STATE OF ALASKA

Keith H. Miller - Governor

DEPARTMENT OF NATURAL RESOURCES

Thomas E. Kelly - Commissioner

DIVISION OF MINES AND GEOLOGY

James A. Williams - Director

GEOCHEMICAL REPORT NO. 21

Geochemical Survey and Geological Reconnaissance of the White River Area, South-Central Alaska

By

Jeff Knaebel

College, Alaska

October 1970

CONTENTS

APPENDICES

ILLUSTRATIONS

GEOCHEMICAL SURVEY AND GEOLOGICAL RECONNAISSANCE OF THE WHITE RIVER AREA, SOUTH-CENTRAL ALASKA

By

Jeff Knaebel

A B S T R A C T

Granitic plutons north of White River and weakly metamorphosed amygdaloidal basalt in White River Basin are of interest for possible copper deposits. A geochemical survey and geological reconnaissance of parts of seven 15-minute quadrangles centered about 60 miles southeast of Nabesna revealed minor chalcopyrite in fractured argillite, phyllite, and hornfels, near two granitic plutons. Minor native copper and copper sulfides were observed in several places in approximately 60 square miles of altered amygdaloidal basalt.

The northeastern part of the area is dominated by volcanic rocks of Carboniferous age (basalt, agglomerate, tuff) and subordinate (Carboniferous age) sedimentary rocks and meta-sediments (shale, conglomerate, argillite, phyllite). Igneous rocks ranging in composition from granite to andesite porphyry intrude the volcanic and sedimentary rocks. The northwestern and southern parts of the area are composed primarily of layered volcanic rocks and greenstones with minor limestone, argillite, and shale. Airphoto lineaments and fractures mapped on the ground strike predominately northeast and northwest, with minor sets striking north and east.

Geochemistry is a useful exploration tool in the area. Several minor occurrences of copper were revealed by geochemical anomalies. Dithizone field tests for heavy metals and readily extractable copper (Hawkes, 1963) were used. The specific copper test more reliably detects copper above threshold value.

Neither large significant geochemical anomalies nor definite ore deposits were found. Further work around the granitic plutons near the Canadian border on Beaver Creek might discover a copper deposit.

INTRODUCTION

Granitic plutons north of White River and weakly metamorphosed volcanics in White River Basin are of interest for possible copper deposits. During the summer of 1969 a geochemical survey and geological reconnaissance was conducted in the area. This report describes the results of the combined geochemical and geological work.

PURPOSE AND SCOPE

Geochemical sampling and reconnaissance geologic mapping of the White River district, south-central Alaska, were undertaken to begin evaluation of its copper potential. Stream sediment samples were collected at 1/4 mile intervals along main streams, at stream intersections, and from small hillside trickles. The geologic work of previous authors was heavily relied upon, but six small areas (*fig 2, A, B, C, D*) were remapped. All mapping was done at a scale of 1:63,360 (1 inch = 1 mile). Structural lineaments were plotted from air photos after the field work. Research was conducted to determine the best of two geochemical field tests to use in exploring for copper deposits.

LOCATION AND ACCESS

The map area is in the northeast part of the McCarthy quadrangle approximately 60 miles southeast of Nabesna and 40 miles northeast of the famous copper mine at Kennecott (*fig 1*). Parts of the McCarthy C-1, C-2, C-3, C-4, D-1, D-2, and D-3 quadrangles were studied. One stream in Nabesna A-1 quadrangle was sampled.

Access to the area is commonly by air, although swamp buggies, tracked vehicles, and horses can reach it from the Alaska Highway. In the past, horses have been taken over Chitistone Pass into Skolai Creek. Aircraft landing sites are noted on the map. The most important ones for this project are at Horsfeld, North Fork Island, Solo Creek, Cub Creek, and Skolai Pass. A skillful pilot can land light aircraft at many places on gravel bars of the White River, and airplanes have landed on Russell Glacier.

PREVIOUS WORK

The earliest recorded reconnaissance in the area was by Hayes and Schwatka, who ascended White River and Skolai Pass enroute to the coast in 1891. They reported the presence of placer copper in gravels of upper Kletsan Creek. Peters and Brooks (1900) explored White River and the north flank of the Wrangell Mountains westward to Chisana River in 1899. Moffit and Knopf (1910) made a topographic and geologic survey of the area in 1908. Brooks (1914) investigated geology and physical conditions of the Chisana gold placer district. Reconnaissance mapping was done by Capps (1916), who extended the work of Moffit and Knopf. More detailed mapping in part of the area was done by MacKevett and others (1964). The geologic maps of Capps (1916) and MacKevett and others (1964) were used as base maps in the current study, except as noted on figure 2.

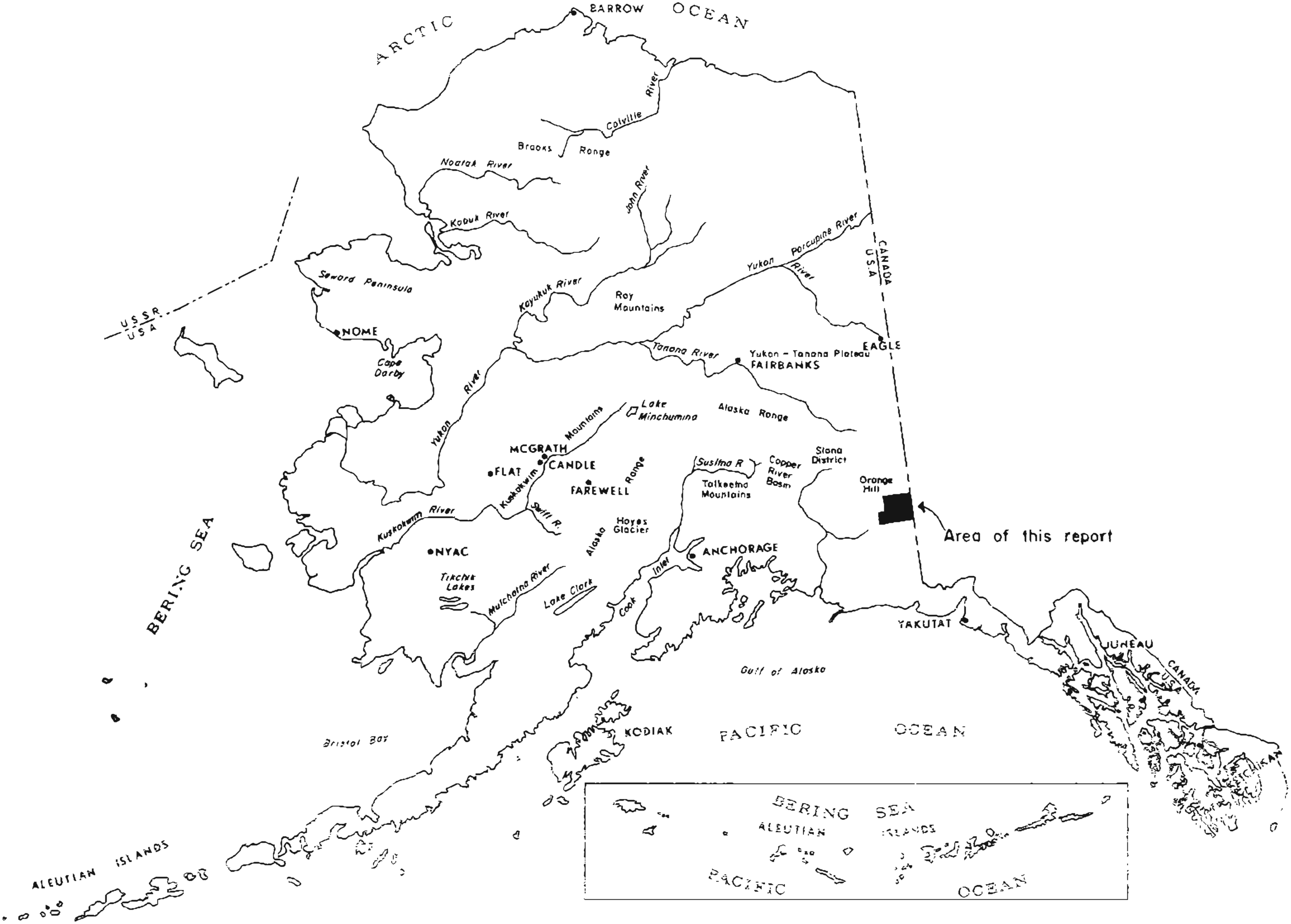


Figure 1 Location map White River Area, South-Central Alaska

TOPOGRAPHY AND DRAINAGE

Local topography is generally steep and rugged. Many peaks and ridges, particularly those which have glaciers, are sharp and bordered by steep cliffs. The highest point in the map area is 13,435 foot Mt. Natazhat. The lowest point is where the 2700 foot contour crosses White River just west of the U.S.-Canada border. A thorough treatment of topography and drainage is given by Capps (1916, p 12-16).

The principal drainages of the area are the White River, which flows east into Canada and then northeast into Yukon River; Beaver Creek, a branch of White River to the north; and Skolai Creek, which flows west to Nizina River. Except for Beaver Creek, these streams head in glaciers, have glacial tributaries, and receive water from melting ice fields. They have all the usual characteristics of glacial streams.

CLIMATE

The climate of the White River area is somewhat warmer than the interior to the east. Horses winter successfully in both Beaver Creek and White River valleys. The summers are cool and generally quite rainy after mid-July. Capps (1916, p 19) reports that in July and August of 1914 it rained more than half the time wherever the field party happened to be. Snow may be expected at any time during the summer. Capps (1916, p 19) recorded snow July 3 and July 23 in the lower valleys. In 1969 snow fell on the White River flats July 26, August 6, 7, 9-14, 18, 19, and 31. During August a low temperature of 7°F was recorded by Douglas Vaden, a local guide, on North Fork Island. On August 13, snow was eight inches deep at the 4,000-foot elevation near Russell Glacier. September was generally a beautiful month, with crisp mornings and evenings and warm afternoons. The White River valley and the passes to the west are often extremely windy throughout the year, sometimes making flying hazardous. Inhabitants report that winter snowfall is usually moderate, and horses find feed by pawing through the snow.

FIELD WORK

Field work was done with four to six horses and one or two field assistants. Supplies came in by air every ten days to two weeks, and were subsequently packed on horses. Camp moves of up to 20 miles were made in one day. A working radius of about 8 miles from camp was found to be a practical limit.

During the warm part of the summer, glacial melt causes great daily variation in stream volume. The Middle Fork of White River, Flood Creek, and the headwaters of White River were observed to rise as much as 18 inches during the day. Under these conditions it is generally safe to cross the larger streams on horseback only before 8 A.M.

Adequate feed for horses was found throughout the area, although camp sites had to be scouted in advance to locate feed and water. Oats were carried whenever possible. The best local horse feed is bunch grass, and next best is a pea vine vetch that grows on gravel bars. Willows provide adequate feed, but horses will roam in search of better.

ACKNOWLEDGEMENTS

B. L. Gaddis was an able and enthusiastic field assistant. Lawrence Heiner, Mining Engineer, Mineral Industry Research Laboratory, supervised semiquantitative spectrographic analyses, designed computer processing of all geochemical data, and provided invaluable assistance in data interpretation. Larry Shafford and Jane Bryant, University of Alaska, did the analytical work for M.I.R.L. Atomic absorption analyses were done by Namok Cho and Don Stein with the assistance of Marley Klingener, Division of Mines and Geology. C. E. Fritts, E. R. Chipp, R. R. Asher, and Gordon Herreid, Division of Mines and Geology, provided valuable assistance, suggestions, and advice. Floyd Miller of Northway is gratefully acknowledged for outstanding flying and for courtesies during the summer. Thanks go to Douglas Vaden and family for hospitality on many occasions and for help with horses. E. M. MacKevett, Jr., of the U. S. Geological Survey, permitted the reprint of Preliminary Geologic Map of the McCarthy C-4 Quadrangle (MacKevett and other, 1964) as part of this report, and discussed the geology west of Skolai Pass.

B E D R O C K   G E O L O G Y

Geology was investigated in rapid reconnaissance fashion. Except for airphoto lineaments and changes in six small areas noted on the map (*fig 2, in pocket*), the geology is unchanged from that of Capps (1916). The geologic discussion in this report is based on his reconnaissance. Capps (1916, p 28) stated that formation boundaries are subject to change as more detailed information is gathered, and that the larger units mapped probably include rocks older or younger than units to which they are assigned.

A portion of Preliminary Geologic Map of the McCarthy C-4 Quadrangle (MacKevett and others, 1964) is used as a base for plotting geochemical data (*fig 3*). No other geologic information on the C-4 quadrangle is presented.

GENERAL SETTING

The rocks of the mapped area range in age from Permian and older(?) to Recent. The northeastern part of the area is dominated by volcanic rocks of Permian age (basalt, agglomerate, tuff) with subordinate sedimentary rocks and meta-sediments (shale, conglomerate, argillite, phyllite). Igneous rocks of Jurassic to Tertiary age ranging in composition from quartz monzonite to gabbro intrude the volcanic and sedimentary rocks. The northwestern and southern parts of the area are composed primarily of layered volcanic rocks of Permian age with minor limestone, argillite, and shale. Between Beaver Creek and White River, Tertiary lava flows cover the older rocks.

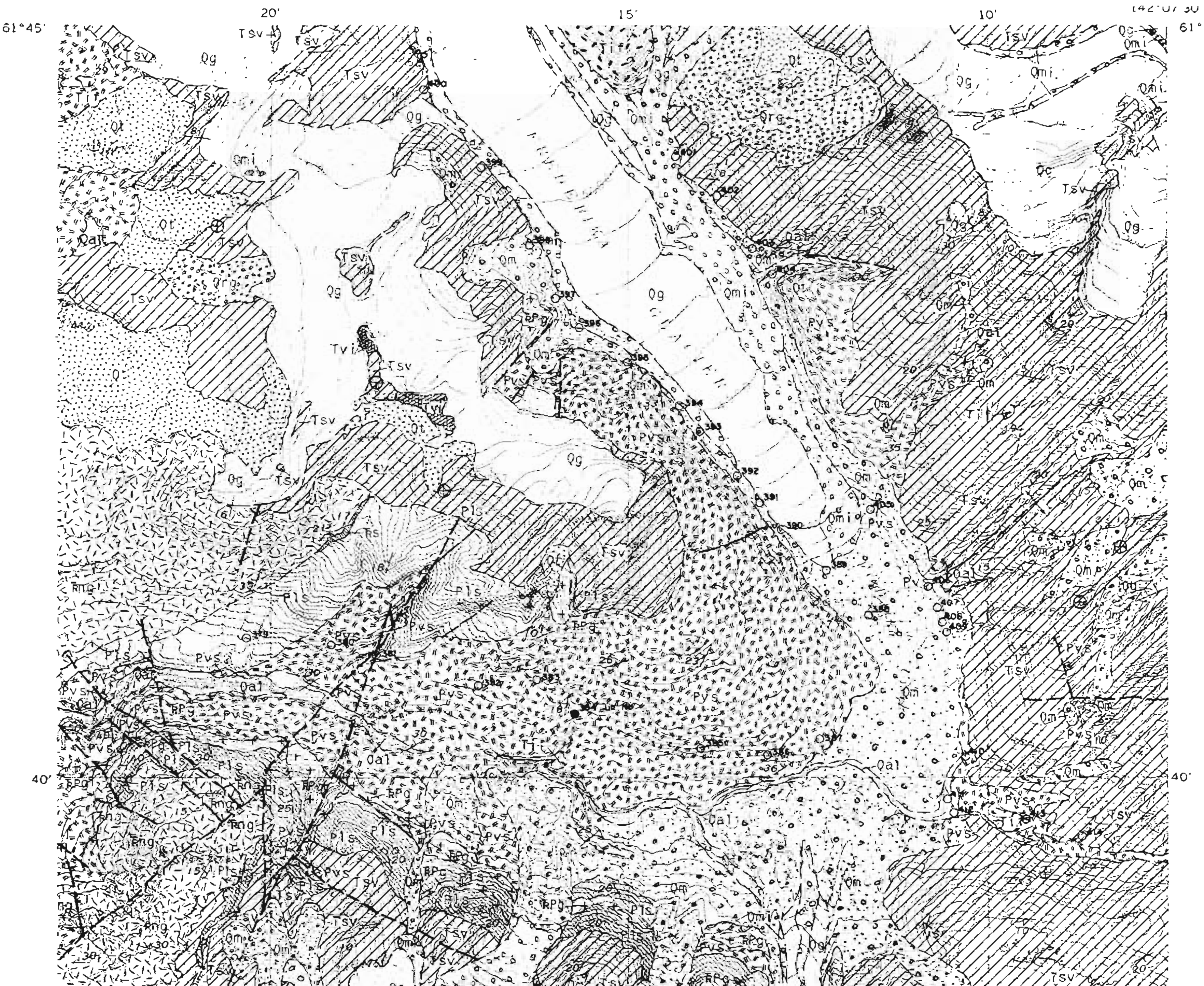
STRATIGRAPHY

At the time of Capps' writing, the Carboniferous system was defined to include the Permian period, and in his text the rocks he mapped as Permian are discussed under the heading of Carboniferous. Today the Carboniferous system does not include Permian, and the rocks which Capps called Carboniferous are herein referred to as Permian.

Permian Rocks

Sequence -- The sequence of Permian rocks is summarized by Capps (1916, p 39) in ascending order as follows:

1. Lavas and pyroclastic beds with some shales.
2. Massive limestone, associated with shales, thin-bedded limestones, a little sandstone, and conglomerate.
3. Lavas and pyroclastic rocks with a small amount of sediments.
4. Massive limestone beds of Skolai Creek with interbedded lavas and minor amounts of shale and conglomerate.
5. Basic bedded lavas with little sedimentary material.



Base map from U.S. Geological Survey advance material of McCarthy C–4 quadrangle, 1959

Geology mapped by E. M. MacKevett Jr., H. C. Berg George Plafker, and D. L. Jones, 1962

Figure 3. Geologic - geochemical map of the northeastern part of McCarthy C-4 Quadrangle, Alaska

EXPLANATION

Qal | Qls | Qt

Alluvium, colluvium, and landslide
- *Qal, alluvium, mainly stream gravel*
- *Qls, landslide*
- *Qt, talus and colluvium*

Qg | Qm | Qmi | Qrg

Glacial, fluvioglacial, and related unconsolidated deposits
- *Qg, glacier or snowfield*
- *Qm, glacial moraine and outwash*
- *Qmi, moraine on ice*
- *Qrg, rock glacier*

QUATERNARY

QTv — *Volcanic rocks. Chiefly flows of andesitic lavas; minor pyroclastic and terrestrial sedimentary rocks*

TERTIARY AND QUATERNARY

Tvi — *Vitrophyre. Forms lava domes at or near top of unit Tsv*

Ti — *Epizonal intrusive rocks. Chiefly porphyritic felsic rocks; intrudes unit Tsv and probably lower part of QTv*

Tsv — *Sedimentary and volcanic rocks. Continental sedimentary rocks, mainly conglomerate, sandstone, and shale, intercalated; with lava flows and pyroclastic rocks*

TERTIARY

Middle or Upper Triassic

Ꞧng — *Nikolai Greenstone. Mostly greenish-brown basalt; in part amygdaloidal; some chloritic alteration*

Middle Triassic

Ꞧs — *Shale. Dark-brown shale that contains the pelecypod* Daonella. *Exposed only in one small area north of Skolai Creek*

TRIASSIC

UNCONFORMITY

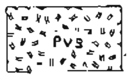
ꞦPg — *Gabbro. Partly serpentinized gabbro that forms small plutons, sills, and dikes*

PERMIAN OR TRIASSIC

Pls — *Limestone. Light-gray, partly recrystallized, fossiliferous limestone and sandy limestone, in part biostromal; forms large lenses*

PERMIAN

Figure 3 - continued



Metamorphic rocks. Diverse, mainly dark-gray and brown, sedimentary and volcanic rocks that commonly are weakly metamorphosed. Upper part of unit probably in part contemporaneous with unit Pls

PERMIAN AND OLDER (?)

Contact, showing dip. Dashed where approximately located; short dashed where gradational; dotted where concealed

Fault, showing dip. Dashed where approximately located; dotted where concealed. U, upthrown side; D, downthrown side

Vertical fault, approximately located; dotted where concealed

Anticline, approximately located. Showing trace of axial plane; dotted where concealed

Syncline, approximately located. Showing trace of axial plane

Strike and dip of beds and flows

Horizontal beds or flows

Geochemical sample site, background, anomalous

Distribution and Lithology -- In addition to the Permian rocks shown on the map, Permian rocks are also probably continuous between Beaver Creek (*NE corner fig 2A*) and White River, although covered by later lava flows and surficial deposits. The contact shown on the map between Permian rocks and the overlying lavas is only approximate. However, the gently rolling nature of the contact indicates that the land surface was of low relief when the younger lavas were extruded (Capps, 1916, p 34).

Permian volcanics and sediments consist of flows, agglomerates, tuffs, and breccias that are interbedded with shales, limestones, and conglomerates. The volcanic rocks are dominant. Layered basalt and andesite flows are interlayered with varying amounts of tuffs, breccias and other pyroclastic volcanic rocks.

The pyroclastic beds are generally light colored and vary in texture from very fine grained to agglomerate with angular blocks more than 1 foot in diameter. These beds were in part water-laid and are locally interbedded with sediments which contain marine fossils. These rocks are not altered except in the vicinity of intrusives.

The lava beds vary from a few feet to over 100 feet thick. They are generally dark shades of red. purple, brown, and green, and are usually porphyritic or amygdaloidal, but no amygdaloids were seen in the northeastern part of the map area. The porphyritic rocks generally have a very fine grained matrix.

The amygdaloidal rocks often have zeolites, calcite, chlorite, epidote, and chalcedony as fillings in the amygdules. Zeolites and calcite are the most common, and in some areas comprise 25 per cent of the rock. Laumontite is the most prevalent zeolite. In places native copper is intergrown with the zeolites, and copper carbonate staining in the zeolites occurs in many places. According to Moffit and Knopf (1910, p 20), the Permian lavas are mainly aggregates of plagioclase and augite, more or less thoroughly altered. Olivine basalt occurs in several areas.

The Permian shale members are generally well indurated. Colors are black, bluish, and gray. All gradations appear, from fine-grained black shale through limy shale to argillaceous limestone, and from sandy shale to sandstone.

In the Beaver Creek drainage, tilted argillites strike generally northwesterly with steep dips to the northeast and southwest. Where they contact granitic intrusions the argillites are strongly fractured and altered, and chalcopyrite and pyrite occur. Phyllite and hornfels also appear in this vicinity. Folded and faulted argillite and hornfels are also present near the headwaters of White River and on Cub Creek.

The Permian limestones are generally little altered, although they are folded and faulted. They are generally light-gray to buff colored, partly recrystallized, and fossiliferous.

Structure and Thickness -- Permian rocks of the area have all been tilted, folded, and faulted to some degree. In some places, intensive folding and shearing has taken place; in others only gently tilting has occurred. Topographic expression and extensive fracturing and shearing suggest the valley of Beaver Creek in the northeast corner of the map area (*fig 2A*) is a major shear zone. Between Wiley Creek and Moraine Creek, a section of folded thin-bedded limestone and shales is over 2,000 feet thick. Several other occurrences of limestone are in the range of 200 feet to 500 feet thick. The limestone west of the foot of Russell Glacier is folded and faulted. Capps (1916, p 37) states that the generally patchy distribution of limestone in the area is probably due to faulting. Extensive fracturing and shearing suggest that Wiley Creek represents a shear zone.

Tertiary and Quaternary Rocks

Sedimentary rocks -- Tertiary sediments are exposed in the basin of Rocker Creek. They are weakly consolidated shales, arkosic sandstone, conglomerate, and some lignite, interbedded with tuffs and lava flows. The section of Tertiary sediments is at least 300 feet thick.

Volcanic rocks -- Tertiary and younger volcanics consist of lava flows and pyroclastic beds. The flows are mainly pyroxene andesites and olivine basalts. The pyroclastic beds are tuffs and breccias of similar composition. Along the valley of Skolai Creek and the northeastern front of the Wrangell Mountains between Russell Glacier and Chisana Glacier (the latter is off the map to the north), the lavas are nearly horizontal and cap the mountains.

Between the head of White River and Lower Skolai Creek, a thick series of lavas and pyroclastic rocks overlies the Permian limestone and shale exposed at the foot of Russell Glacier. Between Beaver Creek and White River, the lavas are thinner and are associated with andesitic dikes and plugs. Layering in the flows is very pronounced and is accentuated by a great variety of colors in the different beds. Columnar jointing is locally developed.

Structure and Thickness -- In general, the Tertiary rocks are nearly horizontal but locally are tilted and gently folded. Thickness varies greatly. On Skolai Creek, there is an exposure of Tertiary volcanics 3,000 feet thick; at Ping Pong Mountain, near White River, the thickness is 1,600 feet; north of Beaver Creek, there are only a few feet of Tertiary volcanics. Near Rocker Creek (*fig 2A*), the volcanic rocks are thought to be of Tertiary age because of their interbedded relationship with Tertiary sediments and the occurrence of these sediments in the stream valley stratigraphically below the volcanics. These volcanics were mapped by Capps as Permian. Fracturing, topographic expression, and the probable age difference of rocks on the east and west sides of Ptarmigan Creek are indications of a major structure occupying the valley of Ptarmigan Creek.

Quaternary Ash -- The map area is covered with a layer of white volcanic ash varying in thickness from a few inches to tens of feet. Radio-carbon dated peat samples indicate the ash fell between 1,750 and 1,520 years ago (Fernald, 1962). The deposit is described in detail by Capps (1915), Bostock (1952), and Fernald (1962).

INTRUSIVE ROCKS

Age and Type

Capps (1916, p 83) assigns the intrusive rocks of the area to two age groups: the older granitic rocks ranging from early Jurassic to Cretaceous, and the younger rocks (mainly fine-grained porphyrys) ranging from Cretaceous to Pleistocene. Ducro and Payne (1957) show the intrusives as Cretaceous and Jurassic on their Geologic Map of Alaska. MacKevett (1964) shows in the McCarthy C-4 Quadrangle gabbros of Permian or Triassic age and epizonal intrusives (chiefly porphyritic felsic rocks) of Tertiary age.

Distribution and Lithology

The granitic intrusives comprise coarse crystalline quartz monzonites, granodiorites, quartz diorites, diorites, and gabbros. Porphyrytic phases of these rocks occur locally. The diorite north of Beaver Creek is part of a batholith which occupies over 75 square miles.

The gabbro pluton at the junction of Ptarmigan and Beaver Creeks shows in places strong sericitization and chloritization. It also exhibits well-zoned plagioclase. Minor pyrite is disseminated throughout this pluton, and massive pyrrhotite and chalcopyrite occur at the north end of it, near the contact with argillite.

The intrusion northwest of Ptarmigan Lake grades from quartz monzonite to granodiorite and quartz diorite. Coarse grained plagioclase and augite are abundant, and there is locally an abundance of an altered amphibole. The small pluton in the south valley wall of the White River is granodiorite, locally sericitized. A large peridotite (harzburgite) sill occurs on upper Holmes Creek (*fig 2B*). The plagioclase in this sill is thoroughly sericitized.

Throughout the area, but most commonly in the northeast part, there occur very fine-grained porphyritic intrusive rocks which are apparently younger than the granitic rocks. They are small stocks, dikes, and sills, mostly too small to map on reconnaissance. They range in composition from dacite to basalt, with andesite the most common. The Tertiary lavas near Rocker Creek are cut by intrusives of composition so similar that Capps (1916, p 86) speculates the same magma furnished material for the intrusions and the flows.

LINEAMENTS

Both airphoto lineaments and fractures mapped on the ground strike predominately northeast and northwest, with minor sets striking north-south and east-west.

E C O N O M I C   G E O L O G Y

HISTORY OF PROSPECTING

The following discussion is taken from Capps (1916) and Moffit and Knopf (1910). Persistant tales of great deposits of native copper were brought by the Indians to the first white men who explored the area. In 1891, Hayes found native copper in the White River basin, but he saw no rich deposits. Jack Dalton prospected for copper on upper Kletsan Creek in 1897-98. He found native copper in the stream gravels and a vein of copper sulfides in the nearby mountains. At a prospect known as "Discovery", on White River a few miles into Canada, a 6000-pound slab of native copper was found. Excavation of bedrock near the slab exposed green amygdaloidal basalt which contained native copper, cuprite, chalcocite, and chalcopyrite. In 1902, a small rush on Beaver Creek resulted in the discovery of minor gold deposits which were not mined. A number of prospectors stayed on and looked for copper in the White River country. Various groups of lode claims were staked in the next six years, and some were patented. In 1905, a large copper-sulfide deposit was found near the head of the Nabesna River. This apparently is not the Orange Hill deposit (a prospect currently being explored), which is mentioned by Moffit as a gold prospect. About 1906, two copper-gold veins were discovered on Beaver Creek near the international boundary, and adits were driven on them. One of the properties was patented. In 1913, the gold stampede into the Chisana district began. Some of the stampeders prospected for gold and copper in the White River area.

From dates seen in 1969 in cabins at North Fork Island and the foot of Russell Glacier, it is apparent that gold and copper prospecting operations (perhaps mining in the case of gold) were conducted in the White River area as late as 1924. Work on an adit on Beaver Creek just above the junction with Ptarmigan Creek is reported to have been done during the mid-1940's. In the last three years at least three different mining concerns have prospected within the map area. No production from the district other than placer gold is known to the writer.

COPPER

Modes of Occurrence

Two types of copper mineralization were seen: chalcopyrite associated with granitic intrusions where they intrude sediments, metasediments, and volcanics; and native copper and copper sulfides in Permian amygdaloidal basalt.

Description of Occurrences

Chalcopyrite occurs in small zones within an area about 6 miles long and 2 miles wide in the valley of Beaver Creek. It appears to be associated with a granitic (quartz monzonite to diorite) intrusion and a gabbro intrusion (*NE corner fig 2A and fig 4*) into argillites. The argillites strike generally NNW with steep dips to the SW and NE. Rocks in the valley are highly fractured and sheared, and the valley is thought to be the topographic expression of a major fault striking NNW. Lower Ptarmigan Creek is also thought to be an expression of a fault which strikes slightly east of north.

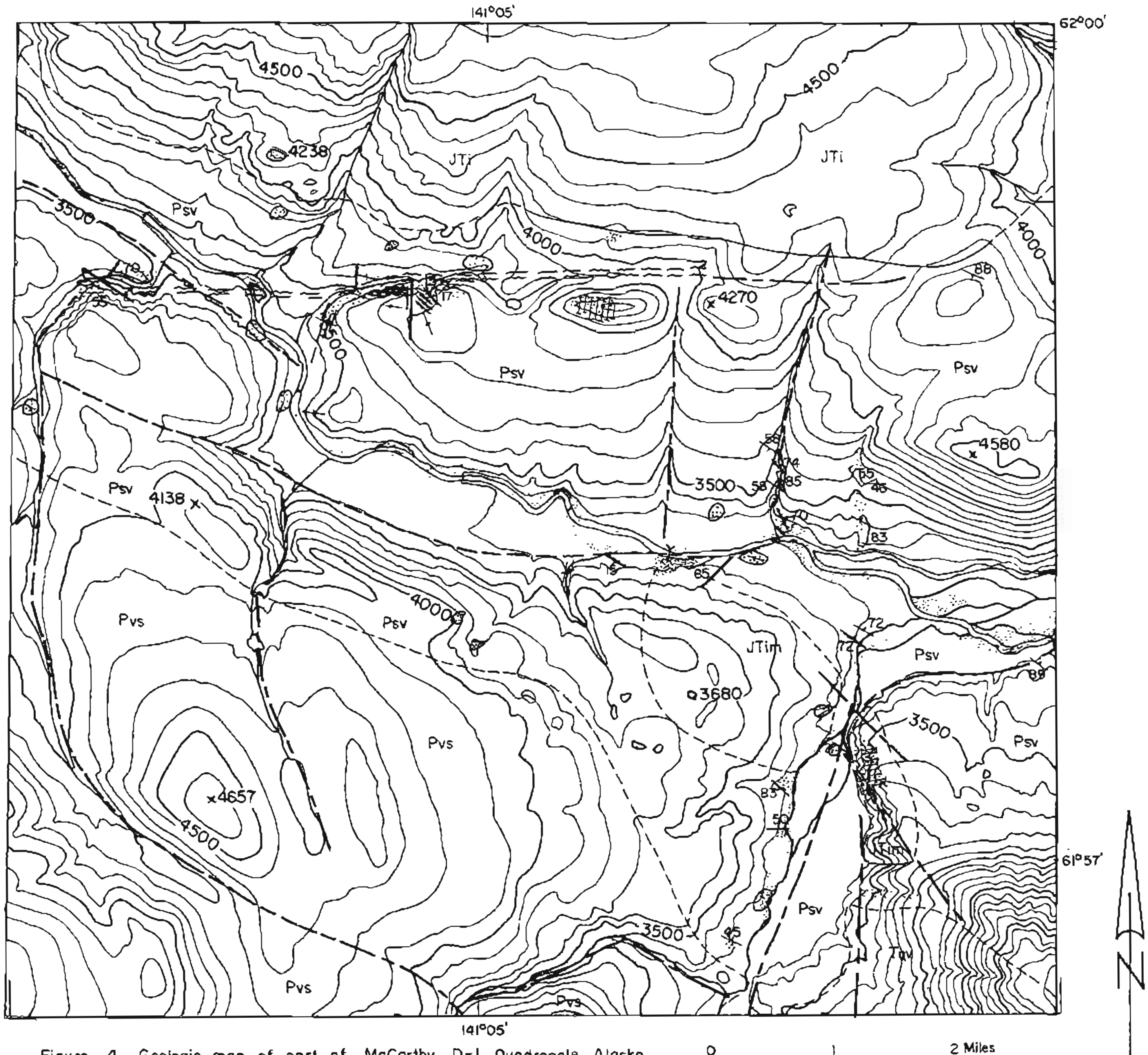


Figure 4 Geologic map of part of McCarthy D-1 Quadrangle, Alaska
Stratigraphy & age relationships by S. R. Capps (1916)
Field relationships & structure by Jeff Knaebel (1969)

EXPLANATION

Tqv	Lava flows and associated rocks	Lower Tertiary to Recent
Psv	Argillites, hornfels, minor phyllites, minor shales, conglomerate & tuffs	Permian(?)
Pvs	Lava flows, including andesite, basalt, very fine grained porphyritic rocks, rhyolite; agglomerates, tuffs	

INTRUSIVE ROCKS

JTi	Quartz monzonite to diorite	Mesozoic or younger
JTim	Gabbro	
——	Dikes, mainly intermediate composition, minor mafic and silicic occurrences	

- Mineralization; mineralized dike (mainly pyrite; chalcopyrite shown by the more intense dots)
- Outline of outcrop
- —-- Contact; inferred contact
- ≈≈ Shear Zone
- Fault
- Inferred Fault
- Fault or lineament from aerial photographs
- Strike, dip
- Strike of vertical bed
- Strike & dip of cleavage
- Strike of vertical cleavage
- Adit

Near the intersection of these two faults a gabbro pluton contains abundant pyrite and minor chalcopyrite. The pyrite occurs as massive pods and disseminations. The chalcopyrite is very thinly disseminated in the intruded argillites and in the gabbro except at the north end of the pluton. About one mile up Beaver Creek from the mouth of Ptarmigan Creek, an adit (now caved) has been driven on an exposure of massive pyrrhotite and chalcopyrite. There are many pieces of solid sulfides on a small dump. Pyrrhotite is more abundant than chalcopyrite.

Within the pluton immediately east of Ptarmigan Creek a strong set of closely spaced fractures strikes N70-80E. The gabbro here has been altered: plagioclase has gone to sericite, and chlorite is abundant. Pyrite plates all the fractures, and small amounts of chalcopyrite are present. The fractures are folded in some places. Slickensides show movement along both strike and dip.

Minor chalcopyrite and abundant pyrite occur in hornfels near the contact between granodiorite-diorite and meta-argillite in the northeastern corner of the map area (*fig 2A*). A prominent east-trending shear zone parallels the contact and crosses Beaver Creek. Both the metasediments and the diorite are altered and fractured. The pyrite and chalcopyrite occur mainly as blebs disseminated in the metasediments near fractures. Sulfides are also associated with several sets of dikes of intermediate composition which strike northwest, north, and west. Strong, closely spaced fractures in places strike N10E and intersect the main east-trending shear zone. The structure in this area is much more complex than shows on the map. Rusty outcrops and disseminated pyrite with minor chalcopyrite occur locally in argillite and hornfels near dikes and fractures in several other places in Beaver Creek valley between Horsfeld Creek and Ptarmigan Creek.

Capps (1916, p 121) discusses an occurrence of native copper in Permian rocks at the head of the Middle Fork of White River. Two small open cuts and two short tunnels about 1450 feet above the stream expose native copper intergrown with prehnite, calcite, and zeolites. The showing is about 200 feet long in a reddish amygdaloidal lava interbedded with breccia and tuffs. The copper occurs as irregular masses several inches long and as small lumps and minute particles within or around amygdules. A small geochemical anomaly here is discussed under the section on geochemistry.

Claims have been patented on prospects on the west side of the head of White River, about half way between the Middle Fork and moraine at the lower edge of Russell Glacier. Chalcocite occurs in Permian amygdaloidal basalts which are interbedded with tuffs, breccias, and porphyritic lavas. Moffit and Knopf (1910, p 57) report thin, short, chalcocite stringers associated with shears in the amygdaloid. Occasionally the chalcocite is intergrown with laumontite.

Upstream from geochemical sample location 485 (a small gulch about half way between Russell Glacier and the Middle Fork), (*fig 2D*), there are more claims and some minor occurrences of chalcocite and malachite in the same Permian volcanics. These minerals are associated with shears and slickensides in purple amygdaloidal lavas.

Chalcocite and hematite are indistinguishably mixed and appear to be amygdule fillings. Copper float is abundant on the talus slopes, but no mineralized zone of more than a few feet in extent was found in place. Locally the laumontite which fills amygdules is malachite-stained.

Capps (1916, p 123) reports a group of claims on Wiley Creek, 2-1/2 miles above the stream mouth on the north wall 500 feet above the stream. He states that shaly lentils in a gray-green amygdaloidal lava contain arsenopyrite. Native copper intergrown with zeolites in amygdules and malachite staining was observed in pieces of float from the talus slopes below the cliffs. Copper-bearing float is not abundant. The Permian lavas here are interbedded with shale and thin-bedded limestone and are cut by felsic and intermediate dikes. Many of the dikes are highly fractured and contain abundant pyrite.

Assessment work is reported to have been done for several years on claims staked on Moraine Creek, a small stream on the east side of Russell Glacier. This area was snow-covered when the geochemical samples were taken, and bedrock was not seen.

Capps (1916, p 123) quotes from Moffit and Knopf that the bedrock consists of green and reddish amygdaloids with associated breccias. Copper occurs in small seams cutting the amygdaloids. The veinlets carry finely developed spheres of prehnite intergrown with calcite and flecked with native copper and chalcocite. Thin sections show small grains of copper embedded in both prehnite and calcite, with some chalcocite occurring similarly. Some of the copper is associated with hydrated iron oxide. The amygdaloids are also cut by small stringers of quartz and prehnite which contain chalcocite. In places chalcocite fills amygdules. The favorable amygdaloidal phases appear to be most common along the contacts of successive lava flows.

Bedrock in the Sheep Creek drainage (a tributary of White River from the south between Solo Creek and North Fork) was snow covered at the time of this visit. Capps (1916, p 124) reports a tunnel at the 5,500-foot elevation had been driven in a purple amygdaloidal lava which contains calcite, zeolite, chalcocite, and copper carbonate in the amygdules.

GEOCHEMISTRY

Stream sediment samples were gathered at 1/4 mile intervals on main streams, at stream intersections, and at points where hillside traverses crossed smaller streams. A few samples were collected in the dry washes of intermittent streams. Many large, swift streams head in glaciers and vary as much as 18 inches in depth daily. Many of the smaller streams have steep gradients and are also swift. Sample locations are shown on figure 2 (*A, B, C, and D*). Reported data include the results of (1) dithizone field tests for heavy metals, (2) dithizone field tests specific for readily extractable copper (Hawkes, 1963), (3) atomic absorption analyses for gold, copper, lead, and zinc, and (4) semiquantitative spectrographic analyses for 30 elements (*tables 1-9*).

SAMPLING AND ANALYTICAL METHODS

Stream sediment samples mainly comprise fine sand from the active beds of streams. Coarser material was taken when nothing else was available. Organic material was excluded where possible. Wherever enough material was available, each sample consisted of a composite of three grabs from locations up to 50 feet apart. Samples were collected in cloth bags, each of which was placed in an individual plastic bag. Samples were analyzed wet and unsieved in the field by the dithizone field test for heavy metals (Hawkes, 1963). They were then sent to the Division laboratory at College and analyzed for gold, copper, lead, and zinc by atomic absorption spectrophotometry (*Appendices VII and VIII*).

Spectrographic analyses for 30 elements were performed on all samples and statistical characteristics of all the sample data were computer-calculated. Analytical limits and ranges of detection are shown in Appendix I. The data tabulations are shown in tables 1 through 9. To calculate averages and standard deviations a substitution of 1/2 of lower detection limit or the crustal average for the element, whichever is less, was made for values below the detection limit.

Threshold and anomalous values for copper, lead, and zinc (*table 1*) were calculated from graphs of cumulative percent of samples versus the logarithm of the parts per million intervals as described by P. L. Anderson (1969). For other elements the threshold is calculated as the mean plus twice the standard deviation and anomalous values are defined as the mean plus three times the standard deviation. Caution must be exercised when using these statistical results to interpret the data. Frequency distribution histograms for copper, lead, and zinc (*table 8*) show the sample populations are neither normally nor log-normally distributed; for this reason the cumulative percent graph was used to determine the anomalous level of concentration. The other elements may also contain contrasting populations. The farther the data departs from normal distribution the less reliable are the threshold and anomalous values computed by using the standard deviation (Hawkes and Webb, 1962).

DISCUSSION OF ANOMALIES

Inspection of the tabulation of laboratory analyses (*table 5*) shows the correlation between atomic absorption analyses and spectrographic analyses for copper, lead, and zinc is generally poor. Part of the reason for this is the discrete jumps in estimation intervals of the spectrographic method (*Appendix I*). For copper, lead, and zinc the anomalous values shown in table 1 are based on atomic absorption data. Anomalies of other elements are based on spectrographic data. A tabulation of anomalous and possibly anomalous samples, together with possibly significant geochemical associations, is shown in table 2.

Table 1

Threshold and Anomalous Values of Copper, Lead, and Zinc,

White River Area, South-Central Alaska

Element	Threshold Value (ppm)	Anomalous Value (ppm)
Copper (Cu)	100	180
Zinc (Zn)	100	200
Lead (Pb)	20	50

(Calculated from graphs of cumulative percent of samples versus logarithm of parts per million, Appendix VI).

These values apply to atomic absorption spectrophotometry (AAS) data only.

Table 2

Anomalous Geochemical Stream Sediment Samples, White River Area, South-Central, Alaska.

Map No.	Important Anomalous Elements; values in ppm (AAS unless noted Spec.)	Remarks and Possibly Significant Associate Elements; values in ppm (Spec. unless noted AAS)
2		V 500
3	Cu 190	
4		Zr 500, La 50
7	Cu 195	
8	Cu 190	
9	Cu 240	V 500
18		Zr 500, La 50, Nb 50
21		Zr 1000, La 50, Nb 50, V 1000, Zn 90 (AAS)
22		La 50
31		V 500, Cu 500, Pb 50 (Cu 75 ppm by AAS)
50		V 500, Zn 500
78	Pb 55	Lake head sediments
84		Co 100, Cu 160 (AAS)
93		Sr 1000 Possibly associated with nearby andesite (Krauskopf, p 588)
109		Sr 1000
123		Sr 1000
129		Sr 1000
132		Sr 1000
148	Zn 210	
152		La 100
190		Sr 1000
195		Nb 50
206		Nb 50, Zn 95 (AAS)
210		La 50, Nb 50, Zn 90 (AAS)
213		Nb 50, Zn 110 (AAS)
214	Pb 55	Zn 150 (AAS)
218		Nb 50
238		La 50
239		La 50
240		La 50
241		La 50
244		La 50
247		Nb 50, Zn 95 (AAS)
252		La 50
280		Nb 50
290		Nb 50, Zn 140 (AAS)
293		Co 100, Ba 2000, Cu 160 (AAS), Zn 125 (AAS)
297		Nb 50
303		Co 100, Cu 150 (AAS), Zn 145 (AAS)
329	Cu 1000	
338		Nb 50, Cu 100 (AAS)
340		La 50

Map No.	Important Anomalous Elements; values in ppm (AAS unless noted Spec.)	Remarks and Possibly Significant Associate Elements; values in ppm (Spec. unless noted AAS)
353		Nb 50, Cu 165 (AAS)
356		Nb 50
371		Nb 50
377		Nb 50
384		La 100, Nb 50
418		B 100
424		Sr 1000
429		Sr 1000
438	Ag 100 (Spec.)	Questionable analysis
448	Cu 200	Co 100, Nb 50
452		Co 100
457	Cu 215	Nb 50
458		Nb 50, Cu 175 (AAS)
463		Nb 50, Cu 145 (AAS)
465		Nb 50, Cu 145 (AAS)
473	Cr 2000, Ni 500 (Both Spec.)	B 100
474	Co 100, Cr 2000, Ni 500 (All Spec.)	Sc 100
475		Nb 50, Cu 135 (AAS)
477	Co 100, Cr 5000, Ni 500 (All Spec.)	Sc 100, Sb 1000
480	Co 100, Cr 5000, Ni 500 (All Spec.)	Sc 100, Sb 500
485		Nb 50, Cu 100 (AAS)
487	Co 100 (Spec.)	
490		B 100
491		B 100
499		B 100
503		Co 100
507		Co 100, Cr 2000, Zn 115 (AAS)
510		Co 100
511		B 100
513		B 100
514		Nb 50, Cu 130 (AAS)
516		B 100
517		Nb 50, Cu 150 (AAS)
520		B 100
521		B 100
522		Nb 50
523		Co 100, Cu 130 (AAS)
525		B 100
528	Cr 2000, Ni 500 (Spec.)	
531	Cr 2000, Ni 500 (Spec.)	
533		Ba 2000
534	Cr 2000, Ni 500 (Spec.)	
535	Ni 500 (Spec.)	
537		Ba 2000, Zn 170 (AAS)
538	Zn 200	Ba 2000, Mo 50
539		La 50
540		La 50, B 100
543		La 50
546		Nb 50, Cu 105 (AAS)
547		Nb 50, Cu 110 (AAS)
558		Nb 50
559		Nb 50, Cu 110 (AAS), Zn 100 (AAS)
562		B 100, Cu 120 (AAS)

Table 2 - continued

Map No.	Important Anomalous Elements; values in ppm (AAS unless noted Spec.)	Remarks and Possibly Significant Associate Elements; values in ppm (Spec. unless noted AAS)
564		Nb 50, Cu 120 (AAS)
567		Nb 50, Cu 110 (AAS)
568		Nb 50, Cu 135 (AAS)
569		Nb 50, Cu 135 (AAS)
570		Nb 50, Cu 130 (AAS)
571		Nb 50, Cu 140 (AAS)
572		Nb 50, Cu 145 (AAS)
573		Ba 2000, Zn 170 (AAS)
574		Ba 2000, Zn 160 (AAS)
578		Nb 50, Zn 175 (AAS)
579		Nb 50, Co 100, Mn 5000, Cu 130 (AAS)
580		Co 100, Cu 130 (AAS)
582		Nb 50, Cu 100 (AAS)
583		Nb 50, Cu 140 (AAS)
585	Zn 260	Ba 2000, La 50
586		Co 100, Nb 50, Cu 120 (AAS)
587		Co 100, Nb 50, Cu 135 (AAS)
589		Co 100, Cu 115 (AAS)
590		Co 100, Cu 95 (AAS)
591	Zn 250	
592	Zn 250	
593		Ba 2000, Cu 100 (AAS), Zn 125 (AAS)
594	Zn 210	
595	Zn 260	Ba 5000, B 100
596	Zn 280	Ba 2000, B 100
597	Zn 240	Ba 2000
600		Ba 2000, Cu 95 (AAS), Zn 140 (AAS)
604		Nb 50, Zn 170 (AAS), Cu 95 (AAS)
605		Nb 50, Zn 165 (AAS), Cu 95 (AAS)
607		La 50, Cu 115 (AAS)
617	Cu 195	
623		Cr 2000
628	Zn 210	
633		Ba 2000, Zn 125 (AAS)
636		Nb 50, Zn 130 (AAS)
637	Zn 220	
638	Cr 2000, Ni 500 (Both Spec.)	Cu 110 (AAS), Zn 120 (AAS)
639	Ni 500 (Spec.)	
640		Nb 50, Cu 130 (AAS)
642		V 500, Cu 135 (AAS)
643	Zn 280	Nb 50, Cu 145 (AAS)
644		V 500, Cu 145 (AAS)
645		Co 100, W 50, V 500, Cu 145 (AAS)
647		Nb 50, Cu 135 (AAS), Zn 130 (AAS)
648		Nb 50, Cu 140 (AAS)
649		Nb 50, Cu 105 (AAS)
652		Ba 2000
653		Mo 50
659		Ba 2000
665	Ni 500 (Spec.)	Cu 110 (AAS), Zn 140 (AAS)
668		Co 100, Cr 2000, Ni 500, Cu 90 (AAS), Zn 120 (AAS)
670	Ni 500 (Spec.)	Cu 95 (AAS), Zn 95 (AAS)

Table 2 - continued

Map No.	Important Anomalous Elements; values in ppm (AAS unless noted Spec.)	Remarks and Possibly Significant Associate Elements; values in ppm (Spec. unless noted AAS)
675		B 100, Zn 130 (AAS)
676		B 100, Zn 130 (AAS)
677		B 100, Zn 165 (AAS)
679		Ba 2000, Zn 100 (AAS)
682		Ba 2000, Zn 165 (AAS)
684		V 500
685		Nb 50
692		B 100, Zn 165 (AAS)
694		B 100, Zn 140 (AAS)
696		Nb 50, Zn 100 (AAS)
699		B 100, Zn 150 (AAS)
704		Ba 2000, Zn 135 (AAS)
715		Co 100
728	Cu 220	
736	Ni 500 (Spec.)	Small dike (?)
737	Ni 500 (Spec.)	Co 100, Cu 165 (AAS)

The following abbreviations are used in this table:

AAS = atomic absorption spectrophotometry
Spec. = semiquantitative spectrographic analysis
ppm = parts per million
Cu = copper
V = vanadium
Zr = zirconium
La = lanthanum
Zn = zinc
Pb = lead
Co = cobalt
Sr = strontium
Ba = barium
B = boron
Ag = silver
Sc = scandium
Cr = chromium
Ni = nickel
Nb = niobium
Sb = antimony
Mo = molybdenum
Mn = manganese
W = tungsten

Table 3

Variance in Ratios of Copper Detectability by Heavy Metals Field Test and Specific Copper Field Test for the Entire Sample Population, White River Area, South-Central Alaska*

	Ratio Variance	Frequency / Total Data Points	Percentage of times this variance occurs
(1)	$\frac{\text{Heavy Metals Field Test (ml dye)}}{\text{Total Copper by AAS (ppm)}} > \frac{\text{Specific Copper Field Test (ml dye)}}{\text{Total Copper by AAS (ppm)}}$ (This relationship means HM is more sensitive to copper than CuCx)	327/703	46.5%
(2)	$\frac{\text{Specific Copper Field Test (ml dye)}}{\text{Total Copper by AAS (ppm)}} > \frac{\text{Heavy Metals Field Test (ml dye)}}{\text{Total Copper by AAS (ppm)}}$ (This relationship means CuCx is more sensitive to copper than HM)	253/703	36%
(3.	$\frac{\text{Heavy Metals Field Test (ml dye)}}{\text{Total Copper by AAS (ppm)}} = \frac{\text{Specific Copper Field Test (ml dye)}}{\text{Total Copper by AAS (ppm)}}$	123/703	17.5%

*Note: The data for this table comes from the 10th and 11th columns of table 6. There is a total of 703 data points in table 6. Of these, the relationship of ratios shown as (1) occurs 327 times, relationship (2) occurs 253 times, and relationship (3) occurs 123 times.

