Results of the 1992 U.S. Bureau of Mines Colville Mining District Study

By Mark P. Meyer, Joseph M. Kurtak, and Russell W. Hicks

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UNIT OF MEASURE ABBREVIATIONS USED IN THIS REPORT

%	percent
°C	degree celsius
cm	centimeter
g/mt	gram per metric ton
kg	kilogram
km	kilometer
m	meter
mt	metric ton
ppb	part per billion
ppm	part per million

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ABSTRACT

The U.S. Bureau of Mines (Bureau) is conducting a four-year study to assess the mineral resources and the mineral development potential of the Colville Mining District. This study is a continuation of the Bureau's statewide mining district evaluation program. The northern Alaska mining district includes the Colville River drainage basin and the southern part of the southern National Petroleum Reserve - Alaska.

During the second year of the field program, 1992, the regional reconnaissance part of the study was conducted between Spike Creek and Ivotuk Hills, where anomalous U.S. Geological Survey and Bureau geochemical sample values were investigated. Site-specific investigations of one phosphate, five lead-zinc, and seven barite occurrences were conducted between Rolling Pin and Ivotuk Creeks.

As a result of this study, one lead-zinc and two barite occurrences were discovered. No evidence of major massive sulfide occurrences was noted in the area west of Drenchwater Creek within the mining district. This report summarizes the Bureau's 1992 field season. Work completed in 1991 is summarized in OFR 75-92.

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INTRODUCTION

In 1991, the U.S. Bureau of Mines (Bureau) initiated the four-year Colville Mining District (CMD) study. This mining district, located in northern Alaska, includes the Colville River drainage basin and a part of the southern National Petroleum Reserve - Alaska (NPRA) (fig. 1). The study area is composed of 6.7 million hectares within the Colville River drainage and 9 million hectares within the NPRA which also includes the eastern part of the Wainwright Mining District.

The ultimate objectives of this study are to: 1) identify mineral deposits of the CMD; 2) study the application of modern beneficiation technologies on known deposits; and 3) perform mining feasibility studies using hypothetical mine models. This investigation is a cooperative effort involving the Bureau, the USGS, and the Alaska Division of Geological and Geophysical Surveys (DGGS).

The 1991 and 1992 studies of the CMD are part of the Bureau's ongoing statewide mining district evaluation program. In 1991 and 1992, the Bureau conducted both reconnaissance sampling of the central and southwestern parts of the study area and continued detailed examinations and delineations of selected mineral occurrences in the central part of the study area. This report summarizes the work completed during the 1992 field season and is the second in a series of annual summary reports covering the Bureau's CMD field work.

LAND STATUS

Land ownership in the CMD includes those lands managed by the Bureau of Land Management (BLM), National Park Service (NPS), State of Alaska, and Native regional and village corporations. The BLM manages the NPRA which is open for oil and gas exploration but unavailable for mineral location and development. The NPS manages the Gates of the Arctic National Park, Preserve, and Wilderness, which is closed to oil, gas, and mineral exploration and development. The State of Alaska has selected land in the area which includes those lands that are and are not available for mineral exploration and development. Native regional and village corporations also have selected lands in the area. Small parcels of private inholdings are also located within the study area. Some of this land may be available for mineral exploration and development subject to the management policies of the state and private land owners.

LOCATION AND ACCESS

The CMD is in northern Alaska and comprises most of the west-central part of the northern slope of the Brooks Range (fig. 1). The area is bounded by the southern divide of the Colville, Kokolik, Kugra, Kukpowruk, Meade, Titaluk, and Utukok Rivers, and the Arctic Ocean. Three physiographic provinces cover the area which include the Arctic Coastal Plain, the Arctic Foothills, and the Central and Eastern Brooks Range. The Arctic Coastal Plain physiographic division is characterized by a low lying plain rising from the Arctic Ocean in the north and extending southward to an elevation of 183 m. Numerous shallow lakes occur in the low lying areas. An occasional abrupt scarp up to 61 m high, separates the coastal plain from the foothills. The Arctic Foothills physiographic division consists of rolling plateaus and low linear ridges.

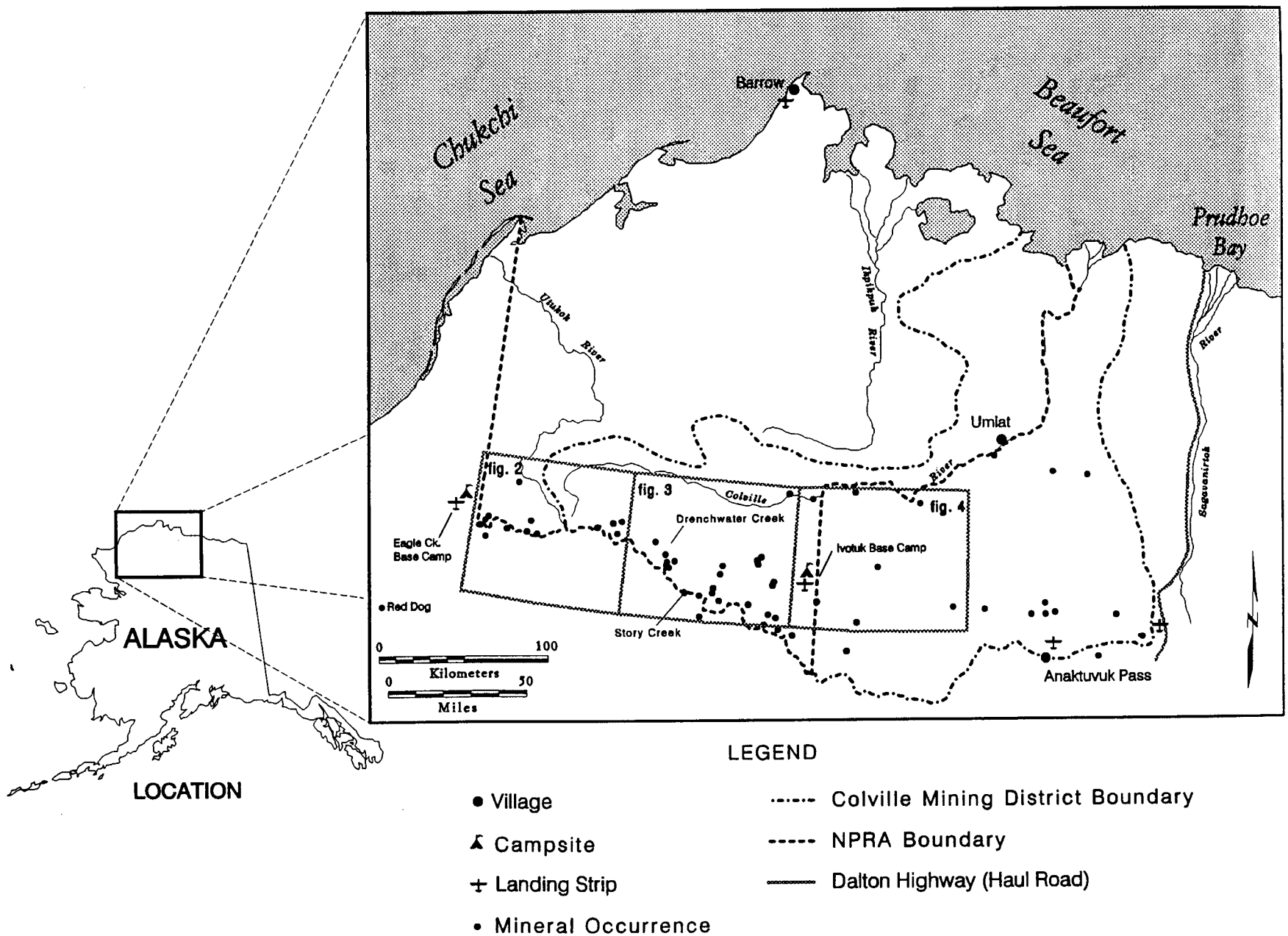

FIGURE 1. - Location Map of the CMD study area.

The northern foothills, rising in elevation from 183 to 1,068 m, have broad east-west trending ridges dominated by mesa-like mountains. The southern foothills are characterized by irregular buttes, knobs, mesas, east-west trending ridges ranging from 366 to 1,068 m, and intervening gently undulating tundra plains. The Central and Eastern Brooks Range physiographic division is composed of rugged glaciated east-west trending ridges with elevations ranging from 915 to 2,135 m (32)[3]. The higher elevations in the Brooks Range are devoid of trees and have lichens covering the rocky slopes. At the lower elevations the vegetation grades into typical tundra species with stunted alder and willow along the river gravel bars.

Anaktuvuk Pass is the only year-round village within the study area while Umiat has a small summer population. Umiat is located on the north bank of the Colville River 120 km south of Harrison Bay. Anaktuvuk Pass is located on the southern boundary of the study area at the headwaters of the John and Anaktuvuk Rivers.

There are no roads, highways, or railroads within the study area. A few useable gravel airstrips are within the study area, and these are at Umiat, Ivotuk, Kikiktat Mountain, and Anaktuvuk Pass. An airstrip, located 32 km west of the study area, along Eagle Creek, is useful for access to the western part of the study area. Access to the villages and base camps within the study area is by aircraft from either Barrow, Bettles, Deadhorse, Fairbanks, or Kotzebue. The Dalton Highway and the Galbraith Lake airstrip, just outside the eastern boundary of the study area, can be used for access to the eastern part of the study area.

CLIMATE

The CMD lies within a zone of continuous permafrost (32). Average summer temperatures range between -2° and 7° C and winter temperatures average between -32° and -21° C in Barrow (11). Mid-day temperatures of 29° C have been experienced at both the Ivotuk and Eagle Creek airstrips. Strong winds blow persistently throughout the year, generally from either the southwest or northeast at Ivotuk and from the southwest or southeast at Eagle Creek. Summer afternoon rainstorms and thunderstorms arrive from the south and southwest while morning fog banks move in from the Arctic Ocean either from the northeast or the northwest.

Annual precipitation in the area is low. Less than 12 cm of snow falls in Barrow and 28 cm in Anaktuvuk Pass, making the area technically a desert. Precipitation occurs mostly as snow, but scattered light rain is common during the summer months, along with occasional afternoon thunderstorms (11).

ACKNOWLEDGEMENTS

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[3]Underlined numbers in parentheses refer to the references found in the bibliography preceding the appendix.

GEOLOGIC SETTING

The CMD is within a fold and thrust belt consisting of an intensely folded and faulted middle Paleozoic through lower Mesozoic sedimentary succession overlying a basement of lower Paleozoic and Precambrian sedimentary, volcanic, and plutonic rocks (7). Two major terranes exist within the study area: a southern basement terrane, and a northern overlying terrane. The southern terrane is composed of Devonian black shale and chert of the Mississippian Lisburne Group, overlain by argillite and chert of the Permian Siksikpuk Formation. This in turn is overlain by chert, limestone, and shale of the Triassic Shublik Formation. This sequence is overlain, to the north, by a thick section of coarse clastic rocks of Cretaceous age (3). The fold and thrust belt consists of imbricate and south-dipping thrust faults and north-vergent folds deforming the Devonian through Cretaceous rocks and sediments. The original depositional environments of many of the rocks have been shortened and juxtaposed by large scale thrust faults (26).

Metallic mineral occurrences found within the CMD consist of sediment- and/or volcanic-hosted sulfide deposits (7). The predominant type of metallic mineral occurrences are the shale-hosted Zn-Pb-(Ba) deposits. These occurrences occur within thrust sheets of Mississippian shale, sandstone, and limestone (3). Also located in the area are occurrences of breccia-hosted sphalerite and galena within upper Devonian to lower Mississippian sandstone, siltstone, shale, and limestone (3).

Other types of minerals occurring in the CMD include coal, oil sands, barium, chromium, copper, fluorite, lanthanum, manganese, phosphorous, scandium, silver, vanadium, yttrium, and industrial minerals. Industrial minerals include phosphate, barite, and clay. Limestone of the Mississippian Lisburne Group covers a large section of the study area, and sand and gravel occur along the river drainages.

PREVIOUS STUDIES

The USGS started investigating Alaska's northern slope for mineral and fuel resources in the early 1900's (1-2, 15, 27). Additional investigations occurred during the 1920's (28) with a lull in exploration during the 1930's followed by renewed interest during the 1940's and 1950's for oil (25). A USGS metallic mineral resource appraisal program was conducted between 1974 and 1982 (4, 16, 20-21, 29). Cobb published the first summary of metallic resources of Northern Alaska in 1975 (5) including mineral occurrences within the CMD study area. An update report of the metallic resources was published in 1981 (6).

Currently the USGS, with assistance from the DGGS, is conducting an Alaska Mineral Resource Appraisal Program (AMRAP) study on the Killik River quadrangle. The USGS wrote an administrative report summarizing the historical geologic, geochemical, and geophysical work that has been conducted within the Howard Pass, western Killik River, and Misheguk Mountain quadrangles (26).

Private companies and Native corporations have carried out exploration within the NPRA. Regional reconnaissance studies were conducted during the late 1950's and early 1960's, while site-specific studies were conducted at Drenchwater Creek, Story Creek, and Kivliktort Mountain during the 1980's (26). The 1990's has brought a renewed interest by private industry in the

mineral potential of the central Brooks Range. This interest is a result of the opening of the world-class Red Dog lead-zinc-silver mine in 1990 in the southern DeLong Mountains.

The Bureau and the USGS appraised the mineral resources of the southern part of the NPRA during 1977 and 1978. During the field investigations, the USGS conducted regional geological mapping to determine the geological setting of the NPRA, and mapped zones of mineral potential. Regional geochemical surveys (29-30) were conducted by the USGS. The Bureau used the analytical results and preliminary interpretation in selecting areas of anomalous concentrations of specific elements for further detailed sampling and investigations. Eighty drainages with anomalous metal values were identified from the USGS geochemical surveys.

The Bureau's field work consisted of traversing those drainages containing the geochemical anomalies in search of the source rock. Stream sediments and select rock samples were collected from the drainages to define and identify further zones of mineralization. Due to time constraints, the Bureau examined only 25 of the drainages with lead-zinc anomalies during the two years of field work (9-13). The drainages containing geochemical anomalies are within a 193-km-long east-southeast to west-northwest trending mineral belt that may be an eastern extension of the mineralized terrane that hosts the Red Dog Mine.

Additional sulfide mineralization was identified and sampled by the Bureau in widely scattered areas along the geochemical trends which track the region's east-west geological structure. Barium, chromium, fluorite, phosphorus, rare-earth elements (e.g. lanthanum, scandium, and yttrium), and vanadium were also noted within the NPRA (9-13).

In 1990, the Bureau conducted an 8-day field orientation of the southcentral CMD and its known mineralization. Nine anomalous areas and mineralized occurrences were visited, including Drenchwater Creek, Isiktut Mountain, Kivliktort Mountain East, Kivliktort Mountain West, Koiyaktot Mountain West, Lisburne Ridge, Otuk Creek, Safari Creek, and Story Creek (17).

The Bureau started the three-year field-study portion of the program of the CMD during 1991. Drenchwater Creek, Kady, Kivliktort Mountain East, Kivliktort Mountain West, Koiyaktot Mountain East, Koiyaktot Mountain West, and Story Creek were examined, and the part of the study area between Rampart Creek to the west, and the Okokmilaga River to the east was investigated for lead, zinc, copper, silver, barium, manganese, chromium, as well as other types of mineral occurrences. Approximately 97% of the identified USGS geochemical stream sediment anomalies were investigated during the 56-day field season, and a total of 736 samples were collected. Bulk samples were collected at Drenchwater Creek, Story Creek, and Ivotuk Hills for characterization studies (18).

1992 FIELD PROGRAM

The Bureau conducted the second year of the CMD study during the 1992 field season. A total of 56 days were spent working in the area between Spike Creek to the west, and Ivotuk Creek to the east. A total of 350 rock, soil, and stream sediment samples were collected. Two base camps were utilized by independent crews, one at Eagle Creek (56 days) and the other at Ivotuk (30 days). The Eagle Creek crew conducted a geologic reconnaissance sampling program of the area between Spike Creek and Bogie Creek collecting a total of 126 samples (fig. 2). The Ivotuk crew conducted site-specific investigations and geological and geochemical reconnaissance

sampling in the area from Rolling Pin Creek to Ivotuk Creek collecting a total of 224 samples (figs. 3 and 4).

SAMPLING

Rock samples consisted of fresh, altered, or mineralized material collected from either outcrop, rubblecrop, or float near real or apparent mineral occurrences. Rock samples collected were of seven types: 1) continuous chip: rock fragments broken in a continuous line for a measured distance across an exposure; 2) random chip: rock fragments collected at random points from an apparently homogenous mineralized occurrence; 3) spaced chip: rock fragments collected at measured points from an apparently homogenous mineral occurrence; 4) chip channel: rock fragments collected along a channel of uniform width and depth across the exposure of mineralized rock; 5) representative chip: rock fragments depicting an exposure of mineralized rock; 6) select: rock collected from the highest grade portion of a mineralized zone; and 7) grab: rock collected more or less at random from an outcrop or float.

Soil samples were collected from the thin C horizon characteristic of arctic soils. Samples collected near the surface were obtained with a plastic hand trowel and stainless steel hand augers were used to sample the horizon beneath a 0.3-to 0.8-m-thick tundra cover.

Stream sediment samples were collected of silt-sized material from the active part of stream beds.

ANALYTICAL PROCEDURES

Rock samples were ground to -140 mesh and analyzed by ICP spectroscopy. Any sample suspected of containing elevated levels of either silver, copper, lead, zinc, or PGM minerals were fire assayed or analyzed by atomic absorption spectroscopy. Soil and stream sediment samples were sieved through an -80 mesh screen prior to analysis. The detection limits for the elements that were analyzed by Atomic Emission Spectroscopy - ICP, Fire Assay - DCP, and Quantitative Analysis - FA methods are listed in Table 2. Fluorometric analysis was used to analyze for Uranium. Barite specific gravity values were determined by the U.S. Geological Survey (14), which considered them to be representative for the samples used.

RESULTS

This report presents the findings of the field investigations which were completed during the 1992 field season. It is not a comprehensive or conclusive discussion of the entire CMD project.

The location of the samples taken and the locations of the mineral occurrences examined during the 1992 field season are shown on figures 2, 3, and 4. The appendix correlates the map numbers with the name and/or location of the mineral occurrence, and lists information on the U.S. public land survey grid, year the sample was collected, sample site and type, basic rock types, and analytical results for each sample.

In the discussion below, sample results are referred to by sample location and number. Sample location refers to the actual geographic location or occurrence name where a sample was

collected in the field. Sample number refers to the number that was assigned to a sample when it was collected in the field. Map number refers to the numbering system used on figures 2, 3, and 4, that is used to geographically represent the locations of samples. Some map numbers represent more than one sample number due to the close spacing of sample locations.

RECONNAISSANCE

Reconnaissance sampling in the CMD study area consisted of traversing both ridges and stream drainages in an attempt to verify anomalous values indicated from previous USGS geochemical sampling (30), and previous field work by Bureau geologists (9-13). Traverses were concentrated along the southern part of the CMD between Spike Creek to the west, and Ivotuk Hills to the east (fig. 2). Lead, zinc, copper, phosphate, and barite were the primary minerals of interest in the area between Rampart Creek and the Ivotuk airstrip (figs. 3 and 4).

The majority of sulfide minerals found occur as disseminations or as veinlets of pyrite within shales, cherts, wackes, and limestones. Small barite outcrops were located on the north side of Sharp Peak (4299) and within numerous small beds in the vicinity of lower Nucleus Creek (4313, 4315-16, and 4327). Marcasite was sampled in upper Spike Creek and its tributaries. Manganese oxide coatings on the cherts, sandstones, and wackes were noted throughout the area. The highest manganese values (>20,000 ppm) were noted in the Nuka Ridge, Sphinx Mountain, Spike Creek, and Echo Mountain areas.

No visible lead, zinc, or copper mineralization was noted along any of the Eagle Creek traverses. Analytical results confirm that significant lead, zinc, and copper were not found in any of the samples. Barite, phosphate, and quartz crystal mineralization are worth additional study.

Eagle Creek

Quartz crystals, weathered out of both cherts and wackes, were located along a 3-km-wide zone 5 km north of the southern study area boundary. This zone has been noted to extend from the Eagle Creek area eastward at least to Karupa Hills. Most crystals were located along the ridge lines, but occasional crystals were found within stream drainages. The crystals range from 0.6-cm clear double-terminated crystals, through 5-cm smokey crystals, up to massive 15-kg milky quartz clusters.

Twistem Creek

Stream sediment samples collected by the Ivotuk crew near the headwaters of Twistem Creek (fig. 3), a tributary of the Kiligwa River, contain up to 1,895 ppm zinc (5888). Siliceous mudstone and sooty black mudstone of the Kuna Formation are exposed in the area in a stratigraphic setting similar to that containing zinc and lead sulfides at Drenchwater Creek, 8 km to the northwest. Samples of the sooty mudstone contained up to 549 ppm zinc and 145 ppm copper (5881). The silicified mudstone is limonite stained on weathered surfaces due to oxidation of finely disseminated pyrite. Locally, the mudstone is brecciated and contains numerous barren quartz veinlets. These features indicate that the original sediment has probably

undergone hydrothermal alteration. No visible zinc or lead sulfides were observed in any of the rocks. Continued prospecting of the Kuna rocks in this area for Drenchwater-type stratiform sulfide bodies is recommended.

MINERALIZED OCCURRENCES

Twelve mineral occurrences were examined and sampled during the 1992 field season. The previously reported occurrences include Abby, Bion, Drenchwater Creek, Ekakevik, Lisburne Ridge, Stack, Story Creek, Story Creek West, and Tuck (figs. 3 and 4). Detailed mapping and sampling were conducted at Abby, Bion, Ekakevik, Lakeview, Longview, Safari Creek, Stack, and Tuck. Three of the occurrences were previously unreported and include; Lakeview, Longview, and Safari Creek. The mineral occurrences are discussed below in alphabetical order.

Abby

The Abby bedded barite occurrence is located in the Cutaway Creek drainage, 5.6 km due north of Mt. Bupto (fig. 3). The body occurs within the lower chert of the Etivluk Group (14) and has an average thickness of 30 m. Samples (5843-5849) from the occurrence averaged 93.1% $BaSO_4$ with an average specific gravity of 4.23 (14). Geologic mapping by the Bureau shows the occurrence to contain an indicated resource totalling 406,080 mt (31). Samples of the surrounding rocks contained no significant base metal values.

