Geological Survey of Canada
Commission géologique du Canada

PAPER 85-24

MINERAL POTENTIAL OF THE MOUNT SEDGWICK AREA, YUKON TERRITORY (NORTHERN YUKON NATIONAL PARK RESOURCE ASSESSMENT — PHASE II)

D.C. Findlay
C.F. Gleeson
R.T. Bell
W.D. Goodfellow
R.D. Lancaster

1986

Canada

GEOLOGICAL SURVEY OF CANADA
PAPER 85-24

MINERAL POTENTIAL OF THE MOUNT SEDGWICK AREA, YUKON TERRITORY (NORTHERN YUKON NATIONAL PARK RESOURCE ASSESSMENT — PHASE II)

Prepared for the
Interdepartmental working committee on Northern Mineral and Energy Resource Assessment (MERA)

D.C. Findlay
C.F. Gleeson
R.T. Bell
W.D. Goodfellow
R.D. Lancaster

1986

Available in Canada through

authorized bookstore agents and other bookstores

or by mail from

Canadian Government Publishing Centre
Supply and Services Canada
Ottawa, Ontario, Canada K1A 0S9

and from

Geological Survey of Canada offices:

601 Booth Street
Ottawa, Canada K1A 0E8

3303-33rd Street N.W.,
Calgary, Alberta T2L 2A7

100 West Pender Street
Vancouver, British Columbia V6B 1R8
(mainly B.C. and Yukon)

A deposit copy of this publication is also available
for reference in public libraries across Canada

Cat. No. M44-85/24E Canada: $10.00
ISBN O-660-12069-0 Other countries: $12.00

Price subject to change without notice

Authors' Addresses

D.C. Findlay, R.T. Bell
W.D. Goodfellow, and R.D. Lancaster
Geological Survey of Canada
601 Booth Street
Ottawa, Ontario
K1A 0E8

C.F. Gleeson
Lakeshore Drive
RR #1
Iroquois, Ontario
K0E 1K0

Original manuscript submitted: 1984 - 10
Final version approved for publication 1985 - 05

Foreword

The northern National Parks Policy, introduced by the Government of Canada in early 1979, directs that "inventories" of mineral and fuel resource potential be made prior to setting aside lands for park purposes. Responsibility for implementing this policy rests with the Department of Indian and Northern Affairs.

A joint interdepartmental committee, the Working Committee for Northern Mineral and Energy Resource Assessment (MERA), was formed in early 1980 to conduct the required assessments. Committee membership includes representatives from the Department of Indian and Northern Affairs, the Department of Energy, Mines and Resources and Parks Canada Program of the Department of the Environment.

A preliminary (Phase I) assessment of potential for undiscovered deposits of metallic minerals, coal, and oil and gas in areas covered by the 1978 Northern Yukon Land Withdrawal (including the area of the proposed Northern Yukon National Park) was completed in 1981. The assessment, based on office compilations using available data and information, identified several sub-areas within the 1978 Land Withdrawal area that were considered to have above-average potential for undiscovered metallic minerals. One of these, the Mount Sedgwick area, lies within the proposed Northern Yukon National Park. It was selected for Phase II field investigations, which were conducted in 1982 to provide a more adequate base on which judgment of mineral potential could be made. The results of these studies are presented in this report.

Avant-propos

La politique sur les parcs nationaux du Nord énoncée par le gouvernement du Canada au début de 1979 exige que soit dressé un <<inventaire>> du potentiel en ressources combustibles et minérales des terres avant leur mise en réserve pour l'établissement d'un parc national. La responsabilité d'appliquer cette politique relève du ministère des Affaires indiennes et du Nord canadien.

Un comité mixte, le Comité (de travail interministériel) des évaluations des ressources minérales et des hydrocarbures du Nord (ERMH), a été formé au début de 1980 pour mener ces évaluations. Il comprend des représentants du ministère des Affaires indiennes et du Nord canadien, du ministère de l'Énergie, des Mines et des Ressources et du Programme Parcs Canada du ministère de l'Environnement.

Une première évaluation (Phase I) du potentiel de gîtes présumés de minéraux métalliques, de charbon, de pétrole et de gaz dans les régions visées par la Mise à part de terres dans le Nord du Yukon (y compris l'emplacement proposé pour l'établissement du Parc national du Nord du Yukon) a été achevée en 1981. Fondée sur les dossiers de données et de renseignements existants, cette évaluation a permis de relever plusieurs sous-zones de la région visée par la mise à part qui présenteraient un potentiel plus élevé que la moyenne en minéraux métalliques non identifiés. L'une d'entre elles, la zone du mont Sedgwick, se trouve dans les limites du territoire où l'on projette d'établir le Parc national du Nord du Yukon. Elle a été retunue pour des études sur le terrain effectuées pendant la Phase II, en 1982; il s'agissait d'obtenir une base plus solide pour juger du potentiel minéral. Le présent rapport fait état des résultats de ces études.

CONTENTS

Appendices

Tables

Figures

MINERAL POTENTIAL OF THE MOUNT SEDGWICK AREA, YUKON TERRITORY (NORTHERN YUKON NATIONAL PARK RESOURCE ASSESSMENT – PHASE II)

Abstract

Field investigations to assess the potential for undiscovered metallic minerals in an area included in a proposed National Park are described. Geochemical surveys were carried out and indicate moderate mineral potential for Mo, W, U, Sb, Au and base metals in and around the Mount Sedgwick granitic pluton. Following a brief description of the general geology the geochemical data are presented and interpreted.

Résumé

Le présent, rapport fait état d'études sur le terrain entreprises dans le but d'évaluer le potentiel en minéraux métalliques non identifiés d'une région où l'on projette d'établir un parc national. D'après les levés géochimiques effectués, il y aurait des quantités modérées de Mo, de W, d'U, de Sb, d'Au et de métaux communs autour et à l'intérieur du pluton granitique du mont Sedgwick. Suit une bréve description de la géologie générale; les données géochimiques sont aussi présentées et interprétées.

SUMMARY

During field investigations of the Mount Sedgwick area in 1982, 111 stream-silt sediment samples and 16 concentrate heavy mineral samples were collected. The samples were geochemically analysed and the data combined with results from earlier geochemical samples (123 samples) collected in the Mount Sedgwick area during a regional geochemical survey of the Yukon north slope region conducted by the Geological Survey in 1978. The geochemical results from the two surveys were processed and the results are presented in this report. The main findings derived from the geochemical results are as follows:

1. The original (Phase I) assessment of significant (moderate) mineral potential for Mo, W, U and base metals mineralization in and around the mid-Paleozoic Mount Sedgwick granite pluton is supported by the results of geochemical analyses of stream sediment and heavy mineral samples.

2. An interesting target area for base metals, U, Ag, Cd, W, As, Sn and Au is identified in the area of the northwest contact zone of the Mount Sedgwick pluton. There is no known surface reflection of this zone, although minor rusty, limonitic alteration is present near the pluton margin.

3. An anomalous (up to 123 ppm) As halo around the pluton is reflected in stream sediment samples. This could be related to epithermal gold mineralization near the stock, possibly contained in the enclosing Precambrian metasedimentary rocks (Neruokpuk Formation). Minor gold found in panned concentrates from creeks west of the intrusion and confirmed by geochemical analyses lends support to this interpretation.

4. There appears to be a trend of multi-element geochemical anomalies extending northeast from the Mount Sedgwick pluton to the northeast corner of the study area between Babbage and Trail rivers. This trend is shown by anomalies in Fe, Co, Mn, As and Sn in samples from creeks draining a variety of rock types, including Neruokpuk Formation metasediments and Carboniferous to Cretaceous shale, sandstone and siltstone assemblages. These creeks could also have potential for gold mineralization.

PRÉCIS

Durant l'étude sur le terrain de la région du mont Sedgwick, en 1982, 111 échantillons de sédiments fluviatiles de nature limoneuse et 16 échantillons de minéraux lourds concentrés ont été prélévés. On a procédé à l'analyse géochimique des échantillons et les résultats obtenus ont été combinés aux résultats d'analyses géochimiques antérieures effectuées sur 123 échantillons prélevés dans la région du mont Sedgwick durant une étude géochimique régionale du versant nord du Yukon exécutée par la Commission géologique en 1978. Les résultat géochimiques des deux études ont été traités et sont présentés dans le rapport. En voici les principales conclusions:

1. L'évaluation initiale (Phase I) établissant un potentiel minéral significatif (modéré) de Mo, de W, d'U et de métaux communs minéralisés à l'intérieur et autour du pluton granitique du Paléozoïque moyen du mont Sedgwick est étayée par les résultats des analyses géochimiques des sédiments fluviatiles et des échantillons de minéraux lourds.

2. Une région prometteuse de métaux communs, d'U, d'Ag, de Cd, de W, d'As, de Sn et d'Au a été relevée en un point de la zone de contact nord-ouest du pluton du mont Sedgwick. Aucune manifestation superficielle liée à cette zone est connue, bien qu'il existe à proximité du pluton une légère altération à limonite oxydée.

3. Une auréole anomale d'As (jusqu'à 123 ppm) autour du pluton se retrouve dans les échantillons des sédiments fluviatiles. Ce phénomène pourrait être lié à une minéralisation d'or épithermale près des massifs intrusifs, peut-être emprisonnée dans les roches métasédimentaires qui datent du Précambrien (formation de Neruokpuk). De petites quantités d'or trouvées à la batée dans des concentrés provenant de ruisseaux situés à l'ouest de l'intrusion et confirmées par des analyses géochimiques tendent à appuyer cette interprétation.

4. Les anomalies géochimiques à éléments multiples semblent occuper une zone qui s'étend du nord-est du pluton du mont Sedgwick jusqu'à la partie nord-est de la région étudiée, entre les rivières Babbage et Trail. Les anomalies de Fe, de Co, de Mn, d'As, et de Sn décelées dans des échantillons pris dans les ruisseaux drainant divers types de roches, y compris les métasédiments de la formation de Neruokpuk et les assemblages de schistes, de grès et d'aleurolite s'échelonnant du Carbonifère au Crétacé, attestent de ce phénomène. Ces ruisseaux pourrait aussi être aurifère.

5. East of the north end of the Mount Sedgwick pluton, base metals, Ag, Cd and Ba anomalies are present near intersecting northwest- and northeast-trending faults that cut Neruokpuk Formation strata and vein-type or fracture-filling mineralization may be a possibility.

6. Anomalous concentrations of As and Sn in sediments from streams draining Lower Cretaceous sandstone, shale and siltstone in the east and southeast sectors of the area north of Babbage River are of interest. In the latter area local Cu, Pb, Zn, and Ag anomalies also occur. These areas merit further investigation for stratiform and/or epithermal base and precious metal mineralization.

7. Very high Fe values and, in places, Mn, Co, Zn and Ni anomalies are present between Babbage River and Gravel Creek in pediments covered by thin deposits of colluvium and/or organic deposits in the southwest part of the study area. Whether these metal enrichments are due to environmental conditions or to in situ mineralized bedrock is not known. The host rocks probably are Carboniferous limestone and shale of the Lisburne Group or limestone, sandstone and shale of the Triassic Shublik Formation.

5. À l'est de l'extrémité nord du pluton du mont Sedgwick, des anomalies de métaux communs, d'Ag, de Cd et de Ba sont présentes près de failles entrecroisées qui se dirigent vers le nord-ouest et vers le nord-est et qui coupent les couches de la formation de Neruokpuk. Il y a donc possibilité d'une minéralisation de type filonien ou de remplissage de fracture.

6. Des concentrations anomales d'As et de Sn dans les sédiments provenant des ruisseaux drainant le grès, les schistes et l'aleurolite du Crétacé inférieur, dans les secteurs est et sud-est de la région au nord de la rivière Babbage, présentent quelque intérêt. Dans cette dernière région, des anomalies localisées de Cu, de Pb, de Zn et d'Ag ont aussi été relevées. Ces endroits méritent que l'on y poursuive des études afin de savoir s'il existe une minéralisation stratiforme ou épithermale, ou les deux, de métaux communs et de métaux précieux.

7. Des anomalies à teneur fort élevée en Fe et, par endroits, en Mn, en Co, en Zn et en Ni ont été repérées entre la rivière Babbage et le ruisseau Gravel, dans les pédiments recouverts par de minces dépôts de colluvions ou de matières organiques, ou les deux, dans la partie sud-ouest de la région étudiée. On ignore si ces enrichissements en métaux sont dus aux conditions du milieu ou à la présence d'un socle rocheux minéralisé. Les roches encaissantes sont probablement composées de calcaire et de schistes du Carbonifère du groupe de Lisburne ou de calcaire, de grès et de schistes triassiques de la formation de Shublik.

INTRODUCTION

The original mineral and fuel resource assessment (Phase I) of the proposed Northern Yukon National Park and adjacent areas was published in 1981 (Geological Survey of Canada, 1981). As a result of the assessment, a number of areas within the 1978 Land Withdrawal Area and the proposed Northern Yukon National Park were identified as having moderate potential for several mineral deposit types, chiefly lead, zinc, tungsten, tin, uranium and gold. One of the areas identified within the proposed park is centred around Mount Sedgwick, close to the east-central park boundary between the Babbage and Tuluag (Crow) rivers that drain northeasterly into Beaufort Sea (Fig. 1).

Because of the critical position of this area within the proposed park zone but close to its eastern boundary, it was decided that additional work should be done to provide a firmer base on which policy decisions concerning the ultimate disposition of the Mount Sedgwick lands could be made with respect to the proposed park boundary.

During the 1982 field season a 10-day helicopter geological reconnaissance and geochemical sampling program was conducted (Fig. 1) and preliminary results reported (Findlay and Bell, 1983). The 1982 geochemical data were merged with an earlier geochemical data set for the Mount Sedgwick area, obtained during a Geological Survey of Canada regional geochemistry program conducted in the north slope region in 1978 (Geological Survey of Canada, 1979). The combined data were interpreted and analysed by one of us (C.F.G.) in 1983.

This report presents the results of the 1982 work and interpretations of the geochemical data. The conclusions based on the new geochemical data confirm the original assessment of moderate potential for undiscovered mineral deposits in the Mount Sedgwick area.

Previous Work

Mount Sedgwick area was included in the Geological Survey of Canada's northern Yukon reconnaissance geological mapping program (Operation Porcupine; Norris, 1980). Subsequently, a series of 1:250 000 scale coloured geological maps covering the Operation Porcupine region were released, two of which (Map 1516A, Blow River-Davidson Mountains and 1514A, Herschel Island-Demarcation Point) contain parts of the present study area (Norris, 1981a, b). Results of heavy mineral investigations conducted during Operation Porcupine, including a few samples from the Mount Sedgwick area, were reported by Gleeson (1963).

Tungsten and gold were reported in creeks in the Mount Sedgwick area in early accounts of placer occurrences in northern Yukon and Gleeson (1963) and Cathro (1969) particularly noted the presence of tungsten. Bell and Jones (1979) reported radiometric responses from granitic rocks of the Mount Sedgwick pluton and also observed local disseminated chalcopyrite and molybdenite in fractures and shear zones in the granitic rocks.

Reconnaissance geochemical surveys of the Blow River (NTS 117A), Davidson Mountains (117B), Demarcation Point (117C) and Herschel Island (117D) map areas were conducted in 1978 as part of the Uranium Reconnaissance Program (Geological Survey of Canada, 1979). Interpretations of the geochemical patterns yielded by this survey with respect to the mineral potential of the Yukon north slope region were provided by Geological Survey of Canada (1981). The part of the 1978 geochemical data base (123 stream-silt sample locations) relevant to the Mount Sedgwick area is further referred to in the present report.