Symbols used in this table: ml = milliliters ppm = parts per million $>$ = greater than

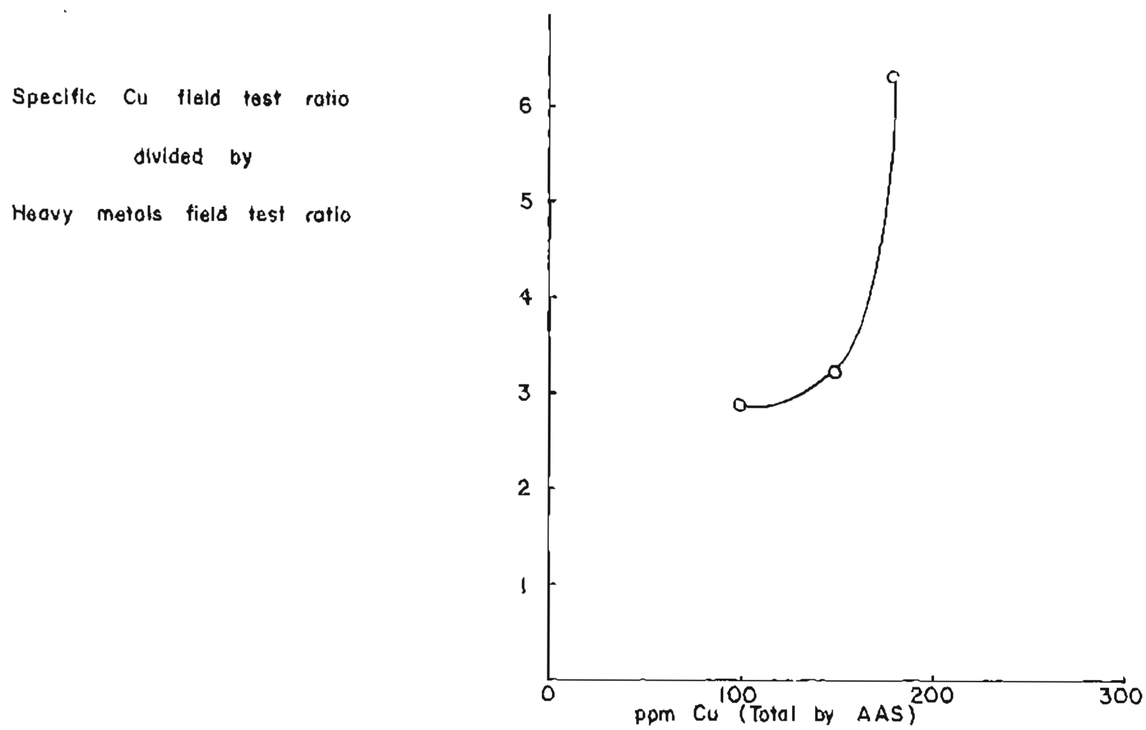
AAS = atomic absorption spectrophotometry HM = heavy metals field test

CuCx = specific copper field test

Table 4

Copper Detectability of Heavy Metals Field Test and Specific Copper Field Test for Copper Values above Threshold (100 ppm), White River Area, South-Central Alaska

Total copper by AAS (ppm)	Number of times the heavy metals field test and specific copper field test reported greater than 5 ml dye for three copper values above threshold, divided by the number of samples containing these copper values as measured by AAS	
	Heavy Metals Field test ratio	Specific Copper Field test ratio
+100 ppm (threshold) 101 samples	19/101 = 0.188	56/101 = 0.555
+150 ppm (possibly anomalous) 22 samples	5/22 = 0.228	16/22 = 0.727
+180 ppm (anomalous) 8 samples	1/8 = 0.139	7/8 = 0.875



Abbreviations used in this table: ppm = parts per million ml = milliliters
AAS = atomic absorption spectrophotometry

Table 5 Analytical Results(1), Results of Field Test(2), and Field Data.*

Stream Sediment Samples, White River Area, South-Central Alaska

Map No.	Sample No.	Gold (3)	Copper (3)	Lead (3)	Zinc (3)	Copper	Lead	Zinc	Molybdenum	Silver	Cobalt	Chromium	Nickel	Manganese	Titanium	Iron (%)	Magnesium (%)	Calcium (%)	Barium	Strontium	Boron	Beryllium	Tin	Tungsten
2	69T24	NA	150	20	155	200	10	100	20	ND	50	1000	20	1000	*1.0	20	2	5	200	200	10	2	ND	ND
3	69T25	NA	190	20	65	200	10	100	20	ND	20	200	20	1000	5000	5	2	2	500	500	10	1	ND	ND
4	69T26	NA	80	20	60	100	20	100	10	ND	20	200	50	1000	*1.0	5	2	1	500	200	10	ND	ND	ND
5	69T27	NA	145	15	55	200	20	100	20	ND	50	200	20	1000	5000	10	2	2	500	200	10	ND	50	ND
6	69T280	NA	35	10	40	20	10	100	10	ND	50	500	20	1000	*1.0	10	5	5	500	200	ND	1	ND	ND
7	69T29	NA	195	20	70	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
8	69T30	NA	190	25	75	200	20	100	20	ND	50	500	20	1000	5000	10	5	2	500	200	10	ND	ND	ND
9	69T31	NA	240	40	85	200	10	100	20	ND	50	1000	20	2000	*1.0	10	5	2	500	500	ND	ND	10	ND
10	69T32	NA	170	15	65	200	20	100	20	ND	50	200	20	1000	5000	10	2	5	500	200	10	1	ND	ND
11	69T33	NA	155	15	60	200	20	100	10	ND	50	200	20	1000	5000	10	2	5	500	500	10	1	ND	ND
12	69H22	NA	60	20	80	50	20	200	10	ND	20	50	10	1000	5000	2	2	1	500	500	10	ND	ND	ND
13	69H21	NA	40	15	80	50	50	100	10	ND	20	200	20	1000	5000	5	2	2	500	500	ND	ND	10	ND
14	69H20	NA	55	15	75	20	20	100	5	ND	20	50	10	1000	*1.0	5	1	1	500	500	ND	ND	ND	ND
15	69H19	NA	55	20	80	50	20	100	20	ND	20	500	50	1000	5000	5	2	2	500	500	ND	1	ND	ND
16	69H18	NA	60	25	90	50	10	100	10	ND	20	50	10	1000	5000	5	1	2	500	200	10	1	ND	ND
17	69H17	NA	70	25	95	50	20	100	20	ND	20	200	20	1000	5000	5	2	2	500	500	ND	ND	ND	ND
18	69H16	NA	70	15	45	20	20	200	10	ND	20	100	10	1000	5000	10	2	2	500	500	10	2	ND	ND
19	69H15	NA	50	20	85	50	20	100	10	ND	20	200	20	1000	5000	5	2	2	500	500	ND	ND	ND	ND
20	69H14	NA	70	20	95	100	20	200	10	ND	20	100	20	1000	*1.0	5	2	2	500	500	10	ND	ND	ND
21	69H13	NA	40	15	90	50	10	200	20	1	50	1000	50	2000	NA	20	2	2	500	200	10	5	ND	ND
22	69H12	NA	40	10	70	50	20	100	10	ND	20	200	50	1000	5000	5	2	2	500	500	ND	1	ND	ND
23	69H11	NA	50	15	55	50	10	200	5	ND	20	50	10	1000	5000	2	1	2	500	500	10	ND	ND	ND
24	69H10	NA	65	30	85	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
25	69H9	NA	45	15	65	50	20	100	10	ND	20	100	20	1000	5000	2	2	2	500	500	10	ND	ND	ND
26	69H8	NA	55	20	85	50	20	100	10	ND	20	100	20	1000	5000	5	2	2	500	500	ND	1	ND	ND
27	69H7	NA	55	15	85	50	20	100	5	ND	20	50	20	1000	5000	2	1	1	500	500	10	ND	ND	ND
28	69H6	NA	40	10	60	50	20	100	10	ND	20	500	50	1000	5000	5	2	2	500	500	10	ND	ND	ND
29	69H5	NA	40	10	75	50	20	200	5	ND	20	200	20	1000	*1.0	5	2	2	500	500	10	ND	ND	ND
30	69H4	NA	40	15	70	50	10	100	10	ND	20	100	20	1000	5000	2	2	2	500	500	ND	ND	ND	ND
31	69H3	NA	75	15	80	500	50	200	10	ND	50	200	20	1000	*1.0	20	2	5	500	500	ND	ND	ND	ND
32	69T43	NA	65	20	85	50	20	100	5	ND	20	100	20	1000	5000	5	2	2	500	500	10	1	ND	ND
33	69T42	NA	60	20	85	50	20	100	10	ND	20	500	50	1000	5000	5	2	2	500	500	ND	ND	ND	ND
34	69T41	NA	60	20	80	50	20	100	5	ND	20	100	20	1000	5000	5	2	2	500	500	10	ND	ND	ND
35	69T40	NA	50	20	85	50	20	100	10	ND	50	200	50	1000	5000	5	2	2	500	500	ND	ND	ND	ND
36	69T39	NA	60	25	100	50	20	100	10	ND	20	200	20	1000	5000	5	2	2	500	500	10	1	ND	ND
37	69T38	NA	70	20	105	50	20	100	20	ND	50	500	50	1000	5000	5	2	2	500	500	10	1	ND	ND
38	69T37	NA	50	20	80	50	20	100	5	ND	20	200	20	1000	5000	5	2	2	500	500	10	ND	ND	ND
39	69T36	NA	60	25	90	50	20	100	10	ND	20	200	20	1000	5000	5	2	2	500	500	ND	ND	ND	ND
40	69T35	NA	70	15	90	50	20	100	5	ND	20	200	20	1000	5000	5	2	2	500	500	10	ND	ND	ND
41	69H28	NA	55	20	85	50	20	100	10	ND	20	200	20	1000	5000	5	2	2	500	500	ND	1	ND	ND
42	69H53	NA	55	20	80	50	20	100	10	ND	20	200	20	1000	5000	5	2	2	500	500	ND	1	ND	ND
43	69T44	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
44	69T45	NA	65	20	95	50	10	100	5	ND	20	200	20	1000	2000	5	2	2	500	500	10	ND	ND	ND
45	69T47	NA	65	20	95	50	20	100	10	ND	20	200	50	1000	5000	5	2	2	500	500	10	1	ND	ND
46	69T48	NA	45	10	65	50	10	100	10	ND	50	500	50	1000	*1.0	10	5	5	500	500	ND	1	ND	ND
47	69T49	NA	55	30	95	50	20	100	10	ND	20	200	50	1000	5000	5	2	2	500	500	10	1	ND	ND
48	69T50	NA	60	20	85	50	20	100	10	ND	20	200	20	1000	5000	5	2	2	500	500	ND	1	ND	ND
49	69T52	NA	80	25	130	100	50	100	10	ND	20	200	20	1000	5000	5	2	2	500	500	10	1	ND	ND
50	69H61	NA	40	15	90	50	10	500	10	1	50	1000	20	1000	NA	10	1	2	500	500	10	2	ND	ND
51	69H60	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
52	69H59	NA	50	15	85	50	20	100	10	ND	20	500	20	1000	5000	5	2	2	500	500	10	1	ND	ND
53	69H58	NA	50	15	75	50	10	100	5	ND	20	100	20	1000	5000	2	2	2	500	500	10	ND	ND	ND
54	69H57	NA	50	15	80	50	20	100	10	ND	20	500	20	1000	5000	5	2	2	500	500	ND	ND	ND	ND
55	69H56	NA	50	15	85	50	20	100	10	ND	20	100	20	1000	5000	2	2	2	500	500	10	1	ND	ND
56	69T55	NA	25	10	55	20	20	100	10	ND	50	500	50	1000	*1.0	10	5	5	500	500	ND	1	ND	ND
57	69T54	NA	35	10	60	20	20	100	5	ND	20	200	20	1000	5000	5	2	2	500	500	10	ND	ND	ND
58	69T53	NA	45	15	75	50	20	100	10	ND	50	500	50	1000	*1.0	10	5	5	500	500	ND	1	ND	ND
59	69H44	NA	75	10	50	50	10	100	5	ND	20	100	20	1000	5000	5	2	NA	500	200	10	ND	ND	ND
60	69H37	NA	70	10	60	20	10	200	5	ND	20	100	20	1000	5000	5	2	NA	500	200	10	ND	ND	ND
61	69H38	NA	110	15	95	50	10	200	5	ND	20	100	20	1000	5000	2	1	NA	500	200	10	1	ND	ND
62	69H39	NA	125	15	95	20	10	100	10	ND	50	100	50	*1.0	2000	10	0.5	2	500	200	ND	1	ND	ND
63	69H36	NA	130	15	65	100	10	200	10	ND	20	100	20	1000	5000	2	2	NA	500	200	10	ND	ND	ND
64	69H40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
65	69H23	NA	40	10	80	50	10	100	20	ND	50	500	50	1000	*1.0	10	5	5	500	200	10	1	ND	ND
66	69H24	NA	55	15	75	50	20	100	5	ND	50	200	20	1000	5000	5	5	2	500	200	20	ND	ND	ND
67	69H25	NA	45	20	125	50	10	100	10	ND	50	100	20	2000	*1.0	10	5	2	500	500	ND	ND	10	ND
68	69H26	NA	35	10	85	20	10	200	10	ND	20	100	20	1000	5000	5	2	NA	500	500	10	ND	ND	ND
69	69H27	NA	40	10	85	20	10	100	10	ND	20	200	20	1000	*1.0	5	2	2	500	200	ND	ND	ND	ND
70	69T34	NA	70	10	65	50	10	100	5	ND	20	100	50	1000	5000	5	2	2	500	200	ND	ND	ND	ND
71	69H29	NA	90	10	70	100	20	100	5	ND	50	200	20	1000	5000	5	2	NA	500	500	10	ND	ND	ND
72	69H30	NA	60	10	60	100	10	100	10	ND	50	200	20	1000	*1.0	10	2	5	500	200	ND	ND	ND	ND
73	69H31	NA	40	5	55	20	20	100	5	ND	20	100	20	1000	5000	5	2	NA	500	500	10	1	ND	ND
74	69H32	NA	20	10	40	20	10	100	10	ND	50	200	20	1000	*1.0	10	5	5	500	500	ND	ND	ND	ND
75	69H34	NA	40	10	155	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
76	69H35	NA	20	20	30	10	10	100	10	ND	10	20	10	500	200	10	0.1	1	100	50	ND	1	10	ND
77	69H43	NA	45	15	75	20	10	100	5	ND	20	200	20	1000	5000	2	0.5	1	200	200	ND	ND	ND	ND
78	69H42	NA	75	55	110	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
79	69H33	NA	20	10	40	10	10	100	5	ND	20	50	20	1000	5000	2	2	NA	500	500	10	ND	ND	ND
80	69H41	NA	30	10	50	20	20	200	5	ND	50	100	20	1000	*1.0	5	2	NA	500	500	10	1	ND	ND
81	69H70	NA	55	15	75	50	10	100	10	ND	50	200	20	1000	*1.0	10	5	5	500	200	10	ND	ND	ND
82	69H71	NA	45	15	65	20	20	100	5	ND	20	200	20	1000	*1.0	5	2	2	500	500	20	ND	ND	ND
83	69H72	NA	40	15	55	20	20	100	5	ND	10	100	20	1000	*1.0	5	2	2	500	500	10	1	ND	ND
84	69H73	NA	160	20	95	200	20	100	5	ND	100	200	50	1000	5000	10	2	2	500	200	20	ND	ND	ND
85	69H74	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
86	69H45	NA	85	25	90	100	20	100	10	ND	50	500	50	2000	*1.0	10	5	5	200	500	20	ND	ND	ND
87	69H46	NA	80	20	90	100	10	200	ND	ND	50	500	50	2000	*1.0	5	5	2	500	500	20	ND	ND	ND
88	69H47	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
89	69H48	NA	90	20	85	100	10	200	5	ND	50	500	50	1000	5000	5	2	2	500	500	20	ND	ND	ND
90	69H49	NA	35	10	55	50	10	100	10	ND	50	500	100	1000	*1.0	10	5	5	500	500	ND	ND	ND	ND
91	69H50	NA	25	10	70	20	10	100	5	ND	20	200	50	2000	5000	2	1	2	500	500	20	ND	ND	ND
92	69H51	NA	35	10	55	50	10	100	5	ND	50	500	100	1000	*1.0	10	5	5	500	500	ND	ND	ND	ND
93	69H52	NA	35	10	50	50	20	200	5	ND	50	1000	100	1000	*1.0	5	5	5	500	1000	ND	1	ND	ND
94	69T46	NA	65	20	95	100	20	100	10	ND	50	500	50	2000	*1.0	10	5	5	500	500	10	1	10	ND
95	69T51	NA	55	20	85	100	20	100	10	ND	50	500	50	1000	*1.0	10	5	5	500	500	ND	1	ND	ND
96	69H62	NA	35	10	100	20	10	100	5	ND	20	200	20	1000	5000	2	1	2	500	500	10	ND	ND	ND
97	69H63	NA	25	10	85	20	20	100	5	ND	20	500	20	1000	*1.0	5	2	2	500	500	ND	1	ND	ND
98	69H64	NA	15	10	70	20	10	100	5	ND	20	200	20	500	5000	2	2	2	500	500	10	ND	ND	ND
99	69H54	NA	55	10	60	20	20	100	5	ND	20	500	20	1000	*1.0	5	2	2	500	500	10	2	ND	ND
100	69H55	NA	30	10	55	50	20	100	10	ND	50	500	20	1000	*1.0	10	5	5	500	500	ND	ND	ND	ND
101	69T56	NA	40	10	60	20	20	100	5	ND	20	200	20	1000	5000	5	2	2	500	500	10	ND	ND	ND
102	69T57	NA	30	10	60	20	20	100	10	ND	50	500	50	500	*1.0	5	2	5	500	500	ND	1	ND	ND
103	69T58	NA	30	10	60	20	20	100	5	ND	20	200	20	1000	5000	5	2	2	500	500	10	ND	ND	ND
104	69T59	NA	30	10	55	20	20	100	10	ND	50	500	50	1000	*1.0	5	2	5	500	500	ND	ND	ND	ND
105	69T60	NA	30	10	60	20	20	100	5	ND	20	200	20	1000	5000	5	2	2	500	500	10	1	ND	ND
106	69T61	NA	20	5	50	20	10	100	5	ND	20	200	20	1000	5000	5	2	2	500	500	ND	ND	ND	ND
107	69T62	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
108	69T63	NA	25	10	55	20	20	100	10	ND	20	500	20	1000	5000	5	2	5	500	500	ND	ND	ND	ND
109	69T64	NA	25	10	75	20	20	100	5	ND	20	200	20	1000	5000	5	2	2	1000	1000	10	ND	ND	ND
110	69T65	NA	30	10	75	20	20	100	10	ND	20	500	20	1000	*1.0	5	2	2	500	500	10	ND	ND	ND
111	69T66	NA	25	10	50	20	10	100	5	ND	20	200	50	500	5000	5	2	2	500	500	ND	1	ND	ND
112	69T91	NA	30	10	50	20	20	100	5	ND	20	200	20	1000	5000	5	2	2	500	500	10	1	ND	ND
113	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	20	10	100	5	ND	20	200	20	1000	5000	5	2	5	500	500	ND	1	ND	ND

Zirconium	Lanthanum	Niboium	Scandium	Yttrium	Vanadium	Arsenic	Antimony	Bismuth	Cadmium	Field Test	Stream Width	Location (4)	Organic Content	Sediment Size	Bedrock (4)	Sediments in Stream Bed in Percent (4)	Map No.
200	ND	20	20	50	500	ND	100	5	ND	ND	01	08	D	MD	M	NONE MIX--GR75	2
200	ND	20	20	20	200	ND	ND	ND	ND	ND	01	08	D	MD	M	NONE MIX--GR75	3
500	50	20	20	20	200	ND	ND	ND	ND	ND	01	08	D	LG	M	NONE MIX--GR75	4
200	ND	20	20	20	200	ND	ND	5	ND	ND	01	08	C	LG	M	NONE MIX--GR75	5
200	20	20	20	20	100	ND	ND	ND	ND	ND	02	60	C	MD	M	ND POR+AMYG VCL	6
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	01	08	C	MD	F	NONE MIX--GR90	7
200	ND	20	20	20	200	ND	ND	5	ND	ND	01	08	C	FI	M	NONE MIX-GR75+	8
200	20	20	50	20	500	ND	100	ND	ND	ND	02	08	C	LG	M	NONE MIX--GR85	9
200	ND	20	20	20	200	ND	ND	5	ND	ND	12	08	C	MD	C	NONE MIX--GR85	10
200	20	20	20	20	200	ND	ND	5	ND	ND	13	08	C	FI	C	NONE MIX--GR85	11
100	20	20	10	20	100	ND	ND	ND	ND	ND	12	60	C	MD	C	NONE MIX	12
100	10	20	20	20	100	ND	ND	ND	ND	ND	05	60	C	MD	M	NONE MIX	13
100	ND	20	20	20	100	ND	ND	5	ND	ND	07	60	C	MD	C	NONE MIX	14
200	20	20	20	20	100	ND	ND	ND	ND	ND	12	60	C	MD	M	NONE MIX	15
200	20	20	20	20	100	ND	ND	ND	ND	ND	04	80	C	MD	C	NONE MIX	16
100	20	20	20	20	100	ND	ND	ND	ND	ND	09	60	C		C	NONE MIX	17
500	50	50	20	50	200	ND	ND	5	ND	ND	01	99	B	LG	M	NONE MIX	18
100	20	20	20	20	100	ND	ND	ND	ND	ND	09	99	B	MD	M	NONE MIX	19
200	ND	20	20	20	100	ND	ND	5	ND	ND	05	60	B	MD	M	NONE MIX	20
1000	50	50	50	50	1000	ND	200	ND	ND	ND	01	60	B	MD	M	NONE MIX	21
200	50	20	20	20	100	ND	ND	ND	ND	ND	04	60	B	MD	C	NONE MIX	22
100	ND	20	10	20	100	ND	ND	ND	ND	ND	12	80	B	MD	C	NONE MIX	23
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	02	99	B	FI	C	NONE MIX	24
100	20	10	20	20	100	ND	ND	ND	ND	ND	10	99	B		C	NONE MIX	25
100	20	20	20	20	100	ND	ND	ND	ND	ND	07	99	B		C	NONE MIX	26
100	ND	10	10	20	100	ND	ND	ND	ND	ND	03	99	B	MD	C	NONE MIX	27
200	20	20	20	20	100	ND	ND	ND	ND	ND	01	99	B	MD	C	NONE MIX	28
200	ND	20	20	20	100	ND	ND	5	ND	ND	09	60	B	MD	C	NONE MIX	29
100	20	20	20	20	100	ND	ND	ND	ND	ND	01	99	B	MD	M	NONE MIX	30
100	ND	20	20	50	500	ND	ND	10	ND	ND	01	99	B	MD	M	NONE MIX	31
200	20	20	20	20	100	ND	ND	ND	ND	ND	03	99	B	LG	C	NONE MIXED GR	32
100	10	20	20	20	100	ND	ND	ND	ND	ND	05	99	B	LG	C	NONE MIXED GR	33
100	20	20	20	20	100	ND	ND	ND	ND	ND	10	80	B	FI	C	NONE PREDOM GR	34
100	10	20	20	20	100	ND	ND	ND	ND	ND	02	99	B	MD	C	NONE PREDOM GR	35
200	20	20	20	20	100	ND	ND	ND	ND	ND	20	80	B	LG	C	NONE MIXED PREDOMINANT GRANITE	36
200	20	20	20	20	100	ND	50	ND	ND	ND	05	99	B	MD		NONE PREDOM GR	37
100	20	20	20	10	100	ND	ND	ND	ND	ND		99	B	MD	C	NONE MIX	38
100	20	20	20	20	100	ND	ND	ND	ND	ND	03	99	B	MD	C	NONE MIX	39
100	20	20	20	20	100	ND	ND	ND	ND	ND	01	80	B	MD	C	NONE MIX	40
100	20	20	20	20	100	ND	ND	ND	ND	ND	06	60	B	MD	M	NONE MIX	41
100	10	20	10	20	100	ND	ND	ND	ND	ND	06	90	B	LG	M	ARGL MIXED	42
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	03	80	B	LG	C	NONE MIXED PREDOMINATELY GR	43
200	20	20	20	20	100	ND	ND	ND	ND	ND	03	99	B	LG	M	ARGL MIXED PREDOMINATELY GR	44
100	50	20	20	20	100	ND	ND	ND	ND	ND	08	99	B	LG	C	NONE GR MIXED SEDIMENTS	45
100	10	20	50	20	100	ND	ND	ND	ND	ND	03	60	B	LG	M	NONE NOT SEEN	46
100	20	20	20	20	100	ND	50	ND	ND	ND	04	60	B	LG	M	NONE GR	47
100	20	20	50	20	100	ND	ND	ND	ND	ND	06	60	B	LG	M	NONE MIXED PREDOMINATELY GR	48
200	20	20	20	20	100	ND	ND	ND	ND	ND	07	99	B	LG	C	I-C GR	49
200	20	50	20	50	500	ND	ND	5	ND	ND	01	80	B	MD	M	PHYL PREDOMGRWMINORMETASED+VCL	50
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	03	40	B	MD	M	MSED+GR+VCL	51
200	20	20	20	20	100	ND	ND	ND	ND	ND	05	60	B	MD	M	ARGL METASED+VCL+GR	52
100	20	20	20	20	100	ND	ND	5	ND	ND	01	80	B	MD	M	NONE METASEDS + VCL + GR	53
100	20	20	20	20	100	ND	ND	ND	ND	ND	01	60	B	MD	M	NONE PREDOMGR+METASEDW SOMEVCLS	54
200	20	20	20	20	100	ND	ND	5	ND	ND	02	60	B	MD	M	NONE METASED + VCLS + GR	55
100	20	20	20	20	100	ND	ND	ND	ND	ND	01	08	B	MD	M	NONE GR MIXMETASED	56
100	20	20	20	20	100	ND	ND	ND	ND	ND	01	20	B	MD	M	NONE SED+VCL	57
200	20	20	20	20	100	ND	ND	ND	ND	ND	01	07	B	MD	M	NONE SAND	58
100	ND	NA	20	50	100	ND	ND	5	ND	ND	04	DR	A	LG	C	NONE 50(GR 50(ARGL	59
200	ND	NA	20	20	100	ND	ND	ND	ND	ND	01	DR	A	LG	C	NONE MIXED PREDOMINATELY GR WITH ONE THIRD META SED	60
200	20	NA	20	50	100	ND	ND	ND	ND	ND	06	DR	A	LG	M	NONE MIXED GR WITH SOME META SEDS	61
100	50	10	10	20	100	ND	ND	ND	ND	ND	01	02	A	MD	M	GR96 OTHER04	62
100	20	NA	20	50	100	ND	ND	5	ND	ND	01	01	A	FI	M	NONE 98(GR 2(VOLCANICS	63
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	02	DR	A	FI	C		64
200	50	20	20	20	100	ND	ND	ND	ND	ND	01	02	A	MD	M	NONE MIX	65
100	ND	20	20	20	100	ND	ND	5	ND	ND	03	03	A	MD	M	NONE VCL+GR	66
200	20	20	50	50	200	ND	ND	ND	ND	ND	05	04	A	MD	M	HFLS GR80VCL20	67
200	20	NA	20	50	100	ND	ND	5	ND	ND	05	DR	A		M	NONE MIX GR90	68
200	20	20	20	20	100	ND	ND	ND	ND	ND	05	DR	A	MD	M	NONE MIX GR95	69
100	50	20	20	20	100	ND	ND	ND	ND	ND	01	06	C	MD	C	NONE MIX	70
100	ND	NA	20	20	100	ND	ND	5	ND	ND	11	06	B	LG	C	ARGL 80(ARGILLITE WITH SULFIDES	71
100	10	20	20	20	100	ND	ND	ND	ND	ND	15	08	A	FI	C	ARGL 80 ARGIL, LITE WITH SULFIDES	72
100	ND	NA	20	20	100	ND	ND	ND	ND	ND	06	08	A	LG	C	ARGL 50(ARGILLITE 50(GR	73
200	20	20	50	50	100	ND	ND	ND	ND	ND	06	08	B	LG	C	NONE 90 GR	74
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	14	01	A	FI	C	NONE 75 GR 25 SED	75
ND	50	10	ND	10	50	ND	ND	ND	ND	ND	04	01	A	FI	C	NONE NONE	76
100	50	20	10	20	100	ND	ND	ND	ND	ND	02	01	A	FI	C	NONE NONE LAKE MOUTH SEDS	77
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	02	01	A	FI	C	NONE NONE LAKE HEAD SEDIMENTS	78
100	ND	NA	20	20	100	ND	ND	5	ND	ND	04	01	A	LG	M	NONE 90(GR	79
200	ND	NA	20	50	100	ND	ND	5	ND	ND	02	DR	A	MD	M	NONE 60(GR 40(ARGL & META SEDS	80
200	10	20	20	20	100	ND	ND	ND	ND	ND	03	03	A	MD	M	NONE META SED 90 VCL10	81
200	ND	20	20	20	100	ND	ND	5	ND	ND	03	07	C	MD	M	HFLS GR+ARGL	82
100	ND	20	20	20	100	ND	ND	ND	ND	ND	02	03	B	MD	M	PHYL ARGL+BASALT+GR	83
100	10	20	20	20	100	ND	ND	ND	ND	ND	04	03	B	MD	M	HFLS META ARGL	84
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	04	03	B	MD	M	SCH HFLS	85
200	10	20	20	20	100	ND	ND	ND	ND	ND	02	15	B	LG	M	NONE 50 GR 50 META SEDS	86
200	ND	20	50	20	100	ND	ND	ND	ND	ND	03	15	B	LG	M	ARGL GR VOLCANICS META SEDS	87
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	02	05	B	MD	M	ARGL ARGL+VCL	88
100	20	20	20	50	100	ND	ND	5	ND	ND	02	08	B	LG	M	ARGL VOLCANICS AND META SEDS WITH MINOR GR	89
200	ND	20	20	20	100	ND	50	ND	ND	ND	01	18	B	LG	M	NONE 40 GR 20 META SEDS 40 VOLCANICS	90
100	20	10	10	20	100	ND	ND	ND	ND	ND	02	01	B	FI	C	NONE BAS META SEDS GR	91
200	ND	20	20	20	100	ND	50	ND	ND	ND	01	08	B	LG	M	NONE BAS GR META SEDS	92
200	ND	20	20	20	100	ND	ND	5	ND	ND	01	08	B	LG	M	NONE 75(BAS 10(GR 15(META SEDS	93
200	10	20	20	20	100	ND	ND	ND	ND	ND	04	20	A	LG	M	NONE DARK ARGL	94
100	10	20	20	20	100	ND	ND	ND	ND	ND	03	60	B	LG	M	NONE MIXED PREDOMINATELY GR	95
200	20	20	20	20	100	ND	ND	5	ND	ND	02	03	A	MD	M	PHYL MOSTMETA SED W SOME VCL+GR	96
200	10	20	20	20	100	ND	ND	ND	ND	ND	03	03	A	MD	M	NONE GR+META SED+VCL	97
100	ND	20	20	20	100	ND	ND	5	ND	ND	02	03	A	MD	M	NONE GR50 ARGL50	98
200	ND	20	20	20	100	ND	ND	5	ND	ND	02	25	B	MD	M	NONE PREDOM META SED+VCL W SOME GR	99
200	ND	20	20	20	200	ND	50	ND	ND	ND	02	15	B	MD	M	NONE METASED+VCLW SOMEGR	100
100	20	20	20	20	100	ND	50	ND	ND	ND	01	20	B	MD	M	NONE MOSTLYGR	101
200	20	20	20	20	100	ND	ND	ND	ND	ND	02	40	B	LG	C	NONE META SED+OTHER	102
100	20	20	20	20	100	ND	ND	ND	ND	ND	02	20	B	LG	C	NONE MIX	103
100	20	20	20	20	100	ND	ND	ND	ND	ND	02	20	B	MD	M	NONE MIX	104
200	20	20	20	20	100	ND	50	ND	ND	ND	01	40	B	MD	C	MIX	105
100	20	20	20	20	100	ND	ND	ND	ND	ND	03	40	B	MD	M	ARGL MIX W META SEDS	106
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	02	15	B	MD	M	ARGL METASED	107
200	10	20	20	20	100	ND	ND	ND	ND	ND	02	40	B	MD	M	NONE MIX	108
100	20	20	20	20	100	ND	ND	ND	ND	ND	04	20	B	MD	M	VCL	109
200	20	20	20	20	100	ND	ND	ND	ND	ND	01	40	B	MD	M	VCL MIXW VCL SED	110
200	20	20	20	20	100	ND	50	ND	ND	ND	02	20	B	MD	F	NONE MIX W META SED	111
200	ND	20	20	20	100	ND	ND	ND	ND	ND	02	08	B	LG	M	NONE VOLCANICS AND META SEDS	112
200	10	20	20	20	100	ND	ND	ND	ND	ND	02	40	B	LG	M	NONE VOLCANICS AND META SEDS	113

Map No.	Sample No.	Gold (3)	Copper (3)	Lead (3)	Zinc (3)	Copper	Lead	Zinc	Molybdenum	Silver	Cobalt	Chromium	Nickel	Manganese	Titanium	Iron (%)	Magnesium (%)	Calcium (%)	Barium	Strontium	Boron	Beryllium	Tin	Tungsten
114	69T93	NA	20	5	40	20	10	100	5	ND	20	500	50	1000	5000	5	2	2	500	500	10	ND	ND	ND
115	69T94	NA	25	5	45	20	10	100	5	ND	50	500	20	1000	*1.0	10	5	5	500	500	ND	1	ND	ND
116	69T95	NA	20	10	45	20	10	ND	5	ND	20	500	50	1000	5000	5	5	5	500	500	10	1	ND	ND
117	69T96	NA	25	10	50	20	10	100	5	ND	20	500	20	1000	*1.0	5	2	5	500	500	ND	1	ND	ND
118	69T97	NA	25	10	45	20	10	100	5	ND	20	500	20	1000	5000	5	2	5	500	500	10	1	ND	ND
119	69T98	NA	25	10	50	20	10	100	5	ND	50	500	20	1000	*1.0	5	2	5	500	500	ND	ND	ND	ND
120	69T116	NA	20	10	35	20	10	100	10	ND	50	500	50	1000	5000	5	5	5	500	500	ND	1	ND	ND
121	69T119	NA	25	10	40	20	10	100	5	ND	20	200	20	1000	5000	5	2	5	500	500	ND	ND	ND	ND
122	69T80	NA	20	10	60	20	20	100	20	ND	50	1000	100	1000	*1.0	10	5	2	500	500	ND	1	ND	ND
123	69T81	NA	20	10	70	20	20	100	5	ND	20	200	20	1000	5000	5	2	2	1000	1000	10	1	ND	ND
124	69T82	NA	45	15	55	20	10	200	5	ND	50	500	200	1000	*1.0	5	5	2	200	200	ND	ND	ND	ND
125	69T83	NA	20	10	70	20	20	100	5	ND	20	200	20	500	5000	5	1	2	1000	1000	10	ND	ND	ND
126	69T84	NA	15	10	65	10	20	100	5	ND	20	200	20	1000	5000	5	2	2	500	500	ND	ND	ND	ND
127	69T90	NA	25	10	70	20	10	100	5	ND	20	500	20	1000	*1.0	10	2	5	1000	500	ND	1	ND	ND
128	69T89	NA	20	10	65	20	10	100	ND	ND	20	100	20	500	5000	5	1	2	500	500	10	1	ND	ND
129	69T88	NA	20	10	70	20	10	100	5	ND	20	200	20	1000	5000	5	2	5	1000	1000	10	ND	ND	ND
130	69T87	NA	15	10	60	20	10	100	5	ND	20	200	20	500	5000	5	1	2	500	500	10	ND	ND	ND
131	69T86	NA	25	5	55	20	10	100	5	ND	50	1000	50	1000	*1.0	10	5	5	500	500	ND	1	ND	ND
132	69T85	NA	15	10	65	10	10	100	ND	ND	20	100	10	500	5000	5	1	2	500	1000	10	ND	ND	ND
133	69H67	NA	30	10	60	20	10	100	10	ND	50	500	20	1000	*1.0	5	2	5	500	500	ND	1	ND	ND
134	69H68	NA	40	10	80	20	10	100	5	ND	20	500	20	2000	5000	5	2	2	500	200	ND	ND	ND	ND
135	69H66	NA	NA	NA	NA	100	10	100	10	ND	50	500	50	1000	*1.0	10	2	5	500	200	10	1	10	ND
136	69H65	NA	35	10	85	50	10	100	10	ND	50	1000	20	1000	*1.0	10	2	5	500	500	10	1	ND	ND
137	69H69	NA	150	20	140	100	20	100	5	ND	20	100	20	1000	5000	5	2	.2	200	200	10	ND	ND	ND
138	69T79	NA	105	20	110	100	20	100	5	ND	50	200	50	1000	5000	5	2	2	500	500	10	ND	ND	ND
139	69T78	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
140	69T77	NA	40	20	110	50	20	100	5	ND	50	500	50	1000	*1.0	5	2	2	500	200	10	ND	ND	ND
141	69T67	NA	25	10	55	20	10	100	10	ND	20	200	20	1000	5000	5	2	2	500	500	ND	ND	ND	ND
142	69T68	NA	45	15	95	50	20	100	10	ND	20	500	50	1000	5000	5	2	5	500	500	20	1	ND	ND
143	69T69	NA	45	15	95	50	20	100	10	ND	50	500	50	1000	*1.0	5	2	2	500	500	10	1	ND	ND
144	69T70	NA	55	15	75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
145	69T71	NA	45	15	65	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
146	69T72	NA	20	10	75	20	20	100	20	ND	20	500	50	2000	*1.0	5	2	2	500	500	10	1	ND	ND
147	69T73	NA	20	10	135	20	10	100	10	ND	20	200	50	2000	5000	2	1	2	500	500	10	ND	ND	ND
148	69T74	NA	20	10	210	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
149	69T75	NA	55	15	115	50	20	100	5	ND	50	500	100	1000	5000	10	2	2	1000	200	20	ND	ND	ND
150	69T76	NA	45	15	100	50	20	100	5	ND	20	200	50	1000	5000	5	2	1	1000	500	20	1	ND	ND
151	69T99	NA	25	15	55	20	20	ND	5	ND	50	500	20	1000	*1.0	5	5	5	1000	500	10	1	ND	ND
152	69T100	NA	25	10	50	20	10	100	5	ND	20	500	20	1000	*1.0	5	2	5	1000	500	10	1	ND	ND
153	69T101	NA	25	5	50	20	10	ND	5	ND	20	200	20	1000	5000	5	5	5	1000	500	10	ND	ND	ND
154	69T102	NA	25	10	60	20	20	100	5	ND	20	200	20	1000	*1.0	5	2	5	500	500	ND	1	ND	ND
155	69T103	NA	25	10	55	20	20	ND	10	ND	20	200	20	1000	5000	5	5	5	1000	500	10	ND	ND	ND
156	69T104	NA	25	10	55	20	10	100	10	ND	20	500	50	1000	*1.0	5	2	5	1000	500	10	ND	ND	ND
157	69T105	NA	20	10	55	20	20	ND	5	ND	20	500	50	1000	5000	5	5	5	1000	500	20	1	ND	ND
158	69T106	NA	25	10	60	20	10	100	10	ND	50	1000	50	1000	*1.0	10	5	5	1000	500	ND	1	ND	ND
160	69T107	NA	30	10	75	50	10	100	10	ND	20	500	50	1000	*1.0	5	5	5	1000	500	10	1	ND	ND
161	69T108	NA	20	10	50	20	10	100	10	ND	20	500	100	1000	5000	10	5	5	500	500	ND	ND	ND	ND
162	69T109	NA	25	10	50	20	10	100	5	ND	20	200	50	1000	5000	5	5	5	1000	500	10	1	ND	ND
163	69T110	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
164	69T111	NA	20	10	45	20	20	100	5	ND	20	200	50	1000	5000	5	5	5	1000	500	10	1	ND	ND
165	69T112	NA	20	10	45	20	20	100	5	ND	20	500	50	1000	5000	10	5	5	500	500	ND	ND	ND	ND
166	69T113	NA	20	10	50	20	50	100	ND	ND	20	500	100	1000	5000	10	5	5	1000	500	ND	ND	100	ND
167	69H76	NA	25	15	60	10	20	100	5	ND	10	200	20	1000	*1.0	5	2	5	1000	500	10	ND	ND	ND
168	69T114	NA	20	10	40	20	10	100	5	ND	50	500	50	1000	5000	5	5	5	500	500	ND	1	ND	ND
169	69T115	NA	25	20	40	20	10	100	5	ND	50	500	50	1000	5000	5	5	5	500	500	ND	1	ND	ND
170	69H78	NA	30	10	45	20	20	100	5	ND	20	500	20	1000	*1.0	5	5	5	500	500	ND	ND	ND	ND
171	69H77	NA	25	10	40	20	10	100	5	ND	50	500	20	1000	*1.0	5	5	5	500	500	ND	1	ND	ND
172	69T117	NA	25	20	60	20	20	ND	5	ND	20	200	20	1000	5000	5	1	2	500	500	10	1	ND	ND
173	69T118	NA	25	15	55	20	10	100	10	ND	20	200	20	1000	5000	5	2	1	500	500	10	1	ND	ND
174	69T120	NA	25	20	60	50	20	100	10	ND	20	200	20	1000	5000	5	2	2	500	500	10	1	ND	ND
175	69T121	NA	20	15	55	20	20	ND	5	ND	20	200	20	1000	5000	5	2	2	500	500	10	ND	ND	ND
176	69T122	NA	20	20	55	20	20	100	10	ND	20	200	20	1000	5000	5	2	2	500	500	10	1	ND	ND
177	69T123	NA	25	15	65	20	20	100	20	ND	20	500	50	1000	*1.0	10	2	1	500	500	10	1	ND	ND
178	69H91	NA	25	15	60	20	10	100	10	ND	20	200	20	1000	5000	5	2	2	500	200	10	ND	ND	ND
179	69T124	NA	20	15	45	20	20	100	5	ND	20	200	20	1000	*1.0	5	2	2	500	500	10	1	ND	ND
180	69H90	NA	30	15	65	20	10	100	5	ND	20	200	20	1000	5000	5	2	2	500	500	10	ND	ND	ND
181	69T125	NA	20	15	45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
182	69H89	NA	25	15	55	20	10	100	10	ND	20	500	20	1000	5000	10	5	5	500	200	ND	1	ND	ND
183	69H88	NA	30	15	75	20	10	200	5	ND	20	500	20	1000	5000	5	2	2	500	500	10	1	ND	ND
184	69T158	NA	15	10	90	20	10	100	5	ND	10	500	20	1000	5000	5	1	1	500	500	10	ND	ND	ND
185	69T157	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
186	69T156	NA	35	10	55	50	10	100	5	ND	50	200	50	1000	*1.0	5	5	5	500	500	ND	ND	ND	ND
187	69T155	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
188	69T154	NA	35	5	55	50	10	ND	5	ND	50	200	50	1000	5000	5	2	5	500	500	ND	ND	ND	ND
189	69T153	NA	35	5	50	50	10	100	5	ND	50	500	50	1000	5000	10	5	5	200	500	ND	ND	ND	ND
190	69T152	NA	30	10	50	50	10	100	5	ND	50	500	50	1000	*1.0	5	5	5	500	1000	ND	1	ND	ND
191	69T151	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
192	69T150	NA	25	10	50	20	20	100	5	ND	20	100	20	1000	*1.0	5	2	5	500	500	ND	ND	ND	ND
193	69T149	NA	20	5	50	20	10	100	5	ND	20	200	20	1000	*1.0	5	2	2	500	500	ND	ND	ND	ND
194	69T148	NA	30	10	50	20	20	100	5	ND	50	100	20	1000	*1.0	5	2	5	500	500	ND	1	10	ND
195	69T147	NA	20	10	50	20	20	100	5	ND	50	200	20	1000	*1.0	10	5	5	500	500	ND	1	ND	ND
196	69T146	NA	25	10	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
197	69T145	NA	25	10	60	20	10	100	10	ND	20	500	100	1000	5000	5	2	2	500	500	ND	ND	ND	ND
198	69T144	NA	30	10	120	20	10	100	5	ND	50	200	20	1000	5000	5	2	2	500	500	ND	ND	10	ND
199	69T143	NA	25	5	65	50	20	100	5	ND	50	100	20	1000	5000	5	2	2	500	500	ND	1	10	ND
200	69T142	NA	20	5	45	20	10	100	10	ND	20	200	20	1000	5000	5	2	5	500	500	ND	1	ND	ND
201	69T141	NA	40	10	100	20	10	100	5	ND	20	200	50	1000	5000	5	2	2	900	500	10	ND	ND	ND
202	69T140	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
203	69T159	NA	25	5	45	20	10	100	10	ND	50	200	50	1000	*1.0	5	5	2	500	500	ND	1	ND	ND
204	69H83	NA	50	20	95	50	20	100	2	ND	50	500	50	1000	0900	10	2	5	500	500	10 0		ND	ND
205	69H85	NA	30	15	60	50	20	100	20	ND	50	500	50	1000	NA	20	2	5	200	200	10	2	10	ND
206	69H82	NA	45	25	95	50	50	100	10	ND	10	100	20	1000	*1.0	10	2	2	500	500	10	1	ND	ND
207	69H80	NA	25	35	95	20	50	100	5	ND	10	100	20	1000	5000	5	1	1	500	500	20	ND	ND	ND
208	69H81	NA	55	15	75	100	10	100	10	ND	50	500	50	1000	*1.0	10	5	5	200	200	ND	ND	ND	ND
209	69H84	NA	60	20	70	50	20	100	5	ND	10	100	20	1000	*1.0	10	5	2	500	500	10	1	ND	ND
210	69H86	NA	60	15	90	50	20	200	10	5	20	200	20	1000	*1.0	10	5	2	500	500	10	1	ND	ND
211	69H87	NA	35	15	65	50	20	100	10	ND	50	500	50	1000	*1.0	10	2	5	500	200	10	1	ND	ND
212	69H79	NA	30	20	75	20	20	100	10	ND	50	200	20	1000	*1.0	10	5	5	500	500	ND	1	10	ND
213	69T161	NA	30	40	110	20	50	100	10	ND	50	200	50	1000	*1.0	5	2	2	500	200	10	1	ND	ND
214	69T162	NA	30	55	150	20	50	200	10	ND	50	200	20	1000	*1.0	10	2	2	500	500	ND	1	10	ND
215	69T170	NA	15	15	65	10	20	ND	ND	ND	20	100	20	1000	5000	5	1	1	500	200	10	ND	ND	ND
216	69T169	NA	25	10	55	20	10	100	10	ND	20	200	20	1000	5000	5	1	1	500	200	10	1	ND	ND
217	69T163	NA	35	5	60	20	10	100	5	ND	20	200	20	1000	*1.0	5	2	2	500	500	ND	ND	ND	ND
218	69T164	NA	25	5	75	20	10	100	10	ND	20	200	20	1000	*1.0	5	2	2	500	500	ND	1	ND	ND
219	69T165	NA	35	5	50	20	10	100	5	ND	50	200	50	1000	*1.0	5	5	2	200	500	ND	ND	ND	ND
220	69T166	NA	30	5	75	20	10	100	5	ND	20	200	50	1000	5000	5	2	2	500	500	10	ND	ND	ND
221	69T167	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
222	69T168	NA	30	5	50	20	20	100	5	ND	50	200	50	1000	5000	10	5	5	500	500	ND	ND	ND	ND
223	69T160	NA	25	40	75	20	10	100	5	2	20	200	20	1000	*1.0	5	2	1	500	200	20	ND	ND	ND
224	69T139	NA	25	5	45	20	10	100	10	ND	20	500	50	1000	*1.0	5	2	5	500	500	ND	ND	ND	ND
225	69T126	NA	20	10	45	20	10	100	5	ND	50	200	20	1000	*1.0	10	5	5	500	500	ND	1	ND	ND
226	69T127	NA	25	10	45	20	10	100	5	ND	20	200	50	1000	*1.0	5	2	5	500	500	10	1	ND	ND

