2	--	<200	614,910	7,589,475
6170	<50	--	--	<10	<5	1,400	.8	<2	3.7	--	<200	615,067	7,589,964
6172	<50	--	--	<10	<5	1,800	7	<2	8	--	<200	614,798	7,590,596
6173	<50	--	--	<10	<5	1,700	2.1	<2	3.3	--	<200	614,453	7,590,288
6183	<50	--	--	<10	<5	2,600	10	<2	4.2	--	<200	610,477	7,590,705
6184	78	--	--	13	<5	8,900	10	<2	10	--	390	610,726	7,596,104
6185	<50	--	--	<10	<5	3,500	11	2	5.1	--	<200	612,363	7,594,777
6186	79	--	--	<10	<5	5,000	8.9	<2	4.4	--	<200	613,107	7,594,931
6187	<50	--	--	<10	<5	5,400	5.9	<2	3.7	--	210	613,574	7,595,082
6188	<50	--	--	<10	<5	14,000	8	<2	3.4	--	<200	616,793	7,595,508
6190	<50	--	--	<10	<5	13,000	6.9	<2	2.7	--	<200	617,813	7,595,946
6191	<50	--	--	<10	<5	12,000	7.1	<2	2.8	--	<200	618,842	7,598,333
6192	55	--	--	<10	<5	4,100	8.3	3	3.1	--	370	613,849	7,603,499
6193	89	--	--	<10	<5	11,000	13	<2	3.3	--	200	614,101	7,605,871
6194	79	--	--	<10	<5	14,000	8	<2	3.1	--	<200	615,173	7,605,449
6195	<50	--	--	<10	<5	15,000	6.8	<2	2.6	--	<200	614,144	7,608,793
6196	79	--	--	<10	<5	14,000	11	<2	3.7	--	<200	605,101	7,602,080
6197	<50	--	--	<10	<5	13,000	8.2	<2	2.7	--	<200	605,555	7,604,155
6198	57	--	--	<10	<5	14,000	11	<2	3.6	--	<200	602,967	7,603,395
6199	66	--	--	<10	<5	13,000	10	<2	3.3	--	<200	603,437	7,604,273
6200	100	--	--	<10	<5	15,000	10	<2	3.2	--	<200	603,269	7,601,913
6201	<50	--	--	<10	<5	500	1.4	<2	3.6	--	<200	572,149	7,565,418
6202	<50	--	--	<10	<5	800	10	3	3.4	--	<200	572,976	7,566,753
6203	<50	--	--	<10	<5	1,600	8.3	2	3.6	--	<200	572,956	7,567,982
6204	54	--	--	<10	<5	1,500	10	<2	3.7	--	<200	572,954	7,569,514
6205	58	--	--	<10	<5	1,700	10	<2	3.9	--	400	571,995	7,570,209
6206	63	--	--	<10	<5	1,100	12	<2	4.3	--	<200	571,989	7,567,235
6207	<50	--	--	<10	<5	1,800	14	<2	3.7	--	<200	571,665	7,566,437
6208	<50	--	--	<10	<5	1,300	4.1	<2	1.9	--	<200	570,540	7,565,798
6399	54	--	--	<10	<5	1,300	10	<2	3.6	--	<200	572,649	7,569,618
6400	<50	--	--	<10	<5	1,500	8.3	2	3.5	--	370	571,536	7,569,366
6411	<50	--	--	<10	<5	2,500	3.8	<2	1.7	--	<200	570,572	7,600,985

Table 3. Analytical results from stream-sediment samples collected in 1985 from the Cobblestone Creek study area, Chandler Lake quadrangle, Alaska