Bion

The Bion bedded barite occurrence is located in the Cutaway Creek drainage, 9.6 km southwest of Peak 2810 (fig. 3). The barite is interbedded with late Mississippian or early Pennsylvanian bedded chert, petroliferous limestone and organic shale (14) and averages 40 m thick. Samples (5850-5860, 5874) averaged 95.7% $BaSO_4$ with an average specific gravity of 4.25 (14). Geologic mapping by the Bureau shows the occurrence to contain an indicated resource totalling 10,051,470 mt. Samples of the surrounding rocks contained no significant base metal values.

Drenchwater Creek

Detailed geologic mapping and geochemical surveys were carried out at the Drenchwater Creek occurrence (fig. 3) by the Bureau in 1991 (18). During the 1992 field season, grid line 26 east was extended 152 m south. Soil and rock samples (5710-5718) collected along the extension were anomalous in lead and zinc, doubling the size of the anomaly outlined during 1991. Samples collected from siliceous mudstones containing galena and sphalerite boxworks, 0.8 km west of Drenchwater Creek, contained up to 4,815 ppm lead and 645 ppm zinc (sample 5818). Sulfides had not been previously reported as occurring that far west of Drenchwater Creek.

During 1992, sphalerite and galena-rich float was discovered by Kennecott Exploration personnel between False Wager Creek and an eastern tributary. Siliceous mudstone breccia float

was found within a 1 x 2 m area of frost-boiled ground. Samples of this material collected by the Bureau contain up to 12.6% zinc and 1.9% lead, and 205 g/mt silver (5731). The sulfide-rich float lies near the contact between pyrite-bearing felsic volcanic rock and carbonaceous shale. Limonite staining and ferricrete were observed in the stream just west of the occurrence. Further prospecting in the area located no additional mineralized outcrops. A stream sediment sample, collected downstream from this occurrence, was anomalous in zinc (21).

An orientation survey indicated that the VLF-EM method may be of limited use in the Drenchwater Creek area. VLF observations were made at stations on the East Grid (18) with a Phoenix VLF-2 instrument using Seattle and Hawaii stations. When the information was plotted, the resulting dip angle profiles were quite ambiguous, but Fraser filtering (8) of the Seattle station data developed a series of east-west trending anomalies south of the baseline. It is not clear at present whether these anomalies should be assigned to thrust-related structural features, to mineralized conductors, or to a combination of the two.

Table 1 shows head analysis from two bulk samples collected of massive sulfides at Drenchwater Creek in 1991. The samples were collected from oxidized surface material, which had been leached to an unknown depth. The samples were analyzed at the Bureau Salt Lake City Research Center. They were ground to -200 mesh for a standard flotation test. The recovery was poor due to the fine grained nature of the sulfides. A minimum -400 mesh grind would be needed to successfully liberate the sulfides. This would require a flow sheet similar to that for the presently producing zinc and lead Red Dog zinc and lead mine located 60 km southwest of Drenchwater Creek. The samples were select and may not be entirely representative of the Drenchwater Creek occurrence (23).

TABLE 1. - Chemical Analysis of the Drenchwater Creek Bulk Samples

Sample no.	Cu (%)	Pb (%)	Zn (%)	Ag g\mt	As (%)	Remarks
DWI	0.006	3.23	15.20	59.9	<0.01	siliceous, pyrite - poor, massive sulfides
DWII	0.01	0.91	10.50	31.8	0.01	pyrite - rich, massive sulfides

Ekakevik

The Ekakevik bedded barite occurrence is located on the Ipnavik River drainage, 4.8 km northeast of Ekakevik Mountain (fig. 3). The barite occurs within interbedded chert, shale, and limestone of the Mississippian Lisburne Group (14) and is estimated to be 20 m thick.

Samples (5875-5879) averaged 97.1% $BaSO_4$ with an average specific gravity of 3.90 (14). Small lenses of witherite ($BaCO_3$) occur locally within the barite body. Geologic mapping by the Bureau shows the occurrence to contain an indicated resource totalling 2,275,560 mt. Samples of the surrounding rocks contained no significant base-metal values.

Lakeview

The Lakeview bedded barite occurrence is located in the Cutaway Creek drainage, 6.2 km southwest of Peak 2810 (fig. 3). The barite bed occurs within Triassic (19) interbedded black chert and felsic volcanic rocks and is estimated to be 10 m thick. Samples (5864-5867) averaged 95.9% $BaSO_4$ with an average specific gravity of 4.13 (14). Geologic mapping by the Bureau shows the occurrence to extend for at least 425 m along strike and to contain an inferred resource totalling 3,773,788 mt. Samples of the surrounding rocks showed no significant base metal values. This occurrence may be the southern extension of the Longview occurrence, located 0.8 km to the northeast.

Lisburne Ridge

The Lisburne Ridge area (fig. 3) was examined to evaluate previously reported phosphate occurrences (24). Dolomitic beds from 2.5 to 15.5 cm thick containing pellets or oöids of phosphatic material, were found to occur within a sooty black shale unit of unknown thickness. The shale is poorly exposed, lying at the top of the dolomitic unit of the Lisburne Group rocks on the south side of the ridge, just within the upper limits of vegetation. Due to the poor exposures, none of the individual phosphate beds could be traced along strike for more than a few meters.

Samples of the phosphates contained up to 29.2% P_2O_5 (5806) and averaged 24.3% P_2O_5. Pellets range from <1 to 6 mm in diameter. Samples of the phosphate also contained up to 94 ppm uranium (5806). Samples of the enclosing shale contained up to 2,000 ppm vanadium (5805). Due to an anomalous uranium content, the phosphate-rich beds were detectable with a scintillometer. It proved to be a very useful prospecting tool, and with it the beds could be traced through areas of poor exposure. Phosphates were traced intermittently along strike for 5 km. Fragments of black chert float found near the phosphate beds had a characteristic blue-gray oxide coating (phosphate bloom).

A bulk sample of similar material was collected at the Ivotuk Hills (fig. 4) by the Bureau in 1991 (18). The primary composition of the Ivotuk phosphate pellets was determined to be fluorapatite with minor quartz and dolomite (22).

Longview

The Longview bedded-barite occurrence lies 4.8 km southwest of Peak 2810 in the Cula Creek drainage (fig. 3). The barite bed occurs within Triassic (19) interbedded black chert, gray chert, and silicified mudstone and averages 30 m thick. It can be traced intermittently along strike for 690 m. Samples (5742-5750, 5861-5862) averaged 95.3% $BaSO_4$ with an average specific gravity of 4.13 (14). The occurrence contains an inferred resource totalling 29,494,395 mt, making it the largest known barite body within the CMD. The Longview occurrence lies on strike with the Lakeview occurrence, and both may represent one continuous body, possibly extending for up to 1.9 km. Samples of the chert and mudstone contained no significant base metal values, but did contain up to 61 ppm uranium (5742).

Safari Creek

A stream sediment sample, previously collected by the Bureau in Safari Creek, contained 415 ppm lead (13). Reconnaissance work in the headwaters of Safari Creek by the Bureau during the 1992 field season (fig. 3) led to the discovery of a sulfide occurrence. A 3-m-wide continuous zone containing massive lenses and pods of galena and sphalerite is exposed in the gravels near the eastern margin of the stream drainage. Spotty exposures nearby indicate that the zone could be up to 15.5 m wide. Sulfides consist mainly of galena with subsidiary sphalerite and minor chalcopyrite. The sulfides are intermittently exposed for 12.2 m along the trend of what appears to be a near-vertical east-west trending shear zone. Select samples of the massive zone contained up to 46% lead, 12% zinc, and 685 g/mt silver (5770). A 1.1-m-wide continuous chip sample contained 25.2% zinc, 8.5% lead, 278 g/mt silver, 925 ppm copper, and 347 ppm cadmium (5900). Adjacent to the massive sulfide zone is a stringer sulfide zone approximately 7.8 m wide and exposed continuously for 18.5 m along the east stream bank. Across this zone select samples (5769-5770, 5903, 5908) averaged 22% lead, 7% zinc, and 274 g/mt silver.

The sulfides are confined to silicified, bleached Kanayut sandstone, which locally shows signs of brecciation and overlies Kayak Formation siltstone and shale in a thrust fault contact (19). The stringer sulfide zone can be traced intermittently for 92 m in rubblecrop and float along the east stream bank. A VLF geophysical traverse across the galena-rich zone gave no response.

Stack

The Stack bedded-barite occurrence lies in the Cutaway Creek drainage, 7.2 km southwest of Peak 2810 (fig. 3). The barite bed occurs within interbedded Mississippian petroliferous limestone, chert, sandstone, and shale and has an average thickness of 30 m. Samples (5868-5871) averaged 95.8% $BaSO_4$ with an average specific gravity of 4.21 (14). The occurrence contains an indicated resource totalling 2,851,223 mt. Samples of the surrounding rocks contained no significant base metal values.

Story Creek

In 1991, the geology of the main Story Creek occurrence (fig. 3) was mapped and a soil geochemical survey completed by the Bureau (18). During the 1992 season, prospecting within Kayak Formation siltstones to the west of the main occurrence located several zones containing sulfides. Lenticular exposures of sulfide-bearing rubblecrop, up to 15.2 m long and of undetermined width are intermittently exposed over a 975 m distance along the S 55° W trend of the main occurrence. Sulfides consisting of galena and sphalerite occur within a quartz-cemented, siltstone breccia. Samples contained up 1.46% lead and 0.58% zinc (5792).

Story Creek West

Two subparallel, quartz-cemented, siltstone breccia zones within the Kayak Formation are present as rubble crops on the east and west sides of a northeast-trending stream, 1.9 km west of the main Story Creek occurrence (fig. 3). The zones consist of lenses, varying in width from 9.2 to 31 m, and are up to 155 m along strike. Linear float traces across the banks of the stream indicate that the bodies are steeply dipping.

Sulfide-bearing quartz vein breccia containing galena, sphalerite, and minor chalcopyrite was found in the zones. Select samples contained up to 11% zinc (5778), 2.8% lead (5914), 51.0 g/mt silver, and 1,366 ppm copper (5782). A sample of rubblecrop taken across a 9 m width of one of the breccia zones contained 0.2% lead, 0.53% zinc, and 9.6 g/mt silver (5917). The strikes of the two zones are approximately parallel to that of the main Story Creek occurrence to the west, but not on trend with it. The entire group, including both Story Creek and Story Creek West may represent a group of enechelon dilational breccia zones extending over a length of 2.2 km. Some of the sulfide-bearing rocks in this area were previously sampled by the Bureau (9).

Tuck

The Tuck bedded-barite occurrence is a small body of high quality material located in the Cutaway Creek drainage, 6.4 km southwest of Peak 2810 (fig. 3). The bed is a minimum of 20 m thick and no contacts with other rock types are evident within its small 30 x 60 m exposure. Samples (5872-5873) averaged 95.9% $BaSO_4$ with an average specific gravity of 4.31 (14), the highest grade of all the known bedded deposits in the district. The occurrence contains an indicated resource totalling 155,160 mt. None of the samples collected contained anomalous base metal values.

CONCLUSIONS

The Bureau conducted reconnaissance and site-specific investigations in the southwestern part of the CMD during the 1992 field season. Reconnaissance level work in the area between Spike Creek and Ivotuk Hills tried to verify USGS and Bureau geochemical lead and zinc stream sediment sample anomalies. The field work resulted in the discovery of three new mineral occurrences and conducted detailed examinations on thirteen mineral occurrences.

Mineral occurrences examined containing anomalous lead and zinc include Drenchwater Creek, Safari Creek, Story Creek, and Story Creek West. The anomalous barite occurrences examined include Abby, Bion, Ekakevik, Lakeview, Longview, Stack, and Tuck. The Lisburne Ridge area contains anomalous phosphate occurrences. Anomalously high lead and zinc concentrations were also found that may indicate additional mineral occurrences in the Twistem Creek area. A total of 49,007,675 mt of barite resources was identified.

TABLE 2. - 1992 Sample Analysis Lower Detection Limits

Quantitative Analysis - FA			
$BaSO_4$...	0.01%	P_2O_5...	0.03%
Pb...	0.01%	Zn...	0.01%
Fire Assay - DCP			
Ag...	0.02 oz/t	Pd...	1 ppb
Au...	1 ppb	Pt...	5 ppb
Atomic Emission Spectroscopy - ICP			
Ag...	0.5 ppm	Mo...	1 ppm
Al...	0.01%	Na...	0.01%
As...	5 ppm	Nb...	5 ppm
Ba...	5 ppm	Ni...	1 ppm
Bi...	5 ppm	Pb...	2 ppm
Ca...	0.01%	Sb...	5 ppm
Cd...	2 ppm	Sn...	20 ppm
Co...	1 ppm	Sr...	1 ppm
Cr...	2 ppm	Ta*...	5-100 ppm
Cu...	1 ppm	Te...	25 ppm
Fe...	0.01%	Ti...	0.01%
Ga...	10 ppm	V....	2 ppm
K....	0.01%	W....	20 ppm
La...	5 ppm	Y....	5 ppm
Li...	2 ppm	Zn...	2 ppm
Mg...	0.01%	Zr...	5 ppm
Mn...	5 ppm		
FLUOROMETRIC			
U...	0.2 ppm		

*Background interference, solubility, and line calibration problems at the lab may effect the lower detection limits.

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APPENDIX – 1992 CMD Sample Analytical Results

Map no.	Sample no.	Year	Property name	Location name	Mining district	Basic rock type	Sample site	Sample type	Quad name	Quad. no.	TWP	RNG	Section	Quarter section	Meridian	Pb %	Zn %
HP1	5789	1992		Anuk Creek	Colville	Gray Shale	Rubblecrop	Grab	Howard Pass	D-4	8S	26W	8	SW	Umiat		
HP1	5788	1992		Anuk Creek	Colville	Breccia	Outcrop	Contin chip	Howard Pass	D-4	8S	26W	8	SW	Umiat		
HP1	5785	1992		Anuk Creek	Colville	Gray Shale	Outcrop	Random chip	Howard Pass	D-4	8S	26W	8	SW	Umiat		
HP1	5786	1992		Anuk Creek	Colville	Gray Mudstone	Outcrop	Random chip	Howard Pass	D-4	8S	26W	8	SW	Umiat		
HP1	5787	1992		Anuk Creek	Colville	Silty Mudstone	Outcrop	Contin chip	Howard Pass	D-4	8S	26W	8	SW	Umiat		
HP2	5837	1992		Rampart Creek	Colville			Stream Sed	Howard Pass	C-5	9S	30W	34	NE	Umiat		
HP2	5838	1992		Rampart Creek	Colville			Stream Sed	Howard Pass	C-5	9S	30W	34	NE	Umiat		
HP3	5836	1992		Rampart Creek	Colville	Py. Black Chert	Outcrop	Random chip	Howard Pass	C-5	9S	30W	35	NW	Umiat		
HP4	5824	1992		Rolling Pin Creek	Colville			Stream Sed	Howard Pass	C-5	10S	29W	7	SE	Umiat		
HP4	5823	1992		Rolling Pin Creek	Colville			Stream Sed	Howard Pass	C-5	10S	29W	8	SW	Umiat		
HP5	5821	1992	Drenchwater Creek	Drenchwater Creek	Colville	Sil. Breccia	Float	Select	Howard Pass	C-5	10S	29W	8	SW	Umiat		
HP5	5820	1992	Drenchwater Creek	Drenchwater Creek	Colville	Sil. Breccia	Float	Select	Howard Pass	C-5	10S	29W	8	SW	Umiat		
HP6	5722	1992	Drenchwater Creek	Drenchwater Creek	Colville	Chert/Mudstone	Rubblecrop	Random chip	Howard Pass	C-5	10S	29W	17	NW	Umiat		
HP6	5816	1992	Drenchwater Creek	Drenchwater Creek	Colville	Gray Chert	Rubblecrop	Select	Howard Pass	C-5	10S	29W	17	NE	Umiat		
HP6	5817	1992	Drenchwater Creek	Drenchwater Creek	Colville	Gray Chert	Float	Grab	Howard Pass	C-5	10S	29W	17	NE	Umiat		
HP6	5818	1992	Drenchwater Creek	Drenchwater Creek	Colville	Sil. Mudstone	Float	Select	Howard Pass	C-5	10S	29W	17	NE	Umiat		
HP6	5819	1992	Drenchwater Creek	Drenchwater Creek	Colville	Gray Chert	Float	Select	Howard Pass	C-5	10S	29W	17	NW	Umiat		
HP6	5822	1992	Drenchwater Creek	Drenchwater Creek	Colville	Carb. Chert	Outcrop	Random chip	Howard Pass	C-5	10S	29W	17	NE	Umiat		
HP6	5815	1992	Drenchwater Creek	Drenchwater Creek	Colville	Gray Chert	Rubblecrop	Select	Howard Pass	C-5	10S	29W	17	NE	Umiat		
HP7	5721	1992	Drenchwater Creek	Drenchwater Creek	Colville	Black Shale	Rubblecrop	Grab	Howard Pass	C-5	10S	29W	17	SE	Umiat		
HP7	5720	1992	Drenchwater Creek	Drenchwater Creek	Colville	Black Chert	Outcrop	Random chip	Howard Pass	C-5	10S	29W	17	SE	Umiat	0.02	0.02
HP7	5709	1992	Drenchwater Creek	Drenchwater Creek	Colville	Sil. Mudstone	Outcrop	Select	Howard Pass	C-5	10S	29W	17	NE	Umiat	0.32	0.26
HP8	5715	1992	Drenchwater Creek	Drenchwater Creek	Colville			Soil	Howard Pass	C-5	10S	29W	22	NW	Umiat		
HP8	5710	1992	Drenchwater Creek	Drenchwater Creek	Colville			Soil	Howard Pass	C-5	10S	29W	22	NW	Umiat		
HP8	5719	1992	Drenchwater Creek	Drenchwater Creek	Colville	Mudstone/Chert	Outcrop	Grab	Howard Pass	C-5	10S	29W	21	NE	Umiat		
HP8	5718	1992	Drenchwater Creek	Drenchwater Creek	Colville	Lithic Tuff	Float	Grab	Howard Pass	C-5	10S	29W	22	NW	Umiat		
HP8	5717	1992	Drenchwater Creek	Drenchwater Creek	Colville			Soil	Howard Pass	C-5	10S	29W	22	NW	Umiat		
HP8	5716	1992	Drenchwater Creek	Drenchwater Creek	Colville	Lithic Tuff	Float	Grab	Howard Pass	C-5	10S	29W	22	NW	Umiat		
HP8	5713	1992	Drenchwater Creek	Drenchwater Creek	Colville			Soil	Howard Pass	C-5	10S	29W	22	NW	Umiat		
HP8	5714	1992	Drenchwater Creek	Drenchwater Creek	Colville	Chert/Dacite	Float	Grab	Howard Pass	C-5	10S	29W	22	NW	Umiat		
HP8	5712	1992	Drenchwater Creek	Drenchwater Creek	Colville	Sil. Volcanic (?)	Float	Select	Howard Pass	C-5	10S	29W	22	NW	Umiat		
HP8	5711	1992	Drenchwater Creek	Drenchwater Creek	Colville	Chert/Dacite	Float	Grab	Howard Pass	C-5	10S	29W	22	NW	Umiat		
HP9	5835	1992	False Wager Creek	False Wager Creek	Colville			Stream Sed	Howard Pass	C-5	10S	29W	15	SE	Umiat		
HP10	5832	1992		Wager Creek	Colville	Mudstone/Chert	Float	Select	Howard Pass	C-5	10S	29W	14	SW	Umiat		
HP10	5829	1992		Wager Creek	Colville			Soil	Howard Pass	C-5	10S	29W	14	SW	Umiat		
HP10	5834	1992	False Wager Creek	False Wager Creek	Colville	Siliceous Breccia	Float	Select	Howard Pass	C-5	10S	29W	14	SW	Umiat		
HP10	5827	1992		Wager Creek	Colville	Gray Chert	Float	Select	Howard Pass	C-5	10S	29W	14	SW	Umiat		
HP10	5830	1992		Wager Creek	Colville	Sil. Mudstone	Float	Select	Howard Pass	C-5	10S	29W	14	SE	Umiat		
HP10	5828	1992		Wager Creek	Colville	Chert	Float	Select	Howard Pass	C-5	10S	29W	14	SW	Umiat		
HP10	5833	1992		Wager Creek	Colville	Black Mudstone	Float	Select	Howard Pass	C-5	10S	29W	14	SW	Umiat		
HP11	5731	1992	False Wager Creek	False Wager Creek	Colville	Mudstone Bx.	Float	Select	Howard Pass	C-5	10S	29W	22	NW	Umiat	1.89	12.64
HP11	5732	1992	False Wager Creek	False Wager Creek	Colville	Felsic Volcanic	Outcrop	Random chip	Howard Pass	C-5	10S	29W	22	NW	Umiat		
HP11	5734	1992	False Wager Creek	False Wager Creek	Colville			Stream Sed	Howard Pass	C-5	10S	29W	22	NW	Umiat		
HP11	5730	1992	False Wager Creek	False Wager Creek	Colville	Black Shale	Rubblecrop	Grab	Howard Pass	C-5	10S	29W	22	NW	Umiat		
HP11	5729	1992	False Wager Creek	False Wager Creek	Colville	Black Shale	Float	Grab	Howard Pass	C-5	10S	29W	22	NW	Umiat		
HP11	5728	1992	False Wager Creek	False Wager Creek	Colville	Chert/Mass. Py.	Float	Select	Howard Pass	C-5	10S	29W	22	SW	Umiat		
HP11	5727	1992	False Wager Creek	False Wager Creek	Colville	Black Shale	Float	Grab	Howard Pass	C-5	10S	29W	22	SW	Umiat		
HP11	5726	1992	False Wager Creek	False Wager Creek	Colville	Black Chert	Float	Grab	Howard Pass	C-5	10S	29W	22	SW	Umiat		
HP11	5735	1992	False Wager Creek	False Wager Creek	Colville			Stream Sed	Howard Pass	C-5	10S	29W	22	NW	Umiat		
HP11	5733	1992	False Wager Creek	False Wager Creek	Colville	Blk. Shale/Chert	Float	Grab	Howard Pass	C-5	10S	29W	22	NW	Umiat		
HP11	5725	1992	False Wager Creek	False Wager Creek	Colville	Black Mudstone	Float	Grab	Howard Pass	C-5	10S	29W	22	SE	Umiat		
HP12	5825	1992	False Wager Creek	False Wager Creek	Colville	Black Chert	Float	Select	Howard Pass	C-5	10S	29W	22	SE	Umiat		
HP13	5724	1992	False Wager Creek	False Wager Creek	Colville	Black Chert	Float	Grab	Howard Pass	C-5	10S	29W	22	SE	Umiat		
HP13	5723	1992	False Wager Creek	False Wager Creek	Colville	Green Shale	Float	Grab	Howard Pass	C-5	10S	29W	22	SE	Umiat		
HP14	5826	1992		Wager Creek	Colville	Black Chert	Float	Select	Howard Pass	C-5	10S	29W	23	NW	Umiat		
HP15	5831	1992		Wager Creek	Colville			Stream Sed	Howard Pass	C-5	10S	29W	13	SW	Umiat		
HP16	5840	1992		Kiligwa River	Colville	Quartz Vein	Float	Grab	Howard Pass	C-5	10S	28W	19	SW	Umiat		
HP16	5841	1992		Kiligwa River	Colville			Stream Sed	Howard Pass	C-5	10S	28W	19	SE	Umiat		
HP17	5839	1992		Kiligwa River	Colville	Gray Py. Chert	Float	Grab	Howard Pass	C-5	10S	29W	25	NW	Umiat		

