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PROGRESS REPORT ON THE GEOLOGY AND MINERAL RESOURCES OF THE NOME MINING DISTRICT

by

T.K. Bundtzen, R.D. Reger, G.M. Laird, D.S. Pinney, K.H. Clautice, S.A. Liss, and G.R. Cruse

July 1994

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PROGRESS REPORT ON THE GEOLOGY AND MINERAL RESOURCES OF THE NOME MINING DISTRICT

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INTRODUCTION

During July 1993, the Alaska Division of Geological and Geophysical Surveys conducted bedrock and surficial geologic mapping of about 1,900 km^2 (590 mi^2) in the Nome mining district of western Alaska. This project was undertaken as a result of a Capital Improvements Project appropriation passed by the 1993 Alaska Legislature to begin detailed geological and mineral resource investigations of Alaskan mining districts using airborne, multispectral geophysical surveys and 1:63,360-scale geological mapping. We emphasize that the results presented here are preliminary data acquired during 1993-1994. More field work will be completed during the summer of 1994, and a complete summary of the Nome district studies will be released pending completion of field, office, and laboratory investigations.

This preliminary report consists of: (1) the geologic map accompanied by complete map unit descriptions (sheet 1); (2) data tables that depict major oxide, sulfur isotope, and trace element analyses, and annual gold production statistics (tables 1-4); and (3) a brief summary text.

SUMMARY OF BEDROCK GEOLOGY

Twenty-two metasedimentary, metavolcanic, and metaplutonic bedrock units were delineated during our investigations. All rock units have been regionally metamorphosed. Throughout the following discussion, the reader is referred to data presented on the geologic map (sheet 1).

NOME GROUP

The regionally metamorphosed rocks of the Nome mining district were first described by Brooks and others (1901), whose work was supplanted by more detailed mapping and petrographic studies by Collier (1902), Knopf (1908), Smith (1910), and Moffit (1913). The high-grade regionally metamorphosed rocks of the central Kigluaik Mountains were referred to by Moffit (1913) as the Kigluaik Group; he defined the lower rank, regionally metamorphosed units in the Nome mining district as the Nome Group. Moffit (1913) and Smith (1910) first identified glaucophane in the Nome Group, which is now regarded as one of the largest, high P-low T, blueschist-facies metamorphic terranes in the world. Many modern workers including Sainsbury and others (1970), Forbes and others (1984), Thurston (1985), Evans and Patrick (1989), Till (1980), Sturnick (1984), Patrick and Evans (1989), Miller and Hudson (1991), and Miller and others (1992) have published detailed petrographic and radiometric age dating studies of metamorphic rocks in and near the study area. Nokleberg and others (1993) include the Nome Group into the Seward Terrane, an offset continental margin ranging in age from PreCambrian(?) to Late Paleozoic.

All regionally metamorphosed rocks in the study area have been assigned to the Nome Group, although some small metamorphosed intrusions may be unrelated to the other units. We have benefited from geologic map studies completed by the previously mentioned early workers and by Herreid (1970) and Hummel (1962a,b). Till and others (1986) and Till and Dumoulin (in press) believe that the Nome Group constitutes a coherent lithostratigraphic succession, which consists of four units: (1) a basal, complexly deformed quartz-rich pelitic schist, which may be correlative with the Solomon Schist of Smith (1910) and Moffit (1913); (2) a "mixed unit" of mafic and pelitic schists and marble; (3) a mafic-dominated schist package, which may be correlative with the Casadepaga Schist of Smith (1910); and (4) an "impure marble unit". We have tentatively subdivided the Nome Group rocks of the study area into the first three units of Till and others (1986), which, in the study area, are locally repeated by thrust faults.

Smith (1910) and Moffit (1913) believed the Nome Group is Paleozoic in age. However, Sainsbury and others (1970) regarded all Nome Group lithologies as Precambrian in age, on the basis of inferred stratigraphic position and limited Rb-Sr isotopic-age determinations. Till and others (1986) have reported Ordovician to Devonian conodonts from marble units in the Nome Group. We assign a Precambrian-Paleozoic age to all Nome Group rocks mapped in the study area pending results of U-Pb isotopic-age dating of felsic metavolcanic rocks in the mixed unit and further geological mapping to the east of the study area in 1994.

SUMMARY OF SURFICIAL GEOLOGY

Most of the area is covered by drift laid down during past glaciations. Drift of the oldest advance, the Sinuk glaciation of early Pleistocene(?) age, is exposed in the vicinity of Cape Nome in the southeastern corner of the map area. The most extensive surface drift sheet was deposited during the Nome River glaciation of middle Pleistocene age. Ice of this advance flowed southward out of cirques in the Kigluaik Mountains and coalesced with local ice from cirques and small ice caps in the uplands north of Nome. Ice of the Nome River glaciation filled the major trunk streams near Nome and extended southward several kilometers into present day Norton Sound (Hopkins and others, 1960; Nelson and Hopkins, 1972, Kaufman and Hopkins, 1989; Kaufman and others, 1991).

The subsequent Stewart River Glaciation spread out of the Kigluaik Mountains as far as 10 km beyond the mountain front. Ice from Kigluaik Mountain sources joined with local ice from small, north-facing cirques in the uplands immediately south of Kigluaik Mountains. The Stewart River glaciation is thought to be older than the last major interglaciation (Kaufman and Hopkins, 1986; Kaufman and others, 1988).

Slightly modified drift of the Salmon Lake glaciation forms lobate moraines that nearly reach as far south as the Stewart River terminal moraines (Kaufman and Hopkins, 1989). Radiocarbon dating indicates that this ice expansion occurred more than 33,000 years ago (Kaufman and others, 1989).

During and after these ice expansions, fluvial, colluvial, and marine processes modified the landscape, formed gravel-rich alluvial valley fills, and beach and terrace sediments. Fine-grained estuarine deposits were laid down in lower streams close to the present coast of Norton Sound.

STRUCTURE

All bedrock geologic units have been subjected to blueschist-facies metamorphism, which in turn was retrograded to T-P conditions of the greenschist facies. In the study area, earlier high P-low T mineral assemblages are frequently altered due to the strong, retrogressive greenschist metamorphism. Earlier metamorphic minerals such as garnet, chloritoid, glaucophane, hornblende, and calcic plagioclase are frequently rolled in a granoblastic fabric. Axial-plane schistosity parallel to compositional banding is the dominant "S 1" surface measured in outcrop; later "S 2" cleavage or foliation is transposed at low angles in a westward vergence across lithologic or compositional banding, indicating that low-angle thrusting or recumbent folds have deformed the Nome Group in the study area. Stretched mineral lineations, isoclinal fold plunges, and mica crenulations (sheet 1) record deformation that postdates original schistosity developed during the prograde, blueschist-facies event.

Lithostratigraphic units of the mixed unit are repeated by probable late synmetamorphic thrust faults south of Aurora Creek and east of Mount Distin. In the former area, metaturbidite schist (pCPzt), felsic metavolcanic schist (pCPzsf), black quartzite (pCPzsg), and "lumpy", porphyroclastic schist (pCPzpm) exposed in the Aurora Creek area are repeated in the Hungary Creek drainage implying a low-angle throw of approximately 7 km. In the Basin Creek drainage, albite mafic schist and metabasite of the Casadepaga Schist(?) are thrust over the upper portion of the mixed unit. Other thrust faults are mapped on the basis of sheared contacts, low-angle mylonite zones, and outcrop-scale discontinuities, but the significance of offset along these faults is unknown.

Large-scale, younger structures include the north-trending Twin Mountain anticline, and northeast-trending high-angle faults. Pelitic, felsic, mafic, and carbonate-dominated lithologies of the mixed unit at Aurora Creek on the west are repeated at Dexter Mountain and Goldbottom Creek on the east by the Twin Mountain anticline, which largely defines the distribution of Nome Group lithologies in the study area.

The well known Anvil Creek fault trends north 40 to 55 degrees east up Anvil Creek (sheet 1), and juxtaposes metaturbidite schists on the west with pelitic, graphitic, metavolcanic, and calcareous lithologies on the east. A significant metafelsite center and interbedded pelitic schist and marble on Dexter Creek are equivalent to felsic metavolcanic schists and exhalite at Aurora Creek. The lithostratigraphic correlation indicates that the amount of postulated vertical movement along the Anvil fault is about 1.5 km.

The Penny River fault (after Herreid, 1970) right laterally offsets the metavolcanic schist section at Aurora Creek about 4 km from an equivalent section on the east side of Penny River (sheet 1).

Other significant northeast-trending high-angle faults include the Rodine fault (after Hawley and Buxton, oral comm., 1993), and the Oregon Creek-Charley Creek fault, both of which show right-lateral throws ranging from 1 to 3 km.

Smaller less well defined, northwest-trending high-angle faults such as the Boulder Creek fault also cut the metamorphic rocks throughout the map area, and are probably more extensive than shown on the geologic map (sheet 1).

ECONOMIC GEOLOGY

Four types of metallic mineral resources have thus far been identified in the study area: (1) gold-polymetallic-quartz-carbonate veins cutting pelitic and mafic schists and carbonates, believed to have formed as a result of regional metamorphism; (2) stratiform, massive sulfide-barite deposits associated with felsic metavolcanic schist and metafelsite centers; (3) massive sulfide-iron deposits hosted in carbonate-dominated terranes and of uncertain origin; and (4) heavy mineral placer deposits, that have accounted for almost all of the metallic mineral production in the study area.

All of our investigations of mineral resources are still in progress, and the results presented here are preliminary.

Polymetallic Gold Quartz Veins

Polymetallic-gold-quartz-carbonate mineral deposits contain most of the significant lode gold resources currently known in the Nome district. One deposit at Rock Creek (sheet 1) has been recently evaluated by the mineral industry and contains a drill-inferred reserve amounting to 6.1 million tonnes grading 2.4 g/tonne gold or 14.6 tonnes (475,200 ounces) of contained gold (Bundtzen and others, 1992). The polymetallic gold quartz deposits contain arsenic, antimony, silver, zinc, lead, copper and tungsten in addition to the gold (table 3). Other important deposits include gold-tungsten deposits at Sophie Gulch, the gold-antimony deposits in the Mt. Distin area, the gold-bismuth-arsenic vein deposits of the Charley Creek area, and the Rodine and other recently discovered deposits in the "Gold Hill trend" west of Snake River. At least three vein types are recognized: (1) early chalcopyrite-sphalerite-quartz-carbonate veins that appear as boudins rolled around F1 fold axes; (2) saddle reef quartz-gold-polysulfide veins (example; Rodine and McDuffy Prospects) that crosscut host schists at low angles to schistosity; and (3) brittle vein systems that clearly crosscut metamorphic stratigraphy at high angles (example; Rock Creek; Sliscovich). All could be interpreted to have formed during various stages of dewatering of a metamorphic pile during Barrovian style greenschist-facies metamorphism and associated plutonism, as suggested for the origins of metallic vein mineralization at Rock Creek, (Apodaca, 1992) and Mt. Distin and Bluff (Ford, 1990).

Many of the gold-bearing vein deposits in the Nome district are hosted in metamorphosed clastic rocks interpreted to be turbidites and related deepwater sediments. The Rock Creek, Mt. Distin, and Gold Hill mineralized areas are similar to other turbidite hosted gold regions worldwide such as the saddle reef systems of the Meguma Terrane of Nova Scotia, Canada (Haynes, 1986; Sangster, 1990), the gold-scheelite vein deposits in the Otago and Reefton districts in New Zealand (Paterson, 1982; Lee and others, 1989; Henley and others, 1976; Lew and Corner, 1988), or the gold vein deposits hosted in the Valdez Group of southern Alaska (Goldfarb and others, 1986).

Limited sulfur isotopic analyses conducted during our investigations show light del-34 values ranging from -1.6 to +3.6 and averaging about +0.2 from sulfides in six gold-polymetallic vein deposits of the study area (table 2).

Stratiform Massive Sulfide Deposits

Stratiform massive sulfide-barite deposits in the Aurora Creek area and at the Christopherson Prospect were first described by Herreid (1966, 1970), and evaluated by the mineral industry in the mid-1970s and more recently in the 1990s. During our brief investigations we mapped a complex package of muscovite-feldspar metavolcanic schist, carbonate, pelitic schist, and graphitic schist informally referred to as the "Aurora Creek section" (pCPzf, pCPzsf, pCPzsg; sheet 1). Lenses and disseminations of sphalerite, galena, chalcopyrite, and massive barite appear to be parallel to original compositional banding of host metavolcanic and carbonaceous schist for over 4 km of strike length. Mineralization is complexly folded along with host rocks indicatinging a premetamorphic origin for the mineralized zones. Zones of intense tourmalinization are present in wallrock adjacent to the massive sulfide-barite deposits. Limited sulfur isotopic analyses yield heavy del-34 values ranging from +5.5 to +26.3, typical of seawater contaminated sulfur in submarine volcanogenic massive sulfide settings (table 2). Selected samples from the Aurora Creek deposits contain up to 15.86% zinc, 1.38% lead, 659 ppm copper, and anomalous cadmium, barium, silver and gold (table 3).

Tourmaline enrichment in felsic schist horizons could indicate hydrothermal activity related to premetamorphic submarine volcanism in other portions of the study area.

Carbonate-hosted Stratabound Polymetallic Deposits

Carbonate-hosted sulfide-barite-fluorite-iron deposits have been described from the Sinuk River drainage in fair detail by Mulligan and Hess (1965) and Herreid (1970). The origin of these sulfide-bearing gossans is uncertain. Mineral deposit types proposed for these polymetallic occurrences include sedex, volcanogenic massive sulfide, intrusive related replacement, and hydrothermal vein. One sulfur isotopic analysis collected from the Quarry Prospect yielded a del-34 value of +10.8 from galena (sheet 1; table 2), which contrasts with light del-34 sulfur values found in polymetallic veins in the study area.