Sample	Latitude	Longitude	Au	Sb	As	Ba	Cd	Cs	Cr	Co	Cu	Hf	Fe	La	Pb	Mo
6412	68 30 36	151 1 21	.039	.6	12	5,400	6	--	68	59	32	3	88,000	17	5	<2
6413	68 30 40	151 0 7	.037	.7	9	1,100	<5	--	200	25	30	6	60,000	23	7	<2
6414	68 31 6	150 59 32	.007	.6	8	830	<5	--	140	18	22	4	50,000	22	8	<2
6415	68 31 47	150 59 13	.006	.8	17	830	<5	--	130	24	34	5	62,000	30	12	<2
6417	68 19 43	150 23 43	.005	1.2	13	460	5	--	93	19	38	8	43,000	42	15	<2
6418	68 19 38	150 24 19	.022	1.2	13	490	6	--	110	20	38	9	51,000	46	14	<2
6419	68 19 32	150 25 15	.034	1.2	13	440	<5	--	120	19	39	9	47,000	40	47	<2
6420	68 18 47	150 25 35	.024	.9	9	380	<5	--	95	16	25	8	45,000	40	9	<2
6421	68 18 39	150 26 1	.015	1.2	11	370	<5	--	93	17	26	6	41,000	38	11	<2
6422	68 18 56	150 26 2	.015	1.1	11	420	<5	--	130	20	32	8	48,000	43	16	<2
6423	68 19 38	150 27 40	.014	1.1	11	400	<5	--	94	17	26	8	43,000	40	9	<2
6424	68 19 45	150 28 5	.015	1.1	13	370	<5	--	120	21	35	7	47,000	45	14	<2
6425	68 19 50	150 28 25	.016	1.2	13	490	<5	--	120	18	31	7	48,000	44	13	<2
6426	68 20 6	150 29 9	.007	1.6	11	410	<5	--	94	16	29	6	40,000	33	8	<2
6427	68 19 11	150 29 56	.011	1.5	11	480	<5	--	120	16	29	8	42,000	40	9	<2
6428	68 19 24	150 29 54	.016	1.3	11	440	<5	--	93	15	27	7	41,000	39	11	<2
6429	68 19 39	150 29 53	.015	2	19	820	<5	--	140	25	44	7	60,000	49	13	<2
6430	68 19 50	150 30 22	.093	1.6	12	480	<5	--	110	17	30	7	39,000	34	8	<2
6431	68 21 11	150 28 18	.11	1.2	12	500	<5	--	100	17	37	7	45,000	42	13	<2
6432	68 20 23	150 30 4	.04	1.5	12	470	<5	--	84	16	31	7	43,000	37	9	<2
6438	68 37 52	151 18 0	.007	.6	6	340	<5	--	75	<10	6	7	32,000	21	6	<2
6439	68 38 12	151 18 17	.012	.6	13	480	<5	--	80	14	9	5	66,000	25	6	<2
6440	68 38 12	151 14 15	.006	.7	7	500	<5	--	81	19	10	5	38,000	28	7	<2
6441	68 37 52	151 12 46	<.005	.5	4	270	<5	--	79	<10	4	5	12,000	18	2	<2
6442	68 36 1	151 10 15	.006	.6	6	390	<5	--	95	12	9	5	32,000	20	6	<2
6443	68 36 31	151 10 7	.014	.6	7	480	<5	--	70	19	10	4	46,000	18	5	<2
6444	68 33 5	151 3 54	.015	.5	11	810	<5	--	69	32	15	4	55,000	20	7	<2
6445	68 31 27	151 9 9	.015	.6	8	360	<5	--	93	<10	15	5	35,000	26	10	<2
6446	68 31 51	151 9 18	.014	.5	8	1,200	<5	--	63	55	9	4	76,000	18	4	<2
6447	68 32 20	151 6 37	.013	.5	8	610	<5	--	63	21	15	3	42,000	17	8	<2
6449	68 33 20	151 3 20	.014	.5	9	580	<5	--	90	20	17	3	40,000	21	7	<2
6450	68 33 31	151 4 8	.006	.5	4	340	<5	--	98	<10	4	7	20,000	17	2	<2
6451	68 34 42	150 58 18	.005	.7	9	610	<5	--	110	21	17	5	35,000	22	7	<2
6457	68 20 34	150 30 29	.02	1.9	12	1,100	<5	--	120	14	36	5	42,000	36	9	<2
6458	68 24 37	150 26 6	.02	2.9	30	2,200	<5	--	150	14	48	6	48,000	40	14	16
6459	68 24 49	150 26 25	.009	2	19	4,200	<5	--	130	14	40	5	44,000	35	15	8
6460	68 24 54	150 25 59	.027	1.8	13	770	<5	--	120	21	45	6	56,000	48	19	<2
6461	68 25 3	150 25 51	.009	2.6	26	3,200	<5	--	140	16	49	6	45,000	39	14	13
6462	68 25 11	150 25 42	.047	2.3	24	6,100	<5	--	130	19	53	6	47,000	40	15	11
6474	68 25 14	150 26 20	.015	1.5	18	4,400	<5	--	110	12	42	5	43,000	35	11	7
6475	68 25 47	150 24 29	.015	1.5	19	17,500	<5	--	120	14	38	4	45,000	31	10	6
6476	68 25 47	150 25 17	.015	1.2	21	1,800	<5	--	160	21	64	5	55,000	28	13	<2
6477	68 29 55	150 14 11	.023	.4	6	180	<5	--	<50	<10	8	<2	16,000	17	5	<2
6551	68 22 23	150 23 14	.005	.9	7	1,900	<5	--	110	11	32	3	38,000	29	10	<2
6552	68 22 46	150 23 8	<.005	.8	6	2,200	<5	--	110	<10	26	2	36,000	28	9	<2
6553	68 22 55	150 23 20	<.005	.8	9	210	6	--	69	<10	10	<2	20,000	24	8	5
6554	68 23 4	150 23 13	<.005	.7	5	140	<5	--	56	<10	10	<2	12,000	18	6	4
6555	68 23 11	150 23 14	<.005	.4	2	<100	<5	--	<50	<10	6	<2	<5,000	10	3	<2
6556	68 23 24	150 23 34	.005	.6	4	980	<5	--	65	<10	13	<2	18,000	17	7	<2
6557	68 20 38	150 27 11	<.005	1.3	16	540	<5	--	120	24	42	7	59,000	54	19	<2
6558	68 19 54	150 26 28	.009	1.2	16	600	<5	--	130	22	36	8	60,000	59	19	<2
6559	68 18 52	150 25 12	.007	1.3	13	380	<5	--	99	17	33	7	47,000	43	19	<2
6560	68 23 31	150 23 27	.012	2.2	20	4,700	<5	--	140	13	42	5	46,000	38	15	12
6561	68 23 40	150 23 19	.012	1.7	22	1,600	<5	--	110	14	39	5	44,000	37	12	15
6562	68 23 44	150 23 13	.007	4.2	31	1,600	<5	--	180	17	91	5	48,000	49	22	16
6563	68 23 54	150 23 23	.007	1.8	18	1,700	<5	--	80	<10	30	4	30,000	29	10	11
6564	68 23 10	150 26 2	<.005	.4	6	210	<5	--	<50	<10	8	<2	16,000	18	7	<2
6565	68 23 22	150 25 55	.007	1.4	20	1,500	<5	--	130	12	44	6	43,000	39	11	13
6566	68 23 37	150 25 47	.009	2.2	28	1,200	8	--	110	17	43	7	43,000	43	13	18
6567	68 23 11	150 25 34	.006	1.6	20	970	<5	--	100	12	29	5	41,000	35	12	9

Table 3. Analytical results from stream-sediment samples collected in 1985 from the Cobblestone Creek study area, Chandler Lake quadrangle, Alaska