APPENDIX – 1992 CMD Sample Analytical Results

Map no.	Sample no.	Year	Property name	Location name	Mining district	Basic rock type	Sample site	Sample type	Quad name	Quad. no.	TWP	RNG	Section	Quarter section	Meridian	Pb %	Zn %
HP18	5761	1992	Twistem Creek	Twistem Creek	Colville	Pyritic Chert	Outcrop	Contin chip	Howard Pass	C–5	10S	29W	36	SE	Umiat		
HP18	5762	1992	Twistem Creek	Twistem Creek	Colville	Pyritic Chert	Rubblecrop	Select	Howard Pass	C–5	10S	29W	36	SE	Umiat		
HP19	5763	1992	Twistem Creek	Twistem Creek	Colville	Chert/Mudstone	Rubblecrop	Grab	Howard Pass	C–5	11S	29W	1	NE	Umiat		
HP20	5759	1992	Twistem Creek	Twistem Creek	Colville	Black Chert	Outcrop	Grab	Howard Pass	C–5	11S	29W	1	SE	Umiat		
HP20	5764	1992	Twistem Creek	Twistem Creek	Colville			Stream Sed	Howard Pass	C–5	11S	29W	1	SE	Umiat		
HP20	5752	1992	Twistem Creek	Twistem Creek	Colville	Black Chert	Float	Grab	Howard Pass	C–5	11S	29W	1	SE	Umiat		
HP20	5754	1992	Twistem Creek	Twistem Creek	Colville	Sil. Mudstone	Float	Grab	Howard Pass	C–5	11S	29W	1	SE	Umiat		
HP20	5760	1992	Twistem Creek	Twistem Creek	Colville	Black Shale	Float	Grab	Howard Pass	C–5	11S	29W	1	SE	Umiat		
HP20	5755	1992	Twistem Creek	Twistem Creek	Colville	Sil. Mudstone	Outcrop	Random chip	Howard Pass	C–5	11S	29W	1	SE	Umiat		
HP20	5753	1992	Twistem Creek	Twistem Creek	Colville	Chert	Outcrop	Grab	Howard Pass	C–5	11S	29W	1	SE	Umiat		
HP20	5757	1992	Twistem Creek	Twistem Creek	Colville			Stream Sed	Howard Pass	C–5	11S	29W	1	SE	Umiat		
HP20	5756	1992	Twistem Creek	Twistem Creek	Colville	Blk. Mudstone	Outcrop	Contin chip	Howard Pass	C–5	11S	29W	1	SE	Umiat		
HP20	5758	1992	Twistem Creek	Twistem Creek	Colville	Chert/Mudstone	Float	Select	Howard Pass	C–5	11S	29W	1	SE	Umiat		
HP21	5842	1992	Twistem Creek	Twistem Creek	Colville	Sil. Mudstone	Float	Grab	Howard Pass	C–5	11S	28W	6	SW	Umiat		
HP21	5885	1992	Twistem Creek	Twistem Creek	Colville			Stream Sed	Howard Pass	C–5	11S	28W	6	NW	Umiat		
HP21	5886	1992	Twistem Creek	Twistem Creek	Colville	Carb. Chert	Rubblecrop	Grab	Howard Pass	C–5	11S	28W	6	NE	Umiat		
HP21	5892	1992	Twistem Creek	Twistem Creek	Colville			Stream Sed	Howard Pass	C–5	11S	28W	6	SW	Umiat		
HP21	5891	1992	Twistem Creek	Twistem Creek	Colville			Stream Sed	Howard Pass	C–5	11S	28W	6	SW	Umiat		
HP21	5888	1992	Twistem Creek	Twistem Creek	Colville			Stream Sed	Howard Pass	C–5	11S	28W	6	NE	Umiat		
HP21	5887	1992	Twistem Creek	Twistem Creek	Colville	Carb. Chert	Outcrop	Random chip	Howard Pass	C–5	11S	28W	6	NE	Umiat		
HP21	5880	1992	Twistem Creek	Twistem Creek	Colville	Gray Mudstone	Outcrop	Rep chip	Howard Pass	C–5	11S	28W	6	SW	Umiat		
HP21	5884	1992	Twistem Creek	Twistem Creek	Colville	Black Mudstone	Outcrop	Select	Howard Pass	C–5	11S	28W	6	NW	Umiat		
HP21	5883	1992	Twistem Creek	Twistem Creek	Colville	Carb. Mudstone	Outcrop	Rep chip	Howard Pass	C–5	11S	28W	6	NW	Umiat		
HP21	5882	1992	Twistem Creek	Twistem Creek	Colville	Carb. Mudstone	Outcrop	Rep chip	Howard Pass	C–5	11S	28W	6	NW	Umiat		
HP21	5881	1992	Twistem Creek	Twistem Creek	Colville	Carb. Mudstone	Outcrop	Select	Howard Pass	C–5	11S	28W	6	NW	Umiat		
HP22	5890	1992		Kiligwa River	Colville	Gray Mudstone	Outcrop	Select	Howard Pass	C–5	10S	28W	32	NE	Umiat		
HP22	5889	1992		Kiligwa River	Colville			Stream Sed	Howard Pass	C–5	10S	28W	32	NE	Umiat		
HP23	5739	1992		Kiligwa River	Colville			Stream Sed	Howard Pass	C–5	10S	28W	8	NW	Umiat		
HP23	5736	1992		Kiligwa River	Colville	Sil. Volcanic	Float	Grab	Howard Pass	C–5	10S	28W	8	SE	Umiat		
HP23	5738	1992		Kiligwa River	Colville	Gray Chert	Float	Grab	Howard Pass	C–5	10S	28W	8	SE	Umiat		
HP23	5737	1992		Kiligwa River	Colville	Gray Chert	Float	Grab	Howard Pass	C–5	10S	28W	8	SE	Umiat		
HP24	5922	1992		Swayback Creek	Colville			Stream Sed	Howard Pass	C–4	9S	27W	31	SE	Umiat		
HP25	5791	1992		Swayback Creek	Colville			Stream Sed	Howard Pass	C–4	9S	26W	31	NE	Umiat		
HP26	5790	1992		Swayback Creek	Colville	Chert/Siltstone	Rubblecrop	Grab	Howard Pass	C–4	10S	26W	5	NE	Umiat		
HP27	5797	1992		Apex Mtn	Colville	Ultramafic	Float	Select	Howard Pass	B–4	12S	27W	20	SW	Umiat		
HP28	5784	1992	Whoopee Creek	Whoopee Creek	Colville	Mudstone Brec.	Float	Select	Howard Pass	A–4	33N	4E	25	NW	Kateel River	15.25	1.22
HP29	5798	1992		Tukoto Creek	Colville	Carb. Shale	Outcrop	Random chip	Howard Pass	B–2	34N	7E	14	NW	Kateel River		
HP30	5799	1992		Tukuto Creek	Colville			Stream Sed	Howard Pass	B–2	34N	7E	14	NE	Kateel River		
HP31	5800	1992		Tukuto Creek	Colville	Lithic Tuff	Rubblecrop	Grab	Howard Pass	B–2	34N	7E	14	NE	Kateel River		
HP32	5910	1992		Memorial Creek	Colville	Qtz. Sandstone	Float	Grab	Howard Pass	B–3	34N	5E	13	SW	Kateel River		
HP32	5911	1992		Memorial Creek	Colville			Stream Sed	Howard Pass	B–3	34N	5E	13	SE	Kateel River		
HP33	5771	1992		Safari Creek	Colville	Qtz. Sandstone	Float	Select	Howard Pass	B–3	34N	5E	16	NE	Kateel River	6.93	2.27
HP33	5770	1992		Safari Creek	Colville	Qtz. Sandstone	Outcrop	Select	Howard Pass	B–3	34N	5E	16	NE	Kateel River	45.89	6.42
HP33	5769	1992		Safari Creek	Colville	Qtz. Sandstone	Outcrop	Random chip	Howard Pass	B–3	34N	5E	16	NE	Kateel River	5.83	8.47
HP33	5768	1992		Safari Creek	Colville	Qtz. Sandstone	Outcrop	Random chip	Howard Pass	B–3	34N	5E	16	NE	Kateel River		
HP33	5902	1992	Safari Creek	Safari Creek	Colville	Qtz. Sandstone	Outcrop	Rep chip	Howard Pass	B–3	34N	5E	16	NE	Kateel River	2.15	
HP33	5907	1992	Safari Creek	Safari Creek	Colville	Sandstone	Outcrop	Random chip	Howard Pass	B–3	34N	5E	16	NE	Kateel River	23.38	4.60
HP33	5905	1992	Safari Creek	Safari Creek	Colville	Volcanic (?)	Rubblecrop	Grab	Howard Pass	B–3	34N	5E	16	NE	Kateel River		
HP33	5904	1992	Safari Creek	Safari Creek	Colville	Qtz. Sandstone	Float	Grab	Howard Pass	B–3	34N	5E	16	NE	Kateel River		
HP33	5913	1992	Safari Creek	Safari Creek	Colville	Sandstone	Outcrop	Select	Howard Pass	B–3	34N	5E	16	NE	Kateel River	27.00	11.93
HP33	5903	1992	Safari Creek	Safari Creek	Colville	Qtz. Sandstone	Outcrop	Rep chip	Howard Pass	B–3	34N	5E	16	NE	Kateel River	3.75	4.41
HP33	5906	1992	Safari Creek	Safari Creek	Colville	Carb. Shale	Outcrop	Random chip	Howard Pass	B–3	34N	5E	16	NE	Kateel River		
HP33	5908	1992	Safari Creek	Safari Creek	Colville	Sandstone	Outcrop	Random chip	Howard Pass	B–3	34N	5E	16	NE	Kateel River	13.82	6.33
HP33	5901	1992	Safari Creek	Safari Creek	Colville	Qtz. Sandstone	Outcrop	Contin chip	Howard Pass	B–3	34N	5E	16	NE	Kateel River	2.87	
HP33	5900	1992	Safari Creek	Safari Creek	Colville	Qtz. Sandstone	Outcrop	Contin chip	Howard Pass	B–3	34N	5E	16	NE	Kateel River	25.21	8.47
HP34	5775	1992		Safari Creek	Colville	Sandstone	Float	Select	Howard Pass	B–3	34N	5E	9	SW	Kateel River		
HP34	5774	1992		Safari Creek	Colville	Mafic Igneous	Outcrop	Random chip	Howard Pass	B–3	34N	5E	16	NW	Kateel River		
HP35	5772	1992		Safari Creek	Colville	Sil. Mudstone	Float	Grab	Howard Pass	B–3	34N	5E	16	NW	Kateel River	0.17	0.02
HP36	5765	1992		Safari Creek	Colville	Ironstone Conc	Float	Grab	Howard Pass	B–3	34N	5E	21	NE	Kateel River		

Map no.	Sample no.	Year	Property name	Location name	Mining district	Basic rock type	Sample site	Sample type	Quad name	Quad. no.	TWP	RNG	Section	Quarter section	Meridian	Pb %	Zn %
HP37	5767	1992		Safari Creek	Colville	Black Mudstone	Outcrop	Random chip	Howard Pass	B-3	34N	5E	21	NW	Kateel River		
HP37	5895	1992		Safari Creek	Colville	Carb. Shale	Rubblecrop	Random chip	Howard Pass	B-3	34N	5E	21	NW	Kateel River		
HP37	5896	1992		Safari Creek	Colville			Stream Sed	Howard Pass	B-3	34N	5E	21	NW	Kateel River		
HP37	5894	1992		Safari Creek	Colville	Carb. Shale	Outcrop	Rep chip	Howard Pass	B-3	34N	5E	21	NW	Kateel River		
HP37	5893	1992		Safari Creek	Colville	Gray Mudstone	Outcrop	Rep chip	Howard Pass	B-3	34N	5E	21	NW	Kateel River		
HP37	5766	1992		Safari Creek	Colville	Black Chert	Outcrop	Grab	Howard Pass	B-3	34N	5E	21	NW	Kateel River		
HP38	5899	1992	Safari Creek	Safari Creek	Colville	Qtz. Sandstone	Float	Grab	Howard Pass	B-3	34N	5E	16	SW	Kateel River		
HP39	5897	1992	Safari Creek	Safari Creek	Colville	Qtz. Sandstone	Float	Grab	Howard Pass	B-3	34N	5E	16	NW	Kateel River		
HP39	5909	1992	Safari Creek	Safari Creek	Colville	Qtz. Sandstone	Float	Grab	Howard Pass	B-3	34N	5E	16	NW	Kateel River		
HP39	5898	1992	Safari Creek	Safari Creek	Colville	Qtz. Sandstone	Float	Grab	Howard Pass	B-3	34N	5E	16	NW	Kateel River	0.08	<.01
HP40	5776	1992		Safari Creek	Colville			Stream Sed	Howard Pass	B-3	34N	5E	9	SW	Kateel River		
HP41	5793	1992	Story Creek West	Story Creek	Colville	Siltstone Brec.	Rubblecrop	Select	Howard Pass	B-4	12S	26W	27	NE	Umiat	1.08	0.52
HP41	5792	1992	Story Creek West	Story Creek	Colville	Siltstone Brec.	Float	Select	Howard Pass	B-4	12S	26W	27	NE	Umiat	1.46	0.58
HP41	5923	1992	Story Creek West	Story Creek	Colville	Qtz Vein (Kayak)	Float	Grab	Howard Pass	B-4	12S	26W	27	NE	Umiat	6.94	0.04
HP42	5777	1992	Story Creek West	Story Creek	Colville	Brown Siltstone	Rubblecrop	Grab	Howard Pass	B-4	12S	26W	27	NW	Umiat	0.01	0.16
HP42	5920	1992	Story Creek West	Story Creek	Colville	Breccia	Float	Select	Howard Pass	B-4	12S	26W	27	NW	Umiat	0.11	0.72
HP42	5780	1992	Story Creek West	Story Creek	Colville	Siltstone Brec.	Float	Select	Howard Pass	B-4	12S	26W	27	NW	Umiat	0.15	3.20
HP42	5779	1992	Story Creek West	Story Creek	Colville	Siltstone Brec.	Float	Select	Howard Pass	B-4	12S	26W	27	NW	Umiat	0.05	0.15
HP42	5778	1992	Story Creek West	Story Creek	Colville	Siltstone Brec.	Float	Select	Howard Pass	B-4	12S	26W	27	NW	Umiat	0.74	11.01
HP42	5914	1992	Story Creek West	Story Creek	Colville	Breccia	Float	Select	Howard Pass	B-4	12S	26W	27	NW	Umiat	2.81	0.08
HP42	5916	1992	Story Creek West	Story Creek	Colville	Siltstone Brec.	Float	Grab	Howard Pass	B-4	12S	26W	27	NW	Umiat	0.11	0.72
HP42	5919	1992	Story Creek West	Story Creek	Colville	Silicified Kayak	Float	Grab	Howard Pass	B-4	12S	26W	27	NW	Umiat	0.09	0.19
HP42	5918	1992	Story Creek West	Story Creek	Colville	Silicious Gossan	Float	Select	Howard Pass	B-4	12S	26W	27	NW	Umiat	0.43	1.75
HP42	5773	1992		Story Creek	Colville	Brec. Siltstone	Float	Select	Howard Pass	B-4	12S	26W	27	NW	Umiat	0.33	0.58
HP42	5917	1992	Story Creek West	Story Creek	Colville	Siltstone Brec.	Float	Grab	Howard Pass	B-4	12S	26W	27	NW	Umiat	0.20	0.53
HP42	5781	1992	Story Creek West	Story Creek	Colville	Siltstone Brec.	Float	Select	Howard Pass	B-4	12S	26W	27	NW	Umiat	0.03	2.56
HP42	5782	1992	Story Creek West	Story Creek	Colville	Siltstone Brec.	Float	Select	Howard Pass	B-4	12S	26W	27	NW	Umiat	1.18	
HP43	5912	1992		Safari Creek	Colville			Stream Sed	Howard Pass	B-4	12S	26W	24	SW	Umiat		
HP44	5921	1992		Safari Creek	Colville			Stream Sed	Howard Pass	B-3	12S	25W	14	SE	Umiat		
HP45	5783	1992		Safari Creek	Colville	Carb. Shale	Outcrop	Grab	Howard Pass	B-3	12S	25W	13	SE	Umiat		
HP45	5915	1992		Safari Creek	Colville	Carb. Shale	Rubblecrop	Random chip	Howard Pass	B-3	12S	25W	13	SW	Umiat		
HP46	5848	1992	Abby	Cutaway Basin	Colville	Black Mudstone	Float	Grab	Howard Pass	C-3	10S	24W	21	NE	Umiat		
HP46	5844	1992	Abby	Cutaway Basin	Colville	Barite	Rubblecrop	Grab	Howard Pass	C-3	10S	24W	21	NE	Umiat		
HP46	5845	1992	Abby	Cutaway Basin	Colville	Barite	Rubblecrop	Grab	Howard Pass	C-3	10S	24W	21	NE	Umiat		
HP46	5847	1992	Abby	Cutaway Basin	Colville	Black Mudstone	Float	Grab	Howard Pass	C-3	10S	24W	21	NE	Umiat		
HP46	5846	1992	Abby	Cutaway Basin	Colville	Barite	Rubblecrop	Grab	Howard Pass	C-3	10S	24W	21	NE	Umiat		
HP46	5843	1992	Abby	Cutaway Basin	Colville	Barite	Rubblecrop	Grab	Howard Pass	C-3	10S	24W	21	NE	Umiat		
HP46	5849	1992	Abby	Cutaway Basin	Colville	Black Shale	Float	Grab	Howard Pass	C-3	10S	24W	21	NE	Umiat		
HP47	5854	1992	Bion	Cutaway Basin	Colville	Barite/Chert	Float	Grab	Howard Pass	C-3	10S	24W	5	SW	Umiat		
HP47	5853	1992	Bion	Cutaway Basin	Colville	Barite	Rubblecrop	Grab	Howard Pass	C-3	10S	24W	5	SW	Umiat		
HP47	5852	1992	Bion	Cutaway Basin	Colville	Barite	Rubblecrop	Grab	Howard Pass	C-3	10S	24W	5	SW	Umiat		
HP47	5851	1992	Bion	Cutaway Basin	Colville	Black Shale	Rubblecrop	Grab	Howard Pass	C-3	10S	24W	5	SW	Umiat		
HP47	5855	1992	Bion	Cutaway Basin	Colville	Barite	Rubblecrop	Grab	Howard Pass	C-3	10S	24W	5	SW	Umiat		
HP47	5857	1992	Bion	Cutaway Basin	Colville	Black Shale	Float	Grab	Howard Pass	C-3	10S	24W	5	SW	Umiat		
HP47	5850	1992	Bion	Cutaway Basin	Colville	Barite	Rubblecrop	Grab	Howard Pass	C-3	10S	24W	5	SW	Umiat		
HP47	5858	1992	Bion	Cutaway Basin	Colville	Barite	Rubblecrop	Grab	Howard Pass	C-3	10S	24W	5	SW	Umiat		
HP47	5859	1992	Bion	Cutaway Basin	Colville	Barite	Float	Grab	Howard Pass	C-3	10S	24W	5	SW	Umiat		
HP47	5860	1992	Bion	Cutaway Basin	Colville	Black Chert	Float	Grab	Howard Pass	C-3	10S	24W	5	SW	Umiat		
HP47	5856	1992	Bion	Cutaway Basin	Colville	Barite	Float	Grab	Howard Pass	C-3	10S	24W	5	SW	Umiat		
HP48	5740	1992	West Bion	Cutaway Basin	Colville	Barite	Rubblecrop	Grab	Howard Pass	C-3	10S	24W	6	NE	Umiat		
HP49	5874	1992	Bion	Cutaway Basin	Colville	Silicious Sinter	Rubblecrop	Grab	Howard Pass	C-3	9S	24W	32	SE	Umiat		
HP50	5873	1992	Tuck	Cutaway Basin	Colville	Barite	Rubblecrop	Grab	Howard Pass	C-3	10S	24W	3	NW	Umiat		
HP50	5872	1992	Tuck	Cutaway Basin	Colville	Barite	Outcrop	Rep chip	Howard Pass	C-3	10S	24W	3	NW	Umiat		
HP51	5751	1992	Stack Deposit	Cutaway Basin	Colville	Carb. Limestone	Float	Grab	Howard Pass	C-3	10S	24W	3	SW	Umiat		
HP51	5871	1992	Stack	Cutaway Basin	Colville	Carb. Shale	Outcrop	Contin chip	Howard Pass	C-3	10S	24W	3	SW	Umiat		
HP51	5870	1992	Stack	Cutaway Basin	Colville	Barite	Rubblecrop	Grab	Howard Pass	C-3	10S	24W	3	SW	Umiat		
HP51	5869	1992	Stack	Cutaway Basin	Colville	Barite	Rubblecrop	Grab	Howard Pass	C-3	10S	24W	3	SW	Umiat		
HP51	5868	1992	Stack	Cutaway Basin	Colville	Barite	Rubblecrop	Grab	Howard Pass	C-3	10S	24W	3	SW	Umiat		
HP52	5741	1992	Lakeview	Cutaway Basin	Colville	Barite	Rubblecrop	Grab	Howard Pass	C-3	10S	24W	3	NE	Umiat		