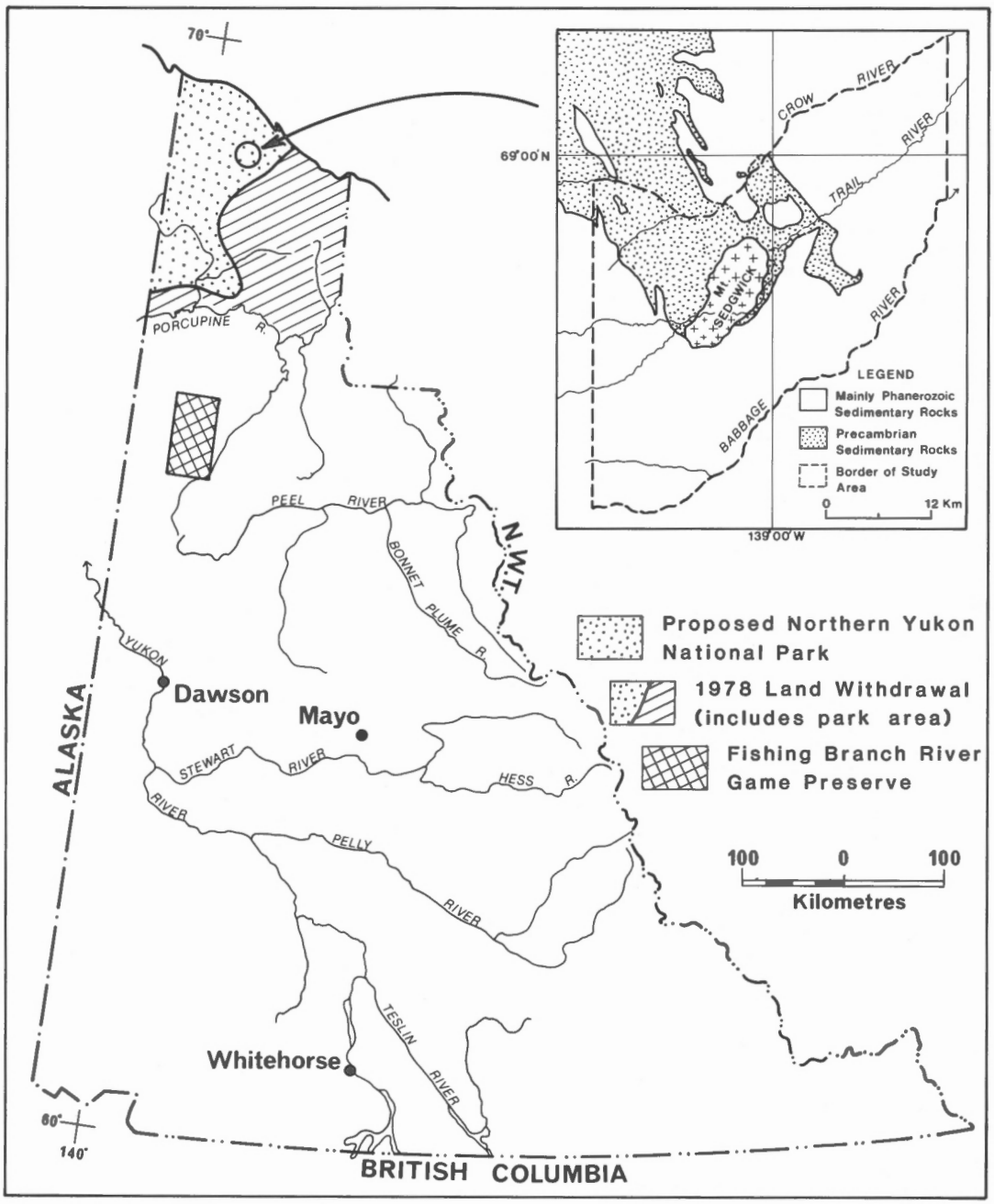


Figure 1. Location sketch, proposed northern Yukon National Park and adjacent areas, and insert of Mount Sedgwick study area.

During the 1980-81 Phase I mineral and fuel resource assessment of the proposed northern Yukon National Park reference was made to most published geological information and some unpublished company report data on the Yukon north slope region, including the present study area (Geological Survey of Canada, 1981). For additional details the reader is referred to that report.

Geology of the Mount Sedgwick Area

The geology of Mount Sedgwick and surrounding area is summarized on Figure 3 (in pocket). For the most part the geological information is from Norris, 1981a, b supplemented by local observations during the course of field work in 1982 (Findlay and Bell, 1983).

The Mount Sedgwick area lies near the southeast extremity of Romanzof Uplift, a structural high that has exposed Precambrian (?Helikian) metasedimentary rocks (Neruokpuk Formation) in an arcuate belt extending through Brooks Range in Alaska to northwest British Mountains in northern Yukon. The Precambrian Neruokpuk Formation of Romanzof Uplift was subdivided by Norris (1980) into several lithological units. In the present area the principal unit of Norris (op. cit) is PN2, characterized by argillite, sandstone and limestone assemblages. As previously noted (Geological Survey of Canada, 1981, p. 5) the PN2 unit appears, at least in southern Romanzof Uplift area, to be a mainly clastic unit containing sandstone, quartzite, siltstone and shale assemblages.

Within Romanzof Uplift to the northwest of the Mount Sedgwick pluton, relicts of younger, mainly Carboniferous, Triassic and Jurassic-Lower Cretaceous strata are exposed in northwest-trending zones lying on Neruokpuk terrane. To the south of the pluton and forming the southwest and northeast flanks of Romanzof Uplift, the area is underlain by generally northwest-trending sedimentary units ranging in age from Carboniferous to Upper Cretaceous-Tertiary that are sliced by a number of southwest dipping thrust faults and locally, in the northeast sector, by northeast dipping thrusts. West and southwest of Mount Sedgwick the dominant lithologies are carbonates (limestone, minor dolomite) of the Carboniferous Lisburne Group with subordinate shales, limestone, sandstone and conglomerate of the Carboniferous Endicott Group (Kayak and Kekiktuk formations). In the central part of the area south and southeast of Mount Sedgwick, Jurassic marine clastics (sandstone, siltstone, shale) of the Husky and Kingak formations predominate. To the northeast, toward the coastal plain, the terrain is underlain mainly by Upper Cretaceous marine and nonmarine shales, sandstones and siltstones (various formations; see Fig. 3).

The Mount Sedgwick pluton is in the approximate centre of the area. It is 13 km long by a maximum of 7 km wide with its northeast-trending long axis oriented approximately 60-70° to the Romanzof Uplift trend and to the general northwesterly strike of the younger sediments of the area. Its age is uncertain, but K-Ar radiometric ages obtained from similar isolated plutons in northern Yukon and adjacent Alaska range from 312 to 406 Ma (D.K. Norris, personal communication; Wanless et al., 1974). It clearly crosscuts Precambrian Neruokpuk Formation and fragments and blocks of biotite-feldspar-quartz gneiss, presumably representing relicts of Neruokpuk xenoliths, were observed near the summit area of Mount Sedgwick (Findlay and Bell, 1983). The relationships between the granite and the Carboniferous (Lisburne and Endicott groups) strata at the southwest extremity of the pluton are not clear. It is possible, however, that the sediments were brought into fault contact with the granites, following emplacement of the Mount Sedgwick pluton. Available evidence indicates that the pluton is Paleozoic in age and, based on the somewhat ambiguous radiometric ages obtained for similar plutons, probably Devonian or older.

Figure 2. Looking northwest from summit area, Mount Sedgwick. Foreground (light grey) is rubbly granular granite scree. Contact zone with Neruokpuk slates and argillaceous quartzites lies in the saddle beyond the scree slope. Lighter grey, irregular patch in Neruokpuk ("a" in middleground) is rusty, limonitic alteration zone near contact. GSC 202099U

Details of the petrochemistry of the Mount Sedgwick plutonic rocks are not known. Relatively unaltered rocks were observed only along Trail River (Findlay and Bell, 1983). There the rocks are grey weathering, locally porphyritic quartz-two feldspar-biotite granites. Sericite-chlorite alteration is common and is particularly pronounced along shear and fracture zones and near the margins of the pluton. At higher elevations and near the summit of Mount Sedgwick, deep weathering has resulted in rubble and granular scree surfaces with local rusty limonitic alteration zones. Along the northwest central contact area of the pluton a moderate zone of rusty limonitic alteration is present (Fig. 2). No residual sulphides were observed in this zone, although, as discussed later in this report, interesting geochemical patterns are present in downslope drainage from the northwest contact area.

GEOCHEMICAL DATA AND INTERPRETATIONS

Introduction

The geochemical data available for the Mount Sedgwick area from the original north slope regional survey (Geological Survey of Canada, 1979) and the 1982 detailed survey (Findlay and Bell, 1983) were assembled by one of us (R.D.L.) to a common base for the area of interest. These data were then processed, interpreted and presented to the Geological Survey by C.F. Gleeson and Associates Ltd. in July, 1983, under terms of a contract let by Department of Supply and Services, Ottawa. The sections that follow are based on the report submitted by C.F. Gleeson. In addition to the main stream-silt geochemistry data, the interpretations also make use of the results of earlier heavy mineral stream samples (Gleeson, 1963) as well as similar samples collected during the 1982 survey (Findlay and Bell, op. cit). The analyses of stream sediment samples (1978 and 1982 surveys) are given in Appendix 1 and tables of statistical data derived from the analytical data are presented in Appendix 2. Appendix 3 lists analyses for heavy mineral samples collected during the 1982 survey.

Field Records

Figure 3 (in pocket) shows the locations of 123 stream-silt samples from the 1978 survey that fall within the present Mount Sedgwick area as well as 111 samples collected during the 1982 survey. The 1982 panned concentrate samples (prefix "HM") are also indicated on Figure 3 as well as four heavy mineral concentrate samples collected from Trail and Crow rivers during Operation Porcupine (Gleeson, 1963).

Laboratory Procedures

The minus 80 mesh fractions of the 1982 stream samples were analysed by Bondar-Clegg and Company Ltd., Ottawa. Cu, Pb, Zn, Co, Ni, Ag, Cr, Mo, Mn, Fe, Cd and Ba were determined using atomic absorption spectroscopy after digestion with a hot mixture of nitric and hydrochloric acid. U was determined fluorimetrically after digestion with hot nitric acid. As was analyzed colorimetrically following a nitric-perchloric acid digestion. W was extracted using a carbonate flux fusion and analysed colorimetrically. Sn analyses were performed on pressed powders by X-ray fluorescence.

Heavy mineral concentrate samples, collected by hand panning in the field at sample sites (designated "HM" on Figure 3 in pocket) were analysed geochemically for Mo, Ag, Au, U, W, Sn, Th, Ce and La. The analytical techniques for Mo, Ag, U and W were the same as those used for the stream sediments. Th, Ce and La were analysed by X-ray fluorescence. Au (heavy mineral samples) was done by fire

Table 1. Summary of detection limits, extraction methods and analytical techniques, 1982 samples

A. 1982 Survey Stream-Silt Samples

Element	Extraction	Analytical Method	Lower Detection Limit (PPM except as noted)
Cu	HNO_3-HCL Hot Extraction	Atomic Absorbtion	1
Pb	HNO_3-HCL Hot Extraction	Atomic Absorbtion	2
Zn	HNO_3-HCL Hot Extraction	Atomic Absorbtion	1
Co	HNO_3-HCL Hot Extraction	Atomic Absorbtion	1
Ni	HNO_3-HCL Hot Extraction	Atomic Absorbtion	2
Ag	HNO_3-HCL Hot Extraction	Atomic Absorbtion	0.1
Cr	HNO_3-HCL Hot Extraction	Atomic Absortion	2
Mo	HNO_3-HCL Hot Extraction	Atomic Absorbtion	1
Mn	HNO_3-HCL Hot Extraction	Atomic Absorbtion	1
Fe	HNO_3-HCL Hot Extraction	Atomic Absorbtion	0.1%
Cd	HNO_3-HCL Hot Extraction	Atomic Absorbtion	0.2
Ba	HNO_3-HCL Hot Extraction	Atomic Absorbtion	1
Ufl	HNO_3-HCL Hot Extraction	Fluorometric	0.1
As	Nitric Perchloric Digest	Colorimetric	2
W	Carbonate Sinter	Colorimetric	2
Sn		X-Ray Fluorescence	1

B. 1982 Heavy Mineral Samples (Concentrates)

Mo	HNO_3-HCL Hot Extraction	Atomic Absorption	1
Ag	HNO_3-HCL Hot Extraction	Atomic Absorption	0.1
Au	Aqua Regia	Fire assay, Atomic Absorption	5 ppb
Ufl	HNO_3	Fluorometric	0.1
W	Carbonate Sinter	Colorimetric	2
Sn	Ammonia-Iodide Fusion	Ion Fusion	2
Th		X-Ray Fluorescence	1
Ce		X-Ray Fluorescence	10
La		X-Ray Fluorescence	10

assay and atomic absorption spectroscopy and Sn was analysed by atomic absorption spectroscopy after digestion using an ammonium iodide fusion. Detection limits, extraction methods and analytical techniques for 1982 samples are summarized in Table 1.

Stream sediment samples from the 1978 regional survey (Geological Survey of Canada, 1979) were analysed originally for Cu, Pb, Zn, Co, Ni, Ag, Mo, Mn, Fe, Ba, U and W. Except for Ba and U the analytical techniques used were similar to those described for the 1982 samples. Ba was analysed by atomic absorption spectroscopy after digestion with hydrofluoric, perchloric and nitric acids and U was done by delayed neutron activation. The extraction technique used for Ba is more complete than that used on the 1982 samples. Hence the two sets of results are not directly comparable. Similarly the technique used for U on the 1982 samples would reflect uranium present in a more labile form while neutron activation analyses would determine total uranium.

Statistical Treatment of Data

Following computer listing of the data, statistical parameters such as arithmetic and geometric means, standard deviations, coefficients of variation, cumulative percentages and histograms were calculated and plotted for each element from the 1982 data set (Appendix 2) and summarized (Table 2). Of interest here is the high background for arsenic (arithmetic mean = 22 ppm) as compared to the average crustal abundance (1.8 ppm). The economic implications of this are discussed later. Note that in calculation of means, the practice of using one-half the detection limit value has been used in cases where element concentrations were below detection limits.

During the 1982 survey seven sites were sampled in duplicate, with results as shown in Table 3. In general, reproducibility is acceptable. Sn shows the poorest reproducibility, probably due to its mode of dispersion as particulates in the stream load. As a further check on precision, a standard was randomly inserted in the sample shipment and analyzed six times. The results, along with means, standard deviations and coefficients of variation for each element in the standard are shown in Table 4. The largest coefficients of variation are for Sn (75%), Cd (50%) and Mo (32%). Assuming a homogeneous standard this would suggest that some of the variation noted in the duplicates is a result of a relatively poor analytical precision, particularly for the low Mo, Sn and Cd values. All other elements determined have coefficients of variation less than 24%. In general therefore, except at relatively low levels of concentration for Mo, Cd and Sn the analytical data are deemed reliable. However, for Ba and Cr a more complete extraction technique would have to be used to obtain more accurate results for these elements.

Presentation of Results

All elements were plotted for distribution of individual elements (1978 and 1982 surveys combined). The data were then combined on three compilation maps (Fig. 4, 5, 6 in pocket) showing the following grouping of elements: Cu-Pb-Zn-Ag-Cd-Ba (Fig. 4), Mo-Sn-W-As-U (Fig. 5) and

Table 2. Statistical summary for trace elements in 111 stream sediment samples, 1982 survey

	Cu	Pb	Zn	Co	Ni	Ag	Cr	Mo	Mn	Fe	Cd	Ba	U	As	W	Sn
AM	26	24	109	13	25	0.2	19	1.3	1006	3.5	0.3	232	2.2	22	2.9	5.68
σ	18	25	56	17	12	0.4	11	1.0	1594	3.3	0.4	145	5.3	22	9.9	3.23
R	8-	3-	32-	2-	6-	<0.1-	6-	<1.7	35-	0.8-	<0.1-	40-	<0.1-	3-	1-	<1-
	150	183	415	176	82	3.9	100		13500	31.5	2.4	880	33	123	100	15
GM	23	19	99	10	23	0.1	17	1.0	542	3.0	0.2	197	0.6	16	1.4	4.44
50	23	17	97	9	23	0.1	19	1.0	560	2.9	0.1	180	0.5	15	1	5
90	43	44	160	22	40	0.4	28	2.0	2150	4.7	0.7	440	6.7	37	6	11
95	50	64	205	31	49	0.7	32	3.0	3350	5.4	1.2	540	8.6	85	6	11
CA	55	13	70	25	75	0.07	100	1.5	950	5.0	0.2	425	1.8	1.8	1.5	2

Note: Fe in %; all other elements in ppm;
AM = Arithmetic mean; σ = standard deviation; GM = geometric mean;
R = range; 50, 90, 95 = percentiles; CA = crustal abundance

Note: element concentrations below detection limits (see Table 1) were recorded as one-half detection limit value for purposes of calculation of means.