Sample	Ni	Nb	Sc	Sn	Ag	Na	Th	W	U	Zn	Zn-INAA	UTME	UTMN
6412	69	--	--	<10	<5	8,900	2.8	2	1.9	--	260	580,842	7,600,855
6413	51	--	--	<10	<5	17,000	4.9	<2	2.4	--	<200	581,672	7,601,007
6414	<50	--	--	<10	<5	16,000	5.5	<2	2.3	--	<200	582,039	7,601,022
6415	<50	--	--	<10	<5	14,000	8.6	<2	3.1	--	<200	582,225	7,603,078
6417	<50	--	--	<10	<5	5,500	16	3	4.5	--	<200	607,324	7,581,563
6418	53	--	--	<10	<5	8,400	16	<2	4.5	--	<200	606,920	7,581,401
6419	53	--	--	<10	<5	8,000	16	<2	4.2	--	<200	606,287	7,581,192
6420	<50	--	--	<10	<5	6,000	12	<2	3.5	--	<200	606,117	7,579,795
6421	<50	--	--	<10	<5	3,300	12	<2	3.8	--	<200	605,823	7,579,542
6422	<50	--	--	<10	<5	4,000	13	3	4.2	--	<200	605,789	7,580,053
6423	<50	--	--	<10	<5	4,200	13	<2	4.1	--	<200	604,516	7,581,304
6424	<50	--	--	<10	<5	5,300	14	3	4.2	--	<200	604,320	7,581,518
6425	<50	--	--	<10	<5	2,000	13	<2	4.2	--	<200	604,001	7,581,685
6426	<50	--	--	<10	<5	2,200	10	<2	3.6	--	<200	603,562	7,582,141
6427	<50	--	--	<10	<5	3,000	12	<2	4.2	--	<200	603,899	7,580,425
6428	<50	--	--	<10	<5	3,400	12	<2	4	--	<200	603,102	7,580,822
6429	87	--	--	<10	<5	2,000	16	<2	4.9	--	<200	603,094	7,581,293
6430	<50	--	--	<10	<5	2,400	11	<2	4	--	<200	602,740	7,581,610
6431	<50	--	--	<10	<5	5,100	13	<2	4	--	<200	604,060	7,584,181
6432	<50	--	--	<10	<5	1,600	12	<2	4.3	--	<200	602,908	7,582,653
6438	<50	--	--	<10	<5	3,300	5.9	<2	2.2	--	<200	569,124	7,614,019
6439	<50	--	--	<10	<5	4,100	7.1	<2	2.5	--	<200	568,920	7,614,617
6440	<50	--	--	<10	<5	2,600	7.1	<2	3.1	--	210	571,650	7,614,699
6441	<50	--	--	<10	<5	2,200	4.1	<2	1.7	--	<200	572,667	7,614,113
6442	<50	--	--	<10	<5	2,700	5.1	<2	2.2	--	<200	574,481	7,610,728
6443	<50	--	--	<10	<5	2,500	4.2	<2	2	--	240	574,543	7,611,644
6444	<50	--	--	<10	<5	5,600	5.1	<2	1.9	--	280	578,960	7,605,414
6445	<50	--	--	<10	<5	3,000	6.5	<2	3.0	--	<200	575,481	7,602,266
6446	120	--	--	<10	<5	2,100	3.9	<2	2.2	--	700	575,358	7,602,987
6447	53	--	--	<10	<5	2,100	4.2	<2	2.8	--	490	577,158	7,603,956
6449	<50	--	--	<10	<5	6,100	5.5	<2	2.2	--	270	579,325	7,605,865
6450	<50	--	--	<10	<5	2,600	3.8	<2	1.8	--	<200	578,769	7,606,203
6451	<50	--	--	<10	<5	12,000	5.8	<2	2.1	--	<200	582,756	7,608,541
6457	51	--	--	<10	<5	2,200	10	<2	4.9	--	<200	602,615	7,582,984
6458	62	--	--	<10	<5	8,500	11	2	8.3	--	200	605,310	7,590,625
6459	<50	--	--	<10	<5	6,000	9.1	<2	5.8	--	220	605,072	7,590,992
6460	55	--	--	<10	<5	7,600	15	3	4.5	--	<200	605,365	7,591,150
6461	61	--	--	<10	<5	8,300	10	3	7.5	--	220	605,439	7,591,416
6462	59	--	--	<10	<5	8,900	11	<2	6.8	--	230	605,531	7,591,680
6474	55	--	--	<10	<5	6,900	10	<2	5.7	--	<200	605,097	7,591,786
6475	<50	--	--	<10	<5	6,700	8.3	<2	5.3	--	<200	606,316	7,592,838
6476	60	--	--	<10	<5	17,000	6.7	<2	2.8	--	<200	605,774	7,592,610
6477	<50	--	--	<10	<5	1,300	3.7	<2	2.7	--	<200	613,015	7,600,828
6551	54	--	--	<10	<5	2,700	8	<2	3.7	--	<200	607,439	7,586,546
6552	<50	--	--	<10	<5	2,400	7	<2	3.7	--	<200	607,483	7,587,277
6553	<50	--	--	<10	<5	1,400	4.4	<2	4.5	--	240	607,328	7,587,544
6554	<50	--	--	<10	<5	1,100	3	<2	5.4	--	270	607,405	7,587,824
6555	<50	--	--	<10	<5	900	1.1	<2	2.9	--	<200	607,380	7,588,032
6556	<50	--	--	<10	<5	1,700	4	<2	3.4	--	<200	607,140	7,588,424
6557	<50	--	--	<10	<5	5,600	17	2	4.3	--	<200	604,860	7,583,182
6558	62	--	--	<10	<5	5,300	18	3	5.1	--	<200	605,418	7,581,837
6559	<50	--	--	<10	<5	5,400	14	3	3.9	--	<200	606,372	7,579,978
6560	<50	--	--	<10	<5	6,300	10	<2	7.2	--	<200	607,205	7,580,642
6561	<50	--	--	<10	<5	7,500	11	<2	8	--	<200	607,286	7,580,928
6562	96	--	--	20	<5	11,000	11	<2	11	--	500	607,353	7,589,059
6563	<50	--	--	<10	<5	5,200	8.2	<2	6.2	--	<200	607,217	7,589,368
6564	<50	--	--	<10	<5	1,600	4.7	<2	2.2	--	<200	605,471	7,587,918
6565	<50	--	--	<10	<5	7,700	11	<2	9.4	--	<200	605,520	7,588,316
6566	60	--	--	<10	<5	8,700	12	<2	9	--	<200	605,599	7,588,770
6567	<50	--	--	<10	<5	6,000	9.2	<2	6.2	--	210	605,787	7,587,970

Table 3. Analytical results from stream-sediment samples collected in 1985 from the Cobblestone Creek study area, Chandler Lake quadrangle, Alaska

Sample	Latitude	Longitude	Au	Sb	As	Ba	Cd	Cs	Cr	Co	Cu	Hf	Fe	La	Pb	Mo
6568	68 24 45	150 18 58	.007	1	8	930	<5	--	90	11	26	5	31,000	31	18	<2
6569	68 24 55	150 19 11	.009	2.1	26	3,100	<5	--	110	34	131	6	58,000	47	26	6
6570	68 25 7	150 18 48	.012	2.4	36	3,800	<5	--	120	37	114	7	65,000	44	23	6
6571	68 25 6	150 19 32	.012	1.6	21	1,500	<5	--	130	22	48	4	52,000	35	19	<2
6572	68 25 29	150 19 36	.006	1.2	27	1,700	<5	--	130	23	61	6	68,000	30	18	<2
6573	68 25 42	150 18 36	<.005	1	9	640	<5	--	87	14	29	7	37,000	36	12	<2
6574	68 26 30	150 17 15	.009	1.1	24	1,700	<5	--	110	26	50	5	65,000	31	12	<2
6575	68 26 31	150 17 48	.008	1.2	26	1,700	<5	--	120	24	58	6	67,000	32	15	<2
6576	68 22 48	150 9 25	.008	.5	12	520	<5	--	92	<10	17	3	30,000	28	11	<2
6577	68 23 5	150 8 55	.009	.5	11	460	<5	--	93	<10	17	2	30,000	23	11	<2
6578	68 23 17	150 9 17	<.005	.5	9	500	<5	--	96	<10	16	3	29,000	27	12	<2
6579	68 23 34	150 8 24	<.005	1.5	17	4,600	<5	--	130	13	36	6	53,000	38	14	8
6580	68 23 40	150 8 30	.008	.9	11	1,300	<5	--	110	<10	25	3	33,000	27	12	4
6581	68 24 1	150 8 36	.007	4.9	32	2,000	6	--	190	15	88	5	50,000	43	23	15
6582	68 24 16	150 8 37	.006	1.1	9	2,800	<5	--	100	<10	35	5	37,000	30	15	<2
6583	68 24 29	150 8 47	.006	2.1	16	1,600	<5	--	77	<10	30	4	29,000	27	12	10
6584	68 23 58	150 22 56	.011	1.8	23	1,500	<5	--	130	35	113	6	61,000	49	29	<2
6585	68 23 59	150 22 57	<.005	1.4	15	1,700	<5	--	95	12	40	4	34,000	28	14	4
6586	68 23 36	150 14 28	.013	1.4	9	870	<5	--	110	<10	31	2	20,000	22	10	6
6587	68 23 59	150 14 43	.022	.7	7	560	<5	--	62	<10	19	3	18,000	18	8	<2
6588	68 20 51	150 28 17	.017	1.4	9	4,300	<5	--	100	14	56	5	70,000	42	19	<2
6589	68 20 52	150 30 30	.008	1.5	9	450	<5	--	97	12	31	3	37,000	31	8	<2
6590	68 21 40	150 29 18	.011	.5	3	160	<5	--	<50	<10	10	<2	11,000	15	9	<2
6591	68 22 13	150 29 49	.008	.5	4	450	<5	--	<50	<10	9	<2	12,000	12	8	<2
6592	68 22 46	150 30 31	.006	.9	8	350	<5	--	82	16	24	6	43,000	38	16	<2
6593	68 23 11	150 30 2	.008	.3	4	120	<5	--	<50	<10	5	<2	9,000	12	8	<2
6594	68 24 34	150 28 12	.006	1.2	15	2,900	<5	--	150	12	38	5	43,000	36	17	<2
6595	68 24 25	150 27 43	.014	2.5	19	4,600	<5	--	150	11	49	5	33,000	32	13	11
6596	68 25 13	150 21 31	.01	1.7	17	3,300	<5	--	140	13	50	4	41,000	31	17	5
6597	68 21 53	150 16 12	<.005	1	9	340	<5	--	98	15	32	5	41,000	38	15	<2
6598	68 21 41	150 18 18	.008	.8	7	1,500	<5	--	80	<10	28	3	37,000	27	11	<2
6599	68 22 0	150 17 2	.035	.6	4	210	<5	--	52	<10	11	<2	12,000	19	9	<2
6600	68 22 33	150 17 28	.019	.6	4	<100	<5	--	<50	<10	7	<2	7,000	13	8	<2