Map no.	Sample no.	Year	Property name	Location name	Mining district	Basic rock type	Sample site	Sample type	Quad name	Quad. no.	TWP	RNG	Section	Quarter section	Meridian	Pb %	Zn %
HP52	5867	1992	Lakeview	Cutaway Basin	Colville	Barite	Rubblecrop	Grab	Howard Pass	C–3	10S	24W	3	NE	Umiat		
HP52	5864	1992	Lakeview	Cutaway Basin	Colville	Barite	Float	Grab	Howard Pass	C–3	10S	24W	2	NW	Umiat		
HP52	5865	1992	Lakeview	Cutaway Basin	Colville	Barite	Rubblecrop	Grab	Howard Pass	C–3	10S	24W	2	NW	Umiat		
HP52	5866	1992	Lakeview	Cutaway Basin	Colville	Barite	Rubblecrop	Grab	Howard Pass	C–3	10S	24W	2	NW	Umiat		
HP53	5747	1992	Longview	Cutaway Basin	Colville	Barite	Float	Grab	Howard Pass	C–3	9S	24W	35	SE	Umiat		
HP53	5750	1992	Longview	Cutaway Basin	Colville	Sil. Mudstone	Outcrop	Random chip	Howard Pass	C–3	9S	24W	35	SE	Umiat		
HP53	5746	1992	Longview	Cutaway Basin	Colville	Barite	Outcrop	Contin chip	Howard Pass	C–3	9S	24W	35	SE	Umiat		
HP53	5744	1992	Longview	Cutaway Basin	Colville	Diabase	Outcrop	Random chip	Howard Pass	C–3	9S	24W	35	SW	Umiat		
HP53	5748	1992	Longview	Cutaway Basin	Colville	Barite	Outcrop	Contin chip	Howard Pass	C–3	9S	24W	35	SE	Umiat		
HP53	5743	1992	Longview	Cutaway Basin	Colville	Barite	Outcrop	Spaced chip	Howard Pass	C–3	9S	24W	35	SW	Umiat		
HP53	5745	1992	Longview	Cutaway Basin	Colville	Cherty Mudstone	Outcrop	Random chip	Howard Pass	C–3	9S	24W	35	SE	Umiat		
HP53	5862	1992	Longview	Cutaway Basin	Colville	Barite	Rubblecrop	Grab	Howard Pass	C–3	9S	24W	35	SW	Umiat		
HP53	5742	1992	Longview	Cutaway Basin	Colville	Chert/Mudstone	Outcrop	Contin Chip	Howard Pass	C–3	9S	24W	35	SW	Umiat		
HP53	5863	1992	Longview	Cutaway Basin	Colville	Barite	Rubblecrop	Grab	Howard Pass	C–3	10S	24W	2	NW	Umiat		
HP53	5861	1992	Longview	Cutaway Basin	Colville	Barite	Outcrop	Random chip	Howard Pass	C–3	9S	24W	35	SW	Umiat		
HP53	5749	1992	Longview	Cutaway Basin	Colville	Chert	Outcrop	Contin chip	Howard Pass	C–3	9S	24W	35	SW	Umiat		
HP54	5875	1992	Ekakevik Mtn	Ekakevik Mtn	Colville	Sil. Mudstone	Float	Grab	Howard Pass	C–2	9S	22W	36	NW	Umiat		
HP54	5876	1992	Ekakevik Mtn	Ekakevik Mtn	Colville	Barite	Rubblecrop	Grab	Howard Pass	C–2	9S	22W	36	NW	Umiat		
HP54	5877	1992	Ekakevik Mtn	Ekakevik Mtn	Colville	Witherite	Rubblecrop	Grab	Howard Pass	C–2	9S	22W	36	NW	Umiat		
HP54	5879	1992	Ekakevik Mtn	Ekakevik Mtn	Colville	Black Shale	Float	Grab	Howard Pass	C–2	9S	22W	36	NW	Umiat		
HP54	5878	1992	Ekakevik Mtn	Ekakevik Mtn	Colville	Barite	Outcrop	Rep chip	Howard Pass	C–2	9S	22W	36	NW	Umiat		
HP55	5702	1992	Lisburne Ridge	Lisburne Ridge	Colville	Oolitic Chert	Rubblecrop	Grab	Howard Pass	C–2	9S	21W	26	NW	Umiat		
HP55	5704	1992	Lisburne Ridge	Lisburne Ridge	Colville	Carb. Siltstone	Rubblecrop	Grab	Howard Pass	C–2	9S	21W	26	NE	Umiat		
HP55	5701	1992	Lisburne Ridge	Lisburne Ridge	Colville	Carb. Limestone?	Outcrop	Spaced chip	Howard Pass	C–2	9S	21W	26	NW	Umiat		
HP55	5703	1992	Lisburne Ridge	Lisburne Ridge	Colville	Oolitic Chert	Rubblecrop	Grab	Howard Pass	C–2	9S	21W	26	NW	Umiat		
HP55	5813	1992	Lisburne Ridge	Lisburne Ridge	Colville	Chert/Siltstone	Rubblecrop	Select	Howard Pass	C–2	9S	21W	25	SW	Umiat		
HP55	5803	1992	Lisburne Ridge	Lisburne Ridge	Colville	Pelletal Limest.	Rubblecrop	Select	Howard Pass	C–2	9S	21W	26	NE	Umiat		
HP55	5809	1992	Lisburne Ridge	Lisburne Ridge	Colville	Black Chert	Outcrop	Random chip	Howard Pass	C–2	9S	21W	26	NE	Umiat		
HP55	5812	1992	Lisburne Ridge	Lisburne Ridge	Colville	Pelletal Limest.	Float	Random chip	Howard Pass	C–2	9S	21W	26	SE	Umiat		
HP55	5811	1992	Lisburne Ridge	Lisburne Ridge	Colville	Pelletal Limest.	Float	Random chip	Howard Pass	C–2	9S	21W	25	SW	Umiat		
HP55	5810	1992	Lisburne Ridge	Lisburne Ridge	Colville	Carb. Shale	Float	Select	Howard Pass	C–2	9S	21W	26	NE	Umiat		
HP55	5804	1992	Lisburne Ridge	Lisburne Ridge	Colville	Pelletal Limest.	Outcrop	Random chip	Howard Pass	C–2	9S	21W	26	NE	Umiat		
HP55	5808	1992	Lisburne Ridge	Lisburne Ridge	Colville	Gray Shale	Rubblecrop	Select	Howard Pass	C–2	9S	21W	26	NW	Umiat		
HP55	5805	1992	Lisburne Ridge	Lisburne Ridge	Colville	Dk. Gray Shale	Outcrop	Random chip	Howard Pass	C–2	9S	21W	26	NE	Umiat		
HP55	5807	1992	Lisburne Ridge	Lisburne Ridge	Colville	Pelletal Limest.	Rubblecrop	Random chip	Howard Pass	C–2	9S	21W	26	NW	Umiat		
HP55	5806	1992	Lisburne Ridge	Lisburne Ridge	Colville	Pellet Phosphate	Float	Grab	Howard Pass	C–2	9S	21W	26	NE	Umiat		
HP55	5814	1992	Lisburne Ridge	Lisburne Ridge	Colville	Pelletal Limest.	Float	Grab	Howard Pass	C–2	9S	21W	25	SW	Umiat		
HP56	5924	1992		Lisburne Ridge	Colville	Black Mudstone	Float	Select	Howard Pass	C–2	9S	21W	34	SW	Umiat		
HP57	5795	1992		Lisburne Ridge	Colville	Black Shale	Rubblecrop	Grab	Howard Pass	C–2	10S	21W	3	NW	Umiat		
HP58	5794	1992		Lisburne Ridge	Colville	Oolitic Mudstone	Float	Select	Howard Pass	C–2	9S	21W	35	SW	Umiat		
HP59	5796	1992	Lisburne Ridge	Lisburne Ridge	Colville	Phos. Mudstone	Float	Select	Howard Pass	C–2	9S	20W	32	NW	Umiat		
KR1	5706	1992		Ivotuk Hills	Colville	Blk. Chert	Float	Select	Killik River	B–5	11S	16W	14	SW	Umiat		
KR2	5705	1992		Ivotuk Hills	Colville	Limestone/Chert	Outcrop	Random chip	Killik River	B–5	11S	16W	23	NW	Umiat		
KR3	5708	1992		Ivotuk Hills	Colville	Oolitic Chert	Float	Select	Killik River	B–5	11S	16W	24	NW	Umiat		
KR4	5707	1992		Ivotuk Hills	Colville	Ool. Blk. Ch.	Float	Select	Killik River	B–5	11S	16W	24	NW	Umiat		
KR5	5801	1992	Ivotuk Hills	Ivotuk Hills	Colville	Chert/Limestone	Float	Select	Killik River	B–5	11S	16W	24	SW	Umiat		
KR6	5802	1992	Ivotuk Hills	Ivotuk Hills	Colville	Chert/Limestone	Outcrop	Chip channel	Killik River	B–5	11S	16W	24	SE	Umiat		
MM1	5803	1992		Iliguruk Creek	Wainwright	Sandstone	Float	Select	Misheguk Mtn	D–5	8S	40W	8	SW	Umiat		
MM2	5823	1992		Iliguruk Creek	Wainwright	Sandstone	Float	Select	Misheguk Mtn	D–5	8S	40W	17	NW	Umiat		
MM3	5834	1992		Iligluruk Creek	Wainwright	Sandstone	Outcrop	Select	Misheguk Mtn	C–5	8S	40W	18	SE	Umiat		
MM4	4221	1992		Ilingnorak Ridge	Wainwright	Sandstone	Rubblecrop	Select	Misheguk Mtn	C–5	9S	41W	6	NE	Umiat		
MM5	4249	1992		Spike Creek	Wainwright	Chert	Rubblecrop	Grab	Misheguk Mtn	C–5	10S	43W	24	NW	Umiat		
MM6	4228	1992		Spike Creek	Wainwright	Alluvium	Float	Grab	Misheguk Mtn	C–5	10S	43W	25	SE	Umiat		
MM7	4244	1992		Spike Creek	Wainwright	Chert	Outcrop	Rep chip	Misheguk Mtn	C–5	10S	43W	36	NE	Umiat		
MM8	4255	1992		Spike Creek	Wainwright	Chert	Outcrop	Select	Misheguk Mtn	C–5	10S	42W	30	SW	Umiat		
MM9	4266	1992		Spike Creek	Wainwright	Chert	Outcrop	Select	Misheguk Mtn	C–5	10S	42W	19	NW	Umiat		
MM9	4267	1992		Spike Creek	Wainwright		Outcrop	Select	Misheguk Mtn	C–5	10S	42W	19	SW	Umiat		
MM10	5804	1992		Spike Creek	Wainwright	Chert	Outcrop	Grab	Misheguk Mtn	C–5	10S	42W	19	SW	Umiat		
MM10	5805	1992		Spike Creek	Wainwright	Chert	Outcrop	Grab	Misheguk Mtn	C–5	10S	42W	19	SW	Umiat		

Map no.	Sample no.	Year	Property name	Location name	Mining district	Basic rock type	Sample site	Sample type	Quad name	Quad. no.	TWP	RNG	Section	Quarter section	Meridian	Pb %	Zn %
MM11	5814	1992		Spike Creek	Wainwright	Chert	Outcrop	Grab	Misheguk Mtn	C–5	10S	42W	19	SW	Umiat		
MM12	5815	1992		Spike Creek	Wainwright	Chert	Outcrop	Grab	Misheguk Mtn	C–5	10S	42W	20	SE	Umiat		
MM13	5816	1992		Spike Creek	Wainwright	Chert	Outcrop	Rep chip	Misheguk Mtn	C–5	10S	42W	21	NW	Umiat		
MM14	5817	1992		Spike Creek	Wainwright	Chert	Rubblecrop	Grab	Misheguk Mtn	C–5	10S	42W	17	SW	Umiat		
MM15	5818	1992		Spike Creek	Wainwright	Chert	Float	Grab	Misheguk Mtn	C–5	10S	42W	10	SE	Umiat		
MM16	5819	1992		Iligluruk Creek	Wainwright	Shale	Outcrop	Chip channel	Misheguk Mtn	C–5	10S	42W	13	NE	Umiat		
MM17	5820	1992		Iligluruk Creek	Wainwright	Chert	Outcrop	Grab	Misheguk Mtn	C–5	10S	41W	4	SW	Umiat		
MM18	5821	1992		Iligluruk Creek	Wainwright	Limestone	Float	Grab	Misheguk Mtn	C–5	10S	41W	10	SE	Umiat		
MM19	5822	1992		Iligluruk Creek	Wainwright	Chert	Outcrop	Select	Misheguk Mtn	C–5	10S	41W	1	SW	Umiat		
MM20	5824	1992		Iligluruk Creek	Wainwright	Limestone	Outcrop	Grab	Misheguk Mtn	C–4	10S	41W	12	SE	Umiat		
MM21	5825	1992		Iligluruk Creek	Wainwright	Conglomerate	Rubblecrop	Grab	Misheguk Mtn	C–4	10S	41W	13	NE	Umiat		
MM22	5826	1992		Iligluruk Creek	Wainwright	Shale	Outcrop	Grab	Misheguk Mtn	C–4	10S	40W	18	NE	Umiat		
MM23	5827	1992		Iligluruk Creek	Wainwright	Chert	Outcrop	Rep chip	Misheguk Mtn	C–4	10S	40W	18	SE	Umiat		
MM24	5828	1992		Iligluruk Creek	Wainwright	Limestone	Outcrop	Grab	Misheguk Mtn	C–4	10S	40W	18	SE	Umiat		
MM25	5829	1992		Tupik Creek	Wainwright	Chert	Outcrop	Contin chip	Misheguk Mtn	C–4	10S	40W	17	SE	Umiat		
MM26	5830	1992		Utukok River	Wainwright	Chert	Outcrop	Select	Misheguk Mtn	C–4	10S	40W	10	SE	Umiat		
MM27	5831	1992		Tupik Creek	Wainwright	Conglomerate	Outcrop	Select	Misheguk Mtn	C–4	10S	39W	30	NE	Umiat		
MM28	5832	1992		Koguk Creek	Wainwright	Limestone	Outcrop	Select	Misheguk Mtn	C–4	11S	39W	3	SE	Umiat		
MM29	5833	1992		Echo Mtn	Wainwright	Chert	Outcrop	Select	Misheguk Mtn	C–4	10S	38W	30	SW	Umiat		
MM30	5835	1992		Sphinx Mtn	Wainwright	Shale	Outcrop	Spaced chip	Misheguk Mtn	C–4	10S	38W	19	SW	Umiat		
MM31	5836	1992		Sphinx Mtn	Wainwright	Chert	Outcrop	Rep chip	Misheguk Mtn	C–4	10S	38W	19	NW	Umiat		
MM32	5837	1992		Sphinx Mtn	Wainwright	Chert	Outcrop	Contin chip	Misheguk Mtn	C–4	10S	39W	24	SE	Umiat		
MM32	5838	1992		Sphinx Mtn	Wainwright	Chert	Outcrop	Contin chip	Misheguk Mtn	C–4	10S	39W	24	SE	Umiat		
MM32	5839	1992		Sphinx Mtn	Wainwright	Chert	Outcrop	Contin chip	Misheguk Mtn	C–4	10S	39W	24	SE	Umiat		
MM33	5840	1992		Sphinx Mtn	Wainwright	Chert	Outcrop	Grab	Misheguk Mtn	C–4	10S	39W	24	NE	Umiat		
MM34	5841	1992		Sphinx Mtn	Wainwright	Limestone	Outcrop	Grab	Misheguk Mtn	C–4	10S	39W	24	NE	Umiat		
MM35	4215	1992		Kogruk Creek	Wainwright	Chert	Rubblecrop	Grab	Misheguk Mtn	C–4	10S	39W	13	SE	Umiat		
MM36	4216	1992		Sphinx Mtn	Wainwright	Limestone	Float	Grab	Misheguk Mtn	C–4	10S	39W	13	NE	Umiat		
MM36	4217	1992		Sphinx Mtn	Wainwright	Limestone	Rubblecrop	Grab	Misheguk Mtn	C–4	10S	39W	13	NE	Umiat		
MM37	4218	1992		Sphinx Mtn	Wainwright	Shale	Outcrop	Rep chip	Misheguk Mtn	C–4	10S	39W	24	NW	Umiat		
MM38	4219	1992		Sphinx Mtn	Wainwright	Chert	Outcrop	Contin chip	Misheguk Mtn	C–4	10S	39W	24	NW	Umiat		
MM39	4220	1992		Sphinx Mtn	Wainwright	Dolomite	Float	Grab	Misheguk Mtn	C–4	10S	39W	24	NW	Umiat		
MM40	4222	1992		Kogruk Creek	Wainwright	Chert	Outcrop	Grab	Misheguk Mtn	C–4	10S	39W	13	SW	Umiat		
MM41	4223	1992		Sphinx Mtn	Wainwright	Chert	Rubblecrop	Select	Misheguk Mtn	C–4	10S	39W	14	SE	Umiat		
MM42	4224	1992		Sphinx Mtn	Wainwright	Chert	Rubblecrop	Grab	Misheguk Mtn	C–4	10S	39W	14	SW	Umiat		
MM42	4225	1992		Sphinx Mtn	Wainwright	Sandstone	Rubblecrop	Grab	Misheguk Mtn	C–4	10S	39W	14	SW	Umiat		
MM43	4226	1992		Sphinx Mtn	Wainwright	Chert	Outcrop	Select	Misheguk Mtn	C–4	10S	39W	23	NW	Umiat		
MM44	4227	1992		Sphinx Mtn	Colville	Shale	Outcrop	Select	Misheguk Mtn	C–4	10S	39W	22	SE	Umiat		
MM44	4242	1992		Sphinx Mtn	Colville	Limestone	Outcrop	Select	Misheguk Mtn	C–4	10S	39W	22	SE	Umiat		
MM45	4243	1992		Utokok River	Wainwright	Chert	Outcrop	Select	Misheguk Mtn	C–4	9S	40W	26	SW	Umiat		
MM46	4244	1992		Adventure Creek	Wainwright	Chert	Outcrop	Rep chip	Misheguk Mtn	C–4	9S	40W	16	SE	Umiat		
MM47	4245	1992		Adventure Creek	Wainwright	Chert, Brec.	Outcrop	Select	Misheguk Mtn	C–4	9S	40W	15	SW	Umiat		
MM48	4246	1992		Adventure Creek	Wainwright	Chert, Brec.	Rubblecrop	Select	Misheguk Mtn	C–4	9S	40W	15	SE	Umiat		
MM49	4247	1992		Adventure Creek	Wainwright	Chert	Outcrop	Select	Misheguk Mtn	C–4	9S	40W	15	NE	Umiat		
MM49	4248	1992		Adventure Creek	Wainwright	Shale/Chert	Outcrop	Rep chip	Misheguk Mtn	C–4	9S	40W	15	W	Umiat		
MM50	4250	1992		Adventure Creek	Wainwright	Chert	Rubblecrop	Grab	Misheguk Mtn	C–4	9S	40W	9	SE	Umiat		
MM51	4253	1992		Adventure Creek	Wainwright	Sandstone	Outcrop	Grab	Misheguk Mtn	C–4	9S	40W	3	SW	Umiat		
MM52	4254	1992		Sharp Peak	Wainwright	Shale/Chert	Outcrop	Rep chip	Misheguk Mtn	C–4	9S	38W	25	NW	Umiat		
MM53	4255	1992		Sharp Peak	Wainwright	Chert	Outcrop	Select	Misheguk Mtn	C–4	9S	38W	19	SW	Umiat		
MM53	4256	1992		Sharp Peak	Wainwright	Chert	Outcrop	Select	Misheguk Mtn	C–4	9S	38W	19	SW	Umiat		
MM54	4257	1992		Sharp Peak	Wainwright	Shale	Outcrop	Select	Misheguk Mtn	C–4	9S	38W	19	SE	Umiat		
MM55	4258	1992		Elbow Creek	Wainwright	Chert	Outcrop	Grab	Misheguk Mtn	C–4	9S	38W	20	SE	Umiat		
MM56	4259	1992		Sharp Peak	Wainwright	Chert	Outcrop	Grab	Misheguk Mtn	C–4	9S	39W	19	NW	Umiat		
MM56	4260	1992		Sharp Peak	Wainwright	Chert	Outcrop	Grab	Misheguk Mtn	C–4	9S	39W	19	NW	Umiat		
MM57	4261	1992		Sharp Peak	Wainwright	Chert	Rubblecrop	Select	Misheguk Mtn	C–4	9S	39W	24	NE	Umiat		
MM58	4262	1992		Sharp Peak	Wainwright	Metamorphic	Rubblecrop	Select	Misheguk Mtn	C–4	9S	39W	13	SE	Umiat		
MM58	4263	1992		Sharp Peak	Wainwright	Chert	Rubblecrop	Select	Misheguk Mtn	C–4	9S	39W	13	SE	Umiat		
MM59	4264	1992		Sharp Peak	Wainwright	Chert	Outcrop	Rep chip	Misheguk Mtn	C–4	9S	38W	19	NW	Umiat		
MM59	4265	1992		Sharp Peak	Wainwright	Chert	Outcrop	Rep chip	Misheguk Mtn	C–4	9S	38W	19	NW	Umiat		