Table 3. List of analytical results from duplicate samples, 1982 survey

Sample Pair	Cu	Pb	Zn	Co	Ni	Ag	Cr	Mo	Mn	Fe	Cd	Ba	U	As	W	Sn
101	17	15	68	9	19	<0.1	14	<1	350	5.0	<0.2	120	0.8	15	< 2	4
107	17	15	65	10	18	<0.1	13	<1	360	5.2	<0.2	180	0.5	13	< 2	1
121	8	10	50	3	7	<0.1	10	2	96	2.6	<0.2	200	0.9	6	< 2	3
127	8	9	50	3	7	0.1	19	<1	89	2.4	<0.2	120	0.5	6	< 2	1
141	24	19	70	10	23	0.1	8	<1	580	2.6	<0.2	60	0.5	18	4	9
143	24	18	70	9	23	<0.1	7	<1	560	2.6	<0.2	100	0.8	24	3	4
161	19	14	73	5	20	0.3	17	<1	180	3.1	<0.2	200	0.8	11	< 2	7
177	20	17	78	7	15	0.1	15	<1	180	3.1	<0.2	240	0.4	11	< 2	6
181	17	12	158	7	35	0.1	28	3	340	1.9	0.9	260	1.5	17	< 2	7
189	16	10	153	7	37	0.1	28	<1	360	2.0	1.0	300	1.5	14	< 2	4
201	20	23	95	10	21	<0.1	15	<1	540	2.7	<0.2	140	0.8	8	< 2	1
205	20	27	90	11	20	0.1	14	<1	555	2.7	<0.2	160	<0.1	6	< 2	4
221	23	15	105	22	24	0.1	28	2	7100	5.6	0.9	280	<0.1	28	< 2	4
223	23	13	100	22	23	0.2	29	1	7100	5.4	0.7	300	0.4	32	< 2	10

Note: Fe in %, all other elements in ppm

Table 4. Analyses, means, standard deviations and coefficients of variations for the standard sample, 1982 survey

No.	Cu	Pb	Zn	Co	Ni	Ag	Cr	Mo	Mn	Fe	Cd	Ba	U	As	W	Sn
132	70	64	65	5	53	0.8	18	2	275	1.4	0.6	400	3.3	21	14	8
156	74	57	65	6	50	0.9	18	2	270	1.3	0.3	440	3.9	30	16	12
174	70	59	63	6	50	0.9	20	2	265	1.4	0.3	480	3.3	33	20	< 1
198	76	59	60	7	50	0.6	19	3	280	1.4	0.2	420	3.5	24	24	7
214	74	62	60	6	52	0.6	18	4	285	1.3	0.3	440	2.3	24	14	2
224	72	63	63	6	55	0.8	18	2	280	1.4	0.2	360	3.3	19	14	4
Mean	73	61	63	6	52	0.8	19	2.5	276	1.4	0.3	423	3.5	25	17	5.6
σ	2.4	2.7	2.3	0.6	2	0.1	0.8	0.8	7.4	0.05	0.15	41	0.2	5.3	4.1	4.2
CV%	3.3	4.4	3.7	10	3.8	12.5	4.2	32	2.7	3.6	50	9.7	5.7	21	24	75

Note: Fe in %; all other elements in ppm

Ni-Co-Fe-Mn-Cr (Fig. 6). Values in excess of the 90th percentile for Cu, Pb, Zn, Ag, Ni, Co, Fe and Mn (Fig. 4, 6) and in excess of the 95th percentile for Cd, U, Mo, Sn, W and Cr (Fig. 4, 5, 6) are indicated on the compilation maps. Because of the significant differences in background for Ba between the 1978 and 1982 data due to different extraction techniques, values in excess of the 95 percentile for the old data (1200 ppm) and the new data (540 ppm) are indicated on the compilation maps. Because of the high background for As, values in excess of the 69th percentile (21 ppm) have been compiled.

Discussion of results

Cu-Pb-Zn-Ag-Cd-Ba (Fig. 4)

Mount Sedgwick pluton area

High base metal, Ag and Cd values occur along the west central portion of the Mount Sedgwick pluton (west of Mount Sedgwick summit) in streams draining an area where Bell and Jones (1979) reported uranium mineralization with minor chalcopyrite and molybdenite in fractures in sericitized granite. The presence of these and other multi-element anomalies as well as the alteration zone and mineralization makes this area west of the summit of Mount Sedgwick a prime exploration target.

Above normal concentrations of Ba are common along the south and east contacts of the granite stock perhaps reflecting an alkalic phase of the pluton. In places Cu-Pb-Zn-Ag are associated with the Ba anomalies. Barite has been found in heavy mineral concentrates from Trail River (Gleeson, 1963). Also traces of smithsonite have been identified at one site (R44) on Trail River, near the northeast (faulted?) contact of the stock.

Neruokpuk and Jurassic-Cretaceous terranes

Cu, Zn, Ag, Cd and Ba are anomalous in streams draining Neruokpuk metasediments north and northeast of Mount Sedgwick and in drainage from Jurassic-Cretaceous shale and siltstone areas east and southeast of Mount Sedgwick. The anomalies are commonly near northwest and northeast trending faults. Also in the southeast sector there are above normal concentration of Cu-Pb-Zn-Ag (sites 122 and 110) in sediments from streams draining Jurassic-Cretaceous shale and siltstone.

Upper Cretaceous terrane

In the northeast corner of the area between Trail and Crow rivers there are local Cu-Zn anomalies that appear to be related to Cretaceous shale and siltstone.

Pediment areas, southwest sector

In the southwest corner of the region, south of Gravel Creek, Zn is anomalous (site 186) in an area thinly covered with colluvium and/or organic deposits. The surrounding area consists mainly of Triassic limestone and sandstone of the Shublik Formation and Carboniferous limestone and shale (Lisburne Group). In the same geological setting (sites 3427 and 3428) 4 km to the southeast, Ba is anomalous.

Mo-Sn-W-As-U (Fig. 5)

Mount Sedgwick pluton area

Along with the elements described on Figure 4 there are above normal concentrations of Mo-Sn-W-As-U in stream sediments from within the granite pluton, especially in the vicinity of Mount Sedgwick summit. As-W-U-Mo anomalies also occur along the south end of the pluton and Mo-Sn-W-As anomalies are present near the north end of the stock. Heavy mineral samples from Trail River are known to contain scheelite (Gleeson, 1963) and the heavy mineral samples from sites HM5 and HM14 (1982 survey) contain 150 and 80 ppm W respectively.

Arsenic, in addition to being anomalous in sediments from streams draining the granite pluton, is also high over the enclosing metasediments of the Neruokpuk Formation. The halo of above-normal As values could extend at least 500 m beyond the granite pluton. This could have economic implications with respect to the possible presence of epithermal-type gold deposits. Fine-grained gold has been identified in some of the heavy mineral samples (HM5, 11, and 16) from streams draining the intrusion and the Neuokpuk terrane. The possibility of skarns along the granite contact zones is also suggested by abundant garnet at sites R43 and R44 (Gleeson, 1963). The skarn zones could host tungsten-tin and/or precious metal mineralization.

A relatively high Sn value of 12 ppm occurs in stream sediments northeast of the Mount Sedgwick pluton at site 179. As is also anomalous in this area. The streams at this location drain an outlier of Carboniferous sediments (Lisburne and Endicott groups) bounded by two northwest trending faults.

Northeast Trail River

Mo anomalies (3-6 ppm) are present in streams draining faulted Neruopuk rocks near Trail River about 10 km northeast of the Mount Sedgwick pluton (sites 200, 131 and 3320). As noted for Figure 4 (Neruopuk and Jurassic-Cretaceous terranes) base metals and Ag, Cd and Ba are also anomalous in this area.

Sn and As are high in sediments from streams draining Cretaceous shale and siltstone (Mount Goodenough Formation) in the northeast sector of the map area between Trail and Crow rivers. Downstream Cu, Zn (Fig. 4) and Mo (Fig. 5) values are also anomalous in this area. This locality appears to lie along a metal trend that extends northeast from Mount Sedgwick, and it was earlier speculated that a small unroofed pluton might be present in the area (Findlay and Sangster, 1982).

Babbage River area

As and Sn anomalies were recorded at several sites (192 to 195) in the eastern part of the area north of Babbage River. The anomalous streams are draining lower Cretaceous shales and siltstones. A similar group of As anomalies occur over the same Cretaceous formations along Babbage River about 15 km to the southwest (sites 105, 106, 117, 119, 110 etc.). These two Babbage River areas should be investigated for gold in stream sediment samples.

Ni-Co-Fe-Mn-Cr (Fig. 6)

Mount Sedgwick pluton area

As with most of the other metals, the samples from the northwest side of the Mount Sedgwick pluton are anomalous in Ni, Co and in places Cr. A northeast trend of above normal Fe, Mn and Co values continues from the north end of the Mount Sedgwick pluton to the northeast corner of the area. Along this trend the streams appear to be draining Carboniferous sediments in the central part and Lower Cretaceous shale and siltstone at the northeast end. As noted earlier Sn-As anomalies (Fig. 5) are also associated with this trend. Because these element trends appear to be associated with the post-plutonic sediments their positions may have been controlled by later structural elements.

Babbage River area

High values of Co, Fe and in places Mn (sites 193 and 3329) occur over Cretaceous shale and siltstone north of Babbage River near the east border of the area in association with previously noted Sn and As anomalies (Fig. 5).

Between Trail River and Babbage River east of Mount Sedgwick an area of above normal Ni values occurs where Neruokpuk Formation strata are faulted against a series of Carboniferous to Jurassic sedimentary rocks (sites 125, 126, 3306 and 3308). Zn, Cu and weak Mo anomalies are also present locally (Fig. 4, 5). The host rocks for the metals here could be the Carboniferous shale units (Endicott Group).

Along Babbage River, south of the anomalous Ni area noted above, Cretaceous shale and siltstone terrane includes several sites (102 to 120) that are very anomalous in Mn with local increases in Ni, Co and Fe. The area is also high in As and in places base metals and Ag (Fig. 4, 5). Cr is also above normal at site 120. These geochemical patterns may be reflecting merely higher background element concentrations in the shales, or alternatively, the presence of discrete precious and/or base metal occurrences.

Babbage River-Gravel Creek-Cottonwood Creek (southwest sector)

Farther southwest along Babbage River in the south sector of the area a stream sediment sample (site 190) yielded 31.5% Fe, 13 500 ppm Mn, 31 ppm Ni and 176 ppm Co. The anomaly is underlain by thin Quaternary colluvium and/or organic deposits. In a similar setting farther west in tributaries of Gravel Creek (sites 185, 186, 3211 and 3429) Fe is also anomalous (4.7 to 20%). At site 186, Co and Zn are anomalously high. Bedrock underlying these areas is presumably Carboniferous and/or Premian limestone and shale and locally (Gravel Creek areas) Triassic limestone, sandstone and shale of the Shublik Formation.

The highest Cr value (100 ppm) found in the survey area occurs at site 211 near Cottonwood Creek in the extreme southwest sector. There, Triassic limestone and sandstone (Shublik Formation) is in contact with Permian sandstone and shale of the Saddlerochit Formation. No ready explanation for such an anomalous Cr value in this clastic terrane is apparent although it may be noted that elsewhere in the northern Cordillera ultramafic plutons are associated with Permian (Cache Creek) rocks.

Heavy mineral sample results

Geochemical analyses (Appendix I) of panned concentrates show that samples from sites HM14a and 16 are enriched in gold (2665 ppb and 8675 ppb respectively). In addition field and microscopic examination of the concentrates by one of us (RTB) confirmed the presence of fine grained gold (e.g. two gold grains 0.1 mm in diameter in sample HM5) at sites HM5, 11, 14a and 16. The first site is from a stream draining the western contact of the Mount Sedgwick pluton where multielement stream sediment anomalies occur (Fig. 4, 5, 6). Also at site HM5, W (150 ppm) and Sn (20 ppm) are above normal (Fig. 5), while at site HM14a, Mo (16 ppm), Ag (4.5 ppm) and U (19.7 ppm) are anomalous (Fig. 4, 5). An above normal sample (site 110) contains anomalous Cu, Pb, Zn, Ni, Co and As. Shale and siltstone of the Jurassic Kingak Formation underlies this area.

Increases in the rare earth elements, Ce and La, at sites HM10, 13, 14b and 16 are probably related to monazite from the Mount Sedgwick pluton. Previously, heavy mineral samples taken from Trail River (R42, R43 and R44) were found to contain scheelite and barite (Gleeson, 1963). Two samples (R43 and R44) contain coarse garnet suggesting the presence of skarn at or near the contact of the pluton and in one sample (R44) a trace of smithsonite was found. Taken altogether, the heavy mineral data confirm the potential for gold-tungsten-tin in and around the Mount Sedgwick pluton.

General discussion, Mount Sedgwick area

The initial assignment of a moderate mineral potential for the Mount Sedgwick area (relative to the general proposed Northern Yukon Park area) made during the course of the 1980-81 Phase I assessment is confirmed by the stream-sediment and heavy mineral geochemical data presented in this report. The presence of an apparently isolated Paleozoic granitic stock emplaced in older Precambrian Neruokpuk metasedimentary strata suggests at least a potential target for granite-associated mineral occurrences (gold, tin, tungsten, molybdenum). The Mount Sedgwick pluton appears similar to other mid-Paleozoic intrusions of northern Yukon and Alaska (Mount Fitton, Hoidahl Cupola, Mount Ammerman) that have known associated mineralization (Geological Survey of Canada, 1981). Minor scheelite, chalcopyrite and molybdenite have, in fact, been found at one locality on Trail River in the southern part of the pluton (Bell and Jones, 1979) and minor radiometric responses have been recorded near the summit of Mount Sedgwick (Bell and Jones, op. cit; Findlay and Bell, 1983).

In addition to the above, the Mount Sedgwick area has been confirmed as a potential exploration target as a result of the present work. Three principal lines of evidence support this conclusion:

1. The visible (although minor) gold found in four panned concentrate sample sites from the vicinity of Mount Sedgwick (two of these localities have been confirmed geochemically by gold values of 2665 and 8675 ppb, see Appendix 3).
2. The presence of the numerous multi-element geochemical anomalies discussed in this report in and near Mount Sedgwick. The pluton appears to be surrounded by a geochemically anomalous arsenic halo (up to 8-10 times normal crustal abundance) suggesting the possibility that channelways for mineralizing fluids were present in the local intrusive system. Based on the present geochemical evidence the main target area associated with the pluton is the northwest zone in contact with Neruokpuk metasediments. Here anomalous concentrations of U, Ag, Cd, W, As, and Sn are present in streams draining the northwest flank of Mount Sedgwick. Other multi-element anomalies not apparently directly associated with the pluton are present elsewhere in the area. They may be in part due to variations in background element concentrations due to local changes in lithology and unrelated to mineralization. However, the distribution of various multi-element associations along a trend northeast from Mount Sedgwick might suggest the presence of other hidden small plutons, or segments of the Mount Sedgwick pluton displaced by younger thrust faults. This possibility has been earlier speculated on based on regional geological and geochemical evidence (Findlay and Sangster, 1982).

3. The presence of coarse garnets in two of the original heavy mineral samples taken from Trail and Crow rivers (Gleeson, 1963). This suggests possible local skarn development along the contacts of the Mount Sedgwick pluton and is reminiscent of the situation at Hoidahl Cupola and Mount Fitton granitic stocks to the southeast along Barn Uplift from the Mount Sedgwick area. At these plutons, extensive garnet skarn development is present locally, in places carrying associated tungsten-molybdenum mineralization in non-economic concentrations (Vokes, 1963; Cathro, 1969).

In summary, various lines of evidence suggest that the Mount Sedgwick pluton and its enclosing rocks is an exploration target for a number of commodities, chiefly tungsten, tin, molybdenum and gold and to a lesser degree, base metals and uranium.

REFERENCES

Bell, R.T. and Jones, L.D.
1979: Geology of some uranium occurrences in Western Canada; in Current Research, Part A, Geological Survey of Canada, Paper 79-1A, p. 397-399.

Cathro, R.J.
1969: Tungsten in Yukon; Western Miner, v. 42, no. 4, p. 23-40.

Findlay, D.C. and Bell, R.T.
1983: Investigation in the vicinity of Mount Sedgwick, Yukon Territory; in Current Research, Part A, Geological Survey of Canada, Paper 83-1A, p. 473-474.