Table 3. Analytical results from stream-sediment samples collected in 1985 from the Cobblestone Creek study area, Chandler Lake quadrangle, Alaska

Sample	Ni	Rb	Sc	Se	Ag	Na	Th	W	U	Zn	Zn-INAA	UTME	UTMN
6568	<50	--	--	<10	<5	4,100	9	<2	3.8	--	<200	610,169	7,591,080
6569	100	--	--	<10	<5	8,000	12	<2	4.9	--	<200	610,014	7,591,392
6570	97	--	--	<10	<5	12,000	11	<2	5	--	280	610,260	7,591,775
6571	60	--	--	<10	<5	12,000	8.5	3	3.7	--	220	609,762	7,591,703
6572	58	--	--	<10	<5	18,000	7.5	<2	2.8	--	<200	609,687	7,592,407
6573	<50	--	--	<10	<5	5,200	11	<2	4.3	--	<200	610,349	7,592,844
6574	61	--	--	<10	<5	18,000	8.2	<2	3	--	<200	611,202	7,594,383
6575	64	--	--	<10	<5	14,000	8.4	<2	3.2	--	200	610,829	7,594,395
6576	<50	--	--	<10	<5	2,600	7.0	<2	2.9	--	<200	616,873	7,587,752
6577	<50	--	--	<10	<5	2,100	6.2	<2	2.6	--	<200	617,186	7,588,277
6578	<50	--	--	<10	<5	1,900	6.7	<2	2.9	--	<200	616,916	7,588,656
6579	57	--	--	<10	<5	5,500	11	<2	6.6	--	200	617,504	7,589,180
6580	<50	--	--	<10	<5	3,200	7	<2	4.2	--	<200	617,409	7,589,649
6581	89	--	--	22	<5	7,600	10	<2	8.9	--	510	617,328	7,590,019
6582	<50	--	--	<10	<5	2,700	9.4	<2	4.8	--	<200	617,290	7,590,497
6583	<50	--	--	<10	<5	4,300	7.4	<2	5.8	--	<200	617,163	7,590,884
6584	81	--	--	<10	<5	10,000	13	<2	4.3	--	210	607,539	7,589,268
6585	<50	--	--	<10	<5	5,200	7.3	<2	5.1	--	<200	607,510	7,589,536
6586	81	--	--	<10	<5	2,600	4.9	<2	4.4	--	460	613,342	7,589,076
6587	<50	--	--	<10	<5	2,400	3.9	<2	3.7	--	<200	613,139	7,589,786
6588	74	--	--	<10	<5	3,100	11	<2	5	--	350	604,097	7,583,569
6589	<50	--	--	<10	<5	1,700	7.7	<2	4.8	--	<200	602,574	7,583,638
6590	<50	--	--	<10	<5	1,500	2.5	<2	2.7	--	<200	603,341	7,585,051
6591	<50	--	--	<10	<5	1,100	2.1	<2	2.2	--	<200	602,946	7,586,043
6592	<50	--	--	<10	<5	4,900	12	<2	3.7	--	<200	602,420	7,587,061
6593	<50	--	--	<10	<5	1,200	2	<2	2.7	--	<200	602,725	7,587,850
6594	<50	--	--	<10	<5	4,000	10	<2	4.5	--	<200	603,880	7,590,457
6595	<50	--	--	<10	<5	5,000	8.6	<2	6.7	--	<200	604,218	7,590,189
6596	66	--	--	<10	<5	4,400	10	<2	6.1	--	<200	608,394	7,591,863
6597	<50	--	--	<10	<5	5,000	12	<2	3.5	--	<200	612,303	7,585,833
6598	<50	--	--	<10	<5	2,000	7.6	<2	4	--	<200	612,248	7,585,450
6599	<50	--	--	<10	<5	1,300	3	<2	4.4	--	<200	611,728	7,586,010
6600	<50	--	--	<10	<5	1,100	1.5	<2	2.5	--	<200	611,375	7,587,041

Table 4. Analytical results from rock samples collected in 1986 from the Cobblestone Creek study area, Chandler Lake quadrangle, Alaska