Placer Gold

Placer gold has been the principal metallic mineral resource mined in the study area. From 1898 to 1993, an estimated 4,822,569 ounces (150 metric tonnes) gold have been produced from stream, hillslope or colluvial, glacial, and marine strandline placer deposits throughout the study area (table 4), making the Nome district Alaska's second largest producer of placer gold. The most significant placer deposits are concentrated along modern and ancestral strandline deposits on the Coastal Plain, in streams draining Anvil Mountain, and in tributaries of the Nome, Osborn, and Snake Rivers (Collier and others, 1908 and Cobb, 1974). An estimated 70 percent of the gold has been produced from the strandline deposits, but rich paystreaks have been mined from glacial, colluvial, and stream deposits.

Glacial scouring milled gold lodes and dispersed much of the gold that eventually formed placer deposits in the Nome mining district. During and after several ice expansions, fluvial, colluvial, and marine processes concentrated gold to form economic placer deposits. One byproduct of the long and extensive placer gold mining activities has been the production of large volumes of high-quality, washed tailings suitable for foundation materials for highways and settlement areas.

Placer geology research is in progress.

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Table 1. *Major oxide analyses and CIPW normative mineralogy from selected metamorphic rocks, Nome mining district, Alaska*[a]

Major oxide analyses

Map no.	Sample no.	SiO_2 (wt%)	TiO_2 (wt%)	Al_2O_3 (wt %)	Fe_2O_3 (wt %)	FeO (wt %)	MnO (wt %)	MgO (wt %)	CaO (wt %)	Na_2O (wt %)	K_2O (wt %)	P_2O_5 (wt %)	Cr_2O_3 (wt %)	LOI (wt %)	Total (wt %)
1	93BT161A	68.83	1.06	14.82	2.11	3.64	0.04	1.30	0.33	0.07	3.20	0.18	0.03	2.46	98.07
2	93BT171	75.39	0.30	13.31	0.59	1.03	0.01	0.72	0.25	7.02	0.05	0.09	0.01	0.66	99.43
3	93BT203	46.93	2.07	14.53	4.28	10.55	0.22	6.36	7.55	2.55	0.05	0.14	0.02	3.23	98.48
4	93BT266	54.86	1.08	17.14	2.39	5.85	0.03	3.67	1.23	7.20	0.05	0.09	0.02	4.94	98.55
5	93BT321	56.20	1.04	18.28	5.45	3.23	0.07	3.86	1.06	3.19	3.11	0.19	0.02	3.91	99.61
6	93GL204	66.13	0.99	12.36	3.93	2.06	0.10	2.87	3.36	2.91	1.01	0.16	0.01	3.36	99.25
7	93GL216	69.95	1.04	11.11	0.80	4.31	0.07	3.18	5.55	1.75	0.97	0.19	0.02	1.73	100.67
8	93GL236	67.79	0.83	13.66	1.40	4.12	0.05	2.37	1.43	3.16	1.66	0.09	0.02	2.45	99.03
9	93KC104	75.46	0.71	11.10	1.41	2.64	0.06	1.84	1.06	1.89	1.52	0.15	0.02	2.76	100.62

CIPW normative minerals

Map no.	Sample no.	Qtz	Cor	Or	Ab	An	Di	Hy	Mt	Hm	Ilm	Ap	Description
1	93BT161A	54.508	11.706	19.993	0.626	0.489	0.000	6.875	3.235	0.000	2.129	0.441	Feldspar muscovite schist (pCPzsf)
2	93BT171	33.002	1.487	0.299	60.143	0.661	0.000	2.754	0.866	0.000	0.577	0.211	Metagranite (pCPzg)
3	93BT203	2.770	0.000	0.310	22.657	29.457	7.323	26.500	6.517	0.000	4.128	0.340	Metabasite (pCPzb)
4	93BT266	1.854	3.441	0.316	65.092	5.892	0.000	17.288	3.703	0.000	2.192	0.223	Metadiorite ((Mzdg)
5	93BT321	19.081	8.563	19.207	28.210	4.200	0.000	10.047	7.968	0.201	2.064	0.460	Albite schist (pCPzsm)
6	93GL204	35.789	0.786	6.225	25.680	16.295	0.000	7.455	4.272	1.153	1.961	0.386	Albite chlorite schist (pCPzsm)
7	93GL216	39.254	0.000	5.794	14.969	19.808	5.541	11.020	1.173	0.000	1.997	0.445	Metaturbidite schist (pCPztc)[b]
8	93GL236	35.604	4.433	10.159	27.690	6.738	0.000	11.426	2.102	0.000	1.633	0.216	Feldspar muscovite schist (pCPzsf)
9	93KC104	54.033	4.883	9.180	16.345	4.374	0.000	7.363	2.090	0.000	1.378	0.355	Graphitic quartzose schist (pCPzsg)[b]

[a]Analyses by Bondar-Clegg, Ltd., 130 Pemberton Ave., North Vancouver, B.C. , Canada V7P2R5.
CIPW normative data calculated with UAF/PETCAL program, University of Alaska, Fairbanks, Alaska 99709.
[b]Norms probably not applicable due to presumed metasedimentary parentage.

Table 2. *Sulfur isotopic ratios of sulfide and sulfate specimens from mineral deposits in the Nome mining district, Seward Peninsula, Alaska*[a]

Mineral deposit	Sample no.	Mineral deposit type	Mineral analyzed	S^{34} 0/00[b]	Remarks
Charley Creek	93BT297a	Polymetallic-gold vein	Arsenopyrite	+0.6	Hanging wall vein
Charley Creek	93BT297b	Polymetallic-gold vein	Arsenopyrite	+0.8	Hanging wall vein
Rock Creek	90BT302a	Polymetallic-gold vein	Arsenopyrite	+0.9	From bulk sample pit
Rock Creek	90BT302b	Polymetallic-gold vein	Galena	-1.6	North of bulk sample pit
Rock Creek	90BT302c	Polymetallic-gold vein	Galena	-0.9	North of bulk sample pit
Unnamed	93BT177	Polymetallic-gold vein	Chalcopyrite	+0.3	Early(?) F1 sulfide-quartz vein
Unnamed	93KC116	Polymetallic-gold vein	Sphalerite	+3.6	Early(?) F1 sulfide quartz vein
Twin Mt. prospect	93BT229a	Polymetallic-gold vein	Galena	-1.1	Saddle reef system
Twin Mt. prospect	93BT229b	Polymetallic-gold vein	Arsenopyrite	-0.6	Saddle reef system
Twin Mt. prospect	93BT229c	Polymetallic-gold vein	Arsenopyrite	-0.5	Saddle reef system
Hed and Strand prospect	93BT335	Stibnite-sulfosalt vein	Lead-antimony sulfosalt	-0.2	Vein in calc-schist near shaft
Christopherson	93BT197a	Stratiform sulfide	Barite	+26.3	From ridge pit
Christopherson	93BT197b	Stratiform sulfide	Pyrite	+5.5	From ridge pit
Christopherson	93BT197c	Stratiform sulfide	Galena	+17.3	From ridge pit
Aurora Creek	93BT211	Stratiform sulfide	Sphalerite	+12.9	From stream cut outcrops
Quarry Prospect	90BT337	Carbonate-hosted, stratiform sulfide-barite	Galena	+10.8	Near portal

[a] Analyses by Krueger Enterprizes Inc., Geochron Laboratories Division, Cambridge, Massachusetts. Unless otherwise noted analyses are reported in 0/00 notation and are computed as follows:

$$S^{34}\text{ sample } 0/00 = \frac{{}^{34}S/{}^{32}S\text{ sample} \times 1{,}000}{{}^{34}S/{}^{32}S\text{ standard}}$$

$^{34}S/^{32}S$ standard = Canon Diablo troilite

[b]Also could be stated as "del-34 value."

Table 3. *Geochemical determinations from selected mineral deposits, occurrences, and bedrock types, Nome mining district, Seward Peninsula, Alaska*

Sample no.	Au ppb	Ir ppb	Ag ppm	Zn ppm	Mo ppm	Ni ppm	Co ppm	Cd ppm	As ppm	Sb ppm	Fe pct	Se ppm	Te ppm	Ba ppm	Cr ppm	Sn ppm	W ppm	Cs ppm	La ppm	Ce ppm	Sm ppm	Eu ppm	Tb ppm	Yb ppm	Lu ppm	Sc ppm
93KC175	38	<100	<5	<200	<2	<20	23	<10	75	7.5	6.1	<10	<20	650	260	<200	6	9	23	36	3.3	7	<1	<5	<0.5	13.0
93BT153	<5	<100	<5	<200	<2	<20	14	<10	3	0.6	0.8	<10	<20	140	74	<200	<2	<1	8	<10	1.4	<2	<1	<5	<0.5	1.5
93BT155	6	<100	<5	<200	<2	<20	<10	<10	217	2.5	0.6	<10	<20	<100	380	<200	<2	<1	<5	<10	0.7	<2	<1	<5	<0.5	2.1
93BT161B	27	<100	<5	<200	<2	45	21	<10	367	15.0	4.9	<10	<20	300	420	<200	<2	7	27	44	6.6	<2	1	6	<0.5	7.9
93BT164	<5	<100	7	<200	<2	37	10	<10	20	2.5	6.3	<10	<20	970	260	<200	2	6	15	<10	3.1	3	<1	<5	0.6	19.0
93BT173	<5	<100	<5	<200	<2	<20	<10	<10	9	0.7	0.5	<10	<20	<100	560	<200	<2	<1	<5	<10	<0.2	<2	<1	<5	<0.5	<0.5
93BT176	<5	<100	<5	<200	<2	<20	<10	<10	9	1.7	0.9	<10	<20	<100	310	<200	<2	<1	5	<10	1.1	<2	<1	<5	<0.5	3.4
93BT177	<5	<100	<5	430	<2	29	<10	<10	65	38.8	1.8	<10	<20	<100	150	<200	<2	<1	7	<10	6.3	4	2	<5	0.5	0.9
93BT184	<5	<100	<5	<200	<2	<20	<10	<10	88	0.8	-0.5	<10	<20	<100	440	<200	<2	<1	<5	<10	<0.2	<2	<1	<5	<0.5	<0.5
93BT191+	<5	<100	<5	<200	3	24	<10	<10	21	1.4	2.8	<10	<20	<100	570	<200	<2	<1	10	21	2.9	<2	<1	<5	0.5	3.3
93BT195	<5	<100	<5	<200	<2	55	24	<10	2	6.0	5.7	<10	<20	880	250	<200	<2	11	44	69	8.8	<2	2	<5	<0.5	16.0
93BT197A	34	<230	42	21200	<11	<53	<10	81	5	68.7	2.1	<49	<140	>20000	320	<820	<2	<1	<30	<120	0.4	<6	<1	<5	<2.2	<0.5
93BT204B	<5	<100	<5	<200	<2	<20	18	<10	482	44.2	6.0	<10	<20	1700	110	<200	<2	4	<5	<10	1.6	<2	<1	<5	<0.5	22.0
93BT205	14	<100	<5	<200	<2	<20	<10	<10	31	50.6	0.9	<10	<20	1000	<50	<200	<2	<1	<5	<10	0.7	<2	<1	<5	<0.5	1.3
93BT210	<11	<100	12	9400	5	42	<10	25	43	158.0	3.6	<10	<64	>20000	400	<200	5	<1	<5	<36	1.0	<4	<1	<5	<0.5	2.7
93BT211	20	<100	<11	158600	<2	<45	14	750	14	4.7	10.0	<10	<20	<100	110	<200	<2	2	<5	<22	0.4	<2	<1	<5	<0.5	2.7
93BT220	<5	<100	<5	840	<2	93	34	<10	49	11.0	6.5	<10	<20	550	250	<200	<2	3	35	58	8.0	<2	1	<5	0.9	21.0
93BT221	12	<100	<5	210	2	<20	<10	<10	156	57.0	3.0	<10	<20	520	380	<200	<2	2	24	30	5.2	<2	1	<5	0.7	4.8
93BT227	270	<100	<5	580	<5	<20	<10	<10	3440	7.8	2.2	<10	<82	280	370	<490	<2	11	7	<37	1.7	<4	<1	<5	<1.5	4.2
93BT228	600	<100	<5	<310	<4	<39	<13	<10	>10000	-24.0	10.0	<10	<20	<490	<350	<200	<8	21	36	49	<7.4	<5	<1	<19	<1.9	<18
93BT230	2640	<100	<5	<1200	<14	<100	<10	<63	>10000	-164.0	-9.9	<25	<130	<240	<130	<590	<26	<1	<5	<53	<0.2	<5	<1	<38	<2.4	<2.1
93BT261	<5	<100	<5	2300	<2	<20	<10	<10	265	0.8	0.6	<10	<20	<100	390	<200	<2	<1	<5	<10	0.3	<2	<1	<5	<0.5	0.7
93BT263A	<5	<100	<5	410	5	170	34	<10	361	54.3	9.2	<10	<20	300	230	<200	3	2	43	85	10.0	<2	<1	7	0.7	12.0
93BT263B	100	<360	<24	1100	<15	<340	<10	110	>10000	-11.0	-4.5	<63	<280	<490	<360	<1500	<5	<3	<6	<140	<1.7	<12	<1	<20	<2.7	<5.4
93BT263C	62	<100	<5	<200	<2	31	<10	<10	373	23.7	0.9	<10	<20	140	390	<200	<2	<1	<5	<10	0.7	<2	<1	<5	<0.5	1.3
93BT265	<5	<100	<5	<200	3	<20	<10	<10	81	4.0	1.1	<10	<20	<100	380	<200	<2	<1	<5	<10	0.9	<2	<1	<5	<0.5	1.2
93BT266A	170	<100	<12	<270	<2	86	<10	<21	3810	6.8	2.5	<22	<92	<100	280	<550	<8	<1	<17	<67	2.6	<7	<1	<5	<0.5	5.2
93BT266B	120	<100	<5	<200	<2	64	<32	<10	8970	66.5	7.3	<10	<20	<130	<200	<200	<15	<1	54	90	9.4	<2	<1	<8	<0.7	12.0
93BT268	9	<100	<5	<200	6	37	<10	<10	175	12.0	1.2	<10	<20	<100	570	<200	<2	<1	<5	<10	<0.2	<2	<1	<5	<0.5	<0.5
93BT269	<15	<100	<5	220	<4	78	18	<10	2220	110.0	5.7	<10	<77	490	440	<470	4	2	37	<45	6.1	<5	<1	<9	1.1	16.0
93BT270	<5	<100	<5	<200	<2	<20	<10	<10	202	5.1	2.8	<10	<20	<100	76	<200	<2	<1	28	56	4.8	3	<1	<5	<0.5	1.8
93BT274	<5	<100	<5	<200	2	<20	<10	<10	23	0.7	2.2	<10	<20	150	310	<200	<2	2	31	59	5.7	<2	1	<5	0.6	6.3
93BT277	<5	<100	<5	<200	<2	27	<10	<10	75	1.7	1.4	<10	<20	<100	290	<200	<2	<1	13	28	1.9	<2	<1	<5	<0.5	6.0
93BT279	<5	<100	<5	<200	<2	<20	<10	<10	35	1.4	1.9	<10	<20	130	290	<200	<2	1	8	24	2.0	<2	<1	<5	<0.5	3.6
93BT291	61	<100	<5	<200	5	89	<10	<10	2510	-0.9	0.7	<10	<79	<100	480	<430	<2	<1	<5	<37	0.3	<2	<1	<5	<0.5	<0.5
93BT293	67	<100	<5	<200	<2	<20	<10	<10	337	1.9	1.9	<10	<20	270	350	<200	<2	3	10	<10	2.4	<2	<1	<5	<0.5	5.9
93BT297B	190	<100	<5	<260	<6	<38	<10	<21	>10000	-24.8	5.9	<10	<45	<360	<360	<200	<9	<4	<12	<20	<3	<4	<1	<15	<0.6	<8.8
93BT297C	912	<100	<5	<200	<8	72	<17	<49	>10000	95.3	10.0	33	<110	<100	<240	<440	<30	<1	<5	<30	0.4	<2	<1	<5	<0.9	1.6
93BT312A	94	<100	<5	<200	<2	<20	<10	<10	719	20.9	10.0	<10	<20	<100	<50	<200	<2	<1	<5	<10	0.4	<2	<1	<5	<0.5	<0.5
93BT329A	180	<100	<5	230	10	<20	<10	<10	1700	12.0	1.7	<10	<50	170	440	<200	3	2	6	<24	1.1	4	<1	<5	<0.5	2.2
93BT329B	586	<100	<5	<200	<4	<25	<10	<10	9010	29.3	7.3	<10	<20	1300	<320	<200	<8	<6	30	49	5.1	<3	<1	<7	<0.5	23.0
93BT329C	30	<100	<5	<200	<2	53	<10	<10	930	8.4	4.5	<10	<44	880	430	<200	21	4	26	65	4.8	<2	<1	<5	0.6	17.0
93BT329D	220	<100	<5	<200	<5	<23	<10	<10	6200	24.9	4.1	<10	<20	1300	370	<200	<6	6	27	44	6.0	<3	<1	<5	<0.5	18.0
93BT331	<5	<100	7	<200	<2	<20	<10	<10	71	1.0	0.5	<10	<20	190	170	<200	<2	<1	<5	14	0.5	<2	<1	<5	<0.5	<0.5
93BT354	110	<100	<5	<200	3	<20	<10	<10	5270	6.8	1.1	<10	<20	290	470	<200	<2	<1	<5	<10	0.6	<2	<1	<5	<0.5	0.9
93GL107	<5	<100	<5	<200	<2	<20	11	<10	53	1.1	2.6	<10	<20	4900	<50	<200	<2	<1	9	14	1.8	3	<1	<5	<0.5	2.8