Findlay, D.C. and Sangster, D.F.
1982: Recent G.S.C. Resource Assessment Studies and their potential as mineral exploration guides; paper delivered at Canadian Institute of Mining and Metallurgy Annual General Meeting, April 25-28, Quebec City, Que., see Abstracts, C.I.M. Bulletin, v. 75, no. 839, p. 93.

Geological Survey of Canada
1979: Regional stream sediment and water geochemical reconnaissance data, northern Yukon Territory, NTS 117A and parts of 117B, C and D; Geological Survey of Canada, Open File 565.

1981: Assessment of mineral and fuel resource potential of the proposed northern Yukon National Park and adjacent areas; Geological Survey of Canada, Open File 760, 31 p.

Gleeson, C.F.
1963: Reconnaissance heavy-mineral study in northern Yukon Territory; Geological Survey of Canada, Paper 63-32, 10 p.

Norris, D.K.
1980: Geology, northern Yukon Territory and northwestern District of Mackenzie; map, scale 1:500 000; Geological Survey of Canada, Open File 715.

1981a: Geology, Herschel Island-Demarcation Point, Yukon Territory; Geological Survey of Canada, Map 1514A, scale 1:250 000.

1981b: Geology, Blow River-Davidson Mountains, Yukon Territory; Geological Survey of Canada, Map 1516A, scale 1:250 000.

Vokes, F.M.
1963: Molybdenum deposits of Canada; Geological Survey of Canada, Economic Geology Report 20, 332 p.

Wanless, R.K., Stevens, R.D., Lachance, G.R., and Delabio, R.N.D.
1974: Age determinations and geological studies; K-Ar Isotopic ages, Report 12; Geological Survey of Canada, Paper 74-2, p. 19-20.

APPENDIX 1

CHEMICAL ANALYSES OF STREAM SEDIMENT SAMPLES
MOUNT SEDGWICK AREA, YUKON

1: SAMPLE NUMBERS PREFIXED BY '78' FROM G.S.C. OPEN FILE 565
2: SAMPLE NUMBERS PREFIXED BY '82' FROM SURVEY BY D.C. FINDLAY and R.T. BELL, 1982

SAMPLE NO	CU	PB	ZN	CO	NI	AG	CR	MO	MN	FE	CD	BA	U	AS	W	SN
82-100	8	7	32	3	12	.1	10	.5	35	1.0	.1	100	.4	3	1	2.0
82-102	9	8	43	4	13	.1	14	2.0	170	1.8	.1	100	.3	8	1	5.0
82-103	24	12	51	6	18	.1	15	1.0	425	4.0	.1	120	.2	10	1	7.0
82-104	14	12	72	9	21	.1	16	.5	3350	2.4	.1	120	.1	15	1	8.0
82-105	22	16	93	13	30	.1	24	1.0	4000	3.0	.1	140	.1	22	1	1.0
82-106	26	21	93	15	31	.3	28	2.0	5000	3.1	.1	160	.1	24	1	8.0
82-107	17	15	65	10	18	.1	13	.5	360	5.2	.1	180	.5	13	1	1.0
82-108	18	10	74	7	21	.1	14	2.0	825	4.6	.2	140	.3	10	1	2.0
82-109	15	12	85	10	24	.2	20	.5	400	2.9	.1	120	.4	18	1	5.0
82-110	45	45	166	32	59	1.0	22	2.0	1200	4.8	.2	140	.6	90	1	6.0
82-111	15	11	62	5	18	.1	14	.5	150	2.0	.1	100	.3	9	1	5.0
82-112	17	12	65	5	16	.1	13	1.0	92	2.2	.1	60	.2	12	1	5.0
82-113	24	17	100	11	29	.4	21	.5	680	3.3	.1	180	.3	19	1	8.0
82-114	29	13	113	7	35	.3	18	1.0	250	3.3	.4	160	.1	11	1	8.0
82-115	20	15	95	14	27	.1	23	2.0	1150	3.6	.3	160	.2	20	1	5.0
82-117	20	18	90	13	23	.1	20	.5	3000	2.9	.1	180	.4	23	1	9.0
82-118	10	9	51	3	12	.1	13	.5	100	1.7	.1	120	.5	8	1	3.0
82-119	11	12	58	6	15	.1	20	.5	169	4.0	.1	160	.8	23	1	1.0
82-120	37	26	138	28	49	.2	35	1.0	9800	3.8	.3	200	.2	63	1	5.0
82-122	46	45	160	13	35	.4	22	1.0	305	4.6	.1	160	.6	26	1	.5
82-123	25	17	115	10	29	.1	19	1.0	310	2.9	.1	180	.8	12	1	9.0
82-124	19	12	105	7	22	.1	24	.5	780	2.8	.3	260	1.0	7	1	8.0
82-125	27	21	147	11	41	.2	28	.5	765	3.5	.5	280	1.6	18	1	2.0
82-126	43	21	225	20	82	.2	24	2.0	380	3.8	.7	240	1.0	12	1	5.0
82-127	8	9	50	3	7	.1	10	.5	89	2.4	.1	120	.5	6	1	1.0
82-128	14	12	97	7	19	.1	19	.5	560	2.9	.2	320	.5	14	1	8.0
82-129	21	17	134	13	25	.1	22	1.0	680	3.7	.4	440	.8	19	1	.5
82-130	30	21	133	9	23	.4	20	1.0	620	3.1	.6	300	1.6	14	1	8.0
82-131	62	34	160	8	31	1.0	22	3.0	850	3.1	1.5	540	1.5	17	1	3.0
82-133	26	17	118	8	23	.2	20	.5	2150	3.0	.8	360	1.3	23	1	3.0
82-134	150	52	138	12	37	1.3	23	3.0	640	4.1	.4	560	2.0	29	1	5.0
82-135	38	45	340	9	35	.3	18	1.0	500	2.2	1.8	200	1.0	29	1	6.0
82-136	19	14	112	6	25	.1	22	1.0	200	2.2	.2	280	1.7	14	1	1.0
82-137	14	29	53	3	9	.4	11	2.0	160	2.6	.1	400	19.0	28	6	6.0
82-138	33	90	110	6	14	.6	10	3.0	230	2.1	.6	760	33.0	42	4	4.0
82-139	43	37	160	11	41	.2	38	1.0	400	4.2	.2	280	1.8	21	1	6.0
82-140	28	37	122	5	32	.3	20	.5	420	2.2	.8	560	6.9	22	4	9.0
82-142	25	64	135	7	21	.3	14	1.0	580	2.7	.6	560	8.6	34	6	7.0
82-143	24	18	70	9	23	.1	7	.5	560	2.6	.1	100	.8	24	3	4.0
82-144	28	21	75	7	21	.1	9	.5	500	2.2	.1	100	1.3	17	1	12.0
82-145	40	34	205	16	45	.1	10	.5	1150	3.3	.5	140	1.4	31	4	5.0
82-146	17	22	86	9	9	.2	10	1.0	2000	5.4	.1	400	8.5	85	6	5.0
82-147	8	29	60	5	7	.1	9	.5	860	2.6	.1	140	6.7	21	6	12.0
82-148	17	31	95	10	9	.3	13	1.0	1650	3.7	.1	320	7.0	30	8	7.0
82-149	38	34	155	7	8	.2	13	3.0	740	2.8	.5	220	6.5	123	32	11.0
82-150	22	19	95	17	25	.4	30	2.0	1400	4.7	.1	400	1.0	20	1	2.0
82-151	36	21	158	12	50	.3	42	2.0	196	3.1	.1	240	1.4	14	2	6.0
82-152	31	17	124	10	39	.2	40	3.0	240	3.4	.2	260	1.0	11	2	6.0
82-153	20	30	110	9	35	.2	29	1.0	580	3.4	.1	200	4.2	51	6	5.0
82-154	38	26	109	12	31	.1	14	1.0	620	3.2	.1	160	.5	16	2	1.0
82-155	26	15	78	6	20	.1	11	3.0	840	2.3	.3	160	.8	8	2	4.0
82-157	24	18	69	9	22	.1	8	2.0	580	2.5	.1	120	.5	16	2	6.0
82-158	26	22	75	9	23	.2	10	1.0	625	2.7	.1	120	.5	16	1	5.0
82-159	20	16	63	8	23	.2	10	1.0	530	2.5	.1	120	.5	9	1	4.0
82-160	30	36	108	10	29	.3	25	2.0	800	3.0	.1	200	1.0	10	1	8.0
82-162	36	29	97	14	31	.1	20	.5	970	3.6	.1	100	.8	10	1	1.0
82-163	30	23	75	12	31	.2	11	.5	850	3.3	.1	120	.5	23	4	10.0
82-164	33	23	84	11	26	.2	7	.5	560	2.9	.1	40	.5	28	4	.5
82-165	30	18	75	13	29	.2	8	2.0	480	2.9	.1	120	1.0	10	2	4.0
82-166	35	21	80	9	23	.2	7	.5	480	2.3	.1	80	.8	15	4	5.0
82-167	42	133	415	13	62	.6	20	2.0	740	2.7	1.2	160	17.8	121	12	8.0
82-168	25	69	242	45	48	.3	10	3.0	1550	1.7	1.2	120	17.1	37	10	15.0
82-169	46	183	65	3	6	3.9	16	2.0	142	4.1	.1	140	8.5	102	6	11.0
82-170	62	139	167	10	10	1.0	10	7.0	560	3.0	.1	100	32.0	99	100	10.0
82-171	24	14	130	8	25	.1	30	.5	325	3.5	.1	180	.3	8	1	6.0
82-172	23	18	103	24	21	.2	23	1.0	920	5.3	.1	320	.3	11	1	5.0
82-173	20	14	90	7	20	.1	25	.5	156	2.8	.1	260	.3	7	1	6.0
82-175	26	17	160	25	40	.2	26	.5	3250	4.2	.5	480	.5	17	1	4.0
82-176	18	15	127	36	29	.1	22	2.0	2800	5.3	.6	460	.5	17	1	11.0
82-177	20	17	78	7	15	.1	15	.5	180	3.1	.1	240	.4	11	1	6.0
82-178	20	15	100	9	18	.1	20	.5	390	2.9	.3	440	.5	10	1	6.0
82-179	18	16	125	31	18	.3	23	.5	2100	3.5	.8	380	.5	25	1	12.0
82-180	50	20	155	17	31	.3	22	.5	1100	3.3	1.3	880	1.3	37	1	4.0
82-182	10	9	96	5	15	.2	20	.5	450	2.0	.1	160	.8	10	1	5.0
82-183	14	7	62	2	13	.2	22	1.0	110	1.6	.1	280	1.0	7	1	3.0
82-184	19	11	82	5	15	.2	16	2.0	94	1.7	.1	240	.5	4	1	5.0
82-185	11	8	100	17	24	.1	20	2.0	600	7.1	.1	280	.4	17	1	5.0
82-186	14	5	169	46	35	.1	14	2.0	1500	20.0	.5	320	.2	12	1	.5
82-187	10	11	80	6	17	.1	28	.5	88	1.8	.1	220	1.6	7	1	2.0

Note: Fe in %; all others in ppm

APPENDIX 1 (cont.)

SAMPLE NO	CU	PB	ZN	CO	NI	AG	CR	MO	MN	FE	CD	BA	U	AS	W	SN
82-188	13	10	108	5	23	.1	23	.5	260	1.9	.4	300	1.5	8	1	4.0
82-189	16	10	153	7	37	.1	28	.5	360	2.0	1.0	300	1.5	14	1	4.0
82-190	12	3	137	176	51	.1	6	.5	13500	31.5	.1	360	.05	11	1	.5
82-191	13	10	82	8	20	.1	13	.5	640	2.0	.1	100	.05	10	1	8.0
82-192	16	13	84	9	20	.1	13	.5	305	2.4	.1	160	.2	9	1	11.0
82-193	13	12	65	22	15	.1	15	.5	1700	7.6	.1	120	.5	24	1	3.0
82-194	18	18	63	13	20	.2	12	.5	400	2.2	.1	320	.4	41	1	6.0
82-195	30	27	127	21	39	.4	20	1.0	480	3.6	.1	160	.3	20	1	11.0
82-196	25	18	116	9	29	.1	20	2.0	300	3.3	.1	180	.5	10	2	6.0
82-197	32	17	120	9	29	.1	23	1.0	450	2.8	.4	420	.8	10	1	9.0
82-199	33	18	62	6	15	.5	18	1.0	210	2.2	.1	420	1.3	14	1	6.0
82-200	98	22	265	10	32	.7	20	5.0	720	2.7	2.4	460	3.6	20	1	3.0
82-202	32	30	193	13	38	.2	32	2.0	570	3.2	.5	200	.9	23	1	8.0
82-203	22	17	66	12	20	.1	10	.5	660	2.6	.1	40	.05	11	1	8.0
82-204	16	13	66	8	18	.1	19	.5	310	2.4	.1	180	.5	15	1	6.0
82-205	20	27	90	11	20	.1	14	.5	555	2.7	.1	160	.05	6	1	4.0
82-206	28	44	113	13	23	.1	13	.5	760	3.3	.1	200	.05	8	1	5.0
82-207	25	27	100	11	23	.1	7	2.0	940	2.6	.1	160	.3	9	1	.5
82-208	52	33	128	17	33	.1	10	.5	1000	3.4	.2	160	.3	13	1	1.0
82-209	31	29	97	14	25	.1	12	.5	740	3.3	.1	120	.2	13	1	11.0
82-210	33	29	100	14	27	.1	12	.5	740	3.4	.1	80	.05	15	1	2.0
82-211	11	13	93	4	15	.1	100	.5	164	2.8	.2	300	2.7	15	1	8.0
82-212	9	6	81	2	19	.1	15	3.0	144	.8	.5	140	1.3	4	1	2.0
82-213	18	12	70	5	21	.1	18	2.0	100	2.5	.1	120	.05	7	1	5.0
82-215	15	13	49	6	14	.1	18	1.0	144	2.4	.1	140	.05	8	1	12.0
82-216	20	13	110	7	22	.1	27	2.0	265	2.1	.3	220	1.0	9	1	8.0
82-217	14	11	63	4	15	.1	26	2.0	100	3.3	.1	160	.05	7	1	5.0
82-218	22	15	75	13	20	.1	24	2.0	2850	3.4	.1	220	.05	14	1	6.0
82-219	25	13	90	12	25	.1	20	2.0	1750	2.6	.1	200	.5	16	1	4.0
82-220	18	16	63	4	15	.1	24	1.0	120	2.4	.3	180	.4	17	1	8.0
82-222	23	12	85	10	21	.1	26	.5	780	3.2	.1	160	1.0	21	1	11.0
82-223	23	13	100	22	23	.2	29	1.0	7100	5.4	.7	300	.4	32	1	10.0
78-1002	24	12	128	14	26	.2	0	2.0	700	5.2	0.0	590	3.6	0	2	0.0
78-1003	60	8	250	12	33	.2	0	4.0	870	2.9	0.0	540	2.6	0	2	0.0
78-1004	64	9	260	11	33	.1	0	2.0	900	3.0	0.0	540	2.1	0	2	0.0
78-1007	18	11	96	9	23	.1	0	1.0	260	5.1	0.0	460	2.8	0	2	0.0
78-1008	26	8	44	6	15	.1	0	1.0	280	2.8	0.0	470	2.5	0	2	0.0
78-1009	16	7	52	6	17	.1	0	1.0	490	2.0	0.0	440	2.6	0	2	0.0
78-1010	22	9	86	14	25	.1	0	1.0	395	2.4	0.0	480	2.9	0	2	0.0
78-1011	28	12	108	11	32	.1	0	1.0	495	2.7	0.0	580	3.4	0	2	0.0
78-1693	12	6	106	4	25	.1	0	2.0	225	1.4	0.0	440	3.1	0	2	0.0
78-1694	14	9	124	7	30	.1	0	1.0	250	2.3	0.0	560	4.0	0	2	0.0
78-1695	12	8	88	8	16	.1	0	1.0	380	5.1	0.0	820	3.3	0	2	0.0
78-1702	24	11	138	10	26	.1	0	1.0	250	3.1	0.0	800	3.7	0	2	0.0
78-1703	24	12	134	11	29	.1	0	1.0	270	3.3	0.0	860	3.6	0	2	0.0
78-3033	22	14	132	15	37	.2	0	1.0	790	4.0	0.0	410	3.4	0	2	0.0
78-3034	36	14	116	19	47	.2	0	1.0	135	2.9	0.0	360	2.4	0	2	0.0
78-3116	12	9	66	10	17	.1	0	1.0	1000	2.4	0.0	400	2.8	0	2	0.0
78-3117	24	14	96	14	29	.1	0	1.0	780	2.8	0.0	430	3.2	0	2	0.0
78-3194	22	14	132	11	31	.1	0	1.0	265	3.2	0.0	960	3.5	0	2	0.0
78-3195	20	10	104	6	20	.1	0	1.0	170	1.9	0.0	780	3.2	0	2	0.0
78-3196	22	12	94	7	22	.2	0	3.0	170	1.9	0.0	690	3.3	0	2	0.0
78-3197	12	6	90	5	19	.1	0	1.0	270	1.4	0.0	600	3.2	0	2	0.0
78-3200	14	12	114	11	27	.1	0	1.0	885	3.1	0.0	520	3.0	0	2	0.0
78-3202	20	11	96	6	17	.2	0	1.0	70	3.0	0.0	560	2.7	0	2	0.0
78-3203	20	12	86	11	21	.1	0	1.0	490	3.3	0.0	580	3.4	0	2	0.0
78-3204	22	15	66	10	20	.1	0	1.0	480	2.1	0.0	620	3.1	0	4	0.0
78-3205	14	16	94	6	22	.1	0	1.0	200	2.3	0.0	1340	4.1	0	2	0.0
78-3206	16	18	100	7	24	.1	0	1.0	220	2.4	0.0	1040	4.1	0	2	0.0
78-3207	26	12	84	8	15	.1	0	1.0	175	4.4	0.0	660	2.8	0	2	0.0
78-3208	18	13	88	8	16	.1	0	1.0	195	3.1	0.0	560	3.6	0	2	0.0
78-3209	16	8	146	18	21	.1	0	1.0	1250	4.8	0.0	630	3.3	0	2	0.0
78-3210	26	10	142	9	25	.1	0	1.0	350	2.5	0.0	1150	4.0	0	2	0.0
78-3211	10	1	106	8	19	.1	0	1.0	125	19.5	0.0	530	1.9	0	2	0.0
78-3213	14	7	116	4	18	.1	0	1.0	290	1.6	0.0	0	3.3	0	2	0.0
78-3240	8	8	58	7	11	.1	0	1.0	330	2.3	0.0	840	3.6	0	2	0.0
78-3242	6	2	64	1	8	.1	0	2.0	95	.7	0.0	150	2.7	0	2	0.0
78-3243	12	8	112	16	18	.1	0	1.0	1150	4.2	0.0	840	3.7	0	2	0.0
78-3244	10	7	70	5	13	.1	0	1.0	105	2.0	0.0	720	3.6	0	2	0.0
78-3246	12	8	72	5	14	.1	0	1.0	115	1.9	0.0	780	3.8	0	2	0.0
78-3247	0	0	0	0	0	0.0	0	0.0	0	0.0	0.0	1060	3.2	0	2	0.0
78-3302	14	7	64	5	13	.1	0	8.0	125	2.1	0.0	340	2.7	0	2	0.0
78-3303	24	14	106	9	28	.1	0	1.0	210	3.4	0.0	500	3.1	0	2	0.0
78-3304	26	13	100	8	27	.1	0	1.0	205	3.3	0.0	440	3.2	0	2	0.0
78-3305	20	10	92	8	23	.1	0	2.0	400	3.1	0.0	490	3.5	0	2	0.0
78-3306	32	15	158	18	50	.1	0	1.0	330	4.0	0.0	680	3.5	0	2	0.0
78-3308	30	17	136	17	42	.1	0	4.0	235	3.5	0.0	670	3.7	0	2	0.0
78-3309	22	14	112	13	29	.1	0	3.0	340	3.3	0.0	1160	3.2	0	2	0.0
78-3310	12	17	76	7	9	.1	0	4.0	225	2.2	0.0	1200	6.5	0	8	0.0