Zirconium	Lanthanum	Niobium	Scandium	Yttrium	Vanadium	Arsenic	Antimony	Bismuth	Cadmium	Field Test	Stream Width	Location (4)	Organic Content	Sediment Size	Bedrock (4)		Sediments in Stream Bed in Percent (4)	Map No.
100	ND	20	10	10	100	ND	ND	ND	ND	ND	05	20	B	LO	M	NONE	VOLCANICS AND META SEDS	114
200	10	20	20	20	100	ND	ND	ND	ND	ND	03	20	A	LO	M	NONE	PREDOMINATELY VOLCANICS	115
100	20	20	20	20	100	ND	50	ND	ND	ND	07	20	B	LO	M	NONE	VOL AND META SEDS	116
200	10	20	20	20	100	ND	ND	ND	ND	ND	03	20	B	LO	M	NONE	VOLCANICS	117
100	ND	20	20	20	100	ND	50	ND	ND	ND	06	20	B	LO	M	NONE	VOLCANICS	118
200	10	20	20	20	100	ND	ND	ND	ND	ND	05	20	B	LO	M	NONE	VOLCANICS META SEDS	119
200	10	20	20	20	100	ND	ND	ND	ND	ND	02	15	B	MD	M	AND+	VOL+META SED	120
200	ND	20	20	20	100	ND	ND	5	ND	ND	02	20	B	MD	M	NONE	VOL+META SED	121
500	20	20	20	20	100	ND	50	ND	ND	ND	02	12	B	MD	M	NONE	META SEDS + VOL	122
100	20	20	20	10	100	ND	ND	ND	ND	ND	04	12	B	MD	M	NONE	VOLW/MINOR META SED	123
100	ND	20	20	20	100	ND	100	ND	ND	ND								124
100	20	20	20	10	100	ND	ND	ND	ND	ND								125
100	10	20	20	20	100	ND	ND	ND	ND	ND	02	12	B	MD	M	ANDP	VOLW META SEDS	126
200	10	20	20	20	100	ND	ND	ND	ND	ND	05	12	B	MD	M	ANDP	AND POR VOL	127
100	20	20	10	10	100	ND	ND	ND	ND	ND								128
100	10	20	20	20	100	ND	ND	ND	ND	ND	04	12	B	MD	M	NONE	AND POR+VOL	129
100	20	20	10	10	100	ND	ND	ND	ND	ND								130
200	ND	20	50	20	100	ND	50	ND	ND	ND	03	12	B	MD	M	ANDP	AND POR VOL	131
100	20	20	20	10	100	ND	ND	ND	ND	ND								132
200	ND	20	20	20	100	ND	50	ND	ND	ND	02	06	A	MD	M	NONE	METASED+GR+VOL	133
100	10	20	20	20	100	ND	50	ND	ND	ND	05	05	A	MD	M	NONE	GR+META SED+VOL	134
200	20	20	20	20	200	ND	50	ND	ND	ND	06	06	B	HI	M	ARGL	ARGL+MSED+GABBRO	135
200	10	20	20	20	200	ND	100	ND	ND	ND	06	02	A	MD	M	NONE	META SED+VOL+GR	136
100	20	20	20	20	100	ND	ND	5	ND	ND	02	DR	A	MD	M	NONE	HFLS	137
100	20	20	20	20	100	ND	ND	5	ND	ND	04	01	A	MD	M	NONE	HFLS AFTER ARGL.	138
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	03	01	B	HI	M		VEGETATION	139
200	20	20	20	20	100	ND	ND	ND	ND	ND	05	02	A	HI	M	NONE	META SED+VOL	140
100	10	20	20	20	100	ND	ND	ND	ND	ND	03	08	B	HI	F	NONE	MIX W LIGHT SEDS	141
100	20	20	20	20	100	ND	50	5	ND	ND	02	08	B	HI	C	NONE		142
200	10	20	20	20	100	ND	ND	ND	ND	ND	03	08	B	MD	M	NONE	ARGL+MIX	143
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	02	05	B	MD	M			144
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	02	05	B	MD	M		METASED	145
200	20	20	20	20	100	ND	50	ND	ND	ND	02	08	B		M	NONE	MIX	146
100	20	20	10	10	100	ND	ND	ND	ND	ND	06	01	B	HI	C	NONE	NONE	147
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	02	01	B	HI	C	NONE	NONE	148
100	20	20	20	10	200	ND	ND	ND	ND	ND	01	08	B	MD	M	NONE	MIX SED	149
200	20	20	20	20	100	ND	ND	5	ND	ND	07	12	B	MD	M	VOL	META VOL	150
100	20	20	20	20	100	ND	100	5	ND	ND	02	08	B	LO	M	NONE	VOLCANICS	151
100	100	20	20	20	100	ND	50	ND	ND	ND	02	06	B	LO	M	NONE	VOLCANICS AND META SEDS	152
100	20	20	20	20	100	ND	ND	ND	ND	ND	03	07	B	LO	M	NONE	VOL AND META SEDS	153
100	10	20	20	20	100	ND	ND	ND	ND	ND	07	05	B	LO	M	NONE	VOL META SEDS	154
100	20	20	20	20	100	ND	50	ND	ND	ND	05	08	B	LO	M	VOLS	VOL META SEDS	155
200	20	20	20	20	100	ND	50	ND	ND	ND	02	08	B	LO	M	VOLS	VOLCANICS	156
200	20	20	20	20	100	ND	ND	ND	ND	ND	02	08	B	LO	M	NONE	VOL AND META SEDS	157
200	10	20	20	20	100	ND	100	ND	ND	ND	04	08	B	LO	M	NONE	VOL AND META SEDS	158
100	20	20	20	10	100	ND	50	5	ND	ND	04	08	B	LO	M	VOLS	VOLCANICS AND META SEDS	160
200	10	20	20	20	100	ND	ND	ND	ND	ND	04	08	B	LO	M	VOLS	VOL META SEDS	161
100	20	20	20	20	100	ND	50	ND	ND	ND	04	08	B	LO	M	VOLS	VOL META SEDS	162
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	04	08	B	LO	M	VOLS	VOL METASEDS	163
100	20	20	20	20	100	ND	50	ND	ND	ND	05	06	B	LO	M	VOLS	VOL META SEDS	164
200	10	20	20	20	100	ND	ND	ND	ND	ND	04	07	B	LO	M	VOLS	VOL META SEDS MIXED	165
100	20	10	20	10	100	ND	ND	ND	ND	ND	03	06	B	LO	M	NONE	VOLCANICS, METAS SEDS	166
100	20	10	20	20	100	ND	ND	ND	ND	ND	04	06	B	MD	M	NONE	VOL+META SED	167
200	ND	20	20	20	100	ND	50	ND	ND	ND	03	08	B	LO	M	VOLS	VOL META SEDS	168
200	ND	20	20	10	100	ND	ND	5	ND	ND	03	08	B	LO	M	VOLS	VOL META SEDS	169
100	ND	20	20	20	100	ND	50	ND	ND	ND	02	15	B	MD	M	NONE	VOL+META SED	170
200	10	20	20	20	100	ND	ND	ND	ND	ND	02	07	B	MD	M	NONE	VOLS	171
200	ND	20	10	20	100	ND	ND	ND	ND	ND	03	DR	A	MD	M	AND+	VOL+META SED	172
200	20	20	10	20	100	ND	50	ND	ND	ND	01	DR	A	MD	M	NONE	VOL+META SED	173
200	10	20	10	20	100	ND	ND	ND	ND	ND	06	DR	B	MD	M	NONE	VOL+META SED	174
200	ND	20	10	10	100	ND	ND	ND	ND	ND	02	DR	A	MD	M	NONE	VOL+META SED	175
200	20	20	10	20	100	ND	ND	ND	ND	ND	02	DR	B	MD	M	NONE	VOL+META SED	176
200	20	20	20	10	100	ND	ND	ND	ND	ND	03	DR	B	MD	M	POR	VOL+META SED	177
200	10	20	20	20	100	ND	ND	ND	ND	ND	02	07	B	MD	M	PAND	PORPH+VOL+META SED	178
200	20	20	20	20	100	ND	ND	ND	ND	ND	03	08	B	MD	M	POR	VOL + META SED	179
200	ND	20	20	20	100	ND	ND	ND	ND	ND	02	07	B	MD	M	PAND	PORPH+VOL+META SED	180
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	05	08	B	MD	M	POR	VOL+META SED	181
200	10	20	20	20	100	ND	ND	ND	ND	ND	03	07	B	MD	M	PAND	PORPH META SED VOL	182
200	ND	20	20	20	100	ND	ND	ND	ND	ND	02	07	B	MD	M	PAND	VOL+PORPH+META SED	183
200	20	20	10	10	100	ND	50	ND	ND	ND	07	02	B	MD	M	NONE	VOL+META SED+PORPH	184
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	01	20	B	MD	M	VOL	VOL-META SED	185
200	ND	20	20	20	100	ND	50	5	ND	ND	02	20	B	MD	M	PAND	VOL+META SED	186
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	02	20	B	MD	M	NONE	VOL-META SED	187
200	ND	20	20	20	100	ND	50	ND	ND	ND	02	08	B	MD	M	VOL	VOL+PORPH+META SED	188
200	ND	20	20	20	100	ND	ND	ND	ND	ND	02	20	B	MD	M	VOL	VOL-PORPH-META SED	189
200	ND	20	20	20	100	ND	50	5	ND	ND	02	08	B	MD	M	NONE	VOL+PORPH	190
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	01	05	B	MD	M		VOL+PORPH+MSED	191
200	20	20	20	20	100	ND	ND	ND	ND	ND	02	08	B	MD	M	NONE	VOL+PORPH+META SED	192
200	ND	20	10	10	100	ND	ND	ND	ND	ND	08	DR	B	MD	M	NONE	PORPH INTRUSIVE + VOL	193
200	20	20	20	20	100	ND	ND	ND	ND	ND	02	08	B	MD	M	NONE	MOSTLY VOLS W SOME LT PORPH	194
200	20	50	20	20	100	ND	ND	ND	ND	ND	01	08	B	MD	M	NONE	PREDOM VOLS W SOME META SED	195
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	02	08	B	MD	M	NONE	MOSTLY VOL	196
200	20	20	20	20	100	ND	50	ND	ND	ND	02	08	B	MD	M	PAND	PORPH+META SED + VOL	197
200	ND	20	20	20	100	ND	ND	ND	ND	ND	02	08	A	MD	M	PAND	VOL+POR + META SED	198
200	ND	20	20	20	100	ND	ND	ND	ND	ND	03	08	B	MD	M	PAND	AND+POR+VOL+META SED	199
100	ND	20	10	20	100	ND	ND	ND	ND	ND	02	DR	B	MD	M	PAND	VOL-META SED-PORPH	200
200	ND	20	20	20	100	ND	ND	5	ND	ND	12	DR	A	MD	M	NONE	VOL+META SED+PORPH	201
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	02	15	B	MD	M		VOL+MSED+PORPH INTR	202
200	ND	20	20	20	100	ND	50	ND	ND	ND	01	20	B	MD	M	INTR	VOL-PORPH-META SED	203
200	20	20	20	50	100	ND	ND	ND	ND	ND	08	07	B	MD	M	NONE	GR VOL META SED	204
200	10	20	20	50	200	ND	100	ND	ND	ND	01	07	A	MD	M	NONE	GR+VOL+META SED	205
100	20	50	20	50	100	ND	ND	ND	ND	ND	12	07	A	MD	M	NONE	GR+VOL+META SED	206
100	20	20	10	20	100	ND	ND	ND	ND	ND	02	02	A	MD	M	NONE	VOL+META SED	207
200	20	20	20	50	100	ND	ND	ND	ND	ND	08	01	A	MD	M	NONE	GR+VOL+META SED	208
200	ND	20	20	50	100	ND	ND	5	ND	ND	01	01	A	MD	M	NONE	GR+VOL+META SED	209
200	50	50	20	50	200	ND	100	5	ND	ND	04	01	A	MD	M	NONE	VOL+PORPH+RUSTY HFLS W SULF	210
200	10	20	20	20	100	ND	50	ND	ND	ND	02	01	A	MD	M	NONE	PORPH VOL	211
200	20	20	20	50	200	ND	ND	ND	ND	ND	04	DR	A	MD	M	NONE	VOL+META SED	212
200	20	50	20	20	200	ND	50	ND	ND	ND	03	08	A	MD	M	NONE	VOL+META SED	213
200	20	20	20	50	200	ND	ND	ND	ND	ND	09	08	B	MD	M	NONE	VOL+META SED	214
100	20	20	10	10	50	ND	ND	ND	ND	ND	02	DR	B	MD	M	NONE	VOL+PORPH+META SED	215
200	20	20	20	20	100	ND	ND	ND	ND	ND	02	02	B	MD	M	NONE	VOL-META SED	216
200	ND	20	20	20	100	ND	ND	5	ND	ND	04	DR	B	MD	M	NONE	VOL+META SED	217
200	ND	50	20	20	100	ND	ND	5	ND	ND	02	08	B	MD	M	NONE	VOL+META SED	218
200	ND	20	20	20	100	ND	ND	ND	ND	ND	02	08	B	MD	M	VOL	VOL-META SED	219
200	ND	20	20	20	100	ND	ND	ND	ND	ND	05	08	B	MD	M	VOLS	VOL+META SEDS	220
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	03	15	B	MD	M	VOL	VOL+MSED	221
100	ND	20	20	10	100	ND	ND	ND	ND	ND	02	20	B	MD	M	NONE	VOL+META SEDS	222
200	ND	20	10	20	100	ND	ND	ND	ND	ND	04	08	C	MD	M	NONE	VOL+META SED+PORPH	223
200	ND	20	20	20	100	ND	ND	ND	ND	ND	07	DR	B	MD	M	NONE	VOL+META SED	224
200	ND	20	50	20	100	ND	ND	ND	ND	ND	03	DR	B	MD	M	NONE	VOL+META SED	225
200	ND	20	20	20	200	ND	ND	ND	ND	ND	04	DR	B	MD	M	NONE	VOL+META SED	226

Map No.	Sample No.	Gold (3)	Copper (3)	Lead (3)	Zinc (3)	Copper	Lead	Zinc	Molybdenum	Silver	Cobalt	Chromium	Nickel	Manganese	Titanium	Iron (%)	Magnesium (%)	Calcium (%)	Barium	Strontium	Boron	Beryllium	Tin	Tungsten
227	69T128	NA	25	10	55	20	10	100	5	ND	20	200	50	1000	*1.0	5	2	5	500	500	ND	ND	ND	ND
228	69T129	NA	30	10	65	20	10	200	10	ND	50	1000	50	1000	*1.0	10	5	5	500	500	ND	1	ND	ND
229	69T130	NA	25	10	40	20	10	100	5	ND	50	200	20	1000	5000	5	2	2	500	500	ND	ND	10	ND
230	69T131	NA	30	10	55	20	10	100	5	ND	20	200	50	1000	*1.0	5	2	5	500	500	10	ND	ND	ND
231	69T132	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
232	69T133	NA	30	10	55	20	10	100	5	ND	20	200	20	1000	*1.0	5	2	5	500	500	10	ND	ND	ND
233	69T134	NA	25	10	50	20	10	100	10	ND	50	500	20	1000	*1.0	5	5	5	500	500	ND	ND	ND	ND
234	69T135	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
235	69T136	NA	20	10	45	20	10	100	10	ND	20	200	20	1000	5000	5	2	2	500	500	ND	1	ND	ND
236	69T136	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
237	69T138	NA	25	10	55	20	10	100	10	ND	50	500	20	1000	*1.0	5	5	5	500	500	ND	1	ND	ND
238	69H338	NA	55	10	70	20	10	100	ND	ND	10	200	20	500	5000	2	1	2	200	200	ND	ND	ND	ND
239	69H336	NA	60	15	60	20	10	100	ND	ND	10	100	20	500	5000	2	1	1	200	100	10	ND	ND	ND
240	69H337	NA	55	15	55	20	10	100	ND	ND	10	100	20	500	5000	2	0.5	2	500	200	10	ND	ND	ND
241	69H333	NA	50	10	65	20	10	ND	ND	ND	10	100	20	500	5000	2	1	2	500	200	10	ND	ND	ND
242	69H335	NA	30	10	15	20	10	ND	5	ND	20	200	20	1000	*1.0	5	5	5	500	500	10	1	ND	ND
243	69H334	NA	40	10	60	50	10	100	10	ND	50	500	50	1000	*1.0	10	5	5	500	500	10	1	ND	ND
244	69H331	NA	45	15	70	50	10	100	ND	ND	10	100	20	500	5000	5	1	2	500	200	10	ND	ND	ND
245	69H332	NA	45	10	60	50	10	100	5	ND	20	200	20	1000	5000	5	2	2	500	500	ND	ND	ND	ND
246	69H330	NA	25	10	90	50	10	100	20	ND	50	1000	50	1000	*1.0	10	5	5	200	500	ND	2	10	ND
247	69H329	NA	25	10	95	50	10	100	10	ND	50	500	100	1000	NA	10	5	2	500	200	10	2	ND	ND
248	69H328	NA	30	10	55	20	10	100	5	ND	20	200	20	1000	*1.0	5	5	5	500	500	10	ND	ND	ND
249	69H327	NA	60	10	70	50	10	100	10	ND	50	500	50	1000	*1.0	10	5	5	200	500	ND	1	10	ND
250	69H326	NA	65	10	60	50	10	100	10	ND	50	500	50	1000	*1.0	10	5	5	200	500	10	1	10	ND
251	69H325	NA	60	15	55	50	10	100	ND	ND	20	200	50	1000	5000	5	2	2	500	200	10	1	ND	ND
252	69H324	NA	60	10	60	50	10	100	10	ND	50	500	50	1000	*1.0	10	5	5	200	500	10	1	ND	ND
253	69H323	NA	60	10	60	50	10	100	5	ND	50	200	50	1000	*1.0	5	5	5	500	500	10	ND	ND	ND
254	69H322	NA	65	10	85	50	10	200	10	ND	50	200	50	1000	*1.0	10	5	5	1000	200	20	1	10	ND
255	69H321	NA	65	10	60	50	10	100	5	ND	50	200	50	1000	*1.0	5	5	5	200	500	10	1	ND	ND
256	69H320	NA	65	10	65	100	10	100	5	ND	50	500	50	1000	*1.0	10	5	5	200	200	20	1	ND	ND
257	69H319	NA	60	10	60	50	10	100	5	ND	50	200	50	1000	*1.0	5	5	5	200	500	10	1	ND	ND
258	69H318	NA	70	10	100	50	10	200	10	1	50	1000	20	1000	*1.0	10	5	5	200	200	10	2	10	ND
259	69H317	NA	60	10	55	50	10	100	5	ND	50	500	50	1000	*1.0	5	5	5	500	500	10	1	ND	ND
260	69H316	NA	50	10	55	100	10	100	5	ND	50	500	50	1000	*1.0	10	5	5	500	500	10	ND	ND	ND
261	69H315	NA	55	10	55	50	10	100	5	ND	50	500	50	1000	*1.0	5	5	5	200	500	10	ND	ND	ND
262	69H314	NA	50	15	55	100	10	100	10	ND	50	1000	100	1000	*1.0	10	5	5	200	200	50	1	10	ND
263	69H313	NA	60	10	65	50	10	100	5	ND	50	500	50	1000	*1.0	5	5	5	500	500	10	1	ND	ND
264	69H312	NA	55	10	60	100	10	100	5	ND	50	500	50	1000	*1.0	10	5	10	500	500	10	1	10	ND
265	69H311	NA	55	10	65	50	10	100	5	ND	50	200	50	1000	*1.0	5	2	5	500	500	10	ND	ND	ND
266	69H310	NA	55	10	60	50	10	100	5	ND	50	500	50	1000	*1.0	10	5	5	500	500	ND	1	ND	ND
267	69H309	NA	55	10	65	50	10	100	5	ND	50	200	50	1000	*1.0	5	5	5	500	500	10	ND	ND	ND
268	69H308	NA	55	10	75	50	10	100	10	ND	50	500	50	1000	*1.0	10	5	2	500	500	10	2	ND	ND
269	69H307	NA	55	10	50	50	10	100	5	ND	20	200	50	1000	5000	5	2	5	500	500	10	ND	ND	ND
270	69H306	NA	55	10	55	50	20	100	5	ND	50	500	50	1000	*1.0	10	5	2	500	500	ND	ND	ND	ND
271	69H305	NA	40	10	70	20	10	100	5	ND	20	500	50	1000	*1.0	5	2	5	500	200	10	ND	ND	ND
272	69H339	NA	65	15	75	50	ND	ND	ND	ND	20	100	20	1000	2000	2	1	2	200	200	10	ND	ND	ND
273	69H093	NA	35	10	50	50	10	100	5	ND	50	1000	50	1000	*1.0	10	5	5	500	500	ND	1	ND	ND
274	69H092	NA	35	15	55	20	10	200	10	ND	50	500	50	2000	*1.0	5	5	5	500	500	ND	1	ND	ND
275	69H103	NA	70	10	55	50	10	100	5	ND	50	200	20	1000	*1.0	10	5	5	200	500	10	1	ND	ND
276	69H104	NA	70	10	50	50	10	100	5	ND	50	200	20	1000	*1.0	5	5	5	200	500	10	ND	ND	ND
277	69H105	NA	60	10	60	50	10	100	5	ND	50	200	50	1000	*1.0	10	5	5	200	500	10	ND	ND	ND
278	69H106	NA	65	10	50	100	10	100	5	ND	50	200	50	1000	5000	10	5	5	500	500	10	1	ND	ND
279	69H102	NA	70	10	55	50	10	100	5	ND	20	200	20	1000	5000	5	5	2	200	500	10	ND	ND	ND
280	69H108	NA	75	10	60	100	10	200	5	ND	50	200	50	1000	*1.0	10	5	5	500	200	10	1	ND	ND
281	69H107	NA	40	10	95	50	10	100	10	ND	50	500	20	1000	*1.0	10	5	5	200	500	ND	1	ND	ND
282	69H101	NA	45	10	55	50	10	100	10	ND	50	500	50	1000	*1.0	10	5	5	500	500	ND	1	ND	ND
283	69H100	NA	45	10	55	20	10	200	5	ND	50	200	20	1000	*1.0	5	5	5	500	500	ND	1	ND	ND
284	69H099	NA	40	10	70	50	10	100	10	ND	50	1000	50	1000	*1.0	10	5	5	500	500	ND	2	ND	ND
285	69H098	NA	40	10	45	20	10	200	5	ND	50	500	50	1000	*1.0	5	5	5	500	500	ND	ND	ND	ND
286	69H097	NA	40	15	40	50	10	100	10	ND	50	500	50	1000	*1.0	10	5	5	200	500	ND	1	ND	ND
287	69H096	NA	35	15	45	20	10	100	5	ND	50	200	50	1000	*1.0	5	5	5	500	500	ND	ND	ND	ND
288	69H095	NA	30	10	40	20	10	100	10	ND	50	500	50	1000	*1.0	10	5	5	500	500	ND	1	ND	ND
289	69H094	NA	30	10	40	20	10	200	5	ND	50	500	50	1000	*1.0	5	5	5	500	500	ND	ND	ND	ND
290	69H112	NA	60	25	140	50	10	100	5	ND	50	200	50	500	5000	5	2	2	1000	200	50	2	ND	ND
291	69T204	NA	80	15	90	50	20	100	5	ND	50	500	50	1000	5000	5	5	5	1000	200	20	ND	ND	ND
292	69T203	NA	95	20	100	100	10	500	5	ND	50	500	50	1000	*1.0	10	5	5	1000	200	20	ND	ND	ND
293	69T202	NA	160	45	125	100	50	200	10	1	100	1000	100	2000	*1.0	10	5	5	2000	200	20	2	ND	ND
294	69H111	NA	45	10	50	50	10	100	5	ND	50	200	50	1000	5000	5	2	5	500	500	ND	ND	ND	ND
295	69T201	NA	30	15	45	50	10	100	5	ND	50	200	20	1000	*1.0	10	5	5	500	200	10	ND	ND	ND
296	69T200	NA	80	20	40	100	10	100	10	ND	50	500	50	1000	*1.0	10	5	5	1000	200	20	ND	ND	ND
297	69H110	NA	60	15	80	100	10	200	5	ND	50	500	50	1000	*1.0	10	5	5	500	500	20	1	ND	ND
298	69T199	NA	40	15	65	50	10	100	5	ND	50	200	20	1000	5000	5	2	5	500	200	10	ND	ND	ND
299	69T198	NA	100	25	105	100	20	100	5	2	50	500	50	1000	*1.0	10	5	5	1000	200	20	1	ND	ND
300	69T197	NA	80	10	60	100	10	100	10	ND	50	500	50	1000	*1.0	10	5	5	1000	500	ND	1	ND	ND
301	69H109	NA	55	10	65	50	10	100	5	ND	50	500	50	1000	*1.0	10	5	5	500	500	20	1	ND	ND
302	69T196	NA	45	15	55	50	10	100	5	ND	50	200	20	1000	5000	5	5	5	500	200	50	ND	ND	ND
303	69T195	NA	150	45	145	100	20	100	10	ND	100	1000	100	1000	*1.0	10	5	5	1000	200	10	1	ND	ND
304	69T194	NA	70	20	120	100	20	100	10	ND	50	500	50	1000	*1.0	10	5	5	500	200	20	1	ND	ND
305	69T193	NA	80	20	130	100	20	100	5	ND	50	500	50	1000	*1.0	10	5	5	1000	200	10	ND	ND	ND
306	69T192	NA	45	20	90	100	20	100	10	ND	50	500	50	1000	*1.0	5	5	5	1000	200	50	1	ND	ND
307	69T191	NA	75	20	90	100	10	100	5	ND	50	500	50	1000	*1.0	5	5	5	500	200	10	ND	ND	ND
308	69T190	NA	130	25	110	50	20	100	10	ND	50	1000	50	1000	*1.0	10	5	5	1000	200	10	1	ND	ND
309	69T189	NA	35	15	55	50	20	100	5	ND	20	100	20	1000	*1.0	5	5	10	500	200	20	ND	ND	ND
310	69T188	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
311	69T187	NA	75	20	95	100	10	200	10	ND	50	1000	50	1000	*1.0	10	5	5	1000	200	20	1	ND	ND
312	69T186	NA	95	25	110	50	10	100	10	ND	50	500	50	1000	*1.0	10	5	5	500	200	20	1	ND	ND
313	69T185	NA	80	20	95	50	10	ND	5	ND	20	100	20	500	5000	5	2	20	500	500	10	ND	ND	ND
314	69T184	NA	125	25	115	100	20	100	10	ND	50	500	100	1000	*1.0	10	5	5	1000	200	20	ND	ND	ND
315	69T183	NA	90	15	95	100	20	100	ND	ND	50	500	50	1000	*1.0	10	5	5	1000	200	20	ND	ND	ND
316	69T182	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
317	69T181	NA	85	15	100	50	10	100	ND	ND	50	500	50	1000	5000	10	5	5	500	200	10	ND	ND	ND
318	69T180	NA	40	10	50	50	10	100	10	ND	50	500	50	1000	*1.0	5	5	5	500	500	ND	1	ND	ND
319	69T179	NA	40	15	45	50	10	100	5	ND	50	500	100	1000	*1.0	5	5	5	500	500	ND	ND	ND	ND
320	69T178	NA	85	15	90	50	50	100	ND	ND	50	500	50	1000	5000	10	5	5	500	200	50	ND	ND	ND
321	69T177	NA	35	10	45	50	10	100	5	ND	50	500	50	1000	*1.0	5	5	10	500	500	ND	1	ND	ND
322	69T176	NA	75	15	95	50	10	ND	5	ND	50	500	50	1000	5000	10	5	5	500	200	10	ND	ND	ND
323	69T175	NA	50	25	90	100	10	100	5	ND	50	500	100	1000	5000	5	5	5	500	200	20	ND	ND	ND
324	69T174	NA	80	20	95	50	10	100	5	ND	50	500	50	1000	*1.0	10	5	5	500	200	20	ND	ND	ND
325	69T173	NA	75	15	95	50	10	100	5	ND	50	500	50	1000	*1.0	5	5	5	500	200	10	ND	ND	ND
326	69T172	NA	90	20	105	100	10	100	5	ND	50	500	50	1000	*1.0	10	5	5	500	200	10	ND	ND	ND
327	69T171	NA	80	10	90	100	10	100	10	ND	50	500	50	1000	*1.0	5	5	5	500	200	ND	1	ND	ND
328	69H154	NA	40	10	55	50	10	100	10	ND	50	500	50	1000	*1.0	10	5	5	500	500	ND	1	ND	ND
0329	69H153	NA	1000	10	55	2000	10	100	5	ND	50	500	50	1000	*1.0	10	5	5	100	200	10	1	ND	ND
330	69H156	NA	30	20	75	20	10	100	5	ND	20	200	20	1000	5000	5	2	5	500	200	20	ND	ND	ND
0331	69H157	NA	30	15	55	50	20	100	5	ND	20	50	10	1000	*1.0	5	1	2	1000	500	10	1	ND	ND
0332	69H155	NA	30	10	45	20	10	100	5	ND	20	200	20	500	*1.0	5	2	2	500	500	ND	ND	ND	ND
333	69H158	NA	85	15	55	100	10	100	10	ND	50	500	50	1000	*1.0	10	5	5	100	200	20	1	ND	ND
0334	69H152	NA	100	15	60	100	10	100	5	ND	50	500	50	1000	*1.0	10	5	5	100	100	10	1	ND	ND
0335	69H159	NA	35	15	40	20	10	100	5	ND	20	200	20	1000	*1.0	5	2	2	500	500	ND	1	ND	ND
336	69H160	NA	25	15	40	20	10	100	5	ND	20	100	10	1000	5000	5	2	5	200	200	20	ND	ND	ND
0337	69H151	NA	95	10	50	100	10	100	5	ND	50	500	50	1000	*1.0	10	5	5	100	100	10	ND	ND	ND
0338	69H150	NA	100	10	50	200	10	200	5	ND	50	500	50	1000	*1.0	10	5	5	100	200	10	2	ND	ND
339	69T284	NA	35	20	80	50	20	100	10	ND	50	200	20	1000	5000	5	2	5	500	200	20	ND	ND	ND

Zirconium	Lanthanum	Niboium	Scandium	Yttrium	Vanadium	Arsenic	Antimony	Bismuth	Cadmium	Field Test	Stream Width	Location (4)	Organic Content	Sediment Size	Bedrock (4)		Sediments in Stream Bed in Percent (4)	Map No.
200	ND	20	20	20	100	ND	ND	ND	ND	ND	04	08	B	MD	M	NONE	VCL+META SED	227
200	ND	20	50	20	200	ND	ND	ND	ND	ND	04	08	B	MD	M	NONE	META SED+VCL	228
100	ND	20	20	20	100	ND	ND	ND	ND	ND	04	08	B	MD	M	NONE	VCL+META SED	229
200	ND	20	20	20	100	ND	ND	ND	ND	ND	03	08	B	MD	M	NONE	VCL+META SED	230
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	03	05	B	MD	M		VCL	231
200	ND	20	20	20	100	ND	ND	5	ND	ND	05	08	B	MD	M	NONE	VCL+META SED	232
200	20	20	20	50	100	ND	ND	ND	ND	ND	07	02	B	MD	M	NONE	NONE	233
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	04	CR	B	MD	M		META SED	234
100	ND	20	20	20	100	ND	ND	ND	ND	ND	03	08	B	MD	M	NONE	DARK META SEDS	235
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	03	05	B	MD	M		METASED	236
200	ND	20	20	20	100	ND	ND	ND	ND	ND	05	CR	B	MD	M	NONE	VCL-META SED	237
100	50	10	10	10	100	ND	ND	ND	ND	ND	0	5	B	MD	M		FINE SED+VEGETATION	238
100	50	10	20	20	100	ND	ND	ND	ND	ND		10	B	MD	C		VCL	239
100	50	20	20	20	100	ND	ND	ND	ND	ND		2	B	MD	C		VCL	240
100	50	10	20	20	100	ND	ND	ND	ND	ND	3	10	B	MD	M		PCR+AMYGRCL	241
100	ND	20	20	20	100	ND	ND	ND	ND	ND		CR	A	MD	M		VCL+MS	242
200	20	20	50	20	100	ND	50	ND	ND	ND	0	2	A	MD	M		PCR+AMYGRVCL	243
100	50	10	20	20	100	ND	ND	ND	ND	ND	0	20	B	MD	M		VCL+MS	244
200	20	20	50	20	100	ND	50	ND	ND	ND	0	2	A	MD	M		VCL+MS	245
200	ND	20	50	20	200	ND	50	ND	ND	ND	0	10	B	MD	M		PCRVCL+AMYGVCL	246
200	ND	50	50	50	200	ND	100	5	ND	ND		15	B		M		VCL+AMYGVCL	247
100	ND	20	50	20	100	ND	ND	5	ND	ND	0	12	B	MD	C		VCL	248
200	ND	20	50	20	200	ND	50	ND	ND	ND	0	30	B	MD	C		VCL+SED	249
200	ND	20	20	20	200	ND	50	ND	ND	ND		30	B		C		VCL+SED	250
100	50	10	20	20	100	ND	ND	ND	ND	ND		4	A	MD	C		VCL+AMYGVCL	251
200	ND	20	50	20	200	ND	ND	ND	ND	ND	0	30	B	MD	M		VCL+AMYGVCL	252
200	ND	20	20	20	100	ND	ND	5	ND	ND		30	B	MD	C		VCL+AMYGVCL	253
200	ND	20	50	20	200	ND	50	ND	ND	ND	0	50	B	MD	M		VCL+AMYGRVCL	254
200	ND	20	20	20	100	ND	ND	5	ND	ND	0	20	B	MD	M		VCL+ AMYGRCL	255
200	ND	20	50	20	200	ND	50	ND	ND	ND	0	30	B	MD	M		VCL+AMYGRCL	256
200	ND	20	20	20	200	ND	ND	5	ND	ND		30	B	MD	M		VCL+PCRVCL	257
200	ND	20	50	20	200	ND	100	ND	ND	ND	0	20	B	MD	C		VCL+PCRVCL+AMYGREL	258
200	ND	20	50	20	200	ND	ND	5	ND	ND	0	30	B		C		VCL+PCRVCL+AMYGRCL	259
200	ND	20	20	20	200	ND	ND	ND	ND	ND	0	35	B	MD	C		VCL+PCRVCL	260
200	ND	20	20	20	200	ND	ND	5	ND	ND	0	35	B	MD	M		VCL+AMYGRCL	261
200	ND	20	50	50	200	ND	100	ND	ND	ND	0	55	B	MD	M		VCL+ AMYGRCL	262
200	ND	20	50	20	200	ND	ND	5	ND	ND	0	30	B	MD	M		VCL+AMYGRCL	263
200	ND	20	50	20	200	ND	50	ND	ND	ND	0	40	B	MD	C		VCL+AMYGRCL	264
200	ND	20	20	20	100	ND	ND	5	ND	ND	0	30	B	LC	C		AMYGRCL+PCRVCL 1 OR 2 CUCO3 STN)	265
200	ND	20	50	20	200	ND	50	ND	ND	ND	0	30	B	LC	C		VCL+AMYGRAL	266
200	ND	20	20	20	100	ND	ND	5	ND	ND	0	20	A	LC	M		AMYG+PCRVCL,INTER AGGL OVERLAIN BY PCRPH BA. ONE	267
200	ND	20	50	20	200	ND	50	ND	ND	ND	0	25	B	LC	C		LT AGGL OVERLAIN BY BA YELLOWGRED OXID IN WALL US	268
200	ND	20	20	20	100	ND	ND	ND	ND	ND	0	30	B	MD	M		VCL,LOOKS LIKE LT&DK AGGL FROM ACROSS STREAM	269
200	ND	20	20	20	200	ND	ND	ND	ND	ND	0	40	A	MD	M		VCL	270
200	ND	20	20	20	100	ND	ND	ND	ND	ND	0	6	A	MD	C		VCL	271
100	50	10	20	20	100	ND	ND	ND	ND	ND		2	A	MD	M		FINE SED	272
200	ND	20	20	20	100	ND	100	ND	ND	ND	01	08	B	MD	M	NO	MIX	273
200	ND	20	50	20	200	ND	100	5	ND	ND	07	20	B	MD	M	NO	VCL+PCRPH	274
200	ND	20	50	20	200	ND	ND	ND	ND	ND	01	08	B	MD	M	LS	PCRPH+VCL+MSED	275
100	ND	20	50	50	200	ND	ND	5	ND	ND	08	CR	B	MD	M	NO	LS+PCRPH	276
200	ND	20	50	20	100	ND	ND	ND	ND	ND	05	CR	A	MD	M	NO	LS+PCRPH	277
200	ND	20	20	20	100	ND	ND	5	ND	ND	01	08	B	MD	M	NO	VCL+PCRPH+MSEL	278
100	ND	10	20	20	100	ND	ND	ND	ND	ND	02	08	B	MD	M	NO	DKPCR+MSED	279
200	ND	50	20	20	100	ND	ND	5	ND	ND	03	08	B	MD	M	NO	PCRPH+VCL+MSED	280
200	ND	20	50	20	200	ND	ND	ND	ND	ND	04	CR	A	MD	M	NO	PCRPH+VCL+MSED	281
200	ND	20	20	20	100	ND	ND	ND	ND	ND	04	01	B	MD	M	NO	DKVCL+PCR	282
200	20	20	20	50	100	ND	ND	ND	ND	ND	02	08	B	MD	M	NO	LT+DKPCRPH	283
200	20	20	50	50	200	ND	50	ND	ND	ND	01	08	B	MD	M	NO	PCRPH+MSED	284
200	ND	20	20	20	100	ND	ND	ND	ND	ND	03	08	B	MD	M	NO	LT+DKVCLS	285
200	ND	20	20	20	100	ND	ND	ND	ND	ND	02	01	B	MD	M	NO	VCL MSED	286
100	ND	20	20	20	100	ND	ND	5	ND	ND	02	08	B	MD	M	NO	LT+DK VCLMINOR MSED	287
200	ND	20	20	20	100	ND	50	ND	ND	ND	01	01	B	MD	M	NO	LT DK VCL	288
200	ND	20	20	20	100	ND	50	ND	ND	ND	01	01	B	MD	M	NO	VCL+PCRPH	289
200	50	50	20	20	100	ND	ND	5	ND	ND	01	01	A	MD	M	FELS	FELS+FAYL	290
100	ND	20	50	20	200	ND	ND	ND	ND	ND	01	20	B	MD	M	NONE	VCL+MSED	291
200	ND	20	50	20	200	ND	50	5	ND	ND	02	20	C	MD	M	NONE	VCL+MSED	292
200	ND	20	50	20	200	ND	100	ND	ND	ND	02	20	B	MD	M	VCL	VCL+MSED	293
100	20	20	20	20	100	ND	ND	ND	ND	ND	01	01	A	MD	M	NO	VCL-MSED	294
100	ND	20	50	20	200	ND	ND	ND	ND	ND	01	CR	B	MD	M	NONE	VCL-MSED	295
200	ND	20	50	20	200	ND	ND	ND	ND	ND	02	20	B	MD	M	NONE	VCL-MSED	296
200	ND	50	20	20	100	ND	ND	5	ND	ND	02	01	A	MD	M	NO	VCL+MSED	297
100	ND	20	20	20	100	ND	ND	ND	ND	ND	02	08	B	MD	M	NONE	VCL-MSED	298
200	ND	20	50	20	200	ND	100	5	ND	ND	02	20	B	MD	M	NONE	VCL+MSED	299
200	ND	20	50	20	200	ND	50	ND	ND	ND	03	08	B	MD	M	VCL	VCL-MSED	300
200	ND	20	50	20	100	ND	ND	ND	ND	ND	01	CR	A	MD	M	NO	VCL+MSED	301
100	ND	20	50	20	200	ND	ND	ND	ND	ND	02	08	B	MD	M	NONE	VCL-MSED	302
200	ND	20	50	20	200	ND	100	5	ND	ND	02	20	B	MD	M	NONE	VCL+MSED	303
200	20	20	50	20	200	ND	ND	ND	ND	ND	03	CR	A	MD	M	VCL	VCL-MSED	304
200	ND	20	50	20	200	ND	50	ND	ND	ND	02	20	B	MD	M	VCL	SED+VCL	305
200	20	20	50	20	200	ND	50	ND	ND	ND	03	01	B	MD	M	VCL	VCL-MSED	306
100	20	20	50	20	200	ND	50	ND	ND	ND	02	20	B	MD	M	VCLS	VCL-MSED	307
200	ND	20	50	20	200	ND	100	ND	ND	ND	04	20	B	MD	M	VCL	VCLS	308
100	20	20	50	20	100	ND	ND	ND	ND	ND	01	01	B	MD	M	INTR	VCL-META SED	309
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	06	20	B	MD	M	NONE	VCL-META SED	310
200	ND	20	50	20	200	ND	100	ND	ND	ND	04	01	B	MD	M	INTR	VCL-META SED	311
200	ND	20	50	50	200	ND	50	5	ND	ND	03	20	B	MD	M	VCL	VCL+META SED	312
100	ND	20	20	20	100	ND	ND	5	ND	ND	05	01	B	MD	M	VCL	VCL+META SED	313
100	ND	20	50	20	200	ND	50	ND	ND	ND	02	20	B	MD	M	NONE	VCL+META SED	314
100	ND	20	50	20	200	ND	50	ND	ND	ND	05	20	B	MD	M	VCL	VCL+META SED	315
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	03	CR	B	MD	M		VCL+METASED	316
100	ND	20	50	20	200	ND	50	ND	ND	ND	03	20	B	MD	M	VCL	VCL+META SED	317
200	20	20	50	20	100	ND	100	ND	ND	ND	05	02	B	MD	M	VCL	VCL-META SED	318
200	ND	20	20	20	200	ND	ND	ND	ND	ND	08	CR	A	MD	M	NONE	VCL-META SED	319
100	ND	20	20	20	200	ND	50	ND	ND	ND	03	20	B	MD	M	NONE	VCL+META SED	320
200	ND	20	50	20	200	ND	ND	ND	ND	ND	03	CR	B	MD	M	NONE	VCL-META SED	321
100	ND	20	50	20	200	ND	50	ND	ND	ND	09	20	B	LC	M	NONE	VCL+META SED	322
100	ND	20	50	20	200	ND	ND	ND	ND	ND	04	20	C	LC	M	NONE	VCL-META SED	323
100	ND	20	50	20	200	ND	50	ND	ND	ND	04	20	B	LC	C	NONE	VCL+META SED	324
200	ND	20	50	20	200	ND	50	ND	ND	ND	05	20	B	LC	C	NONE	MIX	325
100	ND	20	50	20	200	ND	50	ND	ND	ND	03	08	B	MD	M	NONE	VCL+META SED	326
100	ND	20	50	20	100	ND	50	ND	ND	ND	03	08	B	LC	M	NONE	VCL-META SED	327
200	20	20	50	20	200	ND	100	ND	ND	ND	01	60	C	MD	M	NO	MIX	328
100	ND	20	50	20	100	ND	ND	5	ND	ND	09	01	A	MD	C	NO	PCRVCL+ AMYGVCL	C329
100	20	20	20	20	100	ND	ND	ND	ND	ND	01	CR	A	MD	C	NO	LTPCR-AMYGVCL	330
100	20	20	50	20	100	ND	ND	5	ND	ND	01	CR	A	MD	M	NO	PCRVCL+ AMYGVCL	C331
200	ND	20	20	20	100	ND	ND	ND	ND	ND	01	60	C	MD	M	NO	MIX	C332
100	ND	20	50	50	200	ND	50	ND	ND	ND	02	CR	A	MD	M	NO	LTVCL-DKVCL-PCRVCL	333
100	ND	20	50	20	100	ND	ND	5	ND	ND	01	08	A	MD	M	NO	PCR+AMYG BASALT	C334
200	20	20	20	20	100	ND	ND	ND	ND	ND	02	60	C	MD	M	NO	MIX	C335
100	20	20	20	20	100	ND	ND	ND	ND	ND	02	CR	A	MD	M	NO	PCRVCL-AMYGVCL	336
100	ND	20	50	20	100	ND	ND	5	ND	ND	01	08	B	MD	M	NO	PCRVCL+ AMYGVCL	C337
100	ND	50	50	20	100	ND	50	5	ND	ND	02	08	B	MD	M	NO	PCRVCL+ AMYGVCL	C338
100	ND	20	20	20	100	ND	ND	ND	ND	ND	02	08	A	MD	M	VCLS	VCLS	339