Samples collected by T.K. Bundtzen (BT), Karen Clautice (KC), Greg Laird (GL), Gina Cruse (CGR), and Shirley Liss (SL). Underlined values indicate anomalies by inspection. Analytical data from Bondar-Clegg Laboratories, North Vancouver, British Columbia, Canada. The following elements were analyzed by both Induced Neutron Activation (INAA) and Induced Coupled Plazma (ICP) techniques: Mo, Ag, Co, Ni, Cd, As, Sb, Fe, Sn, Zr, La, Ba, Cr, W, Te, Na, Zn, and Ta; the ICP method is always listed second in the table. The following elements were analyzed only by the INAA method: Au, Ir, Se, Cs, Ce, Sm, Eu, Tb, Yd, Lu, Sc, Hf, Th, U, and Br. The following elements were analyzed exclusively with ICP technology: Cu, Pb, Bi, Mn, V, Al, Mg, Ca, Ga, K, Li, Nb, Sr, Y, and Ti.

Sample no.	Au ppb	Ir ppb	Ag ppm	Zn ppm	Mo ppm	Ni ppm	Co ppm	Cd ppm	As ppm	Sb ppm	Fe pct	Se ppm	Te ppm	Ba ppm	Cr ppm	Sn ppm	W ppm	Cs ppm	La ppm	Ce ppm	Sm ppm	Eu ppm	Tb ppm	Yb ppm	Lu ppm	Sc ppm
93GL110	<5	<100	<5	350	<2	93	15	<10	275	133.0	3.4	<10	<20	2500	<50	<200	<2	4	14	31	3.3	<2	<1	6	<0.5	6.7
93GL115	<5	<100	<5	<200	<2	<20	<10	<10	5	0.9	-0.5	<10	<20	<100	<50	<200	<2	<1	<5	<10	<0.2	<2	<1	<5	<0.5	<0.5
93GL128	9	<100	<5	<200	<2	<20	<10	<10	121	8.5	0.8	<10	<20	<100	52	<200	<2	<1	<5	<10	<0.2	<2	<1	<5	<0.5	<0.5
93GL147	2900	<100	<5	<200	<2	<20	<10	<10	2030	153.0	10.0	<10	<20	120	<50	<200	<6	3	28	42	4.6	4	<1	<5	<0.6	5.7
93GL150	12	<100	<5	<200	<2	59	43	<10	1150	74.6	7.5	<10	<51	310	<50	<200	3	2	16	<30	3.5	<2	<1	<6	<1.3	15.0
93GL158	<5	<100	<5	<200	<2	<20	<10	<10	128	2.8	0.8	<10	<20	<100	<50	<200	<2	<1	<5	<10	0.6	<2	<1	<5	<0.5	0.6
93GL160	<5	<100	<5	<200	<2	21	15	<10	39	9.2	3.9	<10	<20	360	110	<200	<2	5	43	100	8.6	<2	1	5	0.9	18.0
93GL170	<5	<100	<5	<200	<2	50	14	<10	9	1.2	4.8	<10	<20	280	110	<200	<2	5	19	38	4.4	<2	<1	<5	0.5	17.0
93GL187	<5	<100	<5	<200	<2	46	<10	<10	200	63.7	1.7	<10	<20	130	<50	<200	<2	1	<5	<10	0.8	<2	<1	<5	<0.5	1.6
93GL193	<5	<100	<5	290	<2	85	88	<10	8	1.5	10.0	<10	<20	110	94	<200	<2	1	13	35	4.8	<2	1	7	0.9	58.7
93GL196	<5	<100	<5	<200	<2	<20	<10	<10	8	2.3	1.1	<10	<20	4500	<50	<200	<2	<1	11	29	2.9	<2	<1	<5	<0.5	5.4
93GL197	<5	<100	<5	<200	<2	<20	<10	<10	10	3.5	3.2	<10	<20	350	<50	<200	<2	<1	<5	<10	1.4	2	<1	<5	<0.5	9.3
93GL198	<5	<100	<5	<200	<2	<20	<10	<10	7	1.2	2.1	<10	<20	150	63	<200	<2	1	17	24	4.1	<2	<1	<5	<0.5	3.4
93GL199	40	<100	<5	<200	<2	<20	<10	<10	9	3.3	1.4	<10	<20	<100	<50	<200	2	<1	12	15	1.9	<2	<1	<5	<0.5	4.1
93GL200	10	<100	<5	<200	<2	140	40	<10	92	8.7	3.1	<10	<20	<100	460	<200	<2	1	21	38	5.4	4	<1	<5	<0.5	15.0
93GL201	11	<100	<5	<200	<2	<20	<10	<10	64	18.0	3.6	<10	<20	410	78	<200	2	3	23	32	4.2	<2	<1	<5	<0.5	8.2
93GL202A	<5	<100	<5	<200	<2	<20	<10	<10	131	1.0	-0.5	<10	<20	<100	<50	<200	<2	<1	<5	<10	<0.2	<2	<1	<5	<0.5	<0.5
93GL202B	14	<100	<5	<200	<2	<20	<10	<10	66	3.5	1.7	<10	<20	210	54	<200	<2	<1	24	54	4.2	<2	<1	<5	<0.5	4.6
93GL203	64	<100	<5	<200	<2	<20	<10	<10	177	7.4	3.9	<10	<20	<100	<50	<200	<2	<1	5	13	1.1	<2	<1	<5	<0.5	2.2
93GL204	20	<100	<5	<200	<2	<20	14	<10	11	1.3	3.3	<10	<20	190	73	<200	<2	2	20	36	4.2	<2	<1	<5	<0.5	9.1
93GL205	<5	<100	<5	<200	<2	<20	<10	<10	4	2.0	-0.5	<10	<20	<100	<50	<200	<2	<1	<5	12	0.6	<2	<1	<5	<0.5	<0.5
93GL206	<5	<100	<5	<200	<2	40	18	<10	20	47.2	3.0	<10	<20	4300	1000	<200	4	3	6	<10	2.3	5	<1	<5	<0.5	47.0
93GL211A	<5	<100	<5	<200	<2	<20	<10	<10	13	1.7	-0.5	<10	<20	<100	<50	<200	<2	<1	<5	<10	<0.2	<2	<1	<5	<0.5	1.0
93GL211B	<5	<100	<5	240	9	59	14	<10	124	1.4	4.8	<10	<20	1700	79	<200	<2	4	26	51	4.6	<2	<1	<5	<0.5	12.0
93GL213	<5	<100	<5	<200	17	29	<10	<10	5	1.0	1.8	<10	<20	3100	<50	<200	<2	2	10	23	1.8	<2	<1	<5	<0.5	6.8
93GL228	<5	<100	<5	<200	5	<20	<10	<10	10	20.7	0.7	<10	<20	180	<50	<200	<2	<1	<5	<10	0.4	<2	<1	<5	<0.5	1.1
93GRC010	17	<100	<5	<200	<2	<20	<10	<10	166	4.8	1.8	<10	<20	<100	<50	<200	<2	<1	<5	<10	<0.2	<2	<1	<5	<0.5	0.8
93GRC011	<5	<100	<5	<200	<2	<20	<10	<10	1	0.3	-0.5	<10	<20	<100	<50	<200	<2	<1	<5	<10	0.4	<2	<1	<5	<0.5	0.6
93GRC026	<5	<100	<5	<200	<2	<20	<10	<10	10	11.0	-0.5	<10	<20	<100	<50	<200	<2	<1	<5	<10	0.3	<2	<1	<5	<0.5	0.5
93GRC027	160	<100	<5	<200	<2	<20	<10	<10	8860	14.0	10.0	<10	<20	160	<50	<200	<5	<1	<5	<10	0.8	<2	<1	<5	<0.5	0.9
93GRC083	<5	<100	<5	<200	9	49	<10	<10	87	0.9	3.0	<10	<20	300	<50	<200	<2	<1	5	<10	1.4	<2	<1	<5	<0.5	3.2
93GRC084	<5	<100	<5	<200	<2	27	<10	<10	268	1.2	0.9	<10	<20	560	<50	<200	<2	<1	<5	<10	0.6	<2	<1	<5	<0.5	1.9
93KC102	<19	<100	<5	<200	<4	<20	<10	<10	132	409.0	1.8	<23	<96	<100	<120	<600	<2	<1	27	<56	5.1	<9	<1	<20	<0.5	7.0
93KC103	<5	<100	<5	<200	<14	<20	<10	<10	1080	69.8	2.2	<10	<46	4400	100	<200	4	3	16	<30	3.9	<2	<1	<6	<0.5	11.0
93KC107	<5	<100	<5	<200	<2	<20	<10	<10	11	30.0	1.4	<10	<20	<100	<50	<200	<2	<1	14	33	4.1	2	<1	<5	<0.5	4.0
93KC111A	27	<100	13	<200	<2	<20	<10	<10	403	49.3	-0.5	<10	<20	<100	<50	<200	<2	<1	<5	<10	0.3	<2	<1	<5	<0.5	<0.5
93KC111B	7170	<100	<5	<620	<6	<43	<10	<21	≥10000	-72.4	-5.1	<10	<41	<100	<50	<200	<10	<1	<9	<10	<1.2	<2	<1	<13	<0.5	<1.2
93KC115	<5	<100	<5	<200	3	<20	<10	<10	352	47.1	-0.5	<10	<20	<100	<50	<200	<2	<1	<5	<10	0.2	<2	<1	<5	<0.5	<0.5
93KC116	<5	<100	<5	30000	<2	<20	14	320	35	14.0	2.9	<10	<20	530	50	<200	<2	4	30	55	6.1	3	<1	6	0.8	10.0
93KC131	<5	<100	<5	<200	<2	<20	<10	<10	14	14.0	-0.5	<10	<20	120	<50	<200	<2	<1	<5	<10	<0.2	<2	<1	<5	<0.5	<0.5
93KC132	12	<100	<5	<200	<2	<20	<10	<10	22	81.5	0.6	<10	<20	<100	<50	<200	<2	<1	9	20	1.4	<2	<1	<5	<0.5	<0.5
93KC133	<5	<100	<5	<200	<2	<20	<10	<10	16	32.9	-0.5	<10	<20	<100	<50	<200	<2	<1	<5	14	0.7	<2	<1	<5	<0.5	<0.5
93KC135A	<5	<100	<5	<200	<2	<20	<10	<10	20	5.0	1.3	<10	<20	<100	<50	<200	<2	<1	<5	<10	0.5	<2	<1	<5	<0.5	1.4
93KC135B	<5	<100	<5	<200	<2	<20	<10	<10	33	11.0	1.4	<10	<20	380	56	<200	<2	2	12	33	2.3	<2	<1	<5	<0.5	5.5
93KC136	<5	<100	<5	<200	<2	<20	<10	<10	6	3.0	1.2	<10	<20	<100	<50	<200	<2	<1	<5	<10	0.3	<2	<1	<5	<0.5	1.1
93KC138	<5	<100	<5	240	18	59	<10	<10	29	8.8	2.5	<10	<20	4200	<50	<200	<2	3	5	<10	1.7	<2	<1	<5	<0.5	9.2
93KC142	7	<100	<5	280	<2	73	12	<10	13	6.0	7.1	<10	<20	430	120	<200	<2	7	19	<10	3.0	<2	<1	<5	<0.5	24.0
93KC149A	<5	<100	<5	270	44	110	<10	<10	26	4.9	1.5	<10	<20	2900	<50	<200	<2	2	10	19	3.3	<2	<1	<5	<0.5	5.8
93KC149B	<5	<100	<5	290	24	<20	<10	<10	48	6.3	2.5	<10	<20	5700	140	<200	<2	8	<5	<10	1.2	<2	<1	<5	<0.5	23.0
93KC151A	<5	<100	<5	<200	<2	82	33	<10	3	5.9	7.3	<10	<20	590	98	<200	<2	5	49	80	10.0	<2	2	6	1	26.0