Note: Fe in %; all others in ppm

APPENDIX 1 (cont.)

SAMPLE NO	CU	PB	ZN	CO	NI	AG	CR	MO	MN	FE	CD	BA	U	AS	W	SN
78-3311	8	15	56	8	6	.1	0	2.0	570	2.1	0.0	1040	10.2	0	20	0.0
78-3312	10	10	40	10	6	.1	0	2.0	420	2.7	0.0	1280	10.2	0	2	0.0
78-3313	12	10	34	8	4	.1	0	2.0	390	2.3	0.0	1020	10.3	0	22	0.0
78-3314	16	33	76	10	8	.1	0	2.0	640	3.2	0.0	980	11.5	0	32	0.0
78-3315	12	19	60	7	3	.1	0	2.0	395	2.2	0.0	1360	8.1	0	12	0.0
78-3316	28	16	144	9	35	.1	0	3.0	220	2.9	0.0	1400	4.0	0	2	0.0
78-3317	44	40	138	8	19	.2	0	3.0	370	1.7	0.0	1400	6.3	0	55	0.0
78-3318	22	14	100	7	19	.1	0	1.0	185	2.4	0.0	1160	3.1	0	2	0.0
78-3319	44	24	152	11	29	.1	0	2.0	870	2.8	0.0	1280	4.1	0	2	0.0
78-3320	152	22	315	11	29	1.2	0	6.0	570	2.7	0.0	1100	9.6	0	2	0.0
78-3322	20	12	90	8	21	.1	0	1.0	200	2.8	0.0	640	3.7	0	2	0.0
78-3323	22	17	88	11	21	.1	0	2.0	320	2.7	0.0	540	3.1	0	2	0.0
78-3324	22	10	76	10	20	.1	0	1.0	725	2.5	0.0	440	2.7	0	2	0.0
78-3325	20	10	98	14	25	.1	0	1.0	955	2.7	0.0	560	3.2	0	2	0.0
78-3326	22	10	108	14	25	.1	0	2.0	1200	4.0	0.0	740	2.8	0	2	0.0
78-3327	22	11	114	15	29	.2	0	1.0	1250	4.1	0.0	700	2.8	0	2	0.0
78-3329	26	21	116	16	25	.1	0	1.0	2500	3.6	0.0	480	2.9	0	2	0.0
78-3330	16	14	72	7	17	.1	0	1.0	180	2.4	0.0	490	2.9	0	2	0.0
78-3331	20	14	110	11	25	.1	0	1.0	260	3.5	0.0	680	2.9	0	2	0.0
78-3332	34	19	104	14	33	.2	0	1.0	295	3.5	0.0	440	3.0	0	2	0.0
78-3348	18	9	78	9	20	.1	0	1.0	310	2.5	0.0	530	2.7	0	2	0.0
78-3349	18	11	76	10	20	.1	0	1.0	335	2.6	0.0	600	2.4	0	2	0.0
78-3364	18	15	98	6	19	.1	0	2.0	310	1.6	0.0	450	2.7	0	2	0.0
78-3365	22	24	100	10	19	.1	0	1.0	480	2.0	0.0	560	3.8	0	2	0.0
78-3366	68	40	290	32	60	.2	0	2.0	1050	2.3	0.0	610	10.1	0	2	0.0
78-3367	28	19	74	10	21	.1	0	1.0	430	2.3	0.0	620	3.4	0	2	0.0
78-3368	30	20	102	10	26	.1	0	1.0	480	2.1	0.0	620	4.2	0	10	0.0
78-3370	20	13	66	9	18	.1	0	1.0	415	2.0	0.0	570	3.0	0	2	0.0
78-3371	22	14	70	10	20	.1	0	1.0	420	2.1	0.0	620	2.8	0	2	0.0
78-3372	22	17	70	11	20	.1	0	1.0	490	2.4	0.0	640	2.7	0	2	0.0
78-3373	28	27	72	12	22	.1	0	1.0	600	2.5	0.0	630	3.6	0	2	0.0
78-3374	20	16	72	11	20	.1	0	1.0	515	2.4	0.0	550	2.8	0	2	0.0
78-3376	32	18	100	11	30	.1	0	2.0	480	3.2	0.0	730	3.8	0	2	0.0
78-3377	24	21	148	12	27	.1	0	2.0	445	3.2	0.0	830	5.2	0	6	0.0
78-3378	20	16	106	8	21	.1	0	2.0	305	3.3	0.0	760	4.6	0	20	0.0
78-3379	22	27	166	15	30	.1	0	1.0	540	3.6	0.0	670	5.1	0	2	0.0
78-3380	0	0	0	0	0	0.0	0	0.0	0	0.0	0.0	0	3.2	0	0	0.0
78-3383	18	11	114	9	23	.1	0	1.0	305	3.5	0.0	760	3.7	0	2	0.0
78-3385	18	10	88	5	20	.1	0	1.0	90	2.3	0.0	660	3.2	0	2	0.0
78-3386	14	11	80	10	20	.1	0	2.0	1150	2.9	0.0	400	3.3	0	2	0.0
78-3396	24	13	104	16	37	.1	0	1.0	1800	3.7	0.0	500	2.9	0	2	0.0
78-3398	20	13	94	13	26	.1	0	2.0	835	3.2	0.0	400	3.5	0	2	0.0
78-3399	20	13	98	8	23	.1	0	1.0	160	2.7	0.0	440	3.1	0	2	0.0
78-3400	14	8	74	8	19	.1	0	1.0	350	2.6	0.0	370	2.6	0	2	0.0
78-3403	24	14	114	11	30	.1	0	3.0	375	3.1	0.0	520	3.2	0	2	0.0
78-3404	16	10	76	9	19	.1	0	2.0	695	2.6	0.0	390	2.5	0	2	0.0
78-3405	36	18	136	14	38	.1	0	1.0	360	3.9	0.0	480	3.1	0	2	0.0
78-3406	32	23	100	10	29	.2	0	1.0	210	4.7	0.0	370	2.9	0	2	0.0
78-3407	8	6	48	5	10	.1	0	1.0	310	1.5	0.0	360	2.8	0	2	0.0
78-3408	14	7	66	8	17	.1	0	1.0	310	2.1	0.0	370	2.6	0	2	0.0
78-3409	18	14	86	12	29	.1	0	1.0	320	2.7	0.0	440	3.1	0	2	0.0
78-3411	28	11	94	10	30	.1	0	1.0	500	2.5	0.0	550	3.2	0	2	0.0
78-3425	0	0	0	0	0	0.0	0	0.0	0	0.0	0.0	520	3.7	0	2	0.0
78-3426	14	6	114	7	24	.1	0	1.0	345	2.3	0.0	740	3.5	0	2	0.0
78-3427	18	10	134	10	31	.1	0	2.0	310	2.7	0.0	1400	4.3	0	2	0.0
78-3428	18	8	124	9	30	.1	0	2.0	200	2.6	0.0	1340	4.2	0	2	0.0
78-3429	26	17	146	16	40	.1	0	1.0	300	4.6	0.0	580	3.2	0	2	0.0
78-3430	28	12	146	13	31	.1	0	1.0	230	4.0	0.0	640	3.9	0	2	0.0
78-3431	20	8	124	10	25	.1	0	1.0	150	3.1	0.0	650	3.4	0	2	0.0
78-3432	14	6	112	10	19	.1	0	1.0	130	3.5	0.0	600	3.5	0	2	0.0
78-3433	24	8	114	14	34	.1	0	1.0	880	3.4	0.0	750	3.4	0	2	0.0
78-3434	22	13	118	11	25	.2	0	1.0	345	3.8	0.0	610	3.0	0	2	0.0
78-3435	26	12	140	17	33	.1	0	1.0	680	4.5	0.0	620	2.8	0	2	0.0
78-3436	22	11	114	10	25	.1	0	1.0	410	3.1	0.0	560	3.1	0	2	0.0
78-3437	22	9	138	12	30	.1	0	1.0	430	3.4	0.0	600	3.1	0	2	0.0
78-3438	24	11	110	8	27	.1	0	3.0	150	2.2	0.0	960	3.5	0	2	0.0
78-3439	20	10	118	9	27	.3	0	1.0	310	2.7	0.0	630	3.6	0	2	0.0
78-3442	14	6	70	8	17	.1	0	1.0	770	2.4	0.0	530	2.5	0	2	0.0
78-3443	20	8	94	9	20	.1	0	1.0	195	2.6	0.0	460	2.7	0	2	0.0
78-3444	38	24	136	22	46	.6	0	2.0	480	4.3	0.0	460	3.5	0	2	0.0
78-3445	28	12	132	12	35	.1	0	2.0	425	4.4	0.0	550	3.2	0	2	0.0
78-3446	20	12	90	8	22	.1	0	1.5	198	3.0	0.0	420	3.0	0	2	0.0
78-3451	14	14	78	8	16	.1	0	1.0	360	2.5	0.0	490	3.0	0	2	0.0
78-3453	22	19	90	11	20	.1	0	1.0	490	3.3	0.0	640	2.8	0	2	0.0
78-3454	14	8	62	5	10	.1	0	1.0	295	2.2	0.0	470	2.7	0	2	0.0
78-3455	24	19	78	13	21	.2	0	1.0	505	3.1	0.0	600	2.9	0	2	0.0

Note: Fe in %; all others in ppm

APPENDIX 2

TABLES OF STATISTICAL DATA, MOUNT SEDGWICK AREA, YUKON
(1978 and 1982 stream silt samples)

VARIABLE NAME: CU | UNIT OF MEASUREMENT: PPM | DATA SUBSET: TOTAL

HISTOGRAM

		N	%	CUM %
100 PPB	I	1	.43	.43
200 PPB				
500 PPB				
1 PPM				
2 PPM				
5 PPM	XXX	15	6.47	6.90
10 PPM	XXXXXXXXXXXXXXXXXXX	95	40.95	47.84
20 PPM	XXXXXXXXXXXXXXXXXXXXXXX	112	48.28	96.12
50 PPM	XX	7	3.02	99.14
100 PPM	I	2	.86	100.00
200 PPM				
500 PPM				
1000 PPM				
2000 PPM				
5000 PPM				

0 20 40 60 80 100

PERCENT

SUMMARY STATISTICS

TOTAL NUMBER OF SAMPLES	232
NUMBER OF ZERO VALUE SAMPLES	1
NUMBER OF NON-ZERO SAMPLES	231
ARITHMETIC MEAN	24.4459
VARIANCE	274.9525
STANDARD DEVIATION	16.5817
SKEW	4.5398
EXCESS KURTOSIS	29.2526
COEFFICIENT OF VARIATION, %	67.8302
STANDARD ERROR OF THE MEAN	1.0910
LOWER 95% LIMIT ON THE MEAN	22.2958
UPPER 95% LIMIT ON THE MEAN	26.5960
LOWER 95% LIMIT ON THE RANGE	-8.2326
UPPER 95% LIMIT ON THE RANGE	57.1244
GEOMETRIC MEAN	21.4599
LOG10 MEAN	1.3316
LOG10 VARIANCE	.0432
LOG10 STANDARD DEVIATION	.2078
STANDARD ERROR ON THE MEAN	.0137
LOWER 95% LIMIT ON THE MEAN	20.1692
UPPER 95% LIMIT ON THE MEAN	22.8332
LOWER 95% LIMIT ON THE RANGE	8.3597
UPPER 95% LIMIT ON THE RANGE	55.0892
MINIMUM VALUE	6.0000
25TH PERCENTILE OR 1ST QUARTILE	16.0000
50TH PERCENTILE OR MEDIAN	22.0000
75TH PERCENTILE OR 3RD QUARTILE	28.0000
80TH PERCENTILE	30.0000
90TH PERCENTILE	38.0000
95TH PERCENTILE	46.0000
98TH PERCENTILE	64.0000
99TH PERCENTILE	150.0000
MAXIMUM VALUE	152.0000

VARIABLE NAME: PB | UNIT OF MEASUREMENT: PPM | DATA SUBSET: TOTAL

HISTOGRAM

		N	%	CUM %
10 PPB	I	1	.43	.43
20 PPB				
50 PPB				
100 PPB				
200 PPB				
500 PPB	I	1	.43	.86
1 PPM	I	1	.43	1.29
2 PPM	I	2	.86	2.16
5 PPM	XXXXXXXXXXX	54	23.28	25.43
10 PPM	XXXXXXXXXXXXXXXXXXXXXXX	118	50.86	76.29
20 PPM	XXXXXXXXX	48	20.69	96.98
50 PPM	X	4	1.72	98.71
100 PPM	X	3	1.29	100.00
200 PPM				
500 PPM				
1000 PPM				
2000 PPM				
5000 PPM				