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

Sample	Latitude	Longitude	Au	Sb	As	Ba	Cs	Cr	Co	Cu
Kanayut Conglomerate										
1633	68 20 28	150 31 17	<.005	1.6	2	240	6	190	12	14
1634	68 20 42	150 31 47	<.005	1.1	20	200	<1	390	<10	12
1635	68 20 50	150 31 58	<.005	1.3	20	<100	<1	210	14	6
1636	68 20 55	150 32 14	<.005	1.7	23	230	2	320	<10	15
1660	68 18 5	150 31 35	<.005	2.4	47	310	<1	280	<10	18
Lisburne Group										
1669	68 23 58	150 19 15	.007	3.2	14	1,200	4	380	<10	90
1672	68 24 13	150 16 37	<.005	.4	2	2,200	2	52	<10	14
Kayak Shale										
1657	68 19 10	150 33 25	<.005	.9	16	140	<1	310	<10	22
1658	68 19 30	150 33 21	<.005	.9	4	220	2	310	<10	13
1659	68 19 48	150 33 13	<.005	7.4	61	1,500	<1	<50	15	15
1661	68 18 8	150 33 6	<.005	1	5	140	1	360	<10	15
Siksikpuk Formation										
1662	68 23 37	150 24 44	<.005	14	59	580	7	250	<10	57
1670	68 24 8	150 19 18	<.005	.1	2	28,600	<1	<50	<10	63
1673	68 24 17	150 16 14	<.005	2.4	12	1,100	2	130	<10	36
1674	68 24 13	150 17 27	<.005	4.7	55	880	6	120	15	66
Otuk Formation										
1663	68 23 41	150 25 0	<.005	3.9	22	1,100	7	60	<10	17
1664	68 23 58	150 24 28	<.005	.3	6	660	<1	<50	<10	10
1665	68 24 0	150 24 55	<.005	1.4	6	1,300	2	140	<10	24
1666	68 24 6	150 24 35	<.005	.3	8	190	<1	610	22	17
1667	68 24 9	150 24 56	<.005	.3	<1	370	<1	200	10	45
1668	68 24 26	150 24 50	<.005	.4	5	1,700	7	130	21	58
Cretaceous-Jurassic undivided										
1675	68 26 10	150 18 11	<.005	.7	8	790	2	270	17	34
Cobblestone sandstone										
1642	68 31 31	150 19 30	<.005	2.6	111	810	<1	160	30	35
1643	68 31 17	150 20 10	<.005	.7	9	2,000	5	<50	11	25
1655	68 29 13	150 29 11	<.005	.4	19	200	<1	220	<10	12
1656	68 29 12	150 29 13	<.005	1.1	56	1,200	<1	130	47	31
1676	68 30 23	150 26 9	<.005	.4	20	490	<1	<50	14	12
1677	68 31 27	150 25 5	<.005	1.2	29	770	5	130	49	43
Torok Formation										
1641	68 31 38	150 19 40	<.005	1	28	340	1	<50	46	23
1692	68 32 15	150 12 17	<.005	.3	29	780	<1	<50	66	33
1691	68 32 10	150 12 8	<.005	2.3	85	690	<1	100	35	30

Table 4. Analytical results from rock samples collected in 1988 from the Cobblestone Creek study area, Chandler Lake quadrangle, Alaska--Continued

Sample	Hf	Fe	La	Pb	Mn	Hg	Mo	Ni	Nb	Sc	Se
Kanayut Conglomerate											
1633	4	56,000	24	4	90	.015	<2	79	58	11	<10
1634	<2	46,000	12	5	2,000	.045	<2	<50	11	2.9	<10
1635	<2	210,000	11	4	2,200	.05	2	<50	20	5.4	<10
1636	2	34,000	15	7	210	.065	<2	<50	18	3.9	<10
1660	<2	15,000	9	24	--	--	8	<50	<10	1.6	<10
Lisburne Group											
1669	3	26,000	22	12	--	--	10	88	77	10	50
1672	<2	160,000	15	7	--	--	<2	<50	28	4	<10
Kayak Shale											
1657	5	47,000	18	24	--	--	<2	<50	13	6.7	<10
1658	12	34,000	24	5	--	--	<2	<50	18	5.9	<10
1659	<2	380,000	12	26	--	--	<2	<50	25	8	<10
1661	8	18,000	25	10	--	--	<2	<50	17	4.4	<10
Siksikpuk Formation											
1662	4	56,000	36	31	--	--	4	<50	120	9.4	29
1670	<2	31,000	16	5	--	--	<2	<50	<10	3.1	<10
1673	<2	20,000	25	8	--	--	16	58	38	5.7	38
1674	4	73,000	35	27	--	--	9	65	97	10	15
Otuk Formation											
1663	4	24,000	31	25	--	--	28	<50	130	15	10
1664	<2	14,000	8	4	--	--	12	<50	17	2.2	<10
1665	<2	12,000	12	6	--	--	6	<50	31	4.2	14
1666	4	36,000	12	8	--	--	<2	95	13	15	<10
1667	<2	18,000	<5	5	--	--	<2	51	13	3.9	<10
1668	4	56,000	29	17	--	--	<2	55	110	10	<10
Cretaceous-Jurassic undivided											
1675	4	42,000	14	12	--	--	<2	<50	32	15	<10
Cobblestone sandstone											
1642	<2	200,000	37	6	3,200	.18	4	<50	<10	10	<10
1643	<2	38,000	13	11	2,200	.03	<2	<50	59	6.5	<10
1655	<2	70,000	5	4	--	--	<2	<50	<10	3.4	<10
1656	<2	280,000	29	9	--	--	<2	<50	24	7	<10
1676	<2	310,000	15	4	--	--	<2	<50	<10	4.1	<10
1677	3	150,000	38	19	--	--	<2	<50	83	15	<10
Torok Formation											
1641	<2	190,000	33	7	>20,000	.01	<2	120	30	11	<10
1692	2	290,000	24	4	>20,000	.02	<2	110	21	7.9	<10
1691	<2	240,000	40	9	3,500	.06	<2	53	<10	7	<10

Table 4. Analytical results from rock samples collected in 1986 from the Cobblestone Creek study area, Chandler Lake quadrangle, Alaska--Continued

Sample	Th	W	U	Zn	Zn-INAA	UTME	UTMN
Kanayut Conglomerate							
1633	7.3	<2	3	86	N	602,070	7,582,755
1634	2.1	<2	1.5	19	N	601,709	7,583,177
1635	1.9	<2	1.4	45	N	601,578	7,583,426
1636	2.8	<2	1.4	28	N	601,302	7,583,589
1660	1.5	<2	.8	40	N	602,044	7,578,337
Lisburne Group							
1669	5.9	<2	3.3	325	300	610,048	7,589,603
1672	2.7	<2	2.1	76	N	611,025	7,590,150
Kayak Shale							
1657	5.6	<2	1.0	150	N	600,690	7,580,586
1658	13	<2	2.9	18	N	600,725	7,580,927
1659	3.1	<2	2.1	144	N	600,795	7,581,476
1661	10	<2	2.5	20	N	601,003	7,578,378
Siksikpuk Formation							
1662	8.7	<2	4.5	216	200	606,319	7,588,786
1670	.8	<2	6.4	60	N	609,998	7,589,912
1673	4.2	<2	14	206	220	612,087	7,590,301
1674	9	<2	4.1	300	270	611,256	7,590,130
Otuk Formation							
1663	6.4	<2	7.6	92	N	606,135	7,588,927
1664	1.7	<2	5.4	26	N	606,476	7,589,449
1665	2.6	<2	1.4	142	N	606,158	7,589,521
1666	2.6	<2	.9	46	N	606,380	7,589,703
1667	.9	<2	<.5	62	N	606,147	7,589,787
1668	8.2	<2	2.4	128	N	606,185	7,590,323
Cretaceous-Jurassic undivided							
1675	4	2	1.6	104	N	610,590	7,593,725
Cobblestone Sandstone							
1642	5.6	<2	2.4	140	<200	609,168	7,603,620
1643	4.1	<2	1.9	76	N	608,829	7,603,172
1655	.8	<2	1	38	N	602,854	7,599,066
1656	3.5	<2	1.7	128	N	602,827	7,599,040
1676	1.2	<2	1.2	120	N	604,826	7,601,327
1677	7.7	4	2.9	127	N	605,474	7,603,344
Torok Formation							
1641	2.9	<2	1.3	272	340	609,039	7,603,822
1692	3.5	<2	1.3	265	310	614,112	7,605,204
1691	3.2	<2	2.1	195	<200	614,221	7,605,061