Map No.	Sample No.	Gold (3)	Copper (3)	Lead (3)	Zinc (3)	Copper	Lead	Zinc	Molybdenum	Silver	Cobalt	Chromium	Nickel	Maganese	Titanium	Iron (%)	Magnesium (%)	Calcium (%)	Barium	Strontium	Boron	Beryllium	Tin	Tungsten
340	69T286	NA	30	10	40	20	20	100	10	ND	50	500	50	1000	*1.0	10	5	5	500	200	10	1	ND	ND
0341	69T283	NA	35	15	50	50	10	100	5	ND	20	100	10	1000	5000	5	2	5	500	500	20	ND	ND	ND
342	69T281	NA	95	20	95	50	10	100	5	ND	50	100	20	1000	5000	10	5	5	500	200	10	ND	ND	ND
343	69H149	NA	30	15	55	20	10	100	5	ND	20	100	20	1000	5000	5	2	5	500	200	10	ND	ND	ND
0344	69T285	NA	25	10	40	20	10	ND	5	ND	20	100	20	500	5000	5	2	2	500	500	ND	ND	ND	ND
0345	69T282	NA	25	10	35	20	10	ND	5	ND	20	200	20	500	5000	5	2	2	500	500	10	1	ND	ND
346	69T279	NA	15	10	25	50	20	100	5	ND	50	200	20	1000	*1.0	10	5	5	1000	200	20	ND	10	ND
347	69T280	NA	35	10	40	20	10	100	10	ND	50	500	20	1000	*1.0	10	5	5	500	200	ND	1	ND	ND
0348	69H148	NA	85	15	50	100	10	100	5	ND	50	500	50	1000	*1.0	10	5	5	100	200	ND	1	ND	ND
349	69H147	NA	85	15	50	100	10	100	5	ND	50	500	50	1000	*1.0	10	5	5	100	200	ND	1	ND	ND
350	69H146	NA	75	10	55	100	10	100	10	ND	50	500	50	1000	*1.0	10	5	5	100	200	50	2	ND	ND
351	69T278	NA	80	15	90	50	20	100	10	ND	50	500	50	1000	*1.0	5	5	5	500	200	ND	1	ND	ND
0352	69T277	NA	20	10	35	20	10	ND	5	ND	20	200	20	1000	5000	5	2	2	500	200	10	ND	ND	ND
0353	69H145	NA	165	10	55	200	10	100	5	ND	50	1000	100	1000	*1.0	10	5	5	100	200	10	ND	ND	ND
0354	69T276	NA	20	10	30	20	10	100	5	ND	20	200	20	1000	5000	5	2	5	500	200	ND	1	ND	ND
355	69T275	NA	45	15	50	50	20	100	10	ND	20	500	20	1000	*1.0	10	5	5	1000	200	ND	1	ND	ND
0356	69H144	NA	95	20	55	100	10	100	10	ND	50	1000	100	1000	*1.0	10	5	5	200	100	10	1	ND	ND
357	69T274	NA	55	15	50	50	10	100	10	ND	50	500	50	1000	*1.0	10	5	5	500	200	10	1	ND	ND
0358	69H143	NA	120	15	60	200	10	200	10	1	50	1000	100	1000	*1.0	10	5	5	100	200	20	2	ND	ND
0359	69T273	NA	25	15	35	20	10	ND	5	ND	20	100	20	1000	5000	2	2	2	500	200	10	1	ND	ND
360	69T272	NA	25	10	35	20	10	100	5	ND	20	500	20	1000	5000	5	2	2	1000	200	ND	ND	ND	ND
361	69H141	NA	40	20	70	50	20	100	5	ND	20	200	20	1000	5000	5	2	10	200	200	50	ND	ND	ND
362	69H142	NA	35	15	55	20	20	100	5	ND	20	200	20	1000	5000	5	5	.5	500	200	20	1	ND	ND
363	69T214	NA	35	15	70	20	10	100	ND	ND	20	200	20	1000	*1.0	5	2	5	500	500	20	ND	ND	ND
364	69T213	NA	40	15	70	50	10	100	5	ND	50	500	50	1000	5000	5	2	5	500	200	20	ND	ND	ND
365	69T215	NA	30	10	45	20	20	100	10	ND	50	500	50	1000	5000	5	2	5	1000	200	10	1	ND	ND
366	69T212	NA	40	15	70	50	20	100	ND	ND	20	200	20	1000	*1.0	5	2	5	500	500	20	ND	ND	ND
367	69T211	NA	40	15	70	50	10	100	10	ND	50	500	50	1000	*1.0	10	5	5	500	200	10	ND	ND	ND
368	69T210	NA	40	15	75	50	10	100	5	ND	50	500	20	1000	*1.0	5	5	5	500	500	20	ND	ND	ND
369	69T209	NA	25	10	40	20	10	100	5	ND	20	200	20	1000	*1.0	5	2	5	500	200	ND	1	ND	ND
370	69H118	NA	40	20	65	50	10	100	5	ND	50	100	20	1000	5000	5	2	5	500	200	50	ND	ND	ND
371	69H117	NA	55	20	65	50	10	100	10	ND	50	500	20	1000	*1.0	5	5	10	500	500	20	1	ND	ND
372	69H116	NA	55	20	60	50	10	100	5	ND	50	500	20	1000	5000	10	5	5	500	200	50	ND	ND	ND
373	69T208	NA	30	10	40	20	20	ND	10	ND	20	200	20	1000	5000	5	2	5	500	500	ND	1	ND	ND
374	69T207	NA	30	15	45	20	10	100	10	ND	20	500	20	1000	*1.0	5	5	5	500	500	ND	1	ND	ND
375	69H115	NA	60	20	70	50	10	100	5	ND	50	200	20	1000	5000	5	5	5	500	200	50	ND	ND	ND
376	69T206	NA	20	10	40	20	10	ND	5	ND	20	200	20	1000	5000	5	2	2	500	200	10	ND	ND	ND
377	69H114	NA	45	25	85	50	20	100	10	ND	20	100	20	1000	5000	5	2	5	500	200	50	1	ND	ND
378	69T205	NA	45	10	40	20	10	100	10	ND	20	500	50	1000	*1.0	5	5	5	500	200	ND	1	ND	ND
379	69T439	NA	40	20	110	20	10	200	5	ND	20	200	20	1000	5000	5	5	10	500	200	20	1	ND	ND
380	69T438	NA	50	15	90	20	10	200	ND	ND	20	100	20	500	5000	5	5	5	200	200	10	ND	ND	ND
381	69T437	NA	30	10	55	20	20	100	5	ND	20	200	50	1000	*1.0	10	2	2	1000	500	ND	2	ND	ND
382	69T436	NA	40	15	70	20	20	200	5	ND	50	500	20	1000	5000	5	5	5	500	200	10	2	ND	ND
383	69T435	NA	30	15	70	20	20	100	10	ND	50	1000	50	1000	*1.0	10	5	2	500	500	10	1	ND	ND
384	69T434	NA	35	20	70	20	20	100	5	ND	20	100	20	1000	5000	5	2	2	500	200	10	2	ND	ND
385	69T433	NA	25	15	65	20	20	100	10	ND	50	500	20	1000	*1.0	10	5	5	1000	500	10	1	ND	ND
386	69T432	NA	55	15	80	50	10	100	ND	ND	20	200	20	500	5000	5	2	2	500	200	10	ND	ND	ND
387	69T431	NA	45	15	75	20	20	100	5	ND	20	200	20	1000	5000	5	2	2	500	200	10	ND	ND	ND
388	69T424	NA	35	10	55	20	10	100	5	ND	50	500	20	1000	*1.0	10	5	5	500	500	10	ND	10	ND
389	69T425	NA	40	10	40	50	20	100	5	ND	20	100	20	1000	*1.0	5	2	NA	500	500	10	1	ND	ND
390	69T426	NA	35	10	45	50	10	100	5	ND	20	500	20	1000	*1.0	10	5	5	500	500	ND	ND	ND	ND
391	9T427	NA	35	15	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
392	69T428	NA	35	10	45	20	10	100	5	ND	50	500	50	1000	*1.0	10	5	5	500	500	10	ND	10	ND
393	69T429	NA	25	10	50	20	10	100	ND	ND	20	200	20	1000	*1.0	5	2	NA	500	500	10	ND	ND	ND
394	69T430	NA	35	10	45	20	10	200	5	ND	20	500	20	1000	*1.0	5	2	NA	500	500	10	ND	ND	ND
395	69H256	NA	55	15	60	50	10	ND	5	ND	50	100	20	1000	5000	5	2	5	200	200	10	ND	ND	ND
396	69H255	NA	75	15	70	100	10	100	5	ND	50	500	20	1000	*1.0	10	5	5	500	500	20	ND	ND	ND
397	69H254	NA	35	20	60	20	20	ND	5	ND	50	200	50	1000	5000	5	2	5	500	500	10	1	ND	ND
398	69H253	NA	20	10	65	20	10	100	10	ND	50	500	100	1000	*1.0	10	5	5	500	500	20	1	ND	ND
399	69H252	NA	50	10	55	100	10	ND	10	ND	50	500	100	1000	*1.0	10	5	5	500	500	10	1	ND	ND
400	69H251	NA	95	10	50	200	10	100	10	ND	50	100	20	1000	*1.0	10	2	5	500	500	ND	1	ND	ND
401	69H250	NA	40	20	110	50	20	100	5	ND	20	200	20	1000	5000	5	2	5	500	200	10	ND	ND	ND
402	69H249	NA	30	10	50	20	20	100	5	ND	50	200	50	1000	*1.0	5	5	5	500	500	ND	1	ND	ND
403	69H248	NA	30	10	50	50	10	100	5	ND	50	500	20	1000	*1.0	5	5	5	200	500	ND	ND	ND	ND
404	69H247	NA	20	10	75	20	10	100	5	ND	50	500	50	1000	*1.0	5	5	5	200	500	ND	ND	ND	ND
405	69H246	NA	30	10	50	20	10	100	5	ND	50	200	20	1000	*1.0	5	5	5	500	500	10	1	ND	ND
406	69H245	NA	25	10	55	20	10	100	5	ND	50	500	50	1000	*1.0	5	5	5	200	500	ND	1	ND	ND
407	69H244	NA	40	10	75	50	20	100	5	1	50	200	20	1000	*1.0	5	1	2	500	500	20	ND	ND	ND
408	69H243	NA	30	10	50	50	10	100	5	ND	50	1000	100	1000	*1.0	5	5	5	200	500	ND	ND	ND	ND
409	69H242	NA	30	10	60	20	10	ND	5	ND	50	200	20	1000	*1.0	5	5	5	500	500	20	1	ND	ND
410	69H241	NA	15	10	40	20	10	100	5	ND	50	500	50	1000	*1.0	5	5	5	500	500	ND	ND	ND	ND
411	69H233	NA	15	10	40	20	10	100	5	ND	50	500	50	1000	*1.0	5	5	5	500	500	ND	1	ND	ND
412	69H232	NA	20	10	45	50	50	100	5	ND	20	200	20	1000	*1.0	5	5	5	500	500	ND	ND	ND	ND
413	69H231	NA	25	5	40	20	10	100	5	ND	50	200	50	1000	*1.0	5	5	5	500	500	ND	ND	ND	ND
414	69H230	NA	25	10	50	20	10	100	ND	ND	50	500	50	1000	5000	10	5	5	500	500	ND	ND	ND	ND
415	69H229	NA	20	10	45	20	10	100	5	ND	50	500	50	1000	5000	5	5	5	500	500	ND	1	ND	ND
416	69H228	NA	20	10	40	20	20	100	5	ND	20	500	20	1000	*1.0	5	5	5	200	500	10	ND	ND	ND
417	69H227	NA	20	10	45	20	10	100	5	ND	50	200	20	1000	5000	5	2	5	500	500	ND	1	ND	ND
418	69H226	NA	20	10	45	20	10	100	5	ND	20	500	20	1000	*1.0	5	2	2	500	500	100	ND	ND	ND
419	69T423	NA	25	10	50	10	10	100	ND	ND	20	50	20	500	5000	2	1	NA	500	500	ND	ND	ND	ND
420	69T422	NA	25	10	50	20	10	100	5	ND	50	200	20	1000	*1.0	10	5	5	500	500	10	ND	10	ND
421	69T421	NA	35	10	50	10	20	100	5	ND	20	100	20	1000	5000	5	2	NA	500	500	10	ND	ND	ND
422	9T420	NA	20	10	45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
423	69T419	NA	20	5	35	10	20	100	5	ND	50	100	20	1000	*1.0	5	2	NA	500	500	10	1	ND	ND
424	69T418	NA	25	10	40	20	20	100	10	ND	50	200	50	1000	*1.0	10	5	5	1000	1000	10	1	10	ND
425	69T417	NA	25	10	60	10	10	200	5	ND	50	100	20	1000	5000	5	5	NA	500	500	ND	ND	ND	ND
426	69T416	NA	25	10	70	10	10	100	5	ND	20	200	20	2000	5000	5	2	2	500	500	ND	ND	ND	ND
427	69T415	NA	25	10	55	20	10	100	5	ND	50	500	50	1000	*1.0	5	5	5	500	500	ND	1	10	ND
428	69H225	NA	25	10	50	20	10	100	5	ND	50	500	50	1000	5000	5	5	5	500	500	ND	ND	ND	ND
429	69H224	NA	15	5	45	20	20	100	5	ND	20	200	20	1000	*1.0	5	2	5	500	1000	ND	ND	ND	ND
430	69T405	NA	20	10	45	10	10	100	5	ND	20	200	20	1000	5000	5	2	5	500	500	ND	ND	ND	ND
431	69T407	NA	20	10	45	20	20	100	5	ND	50	200	20	1000	*1.0	10	5	5	500	500	ND	ND	ND	ND
432	69T414	NA	20	10	45	10	10	200	5	ND	20	100	20	1000	*1.0	5	2	NA	500	500	ND	ND	ND	ND
433	69T406	NA	15	10	40	20	20	100	5	ND	20	200	20	1000	5000	5	5	5	500	500	ND	ND	ND	ND
434	69T408	NA	15	10	45	10	10	100	ND	5	20	100	20	1000	5000	5	5	2	500	500	ND	ND	ND	ND
435	69T409	NA	30	35	95	20	50	100	10	ND	50	200	20	1000	*1.0	10	5	5	500	500	ND	1	ND	ND
436	69T411	NA	20	10	50	10	20	100	ND	ND	20	100	20	500	5000	5	2	NA	500	500	ND	ND	ND	ND
437	69T410	NA	15	10	45	20	10	100	5	ND	20	200	20	1000	5000	10	5	5	500	500	ND	ND	ND	ND
438	69T412	NA	20	15	60	20	20	100	10	100	50	500	50	1000	*1.0	10	5	5	500	500	ND	1	50	ND
439	69T413	NA	15	10	35	10	20	100	5	ND	20	200	20	1000	5000	5	5	5	500	500	ND	ND	10	ND
440	69H234	NA	25	10	50	20	10	100	ND	ND	50	200	50	1000	*1.0	10	5	5	500	500	ND	ND	ND	ND
441	69H235	NA	20	10	45	20	10	100	5	ND	50	500	20	1000	*1.0	5	5	5	500	500	ND	1	ND	ND
442	69H236	NA	20	10	45	20	10	ND	ND	ND	50	200	20	1000	*1.0	5	5	5	500	500	ND	ND	ND	ND
443	69H237	NA	20	10	55	20	20	100	5	ND	50	200	20	1000	*1.0	5	5	5	500	500	ND	1	ND	ND
444	69H238	NA	20	15	105	20	10	ND	5	ND	20	200	20	1000	5000	5	5	5	500	500	10	ND	ND	ND
445	69H239	NA	25	10	45	20	10	100	5	ND	50	500	50	1000	*1.0	10	5	5	500	500	ND	1	ND	ND
446	69H240	NA	25	10	45	100	10	ND	ND	ND	50	200	20	1000	5000	5	5	5	500	500	ND	ND	ND	ND
447	69T270	NA	35	15	50	20	10	100	5	ND	50	500	20	1000	*1.0	10	5	5	500	500	ND	ND	ND	ND
0448	69T269	NA	200	15	55	500	10	100	5	1	100	500	50	2000	*1.0	10	5	5	200	200	50	ND	ND	ND
449	69T268	NA	45	15	50	50	50	100	10	1	50	500	50	1000	*1.0	10	5	5	500	500	ND	ND	ND	ND
0450	69T267	NA	80	15	45	200	10	200	5	ND	50	500	50	2000	*1.0	10	5	5	200	200	50	1	ND	ND
0451	69T266	NA	35	15	45	20	10	ND	5	ND	50	200	20	1000	5000	5	5	5	500	500	ND	ND	ND	ND
452	69H140	NA	80	15	50	100	10	100	10	ND	100	500	50	1000	*1.0	10	5	10	100	200	20	1	ND	ND

Zirconium	Lanthanum	Niobium	Scandium	Yttrium	Vanadium	Arsenic	Antimony	Bismuth	Cadmium	Field Test	Stream Width	Location (4)	Organic Content	Sediment Size	Bedrock (4)		Sediments in Stream Bed in Percent (4)	Map No.
200	50	20	20	20	200	ND	50	ND	ND	ND	02	60	B	MD	M	VCLS	VCL+MSED	340
100	ND	20	20	20	100	ND	ND	ND	ND	ND	02	BR	B	MD	M	NO	VCLS	C341
100	ND	20	20	20	100	ND	ND	ND	ND	ND	02	BR	A	MD	M	NO	VCL+MSED	342
100	20	20	20	20	100	ND	ND	ND	ND	ND	02	04	A	MD	M	NO	PORVCL-AMYGVCL	343
100	20	10	20	20	100	ND	ND	ND	ND	ND	02	60	B	MD	M	NO	VCL+MSED	C344
200	20	20	10	20	100	ND	ND	ND	ND	ND	02	60	B	MD	M	NO	VCLS	C345
100	20	20	50	20	200	ND	ND	ND	ND	ND	02	BR	A	MD	M	NO	MIXED	346
200	20	20	20	20	100	ND	ND	ND	ND	ND	02	60	C	MD	M	NO	POR+AMYG VCL	347
100	ND	20	50	20	100	ND	50	5	ND	ND	01	BR	A	MD	M	NO	PORVCL+ AMYGVCL	C348
100	ND	20	50	20	200	ND	ND	ND	ND	ND	02	01	A	MD	M	NO	AMYGVCL-PORVCL	349
100	ND	20	50	20	200	ND	ND	ND	ND	ND	01	BR	A	MD	M	NO	AMYGVCL-PORVCL	350
200	20	20	50	20	200	ND	50	ND	ND	ND	02	60	C	MD	M	NO	POR+AMYG VCL+MSED	351
100	ND	20	10	20	100	ND	ND	ND	ND	ND	01	60	B	MD	M	NO	POR+AMYG VCL	C352
100	ND	50	50	20	100	ND	100	5	ND	ND	01	04	A	MD	M	NO	PORVCL+ AMYGVCL	C353
200	20	20	20	50	100	ND	ND	ND	ND	ND	01	60	B	MD	M	NO	POR+AMYG VCL+MSED	C354
200	20	20	20	20	200	ND	50	ND	ND	ND	01	60	B	MD	M	NO	POR+AMYG VCL	355
100	ND	50	50	20	100	ND	100	5	ND	ND	02	04	A	MD	M	NO	AMYGVCL+ PORVCL MINOR CACO3 STAIN	C356
100	ND	20	50	20	200	ND	50	ND	ND	ND	01	60	C	MD	M	NO	AMYG+POR VCL SOME CACO3 STAIN	357
100	ND	20	50	20	200	ND	50	5	ND	ND	02	06	B	MD	M	NO	VCL+PORVCL	C358
100	20	20	20	20	100	ND	ND	ND	ND	ND	01	60	B	MD	M	NO	POR+AMYG VCL	C359
200	20	20	20	20	100	ND	ND	ND	ND	ND	01	60	B	MD	M	NO	POR+AMYG VCL	360
100	20	20	20	20	100	ND	ND	ND	ND	ND	02	BR	A	MD	M	NO	VCL-MSED	361
100	20	10	20	20	100	ND	ND	ND	ND	ND	01	01	B	MD	M	NO	VCL-AMYGVCL	362
100	ND	20	20	20	100	ND	ND	5	ND	ND	02	01	B	MD	M	VCL	VCL+MSED ARGL	363
100	20	20	50	20	100	ND	50	ND	ND	ND	03	01	B	MD	M	VCL	VCL MSED	364
200	20	20	20	20	100	ND	ND	ND	ND	ND 3	02	99	B	MD	M	NO	VCL MSED	365
100	ND	20	20	20	100	ND	ND	ND	ND	ND	12	01	B	MD	M	VCL	VCL+MSED	366
200	ND	20	50	20	200	ND	50	ND	ND	ND	02	01	B	MD	M	VCL	VCL+MSED	367
100	ND	20	50	20	100	ND	50	ND	ND	ND	03	01	B	MD	M	VCL	VCL+MSED	368
200	20	20	20	20	100	ND	ND	ND	ND	ND	02	60	B	MD	M	NONE	VCL-MSED	369
100	20	20	50	20	100	ND	ND	ND	ND	ND	02	BR	A	MD	M	GWKE	PORVCL-MSED	370
200	ND	50	20	20	100	ND	100	5	ND	ND	02	BR	A	MD	M	VCL	VCL+MSED	371
100	ND	20	50	20	100	ND	ND	ND	ND	ND	02	01	B	MD	M	VCL	MIX	372
100	ND	20	20	20	100	ND	ND	ND	ND	ND	02	60	B	MD	M	VCL	MSED+VCL	373
200	20	20	20	20	100	ND	ND	ND	ND	ND	02	60	B	MD	M	VCL	VCL-MSED GENERALLY LIGHT	374
100	ND	20	50	20	100	ND	ND	ND	ND	ND	02	BR	C	MD	M	VCL	VCL-MSED	375
200	20	20	20	20	100	ND	ND	ND	ND	ND	02	20	B	MD	M	VCL	VCL+MSED	376
200	20	50	20	20	100	ND	ND	ND	ND	ND	03	01	A	MD	M	VCL	VCL+MSED	377
200	20	20	20	20	100	ND	50	ND	ND	ND	02	20	B	MD	M	AGGL	VCL-MSED	378
100	ND	20	20	20	100	ND	ND	ND	ND	ND	0	3	A	LD	C		LST PORPH INTRUSIVE	379
100	ND	10	20	20	100	ND	ND	ND	ND	ND	0	1	A	MD	C			380
200	20	20	20	20	100	ND	ND	ND	ND	ND	0	5	A	LD	M		LST,INTERMED IGN,AGGLOM,BASALT,AMYGL	381
200	ND	20	20	50	100	ND	ND	5	ND	ND	0						FELS BASALT LST AGGLOM AMYGL GR F GR BLUE IGN	382
200	20	20	50	50	100	ND	50	ND	ND	ND	0	4	A	MD	M		FELS, AGGLOM,AMYGL,BASALTS	383
200	100	50	20	50	100	ND	ND	5	ND	ND	0	2	A	FI	M		F GR VCL	384
200	20	20	50	20	200	ND	50	ND	ND	ND	0	2	A	LD	M		F.GR. (LICHEN COVERED)	385
100	ND	20	20	20	100	ND	ND	5	ND	ND	0	2	A	FI	C		F GR VCL AMYGL	386
100	20	20	50	20	100	ND	ND	ND	ND	ND	0	BR	A	MD	M		F.GR.VCL,PORPHRY,AGGLOM	387
200	20	20	20	20	100	ND	50	ND	ND	ND	0	1	A	LD	M		UNSORTED GLACIAL MORAINE	388
200	ND	NA	20	20	100	ND	ND	5	ND	ND	0	20	B	LD	C		GLACIAL MORAINE	389
200	20	20	20	20	200	ND	ND	ND	ND	ND		1	A	LD	C		FELSIC,BASIC,AMYGL	390
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	1	A	LD	M		FELSITE MAFIC AMYGL	391
200	ND	20	20	20	200	ND	ND	ND	ND	ND	0	1	A	LD	M		AS 427	392
100	ND	NA	20	20	100	ND	ND	ND	ND	ND	0	6	A	LD	M		AS 427	393
200	ND	NA	20	50	100	ND	ND	ND	ND	ND	0	1	A	LD	M		SEE 427	394
200	20	20	20	20	100	ND	ND	ND	ND	ND	0	2	A		C		VCL+M SED	395
200	ND	20	50	20	100	ND	ND	ND	ND	ND	0	BR	A		C		HFLS AFTER ARGL (RUSTY) + AMYGRCL+VCL	396
200	ND	20	20	20	100	ND	ND	ND	ND	ND	0	6	B	MD	M		VCL+M SED	397
200	ND	20	20	20	100	ND	ND	ND	ND	ND	0	12	B	MD	M		VCL	398
200	ND	20	50	50	200	ND	50	ND	ND	ND	0	BR	A	MD	C		VCL	399
200	20	20	20	20	100	ND	ND	ND	ND	ND	0	2	A	MD	C		VCL	400
200	20	20	50	50	200	ND	ND	ND	ND	ND	0	7	B	MD	M		MORAINE MIX	401
200	20	20	20	20	100	ND	ND	ND	ND	ND	0	4	A	MD	C		VCL M SED	402
100	ND	20	20	20	100	ND	50	5	ND	ND	0	3	A	MD	M		VCL+M SED	403
200	ND	20	20	20	100	ND	ND	ND	ND	ND	0	6	B	MD	C		VCL	404
100	ND	20	20	20	100	ND	ND	5	ND	ND	0	7	B	MD	C		VCL+M SED	405
200	ND	20	20	20	100	ND	50	ND	ND	ND	0	14	B	MD	M		VCL M SED	406
100	20	20	20	20	100	ND	ND	ND	ND	ND	0	3	A	MD	C		VCL+M SED	407
200	ND	20	20	20	100	ND	50	ND	ND	ND		3	A	MD	M		VCL M SED	408
100	ND	20	20	20	100	ND	ND	5	ND	ND	0	2	A	MD	C		VCL+M SED	409
100	ND	20	20	20	100	ND	ND	ND	ND	ND	0	6	B		M		VCL	410
200	ND	20	20	20	100	ND	ND	ND	ND	ND	0							411
200	ND	20	20	20	100	ND	ND	ND	ND	ND								412
100	ND	20	20	20	100	ND	50	ND	ND	ND	0	2	A		C		VCL	413
100	ND	20	20	20	100	ND	ND	ND	ND	ND	0	2	B	MD	M		VCL+M SED MINOR CACO IN SEVERAL AMYG VCL	414
200	ND	20	20	20	100	ND	ND	ND	ND	ND	00	04	B	MD	M	NONE	VCL	415
100	ND	20	20	20	100	ND	ND	5	ND	ND	0	6	B	MD	M		VCL+M SED	416
200	20	20	20	20	100	ND	ND	ND	ND	ND	0	BR	A	MD	M		VCL MOSTLY POR AND AGGL	417
100	ND	20	20	20	100	ND	ND	ND	ND	ND	0	BR	A	MD	M		VCL MOSTLY POR +AGGL	418
100	ND	NA	10	10	100	ND	ND	ND	ND	ND	0	2	A	LD	M		F GR VCL AMYGL AGLOM	419
200	20	20	20	20	100	ND	ND	ND	ND	ND	0	3	A		M		FIGR VCL,AMYG,AGLOM	420
100	ND	NA	20	20	100	ND	ND	ND	ND	ND	0	2	A	LD	C		F GR VCL AGGLOM AMYGL	421
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	7	2	A	LD	M		F GR VCL AMGL, PORHRY, AGLAM	422
200	ND	NA	20	20	100	ND	ND	5	ND	ND	0	3	A	LD	M		F GR VCL AMYGL AGGLOM TUFF	423
200	20	20	20	20	100	ND	ND	ND	ND	ND	0	5	A	LD	C		F.GR. VCL,AGGLOM,AMYGL.	424
100	ND	NA	20	10	100	ND	ND	5	ND	ND	0	2	A	MD	C		F GR VCL WEATHERED AMYGL	425
100	20	20	20	20	100	ND	ND	ND	ND	ND	0	2	A	MD	C		F.GR.VCL	426
200	ND	20	20	20	100	ND	100	ND	ND	ND	0	4	A	LD	C		FIGR,VCL,AMYGL,AGGLAM	427
200	20	20	20	20	100	ND	ND	ND	ND	ND	0	3	B	MD	M		VCL AMYG VCL MINOR AMTS AMYGS WITH CACO3	428
100	ND	20	20	20	100	ND	ND	5	ND	ND	0	5	B	MD	C		VCL	429
100	ND	20	20	20	100	ND	ND	ND	ND	ND	0	4	A	LD	M		VCL F GR AMYGL	430
200	ND	20	20	20	100	ND	ND	ND	ND	ND	0	2	A	LD	M		F. GR. VCL AMGYL CONGLAM	431
100	ND	NA	20	20	100	ND	ND	ND	ND	ND	0	4	A	LD	C		F GR VCL AMYGL CONGLOMER	432
200	ND	20	20	20	100	ND	ND	ND	ND	ND	0	3	A	LD	M		F. GR. VCL AMYGL PORPH	433
100	ND	20	10	20	100	ND	ND	ND	ND	ND	0	3	A	LD	M		F GR VCL AMYGL	434
200	20	20	20	20	100	ND	ND	ND	ND	ND	0	4	A	LD	M		F. GR. VCL AMYGL (SMALL()	435
200	ND	NA	20	10	100	ND	ND	5	ND	ND	0	4	A	LD	M		F GR VCL AMYGL	436
100	ND	20	20	10	100	ND	ND	ND	ND	ND	0	4	A	LD	M		F GR. VCL AMYGL	437
200	20	20	20	20	100	ND	50	ND	ND	ND	0		A	LD	M		F.GR. AMGYL	438
200	ND	20	20	20	100	ND	50	ND	ND	ND	0	4	A	LD	M		F.GR.VCL,AMYGL	439
100	ND	20	20	20	100	ND	ND	ND	ND	ND	0	2	A	MD	C		VCL	440
200	ND	20	20	20	100	ND	ND	ND	ND	ND	1	2	A	MD	C		VCL	441
100	ND	20	20	20	100	ND	ND	ND	ND	ND	0	2	A	MD	C		VCL	442
200	ND	20	20	20	100	ND	ND	ND	ND	ND	0	3	B	MD	C		VCL	443
100	ND	20	20	20	100	ND	ND	ND	ND	ND	0	2	A	MD	C		VCL	444
200	ND	20	20	20	100	ND	ND	ND	ND	ND	0	2	A	MD	C		VCL	445
100	ND	20	20	20	100	ND	ND	ND	ND	ND	0	2	B	MD	C		VCL	446
200	ND	20	20	20	100	ND	ND	ND	ND	ND	02	60	B	MD	M	NO	AMYG+PORVCL	447
100	ND	50	50	20	200	ND	ND	5	ND	ND	01	08	A	MD	M	NO	POR+AMYG VCL	C448
200	ND	20	50	20	200	ND	ND	ND	ND	ND	01	60	B	MD	M	NO	AMYG+POR VCL MINOR CACO3 STAIN	449
100	ND	50	50	50	200	ND	ND	5	ND	ND	01	BR	A	MD	M	NO	POR+AMYG VCL	C450
100	ND	20	20	20	100	ND	50	5	ND	ND	02	60	B	MD	M	NO	AMYG+POR VCL	C451
100	ND	20	50	50	200	ND	50	ND	ND	ND	01	08	B	MD	M	NO	VCL	452

Map No.	Sample No.	Gold (3)	Copper (3)	Lead (3)	Zinc (3)	Copper	Lead	Zinc	Molybdenum	Silver	Cobalt	Chromium	Nickel	Manganese	Titanium	Iron (%)	Magnesium (%)	Calcium (%)	Barium	Strontium	Boron	Beryllium	Tin	Tungsten
453	69T265	NA	35	15	50	50	20	100	10	ND	50	500	50	1000	*1.0	10	5	5	500	500	ND	ND	ND	ND
0454	69T264	NA	40	15	50	20	10	ND	5	ND	50	200	20	1000	5000	5	2	5	500	500	ND	ND	ND	ND
455	69T263	NA	45	15	50	50	20	100	5	ND	50	500	50	1000	*1.0	10	5	5	500	500	ND	ND	ND	ND
0456	69H139	NA	105	15	55	100	10	100	5	ND	50	500	50	1000	*1.0	10	5	5	200	200	ND	ND	ND	ND
0457	69H137	NA	215	15	60	200	10	200	10	ND	50	500	50	2000	*1.0	10	5	5	100	100	10	2	ND	ND
0458	69H138	NA	175	10	50	200	10	100	5	ND	50	500	50	1000	*1.0	10	5	5	100	100	10	1	ND	ND
0459	69T262	NA	55	15	50	50	10	100	5	ND	50	500	20	1000	*1.0	10	5	5	500	500	ND	ND	ND	ND
0460	69T271	NA	35	10	40	50	10	100	5	ND	50	500	20	2000	*1.0	5	5	5	200	500	ND	ND	ND	ND
0461	69H136	NA	140	10	50	100	10	100	5	ND	50	500	50	1000	*1.0	10	5	5	100	100	10	ND	ND	ND
462	69T261	NA	35	20	55	100	10	100	10	ND	50	500	50	1000	*1.0	10	5	5	500	500	10	1	ND	ND
463	69H135	NA	145	15	50	100	10	200	5	ND	50	500	50	1000	*1.0	10	5	5	200	200	ND	1	ND	ND
0464	69T260	NA	45	15	55	50	20	100	5	ND	50	500	20	2000	*1.0	10	5	5	500	500	10	1	ND	ND
465	69H134	NA	145	15	45	100	10	100	5	ND	50	500	50	1000	*1.0	10	5	5	200	200	10	1	ND	ND
466	69T259	NA	45	15	55	50	10	100	10	ND	50	500	50	1000	*1.0	10	5	5	500	500	10	ND	ND	ND
467	69H133	NA	85	15	60	50	10	100	5	ND	50	200	20	1000	5000	5	5	5	500	200	10	1	ND	ND
468	69T258	NA	40	15	50	100	10	100	5	ND	50	500	20	1000	5000	10	5	5	500	500	ND	ND	ND	ND
469	69T257	NA	35	20	50	50	20	100	10	ND	50	500	50	1000	*1.0	10	5	5	500	500	10	ND	ND	ND
470	69T256	NA	80	15	55	100	10	100	5	ND	50	500	50	1000	*1.0	10	5	5	200	200	10	ND	ND	ND
471	69T255	NA	60	15	55	50	20	100	5	ND	50	500	50	1000	*1.0	10	5	5	500	500	10	ND	ND	ND
472	69T254	NA	150	20	55	200	10	100	5	ND	50	500	50	1000	*1.0	10	5	5	200	200	20	1	ND	ND
473	69T253	NA	110	20	90	200	10	100	10	ND	50	2000	500	1000	5000	10	5	10	1000	200	100	ND	ND	ND
474	69T252	NA	70	15	45	100	10	100	5	ND	100	2000	500	1000	5000	10	10	10	200	100	50	ND	ND	ND
475	69H132	NA	135	15	60	100	10	100	5	ND	50	500	50	1000	*1.0	10	5	5	200	200	10	ND	ND	ND
476	69T251	NA	150	15	40	200	10	ND	5	ND	50	1000	100	1000	5000	10	5	10	100	100	20	ND	ND	ND
477	69T250	NA	110	15	35	20	10	100	ND	ND	100	5000	500	1000	2000	10	10	20	100	50	50	2	ND	ND
478	69T249	NA	120	15	75	200	10	ND	5	ND	50	1000	200	1000	5000	10	5	5	200	200	20	ND	ND	ND
479	69T248	NA	135	15	55	200	10	ND	5	ND	50	1000	100	1000	5000	10	5	10	100	100	10	ND	ND	ND
480	69T247	NA	85	15	55	100	10	100	5	ND	100	5000	500	1000	5000	10	10	10	20	100	10	ND	ND	ND
481	69T246	NA	85	15	45	100	10	ND	ND	ND	50	1000	200	1000	5000	10	5	10	100	200	10	ND	ND	ND
482	69T245	NA	165	15	55	200	10	100	5	ND	50	500	50	1000	*1.0	10	5	5	200	100	10	ND	ND	ND
483	69T244	NA	170	15	50	200	10	100	5	ND	50	500	50	1000	*1.0	10	5	5	100	100	10	ND	ND	ND
484	69T243	NA	140	20	50	200	10	ND	5	ND	50	1000	200	1000	5000	10	5	5	100	100	10	ND	ND	ND
485	69H119	NA	100	15	55	100	10	100	10	ND	50	500	20	1000	*1.0	10	5	10	200	200	10	1	ND	ND
486	69T216	NA	80	15	55	100	10	100	5	ND	50	500	50	1000	*1.0	10	5	5	100	200	10	ND	ND	ND
487	69T217	NA	80	15	50	100	10	100	10	ND	100	1000	50	1000	*1.0	10	5	10	100	100	10	ND	ND	ND
488	69T218	NA	90	15	50	200	10	100	5	ND	50	500	50	1000	*1.0	10	5	5	100	100	10	ND	ND	ND
0489	69T287	NA	120	10	60	100	10	100	5	ND	50	500	50	1000	*1.0	5	5	5	50	200	10	1	ND	ND
490	69H161	NA	40	25	100	50	20	100	5	ND	20	200	20	1000	5000	5	5	5	200	200	100	ND	ND	ND
491	69T188	NA	55	20	85	50	20	100	5	ND	50	500	50	1000	5000	10	5	5	500	200	100	ND	ND	ND
492	69T289	NA	60	15	90	50	10	100	5	ND	50	200	20	1000	5000	10	5	5	200	100	50	ND	ND	ND
493	69T290	NA	75	10	70	50	10	100	10	ND	50	500	100	1000	*1.0	10	5	5	500	200	20	ND	ND	ND
0494	69T291	NA	50	20	105	50	20	100	5	ND	20	100	20	1000	5000	10	2	5	500	200	50	1	ND	ND
0495	69T292	NA	50	15	95	50	10	100	5	ND	20	100	20	1000	5000	5	2	2	500	200	50	1	ND	ND
496	69T293	NA	50	15	90	50	20	100	10	ND	50	100	20	1000	*1.0	10	2	2	500	200	50	1	ND	ND
497	69T296	NA	45	10	65	50	10	100	5	ND	50	500	20	1000	*1.0	10	5	5	500	500	10	ND	ND	ND
0498	69T295	NA	95	10	60	100	10	100	5	ND	50	1000	50	1000	*1.0	10	5	5	500	200	20	ND	ND	ND
499	69H113	NA	40	25	80	50	10	100	5	ND	20	200	20	1000	2000	5	2	5	500	200	100	1	ND	ND
0500	69T294	NA	75	10	80	100	10	100	5	ND	50	500	50	1000	*1.0	10	5	5	500	500	20	ND	ND	ND
501	69H170	NA	45	15	65	50	10	100	10	ND	50	1000	50	1000	*1.0	10	5	5	500	200	10	1	ND	ND
502	69H171	NA	75	20	75	50	10	100	5	ND	50	500	100	1000	*1.0	10	5	5	500	200	20	1	ND	ND
503	69T219	NA	65	20	100	100	10	100	10	ND	100	1000	200	1000	*1.0	10	5	5	1000	200	50	1	ND	ND
504	69H120	NA	80	15	85	100	10	100	10	ND	50	1000	200	1000	5000	5	5	5	500	200	20	1	ND	ND
505	69T220	NA	65	20	110	100	10	100	10	ND	50	1000	200	1000	*1.0	10	5	5	1000	200	50	ND	ND	ND
506	69H121	NA	85	10	60	100	10	100	10	ND	50	500	20	1000	*1.0	10	5	5	200	200	20	2	ND	ND
507	69T221	NA	75	20	115	100	10	100	10	ND	100	2000	200	1000	*1.0	10	5	5	1000	200	50	ND	ND	ND
508	69T222	NA	75	20	115	100	10	100	5	ND	50	500	200	1000	*1.0	10	5	5	1000	200	20	ND	ND	ND
509	69T223	NA	70	20	115	50	10	100	5	ND	50	1000	200	1000	5000	5	5	5	1000	200	50	ND	ND	ND
510	69H122	NA	110	10	55	200	10	100	10	ND	100	1000	50	1000	*1.0	10	5	5	100	200	10	2	ND	ND
511	69T224	NA	20	25	90	20	20	100	5	ND	20	200	20	500	5000	5	2	5	500	200	100	1	ND	ND
512	69T225	NA	75	20	105	100	10	100	5	ND	50	1000	200	1000	5000	5	5	5	1000	100	50	ND	ND	ND
513	69T226	NA	20	20	85	20	20	100	5	ND	20	200	20	500	5000	5	2	5	500	200	100	2	ND	ND
514	69H123	NA	130	10	55	200	10	100	5	ND	50	1000	50	1000	*1.0	10	5	5	100	200	10	ND	ND	ND
515	69T227	NA	25	15	95	20	20	100	5	ND	10	200	20	500	5000	5	1	5	500	200	50	1	ND	ND
516	69T228	NA	20	20	90	20	20	100	10	ND	20	200	20	500	5000	5	1	5	500	200	100	1	ND	ND
517	69H124	NA	150	15	55	200	10	100	5	ND	50	500	50	1000	*1.0	10	5	5	100	200	10	1	ND	ND
518	69T229	NA	75	15	100	100	20	100	5	ND	50	500	200	1000	*1.0	5	5	2	500	200	20	ND	ND	ND
519	69H125	NA	100	20	105	100	10	100	5	ND	50	500	100	1000	5000	10	5	5	500	200	10	ND	ND	ND
520	69T230	NA	20	10	95	20	20	100	10	ND	20	200	20	500	5000	5	1	5	500	200	100	1	ND	ND
521	69T231	NA	25	15	90	20	20	100	5	ND	20	200	20	500	5000	5	1	5	500	200	100	ND	ND	ND
522	69H126	NA	120	15	65	100	10	100	5	ND	50	500	200	1000	5000	10	5	5	200	200	10	ND	ND	ND
523	69H127	NA	130	15	60	100	10	200	5	ND	100	500	200	1000	*1.0	10	5	5	200	200	10	ND	ND	ND
524	69T232	NA	90	20	85	100	20	100	5	ND	50	1000	200	1000	*1.0	10	5	5	500	200	20	ND	ND	ND
525	69T233	NA	25	15	90	20	20	100	10	ND	20	200	50	500	5000	5	2	5	500	200	100	1	ND	ND
526	69H128	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
527	69T234	NA	80	15	90	100	20	100	5	ND	50	1000	200	1000	*1.0	10	5	5	500	200	20	ND	ND	ND
528	69T235	NA	75	20	100	100	10	100	10	ND	50	2000	500	1000	*1.0	10	5	5	500	200	20	1	ND	ND
529	69H129	NA	120	15	75	100	10	200	10	ND	50	500	100	1000	*1.0	10	5	5	500	200	10	ND	ND	ND
530	69H130	NA	140	20	75	100	10	200	10	ND	50	500	200	1000	*1.0	10	5	5	500	200	10	ND	ND	ND
531	69T236	NA	75	25	100	100	20	100	10	ND	50	2000	500	1000	*1.0	10	5	5	500	200	50	ND	ND	ND
532	69T237	NA	80	25	100	100	20	100	5	ND	50	1000	200	1000	*1.0	10	5	5	500	200	20	ND	ND	ND
533	69H131	NA	110	20	125	100	10	200	20	ND	20	200	20	1000	5000	5	5	5	2000	100	20	ND	ND	ND
534	69T238	NA	80	20	90	100	10	100	5	ND	50	2000	500	1000	*1.0	10	5	5	500	200	50	ND	ND	ND
535	69T239	NA	90	20	90	200	20	100	5	ND	50	1000	500	1000	*1.0	10	5	5	500	200	20	ND	ND	ND
536	69T240	NA	90	25	100	50	20	100	5	ND	50	1000	200	1000	5000	10	5	5	500	200	20	ND	ND	ND
537	69T241	NA	85	25	170	50	20	200	20	ND	50	500	100	1000	*1.0	10	5	5	2000	200	20	ND	10	ND
538	69T242	NA	65	25	200	50	20	200	50	ND	50	200	100	1000	5000	5	5	2	2000	200	50	ND	ND	ND
539	69T297	NA	15	15	60	10	20	100	10	ND	20	200	20	200	5000	2	1	5	200	500	50	ND	ND	ND
540	69T298	NA	20	20	80	20	20	100	10	ND	20	200	20	200	5000	5	2	5	500	200	100	1	ND	ND
0541	69T299	NA	15	15	70	20	ND	100	5	ND	20	100	20	200	5000	2	1	5	500	200	50	ND	ND	ND
0542	69T300	NA	25	15	75	20	20	100	5	ND	20	100	20	200	5000	2	1	5	500	500	50	ND	ND	ND
543	69T301	NA	20	15	70	20	20	100	5	ND	20	200	20	200	5000	5	2	10	200	500	50	ND	ND	ND
544	69T302	NA	20	15	70	20	20	100	5	ND	20	200	50	500	5000	2	2	10	200	200	50	ND	ND	ND
545	69H166	NA	25	10	65	20	10	100	10	ND	50	200	20	1000	*1.0	5	5	5	500	500	ND	1	ND	ND
0546	69H165	NA	105	15	70	100	10	100	5	ND	50	200	20	1000	*1.0	10	5	2	200	500	10	2	ND	ND
0547	69H164	NA	110	15	55	100	10	100	5	ND	50	500	50	1000	*1.0	10	5	5	100	200	10	1	ND	ND
0548	69H163	NA	95	15	60	100	10	100	5	ND	50	500	50	2000	1000	10	5	5	100	200	10	1	ND	ND
0549	69H162	NA	90	15	60	100	10	100	5	ND	50	200	20	1000	*1.0	10	5	2	200	200	20	ND	ND	ND
550	69T307	NA	85	10	60	100	10	100	10	ND	50	200	50	1000	*1.0	10	5	5	200	200	10	1	10	ND
0551	69T306	NA	100	10	50	100	10	100	5	ND	50	500	50	1000	*1.0	10	5	5	100	200	10	ND	ND	ND
0552	69T305	NA	115	10	65	200	10	100	5	ND	50	200	50	1000	*1.0	10	2	2	100	100	10	ND	ND	ND
0553	69T304	NA	135	10	65	200	10	100	5	ND	50	200	50	1000	*1.0	10	5	5	100	200	10	1	ND	ND
0554	69T303	NA	90	10	60	100	10	100	5	ND	50	500	50	1000	*1.0	10	5	5	200	200	10	ND	ND	ND
555	69H168	NA	70	20	100	100	20	100	10	ND	50	500	50	1000	*1.0	10	5	2	500	200	20	ND	ND	ND
556	69H167	NA	60	15	70	100	10	100	10	ND	50	500	50	1000	*1.0	10	5	5	200	200	20	1	ND	ND
557	69H169	NA	70	15	60	100	10	100	10	ND	50	500	50	1000	*1.0	10	5	5	200	200	10	1	ND	ND
0558	69T308	NA	95	10	60	100	10	100	5	ND	50	500	50	1000	*1.0	10	5	5	200	200	50	ND	ND	ND
0559	69T309	NA	110	10	60	100	10	100	5	ND	50	500	50	1000	*1.0	10	5	5	100	200	20	ND	ND	ND
560	69T310	NA	60	15	65	50	20	100	10	ND	50	500	50	1000	*1.0	10	5	10	500	200	10	1	10	ND
561	69T311	NA	105	10	65	100	10	100	20	ND	20	1000	100	1000	5000	5	2	5	200	200	20	ND	10	ND
0562	69T312	NA	120	10	65	100	10	100	5	ND	50	500	50	1000	*1.0	10	5	5	100	200	100	ND	ND	ND
0563	69T313	NA	120	10	60	100	10	100	5	ND	50	500	50	1000	*1.0	10	5	5	100	200	20	ND	ND	ND
564	69T315	NA	120	10	60	100	10	200	10	ND	50	500	50	1000	*1.0	10	5	5	100	200	20	1	ND	ND
0565	69T314	NA	120	10	60	100	10	100	5	ND	50	1000	50	1000	*1.0	10	5	5	200	200	50	1	ND	ND