0 20 40 60 80 100

PERCENT

SUMMARY STATISTICS

TOTAL NUMBER OF SAMPLES	232
NUMBER OF ZERO VALUE SAMPLES	1
NUMBER OF NON-ZERO SAMPLES	231
ARITHMETIC MEAN	18.5108
VARIANCE	358.3118
STANDARD DEVIATION	18.9291
SKEW	5.3818
EXCESS KURTOSIS	36.3476
COEFFICIENT OF VARIATION, %	102.2598
STANDARD ERROR OF THE MEAN	1.2454
LOWER 95% LIMIT ON THE MEAN	16.0563
UPPER 95% LIMIT ON THE MEAN	20.9653
LOWER 95% LIMIT ON THE RANGE	-18.7939
UPPER 95% LIMIT ON THE RANGE	55.8156
GEOMETRIC MEAN	14.7899
LOG10 MEAN	1.1700
LOG10 VARIANCE	.0707
LOG10 STANDARD DEVIATION	.2660
STANDARD ERROR ON THE MEAN	.0175
LOWER 95% LIMIT ON THE MEAN	13.6608
UPPER 95% LIMIT ON THE MEAN	16.0122
LOWER 95% LIMIT ON THE RANGE	4.4237
UPPER 95% LIMIT ON THE RANGE	49.4468
MINIMUM VALUE	1.0000
25TH PERCENTILE OR 1ST QUARTILE	11.0000
50TH PERCENTILE OR MEDIAN	14.0000
75TH PERCENTILE OR 3RD QUARTILE	19.0000
80TH PERCENTILE	22.0000
90TH PERCENTILE	30.0000
95TH PERCENTILE	40.0000
98TH PERCENTILE	69.0000
99TH PERCENTILE	139.0000
MAXIMUM VALUE	183.0000

VARIABLE NAME: ZN
UNIT OF MEASUREMENT: PPM
DATA SUBSET: TOTAL

HISTOGRAM

```
          **        *         *         *         *         *
           I                                                *
  1 PPM  *                                                  *
  2 PPM  *                                                  *
  5 PPM  *                                                  *
 10 PPM  *                                                  *
 20 PPM  *
           XX                                               *
 50 PPM  *
           XXXXXXXXXXXXXXXXXXXXXXXXX                        *
100 PPM  *
           XXXXXXXXXXXXXXXXXX                               *
200 PPM  *
           XX                                               *
500 PPM  *                                                  *
1000 PPM *                                                  *
2000 PPM *                                                  *
5000 PPM *                                                  *
          **        *         *         *         *         *
           0        20        40        60        80       100
                              PERCENT
```

	N	%	CUM %
I	1	.43	.43
XX	8	3.45	3.88
XXXXXXXXXXXXXXXXXXXXXXXXX	120	51.72	55.60
XXXXXXXXXXXXXXXXXX	93	40.09	95.69
XX	10	4.31	100.00

SUMMARY STATISTICS

TOTAL NUMBER OF SAMPLES	232
NUMBER OF ZERO VALUE SAMPLES	1
NUMBER OF NON-ZERO SAMPLES	231
ARITHMETIC MEAN	106.9307
VARIANCE	2424.4300
STANDARD DEVIATION	49.2385
SKEW	2.5491
EXCESS KURTOSIS	10.1433
COEFFICIENT OF VARIATION, %	46.0471
STANDARD ERROR OF THE MEAN	3.2397
LOWER 95% LIMIT ON THE MEAN	100.5462
UPPER 95% LIMIT ON THE MEAN	113.3153
LOWER 95% LIMIT ON THE RANGE	9.8935
UPPER 95% LIMIT ON THE RANGE	203.9680
GEOMETRIC MEAN	98.6695
LOG10 MEAN	1.9942
LOG10 VARIANCE	.0285
LOG10 STANDARD DEVIATION	.1688
STANDARD ERROR ON THE MEAN	.0111
LOWER 95% LIMIT ON THE MEAN	93.8188
UPPER 95% LIMIT ON THE MEAN	103.7709
LOWER 95% LIMIT ON THE RANGE	45.8607
UPPER 95% LIMIT ON THE RANGE	212.2879
MINIMUM VALUE	32.0000
25TH PERCENTILE OR 1ST QUARTILE	76.0000
50TH PERCENTILE OR MEDIAN	98.0000
75TH PERCENTILE OR 3RD QUARTILE	124.0000
80TH PERCENTILE	134.0000
90TH PERCENTILE	155.0000
95TH PERCENTILE	169.0000
98TH PERCENTILE	265.0000
99TH PERCENTILE	340.0000
MAXIMUM VALUE	415.0000

VARIABLE NAME: CO
UNIT OF MEASUREMENT: PPM
DATA SUBSET: TOTAL

HISTOGRAM

```
          **        *         *         *         *         *
           I                                                *
 10 PPB  *                                                  *
 20 PPB  *                                                  *
 50 PPB  *                                                  *
100 PPB  *                                                  *
200 PPB  *                                                  *
500 PPB  *                                                  *
           I                                                *
  1 PPM  *                                                  *
           I                                                *
  2 PPM  *
           XXXXXX                                           *
  5 PPM  *
           XXXXXXXXXXXXXXXXXXXXXX                           *
 10 PPM  *
           XXXXXXXXXXXXXXXXX                                *
 20 PPM  *
           XXX                                              *
 50 PPM  *                                                  *
100 PPM  *                                                  *
           I                                                *
200 PPM  *                                                  *
500 PPM  *                                                  *
1000 PPM *                                                  *
2000 PPM *                                                  *
5000 PPM *                                                  *
          **        *         *         *         *         *
           0        20        40        60        80       100
                              PERCENT
```

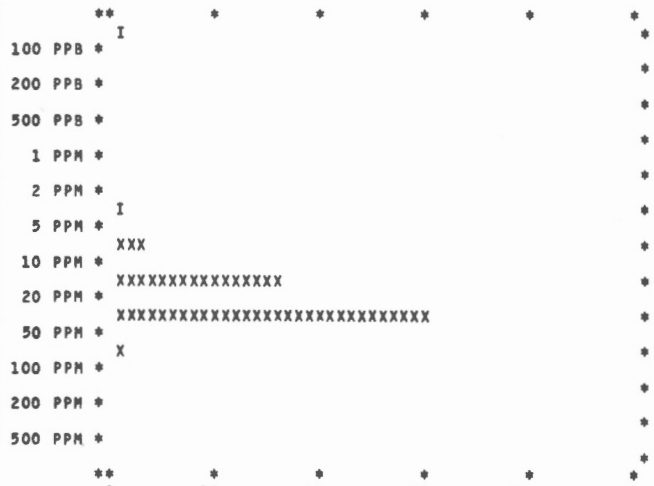
	N	%	CUM %
I	1	.43	.43
I	1	.43	.86
I	2	.86	1.72
XXXXXX	26	11.21	12.93
XXXXXXXXXXXXXXXXXXXXXX	109	46.98	59.91
XXXXXXXXXXXXXXXXX	79	34.05	93.97
XXX	13	5.60	99.57
I	1	.43	100.00

SUMMARY STATISTICS

TOTAL NUMBER OF SAMPLES	232
NUMBER OF ZERO VALUE SAMPLES	1
NUMBER OF NON-ZERO SAMPLES	231
ARITHMETIC MEAN	11.4113
VARIANCE	155.8258
STANDARD DEVIATION	12.4830
SKEW	10.2536
EXCESS KURTOSIS	129.6721
COEFFICIENT OF VARIATION, %	109.3922
STANDARD ERROR OF THE MEAN	.8213
LOWER 95% LIMIT ON THE MEAN	9.7926
UPPER 95% LIMIT ON THE MEAN	13.0299
LOWER 95% LIMIT ON THE RANGE	-13.1898
UPPER 95% LIMIT ON THE RANGE	36.0123
GEOMETRIC MEAN	9.5194
LOG10 MEAN	.9786
LOG10 VARIANCE	.0562
LOG10 STANDARD DEVIATION	.2371
STANDARD ERROR ON THE MEAN	.0156
LOWER 95% LIMIT ON THE MEAN	8.8688
UPPER 95% LIMIT ON THE MEAN	10.2177
LOWER 95% LIMIT ON THE RANGE	3.2459
UPPER 95% LIMIT ON THE RANGE	27.9176
MINIMUM VALUE	1.0000
25TH PERCENTILE OR 1ST QUARTILE	7.0000
50TH PERCENTILE OR MEDIAN	10.0000
75TH PERCENTILE OR 3RD QUARTILE	13.0000
80TH PERCENTILE	13.0000
90TH PERCENTILE	17.0000
95TH PERCENTILE	22.0000
98TH PERCENTILE	32.0000
99TH PERCENTILE	46.0000
MAXIMUM VALUE	176.0000

VARIABLE NAME: NI
UNIT OF MEASUREMENT: PPM
DATA SUBSET: TOTAL

HISTOGRAM



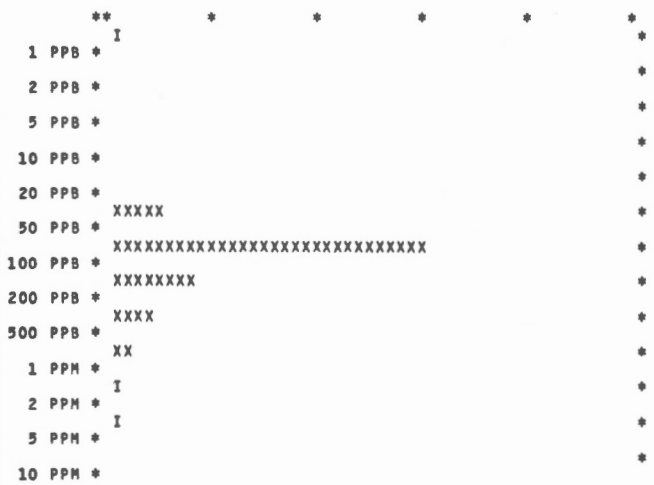
	N	%	CUM %
I	1	.43	.43
I	2	.86	1.29
XXX	15	6.47	7.76
XXXXXXXXXXXXXXX	72	31.03	38.79
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	137	59.05	97.84
X	5	2.16	100.00

SUMMARY STATISTICS

TOTAL NUMBER OF SAMPLES	232
NUMBER OF ZERO VALUE SAMPLES	1
NUMBER OF NON-ZERO SAMPLES	231
ARITHMETIC MEAN	24.5108
VARIANCE	113.7640
STANDARD DEVIATION	10.6660
SKEW	1.3395
EXCESS KURTOSIS	4.1495
COEFFICIENT OF VARIATION, %	43.5156
STANDARD ERROR OF THE MEAN	.7018
LOWER 95% LIMIT ON THE MEAN	23.1278
UPPER 95% LIMIT ON THE MEAN	25.8938
LOWER 95% LIMIT ON THE RANGE	3.4907
UPPER 95% LIMIT ON THE RANGE	45.5310
GEOMETRIC MEAN	22.2535
LOG10 MEAN	1.3474
LOG10 VARIANCE	.0407
LOG10 STANDARD DEVIATION	.2016
STANDARD ERROR ON THE MEAN	.0133
LOWER 95% LIMIT ON THE MEAN	20.9533
UPPER 95% LIMIT ON THE MEAN	23.6345
LOWER 95% LIMIT ON THE RANGE	8.9125
UPPER 95% LIMIT ON THE RANGE	55.5647
MINIMUM VALUE	3.0000
25TH PERCENTILE OR 1ST QUARTILE	19.0000
50TH PERCENTILE OR MEDIAN	23.0000
75TH PERCENTILE OR 3RD QUARTILE	30.0000
80TH PERCENTILE	31.0000
90TH PERCENTILE	37.0000
95TH PERCENTILE	45.0000
98TH PERCENTILE	51.0000
99TH PERCENTILE	62.0000
MAXIMUM VALUE	82.0000

VARIABLE NAME: AG
UNIT OF MEASUREMENT: PPM
DATA SUBSET: TOTAL

HISTOGRAM



	N	%	CUM %
I	1	.43	.43
XXXXX	25	10.78	11.21
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	140	60.34	71.55
XXXXXXXX	37	15.95	87.50
XXXX	19	8.19	95.69
XX	7	3.02	98.71
I	2	.86	99.57
I	1	.43	100.00

SUMMARY STATISTICS

TOTAL NUMBER OF SAMPLES	232
NUMBER OF ZERO VALUE SAMPLES	1
NUMBER OF NON-ZERO SAMPLES	231
ARITHMETIC MEAN	.1777
VARIANCE	.0906
STANDARD DEVIATION	.3011
SKEW	8.9569
EXCESS KURTOSIS	101.2968
COEFFICIENT OF VARIATION, %	169.4197
STANDARD ERROR OF THE MEAN	.0198
LOWER 95% LIMIT ON THE MEAN	.1387
UPPER 95% LIMIT ON THE MEAN	.2167
LOWER 95% LIMIT ON THE RANGE	-.4156
UPPER 95% LIMIT ON THE RANGE	.7710
GEOMETRIC MEAN	.1265
LOG10 MEAN	-.8978
LOG10 VARIANCE	.0829
LOG10 STANDARD DEVIATION	.2879
STANDARD ERROR ON THE MEAN	.0189
LOWER 95% LIMIT ON THE MEAN	.1161
UPPER 95% LIMIT ON THE MEAN	.1379
LOWER 95% LIMIT ON THE RANGE	.0343
UPPER 95% LIMIT ON THE RANGE	.4674
MINIMUM VALUE	.0500
25TH PERCENTILE OR 1ST QUARTILE	.1000
50TH PERCENTILE OR MEDIAN	.1000
75TH PERCENTILE OR 3RD QUARTILE	.2000
80TH PERCENTILE	.2000
90TH PERCENTILE	.3000
95TH PERCENTILE	.4000
98TH PERCENTILE	1.0000
99TH PERCENTILE	1.3000
MAXIMUM VALUE	3.9000

VARIABLE NAME: CR | UNIT OF MEASUREMENT: PPM | DATA SUBSET: TOTAL

HISTOGRAM

		N	%	CUM %
100 PPB	XXXXXXXXXXXXXXXXXXXXXXXX	121	52.16	52.16
200 PPB				
500 PPB				
1 PPM				
2 PPM				
5 PPM	XXXX	20	8.62	60.78
10 PPM	XXXXXXXXXX	51	21.98	82.76
20 PPM	XXXXXXXX	39	16.81	99.57
50 PPM	I	1	.43	100.00
100 PPM				
200 PPM				
500 PPM				
1000 PPM				
2000 PPM				
5000 PPM				

0 20 40 60 80 100

PERCENT

SUMMARY STATISTICS

TOTAL NUMBER OF SAMPLES	232
NUMBER OF ZERO VALUE SAMPLES	121
NUMBER OF NON-ZERO SAMPLES	111
ARITHMETIC MEAN	19.1982
VARIANCE	114.9967
STANDARD DEVIATION	10.7237
SKEW	4.0137
EXCESS KURTOSIS	27.2977
COEFFICIENT OF VARIATION, %	55.8576
STANDARD ERROR OF THE MEAN	1.0178
LOWER 95% LIMIT ON THE MEAN	17.1810
UPPER 95% LIMIT ON THE MEAN	21.2154
LOWER 95% LIMIT ON THE RANGE	-2.0539
UPPER 95% LIMIT ON THE RANGE	40.4503
GEOMETRIC MEAN	17.2349
LOG10 MEAN	1.2364
LOG10 VARIANCE	.0391
LOG10 STANDARD DEVIATION	.1977
STANDARD ERROR ON THE MEAN	.0188
LOWER 95% LIMIT ON THE MEAN	15.8205
UPPER 95% LIMIT ON THE MEAN	18.7757
LOWER 95% LIMIT ON THE RANGE	6.9923
UPPER 95% LIMIT ON THE RANGE	42.4814
MINIMUM VALUE	6.0000
25TH PERCENTILE OR 1ST QUARTILE	13.0000
50TH PERCENTILE OR MEDIAN	19.0000
75TH PERCENTILE OR 3RD QUARTILE	23.0000
80TH PERCENTILE	24.0000
90TH PERCENTILE	28.0000
95TH PERCENTILE	32.0000
98TH PERCENTILE	42.0000
99TH PERCENTILE	100.0000
MAXIMUM VALUE	100.0000