Table 5. Analytical results from stream-sediment samples collected in 1986 from the Cobblestone Creek study area, Chandler Lake quadrangle, Alaska

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

Sample	Latitude	Longitude	Au	Sb	As	Ba	Cs	Cr	Co	Cu	Hf	Fe	La	Pb	Mo
2620	68 32 11	150 11 45	.029	1.8	42	3,600	8	110	32	52	5	51,000	34	22	3
2622	68 32 11	150 13 28	N	N	N	N	N	N	N	50	N	N	N	20	N
2623A	68 32 17	150 14 5	N	N	N	N	N	N	N	47	N	N	N	14	N
2623B	68 30 16	150 20 59	.008	1	20	1,500	8	110	20	50	4	50,000	36	18	<2
2624	68 30 25	150 21 42	.008	1	20	1,500	8	110	20	36	4	53,000	25	16	4
2625	68 30 29	150 22 35	N	N	N	N	N	N	N	37	N	N	N	11	N
3609	68 30 24	150 9 4	<.005	.5	3	220	3	88	N	10	5	20,000	23	9	<2
3610	68 30 26	150 11 53	.006	.7	9	520	4	110	12	23	4	41,000	24	12	<2
3611	68 30 30	150 11 29	<.005	.6	11	460	5	92	17	24	2	56,000	25	15	<2
3612	68 31 22	150 14 16	.007	.7	10	490	5	84	16	34	N	52,000	23	15	<2
3613	68 29 13	150 28 50	.032	.8	10	650	3	140	18	35	4	45,000	20	16	<2
3614	68 29 7	150 28 40	.009	.6	9	530	4	98	13	19	4	43,000	23	10	<2
3615	68 29 39	150 27 45	.16	.9	10	890	3	160	21	39	4	50,000	21	14	<2
3616	68 30 5	150 28 18	.01	1.2	22	900	5	120	16	41	4	54,000	26	19	3
3617	68 30 10	150 27 58	.04	1.4	33	800	6	140	21	40	4	62,000	31	21	<2
3618	68 30 26	150 28 41	.006	1.0	73	700	6	120	21	36	5	57,000	28	17	<2
3619	68 30 46	150 28 11	.005	1	32	690	6	160	23	26	3	57,000	26	14	<2
3620	68 30 51	150 28 32	.013	2.3	94	780	6	100	25	41	4	58,000	25	19	4
3621	68 31 21	150 28 56	.02	.8	19	660	5	120	17	28	4	46,000	23	11	<2
3622	68 31 14	150 28 45	.007	1.3	37	700	6	210	20	34	4	54,000	25	11	<2
3623	68 31 54	150 28 56	.017	.9	20	760	6	140	21	37	4	54,000	30	16	10
3624	68 31 49	150 29 12	<.005	.9	18	760	6	130	21	45	4	57,000	29	14	<2
3625	68 32 7	150 29 54	.011	.8	15	810	6	130	16	39	3	52,000	28	14	<2
3632	68 23 45	150 24 32	.005	1.4	9	440	5	81	15	30	5	40,000	30	7	<2
3633	68 23 50	150 24 16	<.005	3	29	1,600	7	120	16	50	5	46,000	38	19	16
3634	68 23 51	150 24 48	<.005	1.7	17	3,000	8	110	13	38	3	40,000	34	16	9
3635	68 24 37	150 24 52	<.005	1.3	16	2,600	5	85	N	38	4	34,000	27	12	9
3636	68 24 43	150 24 32	.011	1.9	22	1,900	7	120	15	55	4	43,000	34	16	9
3637	68 24 56	150 24 0	<.005	1.4	17	4,400	5	68	11	42	4	35,000	28	12	6
3638	68 24 1	150 18 36	.01	6.5	30	1,800	9	130	14	60	5	45,000	37	24	17
3639	68 24 16	150 10 54	<.005	1	10	920	4	72	N	27	4	28,000	28	12	<2
3640	68 24 47	150 19 14	<.005	.8	7	900	3	N	N	20	3	20,000	20	12	<2
3641	68 24 50	150 16 28	<.005	.9	8	860	6	98	22	44	4	39,000	26	15	<2
3642	68 24 46	150 16 4	<.005	.9	8	4,000	7	110	N	31	4	36,000	26	12	<2
3643	68 25 27	150 19 6	<.005	.8	8	650	4	54	10	26	4	25,000	24	11	<2
3644	68 25 46	150 18 42	<.005	.8	7	580	4	59	N	27	2	25,000	24	11	2
3645	68 29 55	150 26 8	<.005	.5	15	750	2	86	57	14	2	100,000	18	12	<2
3646	68 30 6	150 26 1	<.005	.5	15	690	3	88	43	16	5	89,000	16	13	<2
3647	68 30 20	150 25 42	<.005	.7	12	530	2	260	17	20	5	45,000	17	11	<2
3648	68 30 41	150 25 47	.009	.8	37	880	5	74	32	29	3	90,000	24	16	<2
3649	68 31 12	150 25 29	<.005	1.5	62	640	5	110	39	32	4	100,000	32	15	<2
3650	68 31 41	150 24 59	<.005	.6	26	530	4	170	21	22	4	64,000	24	12	<2
3651	68 31 58	150 24 42	<.005	.6	14	720	5	160	19	27	4	54,000	28	14	<2
3652	68 32 20	150 24 16	<.005	.8	25	800	5	81	21	40	4	58,000	26	17	<2
3654	68 32 47	150 29 2	<.005	2.8	160	1,800	4	130	52	44	3	150,000	34	22	3
3655	68 32 12	150 33 33	<.005	.4	5	420	2	67	14	13	4	39,000	18	13	<2
3656	68 31 27	150 35 4	<.005	.5	9	690	3	94	23	24	4	46,000	20	11	<2
3657	68 30 54	150 35 5	<.005	.6	7	420	3	76	12	22	4	27,000	20	12	<2
3658	68 30 32	150 35 0	<.005	.5	9	350	3	90	N	26	4	33,000	20	13	<2
3659	68 29 44	150 34 34	<.005	.5	8	310	2	N	13	33	N	39,000	13	11	2
3660	68 30 50	150 30 28	.008	.7	8	500	5	110	15	28	4	35,000	25	14	<2
3661	68 31 32	150 32 20	<.005	.4	32	670	2	55	54	11	N	120,000	13	8	<2
382.	68 33 18	150 9 23	.045	1.4	34	2,000	5	160	34	34	5	62,000	22	14	3
3822	68 32 49	150 8 59	.011	1	15	970	5	160	17	32	6	46,000	27	9	3
3823	68 33 39	150 10 40	.011	1	25	1,400	6	160	22	40	5	53,000	30	11	4
3824	68 33 37	150 11 22	.01	1.1	20	1,300	6	150	17	42	4	46,000	27	11	3
3825	68 34 11	150 12 31	.011	1	29	1,100	6	130	22	37	5	61,000	31	12	4
3826	68 34 46	150 12 52	<.005	.6	9	570	3	130	10	9	5	32,000	25	6	<2
3827	68 35 25	150 15 2	<.005	.6	10	570	4	160	13	12	6	38,000	26	9	2
3828	68 35 43	150 16 10	<.005	.7	13	670	5	140	22	20	7	43,000	28	7	<2