Zirconium	Lanthanum	Niobium	Scandium	Yttrium	Vanadium	Arsenic	Antimony	Bismuth	Cadmium	Field Test	Stream Width	Location (4)	Organic Content	Sediment Size	Bedrock (4)		Sediments in Stream Bed in Percent (4)	Map No.
200	ND	20	50	20	100	ND	ND	ND	ND	ND	02	60	B	MD	M	ND	POR+AMYG VOL MINOR CACO3 STAIN	453
100	ND	20	20	20	100	ND	ND	ND	ND	ND	02	20	B	MD	M	ND	VOL+MSED	0454
200	ND	20	20	20	200	ND	ND	ND	ND	ND	01	08	B	MD	M	VOL	VOL+MSED	455
100	ND	20	50	20	100	ND	ND	5	ND	ND	01	DR	A	MD	F	VOL	PORVOL +AMYGVOL	0456
100	ND	50	50	50	200	ND	ND	5	ND	ND	01	DR	A	MD	M	ND	PORVOL+ AMYGVOL	0457
100	ND	50	50	50	100	ND	50	ND	ND	ND	01	08	B	MD	M	VOL	PORVOL+ AMYGVOL	0458
100	ND	20	20	20	100	ND	50	5	ND	ND	01	60	B	MD	M	ND	VOL+MSED	0459
100	ND	20	20	20	100	ND	50	5	ND	ND	02	01	A	MD	F	ND	AMYG+POR VOL	0460
100	ND	20	50	20	200	ND	ND	ND	ND	ND	01	DR	A	MD	M	ND	PORVOL+ AMYGVOL	0461
200	ND	20	20	20	200	ND	ND	ND	ND	ND	02	60	B	MD	M	ND	VOL+MSED + AMYG VOL	462
100	ND	50	50	50	100	ND	ND	5	ND	ND	01	DR	A	MD	M	ND	PORVOL+AMYGVOL	463
100	ND	20	50	50	100	ND	50	5	ND	ND	01	60	C	MD	M	ND	VOL+MSED	0464
100	ND	50	50	50	100	ND	50	ND	ND	ND	01	DR	A	MD	M	ND	PORVOL+AMYGVOL	465
200	ND	20	50	20	200	ND	ND	ND	ND	ND	01	60	C	MD	M	NONE	VOL+MSED	466
200	ND	20	20	20	100	ND	ND	ND	ND	ND	01	DR	A	MD	M	ND	PORVOL-AMYGVOL-MSED	467
100	ND	20	50	20	100	ND	ND	5	ND	ND	01	60	C	MD	M	ND	VOL+MSED	468
200	ND	20	20	20	100	ND	ND	ND	ND	ND	01	20	C	MD	M	ND	VOL+MSED	469
100	ND	20	50	50	100	ND	50	5	ND	ND	01	DR	A	MD	M	ND	POR VOL+ MSED	470
200	ND	20	50	20	200	ND	ND	ND	ND	ND	02	DR	A	MD	M	ND	90VOL 5 MSED 5 LS	471
100	ND	20	50	20	100	ND	50	5	ND	ND	01	01	B	MD	M	VOL	LS+VOL	472
50	ND	20	50	20	100	ND	200	5	ND	ND	01	01	A	MD	M	ND	75 VOL 25 LS	473
50	ND	20	100	10	200	ND	200	ND	ND	ND	01	DR	A	MD	M	LS	POR+AMYG VOL+LS	474
100	ND	50	50	20	200	ND	ND	5	ND	ND	01	DR	A	MD	M	VOL	AMYGVOL+PORVOL+MSED	475
50	ND	20	50	20	100	ND	100	5	ND	ND	01	01	B	MD	M	ND	AMYG+POR VOL V.V. MINOR CACO3 STAIN	476
ND	ND	10	100	10	100	ND	1000	ND	ND	ND	01	DR	B	MD	M	ND	POR+AMYG VOL	477
50	ND	20	50	20	100	ND	100	5	ND	ND	02	DR	A	MD	F	ND	POR+AMYG VOL	478
50	ND	20	50	20	100	ND	100	5	ND	ND	01	DR	B	MD	M	ND	POR+AMYG VOL	479
50	ND	20	100	10	200	ND	500	ND	ND	ND	02	08	B	MD	M	ND	POR+AMYG VOL SOME CACO3 STAIN	480
20	ND	20	50	20	100	ND	100	5	ND	ND	01	DR	A	MD	M	ND	POR+AMYG VOL	481
100	ND	20	50	20	200	ND	50	ND	ND	ND	02	DR	B	MD	M	ND	POR+AMYG VOL	482
100	ND	20	50	20	200	ND	50	5	ND	ND	02	DR	C	FI	M	ND	AMYG+POR VOLW/MINOR CACO3 STAIN	483
50	ND	20	50	20	200	ND	200	5	ND	ND	02	DR	B	MD	M	ND	POR+AMYG VOL	484
200	ND	50	50	20	200	ND	100	5	ND	ND	03	08	B	MD	M	ND	AMYG+POR VOL SOME CACO3 STAIN	485
100	ND	20	50	20	200	ND	50	5	ND	ND	19	08	B	MD	M	VOL	VOL+AMGY VOL	486
100	ND	20	50	20	200	ND	ND	ND	ND	ND	16	08	B	MD	M	VOL	AMYG VOL	487
100	ND	20	50	20	200	ND	50	5	ND	ND	20	01	B	MD	M	ND	POR+AMYG VOL W/SOME CACO3 STAIN	488
100	ND	20	50	20	200	ND	50	5	ND	ND	02	DR	A	MD	M	ND	POR+AMYG VOL	0489
200	20	20	20	20	100	ND	ND	ND	ND	ND	02	04	A	MD	M	VOLS	AMYGVOL-MSED	490
200	20	20	50	20	200	ND	ND	ND	ND	ND	01	DR	A	MD	M	ND	POR + AMYG VOL	491
100	20	20	20	20	100	ND	ND	ND	ND	ND	01	DR	A	MD	M	VOLS	AMYG+POR VOLS	492
200	ND	20	50	20	200	ND	50	ND	ND	ND	01	DR	A	FI	M	ND	POR+AMYG VOLS	493
200	20	20	20	20	100	ND	ND	ND	ND	ND	02	DR	A	MD	M	ND	VOL+MSED	0494
200	20	20	20	20	100	ND	ND	5	ND	ND	01	DR	A	MD	M	ND	PORVOLS	0495
500	20	20	20	50	100	ND	ND	ND	ND	ND	02	DR	A	MD	M	VOL	VOL	496
200	ND	20	20	20	100	ND	50	ND	ND	ND	01	DR	A	MD	M	ND	VOLS+MSED	497
100	ND	20	50	20	100	ND	100	5	ND	ND	02	DR	A	MD	M	ND	POR+AMYG VOL	0498
100	ND	20	20	20	100	ND	ND	ND	ND	ND	02	01	A	MD	M	ND	MIX	499
100	ND	20	50	20	100	ND	50	5	ND	ND	02	DR	A	MD	M	ND	POR+AMYG VOL	0500
200	ND	20	50	20	200	ND	100	ND	ND	ND	02	02	A	MD	M	DIKE	MIX	501
200	ND	20	50	20	200	ND	100	ND	ND	ND	01	02	A	MD	M	ND	MIX	502
100	ND	20	50	20	200	ND	200	ND	ND	ND	03	08	B	MD	M	ND	VOL MSED	503
100	ND	20	50	20	100	ND	100	ND	ND	ND	05	08	B	MD	M	VOL	VOL-MSED	504
100	ND	20	50	20	100	ND	100	5	ND	ND	04	08	B	MD	M	ND	VOL	505
100	ND	20	50	20	200	ND	50	ND	ND	ND	05	DR	A	MD	M	ND	VOL-MSED	506
100	ND	20	50	20	200	ND	200	ND	ND	ND	09	08	B	MD	M	ND	VOL	507
100	ND	20	50	20	100	ND	100	ND	ND	ND	03	08	B	MD	M	ND	VOL	508
200	20	20	50	20	100	ND	100	ND	ND	ND	03	20	B	MD	M	VOL	VOL-MSED	509
200	ND	50	50	50	200	ND	100	5	ND	ND	06	DR	A	MD	M	ND	PORVOL+BASALT	510
200	50	20	10	20	100	ND	ND	ND	ND	ND	03	02	B	MD	M	VOL	VOL	511
100	ND	20	20	20	100	ND	100	ND	ND	ND	03	08	B	MD	M	ND	VOL	512
200	50	20	10	20	100	ND	ND	ND	ND	ND	05	01	B	MD	M	VOL	VOL	513
200	ND	50	50	20	200	ND	100	5	ND	ND	09	01	A	MD	M	ND	BASALT	514
200	50	20	10	20	100	ND	ND	ND	ND	ND	03	01	B	MD	M	VOL	VOL+MSED	515
200	50	20	10	20	100	ND	ND	ND	ND	ND	03	01	B	MD	M	VOL	VOL	516
200	ND	50	50	20	200	ND	100	5	ND	ND	03	DR	A	MD	M	ND	BASALT+PORVOL	517
100	ND	20	20	20	100	ND	100	5	ND	ND	04	20	B	MD	M	VOL	VOL	518
100	ND	20	20	20	100	ND	100	ND	ND	ND	06	DR	A	MD	M	ND	PORVOL+BASALT	519
200	50	20	10	20	100	ND	ND	ND	ND	ND	03	01	B	MD	M	ND	VOL-MSED	520
200	50	20	10	20	100	ND	ND	ND	ND	ND	02	01	B	MD	M	ND	VOL MSED	521
100	ND	50	50	20	100	ND	100	5	ND	ND	09	DR	A	MD	M	ND	VOL+PORVOL+AMYGVOL	522
100	ND	20	50	20	200	ND	100	ND	ND	ND	01	DR	A	MD	M	ND	VOL DK+PORVOL	523
100	ND	20	50	20	100	ND	200	5	ND	ND	05	20	B	MD	M	ND	VOL+MSED	524
200	20	20	20	20	100	ND	ND	ND	ND	ND	03	08	B	MD	M	VOL	VOL MSED	525
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	02	01	B	MD	M		VOL+DIKE	526
100	ND	20	50	20	100	ND	200	5	ND	ND	06	01	B	MD	M	LS	PINK SEDS+VOL+MSED	527
200	ND	20	50	20	200	ND	200	ND	ND	ND	04	20	B	MD	M	VOL	PINK SEDS VOL MSEDS	528
100	ND	20	50	20	100	ND	100	ND	ND	ND	09	DR	A	MD	M	ND	PORVOL+LTVOL+DKVOL	529
100	ND	50	50	20	200	ND	100	ND	ND	ND	07	DR	A	MD	M	ND	VOL+AMYGVOL+PORVOL	530
200	ND	20	50	20	200	ND	200	ND	ND	ND	05	20	B	MD	M	ND	VOL MSED	531
100	ND	20	50	20	100	ND	200	5	ND	ND	03	20	B	MD	M	ND	VOL	532
100	ND	20	20	20	100	ND	ND	5	ND	ND	09	01	A	MD	M	ND	VOL+AMYGVOL+PORVOL	533
200	ND	20	50	20	200	ND	100	ND	ND	ND	05	20	B	MD	M	ND	VOL	534
100	ND	20	50	20	200	ND	200	5	ND	ND	02	08	B	MD	M	ND	VOL	535
100	ND	20	50	20	100	ND	200	5	ND	ND	05	20	B	MD	M	ND	VOL+MSED	536
100	ND	20	50	20	200	ND	50	ND	ND	ND	08	01	B	MD	M	ND	VOL	537
100	20	20	20	20	200	ND	ND	ND	ND	ND	03	08	B	MD	M	ND	BLACK SED POSSIBLY SHALE	538
100	50	10	10	20	100	ND	ND	ND	ND	ND	02	02	A	MD	M	ND	VOL	539
200	50	20	10	20	100	ND	ND	ND	ND	ND	02	02	B	MD	M	ND	VOL+MSED	540
100	20	10	10	10	50	ND	ND	ND	ND	ND	02	02	B	MD	M	ND	VOL+MSED	0541
100	20	20	20	20	100	ND	ND	ND	ND	ND	03	02	B	MD	M	ND	MSED	0542
200	50	20	10	20	100	ND	ND	ND	ND	ND	03	DR	A	MD	M	ND	MSED+LS+MINOR VOLCANICS	543
200	20	20	20	20	100	ND	ND	ND	ND	ND	02	02	A	MD	C	ND	MSED-FELS	544
200	20	20	20	20	100	ND	ND	ND	ND	ND	02	08	B	MD	M	ND	AMYGVOL-PORVOL-MSED	545
200	ND	50	50	20	200	ND	ND	5	ND	ND	02	DR	A	MD	M	ND	AMYGVOL+ PORVOL	0546
100	ND	50	50	20	200	ND	50	5	ND	ND	02	DR	A	MD	M	ND	AMYGVOL MINOR CACO3 STN	0547
100	ND	20	50	20	200	ND	50	5	ND	ND	02	DR	A	MD	M	ND	AMYGVOL+ MSED	0548
200	ND	20	50	20	200	ND	ND	5	ND	ND	01	DR	A	MD	M	ND	AMYGVOL+ MSED	0549
200	ND	20	50	20	200	ND	ND	ND	ND	ND	02	02	B	MD	M	ND	AMYGVOL+ PORVOL	550
100	ND	20	50	20	100	ND	ND	5	ND	ND	03	DR	B	MD	M	ND	PORVOL+ AMYGVOL	0551
100	ND	20	50	20	100	ND	ND	ND	ND	ND	02	DR	B	MD	M	ND	AMYGVOL+ PORVOL	0552
100	ND	20	50	20	100	ND	ND	5	ND	ND	02	DR	B	MD	M	ND	VOL+MSED	0553
100	ND	20	50	20	100	ND	ND	ND	ND	ND	02	02	C	MD	M	ND	AMYGVOL+ PORVOL	0554
200	ND	20	20	20	200	ND	50	ND	ND	ND	01	08	A	MD	C	DIKE	MIX	555
200	ND	20	50	20	200	ND	50	ND	ND	ND	02	02	A	LC	C	ND	MIX	556
200	ND	20	20	20	200	ND	100	ND	ND	ND	02	DR	A	MD	M	ND	MIX	557
100	ND	50	50	20	100	ND	ND	5	ND	ND	02	DR	B	MD	M	ND	AMYGVOL+ PORVOL	0558
100	ND	20	50	20	100	ND	ND	ND	ND	ND	01	03	B	MD	M	ND	AMYGVOL+ PORVOL+MSED	0559
200	ND	20	50	20	200	ND	50	ND	ND	ND	02	02	B	MD	M	ND	SED+VOL	560
200	20	20	20	50	200	ND	100	ND	ND	ND	02	02	B	MD	M	ND	VOL	561
100	ND	20	50	20	100	ND	50	ND	ND	ND	02	03	B	MD	M	ND	AMYGVOL+ PORVOL	0562
100	ND	20	50	20	100	ND	50	ND	ND	ND	02	02	B	MD	M	ND	PORVOL+ AMYGVOL	0563
100	ND	50	50	50	200	ND	50	5	ND	ND	02	02	B	MD	M	ND	PORVOL+MSED	564
100	ND	20	50	20	100	ND	50	ND	ND	ND	02	02	B	MD	M	ND	PORVOL+ VOL	0565

Map No.	Sample No.	Gold (3)	Copper (3)	Lead (3)	Zinc (3)	Copper	Lead	Zinc	Molybdenum	Silver	Cobalt	Chromium	Nickel	Manganese	Titanium	Iron (%)	Magnesium (%)	Calcium (%)	Barium	Strontium	Boron	Beryllium	Tin	Tungsten
566	69T316	NA	120	10	60	100	10	200	5	ND	50	500	50	1000	*1.0	10	5	5	100	200	50	ND	ND	ND
567	69T322	NA	110	10	65	100	10	100	5	ND	50	500	50	1000	*1.0	10	5	5	100	200	50	1	ND	ND
568	69T317	NA	135	10	70	100	10	200	5	ND	50	500	50	1000	*1.0	10	5	5	200	200	20	ND	ND	ND
569	69T318	NA	135	10	70	100	10	100	5	ND	50	500	50	1000	*1.0	10	5	5	200	200	20	ND	ND	ND
570	69T319	NA	130	10	60	100	10	100	5	ND	50	500	50	1000	*1.0	10	5	5	100	200	20	ND	ND	ND
571	69T320	NA	140	10	70	100	10	200	5	ND	50	500	50	1000	*1.0	10	5	5	200	200	20	1	ND	ND
572	69T321	NA	145	10	65	200	10	100	5	ND	50	500	50	1000	*1.0	10	5	5	100	200	20	ND	ND	ND
573	69T323	NA	95	15	170	100	10	200	10	ND	50	500	200	2000	5000	10	5	5	2000	200	20	ND	ND	ND
574	69T324	NA	80	15	160	100	10	100	5	ND	50	1000	200	1000	5000	10	5	5	2000	100	50	ND	ND	ND
575	69T325	NA	85	15	155	100	10	100	10	ND	50	500	200	1000	5000	10	5	5	1000	200	50	ND	ND	ND
576	69T326	NA	85	15	170	100	10	100	5	ND	50	500	200	1000	5000	10	5	5	1000	100	50	ND	ND	ND
0577	69H172	NA	95	20	105	100	10	100	5	ND	50	500	50	2000	5000	5	5	5	500	100	20	ND	ND	ND
578	69T327	NA	90	15	175	200	10	200	10	ND	50	1000	100	1000	*1.0	5	5	5	1000	200	50	ND	ND	ND
0579	69H173	NA	130	15	55	200	10	200	10	ND	100	500	100	5000	*1.0	10	10	10	200	100	50	ND	ND	ND
580	69T343	NA	130	15	105	200	20	100	10	ND	100	500	100	2000	*1.0	10	5	5	1000	100	50	ND	10	ND
581	69T342	NA	130	15	80	200	10	100	5	ND	20	200	50	1000	5000	5	2	2	500	100	20	ND	ND	ND
582	69T341	NA	100	15	85	200	10	200	10	ND	50	200	50	1000	*1.0	10	5	5	500	200	10	ND	ND	ND
583	69T340	NA	140	15	90	200	10	100	10	ND	50	200	50	1000	*1.0	5	2	2	500	100	20	1	ND	ND
584	69T328	NA	85	15	170	100	10	200	10	1	50	1000	200	1000	*1.0	10	5	5	1000	200	50	ND	10	ND
585	69T329	NA	70	15	260	100	10	200	20	ND	20	200	100	1000	5000	5	2	2	2000	100	50	1	ND	ND
586	69T337	NA	120	10	60	200	10	200	10	ND	100	1000	100	1000	*1.0	10	5	5	500	200	10	2	ND	ND
587	69T338	NA	135	10	60	100	10	200	10	1	100	1000	100	1000	NA	10	5	10	500	200	10	2	ND	ND
588	69T339	NA	130	10	65	200	10	200	20	ND	50	1000	100	1000	*1.0	10	5	5	200	200	10	2	10	ND
0589	69H183	NA	115	15	60	100	10	100	10	ND	100	500	100	2000	*1.0	10	5	5	200	200	10	1	ND	ND
0590	69H184	NA	95	15	55	50	10	100	5	ND	100	500	50	2000	*1.0	10	5	5	200	200	10	ND	ND	ND
591	69H176	NA	75	25	250	100	10	200	10	ND	50	200	100	1000	5000	5	5	2	1000	200	50	ND	ND	ND
592	69H177	NA	75	25	250	100	20	200	20	1	50	200	100	1000	5000	5	2	2	1000	200	50	1	ND	ND
0593	69H178	NA	100	25	125	100	10	100	10	1	50	500	50	2000	5000	10	5	5	2000	200	20	ND	ND	ND
594	69H175	NA	80	25	210	100	20	200	20	ND	50	200	100	1000	5000	5	2	2	1000	200	50	1	ND	ND
595	69H180	NA	85	30	260	100	20	200	20	ND	50	200	200	1000	5000	5	2	2	5000	100	100	ND	ND	ND
596	69H181	NA	85	25	280	100	20	200	20	1	50	200	200	1000	5000	5	5	2	2000	100	100	ND	ND	ND
0597	69H182	NA	90	25	240	100	10	200	20	ND	20	100	50	1000	5000	5	2	2	2000	100	50	ND	ND	ND
598	69T330	NA	85	15	170	100	20	200	10	1	50	1000	200	1000	5000	10	5	5	1000	200	50	ND	ND	ND
0599	69H174	NA	100	25	150	100	NA	100	10	1	50	200	50	NA	5000	5	5	2	NA	100	NA	ND	ND	ND
0600	69H175	NA	95	25	140	50	10	100	5	ND	50	200	20	1000	5000	5	2	2	2000	100	20	ND	ND	ND
601	69T331	NA	100	15	180	100	20	200	10	1	50	1000	200	1000	*1.0	5	5	5	1000	200	50	1	ND	ND
602	69T332	NA	85	15	170	100	10	100	10	ND	50	1000	200	1000	*1.0	10	5	5	1000	200	50	ND	10	ND
603	69T333	NA	95	15	60	100	10	100	10	1	50	1000	200	1000	5000	10	5	5	1000	200	50	ND	10	ND
604	69T334	NA	95	15	170	100	10	200	10	1	50	1000	100	1000	5000	5	5	5	1000	200	50	1	ND	ND
605	69T335	NA	95	20	165	100	10	200	5	ND	50	500	100	1000	5000	5	5	5	1000	200	50	1	ND	ND
606	69T336	NA	80	15	190	100	20	200	10	ND	50	500	200	1000	*1.0	10	5	5	1000	200	50	ND	ND	ND
0607	69H185	NA	115	15	80	50	10	100	5	ND	10	100	20	500	2000	2	1	2	500	200	10	ND	ND	ND
608	69H186	NA	60	15	80	100	10	100	5	ND	50	500	50	1000	*1.0	5	5	5	500	200	10	1	ND	ND
609	69H187	NA	95	20	125	100	10	100	5	ND	50	1000	100	1000	5000	10	5	5	1000	200	50	ND	ND	ND
610	69H188	NA	75	20	160	100	10	200	10	1	50	1000	200	1000	*1.0	10	5	5	1000	200	50	ND	ND	ND
611	69H189	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
612	69H190	NA	80	20	180	50	20	200	10	ND	50	500	50	1000	*1.0	5	5	5	1000	200	50	ND	ND	ND
613	9H191	NA	120	20	80	100	20	ND	10	ND	20	100	20	1000	5000	5	2	2	500	500	10	ND	ND	ND
614	69H192	NA	95	15	70	100	20	ND	5	ND	20	100	20	1000	5000	5	2	2	500	500	ND	ND	ND	ND
615	69H193	NA	75	20	190	50	20	200	10	ND	50	500	100	1000	*1.0	5	5	5	1000	200	50	ND	ND	ND
616	69H194	NA	70	20	195	100	20	200	20	ND	50	500	100	1000	*1.0	5	5	5	1000	200	50	ND	ND	ND
617	69H195	NA	195	15	90	200	10	100	5	ND	50	200	20	1000	*1.0	10	5	5	200	200	20	ND	ND	ND
618	69H196	NA	60	15	100	50	20	100	10	ND	50	500	100	1000	*1.0	5	5	5	500	200	20	1	ND	ND
619	69H197	NA	120	20	80	200	20	ND	10	ND	20	100	20	1000	5000	5	2	2	500	500	10	ND	ND	ND
620	69H222	NA	115	20	95	100	20	100	5	ND	20	200	20	1000	*1.0	5	2	2	500	500	ND	ND	ND	ND
621	69H198	NA	50	15	125	50	20	100	20	ND	20	500	50	1000	5000	5	1	1	500	200	10	ND	ND	ND
622	69H199	NA	65	20	115	100	10	100	5	ND	50	1000	100	1000	*1.0	5	5	5	500	200	20	1	ND	ND
623	69T344	NA	65	15	95	50	10	100	10	ND	50	2000	100	1000	5000	10	5	10	500	200	20	ND	10	ND
624	69T345	NA	70	20	125	50	10	200	5	ND	50	500	50	1000	*1.0	10	5	5	500	200	20	ND	ND	ND
625	69T346	NA	60	20	135	50	20	100	5	ND	50	1000	100	1000	*1.0	10	5	5	500	200	50	ND	ND	ND
626	69T347	NA	60	20	145	100	20	200	5	ND	50	1000	200	1000	*1.0	10	5	5	1000	200	50	ND	ND	ND
627	69T348	NA	60	20	155	50	20	200	5	ND	50	1000	100	1000	*1.0	10	5	5	500	200	50	ND	ND	ND
628	69T349	NA	80	25	210	100	50	500	5	ND	50	500	50	1000	*1.0	10	5	2	500	200	20	ND	ND	ND
629	69T350	NA	65	20	150	50	20	200	5	ND	50	1000	100	1000	*1.0	10	5	5	500	200	50	ND	ND	ND
630	69T351	NA	70	20	150	100	20	200	10	ND	50	1000	100	1000	*1.0	10	5	5	1000	200	50	ND	ND	ND
631	69T352	NA	70	30	165	100	20	200	10	ND	50	1000	100	1000	*1.0	10	5	5	1000	200	50	ND	ND	ND
632	69T353	NA	65	20	160	50	20	200	10	ND	50	1000	100	1000	*1.0	10	5	5	500	200	50	ND	ND	ND
633	69T354	NA	75	15	125	50	10	200	10	ND	50	200	20	1000	*1.0	5	5	5	2000	200	20	ND	ND	ND
634	69T355	NA	60	20	135	50	20	100	5	ND	50	1000	100	1000	*1.0	10	5	5	500	200	50	ND	ND	ND
635	69T356	NA	45	10	60	20	20	100	20	ND	20	200	50	1000	5000	5	2	2	500	500	ND	1	ND	ND
636	69T357	NA	65	25	130	50	20	200	20	ND	50	500	50	1000	*1.0	10	5	5	500	500	10	1	10	ND
637	69T358	NA	90	25	220	50	50	200	10	ND	20	100	20	1000	5000	2	2	2	500	500	10	ND	ND	ND
638	69T359	NA	110	15	120	200	10	200	5	ND	50	2000	500	1000	*1.0	5	5	2	500	100	20	ND	ND	ND
639	69T360	NA	95	15	115	100	20	200	5	ND	50	1000	500	1000	*1.0	5	5	5	500	200	20	ND	ND	ND
640	69T371	NA	130	15	70	100	20	200	10	ND	20	500	20	1000	NA	10	5	5	100	200	20	2	ND	ND
641	69T373	NA	120	15	85	100	20	200	5	ND	20	200	20	1000	*1.0	10	5	5	100	100	20	ND	ND	ND
642	69T374	NA	135	15	85	100	20	200	10	ND	20	500	20	1000	NA	10	5	5	100	100	20	2	ND	ND
643	69T375	NA	145	30	280	200	50	500	10	ND	20	500	20	2000	NA	10	5	5	100	200	20	1	ND	ND
644	69T372	NA	145	15	70	200	20	200	10	ND	50	1000	50	2000	NA	10	5	10	100	200	20	1	10	ND
645	69T378	NA	145	15	90	200	10	200	10	1	100	1000	100	1000	NA	20	5	5	200	200	20	5	ND	50
646	69T377	NA	25	5	15	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
647	69T376	NA	135	30	130	200	50	500	10	ND	50	500	50	2000	*1.0	10	5	5	200	200	10	ND	ND	ND
648	69T379	NA	140	15	70	100	20	200	5	ND	20	500	50	2000	NA	10	5	5	100	100	20	1	ND	ND
649	69T370	NA	105	15	55	100	20	200	5	ND	20	500	50	1000	*1.0	10	5	5	100	200	20	ND	ND	ND
650	69T369	NA	75	20	95	50	20	100	10	ND	50	500	50	1000	*1.0	10	5	5	500	200	20	1	10	ND
651	69T368	NA	95	40	115	100	20	200	10	ND	50	1000	100	1000	*1.0	10	5	2	500	200	20	1	10	ND
652	69T404	NA	55	15	75	50	20	100	10	ND	20	200	20	1000	5000	5	5	5	2000	200	20	ND	ND	ND
653	69T403	NA	70	15	90	100	10	100	50	ND	50	500	100	1000	*1.0	10	5	5	1000	200	ND	ND	10	ND
654	69T402	NA	70	15	85	50	10	500	20	ND	50	500	20	1000	5000	5	5	5	1000	200	10	ND	ND	ND
655	69T401	NA	75	15	90	50	20	200	20	1	50	500	20	1000	*1.0	5	5	5	1000	200	10	ND	ND	ND
656	69T400	NA	70	15	85	100	10	100	20	ND	50	1000	100	1000	*1.0	10	5	5	1000	200	ND	ND	ND	ND
657	69T399	NA	70	15	85	50	10	200	20	ND	50	1000	50	1000	5000	5	5	5	1000	200	10	ND	ND	ND
658	69T367	NA	65	10	85	50	10	100	20	ND	50	500	50	1000	*1.0	10	5	5	1000	200	10	ND	10	ND
659	69T366	NA	70	15	90	50	10	200	20	ND	50	500	50	1000	5000	5	5	5	2000	200	10	ND	ND	ND
660	69T361	NA	100	15	75	200	20	200	10	ND	50	1000	100	2000	*1.0	10	5	5	1000	200	20	ND	ND	ND
661	69T362	NA	130	10	55	100	10	200	5	ND	50	200	50	2000	*1.0	5	5	5	200	200	10	ND	ND	ND
662	69T363	NA	85	15	110	100	10	100	5	ND	50	500	100	1000	5000	10	5	5	500	200	20	ND	ND	ND
663	69T364	NA	75	30	85	100	10	100	5	ND	50	500	100	1000	*1.0	10	5	5	500	200	20	ND	10	ND
665	69T365	NA	110	20	140	100	20	100	5	ND	50	1000	500	1000	*1.0	10	5	5	500	200	50	ND	10	ND
666	69H216	NA	75	20	100	50	20	100	5	ND	50	1000	200	500	5000	5	5	5	500	200	50	ND	ND	ND
667	69H220	NA	55	15	65	50	20	100	5	ND	50	500	50	1000	*1.0	10	2	5	1000	500	20	1	ND	ND
668	69H219	NA	90	20	120	100	10	100	5	ND	100	2000	500	1000	5000	5	5	5	1000	200	50	ND	ND	ND
669	69H217	NA	55	15	55	100	10	100	10	ND	50	500	50	1000	*1.0	10	5	5	500	200	20	1	ND	ND
670	69H218	NA	95	15	95	50	20	100	5	ND	50	1000	500	500	5000	5	5	5	200	200	50	ND	ND	ND
671	69H215	NA	70	15	85	100	20	100	10	ND	50	500	100	1000	*1.0	10	5	5	500	200	20	ND	ND	ND
672	69H214	NA	50	15	75	50	10	100	5	ND	20	200	20	1000	*1.0	10	5	5	500	200	20	1	ND	ND
673	69H200	NA	50	20	115	50	10	100	10	ND	50	500	50	1000	*1.0	10	2	5	500	200	50	ND	ND	ND
674	69H201	NA	50	20	130	50	20	100	5	ND	20	200	20	500	5000	5	2	5	500	500	50	ND	ND	ND
675	69H202	NA	45	20	130	50	10	100	5	ND	20	200	50	1000	5000	5	2	5	500	200	100	ND	ND	ND
676	69H203	NA	50	20	130	100	20	100	5	ND	50	500	50	1000	*1.0	5	2	5	500	200	100	ND	ND	ND
677	69H204	NA	55	25	165	50	20	200	10	ND	50	500	100	1000	*1.0	5	2	5	1000	200	100	1	ND	ND
678	69H213	NA	80	20	160	100	20	100	10	ND	20	500	20	1000	*1.0	10	5	5	1000	200	20	ND	ND	ND

Zirconium	Lanthanum	Niobium	Scandium	Yttrium	Vanadium	Arsenic	Antimony	Bismuth	Cadmium	Field Test	Stream Width	Location (4)	Organic Content	Sediment Size	Bedrock (4)		Sediments in Stream Bed in Percent (4)	Map No.
100	ND	20	50	20	100	ND	50	ND	ND	ND	01	CR	B	MD	M	NO	50PORVCL 10AMYGVCL	566
100	ND	50	50	20	100	ND	50	5	ND	ND	03	03	B	MD	M	NO	VCL+MSED	567
100	ND	50	50	50	100	ND	50	5	ND	ND	06	CR	B	MD	M	NO	VCL	568
100	ND	50	50	50	100	ND	ND	5	ND	ND	03	CR	C	ML	M	NO	VCL	569
100	ND	50	50	20	200	ND	ND	5	ND	ND	02	CR	B	MD	M	NO	PORVCL+VCL	570
100	ND	50	50	20	200	ND	100	5	ND	ND	02	CR	C	MD	M	NO	VCL	571
100	ND	50	50	50	100	ND	100	5	ND	ND	05	CR	C	MD	M	NO	VCL	572
100	ND	50	20	20	100	ND	50	ND	ND	ND	04	08	B	MD	M	NO	VCL	573
200	ND	20	20	20	200	ND	50	ND	ND	ND	01	08	B	MD	M	NO	MSED+VCL	574
100	ND	20	20	20	100	ND	100	ND	ND	ND	01	02	B	MD	M	NO	MSED	575
200	ND	20	20	20	100	ND	50	ND	ND	ND	02	08	B	MD	M	NO	VCL+MSED	576
100	ND	20	50	20	200	ND	ND	ND	ND	ND	01	08	A	MD	M	NO	AMYG+POR VCL+MSED	C577
200	ND	50	20	20	100	ND	200	5	ND	ND	02	08	B	MD	M	NO	VCL+MSED	578
100	ND	50	50	50	200	ND	50	5	ND	ND	02	05	A	MD	M	NO	POR+AMYG VCL	C579
100	ND	20	50	20	200	ND	ND	ND	ND	ND	02	CR	A	MD	M	NO	PORVCL	580
100	20	20	20	20	100	ND	ND	ND	ND	ND	03	03	A	MD	M	NO	ND	581
200	ND	50	20	20	100	ND	ND	5	ND	ND	01	CR	A	LD	M	NO	VCL+MSED	582
100	20	50	20	20	100	ND	ND	ND	ND	ND	03	CR	B	FI	M	NO	MIX	583
200	ND	20	50	20	200	ND	100	ND	ND	ND	01	08	B	MD	M	NO	VCL+MSED	584
200	50	20	20	20	200	ND	ND	ND	ND	ND	02	08	B	MD	M	NO	VCL+MSED	585
200	ND	50	50	50	200	ND	100	5	ND	ND	01	02	B	MD	M	NO	VCL+MSED	586
200	ND	50	50	50	200	ND	100	5	ND	ND	03	CR	B	MD	M	NO	VCL+MSED	587
200	ND	20	50	50	200	ND	100	ND	ND	ND	01	CR	A	MD	M	NO	VCL+MSED	588
100	ND	20	50	20	200	ND	ND	5	ND	ND	01	06	A	MD	M	NO	VCL	C589
100	ND	20	50	50	100	ND	50	5	ND	ND	02	08	B	MD	M	NO	VCL	C590
200	ND	20	20	20	200	ND	ND	ND	ND	ND	01	03	A	MD	M	NO	VCL-AMYG VCL	591
200	20	20	50	20	200	ND	ND	ND	ND	ND	02	08	A	MD	M	NO	VCL-AMYG VCL	592
100	ND	20	20	20	200	ND	ND	5	ND	ND	01	CR	A	MD	M	NO	VCL+AMYG VCL	C593
200	ND	20	20	20	200	ND	ND	ND	ND	ND	01	06	B	MD	M	NO	VCL-MSED-AMYG VCL	594
100	20	20	20	20	200	ND	ND	ND	ND	ND	01	02	A	MD	M	NO	VCL-MSED	595
100	20	20	20	20	200	ND	ND	ND	ND	ND	01	02	A	MD	M	NO	VCL-MSED	596
100	20	20	20	50	100	ND	ND	ND	ND	ND	02	02	A	MD	M	PHYL		C597
200	20	20	50	20	200	ND	100	ND	ND	ND	01	08	B	MD	M	NO	VCL+MSED	598
100	20	20	20	50	NA	ND	ND	NA	ND	ND	05	02	A	MD	M	NO	MIX	C599
100	ND	20	20	20	100	ND	ND	ND	ND	ND	01	02	A	MD	C	NO	ND	C600
200	ND	20	20	20	100	ND	200	5	ND	ND	01	06	B	MD	M	NO	VCL+MSED	601
200	ND	20	50	20	200	ND	100	ND	ND	ND	01	08	B	MD	M	NO	VCL+MSED	602
200	ND	20	50	20	200	ND	200	ND	ND	ND	02	08	B	MD	M	NO	VCL+MSED	603
200	ND	50	20	20	100	ND	200	5	ND	ND	01	08	B	MD	M	NO	VCL+MSED	604
200	ND	50	20	20	100	ND	200	5	ND	ND	01	08	B	MD	M	NO	MIX	605
200	20	20	50	20	200	ND	100	ND	ND	ND	01	08	B	MD	M	NO	MIX	606
50	50	10	10	10	50	ND	ND	ND	ND	ND	01	08	I	LD	M	NO	ND	C607
200	20	20	50	20	200	ND	ND	ND	ND	ND	01	02	A	MD	M	NO	AMYGVCL-MIX	608
100	ND	20	50	20	100	ND	100	ND	ND	ND	02	06	A	MD	M	NO	VCL+POR VCL	609
200	20	20	50	20	200	ND	100	ND	ND	ND	01	08	B	MD	M	NO	VCL-POR VCL-AMYGVCL-MSED	610
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	01	05	B	MD	M		VCL+PORVCL+AMYGVCL+MSED	611
200	ND	20	50	20	100	ND	50	ND	ND	ND	01	08	B	MD	M	NO	PORVCL-AMYGVCL-MSED	612
100	ND	20	20	20	100	ND	ND	ND	ND	ND	01	CR	A	MD	M		LIGHT MINERALIZED DIKE PORPH+VCL	613
100	20	20	20	20	100	ND	ND	ND	ND	ND	01	08	B	MD	M	NO	VCL+PORVCL+AMYGVCL+MSED	614
200	ND	20	50	20	200	ND	50	ND	ND	ND	02	08	B	MD	M	NO	VCL-MSED	615
100	20	20	50	20	200	ND	50	ND	ND	ND	01	08	B	MD	M	NO	PORVCL-MSED	616
100	ND	20	50	50	100	ND	ND	5	ND	ND	01	CR	A	MD	M	NO	PORVCL	617
200	ND	20	50	20	200	ND	ND	ND	ND	ND	01	02	A	MD	M	NO	ND	618
100	ND	20	20	20	100	ND	ND	5	ND	ND		CR	A	MD	M	NO	PORVCL+AMYGVCL+MSED	619
100	ND	20	10	20	100	ND	ND	5	ND	ND	8	5	B	MD	M		PORPH+AMYG DIORITE	620
200	20	20	10	20	100	ND	ND	ND	ND	ND	01	08	A	MD	M	NO	VCL-PORVCL	621
100	ND	20	50	20	200	ND	50	ND	ND	ND	01	CR	A	MD	M	NO	VCL-AMYG VCL-MSED	622
100	ND	20	50	50	200	ND	200	ND	ND	ND	01	08	B	MD	M	NO	DKVCL+MSED	623
100	ND	20	50	50	200	ND	100	5	ND	ND	03	08	B	MD	M	NO	DKVCL+MSED	624
100	ND	20	50	20	200	ND	50	ND	ND	ND	02	08	B	MD	M	NO	VCL+MSED	625
200	ND	20	50	20	200	ND	50	ND	ND	ND	02	08	B	MD	M	NO	VCL+MSED	626
200	ND	20	50	20	200	ND	100	ND	ND	ND	01	08	B	MD	M	NO	VCL+MSED	627
100	ND	20	50	50	200	ND	ND	5	ND	ND	01	CR	A	MD	M	NO	VCL+MSED	628
200	ND	20	50	20	200	ND	50	ND	ND	ND	01	08	B	MD	M	NO	VCL+MSED	629
200	ND	20	50	20	200	ND	100	ND	ND	ND	04	08	B	MD	M	NO	VCL+MSED	630
100	ND	20	50	50	200	ND	100	5	ND	ND	02	08	B	MD	M	VOL	VCL+MSED	631
200	ND	20	50	20	200	ND	50	ND	ND	ND	07	08	B	MD	M	NO	VCL MSED	632
100	ND	20	50	20	200	ND	ND	ND	ND	ND	02	03	B	MD	M	VCL	VCL+MSED	633
200	ND	20	50	20	200	ND	50	ND	ND	ND	03	08	B	MD	M	NO	VCL+MSED	634
200	20	20	20	20	100	ND	50	ND	ND	ND	01	02	B	MD	M	NO	PORVCL	635
200	ND	50	50	20	200	ND	50	ND	ND	ND	01	CR	A	MD	M	NO	PORVCL+MSED	636
50	20	10	10	10	50	ND	ND	ND	ND	ND	01	08	B	MD	M	NO	PORVCL+MSED	637
100	ND	20	20	20	100	ND	200	ND	ND	ND	01	05	B	MD	M	NO	VCL+MSED	638
100	ND	20	20	20	100	ND	200	ND	ND	ND	02	05	B	MD	M	NO	PORVCL+MSED	639
100	ND	50	50	50	200	ND	ND	5	ND	ND	1	2	B	MD	M		PORPH VCL+VOL+META SEDS	640
100	ND	20	50	50	200	ND	ND	5	ND	ND	2	CR	A	MD	M		PORPH VCL+META SEDS	641
100	ND	20	50	50	500	ND	100	5	ND	ND	2	CR	A	MD	M		VCL+PORPH VCL	642
100	ND	50	50	50	200	ND	ND	5	ND	ND	2	CR	A	MD	M		PORPH VCL+VCL SOME MEDA SEDS	643
200	ND	20	50	20	500	ND	50	ND	ND	ND	02	06	B	MD	M		PORPH VCL AMYG VCL	644
200	ND	20	50	20	500	ND	ND	ND	ND	ND	2	5	B	MD	M		AMYG+PORPH VCL	645
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1	5	B	MD	M		PORPH VCL + VCL SOME AMYG VCL	646
100	ND	50	50	50	200	ND	ND	5	ND	ND	2	CR	A	MD	M		VCL MIXED	647
100	ND	50	50	50	200	ND	ND	5	ND	ND	1	CR	A	MD	M		VCL AMGG PORPH	648
100	ND	50	50	50	200	ND	100	5	ND	ND	2	5	B	MD	M		PORPH VOL+VCL MIXED	649
200	ND	20	50	20	200	ND	50	ND	ND	ND	1	CR	A	MD	M		VCL+PORPH VCL	650
200	ND	20	50	50	200	ND	100	ND	ND	ND	1	CR	A	MD	M		VCL+AMYG VCL	651
100	20	20	20	20	200	ND	50	ND	ND	ND	2	5	B	MD	M		AMYG+PORPH VCL	652
100	ND	20	50	20	200	ND	100	ND	ND	ND	2	5	B	MD	M		VCL, MIXED	653
100	ND	20	50	50	200	ND	ND	5	ND	ND	1	5	B	MD	M		AMYG + PRCPH VCL	654
100	ND	20	50	20	200	ND	ND	5	ND	ND	1	5	B	MD	M		VCL+PORPHVCL	655
100	ND	20	50	20	200	ND	100	ND	ND	ND	1	5	B	MD	M		VCL+PORPH VCL	656
100	ND	20	50	20	200	ND	100	5	ND	ND	1	5	B		M		PORPH + AMYG VCL META SEDS	657
100	ND	20	50	20	200	ND	100	ND	ND	ND	2	5	B	MD	M		MIXED	658
100	ND	20	50	20	200	ND	ND	ND	ND	ND	1	CR	A	MD	M		MIXED SMALL	659
100	ND	20	50	50	200	ND	50	5	ND	ND	5	5	B	MD	M		VCL	660
100	ND	20	50	50	200	ND	ND	5	ND	ND	5	CR	A	MD	M		VCL+M SED	661
100	ND	20	50	20	200	ND	50	ND	ND	ND	3	2	B	MD	M		VCL,AGGL+PUMICE SLATE,MEDA SEDS,PUMICE	662
200	ND	20	50	20	200	ND	50	ND	ND	ND	3	8	B		M		POR+AMYG VCL+M SED	663
200	ND	20	20	20	200	ND	100	ND	ND	ND	3	CR	A	MD	M		PORVAL+MSED	665
100	ND	20	20	20	100	ND	100	ND	ND	ND	1	2	B	MD	M		MIX-MORAINE	666
100	ND	20	20	20	100	ND	ND	5	ND	ND	1	10	P	MD	C		MIX-MORAINE	667
100	ND	20	20	20	100	ND	100	ND	ND	ND	1	2	A	MD	M		MIX TAILS MORAINE	668
200	20	20	50	20	200	ND	ND	ND	ND	ND	1	7	B	MD	M		MIX MORAINE	669
100	ND	20	10	20	100	ND	200	ND	ND	ND	1	CR	A	MD	M		VCL+M SED	670
200	20	20	20	20	100	ND	100	ND	ND	ND	6	13	B	MD	M		MIX MORAINE	671
200	20	20	20	20	100	ND	ND	ND	ND	ND	4	20	B	MD	C		MIX	672
100	20	20	20	20	200	ND	ND	ND	ND	ND	4	2	A	MD	M		VCL-M SED	673
100	20	20	20	50	100	ND	ND	ND	NL	ND	2	3	A	MD	M		VCL+SED+DIKE	674
200	20	20	20	20	100	ND	ND	ND	ND	ND	4	3	A	MD	M		VCL M SED	675
200	20	20	20	20	100	ND	ND	ND	ND	ND	2	CR	A	MD	M		VCL M SED	676
200	20	20	20	20	100	ND	ND	ND	ND	ND	2	CR	A	MD	M		VCL MSED	677
200	ND	20	20	20	100	ND	50	ND	ND	ND	1	2	A	MD	M		MORAINE	678

Map No.	Sample No.	Gold (3)	Copper (3)	Lead (3)	Zinc (3)	Copper	Lead	Zinc	Molybdenum	Silver	Cobalt	Chromium
679	69H205	NA	50	15	100	100	10	100	10	ND	50	200
680	69H212	NA	90	30	150	50	20	200	5	ND	20	200
681	69H211	NA	60	20	90	50	10	100	5	ND	20	200
682	69H206	NA	100	20	165	100	10	100	10	1	50	500
683	69H207	NA	60	15	55	100	10	100	5	ND	50	500
684	69H210	NA	95	15	65	200	10	200	10	ND	50	500
685	69H208	NA	90	10	55	100	10	100	5	ND	50	200
686	69H209	NA	100	15	75	100	10	ND	5	ND	50	100
687	69T380	NA	75	15	50	50	10	100	10	ND	50	500
688	69T381	NA	60	15	135	50	20	200	5	ND	20	200
689	69T382	NA	70	15	120	50	20	100	10	ND	50	200
690	69T383	NA	85	15	80	100	10	100	10	ND	50	500
691	69T384	NA	40	20	85	50	10	100	5	ND	20	200
692	69T385	NA	55	25	165	100	20	200	5	1	50	200
693	69T386	NA	65	15	115	100	10	200	5	ND	50	500
694	69T387	NA	55	20	140	50	10	200	5	ND	20	200
695	69T388	NA	60	15	110	50	20	100	10	ND	50	500
696	69T389	NA	75	15	100	100	20	200	5	ND	50	500
697	69T398	NA	65	20	125	100	20	100	10	ND	50	500
698	69T390	NA	70	15	85	100	20	100	10	ND	50	500
699	69T391	NA	55	25	150	50	20	100	3	ND	20	200
700	69T392	NA	75	15	100	100	10	200	5	ND	50	500
701	69T393	NA	80	15	85	100	20	100	5	ND	50	500
702	69T394	NA	85	15	90	100	20	200	5	ND	50	1000
703	69T395	NA	80	20	100	100	10	100	5	ND	50	500
704	69T396	NA	95	20	135	100	100	500	20	1	50	500
705	69T397	NA	75	15	100	100	10	100	10	ND	50	1000
706	69H258	NA	65	15	75	50	10	ND	5	ND	50	200
707	69H257	NA	65	70	65	100	20	100	10	ND	50	500
708	69H259	NA	60	15	60	50	10	100	10	ND	50	500
709	69H260	NA	60	10	65	50	10	ND	5	ND	20	200
710	69H261	NA	60	10	60	100	20	100	10	ND	50	500
711	69H267	NA	95	10	60	100	10	100	5	ND	50	200
712	69H268	NA	130	10	45	100	10	100	5	ND	50	500
713	69H269	NA	95	15	70	100	10	100	5	ND	50	200
714	69H270	NA	95	15	80	100	10	100	ND	ND	50	200
715	69H271	NA	55	10	70	100	10	ND	5	ND	100	500
716	69H273	NA	95	15	60	100	10	ND	ND	ND	50	200
717	69H272	NA	70	15	60	100	20	100	10	ND	50	200
718	69H274	NA	90	15	125	100	10	100	20	ND	50	500
719	69H275	NA	70	15	40	50	10	100	5	ND	50	200
720	69H262	NA	100	10	65	100	10	100	10	ND	50	500
721	69H263	NA	50	10	65	50	20	100	5	ND	20	200
722	69H264	NA	50	15	70	20	20	ND	5	ND	20	200
723	69H266	NA	45	10	65	50	20	100	5	ND	50	500
724	69H265	NA	40	20	55	50	20	100	5	ND	20	200
725	69H281	NA	50	20	120	50	20	100	5	ND	20	200
726	69H282	NA	80	15	65	50	10	100	5	ND	50	200
727	69H280	NA	60	10	75	100	10	100	5	ND	50	500
728	69H278	NA	220	13	80	200	10	100	5	ND	50	500
729	69H279	NA	45	15	65	50	10	100	5	ND	50	500
730	69H277	NA	45	10	70	50	10	100	5	ND	50	500
731	69H276	NA	30	15	95	20	10	100	5	ND	50	500
732	69T445	NA	65	15	55	50	20	100	5	ND	50	200
733	69T440	NA	70	20	80	NA	NA	NA	NA	NA	NA	NA
734	69T441	NA	70	15	80	50	10	100	ND	ND	20	200
735	69T443	NA	70	15	90	50	20	100	10	ND	50	1000
736	69T442	NA	70	15	95	50	10	100	ND	ND	50	1000
737	69T444	NA	165	20	55	200	20	200	5	ND	100	1000
738	69T450	NA	65	15	55	50	20	200	5	ND	50	200
740	69T448	NA	55	20	55	50	10	100	5	ND	50	500
741	69T447	NA	80	15	105	100	20	200	10	1	50	500
742	69T446	NA	55	15	70	50	10	200	5	ND	50	200
743	69H285	NA	75	10	55	100	10	100	5	ND	50	200
744	69H284	NA	25	10	70	20	20	100	5	ND	50	200
745	69H286	NA	25	10	70	20	10	100	5	ND	20	200
746	69H287	NA	25	10	75	20	10	100	10	ND	50	200
747	69H288	NA	45	10	75	50	10	100	5	ND	50	200
748	69H289	NA	40	10	85	50	10	100	10	ND	50	500
749	69H290	NA	35	10	70	50	10	100	5	ND	50	200
750	69H291	NA	35	10	70	50	10	100	10	ND	50	500
751	69H292	NA	35	10	70	50	10	100	5	ND	50	200
752	69H293	NA	35	10	80	20	10	100	5	1	50	200
753	69H294	NA	35	10	65	50	10	100	5	ND	50	200
754	69H295	NA	35	10	65	20	10	100	5	ND	50	200
755	69H296	NA	30	10	65	20	10	100	5	ND	50	200
756	69H297	NA	30	10	65	20	10	100	5	ND	50	200
757	69H283	NA	35	15	70	20	10	100	5	ND	50	200
758	69H299	NA	55	10	65	50	10	100	5	ND	50	500
759	69H298	NA	75	15	55	100	10	100	5	ND	50	500
760	69H300	NA	80	15	65	100	10	100	5	ND	50	200
761	69H301	NA	75	10	65	100	10	100	20	ND	100	1000
762	69H302	NA	110	10	50	200	10	200	5	ND	50	500
763	69H303	NA	100	15	70	100	10	100	5	ND	50	500