Sample no.	Au ppb	Ir ppb	Ag ppm	Zn ppm	Mo ppm	Ni ppm	Co ppm	Cd ppm	As ppm	Sb ppm	Fe pct	Se ppm	Te ppm	Ba ppm	Cr ppm	Sn ppm	W ppm	Cs ppm	La ppm	Ce ppm	Sm ppm	Eu ppm	Tb ppm	Yb ppm	Lu ppm	Sc ppm
93KC151B	7	<100	<5	210	<2	<20	<10	<10	11	2.5	5.6	<10	<20	510	170	<200	<2	11	15	23	1.7	<2	<1	<5	<0.5	27.0
93KC163	<5	<100	<5	280	<2	64	68	<10	72	14.0	10.0	<10	<20	200	110	<200	<2	2	9	<10	3.2	<2	<1	6	0.7	26.0
93KC170	23	<100	<5	<200	<2	<20	<10	<10	1210	20.0	1.1	<10	<46	260	<50	<200	6	9	70	110	8.3	<5	<1	<7	<0.9	11.0
93KC171	<5	<100	10	<200	<2	<20	<10	<10	72	5.5	0.9	<10	<20	210	91	<200	10	28	69	120	7.6	<2	2	6	0.7	8.7
93KC177	<5	<100	<5	<200	<2	<20	<10	<10	6	2.2	-0.5	<10	<20	<100	<50	<200	<2	<1	<5	<10	0.3	<2	<1	<5	<0.5	0.7
93KC195A	<5	<100	<5	<200	<2	<20	<10	<10	6	1.9	1.2	<10	<20	<100	<50	<200	<2	<1	18	29	3.0	<2	<1	<5	<0.5	3.5
93KC195B	19	<100	<5	<200	<2	<20	<10	<10	15	20.0	3.8	<10	<20	<100	<50	<200	<2	<1	40	79	6.3	3	<1	<5	<0.5	6.0
93KC202	<5	<100	<5	<200	<2	<20	<10	<10	3	1.9	-0.5	<10	<20	110	<50	<200	<2	<1	6	10	0.9	<2	<1	<5	<0.5	1.0
93KC214	<5	<100	<5	220	<2	85	33	<10	3	4.0	6.2	<10	<20	620	140	<200	2	5	40	81	6.9	<2	<1	<5	0.7	24.0
93KC215	<5	<100	<5	<200	<2	<20	23	<10	2	3.9	4.8	<10	<20	510	100	<200	<2	4	45	75	7.8	5	<1	<5	0.6	18.0
93KC218	<5	<100	<5	<200	<2	<20	<10	<10	17	2.1	0.6	<10	<20	110	<50	<200	<2	<1	<5	<10	0.7	<2	<1	<5	<0.5	2.3
93KC219	<5	<100	<5	<200	<2	<20	<10	<10	17	4.6	0.9	<10	<20	<100	<50	<200	<2	<1	<5	<10	<0.2	<2	<1	<5	<0.5	<0.5
93KC222	19	<100	<5	<200	<2	32	<10	<10	261	78.6	2.6	<10	<20	170	<50	<200	<2	<1	<5	<10	0.4	<2	<1	<5	<0.5	3.4
93SL04	<5	<100	<5	<200	<2	<20	<10	<10	38	1.4	-0.5	<10	<20	<100	<50	<200	<2	<1	<5	<10	0.2	<2	<1	<5	<0.5	<0.5
93SL22B	<5	<100	<5	8400	<2	<20	<10	53	110	47.4	1.4	<10	<20	<100	<50	<200	<2	<1	11	<10	11.0	7	3	7	0.8	1.4
93SL27B	27	<100	<5	<200	3	59	14	<10	1490	14.0	5.0	<10	<43	410	<50	<200	<2	1	8	<21	1.8	<2	<1	<5	0.5	1.9
93SL32	<5	<100	<5	<200	<2	<20	<10	<10	19	0.9	5.8	<10	<20	<100	<50	<200	<2	<1	5	12	3.5	3	<1	<5	<0.5	0.7
93SL40	<5	<100	<5	<200	<2	<20	<10	<10	2	2.8	-0.5	<10	<20	<100	<50	<200	<2	<1	<5	<10	0.2	<2	<1	<5	<0.5	<0.5
93SL47A	26	<100	<5	<200	<2	<20	<10	<10	62	29.8	1.2	<10	<20	<100	<50	<200	<2	<1	<5	<10	0.5	<2	<1	<5	<0.5	1.1
93SL47B	<5	<100	<5	<200	<2	40	24	<10	25	3.2	4.6	<10	<20	160	110	<200	<2	1	49	85	9.0	4	1	<5	<0.5	15.0
93SL47C	<5	<100	<5	<200	<2	<20	<10	<10	38	5.1	1.3	<10	<20	<100	53	<200	<2	<1	7	<10	1.5	<2	<1	<5	<0.5	8.3
93SL49B	6	<100	<5	350	<2	40	70	<10	5	1.5	10.0	<10	<20	<100	180	<200	<2	1	13	<10	4.8	<2	1	7	0.9	54.8
93SL50	14	<100	<5	2500	<2	94	28	<10	553	48.3	10.0	<10	<20	140	<50	<200	<2	7	11	23	2.2	<2	<1	<5	<0.5	11.0
93SL51A	<5	<100	<5	<200	<2	<20	<10	<10	6	1.7	0.9	<10	<20	<100	<50	<200	<2	<1	<5	<10	1.2	<2	<1	<5	<0.5	1.5
93SL51B	<5	<100	<5	<200	<2	<20	<10	<10	2	0.6	-0.5	<10	<20	130	<50	<200	<2	1	7	13	1.4	<2	<1	<5	<0.5	1.2
93SL51C	<5	<100	<5	<200	<2	<20	<10	<10	2	0.8	0.9	<10	<20	630	<50	<200	<2	4	12	23	2.5	<2	<1	<5	<0.5	3.0
93SL51E	<5	<100	<5	320	<2	<20	36	<10	7	3.7	10.0	<10	<20	<100	<50	<200	<2	<1	39	82	16.0	10	3	15	2.1	39.0
93SL57A	<5	<100	<5	<200	<2	<20	<10	<10	2	0.6	0.9	<10	<20	100	<50	<200	<2	<1	<5	<10	0.9	<2	<1	<5	<0.5	3.1
93SL62A	<5	<100	<5	<200	<2	33	<10	<10	-1	0.5	3.4	<10	<20	520	<50	<200	<2	3	44	83	7.8	5	1	<5	0.7	12.0
93SL68A	<5	<100	<5	<200	<2	<20	<10	<10	27	26.3	2.2	<10	<20	310	<50	<200	<2	1	8	<10	1.5	<2	<1	<5	<0.5	2.2
93SL75	<5	<100	<5	280	<2	120	74	<10	5	6.5	10.0	<10	<20	110	420	<200	3	1	10	25	3.8	4	<1	<5	0.8	60.4
93SL76A	<5	<100	<5	640	<2	<20	<10	<10	158	19.0	10.0	<10	<20	360	<50	<200	<2	<1	<5	<10	1.1	2	<1	<5	<0.5	3.3
93SL76B	<5	<100	<5	<200	<2	<20	<10	<10	81	27.4	3.6	<10	<20	120	<50	<200	<2	<1	<5	<10	0.6	<2	<1	<5	<0.5	<0.5
93SL78B	8	<100	<5	220	<2	<20	<10	<10	57	2.7	10.0	<10	<20	<100	<50	<200	<2	2	8	<10	0.6	<2	<1	<5	<0.5	2.7
93SL78C	<5	<100	<5	240	<2	78	75	<10	3	1.8	10.0	<10	<20	<100	350	<200	2	3	10	22	3.7	3	<1	<5	0.7	56.9
93SL82A	<5	<100	<5	<200	<2	<20	<10	<10	8	3.9	1.3	<10	<20	250	<50	<200	<2	<1	6	<10	1.1	<2	<1	<5	<0.5	3.2
93SL99	<5	<100	<5	<200	<2	<20	<10	<10	2	0.6	1.7	<10	<20	220	<50	<200	<2	2	<5	<10	1.1	<2	<1	<5	<0.5	5.6
93SL106B	<5	<100	<5	<200	<2	<20	<10	<10	1	0.5	5.6	<10	<20	<100	<50	<200	<2	<1	11	16	5.1	<2	<1	<5	<0.5	4.2
93SL117B	21	<100	<5	<200	<2	<20	<10	<10	53	57.3	1.0	<10	<20	<100	<50	<200	<2	<1	5	<10	2.1	<2	<1	<5	<0.5	0.7
93SL117C	7	<100	<5	<200	<2	<20	<10	<10	335	16.0	1.0	<10	<20	<100	79	<200	<2	<1	7	<10	1.2	<2	<1	<5	<0.5	1.9
93SL120B	<5	<100	<5	<200	<2	<20	<10	<10	5	0.7	6.4	<10	<20	<100	<50	<200	<2	<1	<5	<10	5.9	2	2	5	0.6	17.0
93SL123B	9	<100	<5	<200	<2	36	18	<10	116	5.7	10.0	<10	<20	1800	290	<200	3	5	<5	<10	1.4	<2	<1	<5	<0.5	72.3
93SL142C	<5	<100	<5	<200	<2	25	11	<10	14	7.3	0.7	<10	<20	<100	<50	<200	<2	<1	<5	<10	0.5	<2	<1	<5	<0.5	2.1
93SL150C	<5	<100	<5	<200	<2	36	11	<10	15	1.8	3.4	<10	<20	460	<50	<200	<2	1	21	35	4.4	<2	<1	<5	<0.5	6.1