Table 5. Analytical results from stream-sediments samples collected in 1986 from the Cobblestone Creek study area, Chandler Lake quadrangle, Alaska--Continued

Sample	Ni	Nb	Sc	Se	Th	W	U	Zn	UTME	UTMN
2620	130	120	15	<10	10	3	3.1	224	614,477	7,605,083
2622	N	N	N	N	N	N	N	152	613,312	7,605,041
2623A	N	N	N	N	N	N	N	236	612,881	7,605,216
2623B	58	120	16	<10	10	<2	3	151	600,355	7,601,255
2624	58	120	16	<10	6.6	<2	2.8	152	607,850	7,601,526
2625	N	N	N	N	N	N	N	109	607,253	7,601,618
3609	N	46	7.4	N	6.1	N	2.1	123	616,456	7,601,881
3610	N	70	11	N	6.1	N	2.3	152	614,542	7,601,832
3611	72	96	13	N	7.3	N	2.7	360	614,808	7,601,964
3612	N	84	13	N	6.4	N	2.4	331	612,834	7,603,509
3613	N	55	14	N	5.2	N	2	115	603,083	7,599,094
3614	N	59	10	N	6.3	N	2.3	136	603,206	7,598,914
3615	54	66	15	N	5.8	N	2	122	603,791	7,599,931
3616	N	84	16	N	7.4	N	2.6	132	603,380	7,600,718
3617	59	94	17	N	8.3	N	2.7	139	603,612	7,600,866
3618	53	79	14	N	8.3	N	2.7	118	603,096	7,601,342
3619	53	78	13	N	7.1	N	2.4	117	603,415	7,601,979
3620	85	88	12	N	8.2	N	2.6	100	603,168	7,602,112
3621	N	69	11	N	7	N	2.4	103	602,854	7,603,053
3622	N	75	13	N	6.6	N	2.5	135	602,986	7,602,840
3623	N	89	16	N	8.7	N	2.5	119	602,811	7,604,059
3624	60	99	17	N	8.4	N	2.6	111	602,642	7,603,887
3625	56	86	16	N	7.5	N	2.5	103	602,143	7,604,453
3632	N	80	11	N	9.4	N	3.1	69	606,444	7,589,065
3633	N	120	13	N	10	N	6.6	190	606,623	7,589,215
3634	61	110	12	N	8.9	N	4.9	169	606,259	7,589,226
3635	52	88	11	N	7.6	N	4.1	125	606,157	7,590,639
3636	57	100	14	N	9	N	5.3	163	606,373	7,590,865
3637	N	92	11	N	7.7	N	4.5	134	606,721	7,591,261
3638	63	120	12	12	10	N	7.2	342	610,488	7,589,716
3639	N	72	8.3	N	8.1	N	3.2	101	610,266	7,590,166
3640	N	53	5.5	N	6.1	N	2.8	82	609,992	7,591,115
3641	60	99	13	N	7.5	N	3.9	183	611,875	7,591,289
3642	N	84	9.1	N	6.7	N	3.4	153	612,161	7,591,186
3643	N	63	7.4	N	7.2	N	3	100	610,024	7,592,381
3644	N	57	7.3	N	6.7	N	2.9	97	610,280	7,592,964
3645	N	42	8.3	N	3.9	N	1.3	190	604,870	7,600,456
3646	51	57	9.2	N	4.3	N	2.6	172	604,943	7,600,793
3647	N	44	11	N	4.1	N	1.8	110	605,139	7,601,250
3648	N	75	13	N	6.2	N	2.1	155	605,055	7,601,807
3649	N	90	14	N	8.6	N	2.3	160	605,213	7,602,862
3650	N	63	12	N	5.8	N	2	135	605,526	7,603,760
3651	N	83	14	N	7.4	N	2.2	120	605,609	7,604,311
3652	N	79	14	N	6.7	N	2.3	156	605,956	7,605,000
3654	56	70	12	N	8.1	N	2.4	152	602,686	7,605,691
3655	N	39	6.9	N	4.8	N	1.7	112	599,654	7,604,500
3656	N	57	8.9	N	5.4	N	2	106	598,673	7,603,065
3657	N	48	8.6	N	5.4	N	2	109	598,706	7,602,037
3658	N	52	7.9	N	6.1	N	2.1	92	598,785	7,601,367
3659	N	40	5.8	N	4.7	N	1.5	152	599,145	7,599,890
3660	N	78	10	N	7.2	N	2.4	116	601,855	7,602,047
3661	N	28	5.7	N	3.8	N	1.5	184	600,528	7,603,299
3821	82	78	13	N	6.5	N	2.6	140	615,992	7,607,196
3822	50	59	15	N	7.1	N	2.7	110	616,309	7,606,365
3823	52	87	18	N	7.5	N	2.6	124	615,087	7,607,847
3824	51	84	17	N	7.3	N	2.5	104	614,621	7,607,759
3825	66	54	17	N	8.2	N	2.8	140	613,790	7,608,789
3826	N	48	8.4	N	6.7	N	2	72	613,504	7,609,870
3827	N	60	10	N	7.4	N	2	82	611,976	7,611,011
3828	N	67	12	N	8.1	N	2.4	123	611,180	7,611,517

Table 5. Analytical results from stream-sediments samples collected in 1986 from the Cobblestone Creek study area, Chandler Lake quadrangle, Alaska--Continued