Map no.	Sample no.	Year	Property name	Location name	Mining district	Basic rock type	Sample site	Sample type	Quad name	Quad. no.	TWP	RNG	Section	Quarter section	Meridian	Pb %	Zn %
MM59	4266	1992		Sharp Peak	Wainwright	Chert	Outcrop	Select	Misheguk Mtn	C-4	9S	38W	19	NW	Umiat		
MM59	4227	1992		Sharp Peak	Wainwright	Chert	Outcrop	Select	Misheguk Mtn	C-4	9S	38W	19	NW	Umiat		
MM60	4229	1992		Elbow Creek	Wainwright	Chert	Rubblecrop	Grab	Misheguk Mtn	C-4	9S	38W	21	NW	Umiat		
MM61	4230	1992		Elbow Creek	Wainwright	Manganese	Float	Grab	Misheguk Mtn	C-4	9S	38W	21	NW	Umiat		
MM62	4231	1992		Nucleus Creek	Wainwright	Shale	Outcrop	Select	Misheguk Mtn	C-3	9S	37W	6	NW	Umiat		
MM63	4232	1992		Nucleus Creek	Wainwright	Chert	Outcrop	Rep chip	Misheguk Mtn	C-3	9S	37W	6	NE	Umiat		
MM64	4233	1992		Nucleus Creek	Wainwright	Chert	Outcrop	Spaced chip	Misheguk Mtn	C-3	8S	37W	35	SW	Umiat		
MM65	4234	1992		Nucleus Creek	Wainwright	Chert	Outcrop	Chip channel	Misheguk Mtn	C-3	8S	37W	35	SE	Umiat		
MM66	4235	1992		Nucleus Creek	Wainwright	Chert	Outcrop	Rep chip	Misheguk Mtn	C-3	8S	37W	35	SE	Umiat		
MM67	4236	1992		Nucleus Creek	Wainwright	Chert	Outcrop	Rep chip	Misheguk Mtn	C-3	8S	37W	35	SE	Umiat		
MM67	4237	1992		Nucleus Creek	Wainwright	Chert	Outcrop	Rep chip	Misheguk Mtn	C-3	8S	37W	35	SE	Umiat		
MM67	4238	1992		Nucleus Creek	Wainwright	Chert	Outcrop	Rep chip	Misheguk Mtn	C-3	8S	37W	35	SE	Umiat		
MM67	4239	1992		Nucleus Creek	Wainwright	Chert	Outcrop	Rep chip	Misheguk Mtn	C-3	8S	37W	35	SE	Umiat		
MM67	4240	1992		Nucleus Creek	Wainwright	Chert	Outcrop	Rep chip	Misheguk Mtn	C-3	8S	37W	35	SE	Umiat		
MM68	4241	1992		Nucleus Creek	Wainwright	Chert	Outcrop	Rep chip	Misheguk Mtn	C-3	8S	37W	35	SE	Umiat		
MM68	4242	1992		Nucleus Creek	Wainwright	Chert	Outcrop	Rep chip	Misheguk Mtn	C-3	8S	37W	35	SE	Umiat		
MM69	4243	1992		Nucleus Creek	Wainwright	Chert	Outcrop	Select	Misheguk Mtn	C-3	9S	37W	8	SE	Umiat		
MM70	4245	1992		Nucleus Creek	Wainwright	Sandstone	Float	Grab	Misheguk Mtn	C-3	9S	37W	17	SW	Umiat		
MM71	4246	1992		Nucleus Creek	Wainwright	Conglomerate	Outcrop	Select	Misheguk Mtn	C-3	9S	37W	17	SE	Umiat		
MM72	4247	1992		Kidney Creek	Wainwright	Chert	Rubblecrop	Grab	Misheguk Mtn	C-3	10S	37W	1	NW	Umiat		
MM73	4248	1992		Storm Creek	Colville	Conglomerate	Rubblecrop	Grab	Misheguk Mtn	C-3	9S	36W	33	SE	Umiat		
MM74	4249	1992		Nuka River	Colville	Chert	Outcrop	Grab	Misheguk Mtn	C-2	9S	35W	32	NE	Umiat		
MM75	4250	1992		Nuka River	Colville	Chert	Outcrop	Grab	Misheguk Mtn	C-2	9S	35W	28	NE	Umiat		
MM76	4251	1992		Nuka River	Colville	Chert	Outcrop	Grab	Misheguk Mtn	C-2	9S	35W	29	NE	Umiat		
MM77	4252	1992		Nuka River	Colville	Chert	Outcrop	Grab	Misheguk Mtn	C-2	9S	35W	21	NE	Umiat		
MM78	4253	1992		Nuka River	Colville	Chert	Rubblecrop	Select	Misheguk Mtn	C-2	9S	35W	21	NW	Umiat		
MM79	4254	1992		Nuka River	Colville	Shale	Outcrop	Select	Misheguk Mtn	C-2	9S	35W	20	NE	Umiat		
MM80	4256	1992		Nuka River	Colville	Limestone	Outcrop	Select	Misheguk Mtn	C-2	9S	35W	20	NE	Umiat		
MM81	4257	1992		Nuka River	Colville	Chert	Outcrop	Select	Misheguk Mtn	C-2	9S	35W	20	NE	Umiat		
MM82	4258	1992		Thunder Creek	Wainwright	Chert	Outcrop	Rep chip	Misheguk Mtn	C-3	8S	35W	19	SE	Umiat		
MM83	4259	1992		Thunder Creek	Wainwright	Chert	Rubblecrop	Grab	Misheguk Mtn	C-3	8S	35W	20	SW	Umiat		
MM84	4260	1992		Storm Creek	Colville	Gabbro	Outcrop	Grab	Misheguk Mtn	C-2	8S	34W	20	SW	Umiat		
MM85	4261	1992		Nuka River	Colville	Mafic Intrusive	Rubblecrop	Grab	Misheguk Mtn	C-2	9S	34W	21	SW	Umiat		
MM86	4262	1992		Nuka River	Colville	Chert	Rubblecrop	Grab	Misheguk Mtn	C-2	9S	34W	28	NW	Umiat		
MM87	4263	1992		Chertchip Creek	Colville	Chert	Outcrop	Grab	Misheguk Mtn	C-2	9S	34W	27	NW	Umiat		
MM88	4264	1992		Chertchip Creek	Colville	Mafic Intrusive	Rubblecrop	Grab	Misheguk Mtn	C-2	9S	34W	22	SW	Umiat		
MM89	4265	1992		Chertchip Creek	Colville	Sandstone	Outcrop	Grab	Misheguk Mtn	C-2	9S	34W	15	SW	Umiat		
MM90	4268	1992		Chertchip Creek	Colville	Chert	Outcrop	Rep chip	Misheguk Mtn	C-2	9S	34W	13	SW	Umiat		
MM91	4269	1992		Nuka River	Colville	Chert	Rubblecrop	Select	Misheguk Mtn	C-1	8S	32W	20	SW	Umiat		
MM92	4270	1992		Mechanic Creek	Colville	Chert	Rubblecrop	Grab	Misheguk Mtn	D-1	8S	32W	9	NE	Umiat		
MM93	4271	1992		Mechanic Creek	Colville	Chert	Rubblecrop	Grab	Misheguk Mtn	C-1	8S	32W	23	NW	Umiat		
MM94	4272	1992		Nuka Ridge	Colville	Chert	Rubblecrop	Grab	Misheguk Mtn	C-1	8S	32W	23	NW	Umiat		
MM95	4273	1992		Nuka Ridge	Colville	Chert	Rubblecrop	Grab	Misheguk Mtn	C-1	9S	32W	26	SW	Umiat		
MM96	4274	1992		Nuka Ridge	Colville	Chert	Float	Grab	Misheguk Mtn	C-1	9S	32W	26	SE	Umiat		
MM97	4275	1992		Bogie Creek	Colville	Mafic Intrusive	Float	Select	Misheguk Mtn	C-1	10S	31W	18	NW	Umiat		
MM98	4276	1992		Bogie Creek	Colville	Sandstone	Outcrop	Grab	Misheguk Mtn	C-1	10S	31W	5	NW	Umiat		
MM99	4277	1992		Nuka Ridge	Colville	Sandstone	Float	Select	Misheguk Mtn	C-1	9S	31W	29	NW	Umiat		
MM100	5806	1992		Nuka Ridge	Colville	Chert	Float	Select	Misheguk Mtn	C-1	9S	31W	29	NW	Umiat		
MM101	5807	1992		Bogie Creek	Colville	Mafic Intrusive	Outcrop	Grab	Misheguk Mtn	C-1	9S	31W	27	NW	Umiat		
MM102	5808	1992		Bogie Creek	Colville	Gabbro	Outcrop	Select	Misheguk Mtn	C-1	9S	31W	22	SE	Umiat		
MM103	5809	1992		Bogie Creek	Colville	Gabbro	Rubblecrop	Select	Misheguk Mtn	C-1	9S	31W	22	SW	Umiat		
MM104	5810	1992		Bogie Creek	Colville	Chert	Rubblecrop	Select	Misheguk Mtn	C-1	9S	31W	16	SW	Umiat		
MM105	5811	1992		Sorepaw Creek	Colville	Gabbro	Outcrop	Select	Misheguk Mtn	C-1	9S	31W	9	NW	Umiat		
MM106	5812	1992		Sorepaw Creek	Colville	Chert, Sheared	Outcrop	Select	Misheguk Mtn	D-1	8S	30W	7	NW	Umiat		
MM107	5813	1992		Sorepaw Creek	Colville	Limestone, Brec.	Outcrop	Chip channel	Misheguk Mtn	D-1	8S	30W	7	NW	Umiat		

Map no.	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Mo ppm	Ni ppm	Co ppm	Cd ppm	Bi ppm	As ppm	Sb ppm	Fe %	Mn ppm	Te ppm	Ba ppm	Cr ppm	V ppm	Sn ppm	W ppm	Li ppm	Ga ppm	La ppm	Ta ppm	Ti %	Al %
HP1	<0.5	56	30	127	6	95	25	<2.0	10	58	<5	5.16	764	<25	722	177	189	<20	<20	54	22	12	<100	0.48	5.38
HP1	<0.5	30	40	28	43	27	8	<2.0	<5	57	<5	2.44	53	<25	35	59	141	<20	<20	9	12	10	<100	0.20	2.91
HP1	<0.5	57	319	161	<1	87	23	<2.0	14	48	<5	5.23	663	<25	777	182	186	<20	<20	55	22	16	<100	0.49	6.69
HP1	1.0	115	346	158	2	61	6	<2.0	<5	34	<5	1.97	750	<25	30	172	248	<20	<20	11	10	<5	<100	0.14	2.30
HP1	0.6	27	54	74	4	26	11	<2.0	6	41	<5	2.85	649	<25	100	66	99	<20	<20	16	18	10	<100	0.30	3.83
HP2	<0.5	64	19	174	4	67	22	<2.0	<5	45	9	4.07	1506	<25	1943	91	175	<20	<20	38	17	11	<100	0.39	4.81
HP2	<0.5	90	29	261	5	95	25	<2.0	<5	19	<5	4.42	2785	<25	1988	96	187	<20	<20	47	23	7	<100	0.37	4.84
HP3	2.3	59	14	60	<1	30	7	<2.0	7	41	<5	2.52	347	<25	43	240	147	<20	<20	25	<10	19	<100	0.12	2.85
HP4	<0.5	180	32	450	11	166	61	<2.0	<5	46	5	4.94	6077	<25	525	88	240	<20	<20	46	24	<5	<100	0.38	4.91
HP4	<0.5	146	29	260	9	102	35	<2.0	14	51	<5	5.02	5321	<25	533	87	218	<20	<20	57	25	6	<100	0.40	5.36
HP5	<0.5	6	6	113	<1	19	7	<2.0	<5	17	<5	2.76	124	<25	643	277	16	<20	<20	<2	<10	<5	<100	<0.01	0.09
HP5	<0.5	18	24	50	<1	11	8	<2.0	<5	7	<5	0.94	686	<25	719	314	28	<20	<20	28	<10	<5	<100	0.03	0.87
HP6	<0.5	35	13	51	1	19	8	<2.0	<5	33	<5	0.77	179	<25	333	248	17	<20	<20	26	<10	<5	<100	0.04	0.88
HP6	1.3	3	458	16	<1	<1	<1	<2.0	<5	35	6	0.71	15	<25	463	175	25	<20	<20	83	<10	7	<100	0.04	0.75
HP6	1.9	5	451	53	13	10	3	<2.0	<5	19	<5	0.53	33	<25	401	371	18	<20	<20	79	<10	<5	<100	0.02	0.37
HP6	8.5	29	4815	645	10	4	2	<2.0	<5	22	14	0.86	28	<25	101	309	35	<20	<20	157	13	<5	<100	0.03	0.74
HP6	<0.5	33	23	55	6	13	3	<2.0	<5	80	<5	2.26	57	<25	169	397	106	<20	<20	44	<10	<5	<100	0.05	0.87
HP6	0.9	109	9	260	15	55	11	2.7	<5	32	<5	3.36	449	<25	107	299	307	<20	<20	37	11	5	<100	0.17	3.29
HP6	2.9	<1	786	16	2	3	3	<2.0	<5	25	<5	0.85	19	<25	78	222	21	<20	<20	80	<10	<5	<100	0.04	0.47
HP7	8.1	14	573	56	12	38	3	<2.0	<5	39	<5	1.01	123	<25	63	279	104	<20	<20	29	<10	14	<100	0.13	0.99
HP7	1.4	16	200	181	<1	67	9	<2.0	<5	62	<5	1.74	75	<25	27	287	21	<20	<20	99	<10	<5	<100	0.03	0.50
HP7	9.8	49	3261	2708	4	47	8	11.1	11	52	<5	1.05	74	<25	55	266	29	<20	<20	118	<10	<5	<100	0.03	0.57
HP8	12.9	38	2305	758	34	16	7	<2.0	<5	227	60	6.50	307	<25	368	47	71	<20	<20	63	34	37	<100	0.31	4.86
HP8	12.6	74	5224	8618	9	72	46	16.3	12	66	35	4.38	1443	<25	974	75	95	21	<20	70	37	49	<100	0.59	4.09
HP8	0.9	10	74	12	1	8	3	<2.0	<5	54	<5	1.36	32	<25	337	264	21	<20	<20	114	<10	<5	<100	0.04	0.68
HP8	<0.5	3	83	762	<1	8	2	2.4	<5	59	9	1.26	888	<25	615	31	15	<20	<20	88	19	57	<100	0.13	6.45
HP8	1.1	28	119	446	5	24	8	<2.0	<5	52	<5	3.65	964	<25	973	49	101	<20	<20	53	25	35	<100	0.40	6.70
HP8	5.5	5	303	482	8	2	<1	<2.0	<5	52	17	0.43	48	<25	303	41	21	<20	<20	88	21	59	<100	0.16	5.15
HP8	1.3	13	271	933	3	23	5	<2.0	<5	44	<5	2.86	650	<25	393	21	53	<20	<20	64	23	75	<100	0.49	5.93
HP8	1.5	4	423	406	<1	3	2	<2.0	6	41	<5	0.66	84	<25	1239	77	26	<20	<20	82	15	43	<100	0.23	3.53
HP8	11.7	14	2514	1808	5	3	3	15.8	<5	60	13	0.82	85	<25	958	87	35	<20	<20	85	18	45	<100	0.23	3.34
HP8	3.9	7	2234	1486	<1	7	6	7.4	<5	37	7	0.71	138	<25	831	50	57	<20	<20	76	16	40	<100	0.36	3.84
HP9	<0.5	51	33	131	14	35	7	<2.0	<5	17	<5	>10.00	353	<25	59	233	298	<20	<20	31	20	8	<100	0.26	3.64
HP10	<0.5	<1	139	<2	4	3	2	<2.0	<5	21	<5	0.39	33	<25	118	435	<2	<20	<20	7	<10	<5	<100	<0.01	0.09
HP10	12.4	10	225	12	30	83	2	<2.0	<5	20	<5	0.87	26	<25	98	362	140	<20	<20	77	<10	26	<100	0.16	1.43
HP10	<0.5	<1	31	233	7	11	3	<2.0	<5	25	<5	2.34	46	<25	125	365	4	<20	<20	23	<10	<5	<100	<0.01	0.57
HP10	<0.5	5	130	7	<1	20	3	<2.0	<5	52	<5	1.09	37	<25	74	391	17	<20	<20	58	<10	34	<100	0.05	0.81
HP10	<0.5	8	40	94	2	9	1	<2.0	<5	47	<5	1.05	38	<25	126	447	3	<20	<20	38	<10	5	<100	<0.01	0.19
HP10	<0.5	<1	27	22	2	3	<1	<2.0	<5	21	<5	0.46	34	<25	189	443	2	<20	<20	50	<10	<5	<100	<0.01	0.25
HP10	6.3	15	55	9	16	35	1	<2.0	<5	59	<5	1.68	26	<25	40	209	91	<20	<20	13	<10	9	<100	0.08	0.83
HP11	>50.0	94	>10000	>20000	56	9	10	292.3	85	61	126	4.62	424	59	7	221	11	58	<20	8	67	<5	<100	<0.01	0.67
HP11	0.7	6	67	214	<1	10	4	<2.0	<5	18	<5	1.33	258	<25	120	33	41	<20	<20	101	25	45	<100	0.32	7.06
HP11	<0.5	49	42	131	19	40	9	<2.0	<5	36	<5	>10.00	373	<25	81	248	333	<20	<20	34	19	<5	<100	0.29	3.10
HP11	12.2	134	12	137	14	189	2	<2.0	<5	32	<5	2.00	58	<25	74	696	142	<20	<20	26	<10	25	<100	0.12	2.43
HP11	2.5	14	<2	34	<1	64	2	<2.0	<5	21	<5	0.42	32	<25	134	353	112	<20	<20	24	<10	10	<100	0.11	2.08
HP11	<0.5	28	34	17	2	124	14	<2.0	<5	17	<5	>10.00	83	<25	<5	160	19	24	<20	5	13	<5	<100	0.06	1.03
HP11	1.5	45	10	84	6	29	5	<2.0	<5	30	<5	0.41	37	<25	407	256	83	<20	<20	14	<10	15	<100	0.06	1.11
HP11	2.3	53	4	56	2	44	5	2.4	<5	43	<5	0.47	115	<25	618	446	39	<20	<20	6	<10	7	<100	0.02	0.33
HP11	<0.5	168	37	2158	5	1594	593	<2.0	21	55	<5	>10.00	>20000	<25	539	67	108	<20	<20	47	53	43	<100	0.22	5.12
HP11	1.9	35	80	250	4	24	4	<2.0	<5	54	<5	1.20	76	<25	162	337	60	<20	<20	34	<10	14	<100	0.10	1.60
HP11	1.1	15	10	11	19	17	4	<2.0	<5	10	<5	0.48	37	<25	336	280	74	<20	<20	19	<10	11	<100	0.05	0.97
HP12	3.9	229	10	397	37	119	7	<2.0	<5	84	12	3.66	145	<25	177	421	176	<20	<20	33	<10	<5	<100	0.05	1.49
HP13	0.6	12	6	12	2	10	3	<2.0	<5	15	<5	0.60	58	<25	1161	396	26	<20	<20	126	<10	<5	<100	0.03	0.59
HP13	<0.5	11	12	17	<1	5	2	<2.0	<5	16	<5	0.74	44	<25	953	73	72	<20	<20	66	13	11	<100	0.22	2.99
HP14	2.7	51	10	31	18	38	7	<2.0	<5	35	<5	0.88	63	<25	82	370	104	<20	<20	36	<10	<5	<100	0.06	1.07
HP15	<0.5	77	30	386	6	107	24	<2.0	<5	47	<5	4.43	1863	<25	1411	119	184	<20	<20	51	20	27	<100	0.41	6.16
HP16	1.8	223	5	129	6	209	11	3.1	8	54	<5	1.05	61	<25	91	431	60	<20	<20	18	<10	10	<100	0.03	0.86
HP16	<0.5	141	39	262	2	126	63	<2.0	7	60	<5	5.54	5604	<25	568	73	156	<20	<20	136	28	<5	<100	0.35	4.96
HP17	<0.5	86	3	12	1	13	3	<2.0	<5	16	<5	1.24	32	<25	353	198	29	<20	<20	37	<10	12	<100	0.12	2.17