Sample no.	Hf ppm	Ta ppm	Th ppm	U ppm	Na ppm	Br ppm	Rb ppm	Zr ppm	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Mo ppm	Ni ppm	Co ppm	Cd ppm	Bi ppm	As ppm	Sb ppm	Fe pct	Mn ppm	Te ppm	Ba ppm	Cr ppm	V ppm	Sn ppm
93KC175	<2	<1	2.7	2.4	0.13	10	85	<500	0.5	74	17	13	2	16	11	<1	<5	34	<5	3.57	1239	<10	197	55	8	<20
93BT153	2	1	2.0	0.5	8.29	<1	<10	<500	<0.2	9	7	6	1	6	2	<1	<5	<5	<5	0.85	421	<10	20	53	<1	<20
93BT155	<2	<1	1.5	<0.5	0.06	2	16	<500	<0.2	13	3	9	2	9	2	<1	<5	178	<5	1.06	16	<10	41	301	<1	<20
93BT161B	4	<1	5.9	4.0	0.13	5	72	<500	<0.2	13	9	24	3	30	12	<1	<5	296	<5	4.28	748	<10	100	273	11	<20
93BT164	5	2	10.0	3.2	1.40	<1	140	<500	<0.2	36	18	62	3	10	4	<1	<5	9	5	5.55	194	<10	200	127	34	<20
93BT173	<2	<1	<0.5	<0.5	<0.05	<1	<10	<500	<0.2	6	5	4	<1	8	1	<1	<5	16	<5	0.55	98	<10	16	489	<1	<20
93BT176	<2	<1	1.2	<0.5	0.37	<1	22	<500	<0.2	36	9	27	<1	11	3	<1	<5	10	<5	0.88	263	<10	48	196	<1	<20
93BT177	<2	<1	<0.5	1.7	<0.05	2	<10	<500	1.6	9941	12	364	8	17	3	3	<5	72	22	1.42	227	<10	15	114	<1	<20
93BT184	<2	<1	<0.5	0.6	<0.05	<1	<10	<500	<0.2	33	4	5	<1	11	2	<1	<5	87	6	0.47	50	<10	33	380	<1	<20
93BT191+	2	<1	2.0	0.7	0.25	<1	10	<500	<0.2	43	6	18	2	19	5	<1	<5	16	<5	2.55	613	<10	37	405	3	<20
93BT195	6	2	14.0	3.7	0.25	<1	170	<500	<0.2	87	13	74	<1	45	16	<1	<5	<5	<5	3.26	754	<10	127	128	16	<20
93BT197A	29	<1	<3.1	<2.1	0.06	<3	<10	<1200	21.8	659	138000	12747	<1	4	1	82.9	7	16	52	1.61	146	16	223	46	<1	<20
93BT204B	<2	<1	<0.5	<0.5	0.05	7	26	<500	0.4	103	50	79	<1	21	11	1.3	<5	402	26	3.47	489	<10	1372	18	3	<20
93BT205	<2	<1	0.8	1.8	<0.05	4	<10	<500	0.5	90	23	36	<1	3	2	<1	<5	23	31	0.46	151	<10	676	4	<1	<20
93BT210	<4	<1	2.2	<0.5	<0.05	6	<10	<500	5.4	245	2124	6802	<1	20	6	32.5	<5	30	103	3.06	913	<10	148	338	<1	<20
93BT211	<2	<1	<0.5	<0.5	0.06	<1	<10	<500	0.3	92	45	158600	2	5	7	507.2	<5	22	22	5.24	2392	44	45	21	<1	<20
93BT220	7	<1	10.0	3.6	1.30	1	69	<500	<0.2	69	18	606	<1	56	22	2.9	<5	43	8	4.23	2067	<10	184	81	21	<20
93BT221	8	<1	5.6	0.7	0.80	5	45	<500	<0.2	42	34	348	<1	19	9	1.8	<5	171	33	2.69	311	<10	225	280	<1	<20
93BT227	<4	<1	2.4	<0.5	0.06	<27	24	<500	<0.2	12	10	235	<1	18	5	7.1	<5	>2000	11	2.03	551	<10	90	358	<1	<20
93BT228	<2	<1	<9	<1.6	<0.34	<109	<130	<500	<0.2	24	9	111	<1	19	10	57.2	<5	>2000	26	6.6	1190	<10	128	148	<1	<20
93BT230	<5	<1	<1.7	<2.9	<1.4	<351	<21	<500	<0.2	15	22	40	4	4	2	350.3	10	>2000	111	9.07	517	<10	27	34	<1	<20
93BT261	<2	<1	0.9	<0.5	0.11	2	<10	<500	<0.2	15	<2	2042	<1	9	2	8.7	<5	413	7	0.67	99	<10	20	285	<1	<20
93BT263A	5	2	13.0	11.0	0.46	5	39	<500	<0.2	146	14	206	<1	138	28	1.9	<5	478	38	6.3	173	<10	132	149	15	<20
93BT263B	<13	<1	<4.1	<2.5	0.08	<66	<47	<2400	<0.2	122	13	37	<1	33	12	21.6	<5	>2000	15	2.75	756	<10	22	188	<1	<20
93BT263C	<2	<1	1.3	0.9	<0.05	4	<10	<500	0.6	164	5	53	<1	9	1	<1	<5	501	23	0.76	29	<10	26	303	<1	<20
93BT265	<2	<1	1.5	<0.5	0.23	<1	<10	<500	<0.2	21	<2	22	3	14	2	<1	<5	184	10	1.03	156	<10	25	283	<1	<20
93BT266A	<5	<1	5.2	<0.5	7.86	<29	<31	<1200	<0.2	45	2	50	<1	16	13	7	<5	>2000	7	2.71	232	<10	27	145	13	<20
93BT266B	<7	<2	18.0	<4.4	6.05	<44	<10	<500	<0.2	78	<2	57	<1	45	23	15.6	<5	>2000	43	5.07	84	<10	11	152	69	<20
93BT268	<2	<1	0.9	1.0	0.25	2	<10	<500	<0.2	31	17	39	2	26	3	<1	<5	218	18	1.23	79	<10	39	542	<1	<20
93BT269	<4	<1	12.0	1.8	0.28	<21	63	<500	<0.2	24	19	24	<1	74	18	4.6	<5	>2000	73	4.1	824	<10	45	279	26	<20
93BT270	<2	<1	3.0	<0.5	0.36	2	<10	<500	0.3	64	5	40	<1	3	1	<1	<5	200	9	1.73	1056	<10	18	20	<1	<20
93BT274	7	<1	8.6	1.1	0.67	<1	51	<500	<0.2	30	2	35	2	19	5	<1	<5	37	<5	1.86	474	<10	37	187	5	<20
93BT277	<2	<1	3.1	0.9	1.60	<1	41	<500	<0.2	47	11	22	<1	14	5	<1	<5	83	<5	1.04	524	<10	24	145	<1	<20
93BT279	<2	<1	4.6	0.9	0.17	<1	22	<500	<0.2	20	2	35	<1	15	4	<1	<5	38	<5	1.67	310	<10	22	178	<1	<20
93BT291	<4	<1	<1.1	<0.5	<0.05	<18	<10	<500	<0.2	12	<2	11	<1	17	3	4.7	<5	>2000	10	0.83	58	<10	13	484	<1	<20
93BT293	3	<1	3.1	1.0	0.12	2	44	<500	<0.2	11	2	30	<1	12	3	<1	<5	296	6	1.56	69	<10	48	230	<1	<20
93BT297B	<2	<1	<4.6	<0.5	<0.44	<132	<54	<500	<0.2	18	6	10	<1	5	3	85	5	>2000	23	4.08	142	<10	44	205	2	<20
93BT297C	<2	<1	<0.5	<2.1	<2.6	<321	<10	<500	<0.2	11	10	12	6	13	13	324.0	14	>2000	68	7.93	34	<10	9	171	<1	<20
93BT312A	<2	<1	<0.5	4.3	<0.05	5	<10	<500	0.8	74	<2	24	<1	6	2	1.4	7	770	23	4.57	2451	<10	22	8	<1	<20
93BT329A	<2	<1	1.2	1.8	0.17	<11	26	<500	0.5	19	4	17	4	11	2	3.6	5	1796	11	1.45	66	<10	39	328	7	<20
93BT329B	<5	<1	9.0	<4.3	2.50	<40	110	<500	0.6	43	9	45	4	17	4	21.2	<5	>2000	25	5.46	62	<10	158	137	25	<20
93BT329C	<2	<1	7.9	2.4	0.89	8	95	<500	<0.2	80	<2	61	<1	27	6	2.1	<5	1006	14	3.47	488	<10	98	167	13	<20
93BT329D	<2	<1	6.5	3.4	0.48	<27	120	<500	1.5	16	10	38	7	10	2	13.3	7	>2000	25	3.23	83	<10	133	199	16	<20
93BT331	<2	<1	0.5	<0.5	8.64	<1	<10	<500	0.8	7	123	15	<1	11	3	<1	<5	162	6	0.41	240	<10	54	118	<1	<20
93BT354	<2	<1	0.6	1.2	<0.13	<22	<10	<500	4.0	27	110	16	<1	10	1	14	9	>2000	16	1.02	64	<10	62	343	1	<20
93GL107	<2	<1	1.0	0.7	0.08	<1	14	<500	0.5	75	<2	16	<1	6	5	<1	<5	89	<5	1.3	1097	<10	108	5	<1	<20
93GL110	3	<1	4.4	2.9	0.13	8	57	<500	1	85	7	115	<1	44	11	1.4	<5	244	76	2.44	1120	<10	211	7	2	<20
93GL115	<2	<1	<0.5	<0.5	0.09	<1	<10	<500	<0.2	5	<2	6	<1	2	<1	<1	<5	15	<5	0.2	35	<10	22	8	<1	<20
93GL128	<2	<1	<0.5	<0.5	<0.05	1	<10	<500	<0.2	12	<2	7	<1	10	2	<1	<5	111	9	0.74	11	<10	8	10	<1	<20
93GL147	<2	<1	1.7	0.9	<0.85	<26	30	<500	<0.2	90	4	41	<1	3	3	4.1	<5	1471	80	6.65	2467	<10	76	3	2	<20

Sample no.	Hf ppm	Ta ppm	Th ppm	U ppm	Na ppm	Br ppm	Rb ppm	Zr ppm	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Mo ppm	Ni ppm	Co ppm	Cd ppm	Bi ppm	As ppm	Sb ppm	Fe pct	Mn ppm	Te ppm	Ba ppm	Cr ppm	V ppm	Sn ppm
93GL150	<2	<1	3.4	1.8	<0.05	<12	23	<500	<0.2	126	93	47	<1	8	20	3.5	<5	817	41	3.34	294	<10	33	3	23	<20
93GL158	<2	<1	0.8	<0.5	4.90	1	<10	<500	<0.2	8	4	7	<1	6	1	<1	<5	100	<5	0.6	45	<10	10	5	<1	<20
93GL160	15	2	16.0	3.6	0.54	<1	130	<500	<0.2	26	11	45	<1	29	13	<1	<5	17	<5	2.87	466	<10	30	9	<1	<20
93GL170	5	1	7.6	2.3	0.72	<1	73	590	<0.2	21	9	91	<1	35	11	<1	<5	<5	<5	3.41	349	<10	31	30	24	<20
93GL187	<2	<1	0.8	<0.5	<0.05	5	<10	<500	<0.2	11	3	31	<1	16	5	<1	<5	172	38	1.54	56	<10	8	10	<1	<20
93GL193	4	1	1.8	0.6	2.60	<1	20	<500	<0.2	137	2	95	<1	32	37	<1	<5	<5	<5	4.68	701	<10	74	35	96	<20
93GL196	<2	<1	2.4	<0.5	0.15	<1	<10	<500	0.4	57	3	11	<1	4	4	<1	<5	<5	<5	0.59	444	<10	1230	1	<1	<20
93GL197	<2	<1	0.9	0.6	0.09	<1	<10	<500	0.2	45	7	41	<1	5	4	<1	<5	<5	<5	1.87	557	<10	33	2	<1	<20
93GL198	5	<1	5.1	0.9	9.05	<1	<10	<500	<0.2	35	3	33	<1	12	13	<1	<5	<5	<5	1.96	106	<10	30	13	<1	<20
93GL199	<2	<1	2.8	<0.5	5.14	<1	<10	<500	<0.2	31	5	30	<1	14	7	<1	<5	<5	<5	1.39	482	<10	15	16	9	<20
93GL200	<2	<1	0.7	<0.5	0.51	1	26	<500	0.3	934	<2	13	<1	95	27	<1	<5	32	<5	1.95	808	<10	11	120	9	<20
93GL201	11	<1	7.7	1.9	1.40	2	96	<500	0.2	46	60	17	<1	6	3	<1	<5	65	9	2.71	63	<10	49	8	<1	<20
93GL202A	<2	<1	<0.5	<0.5	0.32	1	<10	<500	<0.2	3	<2	9	<1	2	<1	1.1	<5	122	<5	0.37	18	<10	14	10	<1	<20
93GL202B	6	<1	5.6	1.1	3.90	<1	28	<500	<0.2	6	4	18	<1	5	4	<1	<5	66	<5	1.47	271	<10	34	10	<1	<20
93GL203	<2	<1	0.7	<0.5	0.06	1	<10	<500	0.5	77	8	33	<1	5	3	1.2	<5	154	<5	2.16	1245	<10	20	2	<1	<20
93GL204	4	<1	6.2	1.5	0.86	<1	33	<500	<0.2	47	4	38	<1	15	10	<1	<5	7	<5	1.72	1240	<10	42	18	13	<20
93GL205	<2	<1	<0.5	<0.5	0.06	<1	<10	<500	0.3	43	<2	2	3	<1	<1	<1	<5	18	<5	0.11	100	<10	7	2	<1	<20
93GL206	8	3	3.5	2.4	1.00	3	130	<500	<0.2	43	<2	10	2	21	8	<1	<5	16	27	0.75	63	<10	65	112	24	<20
93GL211A	<2	<1	<0.5	<0.5	<0.05	<1	<10	<500	<0.2	5	8	15	<1	3	<1	<1	<5	24	<5	0.18	65	<10	13	8	<1	<20
93GL211B	6	<1	7.8	8.0	0.60	2	76	<500	<0.2	44	13	112	11	58	9	<1	<5	97	<5	3.28	120	<10	91	13	16	<20
93GL213	3	<1	3.4	8.8	0.22	<1	44	<500	<0.2	28	10	96	15	17	<1	<1	<5	9	<5	1.39	39	<10	192	9	29	<20
93GL228	<2	<1	<0.5	0.8	<0.05	1	<10	<500	<0.2	15	5	37	2	20	3	<1	<5	11	11	0.65	131	<10	16	8	15	<20
93GRC010	<2	<1	0.5	<0.5	1.30	2	<10	<500	<0.2	5	4	12	<1	5	2	<1	<5	154	<5	1.6	50	<10	5	9	<1	<20
93GRC011	<2	<1	<0.5	<0.5	0.16	<1	<10	<500	0.5	53	<2	4	<1	<1	<1	<1	<5	<5	<5	0.13	85	<10	3	2	<1	<20
93GRC026	<2	<1	<0.5	<0.5	<0.05	2	<10	<500	0.5	77	2	4	<1	1	<1	<1	<5	22	<5	0.17	70	<10	16	1	<1	<20
93GRC027	<2	<1	<0.5	<0.5	<0.21	<39	<10	<500	0.6	63	6	22	<1	5	2	24.8	<5	>2000	9	4.39	2502	<10	21	3	<1	<20
93GRC083	<2	<1	1.7	2.2	<0.05	<1	19	<500	<0.2	47	9	80	9	41	6	<1	<5	108	<5	2.32	103	<10	22	6	<1	<20
93GRC084	<2	<1	<0.5	2.0	<0.05	2	18	<500	0.5	10	23	79	2	15	2	2.6	<5	264	<5	0.72	494	<10	36	6	<1	<20
93KC102	7	<1	6.6	<0.5	0.85	<12	23	<500	<0.2	209	11	26	9	16	6	<1	<5	106	312	2.02	503	<10	42	24	<1	<20
93KC103	<2	<1	7.3	26.0	0.29	<7	83	<500	<0.2	81	6	35	15	10	1	5.4	<5	1062	75	1.88	77	<10	221	14	21	<20
93KC107	<2	<1	2.4	<0.5	<0.05	2	10	<500	<0.2	21	9	15	<1	9	4	<1	<5	28	61	0.97	211	<10	8	11	<1	<20
93KC111A	<2	<1	<0.5	<0.5	<0.05	5	<10	<500	11.3	2	1258	104	<1	6	<1	2.4	10	420	75	0.3	17	<10	4	6	<1	<20
93KC111B	<2	<1	<3.7	<0.5	3.00	<125	<10	<500	6.3	<1	20	21	<1	1	<1	237.7	<5	>2000	84	4.05	10	<10	7	2	<1	<20
93KC115	<2	<1	<0.5	<0.5	<0.05	5	<10	<500	<0.2	<1	<2	3	<1	2	<1	1.4	<5	412	59	0.31	9	<10	3	9	<1	<20
93KC116	3	<1	7.3	1.9	0.19	2	80	<500	<0.2	57	42	16625	2	14	9	227.4	<5	34	28	1.76	846	13	24	8	<1	<20
93KC131	<2	<1	<0.5	<0.5	<0.05	2	<10	<500	0.5	77	<2	93	<1	<1	<1	<1	<5	29	12	0.06	31	<10	11	<1	<1	<20
93KC132	<2	<1	<0.5	0.6	<0.05	4	<10	<500	0.4	76	2	22	1	<1	1	<1	<5	35	42	0.28	574	<10	13	<1	<1	<20
93KC133	<2	<1	<0.5	<0.5	<0.05	2	<10	<500	0.4	78	3	12	6	2	2	<1	<5	29	21	0.17	83	<10	10	<1	<1	<20
93KC135A	<2	<1	1.1	<0.5	<0.05	1	10	<500	0.4	75	5	13	<1	4	2	<1	<5	26	5	0.76	233	<10	7	<1	<1	<20
93KC135B	4	<1	3.5	0.6	0.09	1	53	<500	0.3	79	5	27	4	9	6	<1	<5	43	11	0.85	289	<10	27	4	<1	<20
93KC136	<2	<1	<0.5	<0.5	0.11	1	<10	<500	0.5	57	6	8	<1	1	<1	<1	<5	28	<5	0.58	204	<10	5	<1	<1	<20
93KC138	4	<1	4.6	14.0	0.17	<1	55	<500	<0.2	59	9	97	15	49	6	<1	<5	36	<5	1.81	46	<10	200	9	18	<20
93KC142	5	<1	8.7	3.0	0.89	<1	120	<500	<0.2	41	8	122	<1	28	8	<1	<5	19	<5	3.83	354	<10	41	32	31	<20
93KC149A	<2	<1	2.4	25.0	0.06	<1	36	<500	<0.2	49	10	144	47	88	6	1	<5	38	<5	1.32	55	<10	215	7	19	<20
93KC149B	5	1	3.7	5.6	1.60	<1	130	<500	0.5	22	4	63	25	9	2	<1	<5	54	6	1.5	68	<10	280	13	21	<20
93KC151A	8	1	12.0	2.4	2.10	<1	110	940	<0.2	19	6	108	<1	71	22	<1	<5	14	6	3.69	708	<10	40	40	31	<20
93KC151B	7	2	12.0	3.1	1.10	<1	140	<500	<0.2	21	10	97	3	8	3	<1	<5	12	<5	3.26	241	<10	30	26	28	<20
93KC163	3	<1	0.9	3.3	0.17	1	25	<500	<0.2	92	8	98	<1	19	30	<1	<5	54	<5	5.71	1411	<10	24	23	40	<20
93KC170	15	2	18.0	3.6	6.17	<10	34	<500	<0.2	30	12	11	<1	7	3	4.2	<5	1093	14	0.9	40	<10	59	38	6	<20
93KC171	12	3	22.0	3.8	6.14	2	85	<500	<0.2	45	5	11	<1	10	4	<1	<5	65	<5	0.79	65	<10	147	41	9	<20