Map No.	Sample No.	Nickel	Manganese	Titanium	Iron (%)	Magnesium (%)	Calcium (%)	Barium	Strontium	Boron	Beryllium	Tin	Tungsten
679	69H205	50	1000	5000	10	5	5	2000	500	10	ND	ND	ND
680	69H212	20	1000	5000	9	2	1	1000	100	20	ND	ND	ND
681	69H211	20	1000	5000	5	2	5	500	500	20	ND	ND	ND
682	69H206	50	1000	5000	10	2	5	2000	500	20	ND	ND	ND
683	69H207	50	1000	>1.0	5	5	5	500	500	ND	ND	ND	ND
684	69H210	50	1000	NA	20	5	5	200	200	ND	5	ND	ND
685	69H208	20	1000	>1.0	10	5	5	200	500	10	1	ND	ND
686	69H209	20	1000	>1.0	10	2	5	200	500	20	ND	ND	ND
687	69T380	100	1000	>1.0	10	5	5	500	200	50	ND	ND	ND
688	69T381	20	1000	>1.0	5	2	5	500	200	50	ND	ND	ND
689	69T382	50	1000	>1.0	10	5	2	500	200	50	1	ND	ND
690	69T383	100	1000	>1.0	10	5	5	1000	500	20	ND	ND	ND
691	69T384	20	500	5000	5	2	10	500	200	50	ND	ND	ND
692	69T385	50	500	>1.0	10	2	5	1000	200	100	ND	ND	ND
693	69T386	50	1000	>1.0	10	5	5	500	200	50	1	ND	ND
694	69T387	50	1000	5000	5	2	2	1000	200	100	ND	ND	ND
695	69T388	50	1000	>1.0	10	5	5	500	200	50	ND	ND	ND
696	69T389	50	1000	>1.0	9	5	5	1000	500	50	1	ND	ND
697	69T398	100	1000	>1.0	10	5	2	500	200	50	1	ND	ND
698	69T390	50	1000	>1.0	10	5	10	1000	200	50	ND	10	ND
699	69T391	50	500	5000	10	2	2	500	200	100	ND	ND	ND
700	69T392	50	1000	5000	5	2	5	1000	500	20	ND	ND	ND
701	69T393	50	1000	>1.0	10	5	5	1000	200	20	ND	ND	ND
702	69T394	50	1000	>1.0	5	5	5	1000	500	20	ND	ND	ND
703	69T395	100	1000	>1.0	10	5	5	1000	200	50	ND	ND	ND
704	69T396	50	1000	>1.0	5	5	2	2000	200	10	ND	ND	ND
705	69T397	100	1000	>1.0	10	5	5	1000	200	10	1	10	ND
706	69H258	50	1000	>1.0	10	5	5	500	200	20	ND	ND	ND
707	69H257	50	1000	>1.0	10	5	5	500	500	20	1	ND	ND
708	69H259	50	1000	>1.0	10	5	5	500	500	20	1	ND	ND
709	69H260	20	1000	>1.0	5	5	5	200	200	10	ND	ND	ND
710	69H261	50	1000	>1.0	10	5	5	500	500	20	ND	ND	ND
711	69H267	20	1000	>1.0	10	5	5	200	200	20	1	ND	ND
712	69H268	50	1000	>1.0	10	5	5	200	200	10	ND	ND	ND
713	69H269	50	1000	5000	10	5	5	300	200	20	ND	ND	ND
714	69H270	50	1000	>1.0	10	5	5	500	200	20	ND	ND	ND
715	69H271	50	1000	5000	10	5	5	500	200	20	ND	ND	ND
716	69H273	50	1000	5000	10	5	5	500	200	10	ND	ND	ND
717	69H272	50	1000	>1.0	10	5	2	500	200	50	ND	ND	ND
718	69H274	50	1000	5000	10	5	5	1000	500	10	ND	ND	ND
719	69H275	20	1000	>1.0	10	2	2	500	200	50	1	ND	ND
720	69H262	50	1000	>1.0	10	5	5	200	200	10	ND	ND	ND
721	69H263	50	1000	>1.0	5	5	5	500	500	20	ND	ND	ND
722	69H264	20	1000	5000	5	5	5	200	500	20	ND	ND	ND
723	69H266	50	1000	>1.0	10	5	5	500	500	20	1	ND	ND
724	69H265	20	1000	5000	5	2	10	200	500	20	ND	ND	ND
725	69H281	20	500	5000	5	5	5	500	200	50	ND	ND	ND
726	69H282	50	1000	5000	10	5	5	500	500	20	ND	ND	ND
727	69H280	50	1000	>1.0	10	5	5	200	500	10	ND	ND	ND
728	69H278	50	1000	>1.0	10	5	5	1000	500	20	ND	ND	ND
729	69H279	100	1000	>1.0	10	5	5	500	500	10	ND	ND	ND
730	69H277	100	1000	>1.0	10	5	5	500	500	20	ND	ND	ND
731	69H276	20	1000	>1.0	10	5	5	500	200	20	ND	ND	ND
732	69T445	20	1000	>1.0	10	5	5	500	200	20	ND	ND	ND
733	69T440	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
734	69T441	50	500	5000	2	2	1	500	200	20	ND	ND	ND
735	69T443	200	1000	>1.0	10	5	2	500	200	50	ND	ND	ND
736	69T442	500	1000	>1.0	5	5	2	500	100	20	ND	ND	ND
737	69T444	500	1000	>1.0	5	10	2	200	100	50	ND	ND	ND
738	69T450	20	1000	>1.0	10	5	5	200	500	20	ND	ND	ND
740	69T448	100	1000	>1.0	10	5	5	500	200	50	ND	ND	ND
741	69T447	50	1000	>1.0	10	5	5	1000	500	20	ND	ND	ND
742	69T446	20	1000	5000	2	2	2	500	200	20	ND	ND	ND
743	69H285	50	1000	5000	10	5	5	500	500	10	ND	ND	ND
744	69H284	20	1000	>1.0	10	5	5	500	500	10	ND	ND	ND
745	69H286	20	1000	>1.0	5	2	5	500	500	20	ND	ND	ND
746	69H287	20	1000	>1.0	10	5	5	500	500	20	1	ND	ND
747	69H288	50	1000	5000	5	5	5	200	500	10	ND	ND	ND
748	69H289	100	1000	>1.0	5	5	5	500	500	10	1	ND	ND
749	69H290	50	1000	>1.0	5	5	5	500	500	20	1	ND	ND
750	69H291	50	1000	>1.0	10	5	5	500	500	10	1	ND	ND
751	69H292	50	1000	>1.0	5	5	5	500	500	10	ND	ND	ND
752	69H293	50	1000	>1.0	10	5	5	500	500	20	ND	ND	ND
753	69H294	50	1000	>1.0	5	5	5	500	500	20	ND	ND	ND
754	69H295	50	1000	5000	10	5	5	500	500	10	ND	ND	ND
755	69H296	50	1000	>1.0	5	5	5	200	500	70	1	ND	ND
756	69H297	50	1000	>1.0	10	5	10	500	500	10	ND	ND	ND
757	69H283	20	1000	>1.0	5	5	5	500	500	10	ND	ND	ND
758	69H299	100	1000	>1.0	10	5	5	500	500	10	ND	ND	ND
759	69H298	100	1000	>1.0	5	10	10	200	200	50	ND	ND	ND
760	69H300	50	1000	5000	5	5	5	500	200	20	ND	ND	ND
761	69H301	100	1000	>1.0	10	10	5	500	500	10	ND	10	ND
762	69H302	50	1000	>1.0	10	5	5	100	200	20	1	ND	ND
763	69H303	50	1000	5000	5	5	5	500	200	10	ND	ND	ND

(1) Values are in parts per million unless indicated otherwise

(2) Field cost values in milliliters of dye

(3) Atomic Absorption results; values for remaining elements are emission spectrograph results

(4) LST, Limestone; SEDS, Sediments; GR, Granite; POR, Porphyry; AMYG, Amygloidal; ARGL, Argillite; HFLS, Hornfels, BAS, Basalt; AND, Andesite; VOL, REL, ROL, RAL, Volcanics

(5) NA indicates not analyzed

(6) ND indicates none detected

Zirconium	Lanthanum	Niobium	Scandium	Yttrium	Vanadium	Arsenic	Antimony	Bismuth	Cadmium	Field Test	Stream Width	Location (4)	Organic Content	Sediment Size	Bedrock (4)	Sediments in Stream Bed in Percent (4)	Map No.
100	ND	20	50	20	100	ND	ND	5	ND	ND	5	DR	A	MD	M	VOL (INCL PUMICE) +M SED	679
100	ND	20	20	50	100	ND	ND	ND	ND	ND	1	10	B	MD		MIX MORAINE	680
100	ND	20	20	20	100	ND	ND	ND	ND	ND	2	3	A	MD	M	MIX (MORAINE)	681
100	ND	20	20	20	100	ND	ND	5	ND	ND	2	DR	A	MD	M	VOL+M SED	682
200	ND	20	20	20	100	ND	ND	ND	ND	ND	5	3	A	MD	M	VOL-M SED	683
200	ND	20	50	50	500	ND	ND	ND	ND	ND	1	4	A	MD	M	BASALT + OTHER VOL	684
100	ND	50	50	50	100	ND	ND	5	ND	ND	2	3	A	MD	M	BASALT+OTHER VOL	685
100	ND	20	50	50	100	ND	ND	5	ND	ND	1	2	A	MD	C	SAME 208	686
200	ND	20	50	20	200	ND	ND	ND	ND	ND	1	DR	A	MD	M	PORPH VOL	687
200	20	20	20	50	100	ND	ND	ND	ND	ND	1	DR	A	MD	M	PORPH VOL	688
200	20	20	50	20	200	ND	50	ND	ND	ND	1	DR	A	MD	M	PORPH VOL,DIORITE	689
100	ND	20	50	20	200	ND	100	ND	ND	ND	1	2	A	MD	M	VOL,MIXED	690
100	20	20	20	20	100	ND	ND	ND	ND	ND	1	5	B	MD	M	VOL+META SEDS	691
100	20	20	20	20	100	ND	ND	ND	ND	ND	2	2	B	MD		VOL+META SEDS	692
200	ND	20	50	20	200	ND	50	ND	ND	ND	1	5	B	MD	M	VOL+META SEDS	693
100	ND	20	20	20	100	ND	ND	ND	ND	ND	1	2	B	MD	M	VOL+META SEDS	694
200	ND	20	50	20	200	ND	ND	ND	ND	ND	1	DR	A	MD	M	PUMICE+SMALL CHIPS	695
100	ND	50	50	20	100	ND	ND	5	ND	ND	2	5	A	MD	M	VOL+META SEDS (PORPH+AMYG)	696
200	20	20	20	20	200	ND	ND	ND	ND	ND	1	5	B		M	VOL+META SEDS	697
200	ND	20	50	20	200	ND	50	ND	ND	ND	1	5	B	MD	M	VOL+META SEDS (PORPH+AMYG)	698
200	20	20	20	20	100	ND	50	ND	ND	ND	1	5	B	MD	C	AMYG+PORPH VOL+META SEDS	699
100	ND	20	50	20	100	ND	ND	5	ND	ND	1	5	B	MD	C	PORPH VOL + META SEDS	700
200	ND	20	50	20	200	ND	50	ND	ND	ND	1	5	B	MD	C	VOL+META SEDS	701
100	ND	20	50	20	200	ND	ND	5	ND	ND	1	5	B	MD	M	VOL + META SEDS	702
100	ND	20	50	20	200	ND	ND	ND	ND	ND	1	5	B	MD	M	VOL+META SEDS	703
100	ND	20	50	50	200	ND	ND	5	ND	ND	1	PR	A	MD	M	VOL + META SEDS	704
200	ND	20	50	20	200	ND	100	ND	ND	ND	1	5	B	MD	M	VOL METASEDS	705
200	ND	20	50	50	200	ND	ND	ND	ND	ND	0	5	A	MD	M	VOL+M SED	706
200	ND	20	50	20	200	ND	ND	ND	ND	ND	0	20	B	MD	M	VOL+M SED	707
200	ND	20	50	20	200	ND	50	ND	ND	ND	0	20	B	MD	M	VOL+M SED	708
200	ND	20	50	20	100	ND	ND	ND	ND	ND	2	14	B	MD	M	VOL+M SED	709
200	ND	20	20	20	200	ND	50	ND	ND	ND	0	14	B	MD	M	VOL+M SED	710
200	ND	20	50	50	200	ND	50	5	ND	ND	0	8	B	MD	M	VOL+M SED	711
100	ND	20	50	20	200	ND	ND	ND	ND	ND	0	6	B	MD	M	VOL+M SED	712
100	ND	20	50	20	200	ND	ND	ND	ND	ND	0	5	A	MD	M	VOL+M SED	713
100	ND	20	50	20	200	ND	ND	ND	ND	ND	0	5	B	MD	M	VOL+M SED	714
100	ND	20	50	20	200	ND	ND	ND	ND	ND	0	2	B	MD	M	VOL+M SED	715
100	ND	20	20	20	200	ND	ND	ND	ND	ND	0	DR	A	MD	M	VOL+M SED	716
200	20	20	50	20	200	ND	ND	ND	ND	ND	0	5	B		M	VOL+M SED	717
100	ND	20	50	20	200	ND	ND	ND	ND	ND	0	DR	A	MD	M	VOL+M SED	718
200	20	20	20	20	100	ND	ND	ND	ND	ND	0	5	B		M	VOL+M SED	719
200	ND	20	50	50	200	ND	ND	5	ND	ND	0	2	A	MD	M	VOL+M SED	720
200	ND	20	20	20	100	ND	ND	ND	ND	ND	0	16	B	MD	M	VOL+M SED	721
200	ND	20	50	50	100	ND	ND	5	ND	ND	0	14	B	MD	M	VOL+M SED	722
200	ND	20	50	20	100	ND	ND	ND	ND	ND	0	15	B	MD	M	VOL+M SED	723
100	ND	20	20	20	100	ND	ND	ND	ND	ND	0	3	B	MD	C	VOL+M SED	724
200	20	20	20	20	100	ND	ND	ND	ND	ND	2	5	B	MD	M	VOL+M SED	725
100	ND	20	50	50	100	ND	50	ND	ND	ND	0	14	B	MD	M	VOL+M SED	726
100	ND	20	50	20	100	ND	50	ND	ND	ND	0	14	B	MD	M	VOL+M SED	727
100	ND	20	50	20	200	ND	50	ND	ND	ND	2	5	B	MD	M	VOL+M SED	728
100	ND	20	20	20	100	ND	50	ND	ND	ND	0	5	B	MD	M	VOL+M SED	729
200	ND	20	20	20	100	ND	50	ND	ND	ND	0	5	B	MD	M	VOL+M SED	730
200	20	20	20	20	100	ND	ND	ND	ND	ND	0	5	B	MD	M	VOL+M SED	731
200	ND	20	50	20	200	ND	ND	ND	ND	ND	2	10	A	LO	C	F.GR.SG. SAND&CLAY STONE,DIORITE	732
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	5	A	MD	M	PUMICE F. GR. VOL AGGLOM DIORITE	733
100	20	20	20	20	100	ND	ND	ND	ND	ND	3	5	A	MD	C	PUMICE F GR VOL GRNTD	734
200	ND	20	20	20	100	ND	50	ND	ND	ND	2	1	A	MD	M	PUMICE,F.GR.VOL OR FELSITE	735
100	ND	20	20	20	100	ND	200	5	ND	ND	0	1	A	MD	M	PUMICE FG VOL	736
100	ND	20	20	20	100	ND	200	5	ND	ND	1	2	A	MD	M	PUMICE SANDSTONE FGR VOL	737
100	ND	20	50	50	200	ND	ND	5	ND	ND	0	25		LO	C	F GR IGN SED GRNTD BANDED SILTSTONE	738
200	ND	20	50	20	200	ND	ND	ND	ND	ND		5		LO	M	TAN CLAY STONE, F.GR. IGN,INTERMED	740
100	ND	20	20	50	200	ND	ND	5	ND	ND	0	7		LO	M	INTERMED F GR IGN AGGLOM LOT GREY CLAYSTONE	741
100	ND	20	50	20	100	ND	ND	5	ND	ND	0	8	A	LO	M	INTERMED F GR IGN RD CLAYSTONE OR SILTSTONE AGGL	742
100	ND	20	20	20	100	ND	ND	ND	ND	ND	0	2	A	MD	C	VOL	743
100	ND	20	20	20	100	ND	ND	ND	ND	ND	0	16	B	MD	M	VOL+MS+SED	744
200	ND	20	20	20	100	ND	ND	ND	ND	ND	0	6	B	MD	M	VOL+MS+SED	745
200	20	20	20	20	100	ND	ND	ND	ND	ND	0	8	B	MD	M	VOL+MS+ SED	746
100	ND	20	20	20	100	ND	ND	5	ND	ND	0	2	B	MD	M	VOL	747
200	ND	20	20	20	100	ND	ND	ND	ND	ND	0	15	B	MD	M	VOL+MS	748
200	ND	20	20	20	100	ND	ND	5	ND	ND	2	8	B	MD	M	VOL+MS+LS	749
200	ND	20	20	20	100	ND	ND	ND	ND	ND	1	10	B	MD	M	VOL+MS+LS	750
200	ND	20	20	20	100	ND	ND	5	ND	ND	2	10	B	MD	M	VOL+MS+LS	751
100	ND	20	20	20	100	ND	ND	ND	ND	ND	0	14	B	MD	M	VOL+MS+LS	752
200	ND	20	20	20	100	ND	ND	5	ND	ND	0	16	B	MD	M	VOL+MS+LS	753
200	20	20	20	20	100	ND	ND	ND	ND	ND	1	12	B	MD	M	VOL+MS+LS	754
200	ND	20	20	20	100	ND	50	5	ND	ND	0	15	B	MD	M	VOL+MS+LS	755
200	ND	20	20	20	100	ND	ND	ND	ND	ND	0	8	B	MD	M	VOL+MS+LS	756
100	20	20	20	20	100	ND	50	ND	ND	ND	2	8	B	MD	M	VOL+M SED	757
100	ND	20	20	20	100	ND	50	ND	ND	ND	2	10	B	MD	M	VOL+MS+ SED	758
100	ND	20	20	20	200	ND	50	5	ND	ND	0	8	B	MD	M	VOL+MS+SED	759
100	ND	20	20	20	100	ND	ND	ND	ND	ND	2	2	A	HI	C	VOL+MS	760
200	ND	20	50	20	200	ND	50	ND	ND	ND	0	2	A	MD	M	VOL	761
200	ND	20	50	20	200	ND	ND	5	ND	ND	0	DR	A	MD	C	VOL,PORPH+AMYG+PUMICE	762
100	ND	20	50	20	200	ND	ND	5	ND	ND	3	DR	A	MD	M	VOL	763

(7) Explanation of abbreviations:
AAS = atomic absorption spectrophotometry
ppm = parts per million

(8) Stream width = feet (estimated)

(9) Location:

```
x - - - - - - - - high water level
D
     x
     C

          x - - - - - water level
          B    x
               A
```

(10) Organic content: LO = low (light with little organic matter)
MD = medium (gray, mixed)
HI = high (black with much organic matter)

(11) Particle size: C = coarse; M = medium; F = fine

Table 6 Tabulation of geochemical data showing the relationship of the copper field test to heavy metals field test and total extractable copper, lead, and zinc by AAS, White River area, South-Central Alaska.

AAS analyses by Alaska Division of Mines and Geology; Spectrographic analyses by L. Shaffor MIRL; computer program by L. E. Heiner, MIRL.

Map Number	Cu(AAS)	Pb(AAS)	Zn(AAS)	Ni(Spec.)	HM field test	Cu field test	Readily extractable Cu by (AAS)	CuCx / Total Cu (AAS)	CuCx (ml dye) / Total Cu (AAS)	HM (ml dye) / Total Cu (AAS)	HM (ml dye) / Total Zn (AAS)	HM (ml dye) / Total Pb (AAS)	Ni (Spec.) / Total Cu (AAS)
2	150	20	155	20	1	0	7	0.047	0.0	0.007	0.006	0.050	0.133
3	190	20	65	20	1	3	12	0.063	0.016	0.005	0.015	0.050	0.105
4	80	20	60	50	1	7	11	0.137	0.087	0.012	0.017	0.050	0.625
5	145	15	55	20	1	5	9	0.062	0.034	0.007	0.018	0.067	0.138
8	190	25	75	20	1	5	17	0.089	0.026	0.005	0.013	0.040	0.105
10	170	15	65	20	12	1	14	0.082	0.006	0.071	0.185	0.800	0.118
11	155	15	60	20	13	3	13	0.084	0.019	0.084	0.217	0.867	0.129
12	60	20	80	10	12	5	14	0.233	0.083	0.200	0.150	0.600	0.167
13	40	15	80	20	5	2	8	0.200	0.050	0.125	0.063	0.333	0.500
14	55	15	75	10	7	5	13	0.236	0.091	0.127	0.093	0.467	0.182
15	55	20	80	50	12	2	9	0.164	0.036	0.218	0.150	0.600	0.909
16	60	25	90	10	4	4	9	0.150	0.067	0.067	0.044	0.160	0.167
17	70	25	95	20	9	6	12	0.171	0.086	0.129	0.095	0.360	0.286
18	70	15	45	10	1	5	12	0.171	0.071	0.014	0.022	0.067	0.143
19	50	20	85	20	9	3	7	0.140	0.060	0.180	0.106	0.450	0.400
20	70	20	95	20	5	7	13	0.186	0.100	0.071	0.053	0.250	0.286
21	40	15	90	50	1	3	7	0.175	0.075	0.025	0.011	0.067	1.250
22	40	10	70	50	4	3	8	0.200	0.075	0.100	0.057	0.400	1.250
23	50	15	55	10	12	5	10	0.200	0.100	0.240	0.218	0.800	0.200
25	45	15	65	20	10	7	14	0.311	0.156	0.222	0.154	0.667	0.444
26	55	20	85	20	7	3	9	0.164	0.055	0.127	0.082	0.350	0.364
27	55	15	85	20	3	5	14	0.255	0.091	0.055	0.035	0.200	0.364
28	40	10	60	50	1	6	12	0.300	0.150	0.025	0.017	0.100	1.250
29	40	10	75	20	9	5	12	0.300	0.125	0.225	0.120	0.900	0.500
30	40	15	70	20	1	3	9	0.225	0.075	0.025	0.014	0.067	0.500
31	75	15	80	20	1	5	13	0.173	0.067	0.013	0.012	0.067	0.267
32	65	20	85	20	3	3	9	0.138	0.046	0.046	0.035	0.150	0.308
33	60	20	85	50	5	4	10	0.167	0.067	0.083	0.059	0.250	0.833
34	60	20	80	20	10	5	10	0.167	0.083	0.167	0.125	0.500	0.333
35	50	20	85	50	2	3	9	0.180	0.060	0.040	0.024	0.100	1.000
36	60	25	100	20	20	5	12	0.200	0.083	0.333	0.200	0.800	0.333
37	70	20	105	50	5	5	13	0.186	0.071	0.071	0.048	0.250	0.714
38	50	20	80	20	0	4	9	0.180	0.080	0.0	0.0	0.0	0.400
39	60	25	90	20	3	6	13	0.217	0.100	0.050	0.033	0.120	0.333
41	55	20	85	20	6	2	9	0.164	0.036	0.109	0.071	0.300	0.364
42	55	20	80	20	6	2	6	0.109	0.036	0.109	0.075	0.300	0.364
44	65	20	95	20	3	5	11	0.169	0.077	0.046	0.032	0.150	0.308
45	65	20	95	50	8	4	7	0.108	0.062	0.123	0.084	0.400	0.769
46	45	10	65	50	3	1	5	0.111	0.022	0.067	0.046	0.300	1.111
47	55	30	95	50	4	3	9	0.164	0.055	0.073	0.042	0.133	0.909
48	60	20	85	20	6	4	10	0.167	0.067	0.100	0.071	0.300	0.333
49	80	25	130	20	7	7	9	0.112	0.087	0.087	0.054	0.280	0.250
50	40	15	90	20	1	1	4	0.100	0.025	0.025	0.011	0.067	0.500
52	50	15	85	20	5	2	5	0.100	0.040	0.100	0.059	0.333	0.400
53	50	15	75	20	1	4	7	0.140	0.080	0.020	0.013	0.067	0.400
54	50	15	80	20	1	3	6	0.120	0.060	0.020	0.012	0.067	0.400
55	50	15	85	20	2	2	7	0.140	0.040	0.040	0.024	0.133	0.400
56	25	10	55	50	1	1	5	0.200	0.040	0.040	0.018	0.100	2.000
57	35	10	60	20	1	0	5	0.143	0.0	0.029	0.017	0.100	0.571
58	45	15	75	50	1	3	7	0.156	0.067	0.022	0.013	0.067	1.111
59	75	10	50	20	4	5	7	0.093	0.067	0.053	0.080	0.400	0.267
60	70	10	60	20	1	5	10	0.143	0.071	0.014	0.017	0.100	0.286
61	110	15	95	20	6	13	13	0.118	0.118	0.055	0.063	0.400	0.182
62	125	15	95	50	1	2	5	0.040	0.016	0.008	0.011	0.067	0.400
65	40	10	80	50	1	3	8	0.200	0.075	0.025	0.012	0.100	1.250
66	55	15	75	20	3	3	9	0.164	0.055	0.055	0.040	0.200	0.364
68	35	10	85	20	5	1	6	0.171	0.029	0.143	0.059	0.500	0.571
69	40	10	85	20	5	1	6	0.150	0.025	0.125	0.059	0.500	0.500
70	70	10	65	50	1	10	15	0.214	0.143	0.014	0.015	0.100	0.714
71	90	10	70	20	11	5	18	0.200	0.100	0.122	0.157	1.100	0.222
72	60	10	60	20	15	10	18	0.300	0.167	0.250	0.250	1.500	0.333
73	40	5	55	20	6	3	6	0.150	0.075	0.150	0.109	1.200	0.500
74	20	10	40	20	6	2	5	0.250	0.100	0.300	0.150	0.600	1.000
76	20	20	30	10	4	0	4	0.200	0.0	0.200	0.133	0.200	0.500
77	45	15	75	20	2	4	7	0.156	0.089	0.044	0.027	0.133	0.444
78	75	55	110		2	7	9	0.120	0.093	0.027	0.018	0.036	0.0
79	20	10	40	20	4	1	4	0.200	0.050	0.200	0.100	0.400	1.000
80	30	10	50	20	2	2	6	0.200	0.067	0.067	0.040	0.200	0.667
81	55	15	75	20	3	0	3	0.055	0.0	0.055	0.040	0.200	0.364
82	45	15	65	20	3	3	4	0.089	0.067	0.067	0.046	0.200	0.444
83	40	15	55	20	2	3	4	0.100	0.075	0.050	0.036	0.133	0.500
84	160	20	95	50	4	4	6	0.037	0.025	0.025	0.042	0.200	0.313
86	85	25	90	50	2	7	13	0.153	0.082	0.024	0.022	0.080	0.588
87	80	20	90	50	3	5	8	0.100	0.063	0.037	0.033	0.150	0.625
89	90	20	85	50	2	5	8	0.089	0.056	0.022	0.024	0.100	0.556
90	35	10	55	100	1	0	3	0.086	0.0	0.029	0.018	0.100	2.857
91	25	10	70	50	2	1	3	0.120	0.040	0.080	0.029	0.200	2.000
92	35	10	55	100	1	0	3	0.086	0.0	0.029	0.018	0.100	2.857
93	35	10	50	100	1	1	2	0.057	0.029	0.029	0.020	0.100	2.857
94	65	20	95	50	4	6	13	0.200	0.092	0.062	0.042	0.200	0.769
95	55	20	85	50	3	4	9	0.164	0.073	0.055	0.035	0.150	0.909
96	35	10	100	20	2	2	4	0.114	0.057	0.057	0.020	0.200	0.571
97	25	10	85	20	3	1	4	0.160	0.040	0.120	0.035	0.300	0.800
98	15	10	70	20	2	1	4	0.267	0.067	0.133	0.029	0.200	1.333
99	55	10	60	20	2	1	3	0.055	0.018	0.036	0.033	0.200	0.364
100	30	10	55	20	2	0	3	0.100	0.0	0.067	0.036	0.200	0.667
101	40	10	60	20	1	3	4	0.100	0.075	0.025	0.017	0.100	0.500
102	30	10	60	50	2	1	6	0.200	0.033	0.067	0.033	0.200	1.667
103	30	10	60	20	2	2	5	0.167	0.067	0.067	0.033	0.200	0.667
104	30	10	55	50	2	1	5	0.167	0.033	0.067	0.036	0.200	1.667
105	30	10	60	20	1	1	5	0.167	0.033	0.033	0.017	0.100	0.667
106	20	5	50	20	3	0	3	0.150	0.0	0.150	0.060	0.600	1.000
108	25	10	55	20	2	1	6	0.240	0.040	0.080	0.036	0.200	0.800
109	25	10	75	20	4	1	3	0.120	0.040	0.160	0.053	0.400	0.800
110	30	10	75	20	1	2	5	0.167	0.067	0.033	0.013	0.100	0.667
111	25	10	50	50	2	0	3	0.120	0.0	0.080	0.040	0.200	2.000
112	30	10	50	20	2	1	2	0.067	0.033	0.067	0.040	0.200	0.667
113	25	5	45	20	2	0	2	0.080	0.0	0.080	0.044	0.400	0.800
114	20	5	40	50	5	0	1	0.050	0.0	0.250	0.125	1.000	2.500
115	25	5	45	20	3	0	2	0.080	0.0	0.120	0.067	0.600	0.800
116	20	10	45	50	7	0	1	0.050	0.0	0.350	0.156	0.700	2.500
117	25	10	50	20	3	0	3	0.120	0.0	0.120	0.060	0.300	0.800
118	25	10	45	20	6	1	2	0.080	0.040	0.240	0.133	0.600	0.800
119	25	10	50	20	5	0	2	0.080	0.0	0.200	0.100	0.500	0.800
120	20	10	35	50	2	0	2	0.100	0.0	0.100	0.057	0.200	2.500
121	25	10	40	20	2	0	2	0.080	0.0	0.080	0.050	0.200	0.800
122	20	10	60	100	2	1	1	0.050	0.050	0.100	0.033	0.200	5.000
123	20	10	70	20	4	0	2	0.100	0.0	0.200	0.057	0.400	1.000
124	45	15	95	200	0	0	4	0.089	0.0	0.0	0.0	0.0	4.444
125	20	10	70	20	0	0	3	0.150	0.0	0.0	0.0	0.0	1.000
126	15	10	65	20	2	0	1	0.067	0.0	0.133	0.031	0.200	1.333
127	25	10	70	20	5	0	2	0.080	0.0	0.200	0.071	0.500	0.800
128	20	10	65	20	0	1	1	0.050	0.050	0.0	0.0	0.0	1.000
129	20	10	70	20	4	0	2	0.100	0.0	0.200	0.057	0.400	1.000
130	15	10	60	20	0	0	1	0.067	0.0	0.0	0.0	0.0	1.333
131	25	5	55	50	3	0	2	0.080	0.0	0.120	0.055	0.600	2.000
132	15	10	65	10	0	0	2	0.133	0.0	0.0	0.0	0.0	0.667
133	30	10	60	20	2	1	4	0.133	0.033	0.067	0.033	0.200	0.667
134	40	10	80	20	5	1	5	0.125	0.025	0.125	0.063	0.500	0.500
135				50	6	4	7	0.0	0.0	0.0	0.0	0.0	0.0
136	35	10	85	20	6	1	5	0.143	0.029	0.171	0.071	0.600	0.571
137	150	20	140	20	2	7	6	0.040	0.047	0.013	0.014	0.100	0.133
138	105	20	110	50	4	4	8	0.076	0.038	0.038	0.036	0.200	0.476
140	40	20	110	50	5	1	2	0.050	0.025	0.125	0.045	0.250	1.250
141	25	10	55	20	3	2	6	0.240	0.080	0.120	0.055	0.300	0.800
142	45	15	95	50	2	0	4	0.089	0.0	0.044	0.021	0.133	1.111
143	45	15	95	50	3	2	5	0.111	0.044	0.067	0.032	0.200	1.111
147	20	10	135	50	6	0	3	0.150	0.0	0.300	0.044	0.600	2.500
149	55	15	115	100	1	2	6	0.109	0.036	0.018	0.009	0.067	1.818
150	45	15	100	50	7	4	6	0.133	0.089	0.156	0.070	0.467	1.111
151	25	15	55	50	2	0	2	0.080	0.0	0.080	0.036	0.133	2.000
152	25	10	50	20	2	0	3	0.120	0.0	0.080	0.040	0.200	0.800
153	25	5	50	20	3	0	2	0.080	0.0	0.120	0.060	0.600	0.800
154	25	10	60	20	7	0	2	0.080	0.0	0.280	0.117	0.700	0.800
155	25	10	55	20	5	0	2	0.080	0.0	0.200	0.091	0.500	0.800
156	25	10	55	50	2	0	2	0.080	0.0	0.080	0.036	0.200	2.000
157	20	10	55	50	2	0	2	0.100	0.0	0.100	0.036	0.200	2.500
158	25	10	60	50	4	0	2	0.080	0.0	0.160	0.067	0.400	2.000
160	30	10	75	50	4	0	2	0.067	0.0	0.133	0.053	0.400	1.667
161	20	10	50	100	4	0	3	0.150	0.0	0.200	0.080	0.400	5.000
162	25	10	50	50	4	0	2	0.080	0.0	0.160	0.080	0.400	2.000
164	20	10	45	50	5	0	2	0.100	0.0	0.250	0.111	0.500	2.500
165	20	10	45	50	4	0	3	0.150	0.0	0.200	0.089	0.400	2.500
166	20	10	50	100	3	0	2	0.100	0.0	0.150	0.060	0.300	5.000
167	25	15	60	20	4	0	2	0.080	0.0	0.160	0.067	0.267	0.800
168	20	10	40	50	3	0	3	0.150	0.0	0.150	0.075	0.300	2.500
169	25	20	40	50	3	0	2	0.080	0.0	0.120	0.075	0.150	2.000
170	30	10	45	20	2	0	2	0.067	0.0	0.067	0.044	0.200	0.667
171	25	10	40	20	2	0	2	0.080	0.0	0.080	0.050	0.200	0.800
172	25	20	60	20	3	2	3	0.120	0.080	0.120	0.050	0.150	0.800
173	25	15	55	20	1	0	2	0.080	0.0	0.040	0.018	0.067	0.800
174	25	20	60	20	6	2	4	0.160	0.080	0.240	0.100	0.300	0.800
176	20	20	55	20	2	0	2	0.100	0.0	0.100	0.036	0.100	1.000
177	25	15	65	50	3	0	2	0.080	0.0	0.120	0.046	0.200	2.000
178	25	15	60	20	2	0	3	0.120	0.0	0.080	0.033	0.133	0.800
179	20	15	45	20	3	0	1	0.050	0.0	0.150	0.067	0.200	1.000
180	30	15	65	20	2	1	2	0.067	0.033	0.067	0.031	0.133	0.667
182	25	15	55	20	3	0	2	0.080	0.0	0.120	0.055	0.200	0.800
183	30	15	75	20	2	0	2	0.067	0.0	0.067	0.027	0.133	0.667
184	15	10	90	20	7	1	3	0.200	0.067	0.467	0.078	0.700	1.333
186	35	10	55	50	2	1	2	0.057	0.029	0.057	0.036	0.200	1.429
188	35	5	55	50	2	0	2	0.057	0.0	0.057	0.036	0.400	1.429
189	35	5	50	50	2	0	1	0.029	0.0	0.057	0.040	0.400	1.429
190	30	10	50	50	2	0	2	0.067	0.0	0.067	0.040	0.200	1.667
193	20	5	50	20	8	0	1	0.050	0.0	0.400	0.160	1.600	1.000
199	25	5	65	20	3	2	4	0.160	0.080	0.120	0.046	0.600	0.800
200	20	5	45	20	2	0	1	0.050	0.0	0.100	0.044	0.400	1.000
201	40	10	100	50	12	0	3	0.075	0.0	0.300	0.120	1.200	1.250
203	25	5	45	50	1	0	1	0.040	0.0	0.040	0.022	0.200	2.000
204	50	20	95	50	8	4	8	0.160	0.080	0.160	0.084	0.400	1.000
205	30	15	60	50	1	1	6	0.200	0.033	0.033	0.017	0.067	1.667
206	45	25	95	20	12	3	6	0.133	0.067	0.267	0.126	0.480	0.444
207	25	35	95	20	2	1	3	0.120	0.040	0.080	0.021	0.057	0.800
208	55	15	75	50	8	2	7	0.127	0.036	0.145	0.107	0.533	0.909
209	60	20	70	20	1	5	7	0.117	0.083	0.017	0.014	0.050	0.333
210	60	15	90	20	4	1	3	0.050	0.017	0.067	0.044	0.267	0.333
211	35	15	65	50	2	1	5	0.143	0.029	0.057	0.031	0.133	1.429
213	30	40	110	50	3	1	2	0.067	0.033	0.100	0.027	0.075	1.667
214	30	55	150	20	9	1	2	0.067	0.033	0.300	0.060	0.164	0.667
215	15	15	65	20	2	1	1	0.067	0.067	0.133	0.031	0.133	1.333
216	25	10	55	20	2	0	2	0.080	0.0	0.080	0.036	0.200	0.800
217	35	5	60	20	4	1	3	0.086	0.029	0.114	0.067	0.800	0.571
218	25	5	75	20	2	0	2	0.080	0.0	0.080	0.027	0.400	0.800
219	35	5	50	50	2	0	2	0.057	0.0	0.057	0.040	0.400	1.429
220	30	5	75	50	5	1	3	0.100	0.033	0.167	0.067	1.000	1.667
222	30	5	50	50	2	0	2	0.067	0.0	0.067	0.040	0.400	1.667
223	25	40	75	20	4	0	2	0.080	0.0	0.160	0.053	0.100	0.800
224	25	5	45	50	7	0	1	0.040	0.0	0.280	0.156	1.400	2.000
226	25	10	45	50	4	1	2	0.080	0.040	0.160	0.089	0.400	2.000
227	25	10	55	50	4	0	3	0.120	0.0	0.160	0.073	0.400	2.000
228	30	10	65	50	4	1	5	0.167	0.033	0.133	0.062	0.400	1.667
229	25	10	40	20	4	1	3	0.120	0.040	0.160	0.100	0.400	0.800
230	30	10	55	50	3	0	2	0.067	0.0	0.100	0.055	0.300	1.667
232	30	10	55	20	5	0	1	0.033	0.0	0.167	0.091	0.500	0.667
233	25	10	50	20	7	1	4	0.160	0.040	0.280	0.140	0.700	0.800
235	20	10	45	20	3	1	1	0.050	0.050	0.150	0.067	0.300	1.000
236					3	0	1	0.0	0.0	0.0	0.0	0.0	0.0
237	25	10	55	20	5	0	1	0.040	0.0	0.200	0.091	0.500	0.800
238	55	10	70	20	0	7	12	0.218	0.127	0.0	0.0	0.0	0.364
239	60	15	60	20	0	6	12	0.200	0.100	0.0	0.0	0.0	0.333
240	55	15	55	20	0	8	6	0.109	0.145	0.0	0.0	0.0	0.364
241	50	10	65	20	3	5	8	0.160	0.100	0.060	0.046	0.300	0.400
242	30	10	15	20	0	0	2	0.067	0.0	0.0	0.0	0.0	0.667
243	40	10	60	50	0	2	4	0.100	0.050	0.0	0.0	0.0	1.250
244	45	15	70	20	0	4	7	0.156	0.089	0.0	0.0	0.0	0.444
245	45	10	60	20	0	8	11	0.244	0.178	0.0	0.0	0.0	0.444
246	25	10	90	50	0	1	3	0.120	0.040	0.0	0.0	0.0	2.000
247	25	10	95	100	0	1	3	0.120	0.040	0.0	0.0	0.0	4.000
248	30	10	55	20	0	0	3	0.100	0.0	0.0	0.0	0.0	0.667
249	60	10	70	50	0	1	6	0.100	0.017	0.0	0.0	0.0	0.833
250	65	10	60	50	0	5	10	0.154	0.077	0.0	0.0	0.0	0.769
251	60	15	95	50	0	9	12	0.200	0.150	0.0	0.0	0.0	0.833
252	60	10	60	50	0	3	7	0.117	0.050	0.0	0.0	0.0	0.833
253	60	10	60	50	0	3	5	0.083	0.050	0.0	0.0	0.0	0.833
254	65	10	85	50	0	2	6	0.092	0.031	0.0	0.0	0.0	0.769
255	65	10	60	50	0	3	7	0.108	0.046	0.0	0.0	0.0	0.769
256	65	10	65	50	0	3	7	0.108	0.046	0.0	0.0	0.0	0.769
257	60	10	60	50	0	0	5	0.083	0.0	0.0	0.0	0.0	0.833
258	70	10	100	20	0	3	6	0.086	0.043	0.0	0.0	0.0	0.286
259	60	10	55	50	0	4	9	0.150	0.067	0.0	0.0	0.0	0.833
260	50	10	55	50	0	3	7	0.140	0.060	0.0	0.0	0.0	1.000
261	55	10	55	50	0	2	5	0.091	0.036	0.0	0.0	0.0	0.909
262	50	15	55	100	0	5	5	0.100	0.100	0.0	0.0	0.0	2.000
263	60	10	65	50	0	2	5	0.083	0.033	0.0	0.0	0.0	0.833
264	55	10	60	50	0	4	8	0.145	0.073	0.0	0.0	0.0	0.909
265	55	10	65	50	0	1	5	0.091	0.018	0.0	0.0	0.0	0.909
266	55	10	60	50	0	3	6	0.109	0.055	0.0	0.0	0.0	0.909
267	55	10	65	50	0	2	4	0.073	0.036	0.0	0.0	0.0	0.909