Map no.	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Mo ppm	Ni ppm	Co ppm	Cd ppm	Bi ppm	As ppm	Sb ppm	Fe %	Mn ppm	Te ppm	Ba ppm	Cr ppm	V ppm	Sn ppm	W ppm	Li ppm	Ga ppm	La ppm	Ta ppm	Ti %	Al %
HP18	<0.5	79	15	56	6	43	14	<2.0	7	45	<5	5.08	756	<25	13	288	61	<20	<20	46	16	<5	<100	0.13	2.32
HP18	<0.5	53	8	43	<1	27	7	<2.0	<5	12	<5	1.94	1059	<25	68	303	29	<20	<20	41	11	<5	<100	0.09	1.53
HP19	0.6	30	13	17	<1	23	17	<2.0	<5	<5	<5	0.78	96	<25	1909	487	23	<20	<20	29	<10	<5	<100	0.02	0.40
HP20	<0.5	19	5	68	<1	20	8	<2.0	<5	13	<5	1.09	1228	<25	512	626	11	<20	<20	9	<10	<5	<100	<0.01	0.15
HP20	<0.5	22	19	199	<1	28	11	<2.0	6	18	<5	1.47	351	<25	271	36	83	<20	<20	26	<10	<5	<100	0.14	2.31
HP20	<0.5	23	17	13	8	21	5	<2.0	<5	33	<5	0.72	95	<25	512	494	54	<20	<20	32	<10	6	<100	0.03	0.60
HP20	1.1	92	5	169	<1	76	6	<2.0	<5	29	<5	0.47	215	<25	213	521	28	<20	<20	22	<10	<5	<100	0.01	0.59
HP20	<0.5	93	31	154	<1	66	35	<2.0	17	82	<5	6.71	9400	<25	>2000	111	193	<20	<20	94	32	6	<100	0.45	7.27
HP20	0.9	40	7	216	3	67	3	<2.0	<5	13	<5	0.64	215	<25	224	528	33	<20	<20	50	<10	8	<100	0.03	0.44
HP20	<0.5	42	12	36	3	93	11	<2.0	<5	32	<5	0.82	164	<25	98	480	56	<20	<20	37	<10	7	<100	0.06	1.06
HP20	0.9	28	15	309	4	37	10	<2.0	<5	31	<5	1.41	335	<25	195	62	76	<20	<20	27	<10	<5	<100	0.12	1.55
HP20	1.7	9	20	12	17	20	<1	<2.0	10	37	<5	1.22	23	<25	211	223	134	<20	<20	15	<10	16	<100	0.24	2.84
HP20	<0.5	11	8	34	<1	20	6	<2.0	<5	46	<5	1.21	326	<25	51	455	31	<20	<20	20	<10	<5	<100	0.05	0.71
HP21	<0.5	73	3	78	<1	35	11	<2.0	7	25	<5	1.58	691	<25	1067	212	41	<20	<20	28	12	6	<100	0.08	1.82
HP21	<0.5	32	11	1088	1	103	21	<2.0	<5	32	<5	1.70	1138	<25	307	60	71	<20	<20	35	<10	<5	<100	0.12	2.21
HP21	1.7	24	65	23	10	22	5	<2.0	7	33	<5	0.80	55	<25	233	645	41	<20	<20	15	<10	<5	<100	0.03	0.37
HP21	<0.5	23	6	228	<1	29	11	<2.0	8	42	<5	1.43	433	<25	303	34	72	<20	<20	27	<10	<5	<100	0.12	2.24
HP21	<0.5	24	6	173	<1	28	14	<2.0	9	35	<5	1.57	496	<25	504	38	61	<20	<20	31	<10	<5	<100	0.13	2.40
HP21	<0.5	36	21	1895	<1	122	29	<2.0	13	<5	<5	3.71	1115	<25	68	55	52	<20	<20	29	<10	<5	<100	0.09	2.12
HP21	4.9	40	11	195	6	67	2	<2.0	9	28	<5	1.31	34	<25	329	546	97	<20	<20	33	<10	23	<100	0.06	2.01
HP21	0.7	79	20	351	12	106	15	<2.0	60	39	<5	3.46	>20000	<25	65	63	112	<20	<20	44	71	8	<100	0.10	2.66
HP21	3.6	31	10	505	<1	100	10	<2.0	31	33	<5	1.17	642	<25	123	692	88	<20	<20	26	<10	<5	<100	0.03	0.89
HP21	2.6	25	7	56	6	56	4	<2.0	6	32	<5	1.38	62	<25	110	380	149	<20	<20	23	10	13	<100	0.15	3.62
HP21	8.8	24	7	57	5	119	2	<2.0	<5	30	<5	1.01	597	<25	338	527	212	<20	<20	30	<10	13	<100	0.11	2.39
HP21	5.0	145	12	549	10	271	5	<2.0	9	33	<5	3.11	307	<25	103	491	222	<20	<20	30	15	36	<100	0.15	3.52
HP22	<0.5	28	25	147	<1	54	14	<2.0	19	50	<5	4.73	1091	<25	>2000	85	119	<20	<20	28	23	12	<100	0.32	6.22
HP22	<0.5	33	15	942	<1	130	23	<2.0	14	27	<5	1.28	969	<25	123	67	56	<20	<20	30	<10	<5	<100	0.09	1.72
HP23	<0.5	95	14	405	2	154	31	<2.0	<5	28	<5	4.13	3129	<25	680	127	156	<20	<20	57	21	12	<100	0.32	4.78
HP23	<0.5	80	14	25	10	105	14	<2.0	42	52	<5	3.54	>20000	<25	47	59	110	<20	<20	43	75	6	<100	0.11	2.74
HP23	<0.5	69	8	69	<1	38	11	<2.0	7	36	<5	4.26	3428	<25	14	154	57	<20	<20	47	11	<5	<100	0.09	1.94
HP23	<0.5	42	8	56	1	29	8	<2.0	<5	23	<5	1.25	1001	<25	164	307	23	<20	<20	163	<10	<5	<100	0.07	1.50
HP24	<0.5	66	18	141	<1	56	26	<2.0	8	6	<5	5.17	1344	<25	1396	86	161	<20	<20	48	22	14	<100	0.52	6.70
HP25	<0.5	18	20	146	<1	52	24	<2.0	<5	36	<5	4.07	1439	<25	971	171	118	<20	<20	39	15	9	<100	0.42	4.96
HP26	0.7	52	78	97	<1	43	14	<2.0	<5	12	<5	1.72	1039	<25	763	291	102	<20	<20	24	<10	6	<100	0.07	1.54
HP27	0.8	6943	16	36	<1	24	22	<2.0	22	29	<5	4.91	631	<25	33	178	82	<20	<20	<2	22	<5	<100	0.04	6.88
HP28	>50.0	808	>10000	12777	7	73	70	54.2	17	249	49	2.12	351	30	15	253	17	40	<20	54	21	<5	<100	0.06	1.15
HP29	<0.5	31	105	449	<1	39	15	<2.0	14	43	<5	1.21	229	<25	233	138	165	<20	<20	205	25	31	<100	0.78	5.85
HP30	<0.5	35	67	386	<1	55	25	<2.0	10	27	<5	4.60	1009	<25	641	111	144	21	<20	79	25	10	<100	0.53	5.90
HP31	7.4	50	1686	1838	6	12	5	4.0	<5	59	<5	1.55	93	<25	154	239	124	<20	<20	52	14	28	<100	0.81	3.39
HP32	<0.5	6	377	204	<1	27	18	<2.0	12	18	<5	7.82	2812	<25	104	149	61	<20	<20	16	11	12	<100	0.19	2.37
HP32	<0.5	40	58	119	<1	62	25	<2.0	<5	23	<5	5.25	1236	<25	473	104	129	<20	<20	32	22	6	<100	0.51	4.44
HP33	>50.0	171	>10000	>20000	11	21	9	100.3	20	12	23	1.15	244	<25	58	414	24	<20	<20	23	<10	6	<100	0.11	1.28
HP33	>50.0	1156	>10000	>20000	37	42	17	355.5	61	54	1930	0.46	29	37	<5	202	5	30	<20	8	20	<5	<100	0.03	0.40
HP33	>50.0	334	>10000	>20000	39	28	26	310.6	64	38	70	0.51	440	29	203	261	19	35	<20	17	22	<5	<100	0.09	1.12
HP33	<0.5	8	102	53	<1	11	6	<2.0	<5	46	<5	2.27	517	<25	353	328	45	<20	<20	109	<10	16	<100	0.14	2.27
HP33	13.8	74	>10000	14685	12	11	9	60.7	7	46	26	0.45	142	<25	89	471	20	<20	<20	22	<10	7	<100	0.07	1.06
HP33	>50.0	315	>10000	>20000	20	32	14	169.5	34	36	51	0.68	126	<25	13	228	21	32	<20	14	14	<5	<100	0.11	0.96
HP33	<0.5	44	174	434	<1	171	49	<2.0	24	<5	<5	9.17	1995	<25	172	153	243	51	<20	79	29	86	<100	1.61	3.89
HP33	<0.5	34	225	519	3	85	41	<2.0	<5	29	<5	>10.00	4502	<25	562	222	110	26	<20	102	25	19	<100	0.34	5.19
HP33	>50.0	2629	>10000	>20000	60	60	47	432.7	85	69	325	0.66	21	40	<5	185	8	44	<20	16	15	<5	<100	0.04	0.54
HP33	34.7	185	>10000	>20000	21	21	15	179.2	48	53	49	0.51	227	<25	102	456	26	24	<20	19	16	7	<100	0.13	1.35
HP33	<0.5	18	78	285	<1	73	34	<2.0	<5	22	<5	>10.00	2952	<25	160	177	59	<20	<20	67	13	23	<100	0.18	2.22
HP33	>50.0	523	>10000	>20000	30	24	13	270.0	51	40	15	0.60	101	<25	12	375	16	<20	<20	14	20	<5	<100	0.05	0.82
HP33	15.9	92	>10000	18390	12	15	10	69.5	15	37	<5	0.43	189	<25	44	425	18	<20	<20	20	<10	5	<100	0.07	0.96
HP33	>50.0	925	>10000	>20000	50	41	21	347.1	68	76	254	0.64	50	44	8	351	15	29	<20	17	22	<5	<100	0.08	0.89
HP34	<0.5	8	91	165	<1	19	7	<2.0	<5	31	<5	0.99	134	<25	226	331	25	<20	<20	31	<10	9	<100	0.08	1.12
HP34	<0.5	69	51	114	<1	629	68	<2.0	29	20	<5	7.85	1322	<25	821	468	220	34	<20	43	23	63	<100	1.07	3.89
HP35	2.6	39	1822	281	<1	22	8	<2.0	<5	21	<5	1.19	241	<25	>2000	374	25	<20	<20	61	<10	<5	<100	0.05	1.19
HP36	<0.5	14	18	60	2	49	14	<2.0	<5	9	<5	>10.00	7494	31	187	28	35	28	<20	70	18	<5	<100	0.09	2.09

Map no.	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Mo ppm	Ni ppm	Co ppm	Cd ppm	Bi ppm	As ppm	Sb ppm	Fe %	Mn ppm	Te ppm	Ba ppm	Cr ppm	V ppm	Sn ppm	W ppm	Li ppm	Ga ppm	La ppm	Ta ppm	Ti %	Al %
HP37	0.9	22	11	115	<1	53	4	<2.0	<5	33	<5	0.93	22	<25	452	260	130	<20	<20	13	<10	16	<100	0.11	2.29
HP37	0.6	11	6	18	<1	41	<1	<2.0	<5	46	<5	1.05	31	<25	537	211	123	<20	<20	30	17	20	<100	0.25	5.98
HP37	0.6	40	16	488	<1	63	12	<2.0	6	34	<5	1.31	509	<25	113	65	92	<20	<20	25	<10	<5	<100	0.09	2.02
HP37	<0.5	32	<2	303	2	112	8	<2.0	10	56	<5	2.37	25	<25	401	324	130	<20	<20	14	15	17	<100	0.23	5.37
HP37	<0.5	25	11	119	2	47	14	<2.0	8	35	<5	2.00	824	<25	53	82	88	<20	<20	16	14	8	<100	0.24	3.69
HP37	0.9	11	11	75	<1	31	4	<2.0	<5	23	<5	0.51	139	<25	302	535	21	<20	<20	9	<10	13	<100	<0.01	0.22
HP38	<0.5	7	13	9	<1	25	9	<2.0	7	23	<5	1.95	404	<25	246	359	43	<20	<20	14	<10	10	<100	0.06	1.12
HP39	<0.5	50	12	86	<1	601	54	<2.0	24	45	<5	6.47	1324	<25	193	536	181	<20	<20	27	17	40	<100	0.92	3.19
HP39	<0.5	30	758	165	<1	50	23	<2.0	<5	27	<5	4.24	797	<25	228	289	95	<20	<20	27	17	17	<100	0.40	4.26
HP39	<0.5	11	673	61	<1	64	13	<2.0	<5	20	<5	>10.00	5706	<25	146	58	31	29	<20	54	12	<5	<100	0.04	1.15
HP40	<0.5	29	26	104	<1	50	22	<2.0	<5	30	<5	4.30	1025	<25	493	113	123	<20	<20	54	21	8	<100	0.54	4.52
HP41	15.4	360	>10000	5653	<1	6	3	29.1	<5	59	9	0.88	35	<25	115	298	15	<20	<20	72	<10	<5	<100	0.06	1.05
HP41	22.5	27	>10000	5819	<1	21	8	23.5	<5	65	8	3.08	781	<25	78	352	23	<20	<20	26	<10	<5	<100	0.09	1.04
HP41	>50.0	7	>10000	440	<1	602	11	<2.0	<5	238	43	2.87	895	<25	60	320	14	<20	<20	79	<10	<5	<100	0.08	1.50
HP42	3.4	34	208	1800	<1	14	5	5.3	<5	77	<5	1.21	115	<25	79	347	18	<20	<20	75	<10	<5	<100	0.08	0.98
HP42	5.0	79	1142	7594	3	15	5	28.4	<5	39	10	1.98	320	<25	200	284	38	<20	<20	54	14	12	<100	0.17	2.27
HP42	14.2	530	1537	>20000	15	81	15	185.1	27	335	37	1.67	55	<25	29	379	18	33	<20	67	20	<5	<100	0.09	1.42
HP42	5.2	84	500	1620	2	12	5	8.5	<5	165	13	1.14	50	<25	293	427	9	22	<20	83	11	<5	<100	0.04	0.64
HP42	10.6	118	7729	>20000	61	9	39	579.1	81	90	76	3.25	373	67	22	297	40	60	<20	59	20	<5	<100	0.16	2.16
HP42	49.5	267	>10000	857	<1	9	2	<2.0	<5	35	18	1.58	111	<25	114	292	23	<20	<20	60	<10	6	<100	0.11	1.62
HP42	8.3	955	1129	7765	5	23	11	39.9	7	77	19	1.53	82	<25	163	324	18	37	<20	76	13	<5	<100	0.07	1.38
HP42	4.1	45	919	2048	<1	29	8	3.4	<5	65	7	3.75	505	<25	203	247	49	<20	<20	44	12	10	<100	0.22	2.73
HP42	34.7	142	4195	17160	12	7	7	64.2	11	32	5	1.95	40	<25	43	347	14	90	<20	54	44	<5	<100	0.05	0.94
HP42	4.3	226	3581	6735	<1	49	11	31.6	<5	85	12	3.39	898	<25	120	343	40	<20	<20	87	<10	9	<100	0.13	1.79
HP42	8.1	1304	1983	5826	1	34	10	30.3	<5	68	8	2.36	347	<25	145	344	21	33	<20	58	13	<5	<100	0.09	1.31
HP42	4.0	45	372	>20000	21	54	15	135.1	23	403	34	1.44	95	<25	42	420	33	<20	<20	75	15	10	<100	0.17	1.83
HP42	18.8	1366	>10000	10995	5	20	7	74.4	5	58	7	1.17	49	<25	106	372	18	<20	<20	85	<10	<5	<100	0.07	1.41
HP43	<0.5	33	24	123	<1	56	27	<2.0	7	44	<5	4.53	1291	<25	396	117	116	<20	<20	55	22	8	<100	0.51	4.92
HP44	<0.5	51	20	429	<1	127	31	<2.0	7	35	<5	6.21	250	<25	305	201	196	<20	<20	78	25	6	<100	0.42	6.76
HP45	<0.5	4	49	32	<1	34	2	<2.0	<5	30	<5	0.98	15	<25	>2000	196	224	<20	<20	99	28	18	<100	0.56	5.45
HP45	1.2	8	558	207	<1	41	3	<2.0	<5	55	<5	0.82	19	<25	1205	316	309	<20	<20	90	26	16	<100	0.45	5.91
HP46	0.8	38	14	18	17	27	3	<2.0	10	30	<5	0.81	55	<25	107	365	91	<20	<20	24	<10	14	<100	0.06	0.87
HP46	<0.5	<1	<2	4	<1	<1	2	<2.0	<5	24	<5	0.05	<5	<25	693	4	7	<20	<20	<2	<10	<5	<100	<0.01	0.09
HP46	<0.5	<1	<2	9	<1	6	3	<2.0	<5	30	<5	0.16	914	<25	1828	20	16	<20	<20	<2	<10	<5	<100	<0.01	0.16
HP46	<0.5	30	14	16	10	27	3	<2.0	<5	24	<5	0.76	58	<25	123	385	81	<20	<20	25	<10	13	<100	0.05	0.99
HP46	<0.5	15	9	19	13	15	3	<2.0	<5	8	<5	0.22	77	<25	401	23	34	<20	<20	5	<10	10	<100	0.02	0.29
HP46	<0.5	<1	<2	14	<1	19	1	<2.0	<5	8	<5	0.12	14	<25	484	34	11	<20	<20	<2	<10	<5	<100	0.01	0.18
HP46	<0.5	63	19	29	13	26	5	<2.0	<5	22	<5	0.76	77	<25	1672	257	60	<20	<20	28	<10	18	<100	0.07	1.64
HP47	<0.5	20	18	8	17	20	3	<2.0	<5	20	<5	0.28	56	<25	683	88	27	<20	<20	9	<10	12	<100	0.03	0.44
HP47	<0.5	14	16	3	22	13	3	2.7	<5	38	<5	0.05	20	<25	406	21	30	<20	<20	3	<10	12	<100	0.02	0.09
HP47	<0.5	33	34	15	33	41	5	3.1	16	94	<5	0.05	658	<25	>2000	49	25	<20	<20	9	<10	25	<100	<0.01	0.08
HP47	9.4	197	15	91	54	276	1	<2.0	7	59	<5	1.36	56	<25	286	1137	324	<20	<20	32	11	69	<100	0.21	4.06
HP47	<0.5	10	11	4	9	11	2	<2.0	5	18	<5	0.08	18	<25	1658	16	15	<20	<20	2	<10	7	<100	0.01	0.12
HP47	1.0	20	13	21	8	35	2	<2.0	<5	29	<5	0.45	23	<25	880	200	107	<20	<20	17	<10	13	<100	0.14	2.76
HP47	<0.5	14	11	4	15	15	23	<2.0	11	18	<5	0.01	38	<25	<5	17	9	<20	<20	4	<10	15	<100	<0.01	0.02
HP47	<0.5	5	3	6	3	7	1	<2.0	<5	19	<5	0.03	41	<25	>2000	9	6	<20	<20	<2	<10	<5	<100	<0.01	0.06
HP47	<0.5	9	5	16	6	32	1	<2.0	<5	29	<5	0.17	101	<25	974	47	17	<20	<20	4	<10	<5	<100	0.02	0.36
HP47	<0.5	41	10	20	25	33	<1	<2.0	7	<5	<5	0.65	48	<25	209	410	53	<20	<20	19	<10	6	<100	0.04	0.58
HP47	<0.5	8	10	<2	8	8	<1	<2.0	8	29	<5	0.08	14	<25	796	16	11	<20	<20	2	<10	6	<100	0.01	0.14
HP48	0.5	17	2	14	<1	9	2	<2.0	<5	27	<5	0.83	52	<25	309	337	38	<20	<20	29	<10	<5	<100	0.04	0.86
HP49	<0.5	11	4	25	<1	9	3	<2.0	<5	18	<5	0.79	64	<25	1309	470	18	<20	<20	<2	<10	<5	<100	0.01	0.10
HP50	<0.5	<1	<2	5	<1	<1	<1	<2.0	7	13	<5	0.06	36	<25	633	<2	5	<20	<20	<2	<10	<5	<100	<0.01	0.04
HP50	<0.5	<1	<2	4	<1	<1	2	<2.0	<5	27	<5	0.03	101	<25	528	3	6	<20	<20	<2	<10	<5	<100	<0.01	0.03
HP51	<0.5	7	<2	90	<1	11	4	<2.0	8	26	<5	0.11	1118	<25	96	96	18	<20	<20	2	<10	<5	<100	<0.01	0.19
HP51	4.7	65	13	41	15	99	3	<2.0	<5	24	<5	0.79	29	<25	234	521	143	<20	<20	18	<10	25	<100	0.11	1.96
HP51	<0.5	<1	<2	<2	<1	<1	4	<2.0	<5	26	<5	0.02	42	<25	>2000	<2	8	<20	<20	<2	<10	<5	<100	<0.01	0.02
HP51	<0.5	<1	<2	<2	<1	<1	2	<2.0	<5	25	<5	0.03	8	<25	428	3	4	<20	<20	<2	<10	<5	<100	<0.01	0.12
HP51	<0.5	2	7	3	<1	1	2	<2.0	<5	23	<5	0.05	49	<25	>2000	3	9	<20	<20	<2	<10	<5	<100	<0.01	0.03
HP52	<0.5	<1	<2	3	<1	<1	2	<2.0	<5	23	<5	0.08	8	<25	353	9	8	<20	<20	<2	<10	<5	<100	<0.01	0.10

Map no.	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Mo ppm	Ni ppm	Co ppm	Cd ppm	Bi ppm	As ppm	Sb ppm	Fe %	Mn ppm	Te ppm	Ba ppm	Cr ppm	V ppm	Sn ppm	W ppm	Li ppm	Ga ppm	La ppm	Ta ppm	Ti %	Al %
HP52	<0.5	4	<2	7	2	3	<1	<2.0	<5	18	<5	0.09	8	<25	501	11	13	<20	<20	<2	<10	<5	<100	<0.01	0.14
HP52	<0.5	7	<2	21	3	25	<1	<2.0	<5	<5	<5	0.13	146	<25	304	17	10	<20	<20	<2	<10	<5	<100	<0.01	0.17
HP52	<0.5	6	<2	53	3	15	2	<2.0	<5	9	<5	0.10	364	<25	589	6	5	<20	<20	2	<10	<5	<100	<0.01	0.13
HP52	<0.5	4	<2	17	4	18	1	<2.0	<5	25	<5	0.08	232	<25	1453	18	2	<20	<20	<2	<10	<5	<100	<0.01	0.04
HP53	<0.5	3	6	4	2	5	1	<2.0	<5	15	<5	0.08	142	<25	783	11	8	<20	<20	<2	<10	<5	<100	<0.01	0.10
HP53	<0.5	10	4	56	<1	5	4	<2.0	7	<5	<5	0.26	134	<25	517	75	19	<20	<20	10	<10	<5	<100	0.02	0.49
HP53	<0.5	<1	<2	11	<1	<1	<1	<2.0	<5	11	<5	0.12	49	<25	408	5	11	<20	<20	<2	<10	<5	<100	0.01	0.17
HP53	<0.5	20	11	71	<1	42	15	<2.0	5	56	<5	4.53	878	<25	>2000	222	95	<20	<20	39	20	9	<100	0.49	4.79
HP53	<0.5	3	<2	7	<1	<1	2	<2.0	<5	16	<5	0.14	35	<25	378	11	14	<20	<20	<2	<10	<5	<100	0.02	0.26
HP53	<0.5	<1	<2	7	<1	<1	<1	<2.0	<5	13	<5	0.04	42	<25	1989	5	3	<20	<20	<2	<10	<5	<100	<0.01	0.05
HP53	1.6	41	4	47	46	47	4	<2.0	<5	26	<5	0.63	75	<25	243	465	44	<20	<20	12	<10	<5	<100	0.03	0.50
HP53	<0.5	7	<2	7	3	6	<1	<2.0	<5	12	<5	0.19	43	<25	599	21	22	<20	<20	2	<10	<5	<100	0.02	0.26
HP53	3.0	38	12	40	37	53	4	<2.0	<5	28	<5	0.54	65	<25	324	484	92	<20	<20	6	<10	6	<100	0.02	0.38
HP53	<0.5	8	<2	43	2	14	2	<2.0	<5	<5	<5	0.17	32	<25	612	8	14	<20	<20	4	<10	<5	<100	0.01	0.29
HP53	<0.5	13	<2	29	5	16	3	<2.0	<5	8	<5	0.17	839	<25	1557	19	19	<20	<20	3	<10	<5	<100	0.01	0.27
HP53	2.5	24	6	11	44	19	2	<2.0	<5	26	<5	0.58	42	<25	519	549	57	<20	<20	13	<10	<5	<100	0.02	0.39
HP54	1.0	10	8	11	4	17	1	<2.0	<5	8	<5	0.52	20	<25	251	204	142	<20	<20	11	<10	<5	<100	0.05	0.97
HP54	<0.5	79	<2	11	<1	<1	2	<2.0	<5	<5	<5	0.08	48	<25	1001	4	8	<20	<20	<2	<10	<5	<100	0.01	0.20
HP54	0.8	<1	<2	7	<1	<1	4	2.5	<5	24	<5	<0.01	<5	<25	>2000	<2	<2	<20	<20	<2	10	<5	<100	<0.01	<0.01
HP54	1.0	9	5	54	<1	18	6	<2.0	25	48	<5	0.14	2137	<25	645	119	47	<20	<20	<2	12	<5	<100	<0.01	0.19
HP54	<0.5	3	2	8	<1	<1	2	<2.0	<5	9	<5	0.09	103	<25	>2000	<2	7	<20	<20	<2	<10	<5	<100	<0.01	0.07
HP55	<0.5	38	14	48	1	23	4	<2.0	<5	<5	11	1.32	140	<25	>2000	377	30	<20	<20	32	<10	8	<100	0.07	1.43
HP55	3.6	62	7	384	10	148	5	<2.0	14	<5	5	0.61	656	<25	330	436	145	<20	<20	12	12	40	<100	0.07	1.64
HP55	0.6	11	7	38	5	14	6	<2.0	11	16	8	0.21	47	<25	53	186	26	<20	<20	3	13	0	<100	<0.01	0.21
HP55	<0.5	34	8	62	3	29	4	<2.0	<5	20	17	2.08	99	<25	1642	522	28	<20	<20	27	<10	<5	<100	0.06	1.10
HP55	1.1	11	4	29	4	23	2	<2.0	<5	12	<5	0.47	61	<25	86	592	22	<20	<20	6	<10	9	<100	<0.01	0.14
HP55	1.8	23	7	459	11	54	3	33.8	16	20	7	0.38	1238	<25	658	132	435	<20	<20	3	12	100	<100	0.01	0.29
HP55	0.8	12	4	56	5	26	3	<2.0	<5	<5	7	0.44	95	<25	157	535	29	<20	<20	4	<10	12	<100	<0.01	0.20
HP55	2.7	29	12	297	6	47	4	13.4	15	23	21	0.36	1201	<25	849	179	426	<20	<20	<2	17	123	<100	0.02	0.37
HP55	1.3	21	10	126	7	39	3	<2.0	9	<5	11	0.30	764	<25	313	274	144	<20	<20	3	11	36	<100	0.02	0.37
HP55	3.0	234	5	806	67	137	2	23.0	6	21	20	1.26	702	<25	1678	256	1547	<20	<20	20	14	21	<100	0.18	3.04
HP55	1.3	27	15	425	10	47	6	21.4	<5	12	8	0.30	868	<25	964	112	406	<20	<20	3	12	114	<100	0.01	0.28
HP55	7.8	68	13	333	21	191	3	3.2	29	11	16	0.86	1254	<25	662	608	364	<20	<20	16	15	44	<100	0.11	2.28
HP55	7.5	101	20	1695	93	192	3	132.8	22	64	20	1.77	1773	<25	713	668	>2000	<20	<20	19	17	46	<100	0.23	3.88
HP55	1.4	25	12	371	12	47	3	29.5	5	13	11	0.25	1282	<25	735	109	397	<20	<20	<2	<10	85	<100	0.01	0.33
HP55	2.0	23	4	465	9	49	4	21.3	10	9	<5	0.27	553	<25	595	79	317	<20	<20	<2	13	94	<100	0.01	0.27
HP55	3.7	24	10	444	9	67	6	19.1	13	8	16	0.25	576	<25	303	128	474	<20	<20	<2	<10	95	<100	0.01	0.25
HP56	1.6	20	67	86	8	55	4	<2.0	<5	18	<5	0.42	48	<25	192	487	91	<20	<20	10	<10	<5	<100	0.01	0.35
HP57	4.0	34	52	174	6	90	5	<2.0	6	9	<5	0.39	59	<25	374	319	148	<20	<20	9	<10	10	<100	0.03	0.81
HP58	<0.5	17	120	97	<1	16	5	<2.0	<5	17	<5	0.74	44	<25	859	243	20	<20	<20	21	<10	<5	<100	0.06	1.34
HP59	1.8	14	28	337	11	70	3	15.6	14	34	<5	0.25	41	<25	163	175	316	<20	<20	<2	10	69	<100	<0.01	0.21
KR1	0.6	20	<2	42	7	30	1	<2.0	<5	19	11	0.59	71	<25	137	697	18	<20	<20	7	<10	19	<100	<0.01	0.18
KR2	1.7	10	8	42	4	15	<1	<2.0	15	7	14	0.23	180	<25	59	232	26	<20	<20	6	11	7	<100	<0.01	0.18
KR3	<0.5	13	<2	26	3	21	3	<2.0	<5	16	<5	0.61	94	<25	107	548	19	<20	<20	11	<10	<5	<100	0.02	0.28
KR4	0.9	12	4	32	3	20	6	<2.0	<5	5	25	0.42	139	<25	66	428	18	<20	<20	10	<10	<5	<100	<0.01	0.17
KR5	<0.5	9	9	30	1	13	4	<2.0	7	29	<5	0.42	77	<25	80	446	22	<20	<20	10	<10	9	<100	0.01	0.30
KR6	0.9	8	<2	23	3	10	1	<2.0	15	<5	9	0.45	59	<25	56	491	13	<20	<20	20	<10	<5	<100	<0.01	0.24
MM1	<0.5	17	57	8	36	61	22	<2.0	<5	1102	<5	>10.00	140	29	47	230	27	<20	<20	54	<10	<5	57	0.11	1.98
MM2	<0.5	19	74	23	28	77	36	<2.0	<5	1060	<5	>10.00	168	38	64	173	35	<20	<20	77	<10	<5	77	0.12	2.64
MM3	<0.5	31	29	69	5	51	18	<2.0	40	58	<5	4.18	1186	<25	439	217	105	<20	<20	42	16	12	75	0.33	3.56
MM4	<0.5	18	11	47	5	20	9	<2.0	5	24	20	1.89	69	<25	460	245	47	<20	<20	23	<10	11	47	0.10	1.31
MM5	<0.5	18	18	23	2	17	11	<2.0	33	<5	<5	2.12	16990	<25	55	17	30	<20	<20	3	17	7	23	0.06	0.87
MM6	8.9	32	25	79	4	165	26	<2.0	118	75	<5	1.95	>20000	36	189	36	76	<20	<20	19	142	10	66	0.01	0.28
MM7	12.0	53	17	97	123	186	2	<2.0	21	63	19	4.23	84	<25	12	452	102	28	<20	13	<10	<5	<5	0.04	0.66
MM8	<0.5	60	52	52	24	106	43	<2.0	<5	91	<5	>10.00	133	<25	17	294	56	<20	<20	18	11	7	238	0.11	0.59
MM9	<0.5	59	53	31	5	99	32	<2.0	<5	41	<5	>10.00	373	<25	14	89	56	23	<20	22	13	<5	71	0.18	1.02
MM9	0.6	45	2	54	8	734	16	<2.0	5	<5	13	0.62	1372	<25	169	58	640	<20	<20	10	<10	<5	125	0.04	0.51
MM10	<0.5	42	52	205	6	110	59	<2.0	12	6	<5	>10.00	363	<25	39	197	47	<20	<20	36	13	<5	120	0.10	0.80
MM10	<0.5	26	29	32	14	97	16	<2.0	<5	<5	34	>10.00	397	<25	337	197	52	<20	<20	14	<10	<5	95	0.07	0.57