Sample no.	Hf ppm	Ta ppm	Th ppm	U ppm	Na ppm	Br ppm	Rb ppm	Zr ppm	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Mo ppm	Ni ppm	Co ppm	Cd ppm	Bi ppm	As ppm	Sb ppm	Fe pct	Mn ppm	Te ppm	Ba ppm	Cr ppm	V ppm	Sn ppm
93KC177	<2	<1	0.6	<0.5	1.40	<1	<10	<500	<0.2	3	<2	10	<1	4	3	<1	<5	<5	<5	0.41	278	<10	13	10	<1	<20
93KC195A	4	<1	4.7	1.0	0.05	<1	17	<500	<0.2	4	<2	13	<1	10	3	<1	<5	9	<5	0.99	32	<10	11	14	<1	<20
93KC195B	3	<1	5.0	1.4	0.08	1	15	<500	0.4	297	4	21	2	10	3	<1	<5	13	11	2.67	68	<10	7	29	12	<20
93KC202	3	<1	1.4	<0.5	<0.05	<1	10	<500	<0.2	4	<2	2	3	2	1	<1	<5	9	<5	0.28	17	<10	12	7	<1	<20
93KC214	10	2	12.0	1.9	2.70	<1	110	<500	<0.2	21	5	87	1	46	20	<1	<5	<5	<5	3.65	436	<10	31	38	36	<20
93KC215	9	1	12.0	2.0	2.40	<1	93	<500	<0.2	44	4	69	<1	30	14	<1	<5	24	<5	2.92	669	<10	36	38	28	<20
93KC218	<2	<1	<0.5	0.5	<0.05	<1	<10	<500	0.3	64	13	15	<1	5	1	<1	<5	22	<5	0.34	305	<10	15	3	<1	<20
93KC219	<2	<1	<0.5	<0.5	<0.05	<1	<10	<500	0.7	15	24	12	<1	6	1	<1	<5	15	<5	0.82	29	<10	7	11	<1	<20
93KC222	<2	<1	<0.5	<0.5	6.42	7	<10	<500	<0.2	17	4	51	<1	24	10	<1	<5	206	39	2.03	534	<10	17	17	12	<20
93SL04	<2	<1	<0.5	<0.5	7.57	<1	<10	<500	<0.2	10	4	3	<1	6	<1	<1	<5	34	<5	0.7	19	<10	8	5	<1	<20
93SL22B	<2	<1	<0.5	0.5	0.12	3	<10	<500	1	6840	9	5228	<1	12	4	41.4	<5	116	29	1.03	382	<10	2	2	<1	<20
93SL27B	<2	<1	0.9	3.3	<0.05	13	12	<500	<0.2	239	3	64	<1	33	11	5.4	<5	1421	6	4.02	40	<10	19	8	<1	<20
93SL32	<2	<1	<0.5	<0.5	0.14	1	<10	<500	0.4	55	3	14	5	2	1	<1	<5	13	<5	2.84	1367	<10	2	1	<1	<20
93SL40	<2	<1	<0.5	<0.5	<0.05	<1	<10	<500	0.4	81	3	3	1	<1	<1	<1	<5	<5	<5	0.05	30	<10	4	<1	<1	<20
93SL47A	<2	<1	0.7	<0.5	0.17	3	<10	<500	0.7	499	23	10	<1	3	1	<1	<5	30	21	0.98	12	<10	8	17	<1	<20
93SL47B	9	<1	12.0	3.2	2.30	1	23	<500	<0.2	990	3	58	3	56	19	<1	<5	<5	<5	3.62	198	<10	15	63	44	<20
93SL47C	<2	<1	1.7	<0.5	0.23	1	<10	<500	<0.2	24	4	7	5	4	<1	<1	<5	23	<5	0.98	15	<10	7	19	<1	<20
93SL49B	5	<1	1.5	<0.5	3.50	<1	<10	<500	<0.2	152	4	76	2	23	28	<1	<5	<5	<5	3.98	532	<10	21	56	64	<20
93SL50	<2	<1	1.5	4.2	<0.05	8	19	<500	<0.2	38	8	1095	4	20	11	5.2	<5	253	8	10	1743	<10	29	26	14	<20
93SL51A	<2	<1	0.6	<0.5	<0.05	<1	<10	<500	<0.2	44	4	20	1	2	2	<1	<5	<5	<5	0.69	256	<10	8	3	<1	<20
93SL51B	2	<1	1.4	1.0	<0.05	<1	25	<500	0.3	59	6	5	<1	2	2	<1	<5	<5	<5	0.34	165	<10	10	2	<1	<20
93SL51C	9	<1	3.4	1.7	0.19	<1	61	<500	<0.2	60	7	18	<1	3	2	<1	<5	<5	<5	0.58	156	<10	38	2	<1	<20
93SL51E	20	6	5.2	2.2	4.30	<1	<10	870	<0.2	108	<2	187	3	2	20	<1	<5	<5	<5	8.12	790	<10	8	1	136	<20
93SL57A	<2	<1	0.8	<0.5	<0.05	<1	<10	<500	<0.2	51	3	11	<1	3	2	<1	<5	<5	<5	0.59	160	<10	11	4	<1	<20
93SL62A	9	1	12.0	2.4	1.80	<1	110	<500	<0.2	53	10	55	<1	11	7	<1	<5	<5	<5	2.26	590	<10	32	15	3	<20
93SL68A	<2	<1	1.4	<0.5	<0.05	2	13	<500	0.4	85	5	19	<1	11	2	<1	<5	11	17	1.38	1289	<10	226	2	<1	<20
93SL75	6	<1	0.8	<0.5	2.50	1	<10	<500	<0.2	179	<2	81	<1	46	33	<1	<5	<5	<5	4.51	831	<10	52	158	101	<20
93SL76A	<2	<1	<0.5	0.5	<0.05	5	<10	<500	<0.2	10	18	317	<1	<1	3	<1	9	64	11	10	3929	<10	174	<1	3	<20
93SL76B	<2	<1	<0.5	<0.5	<0.05	3	<10	<500	0.2	77	3	60	<1	4	2	<1	<5	52	14	2.14	852	<10	46	1	<1	<20
93SL78B	<2	<1	<0.5	<0.5	<0.05	<1	<10	<500	<0.2	47	21	127	<1	<1	2	1.2	10	8	<5	10	6039	<10	8	<1	<1	<20
93SL78C	3	<1	0.9	<0.5	2.20	<1	<10	<500	<0.2	209	6	71	<1	49	36	<1	<5	<5	<5	4.99	895	<10	17	186	109	<20
93SL82A	<2	<1	2.0	2.0	0.28	<1	16	<500	<0.2	16	4	48	6	7	2	<1	<5	7	<5	1.17	111	<10	35	13	<1	<20
93SL99	<2	<1	1.2	0.7	0.18	<1	53	<500	<0.2	4	2	13	<1	7	2	<1	<5	<5	<5	1.38	60	<10	23	14	<1	<20
93SL106B	2	<1	2.3	0.6	0.08	<1	25	<500	<0.2	42	9	11	2	10	3	<1	<5	6	<5	3.22	1307	<10	8	2	<1	<20
93SL117B	<2	<1	<0.5	0.8	<0.05	4	<10	<500	<0.2	749	15	4	3	3	<1	<1	<5	35	36	0.82	14	<10	7	9	<1	<20
93SL117C	<2	<1	1.3	0.7	0.17	4	<10	<500	<0.2	18	7	22	<1	4	<1	<1	<5	309	8	0.92	27	<10	14	12	<1	<20
93SL120B	<2	<1	0.8	<0.5	0.36	<1	<10	<500	<0.2	54	6	14	<1	5	1	<1	<5	<5	<5	3.4	1803	<10	3	3	<1	<20
93SL123B	5	1	2.2	3.0	0.73	1	100	<500	<0.2	136	14	46	<1	25	15	<1	<5	83	<5	9.4	102	<10	66	17	31	<20
93SL142C	<2	<1	0.8	0.6	2.80	<1	<10	<500	<0.2	14	18	22	3	18	5	<1	<5	7	6	0.78	123	<10	14	8	<1	<20
93SL150C	4	<1	8.0	1.0	2.10	<1	72	<500	<0.2	17	<2	43	<1	12	7	<1	<5	<5	<5	2.53	399	<10	28	16	25	<20