VARIABLE NAME: MO | UNIT OF MEASUREMENT: PPM | DATA SUBSET: TOTAL

HISTOGRAM

		N	%	CUM %
10 PPB	I	1	.43	.43
20 PPB				
50 PPB				
100 PPB				
200 PPB				
500 PPB	XXXXXXXXXX	48	20.69	21.12
1 PPM	XXXXXXXXXXXXXXXXXXXXXXXX	110	47.41	68.53
2 PPM	XXXXXXXXXX	52	22.41	90.95
5 PPM	XXXX	18	7.76	98.71
10 PPM	X	3	1.29	100.00
20 PPM				
50 PPM				

0 20 40 60 80 100

PERCENT

SUMMARY STATISTICS

TOTAL NUMBER OF SAMPLES	232
NUMBER OF ZERO VALUE SAMPLES	1
NUMBER OF NON-ZERO SAMPLES	231
ARITHMETIC MEAN	1.3745
VARIANCE	1.0429
STANDARD DEVIATION	1.0212
SKEW	2.8826
EXCESS KURTOSIS	12.4078
COEFFICIENT OF VARIATION, %	74.2989
STANDARD ERROR OF THE MEAN	.0672
LOWER 95% LIMIT ON THE MEAN	1.2420
UPPER 95% LIMIT ON THE MEAN	1.5069
LOWER 95% LIMIT ON THE RANGE	-.6381
UPPER 95% LIMIT ON THE RANGE	3.3870
GEOMETRIC MEAN	1.1360
LOG10 MEAN	.0554
LOG10 VARIANCE	.0661
LOG10 STANDARD DEVIATION	.2570
STANDARD ERROR ON THE MEAN	.0169
LOWER 95% LIMIT ON THE MEAN	1.0521
UPPER 95% LIMIT ON THE MEAN	1.2266
LOWER 95% LIMIT ON THE RANGE	.3539
UPPER 95% LIMIT ON THE RANGE	3.6465
MINIMUM VALUE	.5000
25TH PERCENTILE OR 1ST QUARTILE	1.0000
50TH PERCENTILE OR MEDIAN	1.0000
75TH PERCENTILE OR 3RD QUARTILE	2.0000
80TH PERCENTILE	2.0000
90TH PERCENTILE	2.0000
95TH PERCENTILE	3.0000
98TH PERCENTILE	4.0000
99TH PERCENTILE	7.0000
MAXIMUM VALUE	8.0000

VARIABLE NAME: MN
UNIT OF MEASUREMENT: PPM
DATA SUBSET: TOTAL

HISTOGRAM

		N	%	CUM %
1 PPM	I	1	.43	.43
2 PPM				
5 PPM				
10 PPM				
20 PPM				
50 PPM	I	1	.43	.86
100 PPM	XX	10	4.31	5.17
200 PPM	XXXXXXX	34	14.66	19.83
500 PPM	XXXXXXXXXXXXXXXXXXXX	95	40.95	60.78
1000 PPM	XXXXXXXXXXXX	60	25.86	86.64
2000 PPM	XXXX	18	7.76	94.40
5000 PPM	XX	10	4.31	98.71
1 PCT	X	3	1.29	100.00
2 PCT				
5 PCT				

0 20 40 60 80 100

PERCENT

SUMMARY STATISTICS

TOTAL NUMBER OF SAMPLES	232
NUMBER OF ZERO VALUE SAMPLES	1
NUMBER OF NON-ZERO SAMPLES	231
ARITHMETIC MEAN	718.9394
VARIANCE	**********
STANDARD DEVIATION	1164.7969
SKEW	5.4929
EXCESS KURTOSIS	36.1797
COEFFICIENT OF VARIATION, %	162.0160
STANDARD ERROR OF THE MEAN	76.6380
LOWER 95% LIMIT ON THE MEAN	567.9043
UPPER 95% LIMIT ON THE MEAN	869.9745
LOWER 95% LIMIT ON THE RANGE	-1576.5957
UPPER 95% LIMIT ON THE RANGE	3014.4745
GEOMETRIC MEAN	439.9007
LOG10 MEAN	2.6434
LOG10 VARIANCE	.1512
LOG10 STANDARD DEVIATION	.3889
STANDARD ERROR ON THE MEAN	.0256
LOWER 95% LIMIT ON THE MEAN	391.6810
UPPER 95% LIMIT ON THE MEAN	494.0566
LOWER 95% LIMIT ON THE RANGE	75.3364
UPPER 95% LIMIT ON THE RANGE	2568.6477
MINIMUM VALUE	35.0000
25TH PERCENTILE OR 1ST QUARTILE	250.0000
50TH PERCENTILE OR MEDIAN	420.0000
75TH PERCENTILE OR 3RD QUARTILE	740.0000
80TH PERCENTILE	840.0000
90TH PERCENTILE	1250.0000
95TH PERCENTILE	2150.0000
98TH PERCENTILE	4000.0000
99TH PERCENTILE	9800.0000
MAXIMUM VALUE	9999.0000

VARIABLE NAME: FE
UNIT OF MEASUREMENT: PCT
DATA SUBSET: TOTAL

HISTOGRAM

		N	%	CUM %
100 PPM	I	1	.43	.43
200 PPM				
500 PPM				
1000 PPM				
2000 PPM				
5000 PPM				
1 PCT	X	3	1.29	1.72
2 PCT	XXXXX	24	10.34	12.07
5 PCT	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	191	82.33	94.40
10 PCT	XX	10	4.31	98.71
20 PCT	I	2	.86	99.57
50 PCT	I	1	.43	100.00

0 20 40 60 80 100

PERCENT

SUMMARY STATISTICS

TOTAL NUMBER OF SAMPLES	232
NUMBER OF ZERO VALUE SAMPLES	1
NUMBER OF NON-ZERO SAMPLES	231
ARITHMETIC MEAN	3.2555
VARIANCE	6.8209
STANDARD DEVIATION	2.6117
SKEW	7.7233
EXCESS KURTOSIS	70.7411
COEFFICIENT OF VARIATION, %	80.2230
STANDARD ERROR OF THE MEAN	.1718
LOWER 95% LIMIT ON THE MEAN	2.9169
UPPER 95% LIMIT ON THE MEAN	3.5942
LOWER 95% LIMIT ON THE RANGE	-1.8915
UPPER 95% LIMIT ON THE RANGE	8.4026
GEOMETRIC MEAN	2.9193
LOG10 MEAN	.4653
LOG10 VARIANCE	.0302
LOG10 STANDARD DEVIATION	.1737
STANDARD ERROR ON THE MEAN	.0114
LOWER 95% LIMIT ON THE MEAN	2.7718
UPPER 95% LIMIT ON THE MEAN	3.0747
LOWER 95% LIMIT ON THE RANGE	1.3274
UPPER 95% LIMIT ON THE RANGE	6.4206
MINIMUM VALUE	.7000
25TH PERCENTILE OR 1ST QUARTILE	2.4000
50TH PERCENTILE OR MEDIAN	2.9000
75TH PERCENTILE OR 3RD QUARTILE	3.4000
80TH PERCENTILE	3.6000
90TH PERCENTILE	4.4000
95TH PERCENTILE	5.1000
98TH PERCENTILE	7.1000
99TH PERCENTILE	20.0000
MAXIMUM VALUE	31.5000

VARIABLE NAME: CD
UNIT OF MEASUREMENT: PPM
DATA SUBSET: TOTAL

HISTOGRAM

	N	%	CUM %
1 PPB	121	52.16	52.16
2 PPB			
5 PPB			
10 PPB			
20 PPB			
50 PPB	68	29.31	81.47
100 PPB	8	3.45	84.91
200 PPB	19	8.19	93.10
500 PPB	10	4.31	97.41
1 PPM	5	2.16	99.57
2 PPM	1	.43	100.00
5 PPM			
10 PPM			
20 PPM			
50 PPM			

0 20 40 60 80 100
PERCENT

SUMMARY STATISTICS

TOTAL NUMBER OF SAMPLES	232
NUMBER OF ZERO VALUE SAMPLES	121
NUMBER OF NON-ZERO SAMPLES	111
ARITHMETIC MEAN	.2937
VARIANCE	.1433
STANDARD DEVIATION	.3786
SKEW	2.9594
EXCESS KURTOSIS	10.3835
COEFFICIENT OF VARIATION, %	128.9033
STANDARD ERROR OF THE MEAN	.0359
LOWER 95% LIMIT ON THE MEAN	.2225
UPPER 95% LIMIT ON THE MEAN	.3649
LOWER 95% LIMIT ON THE RANGE	-.4566
UPPER 95% LIMIT ON THE RANGE	1.0440
GEOMETRIC MEAN	.1834
LOG10 MEAN	-.7365
LOG10 VARIANCE	.1416
LOG10 STANDARD DEVIATION	.3763
STANDARD ERROR ON THE MEAN	.0357
LOWER 95% LIMIT ON THE MEAN	.1658
UPPER 95% LIMIT ON THE MEAN	.2159
LOWER 95% LIMIT ON THE RANGE	.0329
UPPER 95% LIMIT ON THE RANGE	1.0215
MINIMUM VALUE	.1000
25TH PERCENTILE OR 1ST QUARTILE	.1000
50TH PERCENTILE OR MEDIAN	.1000
75TH PERCENTILE OR 3RD QUARTILE	.4000
80TH PERCENTILE	.5000
90TH PERCENTILE	.7000
95TH PERCENTILE	1.2000
98TH PERCENTILE	1.8000
99TH PERCENTILE	2.4000
MAXIMUM VALUE	2.4000

VARIABLE NAME: BA
UNIT OF MEASUREMENT: PPM
DATA SUBSET: TOTAL

HISTOGRAM

	N	%	CUM %
1 PPM	2	.86	.86
2 PPM			
5 PPM			
10 PPM			
20 PPM			
50 PPM	2	.86	1.72
100 PPM	11	4.74	6.47
200 PPM	54	23.28	29.74
500 PPM	73	31.47	61.21
1000 PPM	74	31.90	93.10
2000 PPM	16	6.90	100.00
5000 PPM			
1 PCT			
2 PCT			
5 PCT			

0 20 40 60 80 100
PERCENT

SUMMARY STATISTICS

TOTAL NUMBER OF SAMPLES	232
NUMBER OF ZERO VALUE SAMPLES	2
NUMBER OF NON-ZERO SAMPLES	230
ARITHMETIC MEAN	456.2609
VARIANCE	93857.5736
STANDARD DEVIATION	306.3618
SKEW	1.0547
EXCESS KURTOSIS	.9587
COEFFICIENT OF VARIATION, %	67.1462
STANDARD ERROR OF THE MEAN	20.2009
LOWER 95% LIMIT ON THE MEAN	416.4489
UPPER 95% LIMIT ON THE MEAN	496.0728
LOWER 95% LIMIT ON THE RANGE	-147.5170
UPPER 95% LIMIT ON THE RANGE	1060.0388
GEOMETRIC MEAN	356.5055
LOG10 MEAN	2.5521
LOG10 VARIANCE	.1053
LOG10 STANDARD DEVIATION	.3245
STANDARD ERROR ON THE MEAN	.0214
LOWER 95% LIMIT ON THE MEAN	323.5157
UPPER 95% LIMIT ON THE MEAN	392.8593
LOWER 95% LIMIT ON THE RANGE	81.7549
UPPER 95% LIMIT ON THE RANGE	1554.5997
MINIMUM VALUE	40.0000
25TH PERCENTILE OR 1ST QUARTILE	180.0000
50TH PERCENTILE OR MEDIAN	440.0000
75TH PERCENTILE OR 3RD QUARTILE	610.0000
80TH PERCENTILE	640.0000
90TH PERCENTILE	840.0000
95TH PERCENTILE	1150.0000
98TH PERCENTILE	1340.0000
99TH PERCENTILE	1400.0000
MAXIMUM VALUE	1400.0000

VARIABLE NAME: U
UNIT OF MEASUREMENT: PPM
DATA SUBSET: TOTAL

HISTOGRAM

		N	%	CUM %
1 PPB				
2 PPB				
5 PPB				
10 PPB				
20 PPB	XXX	13	5.60	5.60
50 PPB	I	1	.43	6.03
100 PPB	XX	7	3.02	9.05
200 PPB	XXXXXXXX	38	16.38	25.43
500 PPB	XXXXX	21	9.05	34.48
1 PPM	XXXX	17	7.33	41.81
2 PPM	XXXXXXXXXXXXXXXXXXXXXXXX	112	48.28	90.09
5 PPM	XXX	13	5.60	95.69
10 PPM	XX	8	3.45	99.14
20 PPM	I	2	.86	100.00
50 PPM				
100 PPM				
200 PPM				
500 PPM				

0 20 40 60 80 100

PERCENT

SUMMARY STATISTICS

TOTAL NUMBER OF SAMPLES	232
NUMBER OF ZERO VALUE SAMPLES	0
NUMBER OF NON-ZERO SAMPLES	232
ARITHMETIC MEAN	2.9670
VARIANCE	15.3131
STANDARD DEVIATION	3.9132
SKEW	4.6215
EXCESS KURTOSIS	28.6114
COEFFICIENT OF VARIATION, %	131.8896
STANDARD ERROR OF THE MEAN	.2569
LOWER 95% LIMIT ON THE MEAN	2.4607
UPPER 95% LIMIT ON THE MEAN	3.4733
LOWER 95% LIMIT ON THE RANGE	-4.7448
UPPER 95% LIMIT ON THE RANGE	10.6788
GEOMETRIC MEAN	1.5453
LOG10 MEAN	.1890
LOG10 VARIANCE	.3356
LOG10 STANDARD DEVIATION	.5793
STANDARD ERROR ON THE MEAN	.0380
LOWER 95% LIMIT ON THE MEAN	1.3004
UPPER 95% LIMIT ON THE MEAN	1.8364
LOWER 95% LIMIT ON THE RANGE	.1115
UPPER 95% LIMIT ON THE RANGE	21.4107
MINIMUM VALUE	.0500
25TH PERCENTILE OR 1ST QUARTILE	.5000
50TH PERCENTILE OR MEDIAN	2.7000
75TH PERCENTILE OR 3RD QUARTILE	3.5000
80TH PERCENTILE	3.6000
90TH PERCENTILE	5.1000
95TH PERCENTILE	8.6000
98TH PERCENTILE	17.1000
99TH PERCENTILE	32.0000
MAXIMUM VALUE	33.0000

VARIABLE NAME: AS
UNIT OF MEASUREMENT: PPM
DATA SUBSET: TOTAL

HISTOGRAM

		N	%	CUM %
100 PPB	XXXXXXXXXXXXXXXXXXXXXXXXX	121	52.16	52.16
200 PPB				
500 PPB				
1 PPM				
2 PPM				
5 PPM	X	3	1.29	53.45
10 PPM	XXXXXX	30	12.93	66.38
20 PPM	XXXXXXXXX	43	18.53	84.91
50 PPM	XXXXXX	27	11.64	96.55
100 PPM	X	5	2.16	98.71
200 PPM	X	3	1.29	100.00
500 PPM				
1000 PPM				
2000 PPM				
5000 PPM				

0 20 40 60 80 100

PERCENT

SUMMARY STATISTICS

TOTAL NUMBER OF SAMPLES	232
NUMBER OF ZERO VALUE SAMPLES	121
NUMBER OF NON-ZERO SAMPLES	111
ARITHMETIC MEAN	21.5225
VARIANCE	492.5972
STANDARD DEVIATION	22.1945
SKEW	3.0201
EXCESS KURTOSIS	9.3157
COEFFICIENT OF VARIATION, %	103.1224
STANDARD ERROR OF THE MEAN	2.1066
LOWER 95% LIMIT ON THE MEAN	17.3476
UPPER 95% LIMIT ON THE MEAN	25.6974
LOWER 95% LIMIT ON THE RANGE	-22.4626
UPPER 95% LIMIT ON THE RANGE	65.5076
GEOMETRIC MEAN	16.0676
LOG10 MEAN	1.2059
LOG10 VARIANCE	.0928
LOG10 STANDARD DEVIATION	.3046
STANDARD ERROR ON THE MEAN	.0289
LOWER 95% LIMIT ON THE MEAN	14.0818
UPPER 95% LIMIT ON THE MEAN	18.3333
LOWER 95% LIMIT ON THE RANGE	4.0026
UPPER 95% LIMIT ON THE RANGE	64.4993
MINIMUM VALUE	3.0000
25TH PERCENTILE OR 1ST QUARTILE	10.0000
50TH PERCENTILE OR MEDIAN	15.0000
75TH PERCENTILE OR 3RD QUARTILE	23.0000
80TH PERCENTILE	25.0000
90TH PERCENTILE	37.0000
95TH PERCENTILE	85.0000
98TH PERCENTILE	121.0000
99TH PERCENTILE	123.0000
MAXIMUM VALUE	123.0000