Map no.	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Mo ppm	Ni ppm	Co ppm	Cd ppm	Bi ppm	As ppm	Sb ppm	Fe %	Mn ppm	Te ppm	Ba ppm	Cr ppm	V ppm	Sn ppm	W ppm	Li ppm	Ga ppm	La ppm	Ta ppm	Ti %	Al %
MM11	0.8	33	18	96	5	66	13	<2.0	19	41	<5	3.35	1057	<25	698	191	131	<20	<20	40	14	13	65	0.23	2.23
MM12	0.5	15	12	4	4	5	50	<2.0	19	11	<5	0.21	995	<25	<5	9	23	<20	<20	4	<10	7	125	0.03	0.91
MM13	2.0	32	13	113	6	54	2	<2.0	18	33	<5	0.43	92	<25	408	285	89	<20	<20	19	<10	11	64	0.05	1.08
MM14	<0.5	21	18	20	3	17	12	<2.0	31	<5	<5	4.05	16574	<25	>2000	23	49	<20	<20	8	20	23	330	0.10	1.53
MM15	<0.5	7	18	18	<1	31	5	<2.0	9	13	16	3.82	525	<25	35	246	26	<20	<20	41	<10	9	73	0.14	0.89
MM16	<0.5	42	6	35	29	25	7	<2.0	16	30	<5	3.20	3682	<25	114	130	192	<20	<20	47	12	5	<5	0.43	1.82
MM17																									
MM18	0.9	10	10	<2	12	8	4	<2.0	18	<5	11	0.12	124	<25	327	31	35	<20	<20	3	14	10	146	<0.01	0.13
MM19	<0.5	19	12	19	4	19	<1	<2.0	<5	<5	<5	1.29	145	<25	122	354	58	<20	<20	37	<10	6	101	0.08	1.17
MM20	<0.5	38	20	38	4	141	29	<2.0	24	25	30	4.30	1879	<25	641	370	167	23	<20	57	16	19	201	0.39	4.12
MM21	<0.5	48	22	44	5	176	34	<2.0	24	<5	21	4.92	1096	<25	>2000	513	214	<20	<20	30	16	8	85	0.49	4.15
MM22	<0.5	103	17	58	4	50	17	<2.0	<5	13	8	1.79	966	<25	1649	108	31	<20	<20	30	11	9	226	0.11	2.31
MM23	<0.5	64	15	48	21	51	15	<2.0	<5	<5	22	>10.00	842	<25	12	172	157	<20	<20	18	<10	<5	42	0.12	0.74
MM24	<0.5	6	33	21	3	61	8	<2.0	14	<5	7	>10.00	333	<25	33	53	44	<20	<20	6	<10	<5	153	0.07	0.51
MM25	<0.5	69	20	107	<1	158	68	<2.0	9	<5	7	6.01	7243	<25	>2000	73	310	<20	<20	45	27	<5	123	0.44	1.64
MM26	<0.5	40	10	60	5	145	36	<2.0	15	24	<5	8.05	1025	<25	253	398	194	<20	<20	64	16	12	8	0.41	3.64
MM27	<0.5	58	3	34	4	58	30	<2.0	11	29	<5	5.75	1445	<25	1472	203	160	<20	<20	27	16	<5	142	0.34	4.79
MM28	0.9	11	15	<2	<1	5	5	<2.0	17	19	<5	0.47	723	<25	415	16	41	<20	<20	5	19	<5	107	0.07	0.42
MM29	<0.5	17	20	36	3	107	25	<2.0	26	<5	12	1.56	>20000	<25	1030	284	22	<20	<20	39	26	<5	<5	0.05	1.15
MM30	<0.5	226	43	248	14	160	54	<2.0	21	<5	17	6.26	16949	<25	>2000	91	325	<20	<20	121	51	38	60	0.57	7.12
MM31	0.8	169	15	50	2	39	6	2.3	9	<5	<5	1.72	91	<25	208	113	157	<20	<20	18	<10	7	118	0.16	1.74
MM32	<0.5	173	32	249	9	115	21	<2.0	25	<5	17	4.52	796	<25	>2000	142	129	<20	<20	88	26	24	<5	0.35	5.71
MM32	<0.5	171	21	235	4	118	18	<2.0	26	27	<5	4.31	468	<25	1776	100	137	<20	<20	87	24	19	90	0.37	3.97
MM32	<0.5	74	27	110	10	61	19	<2.0	20	11	<5	3.81	498	<25	177	216	107	<20	<20	70	11	5	<5	0.33	1.86
MM33	<0.5	88	25	77	13	38	8	<2.0	5	19	18	1.75	692	<25	>2000	355	32	<20	<20	38	<10	12	<5	0.06	1.28
MM34	0.8	96	29	121	6	131	51	<2.0	20	27	19	5.51	>20000	<25	>2000	68	165	<20	<20	95	50	8	55	0.40	2.48
MM35	<0.5	38	25	40	18	73	10	<2.0	<5	23	<5	1.26	123	<25	>2000	308	50	<20	<20	29	<10	11	236	0.10	0.76
MM36	<0.5	16	34	19	9	45	15	<2.0	37	48	<5	>10.00	6246	32	772	87	83	<20	<20	25	16	12	119	0.13	2.07
MM36	<0.5	12	20	51	2	31	8	<2.0	12	40	16	>10.00	4978	<25	412	89	123	<20	<20	21	10	9	37	0.07	1.17
MM37	1.7	68	15	8	<1	28	4	<2.0	<5	7	6	1.49	240	<25	142	153	135	<20	<20	14	<10	<5	74	0.12	1.78
MM38	1.8	116	10	90	5	89	2	<2.0	15	42	7	3.36	1731	<25	170	431	230	<20	<20	14	<10	<5	54	0.06	1.21
MM39	0.7	17	12	10	7	12	4	<2.0	32	18	<5	0.23	343	<25	366	33	73	<20	<20	2	<10	<5	154	0.03	0.70
MM40	0.9	57	14	49	8	108	10	<2.0	<5	15	10	0.73	106	<25	696	384	56	<20	<20	17	<10	6	147	0.05	0.88
MM41	0.5	23	16	32	3	46	5	<2.0	<5	15	12	1.22	203	<25	>2000	277	44	<20	<20	31	<10	<5	143	0.10	1.24
MM42	<0.5	17	35	7	4	19	6	<2.0	18	17	6	>10.00	3390	<25	1380	40	41	21	<20	15	18	6	141	0.08	1.16
MM42	<0.5	11	16	18	1	20	8	<2.0	23	9	<5	1.85	1638	<25	424	66	65	<20	<20	12	17	20	192	0.24	1.70
MM43	<0.5	13	9	23	2	23	5	<2.0	10	<5	<5	0.64	186	<25	484	263	36	<20	<20	12	<10	<5	98	0.02	0.48
MM44	<0.5	8	19	60	<1	28	8	<2.0	18	8	<5	1.76	67	<25	205	64	58	<20	<20	26	11	14	37	0.16	1.69
MM44	1.0	5	14	<2	<1	9	5	<2.0	13	19	16	0.60	81	<25	173	17	34	<20	<20	8	25	<5	268	0.03	0.62
MM45	<0.5	26	13	14	2	20	7	<2.0	15	<5	13	2.04	1627	<25	20	349	20	<20	<20	31	<10	<5	80	0.04	0.57
MM46	<0.5	47	21	75	3	36	7	<2.0	7	14	8	1.19	315	<25	463	229	59	<20	<20	25	<10	9	131	0.09	1.89
MM47	1.9	39	25	28	2	30	7	<2.0	<5	16	<5	2.57	840	<25	61	278	37	<20	<20	32	<10	5	54	0.07	1.30
MM48	<0.5	21	11	14	12	21	5	<2.0	<5	<5	<5	2.32	91	<25	1078	369	27	<20	<20	49	<10	<5	59	0.03	0.55
MM49	<0.5	19	10	12	2	15	2	<2.0	<5	<5	<5	1.50	152	<25	82	403	13	<20	<20	5	<10	<5	110	0.01	0.19
MM49	<0.5	73	10	196	21	61	25	<2.0	32	52	18	3.96	9625	<25	139	38	119	<20	<20	24	17	10	146	0.17	3.20
MM50	<0.5	44	<2	47	8	34	6	<2.0	29	8	30	2.09	181	<25	248	292	27	<20	<20	20	13	<5	<5	0.07	1.10
MM51	2.3	80	47	114	14	93	24	<2.0	61	120	60	5.75	580	53	610	157	239	71	<20	59	49	6	125	0.55	3.46
MM52	<0.5	120	32	85	330	111	21	<2.0	<5	60	13	3.62	288	<25	215	216	117	<20	<20	37	11	15	80	0.30	4.44
MM53	<0.5	39	13	54	3	56	9	<2.0	17	<5	<5	2.80	719	<25	170	121	48	<20	<20	31	<10	6	54	0.13	1.65
MM53	<0.5	75	12	77	2	47	11	<2.0	16	<5	<5	3.56	344	<25	>2000	81	116	<20	<20	39	13	18	90	0.27	5.22
MM54	<0.5	84	38	92	5	45	17	<2.0	32	9	30	5.05	4802	<25	>2000	172	126	<20	<20	29	23	18	7	0.26	4.83
MM55	<0.5	568	8	38	3	37	11	<2.0	<5	<5	<5	1.37	4029	<25	>2000	262	35	<20	<20	23	<10	8	123	0.10	1.90
MM56	<0.5	482	5	21	1	30	6	<2.0	7	<5	8	0.73	3025	<25	>2000	181	34	<20	<20	24	12	7	34	0.07	1.56
MM56	<0.5	64	17	74	4	80	23	<2.0	5	6	9	1.35	5352	<25	>2000	201	34	<20	<20	32	11	7	11	0.09	1.73
MM57	<0.5	93	17	60	4	60	14	<2.0	8	22	<5	1.99	5304	<25	378	102	65	<20	<20	39	13	9	78	0.15	2.14
MM58	<0.5	11	10	13	3	11	3	<2.0	14	19	<5	0.41	233	<25	1164	15	27	<20	<20	7	<10	<5	49	0.03	0.50
MM58	<0.5	18	31	23	19	22	3	<2.0	8	9	7	2.29	127	<25	1293	219	23	<20	<20	3	<10	12	65	<0.01	0.06
MM59	<0.5	78	9	30	2	32	9	<2.0	14	7	<5	1.39	1472	<25	1713	334	36	<20	<20	31	<10	7	23	0.08	1.26
MM59	<0.5	83	25	38	15	52	17	<2.0	8	<5	19	1.55	365	<25	839	106	75	<20	<20	26	10	13	134	0.22	2.44

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Map no.	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Mo ppm	Ni ppm	Co ppm	Cd ppm	Bi ppm	As ppm	Sb ppm	Fe %	Mn ppm	Te ppm	Ba ppm	Cr ppm	V ppm	Sn ppm	W ppm	Li ppm	Ga ppm	La ppm	Ta ppm	Ti %	Al %
MM59	<0.5	39	15	28	3	38	10	<2.0	13	<5	19	1.41	5354	<25	1781	303	30	<20	<20	28	11	7	164	0.10	1.36
MM59	<0.5	229	19	41	7	49	10	<2.0	<5	14	<5	1.67	2022	<25	>2000	226	46	<20	<20	32	12	7	154	0.15	1.49
MM60	<0.5	35	13	29	4	30	11	<2.0	<5	<5	<5	1.00	1097	<25	1371	293	27	<20	<20	18	<10	5	13	0.05	1.08
MM61	7.5	54	22	30	30	98	37	<2.0	92	15	37	0.59	>20000	<25	>2000	110	135	<20	<20	14	92	7	145	0.03	0.68
MM62	<0.5	129	4	20	7	60	3	3.6	7	15	<5	0.64	28	<25	23	50	236	<20	<20	3	<10	18	128	<0.01	0.63
MM63	0.5	97	16	149	13	44	15	<2.0	<5	<5	27	3.20	353	<25	89	291	125	<20	<20	28	<10	6	109	0.16	1.86
MM64	<0.5	98	15	146	16	52	6	<2.0	<5	<5	<5	2.66	195	<25	45	264	147	<20	<20	38	<10	6	39	0.17	3.04
MM65	<0.5	103	26	62	5	30	9	<2.0	6	42	<5	4.34	176	<25	910	109	99	<20	<20	28	14	<5	108	0.27	2.77
MM66	2.7	42	<2	123	3	31	11	<2.0	8	10	<5	1.43	1528	<25	>2000	114	34	<20	<20	14	<10	<5	56	0.10	1.76
MM67	1.5	80	8	147	7	75	15	<2.0	13	<5	<5	1.95	523	<25	482	280	141	<20	<20	31	<10	12	70	0.14	2.69
MM67	1.0	72	25	57	27	38	5	<2.0	<5	<5	13	3.50	241	<25	929	170	463	<20	<20	35	14	24	85	0.31	5.77
MM67	<0.5	33	17	63	4	39	7	<2.0	<5	21	11	2.20	310	<25	487	249	61	<20	<20	32	10	6	<5	0.14	2.65
MM67	1.4	108	27	195	30	60	18	<2.0	9	43	<5	5.63	1268	<25	219	114	412	<20	<20	37	21	25	141	0.40	7.59
MM67	0.6	110	28	146	19	49	12	<2.0	11	50	12	4.90	254	<25	219	170	315	<20	<20	34	15	19	<5	0.33	5.34
MM68	<0.5	53	12	75	2	37	9	<2.0	12	14	16	2.13	342	<25	210	172	51	<20	<20	32	10	6	65	0.15	2.78
MM68	<0.5	93	25	151	4	72	23	<2.0	<5	<5	<5	>10.00	389	25	198	122	81	<20	<20	28	15	<5	109	0.22	3.82
MM69	<0.5	25	18	6	14	34	6	<2.0	17	43	14	5.66	3996	<25	15	296	25	<20	<20	26	<10	<5	21	0.04	0.77
MM70	<0.5	20	22	42	8	39	13	<2.0	12	<5	<5	2.84	384	<25	353	239	131	<20	<20	51	11	5	47	0.35	1.37
MM71	<0.5	48	23	73	6	44	9	<2.0	18	<5	<5	2.45	906	<25	343	173	77	<20	<20	25	<10	8	<5	0.12	1.63
MM72	<0.5	137	14	111	3	26	31	<2.0	14	11	<5	6.93	3047	<25	792	46	393	<20	<20	59	25	9	117	0.99	3.26
MM73	<0.5	49	35	154	8	89	22	<2.0	13	<5	14	4.86	1384	<25	>2000	134	150	<20	<20	41	17	27	12	0.45	5.12
MM74	0.9	40	14	172	10	77	9	<2.0	<5	12	11	1.46	2172	<25	754	337	47	<20	<20	203	<10	11	45	0.05	1.27
MM75	<0.5	32	12	53	7	40	5	<2.0	9	6	<5	1.44	562	<25	104	264	48	<20	<20	14	<10	<5	<5	0.07	1.51
MM76	<0.5	26	10	9	5	24	3	<2.0	10	11	17	0.99	254	<25	428	400	27	<20	<20	17	<10	<5	171	0.05	0.92
MM77	<0.5	73	8	205	65	72	13	<2.0	13	13	<5	4.12	264	<25	96	174	72	<20	<20	26	<10	10	114	0.19	2.95
MM78	0.7	82	29	100	14	98	30	<2.0	14	54	10	6.36	303	<25	46	165	156	<20	<20	46	13	19	125	0.36	4.89
MM79	<0.5	25	35	156	7	51	12	<2.0	18	68	16	5.39	408	<25	385	121	149	<20	<20	70	21	34	205	0.49	8.72
MM80	1.0	10	20	35	1	9	8	<2.0	18	9	17	1.09	575	<25	125	17	36	<20	<20	11	22	7	191	0.04	0.79
MM81	1.6	24	17	50	17	71	<1	<2.0	9	<5	9	3.78	118	<25	41	456	45	<20	<20	22	<10	5	22	0.02	0.42
MM82	<0.5	83	6	101	31	57	10	<2.0	14	41	<5	4.01	628	<25	244	114	311	<20	<20	39	17	<5	<5	0.30	2.38
MM83	<0.5	12	<2	10	3	7	2	<2.0	10	30	<5	1.37	32	<25	469	298	24	<20	<20	14	<10	<5	59	<0.01	0.12
MM84	<0.5	184	13	61	5	76	42	<2.0	12	32	<5	9.25	1428	<25	>2000	152	337	<20	<20	20	24	<5	71	0.81	7.19
MM85	<0.5	179	10	79	3	72	50	<2.0	34	<5	7	>10.00	1794	<25	>2000	116	366	26	<20	34	28	<5	65	0.98	5.30
MM86	<0.5	14	13	<2	<1	29	9	<2.0	39	<5	<5	4.72	13751	<25	>2000	31	31	<20	<20	30	14	<5	28	0.03	0.57
MM87	<0.5	16	23	24	3	47	9	<2.0	14	<5	7	1.73	1043	<25	>2000	427	50	<20	<20	32	<10	7	70	0.07	1.40
MM88	<0.5	211	20	90	8	69	52	<2.0	43	19	44	>10.00	1781	<25	1769	91	650	48	<20	28	35	<5	129	1.27	5.16
MM89	<0.5	17	21	48	4	38	8	<2.0	12	20	<5	3.21	730	<25	795	188	139	<20	<20	47	14	<5	98	0.33	1.51
MM90	<0.5	67	27	43	3	29	6	<2.0	6	18	7	2.00	76	<25	>2000	94	74	<20	<20	20	10	9	75	0.16	2.72
MM91	<0.5	47	14	37	4	32	7	<2.0	<5	6	20	2.36	255	<25	>2000	210	83	<20	<20	27	<10	8	15	0.12	2.02
MM92	<0.5	13	7	4	1	12	2	<2.0	12	<5	13	0.38	2985	<25	370	447	15	<20	<20	4	<10	<5	48	<0.01	0.12
MM93	<0.5	8	9	18	2	21	2	<2.0	34	<5	17	0.45	696	<25	674	366	50	<20	<20	20	<10	7	<5	0.02	0.33
MM94	1.2	97	19	16	6	75	24	<2.0	34	13	17	1.25	>20000	<25	1527	268	83	<20	<20	34	48	11	54	0.06	1.03
MM95	1.4	26	13	35	4	46	6	<2.0	19	<5	9	1.03	872	<25	785	276	14	<20	<20	31	<10	<5	<5	0.04	0.93
MM96	<0.5	104	11	6	2	17	2	<2.0	<5	<5	12	0.74	995	<25	1241	435	29	<20	<20	26	<10	<5	87	0.03	0.39
MM97	<0.5	206	22	77	3	54	40	<2.0	21	7	13	9.64	1435	<25	>2000	67	296	<20	<20	16	28	<5	178	0.70	5.73
MM98	<0.5	6	12	4	9	8	<1	<2.0	6	<5	<5	1.73	53	<25	201	267	39	<20	<20	7	11	10	38	0.09	4.45
MM99	0.8	25	36	40	3	183	26	<2.0	20	10	<5	2.13	10810	<25	648	273	115	<20	<20	4	14	13	121	0.11	2.06
MM100	<0.5	174	14	103	6	109	42	<2.0	26	77	9	0.96	>20000	<25	>2000	257	142	<20	<20	35	35	41	74	0.03	0.74
MM101	<0.5	87	23	54	19	112	48	<2.0	14	32	<5	>10.00	1440	<25	>2000	263	336	<20	<20	52	20	10	109	0.87	7.24
MM102	<0.5	224	25	80	2	51	44	<2.0	<5	<5	22	>10.00	1591	<25	>2000	77	372	<20	<20	27	22	<5	52	0.93	6.67
MM103	<0.5	168	26	77	13	100	51	<2.0	25	21	<5	>10.00	1502	<25	>2000	203	344	<20	<20	23	26	6	174	0.91	7.15
MM104	0.8	27	7	4	4	13	<1	<2.0	<5	<5	<5	0.85	55	<25	498	323	65	<20	<20	12	<10	<5	87	0.06	1.28
MM105	<0.5	213	16	78	<1	53	49	<2.0	10	39	7	>10.00	1659	<25	>2000	70	333	27	<20	24	17	<5	55	0.78	6.95
MM106	3.8	18	13	410	12	124	6	<2.0	36	11	39	0.37	215	<25	787	198	52	<20	<20	18	<10	<5	55	0.02	0.57
MM107	1.7	34	7	75	14	64	3	<2.0	11	9	38	0.47	147	<25	318	332	72	<20	<20	8	<10	6	69	0.02	0.38