Sample no.	W ppm	La ppm	Al pct	Mg pct	Ca pct	Ga ppm	Na pct	K pct	Li ppm	Nb ppm	Sr ppm	Ta ppm	Y ppm	Ti pct	Zr ppm	Sn ppm	Description
93KC175	<20	10	0.71	0.22	10.00	<2	0.02	0.38	3	18	609	<100	8	<0.01	<1	<5	3 m wide zone, rusty brown soil.
93BT153	<20	7	0.67	0.23	0.53	<2	0.36	0.02	4	<1	43	<100	4	<0.01	<1	<5	Quartz vein rubble, Rodine extension
93BT155	<20	4	0.17	0.05	0.11	<2	<0.01	0.05	<2	<1	6	<100	1	<0.01	<1	13	70 cm wide, quartz vein, north 5 east trend; contains aspy.
93BT161B	<20	23	1.15	0.14	0.33	<2	0.02	0.28	6	<1	25	<100	12	<0.01	<1	5	Gossan in metavolcanic schist (pCPzsf).
93BT164	<20	12	3.00	1.46	0.11	12	0.07	0.59	36	<1	15	<100	6	<0.01	3	9	Background sample, pelitic Solomon schist (pCPzspb).
93BT173	<20	<1	0.06	0.02	0.01	<2	<0.01	0.02	<2	<1	1	<100	<1	<0.01	<1	<5	Background sample, metaturbidite schist (pCPzct).
93BT176	<20	4	0.20	0.27	10.00	<2	0.02	0.09	2	9	149	<100	5	<0.01	<1	<5	Background sample, metaturbidite schist (pCPzct.)
93BT177	<20	4	0.10	0.03	10.00	<2	<0.01	0.04	<2	9	123	<100	16	<0.01	<1	6	Chalcopyrite bearing "F1" vein; 70 cm chip channel.
93BT184	<20	<1	0.08	<0.01	0.07	<2	<0.01	<0.01	<2	<1	2	<100	<1	<0.01	<1	7	Background sample albite rich schist (pCPzt).
93BT191+	<20	8	0.59	0.45	0.18	<2	0.02	0.04	10	<1	7	<100	7	<0.01	<1	6	
93BT195	<20	29	1.91	1.21	2.89	3	0.03	0.49	35	3	83	<100	14	0.01	1	7	Mineralized layer 20 cm thick in pCPzsf unit.
93BT197A	166	3	0.12	0.03	3.78	<2	0.08	0.02	<2	4	238	<100	10	<0.01	3	<5	Grab sample, sulfide barite mineralized zone.
93BT204B	<20	<1	0.37	0.20	10.00	2	<0.01	0.11	6	23	42	<100	8	<0.01	<1	<5	Mineralized horizon with tuff in pCPzm unit.
93BT205	<20	<1	0.14	0.06	10.00	<2	<0.01	0.06	<2	29	260	<100	4	<0.01	<1	<5	Ferricrete stain schist in pCPzm unit.
93BT210	70	<1	1.76	0.13	2.30	3	<0.01	0.04	<2	3	67	<100	6	<0.01	1	<5	Mineralized felsic schist (pCPzsf).
93BT211	1137	<1	0.04	2.28	10.00	<2	<0.01	0.02	3	12	42	<100	3	<0.01	<1	<5	Grab sample sphalerite rich breccia; in pCPzsf unit.
93BT220	<20	8	1.93	1.14	9.51	<2	0.05	0.19	44	8	96	<100	10	<0.01	<1	<5	Grab sample, sphalerite bearing pCPzsf unit.
93BT221	<20	13	0.75	0.10	3.49	2	0.05	0.4	<2	4	26	<100	9	<0.01	2	5	Grab sample pCPzsf schist.
93BT227	<20	7	0.44	0.05	0.56	<2	0.01	0.13	<2	<1	13	<100	7	<0.01	<1	5	Twin Mt. prospect grab sample.
93BT228	<20	19	0.96	0.04	0.41	<2	0.02	0.34	3	<1	143	<100	24	<0.01	<1	5	Twin Mt. prospect grab sample.
93BT230	<20	<1	0.15	0.01	0.02	10	0.03	0.02	5	<1	6	<100	<1	<0.01	<1	<5	Twin Mt. prospect grab sample.
93BT261	<20	2	0.09	0.10	0.26	<2	0.01	0.01	<2	<1	4	<100	<1	<0.01	<1	<5	20 cm thick "F1" quartz vein in pCPzt unit.
93BT263A	<20	38	2.36	0.21	0.06	8	0.02	0.28	23	<1	27	<100	14	<0.01	4	<5	Large sheeted "F1" quartz vein system; 1 m chip channel.
93BT263B	<20	5	0.43	1.03	2.20	<2	0.01	0.02	7	3	16	<100	3	<0.01	<1	<5	Large sheeted "F1" quartz zone; 1 m chip channel.
93BT263C	<20	3	0.14	0.01	<0.01	<2	<0.01	0.05	<2	<1	2	<100	<1	<0.01	<1	<5	Large sheeted "F1" quartz zone 2 m chip channel.
93BT265	<20	4	0.15	0.04	1.72	<2	0.01	0.04	<2	2	11	<100	2	<0.01	<1	<5	N. 40 E. trending quartz albite vein.
93BT266A	<20	14	0.91	0.51	0.05	4	0.2	0.03	12	<1	14	<100	3	<0.01	<1	<5	Mineralized gossan near metadiorite (Mzdg).
93BT266B	<20	19	2.40	1.88	0.10	15	0.08	0.01	53	<1	22	<100	4	<0.01	3	<5	Mineralized gossan near metadiorite (Mzdg).
93BT268	<20	<1	0.17	0.03	0.10	<2	0.02	<0.01	<2	<1	5	<100	<1	<0.01	<1	5	Quartz float zone near dredge tailings.
93BT269	<20	30	2.78	1.68	0.25	5	0.04	0.26	54	<1	19	<100	11	<0.01	3	9	Grab sample from caved portal, Rodine prospect.
93BT270	<20	8	0.13	2.72	10.00	<2	<0.01	0.02	4	21	382	<100	10	<0.01	<1	<5	Deformed marble (pCPzm) background sample.
93BT274	<20	25	1.07	0.85	5.52	<2	0.03	0.19	11	6	105	<100	9	<0.01	1	<5	Quartz-albite-gossan vein grab sample.
93BT277	<20	7	0.51	0.40	10.00	<2	0.03	0.12	5	11	194	<100	9	<0.01	2	<5	Low angle, N. 75 E. 8 NW., quartz-albite vein.
93BT279	<20	5	0.38	0.67	2.51	<2	0.02	0.08	4	3	51	<100	6	<0.01	1	5	Background sample, isoclinally folded (pCPzt).
93BT291	<20	1	0.04	0.02	0.09	<2	<0.01	0.01	<2	<1	3	<100	<1	<0.01	<1	<5	Quartz vein rubble grab sample with Aspy.
93BT293	<20	8	0.75	0.39	0.18	3	0.02	0.15	8	<1	7	<100	4	<0.01	1	<5	Quartz vein; N. 35 W. for 150 m.
93BT297B	<20	7	0.72	0.42	0.09	5	0.03	0.17	12	<1	12	<100	2	<0.01	<1	<5	Aspy-quartz vein; 40 cm chip channel; E.-W. trend.
93BT297C	<20	<1	0.10	0.02	<0.01	11	<0.01	0.04	<2	<1	2	<100	<1	<0.01	<1	<5	Aspy-quartz vein; 2 m chip channel; E.-W. trend.
93BT312A	<20	<1	0.04	0.63	10.00	<2	<0.01	<0.01	<2	24	64	<100	<1	<0.01	<1	<5	"White schist" (pCPzsf) gossan zone.
93BT329A	<20	3	0.20	0.08	0.21	<2	0.01	0.06	2	<1	6	<100	1	<0.01	4	<5	Quartz vein near old stamp mill; 2 m chip channel.
93BT329B	<20	12	0.75	0.03	0.05	8	0.06	0.3	3	<1	14	<100	4	<0.01	4	<5	Quartz vein near old stamp; 3 m chip channel; N. 30 E. 65 SE.
93BT329C	<20	8	1.25	0.68	1.74	4	0.03	0.22	22	3	10	<100	3	<0.01	2	9	Quartz vein near old stamp; 2 m chip channel; N. 22 E., 70 NW.
93BT329D	<20	10	0.78	0.26	0.09	5	0.02	0.28	8	<1	7	<100	4	<0.01	4	<5	Quartz vein near old stamp; 1 m chip channel N.-S. vertical.
93BT331	<20	2	0.26	<0.01	0.08	<2	0.2	0.01	<2	<1	18	<100	2	<0.01	<1	<5	Grab sample quartz vein.
93BT354	<20	2	0.10	<0.01	0.05	<2	<0.01	0.04	<2	<1	257	<100	2	<0.01	1	<5	Quartz albite vein N. 15 E., 25 SE. in pCPzsg unit; 3 m thick.
93GL107	<20	4	0.41	1.49	10.00	<2	<0.01	0.01	<2	28	340	<100	4	<0.01	<1	5	Sulfides in stringers in calc-schist.
93GL110	<20	8	0.20	0.04	0.19	<2	<0.01	0.07	<2	<1	16	<100	3	<0.01	2	<5	Sulfides with limonite near black quartzite.
93GL115	<20	<1	0.04	0.02	0.14	<2	<0.01	<0.01	<2	<1	3	<100	<1	<0.01	<1	<5	Quartz vein near pCPzt-pCPzct contact.
93GL128	<20	1	0.01	<0.01	0.02	<2	<0.01	<0.01	<2	<1	1	<100	<1	<0.01	<1	<5	1.5 m thick, quartz vein.

Sample no.	W ppm	La ppm	Al pct	Mg pct	Ca pct	Ga ppm	Na pct	K pct	Li ppm	Nb ppm	Sr ppm	Ta ppm	Y ppm	Ti pct	Zr ppm	Sn ppm	Description
93GL147	<20	9	0.21	0.14	10.00	<2	<0.01	0.05	<2	22	90	<100	15	<0.01	<1	<5	Grab sample of gossan in felsic schist; possible exhalite.
93GL150	<20	6	0.88	0.67	10.00	4	<0.01	0.07	12	25	98	<100	10	<0.01	1	<5	Breccia zone in carbonate with metabasite zone.
93GL158	<20	2	0.15	0.03	0.24	<2	0.03	<0.01	<2	<1	5	<100	<1	<0.01	<1	<5	Quartz vein in saddle intrudes albite chlorite schist.
93GL160	<20	36	0.59	0.21	0.09	<2	0.02	0.13	8	<1	10	<100	15	<0.01	3	<5	Background sample; porphyroclastic schist.
93GL170	<20	14	1.84	0.95	0.22	5	0.02	0.13	39	<1	18	<100	12	<0.01	4	<5	Grab sample ferricrete-quartz zone in black quartzite.
93GL187	<20	1	0.10	0.01	0.04	<2	<0.01	0.02	<2	<1	3	<100	2	<0.01	<1	<5	Faslt breccia in float near Rodine fault.
93GL193	<20	<1	2.80	1.96	0.47	9	0.03	0.1	19	2	37	<100	6	0.17	<1	<5	Background, metabasite (pCPzb).
93GL196	<20	5	0.06	2.91	10.00	<2	<0.01	0.03	2	18	164	<100	11	<0.01	1	<5	Background, chlorite muscovite schist.
93GL197	<20	1	0.03	2.76	10.00	<2	<0.01	0.01	<2	13	87	<100	7	<0.01	<1	<5	Mineralized metafelsic schist (pCPzsf).
93GL198	<20	13	0.36	0.31	0.28	2	0.07	<0.01	<2	<1	8	<100	4	<0.01	<1	<5	Orange-yellow stain vein rubble.
93GL199	<20	8	0.52	0.44	0.08	<2	0.03	<0.01	13	<1	3	<100	3	0.01	<1	<5	Iron stained quartz vein.
93GL200	<20	6	0.70	1.29	10.00	<2	0.01	0.05	12	18	112	<100	8	<0.01	<1	<5	Sulfide zone in calcareous schist layers.
93GL201	<20	12	0.34	0.10	0.26	3	0.01	0.16	3	<1	6	<100	4	<0.01	2	<5	Quartz in felsic schist with sulfides.
93GL202A	<20	<1	0.15	0.09	0.03	<2	<0.01	<0.01	2	<1	1	<100	<1	<0.01	<1	<5	Grab sample mineralized quartz vein.
93GL202B	<20	15	0.38	0.11	0.04	<2	0.03	0.1	4	<1	4	<100	4	<0.01	<1	<5	Quartzose, schist grab sample.
93GL203	<20	<1	0.04	2.21	10.00	<2	<0.01	0.02	<2	28	286	<100	4	<0.01	<1	<5	Orange stained hydrothermal quartz zone.
93GL204	<20	5	0.70	0.64	0.86	<2	<0.01	0.06	9	2	29	<100	6	0.03	<1	<5	Quartz vein in coarse grained albite mafic schist.
93GL205	<20	<1	0.01	2.45	10.00	<2	<0.01	<0.01	<2	17	84	<100	<1	<0.01	<1	<5	Mineralized metavolcanic tuff(?) grab sample.
93GL206	<20	4	1.89	2.28	2.61	5	0.01	0.09	25	4	31	<100	7	0.09	2	<5	Contact zone; felsic schist and albite chlorite schist.
93GL211A	<20	<1	0.08	0.07	0.11	<2	<0.01	0.01	<2	<1	2	<100	<1	<0.01	<1	7	Quartz vein in black quartzite.
93GL211B	<20	15	1.36	0.68	0.03	5	<0.01	0.1	25	<1	5	<100	5	<0.01	8	5	Large quartz vein in black quartzite; N. 40 E. trend; folded.
93GL213	<20	7	0.35	0.13	0.12	<2	<0.01	0.07	5	<1	17	<100	3	<0.01	7	6	Limonite zone in black quartzite.
93GL228	<20	1	0.13	0.07	<0.01	<2	<0.01	0.02	<2	<1	1	<100	<1	<0.01	1	<5	Quartz vein rubble in black quartzite.
93GRC010	<20	<1	0.05	<0.01	0.01	<2	0.01	<0.01	<2	<1	<1	<100	<1	<0.01	<1	<5	Grab sample Fe quartz vein.
93GRC011	<20	<1	0.01	1.53	10.00	<2	<0.01	<0.01	<2	22	57	<100	1	<0.01	<1	<5	Marble-dolostone grab sample.
93GRC026	<20	<1	0.03	0.22	10.00	<2	<0.01	<0.01	<2	35	113	<100	3	<0.01	<1	5	Red stained carbonaceous schist grab sample.
93GRC027	<20	<1	0.08	0.58	10.00	<2	<0.01	0.01	<2	28	74	<100	2	<0.01	<1	<5	Limonite stained, sheared schist.
93GRC083	<20	4	0.13	0.03	0.29	<2	<0.01	0.04	<2	<1	2	<100	3	<0.01	6	<5	Grab sample, "lumpy" schist.
93GRC084	<20	1	0.09	0.13	0.52	<2	<0.01	0.02	<2	<1	15	<100	2	<0.01	2	<5	Grab sample, quartz veins in black quartzite.
93KC102	<20	21	0.53	0.33	0.25	<2	0.03	0.04	5	<1	9	<100	8	<0.01	3	6	Pyrite rich schist; early folded quartz sampled.
93KC103	<20	12	0.40	0.11	0.08	<2	0.02	0.09	3	<1	35	<100	5	<0.01	7	<5	Rusty quartz vein in graphitic quartzite.
93KC107	<20	9	0.40	0.33	5.17	<2	<0.01	0.01	6	6	107	<100	12	<0.01	2	10	Vuggy quartz nodule in fold axes; F1 vein.
93KC111A	<20	1	0.04	0.01	0.05	<2	<0.01	<0.01	<2	<1	1	<100	<1	<0.01	<1	<5	Quartz vein with galena and sphalerite.
93KC111B	<20	2	0.17	<0.01	0.02	4	0.02	<0.01	<2	<1	3	<100	<1	<0.01	2	5	Chalky scorodite stained quartz vein.
93KC115	<20	<1	<0.01	<0.01	0.02	<2	<0.01	<0.01	<2	<1	<1	<100	<1	<0.01	<1	<5	Rusty quartz vein in rubble.
93KC116	241	15	0.73	0.84	10.00	<2	<0.01	0.11	11	17	401	<100	20	<0.01	4	<5	Quartz-sphalerite 4 cm thick layer; conformable(?) to foliation.
93KC131	<20	<1	<0.01	0.17	10.00	<2	<0.01	<0.01	<2	38	405	<100	<1	<0.01	<1	<5	Grab sample, maroon streaked marble.
93KC132	<20	4	0.02	0.22	10.00	<2	<0.01	<0.01	<2	37	450	<100	3	<0.01	<1	<5	Dark brown soil, geochem sample.
93KC133	<20	<1	0.03	0.06	10.00	<2	<0.01	<0.01	<2	37	273	<100	4	<0.01	<1	<5	Prospect pit with quartz breccia zone.
93KC135A	<20	<1	0.03	0.14	10.00	<2	<0.01	<0.01	<2	36	67	<100	2	<0.01	<1	<5	Boxwork breccia zone, 30 m above diabase(?) dike.
93KC135B	<20	4	0.41	0.12	10.00	<2	<0.01	0.05	3	29	68	<100	5	<0.01	2	<5	Vuggy calcareous breccia grab sample.
93KC136	<20	<1	0.01	2.74	10.00	<2	<0.01	<0.01	<2	25	163	<100	1	<0.01	<1	<5	Orange dolomitic breccia N. 30 E., 25 NW trend.
93KC138	<20	4	0.41	0.31	0.28	<2	<0.01	0.09	4	1	9	<100	4	0.07	18	<5	Contact between black quartzite; garnet quartz schist.
93KC142	<20	14	2.22	1.12	0.28	7	0.03	0.19	48	1	16	<100	11	0.04	11	5	Grab sample, graphitic muscovite schist.
93KC149A	<20	8	0.50	0.05	0.06	<2	<0.01	0.09	<2	<1	2	<100	6	<0.01	9	6	Conformable quartz vein 30 cm wide.
93KC149B	<20	2	0.81	0.86	0.08	3	0.01	0.17	8	<1	3	<100	4	0.03	22	<5	Background sample pCPzct schist.
93KC151A	<20	23	2.41	1.82	0.17	5	0.02	0.14	28	<1	8	<100	26	0.03	2	<5	Background sample pCPzb metabasite.
93KC151B	<20	10	1.58	0.94	0.04	6	0.02	0.15	30	<1	9	<100	3	<0.01	6	<5	Quartz vein breccia near metabasite (pCPzb).
93KC163	<20	<1	1.82	1.58	10.00	3	<0.01	0.05	16	15	129	<100	12	<0.01	<1	<5	Quartz vein grab sample.
93KC170	<20	48	0.63	0.78	0.68	2	0.05	0.28	32	1	12	<100	7	<0.01	10	<5	Orange dolomitic breccia grab sample.
93KC171	<20	29	1.19	2.32	9.02	4	0.04	1.06	111	10	103	<100	12	0.03	15	7	Orange felsic metaplutonic rock (pCPzf).