VARIABLE NAME: W | UNIT OF MEASUREMENT: PPM | DATA SUBSET: TOTAL

HISTOGRAM

		N	%	CUM %
10 PPB	I	1	.43	.43
20 PPB				
50 PPB				
100 PPB				
200 PPB				
500 PPB				
1 PPM	XXXXXXXXXXXXXXXXXX	86	37.07	37.50
2 PPM	XXXXXXXXXXXXXXXXXXXXXXXX	117	50.43	87.93
5 PPM	XX	8	3.45	91.38
10 PPM	XX	11	4.74	96.12
20 PPM	X	4	1.72	97.84
50 PPM	X	3	1.29	99.14
100 PPM	I	2	.86	100.00
200 PPM				
500 PPM				
1000 PPM				
2000 PPM				
5000 PPM				

0 20 40 60 80 100

PERCENT

SUMMARY STATISTICS

TOTAL NUMBER OF SAMPLES	232
NUMBER OF ZERO VALUE SAMPLES	1
NUMBER OF NON-ZERO SAMPLES	231
ARITHMETIC MEAN	3.1775
VARIANCE	67.6858
STANDARD DEVIATION	8.2271
SKEW	8.7029
EXCESS KURTOSIS	89.2474
COEFFICIENT OF VARIATION, %	258.9194
STANDARD ERROR OF THE MEAN	.5413
LOWER 95% LIMIT ON THE MEAN	2.1107
UPPER 95% LIMIT ON THE MEAN	4.2443
LOWER 95% LIMIT ON THE RANGE	-13.0362
UPPER 95% LIMIT ON THE RANGE	19.3912
GEOMETRIC MEAN	1.8556
LOG10 MEAN	.2685
LOG10 VARIANCE	.1029
LOG10 STANDARD DEVIATION	.3208
STANDARD ERROR ON THE MEAN	.0211
LOWER 95% LIMIT ON THE MEAN	1.6861
UPPER 95% LIMIT ON THE MEAN	2.0421
LOWER 95% LIMIT ON THE RANGE	.4329
UPPER 95% LIMIT ON THE RANGE	7.9544
MINIMUM VALUE	1.0000
25TH PERCENTILE OR 1ST QUARTILE	1.0000
50TH PERCENTILE OR MEDIAN	2.0000
75TH PERCENTILE OR 3RD QUARTILE	2.0000
80TH PERCENTILE	2.0000
90TH PERCENTILE	4.0000
95TH PERCENTILE	8.0000
98TH PERCENTILE	22.0000
99TH PERCENTILE	55.0000
MAXIMUM VALUE	100.0000

VARIABLE NAME: SN | UNIT OF MEASUREMENT: PPM | DATA SUBSET: TOTAL

HISTOGRAM

		N	%	CUM %
10 PPB	XXXXXXXXXXXXXXXXXXXXXXXXX	121	52.16	52.16
20 PPB				
50 PPB				
100 PPB				
200 PPB				
500 PPB	X	6	2.59	54.74
1 PPM	XX	8	3.45	58.19
2 PPM	XX	7	3.02	61.21
5 PPM	XXXXXXXX	37	15.95	77.16
10 PPM	XXXXXXXXX	41	17.67	94.83
20 PPM	XXX	12	5.17	100.00
50 PPM				
100 PPM				
200 PPM				
500 PPM				

0 20 40 60 80 100

PERCENT

SUMMARY STATISTICS

TOTAL NUMBER OF SAMPLES	232
NUMBER OF ZERO VALUE SAMPLES	121
NUMBER OF NON-ZERO SAMPLES	111
ARITHMETIC MEAN	5.6757
VARIANCE	10.4257
STANDARD DEVIATION	3.2289
SKEW	.3511
EXCESS KURTOSIS	-.3522
COEFFICIENT OF VARIATION, %	56.8898
STANDARD ERROR OF THE MEAN	.3065
LOWER 95% LIMIT ON THE MEAN	5.0683
UPPER 95% LIMIT ON THE MEAN	6.2830
LOWER 95% LIMIT ON THE RANGE	-.7233
UPPER 95% LIMIT ON THE RANGE	12.0747
GEOMETRIC MEAN	4.4435
LOG10 MEAN	.6477
LOG10 VARIANCE	.1279
LOG10 STANDARD DEVIATION	.3577
STANDARD ERROR ON THE MEAN	.0339
LOWER 95% LIMIT ON THE MEAN	3.8058
UPPER 95% LIMIT ON THE MEAN	5.1881
LOWER 95% LIMIT ON THE RANGE	.8687
UPPER 95% LIMIT ON THE RANGE	22.7284
MINIMUM VALUE	.5000
25TH PERCENTILE OR 1ST QUARTILE	4.0000
50TH PERCENTILE OR MEDIAN	5.0000
75TH PERCENTILE OR 3RD QUARTILE	8.0000
80TH PERCENTILE	8.0000
90TH PERCENTILE	11.0000
95TH PERCENTILE	11.0000
98TH PERCENTILE	12.0000
99TH PERCENTILE	15.0000
MAXIMUM VALUE	15.0000

SUMMARY STATISTICS

SUBSET	VARIABLE	UNITS	N	ARITH MEAN	STD DEV	CV %	SKEW	EXCESS KURT	95% LIMITS ON MEAN		GEOM MEAN	LOG 10 MEAN	STD DEV	95% LIMITS ON MEAN	
TOTAL	CU	PPM	231	24.4	16.6	67.8	4.54	29.25	22.3	26.6	21.5	1.3316	.2078	20.2	22.8
TOTAL	PB	PPM	231	18.5	18.9	102.3	5.38	36.35	16.1	21.0	14.8	1.1700	.2660	13.7	16.0
TOTAL	ZN	PPM	231	107.	49.2	46.0	2.55	10.14	101.	113.	98.7	1.9942	.1688	93.8	104.
TOTAL	CO	PPM	231	11.4	12.5	109.4	10.25	129.67	9.79	13.0	9.52	.9786	.2371	8.87	10.2
TOTAL	NI	PPM	231	24.5	10.7	43.5	1.34	4.15	23.1	25.9	22.3	1.3474	.2016	21.0	23.6
TOTAL	AG	PPM	231	.178	.301	169.4	8.96	101.30	.139	.217	.127	-.8978	.2879	.116	.138
TOTAL	CR	PPM	111	19.2	10.7	55.9	4.01	27.30	17.2	21.2	17.2	1.2364	.1977	15.8	18.8
TOTAL	MO	PPM	231	1.37	1.02	74.3	2.88	12.41	1.24	1.51	1.14	.0554	.2570	1.05	1.23
TOTAL	MN	PPM	231	719.	.116E+04	162.0	5.49	36.18	568.	870.	440.	2.6434	.3889	392.	494.
TOTAL	FE	PCT	231	3.26	2.61	80.2	7.72	70.74	2.92	3.59	2.92	.4653	.1737	2.77	3.07
TOTAL	CD	PPM	111	.294	.379	128.9	2.96	10.38	.222	.365	.183	-.7365	.3763	.156	.216
TOTAL	BA	PPM	230	456.	306.	67.1	1.05	.96	416.	496.	357.	2.5521	.3245	324.	393.
TOTAL	U	PPM	232	2.97	3.91	131.9	4.62	28.61	2.46	3.47	1.55	.1890	.5793	1.30	1.84
TOTAL	AS	PPM	111	21.5	22.2	103.1	3.02	9.32	17.3	25.7	16.1	1.2059	.3046	14.1	18.3
TOTAL	W	PPM	231	3.18	8.23	258.9	8.70	89.25	2.11	4.24	1.86	.2685	.3208	1.69	2.04
TOTAL	SN	PPM	111	5.68	3.23	56.9	.35	-.35	5.07	6.28	4.44	.6477	.3577	3.81	5.19

SUBSET	VARIABLE	UNITS	N	MIN VALUE	PERCENTILE 25TH	50TH	75TH	80TH	90TH	95TH	98TH	99TH	MAX VALUE
TOTAL	CU	PPM	231	6.000	16.000	22.000	28.000	30.000	38.000	46.000	64.000	150.000	152.000
TOTAL	PB	PPM	231	1.000	11.000	14.000	19.000	22.000	30.000	40.000	69.300	139.000	183.000
TOTAL	ZN	PPM	231	32.000	76.000	98.000	124.000	134.000	155.000	169.000	265.000	340.000	415.000
TOTAL	CO	PPM	231	1.000	7.000	10.000	13.000	13.000	17.000	22.000	32.000	46.000	176.000
TOTAL	NI	PPM	231	3.000	19.000	23.000	30.000	31.000	37.000	45.000	51.000	62.000	82.000
TOTAL	AG	PPM	231	.050	.100	.100	.200	.200	.300	.400	1.000	1.300	3.900
TOTAL	CR	PPM	111	6.000	13.000	19.000	23.000	24.000	28.000	32.000	42.000	100.000	100.000
TOTAL	MO	PPM	231	.500	1.000	1.000	2.000	2.000	2.000	3.000	4.000	7.000	8.000
TOTAL	MN	PPM	231	35.000	250.000	420.000	740.000	840.000	1250.000	2150.000	4000.000	9800.000	9999.000
TOTAL	FE	PCT	231	.700	2.400	2.900	3.400	3.600	4.400	5.100	7.100	20.000	31.500
TOTAL	CD	PPM	111	.100	.100	.100	.400	.500	.700	1.200	1.800	2.400	2.400
TOTAL	BA	PPM	230	40.000	180.000	440.000	610.000	640.000	840.000	1150.000	1340.000	1400.000	1400.000
TOTAL	U	PPM	232	.050	.500	2.700	3.500	3.600	5.100	8.600	17.100	32.000	33.000
TOTAL	AS	PPM	111	3.000	10.000	15.000	23.000	25.000	37.000	85.000	121.000	123.000	123.000
TOTAL	W	PPM	231	1.000	1.000	2.000	2.000	2.000	4.000	8.000	22.000	55.000	100.000
TOTAL	SN	PPM	111	.500	4.000	5.000	8.000	8.000	11.000	11.000	12.000	15.000	15.000

TABLE OF SAMPLES WITH VALUES IN EXCESS OF THE 90TH PERCENTILE
BASED ON THE TOTAL DATA SET WITH MINIMUM SAMPLE SIZE OF 21
DISPLAY IS- BLANK 90TH + 95TH * 98TH ** 99TH ***

MAP	ID	ROCK	RATING	C	P	Z	C	N	A	C	M	M	F	C	B	U	A	W	S
117A14	S82106	SHLE	5						+	+		**							
117A14	S82110	SHLE	16	+	*	+	**	**	**				+				*		
117A14	S82120	SHLE	11				*	*		*		***					*		
117A14	S82122	ARNT	8	*	*	+			*				+						
117A14	S82126	ARGL	9	+		*	+	***						+					
117A14	S82131	SHLE	11	*	+	+			**		*			*					
117A14	S82134	ARGL	13	***	*			+	***		*								
117A13	S82135	CGLM	11	+	*	***			+					**					
117A13	S82137	GRNT	6						*							**		+	
117A13	S82138	GRNT	13		**				*		*					***	+	+	
117A13	S82139	SHLE	6	+	+	+		+		*									
117A13	S82140	SHLE	5		+				+					+		+		+	
117A13	S82142	ARGL	6		*				+							*		+	
117A13	S82145	ARGL	7	+	+	*		*										+	
117A13	S82146	GRNT	7									+	*			+	*	+	
117A13	S82147	GRNT	5													+		+	**
117A13	S82148	GRNT	6		+				+			+				+		*	
117A13	S82149	GRNT	15	+	+	+					*					+	***	**	*
117A13	S82150	ARGL	6				+		*	+		+	+						
117A13	S82151	ARGL	7			+		*	+	**									
117A13	S82152	ARGL	5					+		*	*								
117A13	S82153	ARGL	4		+					+							+	+	
117A13	S82167	GRNT	24	+	**	***		***	*					*		**	**	*	
117A13	S82168	GRNT	26		**	*	**	*	+		*	+		*		**	*	*	***
117A13	S82169	GRNT	16	*	***				***							+	*	+	*
117A13	S82170	GRNT	24	*	***	+			**		***					***	*	***	
117A13	S82172	CGML	4				*						*						
117A13	S82175	ARGL	6			+	*	+				*							
117A14	S82176	ARGL	9				**					*	*						*
117A14	S82179	ARGL	8				*		+			+		+					**
117A14	S82180	SHLE	9	*		+	+		+					*	+		+		
117A13	S82185	GRVL	4				+						**						
117A13	S82186	GRVL	11			*	***					+	***						
117A12	S82190	GRVL	15				***	**				***	***						
117A14	S82193	SHLE	6				*					+	**						
117A14	S82195	ARNT	6				+	+	*										*
117A14	S82200	SLSN	15	**		**			*		**			***					
117A13	S82202	GRVL	6		+	*		+		*									
117A13	S82208	LMSN	4	*	+		+												
117A12	S82211	SNDS	4							***									
117D03	S82223	SHLE	9				*			+		**	*	+					
117A	783302	SHLE	4								***								
117A	783306	SHLE	4			+	+	*											
117A	783308	SHLE	5				+	+			**								
117A	783309	PLLT	4								*				*				
117A	783310	GRNT	8								**				*	+		*	
117A	783311	GRNT	5												+	*		*	
117A	783312	GRNT	4												*	*			
117A	783313	GRNT	6												+	*		**	
117A	783314	GRNT	7		+										+	*		**	
117A	783315	GRNT	6												**	+		*	
117A	783316	SHLE	6								*				***				
117A	783317	PLLT	14	+	*						*				***	+		***	
117A	783320	PLLT	16	***		**			**		**				+	*			
117A	783366	PLLT	16	**	*	**	**	**								*			
117A	783427	GLCM	4												***				
117A	783444	SHLE	7	+			*	*	*										
117D	781003	GLCM	7	*		*					**								
117D	781004	GLCM	5	**		*													

APPENDIX 3

HEAVY MINERAL ANALYSIS, MOUNT SEDGWICK AREA, YUKON

1982 SURVEY

Sample No.	Units	Mo ppm	As ppm	Au ppb	Weight of sample analysed for Au in grams	U(fl) ppm	W ppm	Sn ppm	Th ppm	Ce ppm	La ppm	Remarks
HM-1		1	0.6	< 5	10	1.2	4	10	12	69	27	
HM-2		1	1.6	< 5	10	< 0.1	4	5	16	153	32	
HM-3		2	0.7	< 5	10	0.8	4	5	13	123	26	
HM-4		2	< 0.1	< 5	10	1.0	4	15	11	34	10	
HM-5		2	< 0.1	< 5	10	2.3	150	20	21	137	56	2 flakes Au 0.1 mm
HM-6 (No Sample)												
HM-7		6	0.8	< 5	10	1.9	14	10	12	141	68	
HM-8		2	< 0.1	< 10	7.90	2.3	10	< 5	16	59	42	
HM-9		1	0.5	< 95	0.52	2.1	16	< 5	IS*	IS*	IS*	
HM-10		4	0.5	< 10	6.10	2.9	10	5	19	332	140	
HM-11		1	< 0.1	< 20	2.30	0.8	6	5	16	192	89	
HM-12		8	0.6	< 5	10	2.1	8	15	9	23	33	
HM-13		6	< 0.1	40	10	4.8	6	10	28	267	135	
HM-14a		16	4.5	2665	0.30	19.7	4	10	IS*	IS*	IS*	1 flake Au
HM-14b		7	< 0.1	< 5	10	3.1	80	10	23	236	92	
HM-15		<1	< 0.1	< 15	4.05	1.5	4	< 5	44	155	71	
HM-16		1	< 0.1	8625	4.40	1.5	10	5	30	341	124	1 flake Au

*IS - Insufficient Sample

Analysed by: Bonder-Clegg and Company Limited, Ottawa,

Detection Limits

Mo - 1 ppm
As - 0.1 ppm
Au - 5 ppb
U(fl) - 0.1 ppm (uranium fluorometric)
W - 2 ppm
Sn - 2 ppm
Th - 1 ppm
Ce - 10 ppm
La - 10 ppm

Detection Limits for Au

10 g sample - 5 ppb
5 g sample - 10 ppb
1 g sample - 50 ppb