Map Number	Cu(AAS)	Pb(AAS)	Zn(AAS)	Ni(Spec.)	HM field test	Cu field test	Readily extractable Cu by (AAS)	CuCx / Total Cu (AAS)	CuCx (ml dye) / Total Cu (AAS)	HM (ml dye) / Total Cu (AAS)	HM (ml dye) / Total Zn (AAS)	HM (ml dye) / Total PB (AAS)	Ni (Spec.) / Total Cu (AAS)
68	55	10	75	50	0	3	6	0.109	0.055	0.0	0.0	0.0	0.909
69	55	10	50	50	0	2	5	0.091	0.036	0.0	0.0	0.0	0.909
70	55	10	55	50	0	1	5	0.091	0.018	0.0	0.0	0.0	0.909
71	40	10	70	50	0	1	4	0.100	0.025	0.0	0.0	0.0	1.250
72	65	15	75	20	0	7	10	0.154	0.108	0.0	0.0	0.0	0.308
73	35	10	50	50	1	3	5	0.143	0.086	0.029	0.020	0.100	1.429
74	35	15	55	50	7	0	3	0.086	0.0	0.200	0.127	0.467	1.429
275	70	10	55	20	1	3	5	0.071	0.043	0.014	0.018	0.100	0.286
276	70	10	50	20	8	0	3	0.043	0.0	0.114	0.160	0.800	0.286
277	60	10	60	50	5	5	11	0.183	0.083	0.083	0.083	0.500	0.833
278	65	10	50	50	1	1	4	0.062	0.015	0.015	0.020	0.100	0.769
279	70	10	55	20	2	0	3	0.043	0.0	0.029	0.036	0.200	0.286
280	75	10	60	50	3	0	3	0.040	0.0	0.040	0.050	0.300	0.667
281	40	10	95	20	4	1	3	0.075	0.025	0.100	0.042	0.400	0.500
282	45	10	55	50	4	1	4	0.089	0.022	0.089	0.073	0.400	1.111
283	45	10	55	20	2	1	2	0.044	0.022	0.044	0.036	0.200	0.444
284	40	10	70	50	1	0	2	0.050	0.0	0.025	0.014	0.100	1.250
285	40	10	45	50	3	0	2	0.050	0.0	0.075	0.067	0.300	1.250
286	40	15	40	50	2	0	3	0.075	0.0	0.050	0.050	0.133	1.250
287	35	15	45	50	2	0	2	0.057	0.0	0.057	0.044	0.133	1.429
288	30	10	40	50	1	0	2	0.067	0.0	0.033	0.025	0.100	1.667
289	30	10	40	50	1	0	2	0.067	0.0	0.033	0.025	0.100	1.667
290	60	25	140	50	1	1	3	0.050	0.017	0.017	0.007	0.040	0.833
291	80	15	90	50	1	1	6	0.075	0.012	0.012	0.011	0.067	0.625
292	95	20	100	50	2	1	10	0.105	0.011	0.021	0.020	0.100	0.526
293	160	45	125	100	2	6	13	0.081	0.037	0.012	0.016	0.044	0.625
294	45	10	50	50	1	3	5	0.111	0.067	0.022	0.020	0.100	1.111
295	30	15	45	20	1	0	4	0.133	0.0	0.033	0.022	0.067	0.667
296	80	20	40	50	2	1	6	0.075	0.012	0.025	0.050	0.100	0.625
297	60	15	80	50	2	0	3	0.050	0.0	0.033	0.025	0.133	0.833
298	40	15	65	20	2	0	3	0.075	0.0	0.050	0.031	0.133	0.500
299	100	25	105	50	2	0	8	0.080	0.0	0.020	0.019	0.080	0.500
300	80	10	60	50	3	5	10	0.125	0.063	0.037	0.050	0.300	0.625
301	55	10	65	50	1	1	5	0.091	0.018	0.018	0.015	0.100	0.909
302	45	15	55	20	2	1	5	0.111	0.022	0.044	0.036	0.133	0.444
303	150	45	145	100	2	0	12	0.080	0.0	0.013	0.014	0.044	0.667
304	70	20	120	50	3	0	2	0.029	0.0	0.043	0.025	0.150	0.714
305	80	20	130	50	2	1	7	0.087	0.012	0.025	0.015	0.100	0.625
306	45	20	90	50	3	0	3	0.067	0.0	0.067	0.033	0.150	1.111
307	75	20	90	50	2	1	4	0.053	0.013	0.027	0.022	0.100	0.667
308	130	35	110	50	4	3	13	0.100	0.023	0.031	0.036	0.114	0.385
309	35	15	55	20	1	0	2	0.057	0.0	0.029	0.018	0.067	0.571
311	75	20	95	50	4	2	4	0.053	0.027	0.053	0.042	0.200	0.667
312	95	25	110	50	3	0	5	0.095	0.0	0.032	0.027	0.120	0.526
313	80	20	95	20	5	0	3	0.037	0.0	0.063	0.053	0.250	0.250
314	125	25	115	100	2	1	5	0.040	0.008	0.016	0.017	0.080	0.800
315	90	15	95	50	5	1	5	0.056	0.011	0.056	0.053	0.333	0.556
317	85	15	100	50	3	1	4	0.047	0.012	0.035	0.030	0.200	0.588
318	40	10	50	50	5	1	3	0.075	0.025	0.125	0.100	0.500	1.250
319	40	15	45	100	8	1	3	0.075	0.025	0.200	0.178	0.533	2.500
320	85	15	90	50	3	1	3	0.035	0.012	0.035	0.033	0.200	0.588
321	35	10	45	50	3	0	3	0.086	0.0	0.086	0.067	0.300	1.429
322	75	15	95	50	9	0	6	0.080	0.0	0.120	0.095	0.600	0.667
323	50	25	90	100	4	0	4	0.080	0.0	0.080	0.044	0.160	2.000
324	80	20	95	50	4	2	5	0.063	0.025	0.050	0.042	0.200	0.625
325	75	15	95	50	5	0	3	0.040	0.0	0.067	0.053	0.333	0.667
326	90	20	105	50	3	3	9	0.100	0.033	0.033	0.029	0.150	0.556
327	80	10	90	50	3	1	3	0.037	0.012	0.037	0.033	0.300	0.625
328	40	10	55	50	1	1	4	0.100	0.025	0.025	0.018	0.100	1.250
329	1000	10	55	50	9	100	226	0.226	0.100	0.009	0.164	0.900	0.050
330	30	20	75	20	1	0	2	0.067	0.0	0.033	0.013	0.050	0.667
331	30	15	55	10	1	0	2	0.067	0.0	0.033	0.018	0.067	0.333
332	30	10	45	20	1	0	3	0.100	0.0	0.033	0.022	0.100	0.667
333	85	15	55	50	2	4	6	0.071	0.047	0.024	0.036	0.133	0.588
334	100	15	60	50	1	7	16	0.160	0.070	0.010	0.017	0.067	0.500
335	35	15	40	20	2			0.0	0.0	0.057	0.050	0.133	0.571
336	25	15	40	10	2	0	2	0.080	0.0	0.080	0.050	0.133	0.400
337	95	10	50	50	1	6	11	0.116	0.063	0.011	0.020	0.100	0.526
338	100	10	50	50	2	8	15	0.150	0.080	0.020	0.040	0.200	0.500
339	35	20	80	20	2	0	2	0.057	0.0	0.057	0.025	0.100	0.571
340	30	10	40	50	2	0	4	0.133	0.0	0.067	0.050	0.200	1.667
341	35	15	50	10	2	0	1	0.029	0.0	0.057	0.040	0.133	0.286
342	95	20	95	20	2	1	2	0.021	0.011	0.021	0.021	0.100	0.211
343	30	15	55	20	2	0	2	0.067	0.0	0.067	0.036	0.133	0.667
344	25	10	40	20	2	0	2	0.080	0.0	0.080	0.050	0.200	0.800
345	25	10	35	20	2	0	1	0.040	0.0	0.080	0.057	0.200	0.800
347	35	10	40	20	2	0	3	0.086	0.0	0.057	0.050	0.200	0.571
348	85	15	50	50	1	3	7	0.082	0.035	0.012	0.020	0.067	0.588
349	85	15	50	50	2	2	6	0.071	0.024	0.024	0.040	0.133	0.588
350	75	10	55	50	1	3	7	0.093	0.040	0.013	0.018	0.100	0.667
351	80	15	90	50	2	1	4	0.050	0.012	0.025	0.022	0.133	0.625
352	20	10	35	20	1	0	1	0.050	0.0	0.050	0.029	0.100	1.000
353	165	10	55	100	1	11	16	0.097	0.067	0.006	0.018	0.100	0.606
354	20	10	30	20	1	0	2	0.100	0.0	0.050	0.033	0.100	1.000
355	45	15	50	20	1	1	7	0.156	0.022	0.022	0.020	0.067	0.444
356	95	20	55	100	2	2	5	0.053	0.021	0.021	0.036	0.100	1.053
357	55	15	50	50	1	2	4	0.073	0.036	0.018	0.020	0.067	0.909
358	120	15	60	100	2	7	12	0.100	0.058	0.017	0.033	0.133	0.833
359	25	15	35	20	1	0	2	0.080	0.0	0.040	0.029	0.067	0.800
360	25	10	35	20	1	1	4	0.160	0.040	0.040	0.029	0.100	0.800
361	40	20	70	20	2	1	4	0.100	0.025	0.050	0.029	0.100	0.500
362	35	15	55	20	1	0	2	0.057	0.0	0.029	0.018	0.067	0.571
363	35	15	70	20	2	2	7	0.200	0.057	0.057	0.029	0.133	0.571
364	40	15	70	50	3	0	3	0.075	0.0	0.075	0.043	0.200	1.250
365	30	10	45	50	2	1	3	0.100	0.033	0.067	0.044	0.200	1.667
366	40	15	70	20	12	0	7	0.175	0.0	0.300	0.171	0.800	0.500
368	40	15	75	20	3	1	7	0.175	0.025	0.075	0.040	0.200	0.500
369	25	10	40	20	2	0	2	0.080	0.0	0.080	0.050	0.200	0.800
370	40	20	65	20	2	0	2	0.050	0.0	0.050	0.031	0.100	0.500
371	55	20	65	20	2	1	4	0.073	0.018	0.036	0.031	0.100	0.364
372	55	20	60	20	2	2	4	0.073	0.036	0.036	0.033	0.100	0.364
373	30	10	40	20	2	0	5	0.167	0.0	0.067	0.050	0.200	0.667
374	30	15	45	20	2	0	3	0.100	0.0	0.067	0.044	0.133	0.667
375	60	20	70	20	2	1	5	0.083	0.017	0.033	0.029	0.100	0.333
376	20	10	40	20	2	0	6	0.300	0.0	0.100	0.050	0.200	1.000
377	45	25	85	20	3	1	2	0.044	0.022	0.067	0.035	0.120	0.444
378	45	10	40	50	2	0	3	0.067	0.0	0.044	0.050	0.200	1.111
379	40	20	110	20	0	2	4	0.100	0.050	0.0	0.0	0.0	0.500
380	50	15	90	20	0	4	5	0.100	0.080	0.0	0.0	0.0	0.400
381	30	10	55	50	0	0	2	0.067	0.0	0.0	0.0	0.0	1.667
382	40	15	70	20	0	2	4	0.100	0.050	0.0	0.0	0.0	0.500
383	30	15	70	50	0	1	3	0.100	0.033	0.0	0.0	0.0	1.667
384	35	20	70	20	0	2	2	0.057	0.057	0.0	0.0	0.0	0.571
385	25	15	65	20	0		4	0.160	0.0	0.0	0.0	0.0	0.800

Map Number	Cu(AAS)	Pb(AAS)	Zn(AAS)	Ni(Spec.)	HM field test	Cu field test	Readily extractable Cu by (AAS)	CuCx / Total Cu (AAS)	CuCx (ml dye) / Total Cu (AAS)	HM (ml dye) / Total Cu (AAS)	HM (ml dye) / Total Zn (AAS)	HM (ml dye) / Total Pb (AAS)	Ni (Spec.) / Total Cu (AAS)
386	55	15	80	20	0	5	8	0.145	0.091	0.0	0.0	0.0	0.364
387	45	15	75	20	0	5	8	0.178	0.111	0.0	0.0	0.0	0.444
388	35	10	55	20	0	1	3	0.086	0.029	0.0	0.0	0.0	0.571
389	40	10	40	20	0	1	4	0.100	0.025	0.0	0.0	0.0	0.500
390	35	10	45	20	0	2	4	0.114	0.057	0.0	0.0	0.0	0.571
392	35	10	45	50	0	1	4	0.114	0.029	0.0	0.0	0.0	1.429
393	25	10	50	20	0	1	3	0.120	0.040	0.0	0.0	0.0	0.800
394	35	10	45	20	0	0	4	0.114	0.0	0.0	0.0	0.0	0.571
395	55	15	60	20	0	3	6	0.109	0.055	0.0	0.0	0.0	0.364
396	75	15	70	20	0	2	6	0.080	0.027	0.0	0.0	0.0	0.267
397	35	20	60	50	0	1	4	0.114	0.029	0.0	0.0	0.0	1.429
398	20	10	65	100	0	0	2	0.100	0.0	0.0	0.0	0.0	5.000
399	50	10	55	100	0	0	3	0.060	0.0	0.0	0.0	0.0	2.000
400	95	10	50	20	0	15	27	0.284	0.158	0.0	0.0	0.0	0.211
401	40	20	110	20	0	1	2	0.050	0.025	0.0	0.0	0.0	0.500
402	30	10	50	50	0	2	3	0.100	0.067	0.0	0.0	0.0	1.667
403	30	10	50	20	0	0	3	0.100	0.0	0.0	0.0	0.0	0.667
404	20	10	75	50	0	1	2	0.100	0.050	0.0	0.0	0.0	2.500
405	30	10	50	20	0	0	2	0.067	0.0	0.0	0.0	0.0	0.667
406	25	10	55	50	0	0	2	0.080	0.0	0.0	0.0	0.0	2.000
407	40	10	75	20	0	1	2	0.050	0.025	0.0	0.0	0.0	0.500
408	30	10	50	100	0	0	2	0.067	0.0	0.0	0.0	0.0	3.333
409	30	10	60	20	0	1	1	0.033	0.033	0.0	0.0	0.0	0.667
410	15	10	40	50	0	0	2	0.133	0.0	0.0	0.0	0.0	3.333
411	15	10	40	50	0	0	1	0.067	0.0	0.0	0.0	0.0	3.333
412	20	10	45	20	0	0	1	0.050	0.0	0.0	0.0	0.0	1.000
413	25	5	40	50	0	0	1	0.040	0.0	0.0	0.0	0.0	2.000
414	25	10	50	50	0	0	1	0.040	0.0	0.0	0.0	0.0	2.000
415	20	10	45	50	0	1	2	0.100	0.050	0.0	0.0	0.0	2.500
416	20	10	40	20	0	0	1	0.050	0.0	0.0	0.0	0.0	1.000
417	20	10	45	20	0	0	2	0.100	0.0	0.0	0.0	0.0	1.000
418	20	10	45	20	0	0	1	0.050	0.0	0.0	0.0	0.0	1.000
419	25	10	50	20	0	0	2	0.080	0.0	0.0	0.0	0.0	0.800
420	25	10	50	20	0	0	1	0.040	0.0	0.0	0.0	0.0	0.800
421	35	10	50	20	0	0	2	0.057	0.0	0.0	0.0	0.0	0.571
423	20	5	35	20	0	0	2	0.100	0.0	0.0	0.0	0.0	1.000
424	25	10	40	50	0	0	1	0.040	0.0	0.0	0.0	0.0	2.000
425	25	10	60	20	0	0	2	0.080	0.0	0.0	0.0	0.0	0.800
426	25	10	70	20	0	0	2	0.080	0.0	0.0	0.0	0.0	0.800
427	25	10	55	50	0	0	2	0.080	0.0	0.0	0.0	0.0	2.000
428	25	1.	50	50	0	1	2	0.080	0.040	0.0	0.0	0.0	2.000
429	15	5	45	20	0	0	1	0.067	0.0	0.0	0.0	0.0	1.333
430	20	10	45	20	0	0	1	0.050	0.0	0.0	0.0	0.0	1.000
431	20	10	45	20	0	0	1	0.050	0.0	0.0	0.0	0.0	1.000
432	20	10	45	20	0	0	2	0.100	0.0	0.0	0.0	0.0	1.000
433	15	10	40	20	0	0	1	0.067	0.0	0.0	0.0	0.0	1.333
434	15	10	45	20	0	0	3	0.200	0.0	0.0	0.0	0.0	1.333
435	30	35	95	20	0	0	2	0.067	0.0	0.0	0.0	0.0	0.667
436	20	10	50	20	0	0	2	0.100	0.0	0.0	0.0	0.0	1.000
437	15	10	45	20	0	0	2	0.133	0.0	0.0	0.0	0.0	1.333
438	20	15	60	50	0	0	2	0.100	0.0	0.0	0.0	0.0	2.500
439	15	10	35	20	0	0	2	0.133	0.0	0.0	0.0	0.0	1.333
440	25	10	50	50	0	0	1	0.040	0.0	0.0	0.0	0.0	2.000
441	20	10	45	20	1	0	2	0.100	0.0	0.050	0.022	0.100	1.000
442	20	10	45	20	0	0	1	0.050	0.0	0.0	0.0	0.0	1.000
443	20	10	55	20	0	0	1	0.050	0.0	0.0	0.0	0.0	1.000
444	20	15	105	20	0	0	1	0.050	0.0	0.0	0.0	0.0	1.000
445	25	10	45	50	0	0	1	0.040	0.0	0.0	0.0	0.0	2.000
446	25	10	45	20	0	0	1	0.040	0.0	0.0	0.0	0.0	0.800
447	35	15	50	20	2	0	3	0.086	0.0	0.057	0.040	0.133	0.571
448	200	15	55	50	1	12	21	0.105	0.060	0.005	0.018	0.067	0.250
449	45	15	50	50	1	1	4	0.089	0.022	0.022	0.020	0.067	1.111
450	80	15	45	50	1	2	8	0.100	0.025	0.012	0.022	0.067	0.625
451	35	15	45	20	2	0	3	0.086	0.0	0.057	0.044	0.133	0.571
452	80	15	50	50	1	1	7	0.087	0.012	0.012	0.020	0.067	0.625
453	35	15	50	50	2	1	4	0.114	0.029	0.057	0.040	0.133	1.429
454	40	15	50	20	2	1	6	0.150	0.025	0.050	0.040	0.133	0.500
455	45	15	50	50	1	2	6	0.133	0.044	0.022	0.020	0.067	1.111
456	105	15	55	50	1	5	5	0.048	0.048	0.010	0.018	0.067	0.476
457	215	15	60	50	1	44	40	0.186	0.205	0.005	0.017	0.067	0.233
458	175	10	50	50	1	39	22	0.126	0.223	0.006	0.020	0.100	0.286
459	55	15	50	20	1	1	6	0.109	0.018	0.018	0.020	0.067	0.364
460	35	10	40	20	2	0	3	0.086	0.0	0.057	0.050	0.200	0.571
462	35	20	55	50	2	1	6	0.171	0.029	0.057	0.036	0.100	1.429
463	145	15	50	50	1	5	12	0.083	0.034	0.007	0.020	0.067	0.345
464	45	15	55	20	1	0	7	0.156	0.0	0.022	0.018	0.067	0.444
465	145	15	45	50	1	9	14	0.097	0.062	0.007	0.022	0.067	0.345
466	45	15	55	50	1	3	6	0.133	0.067	0.022	0.018	0.067	1.111
467	85	15	60	20	1	5	9	0.106	0.059	0.012	0.017	0.067	0.235
468	40	15	50	20	1	1	7	0.175	0.025	0.025	0.020	0.067	0.500
469	35	20	50	50	1	3	4	0.114	0.086	0.029	0.020	0.050	1.429
470	80	15	55	50	1	5	10	0.125	0.063	0.012	0.018	0.067	0.625
471	60	15	55	50	2	5	11	0.183	0.083	0.033	0.036	0.133	0.833
472	150	20	55	50	1	10	21	0.140	0.067	0.007	0.018	0.050	0.333
473	110	20	90	500	1	9	18	0.164	0.082	0.009	0.011	0.050	4.545
474	70	15	45	500	1	6	12	0.171	0.086	0.014	0.022	0.067	7.143
475	135	15	60	50	1	15	18	0.133	0.111	0.007	0.017	0.067	0.370
476	150	15	40	100	1	11	26	0.173	0.073	0.007	0.025	0.067	0.667
478	120	15	75	200	2	13	8	0.067	0.108	0.017	0.027	0.133	1.667
479	135	15	55	100	1	12	10	0.074	0.089	0.007	0.018	0.067	0.741
480	85	15	55	500	2	5	12	0.141	0.059	0.024	0.036	0.133	5.882
481	85	15	45	200	1	12	14	0.165	0.141	0.012	0.022	0.067	2.353
482	165	15	55	50	2	7	19	0.115	0.042	0.012	0.036	0.133	0.303
483	170	15	50	50	2	9	21	0.124	0.053	0.012	0.040	0.133	0.294
484	140	20	50	200	2	11	18	0.129	0.079	0.014	0.040	0.100	1.429
485	100	15	55	20	3	3	6	0.060	0.030	0.030	0.055	0.200	0.200
486	80	15	55	50	19	1	9	0.112	0.012	0.237	0.345	1.267	0.625
487	80	15	50	50	16	3	7	0.087	0.037	0.200	0.320	1.067	0.625
488	90	15	50	50	20	4	13	0.144	0.044	0.222	0.400	1.333	0.556
489	120	10	60	50	2	0	2	0.017	0.0	0.017	0.033	0.200	0.417
490	40	25	100	20	2	0	2	0.050	0.0	0.050	0.020	0.080	0.500
492	60	15	90	20	1	1	3	0.050	0.017	0.017	0.011	0.067	0.333
493	75	10	70	100	1	6	10	0.133	0.080	0.013	0.014	0.100	1.333
494	50	20	105	20	2	0	1	0.020	0.0	0.040	0.019	0.100	0.400
495	50	15	95	20	1	0	2	0.040	0.0	0.020	0.011	0.067	0.400
496	50	15	90	20	2	1	2	0.040	0.020	0.040	0.022	0.133	0.400
497	45	10	65	20	1	2	5	0.111	0.044	0.022	0.015	0.100	0.444
498	95	10	60	50	2	0	7	0.074	0.0	0.021	0.033	0.200	0.526
499	40	25	80	20	2	0	4	0.100	0.0	0.050	0.025	0.080	0.500
500	75	10	80	50	2	1	3	0.040	0.013	0.027	0.025	0.200	0.667
501	45	15	65	50	2	2	6	0.133	0.044	0.044	0.031	0.133	1.111
502	75	20	75	100	1	2	6	0.080	0.027	0.013	0.013	0.050	1.333
503	65	20	100	200	3	1	4	0.062	0.015	0.046	0.030	0.150	3.077
504	80	15	85	200	5	1	4	0.050	0.012	0.063	0.059	0.333	2.500

Map number	Cu(AAS)	Pb(AAS)	Zn(AAS)	Ni(Spec.)	HM field test	Cu field test	Readily extractable Cu by (AAS)	CuCx / Total Cu (AAS)	CuCx (ml dye) / Total Cu (AAS)	HM (ml dye) / Total Cu (AAS)	HM (ml dye) / Total Zn (AAS)	HM (ml dye) / Total Pb (AAS)	Ni (Spec.) / Total Cu (AAS)
505	65	20	110	200	4	1	5	0.077	0.015	0.062	0.036	0.200	3.077
506	85	10	60	20	5	1	7	0.082	0.012	0.059	0.083	0.500	0.235
507	75	20	115	200	9	2	6	0.080	0.027	0.120	0.078	0.450	2.667
508	75	20	115	200	3	1	5	0.067	0.013	0.040	0.026	0.150	2.667
509	70	20	115	200	3	1	5	0.071	0.014	0.043	0.026	0.150	2.857
510	110	10	55	50	6	7	11	0.100	0.064	0.055	0.109	0.600	0.455
511	20	25	90	20	3	0	1	0.050	0.0	0.150	0.033	0.120	1.000
512	75	20	105	200	3	0	3	0.040	0.0	0.040	0.029	0.150	2.667
513	20	20	85	20	5	0	2	0.100	0.0	0.250	0.059	0.250	1.000
515	25	15	95	20	3	0	2	0.080	0.0	0.120	0.032	0.200	0.800
516	20	20	90	20	3	0	2	0.100	0.0	0.150	0.033	0.150	1.000
517	150	15	55	50	3	11	17	0.113	0.073	0.020	0.055	0.200	0.333
518	75	15	100	200	4	1	5	0.067	0.013	0.053	0.040	0.267	2.667
519	100	20	105	100	6	6	9	0.090	0.060	0.060	0.057	0.300	1.000
520	20	10	95	20	3	0	1	0.050	0.0	0.150	0.032	0.300	1.000
521	25	15	90	20	2	0	2	0.080	0.0	0.080	0.022	0.133	0.800
522	120	15	65	200	9	10	12	0.100	0.083	0.075	0.138	0.600	1.667
523	130	15	60	200	1	10	14	0.108	0.077	0.008	0.017	0.067	1.538
524	90	20	85	200	5	0	6	0.067	0.0	0.056	0.059	0.250	2.222
525	25	15	90	50	3	0	1	0.040	0.0	0.120	0.033	0.200	2.000
527	80	15	90	200	6	2	6	0.075	0.025	0.075	0.067	0.400	2.500
528	75	20	100	500	4	1	5	0.067	0.013	0.053	0.040	0.200	6.667
529	120	15	75	100	9	7	10	0.083	0.058	0.075	0.120	0.600	0.833
530	140	20	75	200	7	13	17	0.121	0.093	0.050	0.093	0.350	1.429
531	75	25	100	500	5	3	6	0.080	0.040	0.067	0.050	0.200	6.667
532	80	25	100	200	3	0	4	0.050	0.0	0.037	0.030	0.120	2.500
533	110	20	125	20	9	0	4	0.036	0.0	0.082	0.072	0.450	0.182
534	80	20	90	500	5	1	4	0.050	0.012	0.063	0.056	0.250	6.250
535	90	20	90	500	2	2	5	0.056	0.022	0.022	0.022	0.100	5.556
536	90	25	100	200	5	2	5	0.056	0.022	0.056	0.050	0.200	2.222
537	85	25	170	100	8	2	7	0.082	0.024	0.094	0.047	0.320	1.176
538	65	25	200	100	3	1	4	0.062	0.015	0.046	0.015	0.120	1.538
539	15	15	60	20	2	0	1	0.067	0.0	0.133	0.033	0.133	1.333
540	20	20	80	20	2	0	1	0.050	0.0	0.100	0.025	0.100	1.000
541	15	15	70	20	2	0	1	0.067	0.0	0.133	0.029	0.133	1.333
542	25	15	75	20	3	0	1	0.040	0.0	0.120	0.040	0.200	0.800
543	20	15	70	20	3	0	2	0.100	0.0	0.150	0.043	0.200	1.000
544	20	15	70	50	2	0	2	0.100	0.0	0.100	0.029	0.133	2.500
545	25	15	65	20	2	0	1	0.040	0.0	0.080	0.031	0.200	0.800
546	105	15	70	20	2	2	2	0.019	0.019	0.019	0.029	0.133	0.190
547	110	15	55	50	2	0	3	0.027	0.0	0.018	0.036	0.133	0.455
548	95	15	60	50	2	4	4	0.042	0.042	0.021	0.033	0.133	0.526
549	90	15	60	20	1	1	2	0.022	0.011	0.011	0.017	0.067	0.222
550	85	10	60	50	2	2	5	0.059	0.024	0.024	0.033	0.200	0.588
551	100	10	50	50	3	3	12	0.120	0.030	0.030	0.060	0.300	0.500
552	115	10	65	50	2	4	10	0.087	0.035	0.017	0.031	0.200	0.435
553	135	10	65	50	2	6	19	0.141	0.044	0.015	0.031	0.200	0.370
554	90	10	60	50	2	5	9	0.100	0.056	0.022	0.033	0.200	0.556
555	70	20	100	50	1	4	7	0.100	0.057	0.014	0.010	0.050	0.714
556	60	15	70	50	2	2	6	0.100	0.033	0.033	0.029	0.133	0.833
557	70	15	60	50	2	6	7	0.100	0.086	0.029	0.033	0.133	0.714
558	95	10	60	50	2	3	10	0.105	0.032	0.021	0.033	0.200	0.526
559	110	10	60	50	1	4	10	0.091	0.036	0.009	0.017	0.100	0.455
560	60	15	65	50	2	2	6	0.100	0.033	0.033	0.031	0.133	0.833
561	105	10	65	100	2	16	25	0.238	0.152	0.019	0.031	0.200	0.952
562	120	10	65	50	2	5	10	0.083	0.042	0.017	0.031	0.200	0.417
563	120	10	60	50	2	8	12	0.100	0.067	0.017	0.033	0.200	0.417
564	120	10	60	50	2	2	12	0.100	0.017	0.017	0.033	0.200	0.417
565	120	10	60	50	2	5	11	0.092	0.042	0.017	0.033	0.200	0.417
566	120	10	60	50	1	2	12	0.100	0.017	0.008	0.017	0.100	0.417
567	110	10	65	50	3	2	10	0.091	0.018	0.027	0.046	0.300	0.455
568	135	10	70	50	6	5	16	0.119	0.037	0.044	0.086	0.600	0.370
569	135	10	70	50	3	5	11	0.081	0.037	0.022	0.043	0.300	0.370
570	130	10	60	50	2	5	14	0.108	0.038	0.015	0.033	0.200	0.385
571	140	10	70	50	2	3	11	0.079	0.021	0.014	0.029	0.200	0.357
572	145	10	65	50	5	7	17	0.117	0.048	0.034	0.077	0.500	0.345
573	95	15	170	200	4	1	2	0.021	0.011	0.042	0.024	0.267	2.105
574	80	15	160	200	1	2	5	0.063	0.025	0.012	0.006	0.067	2.500
575	85	15	155	200	1	0	4	0.047	0.0	0.012	0.006	0.067	2.353
576	85	15	170	200	2	1	5	0.059	0.012	0.024	0.012	0.133	2.353
577	95	20	105	50	1	6	11	0.116	0.063	0.011	0.010	0.050	0.526
578	90	15	175	100	2	0	4	0.044	0.0	0.022	0.011	0.133	1.111
579	130	15	55	100	2	6	11	0.085	0.046	0.015	0.036	0.133	0.769
580	130	15	105	100	2		25	0.192	0.0	0.015	0.019	0.133	0.769
581	130	15	80	50	3	9	23	0.177	0.069	0.023	0.037	0.200	0.385
582	100	15	85	50	1	5	7	0.070	0.050	0.010	0.012	0.067	0.500
583	140	15	90	50	3	6	19	0.136	0.043	0.021	0.033	0.200	0.357
584	85	15	170	200	1	2	5	0.059	0.024	0.012	0.006	0.067	2.353
585	70	15	260	100	2	1	4	0.057	0.014	0.029	0.008	0.133	1.429
586	120	10	60	100	1	7	12	0.100	0.058	0.008	0.017	0.100	0.833
587	135	10	60	100	3	5	15	0.111	0.037	0.022	0.050	0.300	0.741
588	130	10	65	100	1	9	17	0.131	0.069	0.008	0.015	0.100	0.769
589	115	15	60	100	1	0	10	0.087	0.0	0.009	0.017	0.067	0.870
590	95	15	55	50	2	8	15	0.158	0.084	0.021	0.036	0.133	0.526
591	75	25	250	100	1	1	3	0.040	0.013	0.013	0.004	0.040	1.333
592	75	25	250	100	2	0	3	0.040	0.0	0.027	0.008	0.080	1.333
593	100	25	125	50	1	0	5	0.050	0.0	0.010	0.008	0.040	0.500
594	80	25	210	100	1	0	2	0.025	0.0	0.012	0.005	0.040	1.250
595	85	30	260	200	1	[illegible]	3	0.035	0.0	0.012	0.004	0.033	2.353
596	85	25	280	200	1	1	4	0.047	0.012	0.012	0.004	0.040	2.353
597	90	25	240	50	2	0	3	0.033	0.0	0.022	0.008	0.080	0.556
598	85	15	170	200	1	2	6	0.071	0.024	0.012	0.006	0.067	2.353
599	100	25	150	50	5	5	8	0.080	0.050	0.050	0.033	0.200	0.500
600	95	25	140	20	1	5	8	0.084	0.053	0.011	0.007	0.040	0.211
601	100	15	180	200	1	0	4	0.040	0.0	0.010	0.006	0.067	2.000
602	85	15	170	200	1	1	3	0.035	0.012	0.012	0.006	0.067	2.353
603	95	15	60	200	2	1	5	0.053	0.011	0.021	0.033	0.133	2.105
604	95	15	170	100	1	0	3	0.032	0.0	0.011	0.006	0.067	1.053
605	95	20	165	100	1	0	3	0.032	0.0	0.011	0.006	0.050	1.053
606	80	15	190	200	1	0	4	0.050	0.0	0.012	0.005	0.067	2.500
607	115	15	80	20	1	7	11	0.096	0.061	0.009	0.012	0.067	0.174
608	60	15	80	50	1	6	7	0.117	0.100	0.017	0.012	0.067	0.833
609	95	20	125	100	2	1	4	0.042	0.011	0.021	0.016	0.100	1.053
610	75	20	160	200	1	0	3	0.040	0.0	0.013	0.006	0.050	2.667
612	80	20	180	50	1	0	3	0.037	0.0	0.012	0.006	0.050	0.625
613	120	20	80	20	1	2	8	0.067	0.017	0.008	0.012	0.050	0.167
614	95	15	70	20	1	5	7	0.074	0.053	0.011	0.014	0.067	0.211
615	75	20	190	100	2	0	3	0.040	0.0	0.027	0.011	0.100	1.333
616	70	20	195	100	1	0	3	0.043	0.0	0.014	0.005	0.050	1.429
617	195	15	90	20	1	7	14	0.072	0.036	0.005	0.011	0.067	0.103
618	60	15	100	100	1	6	8	0.133	0.100	0.017	0.010	0.067	1.667
619	120	20	80	20	0	6	10	0.083	0.050	0.0	0.0	0.0	0.167
620	115	20	95	20	8	7	13	0.113	0.061	0.070	0.084	0.400	0.174
621	50	15	125	50	1	6	11	0.220	0.120	0.020	0.008	0.067	1.000
622	65	20	115	100	1	2	5	0.077	0.031	0.015	0.009	0.050	1.538
623	65	15	95	100	1	0	2	0.031	0.0	0.015	0.011	0.067	1.538
624	70	20	125	50	3	0	3	0.043	0.0	0.043	0.024	0.150	0.714
625	60	20	135	100	2	1	2	0.033	0.017	0.033	0.015	0.100	1.667
626	60	20	145	200	2	0	4	0.067	0.0	0.033	0.014	0.100	3.333
627	60	20	155	100	1	1	4	0.067	0.017	0.017	0.006	0.050	1.667
628	80	25	210	50	1	3	7	0.087	0.037	0.012	0.005	0.040	0.625
629	65	20	150	100	1	1	3	0.046	0.015	0.015	0.007	0.050	1.538
630	70	20	150	100	4	1	3	0.043	0.014	0.057	0.027	0.200	1.429
631	70	30	165	100	2	1	3	0.043	0.014	0.029	0.012	0.067	1.429
632	65	20	160	100	7	1	3	0.046	0.015	0.108	0.044	0.350	1.538
633	75	15	125	20	2	1	5	0.067	0.013	0.027	0.016	0.133	0.267
634	60	20	135	100	3	0	2	0.033	0.0	0.050	0.022	0.150	1.667
635	45	10	60	50	1	1	5	0.111	0.022	0.022	0.017	0.100	1.111
636	65	25	130	50	1	1	5	0.077	0.015	0.015	0.008	0.040	0.769
637	90	25	220	20	1	4	7	0.078	0.044	0.011	0.005	0.040	0.222
638	110	15	120	500	1	3	6	0.055	0.027	0.009	0.008	0.067	4.545
639	95	15	115	500	2	3	7	0.074	0.032	0.021	0.017	0.133	5.263
640	130	15	70	20	2	3	11	0.085	0.023	0.008	0.014	0.067	0.154
641	120	15	85	20	2	3	9	0.075	0.025	0.017	0.024	0.133	0.167
642	135	15	85	20	2	3	10	0.074	0.022	0.015	0.024	0.133	0.148
643	145	30	280	20	2	2	10	0.069	0.014	0.014	0.007	0.067	0.138
644	145	15	70	50	2	8	17	0.117	0.055	0.014	0.029	0.133	0.345
645	145	15	90	100	2	7	14	0.097	0.048	0.014	0.022	0.133	0.690
647	135	30	130	50	2	5	13	0.096	0.037	0.015	0.015	0.067	0.370
649	105	15	55	50	2	4	8	0.076	0.038	0.019	0.036	0.133	0.476
650	75	20	95	50	1	2	6	0.080	0.027	0.013	0.011	0.050	0.667
651	95	40	115	100	1	2	7	0.074	0.021	0.011	0.009	0.025	1.053
652	55	15	75	20	2	0	4	0.073	0.0	0.036	0.027	0.133	0.364
653	70	15	90	100	2	0	4	0.057	0.0	0.029	0.022	0.133	1.429
654	70	15	85	20	1	2	4	0.057	0.029	0.014	0.012	0.067	0.286
655	75	15	90	20	1	1	4	0.053	0.013	0.013	0.011	0.067	0.267
656	70	15	85	100	1	0	5	0.071	0.0	0.014	0.012	0.067	1.429
657	70	15	85	50	1	1	4	0.057	0.014	0.014	0.012	0.067	0.714
658	65	10	85	50	2	1	3	0.046	0.015	0.031	0.024	0.200	0.769
659	70	15	90	50	1	0	5	0.071	0.0	0.014	0.011	0.067	0.714
660	100	15	75	100	5	3	7	0.070	0.030	0.050	0.067	0.333	1.000
661	130	10	55	50	5	5	11	0.085	0.038	0.038	0.091	0.500	0.385
662	85	15	110	100	3	1	4	0.047	0.012	0.035	0.027	0.200	1.176
663	75	30	85	100	3	2	5	0.067	0.027	0.040	0.035	0.100	1.333
665	110	20	140	500	3	2	5	0.045	0.018	0.027	0.021	0.150	4.545
666	75	20	100	200	1	0	3	0.040	0.0	0.013	0.010	0.050	2.667
667	55	15	65	50	1	2	6	0.109	0.036	0.018	0.015	0.067	0.909
668	90	20	120	500	1	0	4	0.044	0.0	0.011	0.008	0.050	5.556
669	55	15	55	50	1	1	6	0.109	0.018	0.018	0.018	0.067	0.909
670	95	15	95	500	1	1	4	0.042	0.011	0.011	0.011	0.067	5.263
671	70	15	85	100	6	1	4	0.057	0.014	0.086	0.071	0.400	1.429
672	50	15	75	20	4	0	3	0.060	0.0	0.080	0.053	0.267	0.400
673	50	20	115	50	4	0	3	0.060	0.0	0.080	0.035	0.200	1.000
674	50	20	130	20	2	0	1	0.020	0.0	0.040	0.015	0.100	0.400
675	45	20	130	50	4	0	3	0.067	0.0	0.089	0.031	0.200	1.111
676	50	20	130	50	2	0	2	0.040	0.0	0.040	0.015	0.100	1.000
677	55	25	165	100	2	0	2	0.036	0.0	0.036	0.012	0.080	1.818
678	80	30	160	20	1	0	4	0.050	0.0	0.012	0.006	0.033	0.250
679	90	15	100	50	5	2	5	0.056	0.022	0.056	0.050	0.333	0.556
680	90	30	150	20	1	0	3	0.033	0.0	0.011	0.007	0.033	0.222
681	60	20	90	20	2	1	4	0.067	0.017	0.033	0.022	0.100	0.333
682	100	20	165	50	2	6	8	0.080	0.060	0.020	0.012	0.100	0.500
683	60	15	55	50	5	3	7	0.117	0.050	0.083	0.091	0.333	0.833
684	95	10	65	50	1	2	7	0.074	0.021	0.011	0.015	0.100	0.526
685	90	10	55	20	2	5	7	0.078	0.056	0.022	0.036	0.200	0.222
686	100	15	75	20	1	7	8	0.080	0.070	0.010	0.013	0.067	0.200
687	75	15	90	100	1	0	3	0.040	0.0	0.013	0.011	0.067	1.333
688	60	15	135	20	1	0	2	0.033	0.0	0.017	0.007	0.067	0.333
689	70	15	120	50	1	2	5	0.071	0.029	0.014	0.008	0.067	0.714
690	85	15	80	100	1	1	3	0.035	0.012	0.012	0.012	0.067	1.176
691	40	20	85	20	1	2	4	0.100	0.050	0.025	0.012	0.050	0.500
692	55	25	165	50	2	0	1	0.018	0.0	0.036	0.012	0.080	0.909
693	65	15	115	50	1	4	6	0.092	0.062	0.015	0.009	0.067	0.769
694	55	20	140	50	1	2	3	0.055	0.036	0.018	0.007	0.050	0.909
695	60	15	110	50	1	2	5	0.083	0.033	0.017	0.009	0.067	0.833
696	75	15	100	50	2	2	3	0.040	0.027	0.027	0.020	0.133	0.667
697	65	20	125	100	1	4	8	0.123	0.062	0.015	0.008	0.050	1.538
698	70	15	85	50	1	1	4	0.057	0.014	0.014	0.012	0.067	0.714
699	55	25	150	50	1	0	2	0.036	0.0	0.018	0.007	0.040	0.909
700	75	15	100	50	1	1	3	0.040	0.013	0.013	0.010	0.067	0.667
701	80	15	85	50	1	2	4	0.050	0.025	0.012	0.012	0.067	0.625
702	85	15	90	50	1	0	3	0.035	0.0	0.012	0.011	0.067	0.588
703	80	20	100	100	1	1	3	0.037	0.012	0.012	0.010	0.050	1.250
704	95	20	135	50	1	0	4	0.042	0.0	0.011	0.007	0.050	0.526
705	75	15	100	100	1	1	3	0.040	0.013	0.013	0.010	0.067	1.333
706	65	15	75	50	0	5	7	0.108	0.077	0.0	0.0	0.0	0.769
707	65	70	65	50	0	3	7	0.108	0.046	0.0	0.0	0.0	0.769
708	60	15	60	50	0	4	8	0.133	0.067	0.0	0.0	0.0	0.833
709	60	10	65	20	2	3	6	0.100	0.050	0.033	0.031	0.200	0.333
710	60	10	60	50	0	4	12	0.200	0.067	0.0	0.0	0.0	0.833
711	95	10	60	20	0	5	8	0.084	0.053	0.0	0.0	0.0	0.211
712	130	10	45	50	0	7	9	0.069	0.054	0.0	0.0	0.0	0.385
713	95	15	70	50	0	5	7	0.074	0.053	0.0	0.0	0.0	0.526
714	95	15	80	50	0	5	8	0.084	0.053	0.0	0.0	0.0	0.526
715	95	10	70	50	0	2	7	0.074	0.021	0.0	0.0	0.0	0.526
716	95	10	60	50	0	8	12	0.126	0.084	0.0	0.0	0.0	0.526
717	70	15	80	50	0	3	7	0.100	0.043	0.0	0.0	0.0	0.714
718	90	15	125	50	0	5	9	0.100	0.056	0.0	0.0	0.0	0.556
719	70	15	90	20	0	4	6	0.086	0.057	0.0	0.0	0.0	0.286
720	100	10	65	50	0	0	12	0.120	0.0	0.0	0.0	0.0	0.500
721	50	10	65	50	0	4	9	0.180	0.080	0.0	0.0	0.0	1.000
722	50	15	70	20	0	3	8	0.160	0.060	0.0	0.0	0.0	0.400
723	45	10	65	50	0	3	8	0.178	0.067	0.0	0.0	0.0	1.111
724	40	20	55	20	0	1	5	0.125	0.025	0.0	0.0	0.0	0.500
725	50	20	120	20	2	1	3	0.060	0.020	0.040	0.017	0.100	0.400
726	60	15	65	50	0	0	3	0.050	0.0	0.0	0.0	0.0	0.833
727	60	10	75	50	0	5	9	0.150	0.083	0.0	0.0	0.0	0.833
728	220	13	80	50	2	19	49	0.223	0.086	0.009	0.025	0.154	0.227
729	45	15	65	100	0	2	5	0.111	0.044	0.0	0.0	0.0	2.222
730	45	10	70	100	0	1	3	0.067	0.022	0.0	0.0	0.0	2.222
731	30	15	95	20	0	1	3	0.100	0.033	0.0	0.0	0.0	0.667
732	65	15	55	20	2	5	10	0.154	0.077	0.031	0.036	0.133	0.308
734	70	15	80	50	3	7	12	0.171	0.100	0.043	0.037	0.200	0.714
735	70	15	90	200	2	5	10	0.143	0.071	0.029	0.022	0.133	2.857
736	70	15	95	500	0	3	7	0.100	0.043	0.0	0.0	0.0	7.143
737	165	20	95	500	1	13	11	0.067	0.079	0.006	0.011	0.050	3.030
738	65	15	55	20	0	3	6	0.092	0.046	0.0	0.0	0.0	0.308
740	55	20	55	100	0	1	3	0.055	0.018	0.0	0.0	0.0	1.818

Map number	Cu (AAS)	Pb (AAS)	Zn (AAS)	Ni (Spec.)	HM field test	Cu field test	Readily extractable Cu by (AAS)	CuCx / Total Cu (AAS)	CuCx (ml dye) / Total Cu (AAS)	HM (ml dye) / Total Cu (AAS)	HM (ml dye) / Total Zn (AAS)	HM (ml dye) / Total Pb (AAS)	Ni (Spec.) / Total Cu (AAS)
741	80	15	105	50	0	0	4	0.050	0.0	0.0	0.0	0.0	0.625
742	95	15	70	20	0	3	7	0.074	0.032	0.0	0.0	0.0	0.211
743	75	10	55	50	0	4	10	0.133	0.053	0.0	0.0	0.0	0.667
744	25	10	70	20	0	1	3	0.120	0.040	0.0	0.0	0.0	0.800
746	25	10	75	20	0	0	3	0.120	0.0	0.0	0.0	0.0	0.800
747	45	10	75	50	0	2	5	0.111	0.044	0.0	0.0	0.0	1.111
748	40	10	85	100	0	2	5	0.125	0.050	0.0	0.0	0.0	2.500
749	35	10	70	50	2	1	4	0.114	0.029	0.057	0.029	0.200	1.429
750	35	10	70	50	1	2	4	0.114	0.057	0.029	0.014	0.100	1.429
751	35	10	70	50	2	1	3	0.086	0.029	0.057	0.029	0.200	1.429
752	35	10	80	50	0	1	4	0.114	0.029	0.0	0.0	0.0	1.429
753	35	10	65	50	0	2	3	0.086	0.057	0.0	0.0	0.0	1.429
754	35	10	65	50	1	1	3	0.086	0.029	0.029	0.015	0.100	1.429
755	30	10	65	50	0	0	3	0.100	0.0	0.0	0.0	0.0	1.667
756	30	10	65	50	0	1	2	0.067	0.033	0.0	0.0	0.0	1.667
757	35	15	70	20	2	1	4	0.114	0.029	0.057	0.029	0.133	0.571
758	55	10	65	100	2	2	5	0.091	0.036	0.036	0.031	0.200	1.818
759	75	15	55	100	0	3	7	0.093	0.040	0.0	0.0	0.0	1.333
760	80	15	65	50	2	11	20	0.250	0.137	0.025	0.031	0.133	0.625
761	75	10	65	100	0	2	5	0.067	0.027	0.0	0.0	0.0	1.333
762	110	10	50	50	0	3	9	0.082	0.027	0.0	0.0	0.0	0.455
763	100	15	70	50	3	0	5	0.050	0.0	0.030	0.043	0.200	0.500
764	70	10	50	50	0	3	6	0.086	0.043	0.0	0.0	0.0	0.714

Explanation of Abbreviations

- HM = heavy metals (copper, lead, zinc as a unit group)
- CuCx = readily extractable copper (Hawkes 1963)
- AAS = Atomic Absorption Spectrophotometry
- Ml = milliliters
- Spec. = semiquantitative spectrographic analysis
- Cu = copper
- Pb = lead
- Ni = nickel
- Zn = zinc

Table 7 Statistical characteristics of geochemical stream sediment sample data in parts per million, White River area, South-Central Alaska.

Note: To calculate averages and standard deviations, a value of 1/2 the lower detection limit or the crustal average for the element, whichever is less, was substituted for values below detection limits (ND).

(Computer program by L. E. Heiner, MIRL)

Atomic Absorption Spectrophotometry (AU, CU, PB, ZN) — Semiquantitative Spectrographic Analyses (remaining columns)

AU	CU	PB	ZN	CU	PB	ZN	MO	AG	CO	CR	NI	MN	TI
FE	MG	CA	BA	SR	B	BE	SN	W	ZR	LA	NB	SC	Y
V	AS	SB	BI	CD	AU								
AVERAGE													
0.0	62.83	14.77	77.47	68.15	14.48	117.78	7.42	0.26	41.05	442.04	59.26	1028.28	8097.93
7.34	3.87	4.38	540.51	350.28	18.50	2.56	2.80	1.57	153.29	14.72	22.15	31.01	23.22
137.45	1.80	30.36	1.47	0.20	0.00								
STANDARD DEVIATION													
0.0	51.26	6.35	36.61	89.71	7.94	53.42	4.55	3.72	18.13	397.63	76.41	440.26	2957.55
2.91	1.65	1.57	367.84	172.89	19.83	1.20	4.82	1.80	65.63	9.80	8.50	15.82	10.15
68.69	0.02	61.18	2.16	0.00	0.00								
THRESHOLD AS DEFINED BY HAWKES AND WEBB													
0.0	165.34	27.48	150.69	247.57	30.37	224.63	16.51	7.70	77.31	1237.20	212.08	1508.80	14013.04
13.16	7.18	8.22	1276.20	696.05	58.16	4.95	12.43	9.17	284.56	34.33	39.16	62.65	43.52
274.82	1.85	152.71	5.79	0.20	0.00								
ANOMALY AS DEFINED BY HAWKES AND WEBB													
0.0	216.60	33.83	187.29	337.27	38.31	278.05	21.06	11.42	95.45	1634.54	288.49	2349.06	16970.59
16.07	8.83	10.28	1644.04	868.93	78.00	6.15	17.25	6.97	350.20	44.14	47.66	78.47	53.67
343.51	1.87	213.89	7.95	0.20	0.00								
********************LOGNORMAL CALCULATIONS*****													
AVERAGE													
0.0	1.72	1.17	1.86	1.70	1.15	2.05	0.88	0.05	1.58	2.53	1.62	2.99	3.88
0.89	0.66	0.70	2.65	2.49	1.15	0.52	0.52	0.40	2.15	1.15	1.34	1.45	1.36
2.11	0.45	0.12	0.26	0.08	0.00								
STANDARD DEVIATION													
0.0	0.26	0.15	0.17	0.33	0.16	0.14	0.19	0.10	0.21	0.32	0.33	0.12	0.18
0.16	0.17	0.16	0.28	0.24	0.33	0.17	0.16	0.05	0.18	0.18	0.12	0.22	0.14
0.16	0.00	0.86	0.32	0.00	0.00								
THRESHOLD AS DEFINED BY HAWKES AND WEBB													
0.0	2.25	1.49	2.20	2.37	1.48	2.32	1.27	0.24	2.00	3.17	2.28	3.23	4.23
1.21	1.00	1.03	3.21	2.96	1.80	0.86	0.85	0.50	2.51	1.51	1.58	1.88	1.64
2.43	0.46	2.45	0.89	0.08	0.00								
ANOMALY AS DEFINED BY HAWKES AND WEBB													
0.0	2.52	1.63	2.37	2.70	1.64	2.46	1.46	0.34	2.20	3.49	2.60	3.35	4.41
1.37	1.16	1.19	3.49	3.19	2.13	1.02	1.01	0.55	2.69	1.68	1.70	2.10	1.78
2.59	0.46	3.21	1.20	0.08	0.00								

Au = Gold, Cu = Copper, Pb = Lead, Zn = Zinc, Mo = Molybdenum, Ag = Silver, Co = Cobalt, Cr = Chromium, Ni = Nickel, Mn = Manganese, Ti = Titanium, Fe = Iron, Mg = Magnesium, Ca = Calcium, Ba = Barium, Sr = Strontium, B = Boron, Be = Beryllium, Sn = Tin, W = Tungsten, Zr = Zirconium, La = Lanthanum, Nb = Niobium, Sc = Scandium, Y = Yttrium, V = Vanadium, As = Arsenic, Sb = Antimony, Bi = Bismuth, Cd = Cadmium

Table 8 Frequency distribution histograms in parts per million and logarithms of parts per million of copper, lead and zinc in stream sediment samples, White River area, South-Central Alaska.