Sample no.	W ppm	La ppm	Al pct	Mg pct	Ca pct	Ga ppm	Na pct	K pct	Li ppm	Nb ppm	Sr ppm	Ta ppm	Y ppm	Ti pct	Zr ppm	Sn ppm	Description
93KC177	<20	1	0.11	0.03	0.05	<2	0.02	0.02	<2	<1	4	<100	<1	<0.01	<1	<5	Quartz rubble quartz vein in albite chlorite schist.
93KC195A	<20	8	0.39	0.10	0.05	2	<0.01	0.05	4	<1	5	<100	2	<0.01	2	12	Grab sample, ribbon quartz.
93KC195B	<20	29	1.62	1.58	0.03	6	<0.01	0.02	19	<1	6	<100	2	<0.01	2	10	Folded "F1" quartz with hematite vugs.
93KC202	<20	4	0.07	<0.01	<0.01	<2	<0.01	0.05	<2	<1	<1	<100	<1	<0.01	<1	<5	Sample type not identified.
93KC214	<20	24	2.02	1.63	0.21	7	0.02	0.2	28	<1	10	<100	6	0.02	<1	11	10 cm thick limonite stained quartz vein in float.
93KC215	<20	23	1.89	1.36	1.25	4	0.02	0.17	15	2	50	<100	12	0.04	<1	7	Background sample schist.
93KC218	<20	<1	<0.01	0.19	10.00	<2	<0.01	<0.01	<2	25	833	<100	8	<0.01	<1	<5	30 m wide area, sheeted quartz vein float.
93KC219	<20	<1	0.02	<0.01	0.07	<2	<0.01	<0.01	<2	<1	4	<100	<1	<0.01	<1	<5	30 m wide area, sheeted quartz vein float.
93KC222	<20	1	0.97	0.80	0.02	<2	0.05	<0.01	11	<1	3	<100	1	<0.01	<1	<5	Background sample, mixed schist marble.
93SL04	<20	<1	0.32	<0.01	0.01	<2	0.18	<0.01	<2	<1	18	<100	<1	<0.01	<1	<5	Quartz float trends for 100 m downslope; possibly Rodine system.
93SL22B	40	3	0.01	0.05	10.00	<2	<0.01	<0.01	<2	20	126	<100	35	<0.01	<1	<5	Copper bearing early F1" quartz vein system.
93SL27B	<20	5	0.24	<0.01	0.05	3	<0.01	0.02	<2	<1	2	<100	1	<0.01	1	<5	Large outcrop of quartz vein shear zone sampled.
93SL32	<20	<1	<0.01	2.63	10.00	<2	<0.01	<0.01	<2	21	85	<100	7	<0.01	<1	<5	Quartz crystals in vugs; near small pit.
93SL40	<20	<1	<0.01	0.12	10.00	<2	<0.01	<0.01	<2	36	1030	<100	2	<0.01	<1	<5	Reddish vein material in marble.
93SL47A	<20	2	0.23	0.24	0.20	<2	<0.01	0.02	4	<1	8	<100	<1	<0.01	<1	7	Chalcopyrite(?) in quartz vein.
93SL47B	<20	37	3.17	2.58	0.21	10	0.03	0.04	69	<1	9	<100	8	<0.01	5	<5	Background calcareous schist (pCPzct).
93SL47C	<20	5	0.42	0.52	0.03	<2	0.01	0.03	8	<1	4	<100	<1	<0.01	2	6	Quartz vein grab sample.
93SL49B	<20	1	2.20	1.67	1.00	6	0.03	0.04	15	3	66	<100	7	0.22	<1	<5	Sulfide in chloritic schist.
93SL50	<20	<1	0.85	0.21	10.00	11	<0.01	0.1	6	11	33	<100	6	0.02	1	<5	Sulfide bearing zone in thin muscovite schist horizon.
93SL51A	<20	<1	0.04	0.06	10.00	<2	<0.01	0.02	<2	14	122	<100	10	<0.01	<1	<5	Quartz-siderite-sulfide vein.
93SL51B	<20	3	0.07	0.27	10.00	<2	<0.01	0.05	<2	21	871	<100	7	<0.01	1	<5	Pyrite bearing calcareous schist.
93SL51C	<20	6	0.18	0.36	10.00	<2	<0.01	0.1	2	19	589	<100	8	<0.01	2	<5	Sulfide bearing muscovite schist.
93SL51E	<20	14	3.80	1.95	1.42	24	0.02	<0.01	44	3	46	<100	23	0.16	<1	<5	Chlorite albite schist, background (pCPzcs).
93SL57A	<20	1	0.27	0.37	10.00	<2	<0.01	0.03	4	15	359	<100	8	<0.01	<1	<5	Quartz-siderite vein grab sample.
93SL62A	<20	23	1.47	1.89	6.88	<2	0.01	0.26	17	7	82	<100	12	0.04	3	<5	Grab sample; thinly laminated chlorite albite schist (pCPzcs).
93SL68A	<20	4	0.14	0.15	10.00	<2	<0.01	0.04	<2	29	183	<100	9	<0.01	<1	<5	Orange colored dolomite(?) grab sample.
93SL75	<20	<1	2.82	2.10	3.56	6	0.02	<0.01	29	5	101	<100	6	0.26	<1	<5	Metabasite, grab sample (pCPzb).
93SL76A	<20	<1	0.08	0.10	0.06	11	<0.01	<0.01	<2	1	12	<100	6	<0.01	<1	7	Maroon, red ferricrete gossan.
93SL76B	<20	<1	0.03	0.19	10.00	<2	<0.01	<0.01	<2	20	53	<100	2	<0.01	<1	<5	Gossan near prospect pit.
93SL78B	<20	<1	0.01	0.40	5.41	<2	<0.01	<0.01	<2	5	79	<100	1	<0.01	<1	<5	Maroon gossan near dolomite zone.
93SL78C	<20	<1	2.79	2.13	2.24	7	0.02	0.04	23	3	76	<100	7	0.24	<1	<5	Grab sample, metabasite (pCPzb).
93SL82A	<20	5	0.34	0.18	0.07	<2	<0.01	0.04	4	<1	7	<100	2	<0.01	2	<5	Grab sample, quartz vein float.
93SL99	<20	2	0.54	0.42	0.07	2	<0.01	0.1	4	<1	2	<100	2	<0.01	<1	7	Grab sample quartz vein float.
93SL106B	<20	4	0.05	2.47	10.00	<2	<0.01	0.03	<2	9	110	<100	9	<0.01	<1	<5	Ferricrete breccia in marble.
93SL117B	<20	3	0.17	0.20	0.03	<2	<0.01	0.01	<2	<1	<1	<100	1	<0.01	<1	<5	Grab sample "F1" quartz vein; N. 80 W. strike.
93SL117C	<20	5	0.41	0.37	0.01	<2	<0.01	0.02	10	<1	3	<100	1	<0.01	2	8	Grab sample quartz vein rubble with free gold(?).
93SL120B	<20	<1	0.03	2.88	10.00	<2	<0.01	<0.01	<2	10	106	<100	9	<0.01	<1	<5	Grab sample quartz-albite vein with N. 73° W. strike.
93SL123B	<20	1	0.38	0.08	0.10	15	0.02	0.18	<2	<1	12	<100	7	0.08	<1	<5	Grab sample ferricrete stained schist.
93SL142C	<20	2	0.23	0.09	0.12	<2	0.04	0.03	3	<1	5	<100	2	<0.01	<1	<5	Near Jensen's camp: grab sample, quartz vein.
93SL150C	<20	12	1.27	1.09	1.06	4	0.02	0.12	11	1	13	<100	5	<0.01	2	<5	Grab sample, quartz vein.

Table 4. *Placer gold and silver production, Nome district, 1897-1993*[a]

Year	Volume gold (oz)	Volume silver (oz)	Number of mines	Employment	Total bullion value ($ at time of sale)
1897	725	80	NA	NA	$ 15,000
1898	3,628	409	NA	NA	78,000
1899	135,462	15,578	NA	NA	2,800,000
1900	166,110	20,597	NA	NA	3,433,500
1901	160,619	21,041	NA	NA	3,320,000
1902	152,394	17,677	NA	3,000	3,150,000
1903	140,299	17,537	NA	2,800	2,900,000
1904	138,558	16,072	NA	3,000	2,864,000
1905	164,489	20,561	NA	3,200	3,400,000
1906	295,114	38,659	NA	3,500	6,100,000
1907	268,505	32,220	NA	3,100	5,550,000
1908-11	664,408	81,722	135	NA	13,730,000
1912	55,636	6,676	45	NA	1,150,000
1913	45,800	5,038	55	NA	946,686
1914	120,335	14,271	65	NA	2,487,324
1915	118,335	9,446	57	NA	2,445,984
1916	74,600	7,460	53	1,030	1,542,000
1917	42,152	5,901	40	NA	871,281
1918	21,625	2,811	37	NA	447,000
1919	33,768	3,179	26	NA	698,000
1920	26,124	2,775	25	NA	540,000
1921	28,301	1,490	44	NA	585,000
1922	23,463	1,121	33	NA	485,000
1923	28,930	3,263	21	NA	598,000
1924	41,025	4,483	17	NA	848,000
1925	35,800	4,244	12	435	740,000
1926	67,247	7,389	26	415	1,390,000
1927	46,105	7,137	13	425	953,000
1928	36,284	4,094	24	400	750,000
1929	69,762	7,299	21	4500	1,442,000
1930	47,460	5,091	15	NA	981,000
1931	39,157	4,850	9	275	809,375
1932	58,129	5,742	15	265	1,201,526
1933	40,912	4,541	14	272	845,651
1934	23,696	2,531	14	250	829,360
1935	44,361	4,924	16	340	1,551,635
1936	60,132	6,493	16	325	2,104,620
1937	44,924	4,903	5	345	1,572,340
1938	47,212	5,450	5	343	1,652,420
1939	49,500	5,742	7	365	1,739,500
1940	52,683	5,935	6	377	1,843,905
1941	65,526	7,290	11	345	2,293,410
1942	37,499	3,863	12	340	1,312,465
1943	3,799	320	4	8	132,965
1944	- -	- -	- -	- -	- -
1945	1,193	152	12	16	41,755
1946	5,102	700	24	10	178,570
1947	5,819	610	18	154	203,665
1948	13,576	1,590	16	176	475,160
1949	32,302	3,202	21	152	1,130,570
1950	49,418	5,498	21	146	1,729,630
1951	46,465	5,189	11	143	1,626,275
1952	38,318	4,345	8	151	1,341,130

[a]Compiled by T.K. Bundtzen, Alaska Division of Geological & Geophysical Surveys using (1) U.S. Geological Survey and Territorial Documents from 1897-1959; (2) U.S. Mint records from 1931-1969; and (3) State of Alaska records from 1970-1993.

1953	29,478	3,298	15	170	1,031,730
1954	21,177	2,358	15	161	741,195
1955	23,410	2,602	14	182	819,350
1956	24,058	2,629	8	182	842,030
1957	43,654	4,870	7	175	1,527,890
1958	33,338	3,720	7	165	1,166,830
1959	873	72	2	NA	30,555
1960	39,050	4,443	5	150	1,366,750
1961	26,442	3,076	5	155	925,470
1962	24,001	2,727	6	160	840,035
1963	1,272	134	4	3	44,520
1964	659	74	4	4	23,065
1965	194	21	4	1	6,790
1966	41	4	2	1	1,435
1967	113	14	2	3	3,955
1968	250	26	1	4	8,750
1969-74	NA	NA	NA	NA	NA
1975	7,796	1,013	1	65	1,520,220
1976	14,320	1,603	3	75	1,503,600
1977	15,600	2,184	3	80	2,340,000
1978	12,450	1,369	3	80	3,112,500
1979	14,182	1,843	4	85	3,339,600
1980	12,100	1,694	3	90	5,154,600
1981	16,600	1,992	4	102	6,806,000
1982	18,485	2,772	4	90	7,394,000
1983	20,500	2,542	5	120	8,200,200
1984	21,500	2,601	4	105	7,740,000
1985	22,416	2,689	4	122	7,285,200
1986	28,650	3,151	5	284	10,887,000
1987	75,824	8,340	8	319	34,500,600
1988	66,500	7,700	9	280	28,262,500
1989	59,500	6,950	8	245	22,729,000
1990	56,300	6,193	6	240	21,675,500
1991	25,700	3,048	6	140	9,380,500
1992	25,600	3,584	6	130	8,627,200
1993	27,750	3,607	7	130	9,990,000
TOTALS	4,822,569 (149.98 metric tonnes)	564,134 (17.54 metric tonnes)	- -	- -	301,682,072