Sample	Latitude	Longitude	Au	Sb	As	Ba	Cs	Cr	Co	Cu	Hf	Fe	La	Pb	Mo
3829	68 35 40	150 16 34	.005	.6	10	1,100	3	90	11	21	3	29,000	21	7	3
3830	68 32 50	150 14 32	.012	1	15	2,100	8	140	21	47	5	56,000	34	13	3
3831	68 32 29	150 13 36	.009	1.2	19	3,400	9	160	24	45	4	54,000	33	18	3
3832	68 30 12	150 22 23	<.005	1.2	34	970	6	110	27	43	3	52,000	25	11	5
3833	68 30 21	150 22 1	.005	1.1	37	760	4	180	20	30	5	67,000	21	7	7
3834	68 30 39	150 21 59	.006	.9	22	1,100	5	280	37	30	6	57,000	22	6	4
3836	68 31 12	150 21 25	.005	1.2	30	840	8	130	23	39	4	56,000	31	13	4
3837	68 31 34	150 21 50	.008	2.7	124	1,100	7	160	31	44	3	76,000	32	14	7
3838	68 32 22	150 22 49	<.005	.7	11	1,200	6	170	14	34	5	39,000	23	7	3
3839	68 33 1	150 22 25	<.005	.6	22	1,100	2	310	16	17	5	40,000	15	5	3
3840	68 32 31	150 17 37	.006	.7	15	1,300	4	160	19	27	5	45,000	21	7	<2
3841	68 32 5	150 17 34	<.005	.9	18	1,800	7	170	19	40	5	47,000	28	12	4
3842	68 31 9	150 18 7	<.005	1.7	74	2,100	5	150	83	43	5	110,000	25	10	11
3843	68 19 58	150 29 38	<.005	2.2	13	390	6	110	16	37	8	42,000	31	9	2
3844	68 20 53	150 35 19	<.005	.9	12	530	7	100	14	24	5	37,000	32	9	<2
3845	68 21 59	150 31 9	<.005	.9	6	320	6	75	8	24	3	22,000	29	7	3
3846	68 34 34	150 1 43	.007	.7	24	880	5	160	16	16	6	51,000	26	7	2
3847	68 33 36	150 0 11	.008	.8	11	520	5	77	15	30	5	40,000	26	11	3
3848	68 32 49	150 0 11	.006	.5	11	1,200	2	8	75	10	3	110,000	14	6	3
3849	68 32 21	150 0 22	.006	.6	11	790	3	58	64	20	3	65,000	19	10	3
3850	68 31 39	149 59 53	<.005	.6	6	240	3	68	10	14	5	25,000	23	6	<2
3851	68 31 2	149 59 43	<.005	.6	6	380	3	82	8	16	7	25,000	26	7	<2
3873	68 29 14	150 0 24	<.005	.5	4	220	2	55	8	11	4	21,000	22	6	<2
3874	68 28 43	150 0 22	<.005	.7	7	300	3	78	8	20	5	26,000	24	10	<2
3875	68 27 56	150 0 17	<.005	.6	7	230	2	51	8	14	4	22,000	18	6	<2
3876	68 27 31	150 0 22	<.005	.5	5	220	2	55	8	9	4	19,000	18	5	<2
3877	68 27 9	150 0 21	<.005	1.5	25	1,400	5	79	26	87	4	41,000	31	21	4
3878	68 25 43	150 0 22	<.005	.7	8	390	4	61	11	27	4	29,000	25	10	<2
3879	68 24 31	150 1 2	<.005	1.1	21	800	6	64	24	63	5	44,000	28	14	2
3880	68 24 19	150 0 54	<.005	1	20	770	4	97	19	57	4	51,000	27	11	<2
3881	68 24 1	150 0 36	<.005	.7	7	300	4	65	8	18	4	22,000	21	6	<2
3882	68 22 43	150 0 10	<.005	.6	5	180	3	70	8	12	6	20,000	21	5	<2
3883	68 21 46	150 0 58	<.005	.4	5	1,100	3	8	8	9	<2	13,000	12	4	<2
3884	68 20 44	150 4 38	<.005	.5	16	340	8	83	14	19	3	38,000	31	13	<2
3885	68 20 32	150 4 32	<.005	.6	5	170	3	25	8	16	3	20,000	22	7	<2
3886	68 20 41	150 5 8	<.005	.2	1	50	1	25	8	5	<2	2,500	13	4	<2
3888	68 22 55	150 4 41	<.005	1	10	3,000	7	91	8	32	4	35,000	27	12	2
3889	68 22 49	150 4 27	<.005	.8	7	2,800	8	95	8	26	3	34,000	24	9	<2
3890	68 25 11	150 6 22	<.005	.8	9	2,800	6	83	10	25	3	34,000	23	10	3
3891	68 26 4	150 8 55	<.005	.8	9	1,700	6	75	8	26	3	28,000	21	11	<2

Table 5. Analytical results from stream-sediments samples collected in 1986 from the Cobblestone Creek study area, Chandler Lake quadrangle, Alaska--Continued

Sample	Ni	Rb	Sc	Se	Th	W	U	Zn	UTME	UTMN
3829	N	49	8.9	N	4.8	N	2.5	102	610,902	7,611,678
3830	72	110	21	N	10	N	3.1	118	612,531	7,606,213
3831	67	110	21	N	10	N	3.2	136	613,214	7,605,314
3832	82	83	16	N	6.2	N	2.5	180	607,408	7,601,098
3833	61	60	15	N	5.4	N	2.2	141	607,645	7,601,397
3834	80	60	16	N	5.3	<2	2.1	160	607,644	7,601,936
3836	64	120	18	N	9	<2	2.9	162	607,982	7,602,992
3837	53	110	18	11	9.3	2	2.9	152	607,674	7,603,656
3838	55	76	15	N	6.5	N	2.5	118	606,936	7,605,098
3839	<50	45	9	N	4.3	<2	1.8	95	607,164	7,606,317
3840	50	65	13	N	5.8	N	2.4	109	610,459	7,605,547
3841	N	94	17	N	8.2	N	2.9	112	610,538	7,604,742
3842	130	69	161	N	6.1	<2	2.6	3,800	610,241	7,602,972
3843	N	70	12	N	9.3	N	3.5	72	603,232	7,581,888
3844	N	82	12	N	8.8	N	3	112	599,269	7,583,443
3845	63	68	8.2	N	6	N	4.9	200	602,052	7,585,593
3846	N	72	12	N	7.3	N	2.5	108	621,092	7,609,838
3847	N	64	11	N	7.6	N	3.5	150	622,212	7,608,088
3848	N	39	5.7	N	4.3	N	1.6	184	622,292	7,606,647
3849	69	47	8.2	N	6.1	N	3.5	3,700	622,208	7,605,775
3850	N	47	7	N	5.9	N	2.1	76	622,398	7,604,490
3851	N	57	9.1	N	7.7	N	2.7	73	622,769	7,603,351
3873	N	46	5.7	N	5.8	N	1.9	58	622,463	7,599,994
3874	N	61	7.3	N	6.5	N	2.3	88	622,531	7,599,020
3875	N	29	5	N	4.5	N	1.8	60	622,665	7,597,587
3876	N	31	4.8	N	4.4	N	1.8	55	622,642	7,596,785
3877	N	89	14	N	7.7	N	3	150	622,683	7,596,110
3878	N	55	8.7	N	7	N	2.5	109	622,808	7,593,459
3879	N	74	12	N	7.8	N	2.5	133	622,462	7,591,210
3880	N	83	16	N	6.8	N	2.5	125	622,564	7,590,830
3881	N	50	6	N	5.8	N	2.6	104	622,794	7,590,283
3882	N	40	5.3	N	5.3	N	2.7	82	623,207	7,587,898
3883	N	27	3	N	2.4	N	2	77	622,749	7,586,114
3884	N	110	12	N	9	N	2.3	129	620,327	7,584,072
3885	N	45	5.7	N	6.2	N	2.7	84	620,410	7,583,688
3886	N	5	1	N	.9	N	2.2	76	619,986	7,583,949
3888	N	93	9.3	N	7.5	N	3.5	153	620,104	7,588,108
3889	50	91	8.5	N	6.8	N	3.6	153	620,276	7,587,927
3890	N	78	8.1	N	6.4	N	3.3	145	618,753	7,592,277
3891	N	79	6.8	N	6	N	3.3	146	616,928	7,593,832