(Computer program L. R. Heiner, MIRL)

Copper MINIMUM = 15.00 MAXIMUM = 1000.00

NUMBER OF DATA POINTS = 738

PERCENT SAMPLES IN CLASS INTERVALS

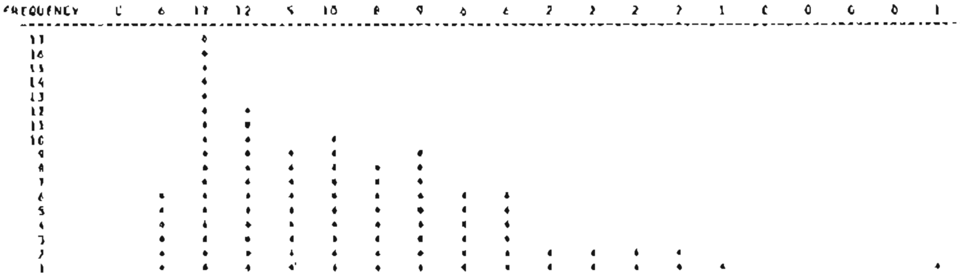
0.0	6.098	17.954	12.534	9.485	10.095	8.672	9.146	6.233	6.165	2.439	2.236
2.033	2.304	1.762	0.678	0.678	0.271	0.136	1.016				

INTERVAL			NUMBER
0	-	10	0
10	-	20	45
20	-	30	133
30	-	40	93
40	-	50	70
50	-	60	75
60	-	70	64
70	-	80	68
80	-	90	46
90	-	100	46
100	-	110	18
110	-	120	17
120	-	130	15
130	-	140	17
140	-	150	13
150	-	160	5
160	-	170	5
170	-	180	2
180	-	190	1
190	-	200	8

INTERVALS

10.000	20.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	100.000	110.000	120.000
130.000	140.000	150.000	160.000	170.000	180.000	190.000	200.000				

FREQUENCY 0 6 17 12 9 10 8 9 6 6 2 2 2 2 1 0 0 0 0 1



INTERVAL CLASS 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Copper MINIMUM = 1.20 MAXIMUM = 3.00

NUMBER OF DATA POINTS = 738

PERCENT SAMPLES IN CLASS INTERVALS

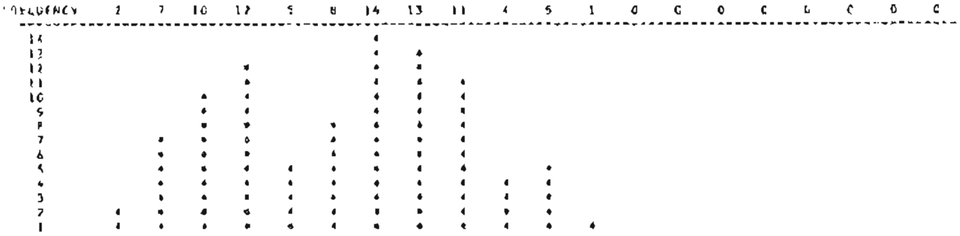
2.168	7.859	10.705	12.873	5.962	8.266	14.634	13.550	11.382	4.878	5.285	1.491
0.678	0.136	0.0	0.0	0.0	0.0	0.0	0.136				

INTERVALS

1.294	1.384	1.474	1.563	1.653	1.743	1.833	1.923	2.012	2.102	2.192	2.282
2.372	2.462	2.551	2.641	2.731	2.821	2.911	3.000				

FOLLOWING HISTOGRAM VALUES CONVERTED TO LOGS

FREQUENCY 2 7 10 12 5 8 14 13 11 4 5 1 0 0 0 0 0 0 0 0



INTERVAL CLASS 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Lead MINIMUM = 5.00 MAXIMUM = 70.00

NUMBER OF DATA POINTS = 738

PERCENT SAMPLES IN CLASS INTERVALS

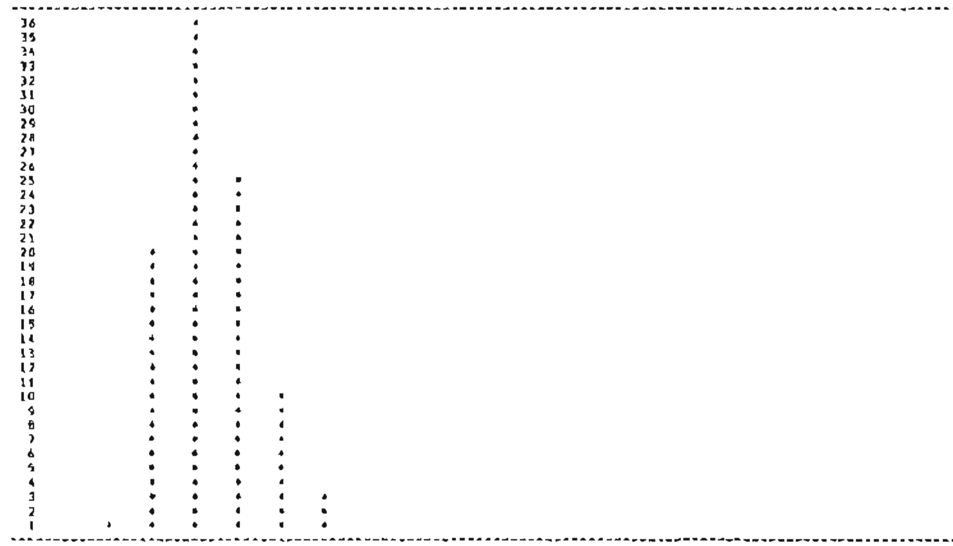
1.558	20.664	36.247	25.406	10.840	3.049	0.813	0.474	0.407	0.136	0.136	0.136
0.0	0.068	0.068	0.0	0.0	0.0	0.0	0.0				

INTERVAL			NUMBER
0	-	5	12
5	-	10	153
10	-	15	268
15	-	20	188
20	-	25	80
25	-	30	23
30	-	35	6
35	-	40	4
40	-	45	3
45	-	50	1
50	-	55	1
55	-	60	1
60	-	65	0
65	-	70	1
70	-	75	1
75	-	80	0
80	-	85	0
85	-	90	0
90	-	95	0
95	-	100	0

INTERVALS

5.000	10.000	15.000	20.000	25.000	30.000	35.000	40.000	45.000	50.000	55.000	60.000
65.000	70.000	75.000	80.000	85.000	90.000	95.000	100.000				

FREQUENCY 1 20 36 25 10 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0



INTERVAL CLASS 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Lead MINIMUM = 0.78 MAXIMUM = 1.85

NUMBER OF DATA POINTS = 738

PERCENT SAMPLES IN CLASS INTERVALS

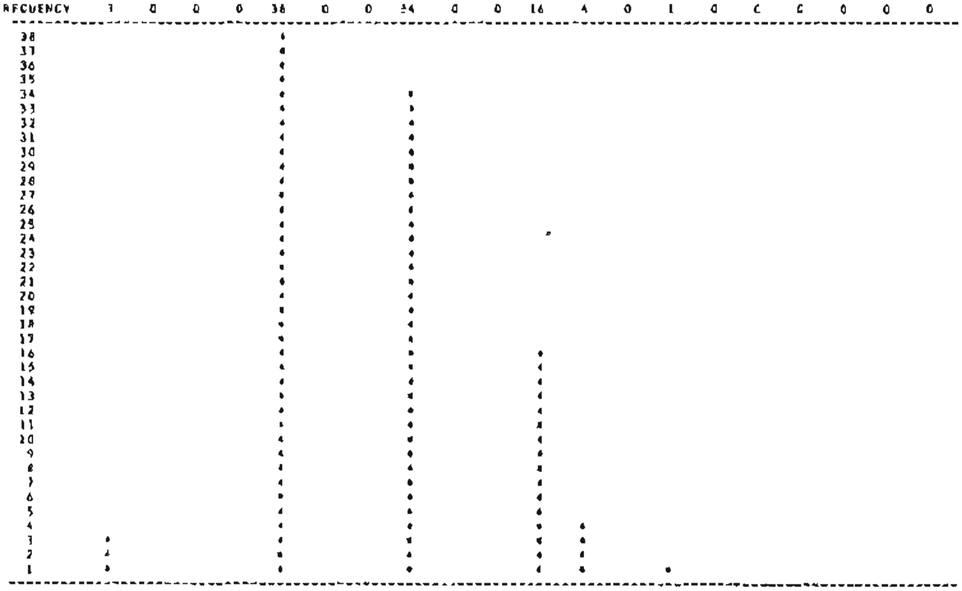
3.117	0.0	0.0	0.0	38.211	0.0	0.136	34.011	0.0	0.0	16.802	4.878
0.0	1.220	0.407	0.542	0.271	0.0	0.271	0.136				

INTERVALS

0.832	0.885	0.939	0.993	1.046	1.100	1.154	1.207	1.261	1.315	1.368	1.422
1.476	1.529	1.583	1.637	1.690	1.744	1.798	1.851				

FOLLOWING HISTOGRAM VALUES CONVERTED TO LOGS

FREQUENCY 3 0 0 0 38 0 0 34 0 0 16 4 0 1 0 0 0 0 0 0



INTERVAL CLASS 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Zinc MINIMUM = 15.00 MAXIMUM = 280.00

NUMBER OF DATA POINTS = 738

PERCENT SAMPLES IN CLASS INTERVALS

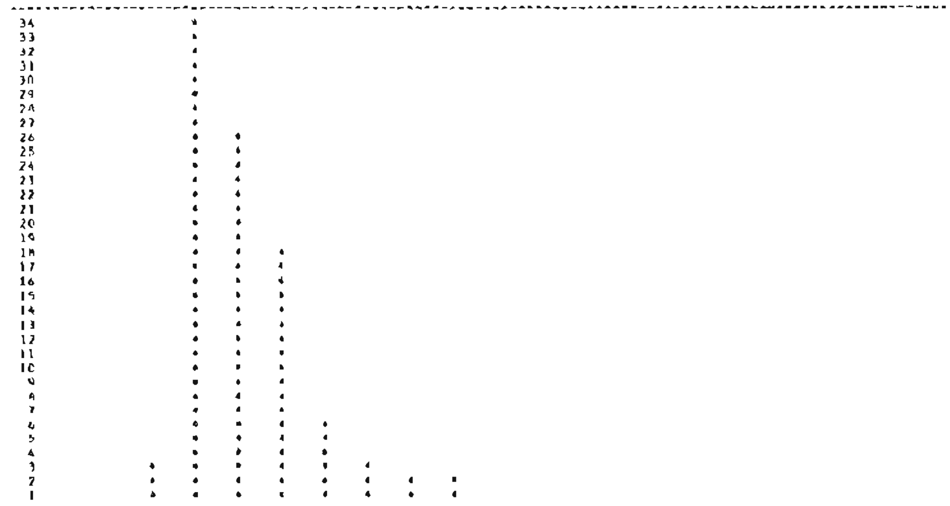
0.271	3.591	34.282	26.762	18.699	6.098	3.726	2.236	2.168	0.610	0.542	0.136
0.474	0.271	0.136	0.0	0.0	0.0	0.0	0.0				

INTERVAL	NUMBER
0 - 20	2
20 - 40	27
40 - 60	253
60 - 80	198
80 - 100	138
100 - 120	45
120 - 140	28
140 - 160	17
160 - 180	16
180 - 200	5
200 - 220	4
220 - 240	1
240 - 260	4
260 - 280	2
280 - 300	1
300 - 320	0
320 - 340	0
340 - 360	0
360 - 380	0
380 - 400	0

INTERVALS

20.000	40.000	60.000	80.000	100.000	120.000	140.000	160.000	180.000	200.000	220.000	240.000
260.000	280.000	300.000	320.000	340.000	360.000	380.000	400.000				

FREQUENCY 2 3 34 26 17 6 3 2 2 0 0 0 0 0 0 0 0 0 0 0



INTERVAL CLASS 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Zinc MINIMUM = 1.20 MAXIMUM = 2.45

NUMBER OF DATA POINTS = 738

PERCENT SAMPLES IN CLASS INTERVALS

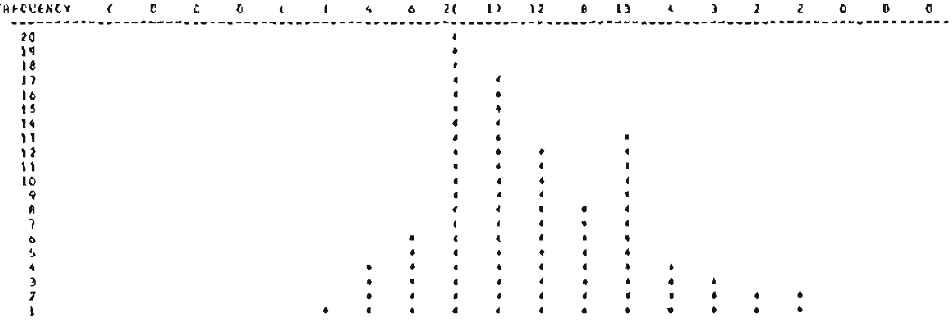
0.271	0.0	0.0	0.136	0.271	1.084	4.201	6.504	10.732	17.480	12.331	8.808
13.279	4.201	3.794	2.304	2.575	0.542	0.678	0.813				

INTERVALS

1.264	1.325	1.351	1.453	1.515	1.577	1.640	1.702	1.764	1.826	1.889	1.951
2.013	2.075	2.138	2.200	2.262	2.324	2.386	2.449				

FOLLOWING HISTOGRAM VALUES CONVERTED TO LOGS

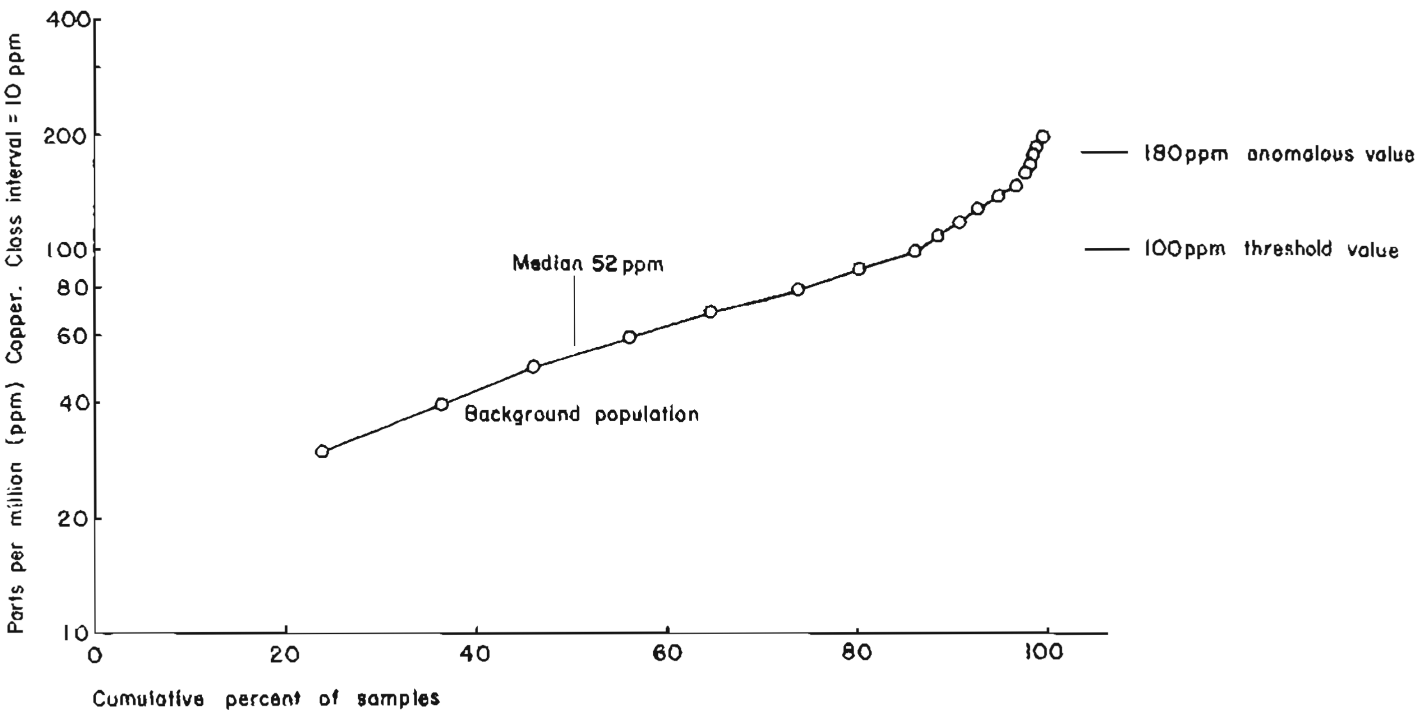
FREQUENCY 0 0 0 0 0 1 4 6 20 17 12 8 13 4 3 2 2 0 0 0



INTERVAL CLASS 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Table 9

Cumulative Frequency Curves for Copper. Plotted on 5 cycle X 10 divisions Semi-Logarithmic Grid. Shows Threshold and Anomalous Values. Atomic Absorption Data, Stream Sediment Samples, White River Area, Alaska.



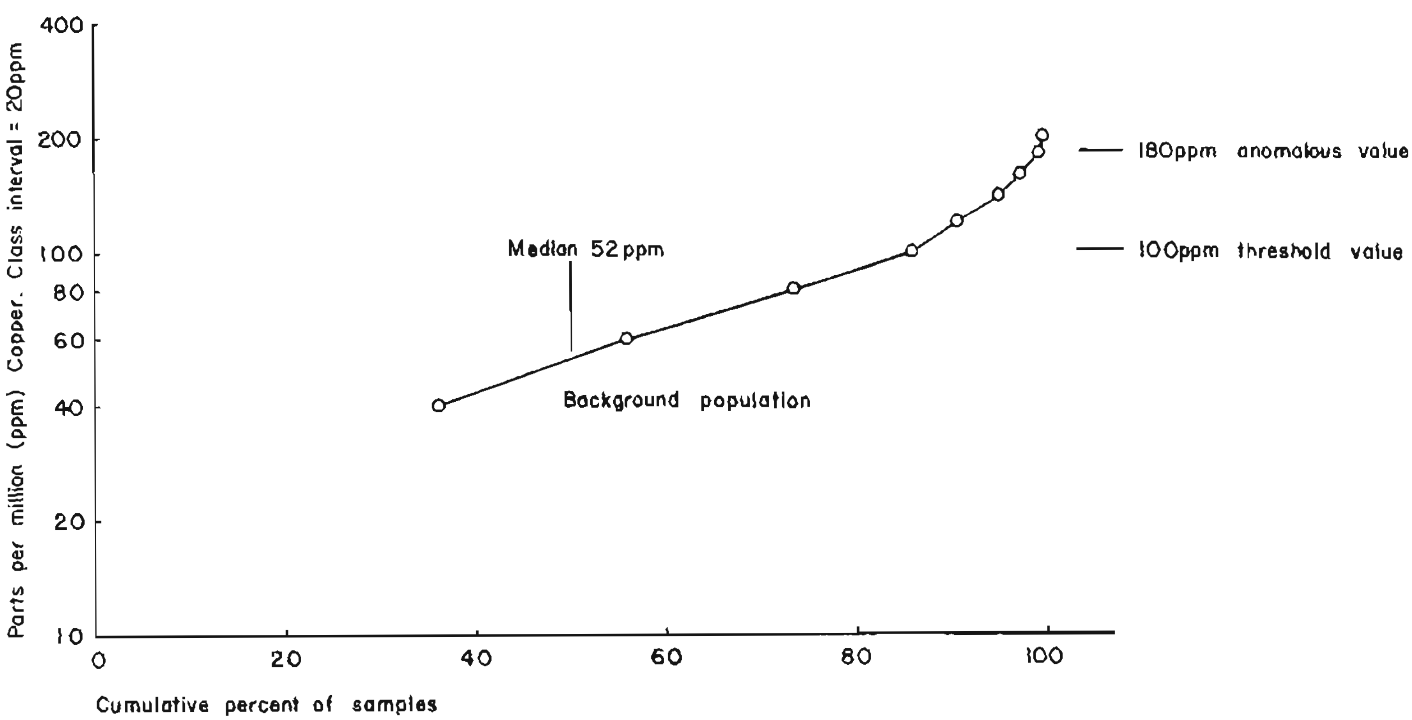
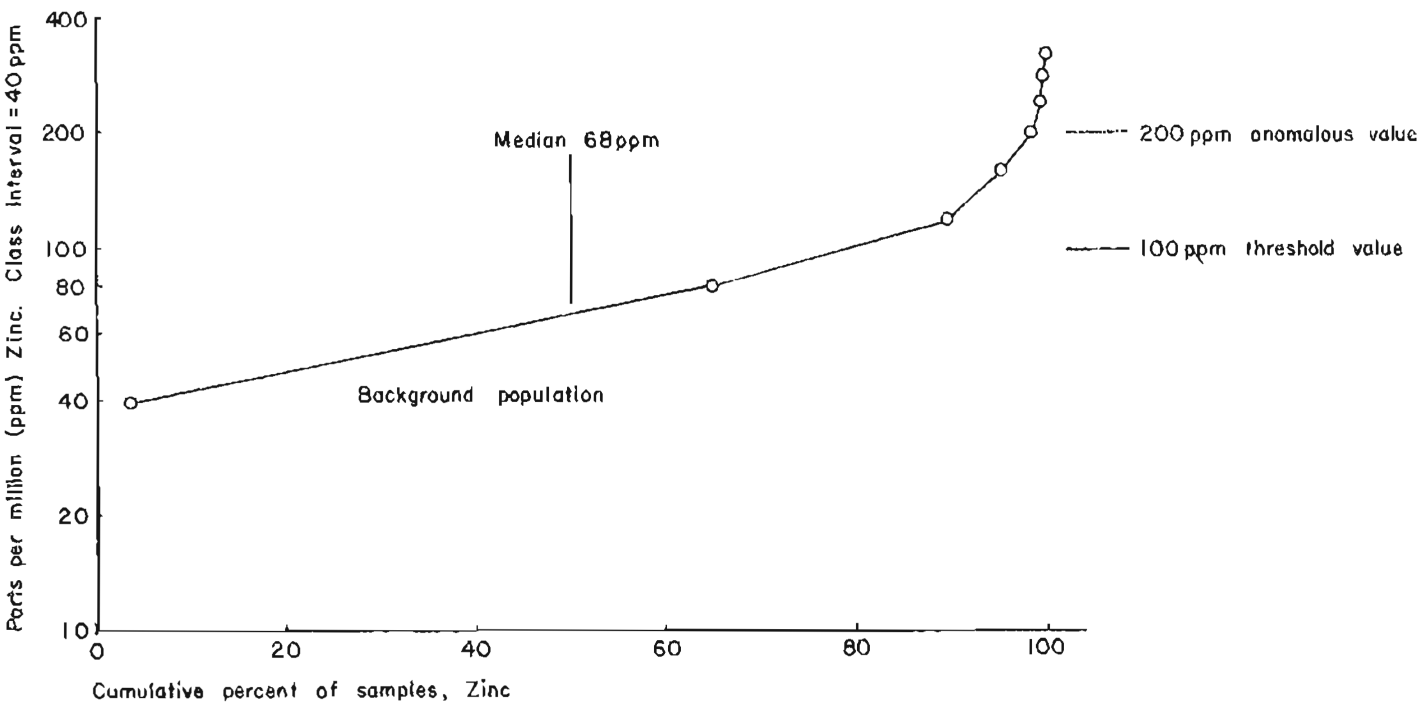
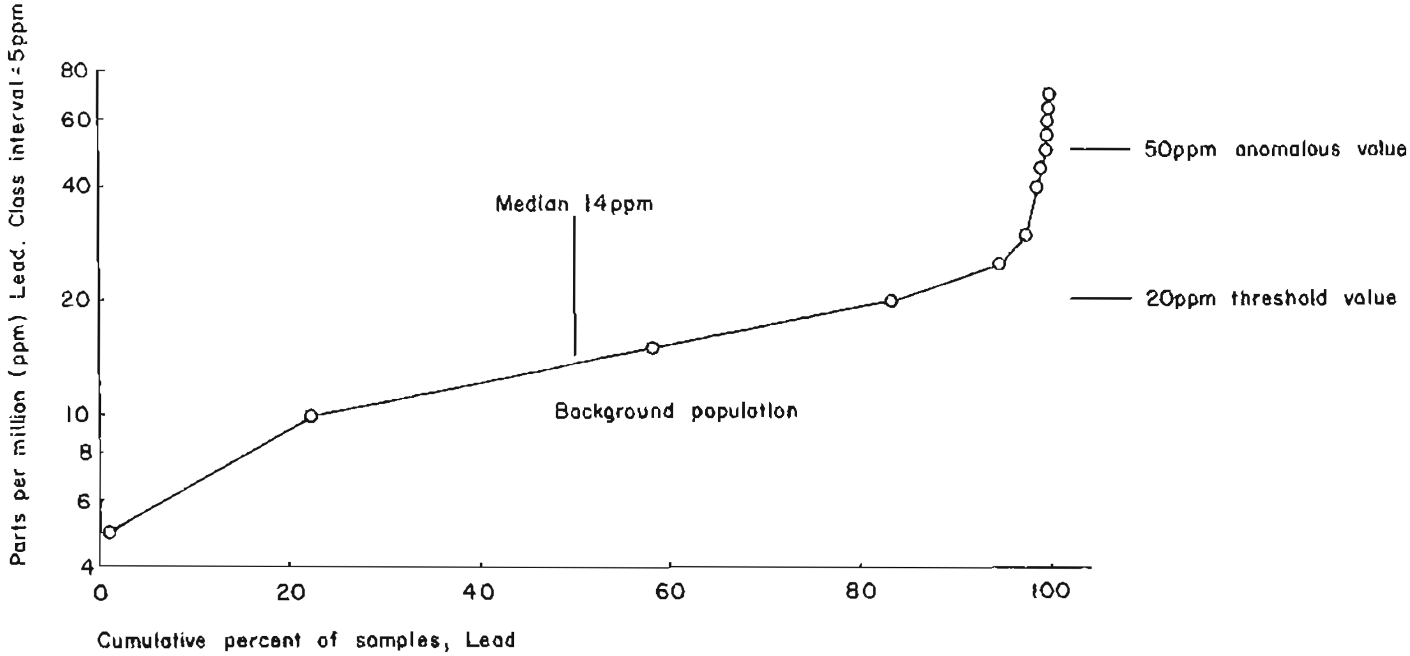


Table 10

Cumulative Frequency Curves, Zinc and Lead. Plotted on 5 cycle X 10 divisions Semi-Logarithmic Grid. Shows Threshold and Anomalous Values. Atomic Absorption Data, Stream Sediment Samples, White River Area, Alaska.





The copper anomaly indicated by samples 3, 7, 8, and 9 in the northeast corner of the map (*fig 2A*) is related to a known copper prospect in the batholith to the north. Sample 329, at the head of Middle Fork of White River, contains 1000 ppm copper and was collected below a copper prospect reported by Moffit and Knopf (1910, p 55). This prospect is discussed under "Economic Geology". Samples 448 and 457, on Flood Creek (*fig 2D*), are anomalous in copper. The surrounding rock is layered amygdaloidal basalt with occasional malachite stains on float. Samples 585 and 594 through 597, on Sheep Creek (*fig 2D*), are anomalous in zinc. Snow cover prevented bedrock observations. Capps (1916, p 124) reports a copper prospect at the head of Sheep Creek. His discussion is abstracted in the economic geology section of this report. The nickel anomaly indicated by samples 665, 668, and 670 on Holmes Creek (*fig 2B*) is probably related to the peridotite (harzburgite) sill in the slope above them. The high nickel/copper ratio (the maximum is 5.6; table 6) in these samples indicates that significant amounts of copper are not to be expected in the sill. A piece of float from the sill containing visible sulfides assayed 730 ppm nickel and 240 ppm copper. The low nickel assay from the rock (average nickel content for ultramafics is 1200 ppm according to Hawkes [1963, p 370]), combined with the high nickel/copper ratio may mean that the nickel in stream sediments is derived from rock silicates rather than sulfides. However, only one small piece of rock was sampled, and it cannot be considered representative of the sill. The possibility of nickel sulfides should not be discounted.

A number of samples (*fig 2B, 2D*) are anomalous in niobium, lanthanum, boron, barium, and cobalt, chromium, nickel. These anomalies may be related to minor occurrences of native copper and copper sulfides in the amygdaloidal basalts near White River.

Krauskopf (1967, p 588) states that of four rock series studied, strontium is highest in andesites. The strontium anomalies in samples 109, 123, 125, 129, and 132 (*fig 2A*) may reflect the nearby presence of andesitic volcanic rocks.

COMPARISON OF FIELD METHODS

The heavy metals field test (*Appendix I*) and the specific readily extractable copper field test (*Appendix IV*), both from Hawkes (1963), show considerable difference in copper detectability. The basic differences in the tests are the extractants (pH 8.5 for heavy metals, pH 2.0 for copper), and the solvents used in preparing the dithizone solutions (aromatic solvent such as toluene or xylene for heavy metals; aliphatic solvent like hexane for copper). In the heavy metals test, zinc, copper, and lead are the principal heavy metals and are measured indiscriminately as a group. The specific copper test responds to copper only. In this project, the heavy metals test was run wet and unsieved under actual field conditions and the specific copper test was run in the laboratory after being dried and screened to minus 80 mesh. Other considerations aside, the specific copper test is probably more reliable because of better controlled conditions. The data are tabulated in table 6.

Table 3 shows that although the correlation between them is low, there is not a great difference in the copper detectability of the specific copper field test and the heavy metals field test when the entire population of samples is considered. For this case the heavy metals test appears to indicate the presence of copper slightly better than the specific copper test.

However, for the population of samples above threshold value in copper, the specific copper test is a better detector of copper than the heavy metals test, as shown in table 4. For the tabulations in table 4, the value of 5 milliliters dye to indicate threshold was chosen based upon experience in the field and inspection of background and threshold values in table 6.

CONCLUSIONS

The results tabulated on table 6 and shown in tables 3 and 4 demonstrate that the specific copper test is a better indicator of anomalous values of copper in the project area than the heavy metals test. The effect of drying and sieving to minus 80 mesh in the specific copper test is unknown, but it may be presumed that uniform control of partic'ʾ size in the samples would lead to more consistent results.

Inspection of the ratios in table 6 shows the correlation between the heavy metals field test and total metal content is better for lead than for either copper or zinc. Table 6 also shows that in the sample population as a whole there is generally not a sympathetic correlation of nickel and copper.

G U I D E S F O R E X P L O R A T I O N

Geochemistry is a useful exploration tool in the project area: minor occurrences of copper are often indicated by threshold and anomalous values obtained by both the heavy metals test and the specific copper test. The specific copper test is a better exploration method for copper than the heavy metals test.

The strongest copper mineralization observed in the area is chalcopyrite associated with the granitic pluton and the gabbro pluton near Beaver Creek (*northeast corner fig 2A*). The intersection of strong northeast, northwest, and north-trending lineaments in the area and the highly fractured nature of the intruded metasediments add interest to the area as a possible target for exploration. Stream sediment samples 61, 62, 63, 84, 137, and 138 (*fig 2A*) are above threshold value in copper, but there are no anomalous samples. The minor quantities of sulfides observed were mostly fresh and unoxidized. This could mean that the sulfides are not being leached, epigentic copper is not being released into streams, and consequently there is not a geochemical anomaly.

The most persistant geochemical anomaly is the zinc anomaly on Sheep Creek, in the south central area of the map (*fig 2D*). Capps (1916, p 124) discusses a copper prospect at the head of Sheep Creek, but snow prevented bedrock observations for the current project.

In spite of the apparent lack of nickel and copper in the sericitized peridotite sill on Holmes Creek (*fig 2B*), it is noteworthy because of its similarity to a nickel-copper-bearing sill nearby in Canada. According to Findlay (1968, p 43), Hudson Bay Mining and Smelting Company is developing a nickel-copper orebody (the Wallgreen Property) in an ultramafic sill (dunite, serpentinized peridotite, feldspathic peridotite) on Quill Creek, eight road miles west of the Alaska Highway at mile 1111. At least 737,000 tons of ore averaging 2.04 percent nickel and 1.42 percent copper have reportedly been outlined. Also, on White River approximately three miles from where it is crossed by the Alaska Highway, a nickel-copper deposit similar to the Wallgreen Property is reported to have 550,000 tons averaging 1.68 percent nickel (Findlay, 1968, p 39).

Niobium and cobalt anomalies may be associated with minor occurrences of native copper and copper sulfides in the altered amygdaloidal basalts near White River. A weaker association of copper mineralization with nickel and chromium anomalies may be inferred.

REFERENCES

Anderson, P. L., 1969, A geochemical orientation study for lead and zinc in the Fairbanks, Alaska, area: Alaska Div. Mines and Geology Laboratory Notes 15.

Anderson, P. L., and Pelz, R., 1969, Dithizone field test, some suggestions: Alaska Div. Mines and Geology Laboratory Notes 14, 2 p.

Asher, R. R., 1969, Geological and geochemical study, Solomon C-5 quadrangle, Seward Peninsula, Alaska: Alaska Div. Mines and Geology Report 33, 64 p.

Brooks, A. H., 1914, The Chisana placer district, Alaska: U. S. Geol. Survey Bull. 592, p 309-320.

Capps, S. R., 1915, An ancient volcanic eruption in the upper Yukon basin: U. S. Geol. Survey Prof. Paper 95-D, p 59-64.

____________, 1916, The Chisana-White River district, Alaska: U. S. Geol. Survey Bull. 630, 130 p.

Dutro, J. T., and Payne, T. G., 1957, Geologic map of Alaska: U. S. Geol. Survey.

Fernald, A. T., 1962, Radiocarbon dates relating to a widespread volcanic ash deposit, eastern Alaska: U. S. Geol. Survey Prof. Paper 450-B, p B29.

Findlay, D. C., 1968, The mineral industry of Yukon Territory and southwestern district of McKenzie, 1968: Geol. Survey of Canada Paper 69-55, 71 p.

Hawkes, H. E., 1963, Dithizone field tests: Econ. Geology, v 58, p 579-586.

Hawkes, H. E., and Webb, J. S., 1962, Geochemistry in mineral exploration: New York, Harper and Row, 415 p.

Irving, J. D., 1907, Copper-White River region: Alaska Terr. Dept. Mines unpub. rept.

Jones, D. L., and MacKevett, E. M., Jr., Summary of Cretaceous stratigraphy in part of the McCarthy quadrangle, Alaska: U. S. Geol. Survey Bull. 1274-K, 19 p.

Krauskopf, K. B., 1967, Introduction to geochemistry: New York, McGraw Hill, 721 p.

MacKevett, E. M., Jr., Berg, H. C., Plafker, G., and Jones, D. L., 1964, Preliminary geologic map of the McCarthy C-4 quadrangle: U. S. Geol. Survey Map I-423.

Miesch, A. T., 1967, Methods of computation for estimating geochemical abundance: U. S. Geol. Survey Prof. Paper 574-B, 15 p.

Moffit, F. H., 1938, Geology of the Chitina valley and adjacent area, Alaska: U. S. Geol. Survey Bull. 894, 137 p.

Moffit, F. H., and Knopf, A., 1910, Mineral resources of the Nabesna-White River district, Alaska: U. S. Geol. Survey Bull. 417, 64 p.

Peters, W. J., and Brooks, A. H., 1900, A reconnaissance from Pyramid Harbor to Eagle City, Alaska, including a description of the copper deposits of the upper White and Tanana Rivers: U. S. Geol. Survey 21st Ann. Rept., p 331-391.

Smith, J. G., and MacKevett, E. M., Jr., 1970, The Skolai Group in the McCarthy B-4, C-4, and C-5 quadrangles, Wrangell Mountains, Alaska: U. S. Geol. Survey Bull. 1247-Q, 26 p.

APPENDIX I

INTERVALS OF ESTIMATION AND DETECTION LIMITS

SEMIQUANTITATIVE SPECTROGRAPHIC ANALYSES

Copper ppm*	Lead ppm	Zinc ppm	Molybdenum ppm	Silver ppm	Cobalt ppm	Chromium ppm	Nickel ppm	Manganese ppm	Titanium ppm	Iron (%)	Magnesium (%)	Calcium (%)	Barium ppm	Strontium ppm
20,000	20,000	10,000	2,000	5,000	2,000	5,000	5,000	5,000	10,000	20	10	20	5,000	5,000
10,000	10,000	5,000	1,000	2,000	1,000	2,000	2,000	2,000	5,000	10	5	10	2,000	2,000
5,000	5,000	2,000	500	1,000	500	1,000	1,000	1,000	2,000	5	2	5	1,000	1,000
2,000	2,000	1,000	200	500	200	500	500	500	1,000	2	1	2	500	500
1,000	1,000	500	100	200	100	200	100	200	500	1	0.5	1	200	200
500	500	200	50	100	50	100	50	100	200	0.5	0.2	0.5	100	100
200	200	100	20	50	20	50	20	50	100	0.2	0.1	0.2	50	50
100	100	L	10	20	10	20	10	20	50	0.1	0.05	0.1	20	L
50	50		5	10	L	10	5	L	L	L	L	0.05	L	
20	20		L	5		5	L					L		
10	10			2		L								
5	L			1										
2				L										
L**														

Boron ppm	Beryllium ppm	Tin ppm	Tungsten ppm	Zirconium ppm	Lanthanum ppm	Niobium ppm	Scandium ppm	Yttrium ppm	Vanadium ppm	Gold ppm	Bismuth ppm	Cadmium ppm	Antimony ppm	Arsenic ppm
2,000	1,000	1,000	10,000	1,000	1,000	2,000	100	200	10,000	500	1,000	500	10,000	10,000
1,000	500	500	5,000	500	500	1,000	50	100	5,000	200	500	200	5,000	5,000
500	200	200	2,000	200	200	500	20	50	1,000	100	200	100	2,000	2,000
200	100	100	1,000	100	100	200	10	20	500	50	100	L	1,000	1,000
100	50	50	500	50	50	100	5	10	200	20	50		500	500
50	20	20	200	20	20	50	L	L	100	10	20		200	L
20	10	10	100	L	L	20			50	L	10		100	
10	5	L	50			10			20		5		50	
L	2		L			L			10		L		L	
	1								L					
	L													

*ppm indicates parts per million
**L = Lowest limit of detection

APPENDIX II

Laboratory Procedure for Atomic Absorption Determination of Copper, Lead, and Zinc in Geochemical Samples

The Techtron AA-4 unit used in the Division laboratory is equipped with a device for direct readout of data, eliminating having to form analytical curves from standards each time. Because of this feature and the nature of the needs of geochemical data, values should be reported at even 5 ppm intervals above 5 ppm, and 1 ppm intervals below 5 ppm.

LOWER LIMITS OF ANALYSIS

The procedure described here will routinely yield the following lower limit of analysis for the three elements:

Cu - 1 ppm   Pb - 5 ppm   Zn - 1 ppm

The above limits could be lowered for particular needs, but routine geochemical analyses would not require better sensitivity. The lead analysis uses a 5x scale expansion on the atomic absorption unit. No scale expansion is used for zinc or copper.

SPECIFIC PROCEDURE

Material must be oven dried and screened to yield minus 80 mesh material for the analysis.

1. To a culture tube, add 2 - 3 ml of conc. HCl.

2. Weigh and add to the acid 2.00 $\pm$0.01g of sample. Wash sample into tube with about 2 ml more HCl.

3. When all reaction stops, place the tube in a near-boiling water bath (watch for and remove from heat in case of vigorous reaction) for 10 minutes or until reaction stops.

4. Add aqua regia* to half-fill the tube.

5. Add 4 - 6 grains of solid $KMnO_4$ as an oxidizer.

6. When the $KMnO_4$ is dissolved, cap the tube and shake until all sample is removed from tube bottom.

7. Loosen cap and digest in near-boiling water bath for 40 minutes.

*This aqua regia reagent is formed by one part concentrated HNO_3, four parts conc. HCl, boiled until nearly clear and diluted to 1/2 with deionized H_2O.

8. Bring analyte volume to 20 ml with deionized H_2O by filling the tube to a level one-half way up on the neck of the culture tube. When liquid is cool, the volume will be very close to 20 ml.

9. Tighten the culture tube cap and again shake to mix water and remove sample from bottom of the tube.

10. Centrifuge at 800-900 RPM for 10 minutes; by use of adaptors, 16 samples can be centrifuged simultaneously.

11. Read by AAS.

12. Report values to the nearest 5 ppm.

APPENDIX III

Laboratory Procedure for Atomic Absorption Determination of Readily Extractable Copper

1. Take one level scoopful of sample (dried and sieved to minus 80 mesh) by a Coors J 29 spoon (average weight .24 g) and put into a culture tube. (Take sixteen samples at once.)

2. Add five milliliters of ammonium citrate solution.

3. Cap, then shake 50 times, two people holding four tubes in each hand.

4. Centrifuge for one minute. Elapsed time approximately two minutes.

5. Read on atomic absorption spectrophotometer.

Standard solution of copper was made using the same matrix of ammonium citrate. Solutions were standards of .1 ppm, .4 ppm, .7 ppm, and 1 ppm.

APPENDIX IV

Laboratory Procedure for Determination of Readily Extractable Copper by Dithizone Field Test Using Hexane

Dithizone Solution

Weigh out 0.01 gram of dry dithizone crystals, then add to 100 milliliters of xylene. Dissolve for one hour.

Keep stock solution in a brown plastic bottle away from light to reduce oxidation.

Add stock solution to hexane in a proportion of 1:9. Keep in a brown plastic bottle also.

Copper Extractant

Add 250 grams of ammonium citrate and 250 milliliters of concentrated hydrochloric acid to one liter of ionized water and shake till dissolved.

Field Procedure

1. Measure one level scoopful (Coors J 29, average weight .24 gram) into a culture tube.

2. Add 5 milliliters of extractant.

3. Add one milliliter of dithizone.

4. Stop and shake briskly 50 times or until dithizone solution is red, whichever occurs first.

5. Observe color of solution. If green, record "0". If end point has not been reached, repeat shakeout, adding solution in increments of 2, 4, and 4 until blue or blue-gray end point is reached.

6. Record total volume of dye added. If end point was overshot, interpolate the recorded value.

APPENDIX V

Dithizone Field Test for Heavy Metals

Field Procedure

1. Measure one level scoopful (0.1 to 0.2 cc) of sample, and tap into graduated cylinder.

2. Add 5 ml of extractant (see Extr-HM below) to 5 ml mark.

3. Add 1 ml of dithizone solution (see Dz-HM below).

4. Insert stopper and shake briskly 50 times or until the dithizone solution is red, whichever occurs first.

5. Allow dithizone solution to collect at surface of liquid and observe color. If green, record 0; if blue, or blue-gray, record 1; and if purple or red, proceed with step 6.

6. Add 1 ml more of dithizone solution and shake briskly 50 times or until solution is red, whichever occurs first. If color is blue, record 2; if purple or red, repeat the shakeout adding dithizone solution in increments of 2, 4, 4, and 4, until blue or blue-gray end point is reached. Record total volume of dithizone solution needed. If the end point is overshot, the recorded value may be interpolated.

7. In the field procedure, the time and vigor of the shakeout should be the same for all determinations.

Heavy-Metal Extractant (Extr-HM)

A five times strength ammonium citrate solution to be diluted 4:1 with metal-free water for field use.

Dithizone Solutions

1. Carefully weigh out 0.01 g of dry dithizone crystals.

2. Add to 100 ml of toluene (benzene, xylene, chloroform, or carbon tetrachloride may be substituted), and allow about an hour to dissolve. This is the stock solution from which the field dithizone solutions for both the heavy-metal and copper tests are prepared.

3. Add stock solution to toluene xylene or benzene in a proportion of 1:9. This is the field dithizone solution for the heavy-metal test (Dz-HM). It should be protected from heat and light.

General Notes

Zinc, copper, and lead are the principal heavy metals, measured (as a group), in this test. The sensitivity of the determination of zinc is considerably higher than that of either copper or lead.

Poor Reproducibility of Data

Failure to reproduce results may be due either to variability in the samples or to lack of standardization of the analytical technique. Non-reproducible analytical data in presumably identical samples may appear as a result of a variety of factors. A sample high in organic matter not uncommonly contains a much higher concentration of metal than a non-organic sample from the same locality. Another effect is that the organic matter in the sample may cause a spuriously high reading due to partial fading of the dithizone. Clay-sized material normally contains a higher concentration of metal than coarser material; thus, variability in grain size of a sample can lead to poor reproducibility. These effects can be reduced by restricting samples so far as possible to material with the same grain size and the same content of organic matter. If particles of minerals like malachite that contain the metal as a dominant constituent occur in the sample, a random variation in the number of such particles will cause wide variations in reported values of contained metal. This effect can be reduced by fine sieving.

The principal analytical source of error in the dithizone field tests is in standardizing the time of shaking. The so-called "extractable" metal content of a sample is not an absolute quantity. It is normally greater the longer the extractions stay in contact with the sample. Thus the time between the beginning of the extraction and the time the colors are estimated is very critical and should be carefully standardized. Another source of analytical error comes from the yellowing and fading of the dithizone solution. As the solution deteriorates, the values as read tend to become progressively greater. Stock solution is considerably more stable than the more dilute field solution.

Extraction of Metal from Sample

The first reaction in both the heavy-metal and the copper test is the extraction of the metal out of the solid sample and into the aqueous solution. This reaction starts as soon as the extractant first comes in contact with the sample. In the heavy-metal test, the extractant is a slightly alkaline solution of ammonium citrate. This reagent will solubilize a large fraction of the metal held by ion-exchange forces on the surface of particles of organic matter and clay minerals, and a lesser fraction of the metal contained in freshly precipitated limonite. Metal held in residual and detrital minerals is removed very slowly and incompletely.

LABORATORY NOTES - 14
PAUL L. ANDERSON AND
ROBERT PELZ
MAY 29, 1969

Dithizone Field Test - Some Suggestions

During the course of laboratory work on various geochemical procedures some pertinent factors about the dithizone field test resulted. The following are comments on the variations obtained and some suggestions as to how to reduce the variation and obtain greater confidence in the method.

Each geochem kit should contain either a solution with known zinc, or a standard sediment sample that contains extractable zinc, that can be used to test the dye solution. We have prepared such materials for your use.

Under the best of conditions, the field test is not highly reproducible. On a number of samples with up to ten titrations each, the standard deviations averaged about 2 ml with range of about 50% of the value. These values were obtained in the laboratory under nearly ideal conditions. We have found that:

1) The number of strokes, speed, rhythm, and vigor of shaking constitute major variables. These factors must be rigidly standardized for best reproducibility. Shake slowly, for 50 strokes, counting each down-stroke.

2) The end-point should be observed in bright light away from colored objects. Observing the end-point against a white paper is probably best.

3) Evidently some organic matter can completely bleach the dye to colorless. In those cases, the sample is just not amenable to this test.

4) In some cases, the dye does not separate from the mud-water mixture and the dye color cannot be seen. In such instances, the sample can be hand centrifuged by swinging the cylinder on the end of a stout fishing line (with a swivel). This is, of course, cumbersome but it does facilitate handling certain difficult samples.

5) Contamination from the sample-spoon, dirty cylinder, and fingers is a serious problem. Wash the cylinder, stopper, and spoon thoroughly. Never touch any item with your fingers that is to come in contact with the solutions. After washing the spoon and stopper do not wipe because of the likelihood of contaminating the solutions. Just wash thoroughly.

6) Because of the variation in the test, whenever color from a sample is found it may have geochemical significance. You should probably be willing to run those samples three or four times to establish the degree of significance, i.e., the spread and average value.

7) Make an effort to use fine sediment only with a minimum of organic matter.

8) We have found it useful during the analysis to have a cylinder of fully titrated dye for direct end-point comparisons.

APPENDIX VI

Airphoto Index, White River Area, South-Central, Alaska

The contact prints listed below cover the map area of this report and can be obtained from the U. S. Geological Survey, Topographic Division, Federal Center Building 25, Denver, Colorado 80225.

Photo Index 51AM-1, McCarthy Sup 2

Contact prints:

	Mission	Exposures
51 AM-1,	240	11471-11479, 11503-11514, 11534-11543, 11564-11572, 11613-11618
	243	12162-12164
	201	240-242
	219	4507
	238	10761-10774
	240	11401-11410, 11468-11470, 11515-11520, 11530-11533, 11575-11576
	241	11733-11740, 11840-11850, 11879-11889
	243	12163-12170, 12224-12235
	244	12300-12310