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Map no.	Mg %	Ca %	Na %	K %	Nb ppm	Sr ppm	Y ppm	Zr ppm	Au ppb	Pt ppb	Pd ppb	Ge ppm	Ag g/mt	U (fluoro) ppm	P205 %	BaSO4 %
HP1	2.75	4.18	1.24	1.53	12	137	10	74	6	12	6	<10				
HP1	0.41	0.37	0.37	1.40	<5	44	8	71	10	15	11	<10				
HP1	3.14	3.99	1.27	1.77	13	149	14	89	7	18	7	<10				
HP1	0.32	1.48	0.25	0.73	<5	73	9	56	11	17	11	<10				
HP1	0.67	1.74	0.50	1.66	9	61	10	74	5	12	8	<10				
HP2	0.88	0.65	0.87	1.06	9	138	14	80	6	28	4	<20				
HP2	0.80	0.37	0.89	1.44	11	227	13	84	9	63	6	<20				
HP3	0.62	0.70	0.69	0.88	21	128	16	57	20	<5	10	<20				
HP4	0.75	0.26	0.99	1.46	11	242	18	91	9	9	8	<20				
HP4	0.77	0.30	1.02	1.79	13	226	14	93	9	15	7	<20				
HP5	0.02	<0.01	0.02	0.01	<5	1	<5	<5	3	<5	1	<20				
HP5	0.21	0.32	0.51	0.07	<5	58	10	11	2	9	2	<20				
HP6	0.12	0.07	0.29	0.18	<5	40	<5	15	2	<5	3	<20				
HP6	0.04	<0.01	0.03	0.25	<5	41	<5	14	6	15	3	<20				
HP6	0.01	<0.01	0.04	0.09	<5	13	<5	7	4	14	2	<20				
HP6	0.03	<0.01	0.04	0.17	<5	86	<5	<5	7	9	3	<20				
HP6	0.03	0.01	0.48	0.07	<5	82	<5	19	6	11	4	<20				
HP6	1.06	1.00	0.60	0.81	<5	123	18	75	11	6	10	<20				
HP6	0.02	<0.01	0.03	0.20	<5	39	<5	11	7	15	3	<20				
HP7	0.06	0.02	0.05	0.38	<5	25	5	40	10	7	18	<20				
HP7	0.02	<0.01	0.04	0.12	<5	13	<5	13	5	13	4	<20				
HP7	0.03	0.04	0.06	0.15	<5	42	<5	12	12	26	3	<20				
HP8	0.20	0.04	0.47	1.06	89	77	11	308	37	9	2	<20				
HP8	0.31	0.16	0.54	0.99	68	104	23	233	59	<5	2	<20				
HP8	0.03	0.01	0.05	0.17	<5	13	<5	15	7	6	4	<20				
HP8	0.06	0.03	0.29	0.68	87	52	13	279	5	10	2	<20				
HP8	0.31	0.06	0.48	1.55	73	84	17	255	10	17	5	<20				
HP8	0.06	0.03	0.25	0.72	77	43	13	288	9	<5	2	<20				
HP8	0.20	0.11	0.36	1.64	99	96	24	373	9	<5	4	<20				
HP8	0.06	0.05	0.12	0.54	58	40	18	244	4	19	<1	<20				
HP8	0.06	0.12	0.13	0.43	61	36	15	201	38	24	<1	<20				
HP8	0.08	0.11	0.18	0.92	51	44	16	202	14	31	<1	<20				
HP9	0.27	0.08	0.43	1.19	28	97	12	82	9	86	7	<20				
HP10	<0.01	<0.01	0.02	0.01	<5	2	<5	<5	4	<5	1	<20				
HP10	0.05	0.02	0.04	0.31	12	64	<5	49	7	12	24	<20				
HP10	<0.01	<0.01	0.03	0.03	5	6	<5	23	3	<5	<1	<20				
HP10	0.01	0.02	0.03	0.21	81	46	10	108	3	<5	1	<20				
HP10	<0.01	<0.01	0.03	0.03	6	13	<5	19	2	<5	<1	<20				
HP10	<0.01	<0.01	0.02	0.03	<5	4	<5	10	4	<5	<1	<20				
HP10	0.03	0.07	0.04	0.31	6	64	<5	20	7	10	8	<20				
HP11	<0.01	1.49	0.02	0.01	8	18	<5	26	76	<5	2	<20	204			
HP11	0.05	1.68	0.30	0.60	195	108	9	353	2	<5	2	<20				
HP11	0.27	0.11	0.40	1.15	28	118	9	86	7	19	8	<20				
HP11	0.15	0.46	0.05	0.59	<5	51	67	40	14	18	27	<20				
HP11	0.13	0.03	0.06	0.51	<5	18	9	36	8	11	17	<20				
HP11	0.07	<0.01	0.78	0.23	12	16	<5	19	19	9	7	<20				
HP11	0.06	0.07	0.04	0.24	<5	66	11	34	6	<5	7	<20				
HP11	0.02	0.34	0.04	0.08	<5	22	20	<5	7	11	5	<20				
HP11	0.39	0.34	0.58	1.22	36	188	74	106	12	35	11	<20				
HP11	0.11	0.09	0.08	0.34	13	100	8	38	7	8	7	<20				
HP11	0.07	0.02	0.05	0.27	<5	44	9	23	9	7	8	<20				
HP12	0.08	0.03	0.05	0.26	<5	97	16	24	6	<5	10	<20				
HP13	0.03	<0.01	0.04	0.15	<5	20	<5	14	5	7	3	<20				
HP13	0.27	0.02	0.19	1.19	5	331	10	51	3	9	6	<20				
HP14	0.07	0.20	0.05	0.31	<5	42	7	<5	7	<5	7	<20				
HP15	0.97	0.70	0.96	1.26	19	178	26	92	44	184	28	<20				
HP16	0.03	0.11	0.04	0.14	<5	42	27	<5	3	<5	6	<20				
HP16	0.55	0.16	0.57	1.93	11	374	12	79	11	49	6	<20				
HP17	0.20	0.01	0.15	0.61	<5	133	7	54	3	<5	4	<20				

Map no.	Mg %	Ca %	Na %	K %	Nb ppm	Sr ppm	Y ppm	Zr ppm	Au ppb	Pt ppb	Pd ppb	Ge ppm	Ag g/mt	U (fluoro) ppm	P205 %	BaSO4 %
HP18	0.39	0.05	0.60	0.65	6	60	8	55	6	<5	5	<10				
HP18	0.38	0.12	0.43	0.41	<5	147	6	45	8	9	6	<10				
HP19	0.03	0.05	0.08	0.10	<5	32	<5	9	4	<5	3	<10				
HP20	0.06	0.22	0.05	0.02	<5	161	<5	<5	2	<5	2	<10				
HP20	0.56	0.17	0.47	0.68	<5	19	<5	24	5	<5	4	<10				
HP20	0.03	0.06	0.22	0.11	<5	23	<5	25	6	5	4	<10				
HP20	0.02	0.98	0.04	0.06	<5	58	11	<5	4	6	6	<10				
HP20	1.40	0.36	1.41	1.79	14	112	11	110	6	<5	4	<10				
HP20	0.28	0.94	0.04	0.12	<5	49	22	<5	3	6	6	<10				
HP20	0.06	0.05	0.08	0.30	<5	35	<5	23	6	<5	6	<10				
HP20	0.39	0.15	0.43	0.67	<5	22	<5	23	4	<5	5	<10				
HP20	0.24	0.04	0.16	1.45	7	110	10	75	9	6	16	<10				
HP20	0.28	0.43	0.09	0.19	<5	54	<5	15	3	6	3	<10				
HP21	0.46	0.03	0.35	0.29	<5	536	7	43	3	5	4	<20				
HP21	0.44	0.15	0.46	0.65	<5	25	<5	23	3	<5	3	<10				
HP21	0.04	0.05	0.04	0.12	<5	19	<5	10	3	<5	3	<10				
HP21	0.53	0.16	0.47	0.66	<5	21	<5	22	4	8	4	<10				
HP21	0.59	0.14	0.59	0.66	<5	27	<5	23	2	<5	2	<10				
HP21	0.34	0.13	0.37	0.44	10	38	7	30	2	<5	3	<10				
HP21	0.10	1.39	0.04	0.32	<5	117	36	<5	3	9	5	<10				
HP21	3.34	7.53	0.19	0.57	<5	329	33	39	5	11	8	<10				
HP21	5.24	>10.00	0.03	0.23	<5	177	11	7	IS	IS	IS	<10				
HP21	0.23	0.33	0.10	1.09	<5	48	7	40	16	7	9	<10				
HP21	0.24	0.07	0.05	0.84	<5	42	8	38	5	6	13	<10				
HP21	0.35	0.96	0.13	0.98	14	264	48	62	3	<5	8	<10				
HP22	0.97	0.10	0.59	1.91	11	139	10	80	9	<5	2	<10				
HP22	0.29	0.16	0.25	0.50	<5	22	<5	20	3	<5	3	<10				
HP23	0.68	0.41	0.71	1.56	12	227	19	84	6	13	7	<20				
HP23	3.26	7.50	0.20	0.59	<5	332	33	39	5	10	2	<20				
HP23	1.48	3.28	0.56	0.42	<5	514	11	40	2	<5	5	<20				
HP23	0.21	0.22	0.18	0.33	<5	106	<5	36	54	<5	4	<20				
HP24	1.63	2.68	1.12	1.51	13	123	18	104	3	10	5	<10				
HP25	1.06	0.69	1.46	0.99	10	88	12	85	4	10	4	<10				
HP26	0.34	0.15	0.18	0.29	<5	33	10	31	5	9	7	<10				
HP27	1.49	>10.00	0.38	0.15	7	357	<5	10	5	15	8	<10				
HP28	0.06	0.10	0.04	0.37	<5	8	<5	12	862	9	3	<10	177			
HP29	0.18	0.53	0.31	1.25	8	79	18	124	4	10	8	<10				
HP30	0.27	0.12	0.44	1.81	14	94	13	109	5	7	4	<10				
HP31	0.06	0.09	0.19	0.57	45	138	11	126	8	8	6	<10				
HP32	3.82	>10.00	0.07	0.51	7	141	17	36	5	9	1	<10				
HP32	0.23	0.11	0.27	1.38	12	107	11	94	9	<5	3	<10				
HP33	0.09	0.07	0.04	0.43	<5	25	7	23	101	<5	<1	<10	54			
HP33	0.01	0.01	0.02	0.15	<5	4	<5	8	34	6	<1	<10	672			
HP33	0.06	0.39	0.04	0.42	<5	58	6	18	39	<5	<1	<10	58			
HP33	0.10	0.11	0.06	0.61	<5	100	9	35	6	<5	<1	<10				
HP33	0.03	0.20	0.03	0.41	<5	45	<5	17	8	6	<1	<10				
HP33	0.25	0.33	0.03	0.30	<5	27	<5	17	33	14	1	<10	171			
HP33	6.73	>10.00	0.26	0.12	48	810	18	149	4	<5	2	<10				
HP33	1.12	0.35	0.41	1.30	14	68	16	79	6	7	<1	<10				
HP33	0.01	0.03	0.03	0.20	<5	5	<5	9	59	9	7	<10	204			
HP33	0.04	0.14	0.03	0.54	<5	45	6	28	22	17	<1	<10				
HP33	2.38	1.89	0.12	0.42	9	77	42	51	5	5	<1	<10				
HP33	0.03	0.03	0.03	0.31	<5	11	<5	12	61	10	<1	<10	163			
HP33	0.05	0.19	0.03	0.35	<5	45	<5	16	14	8	<1	<10				
HP33	0.02	0.01	0.03	0.34	<5	10	<5	17	67	<5	<1	<10	279			
HP34	0.06	0.03	0.03	0.28	<5	24	<5	21	4	<5	<1	<10				
HP34	>10.00	7.50	0.31	0.91	56	614	13	103	2	8	2	<10				
HP35	0.20	0.16	0.15	0.35	<5	389	<5	21	2	<5	1	<10	3			
HP36	2.26	0.62	0.72	0.82	23	30	6	33	3	7	3	<10				

APPENDIX – 1992 CMD Sample Analytical Results

Map no.	Mg %	Ca %	Na %	K %	Nb ppm	Sr ppm	Y ppm	Zr ppm	Au ppb	Pt ppb	Pd ppb	Ge ppm	Ag g/mt	U (fluoro) ppm	P205 %	BaSO4 %
HP37	0.21	0.19	0.16	1.02	<5	55	15	25	3	9	7	<10				
HP37	0.27	0.14	0.34	1.75	8	95	5	55	2	<5	4	<10				
HP37	0.31	0.27	0.37	0.68	<5	47	<5	23	3	<5	4	<10				
HP37	0.43	0.34	0.33	1.69	7	55	25	50	4	7	8	<10				
HP37	0.77	0.20	0.30	1.45	6	123	10	53	<1	<5	2	<10				
HP37	0.14	0.88	0.04	0.06	<5	68	25	<5	2	25	4	<10				
HP38	0.17	0.25	0.03	0.32	<5	31	8	<5	<1	5	1	<10				
HP39	6.70	>10.00	0.22	0.41	51	317	7	89	5	5	2	<10				
HP39	0.59	0.58	0.23	1.24	10	92	10	80	3	10	<1	<10				
HP39	1.80	0.56	0.18	0.24	15	16	<5	8	2	<5	2	<10	2			
HP40	0.23	0.12	0.28	1.69	14	90	11	108	4	<5	<1	<10				
HP41	0.03	<0.01	0.04	0.34	<5	12	<5	15	41	11	5	<10	17			
HP41	0.12	0.04	0.03	0.21	<5	15	<5	30	17	6	6	<10	25			
HP41	0.08	0.03	0.04	0.27	<5	13	<5	26	31	9	7	<10	104			
HP42	0.18	0.07	0.03	0.27	<5	15	<5	20	26	8	<1	<10	4			
HP42	0.06	0.01	0.07	0.80	<5	23	6	40	29	6	7	<10	7			
HP42	0.05	<0.01	0.04	0.45	<5	11	<5	20	60	6	<1	<10	14			
HP42	0.02	<0.01	0.03	0.14	<5	8	<5	9	45	<5	<1	<10	6			
HP42	0.12	0.04	0.07	0.78	<5	21	8	34	22	<5	<1	<10	11			
HP42	0.04	0.02	0.06	0.49	<5	17	<5	25	94	10	7	<10	53			
HP42	0.03	<0.01	0.04	0.38	<5	11	<5	14	35	10	8	<10	10			
HP42	0.08	0.01	0.10	1.04	<5	26	6	44	15	11	9	<10	6			
HP42	0.02	<0.01	0.03	0.28	<5	8	<5	11	186	9	8	<10	40			
HP42	0.13	0.11	0.04	0.48	<5	21	8	29	23	<5	<1	<10	5			
HP42	0.04	0.01	0.04	0.41	<5	13	<5	19	27	9	6	<10	10			
HP42	0.07	0.01	0.05	0.60	<5	22	7	45	24	5	<1	<10	4			
HP42	0.04	<0.01	0.04	0.43	<5	9	<5	14	59	5	<1	<10				
HP43	0.23	0.10	0.35	1.60	9	85	10	112	3	<5	<1	<10				
HP44	0.42	0.32	0.44	1.89	12	88	16	87	3	<5	4	<10				
HP45	0.35	0.04	0.41	2.43	12	65	12	99	6	14	9	<10				
HP45	0.41	0.08	0.39	2.27	11	61	12	85	8	15	11	<10				
HP46	0.10	0.04	0.08	0.29	<5	108	6	23	5	6	6	<20				0.88
HP46	<0.01	<0.01	0.02	0.02	<5	597	<5	<5	2	5	1	<20				96.24
HP46	0.05	3.44	0.03	0.04	<5	635	<5	<5	3	7	<1	<20				87.18
HP46	0.12	0.06	0.08	0.34	<5	120	5	25	6	<5	4	<20				1.09
HP46	0.05	0.04	0.04	0.08	<5	597	<5	7	1	<5	<1	<20				93.15
HP46	0.03	<0.01	0.04	0.04	<5	672	<5	<5	2	6	<1	<20				95.84
HP46	0.25	0.11	0.11	0.55	<5	67	7	23	9	<5	5	<20				0.26
HP47	0.06	0.05	0.05	0.07	<5	851	<5	12	2	<5	1	<20				73.13
HP47	0.01	0.02	0.02	0.02	<5	533	<5	<5	2	<5	2	<20				96.01
HP47	0.19	3.29	0.16	0.11	<5	>2000	<5	12	1	<5	<1	<20				92.33
HP47	0.45	0.61	0.45	1.30	<5	256	138	85	15	14	47	<20				1.46
HP47	0.02	0.02	0.02	0.03	<5	872	<5	<5	2	<5	2	<20				95.88
HP47	0.32	0.15	0.23	0.95	<5	126	12	42	7	7	5	<20				1.48
HP47	<0.01	0.04	0.13	0.08	<5	>2000	<5	6	2	<5	1	<20				99.94
HP47	0.01	0.09	0.03	0.02	<5	749	<5	<5	3	<5	1	<20				96.35
HP47	0.05	0.01	0.05	0.09	<5	969	<5	6	2	<5	<1	<20				93.12
HP47	0.05	0.04	0.08	0.16	<5	91	<5	26	5	<5	5	<20				1.60
HP47	0.02	0.02	0.03	0.04	<5	767	<5	<5	3	<5	<1	<20				96.49
HP48	0.10	0.03	0.12	0.22	<5	52	<5	15	4	<5	3	<20				0.87
HP49	0.07	0.19	0.03	0.04	<5	31	<5	<5	6	10	6	<10		0.2	0.03	0.65
HP50	<0.01	<0.01	0.02	<0.01	<5	195	<5	<5	10	6	6	<10		0.2	0.01	96.78
HP50	0.01	1.04	0.02	<0.01	<5	425	<5	<5	4	7	7	<10		0.5	0.02	95.02
HP51	0.09	5.29	0.04	0.05	<5	54	<5	<5	3	<5	5	<10		4.0	0.05	0.77
HP51	0.25	0.16	0.19	0.77	<5	87	45	38	6	6	13	<10		18.9	0.54	1.35
HP51	0.02	0.66	0.03	0.01	<5	647	<5	<5	2	<5	2	<10		0.2	0.02	96.33
HP51	<0.01	<0.01	0.02	<0.01	<5	488	<5	<5	2	8	2	<10		0.5	0.01	97.36
HP51	0.02	2.01	0.07	0.04	<5	>2000	<5	<5	2	<5	4	<10		0.2	0.02	93.70
HP52	0.02	0.01	0.02	0.02	<5	313	<5	<5	1	<5	2	<20				95.88

APPENDIX – 1992 CMD Sample Analytical Results

Map no.	Mg %	Ca %	Na %	K %	Nb ppm	Sr ppm	Y ppm	Zr ppm	Au ppb	Pt ppb	Pd ppb	Ge ppm	Ag g/mt	U (fluoro) ppm	P205 %	BaSO4 %
HP52	0.02	<0.01	0.02	0.04	<5	696	<5	<5	4	<5	<1	<20				96.42
HP52	0.02	<0.01	0.03	0.03	<5	403	<5	<5	4	<5	2	<20				95.08
HP52	0.09	0.13	0.03	0.03	<5	689	<5	<5	2	<5	1	<20				95.82
HP52	0.19	0.36	0.02	0.02	<5	471	<5	<5	3	<5	1	<20				96.65
HP53	0.01	<0.01	0.03	0.02	<5	411	<5	<5	2	<5	2	<20				96.64
HP53	0.10	0.01	0.05	0.09	<5	115	<5	<5	11	<5	4	<10		<0.2	0.04	19.78
HP53	0.06	0.22	0.04	0.03	<5	505	<5	<5	2	14	2	<20				94.69
HP53	1.19	0.47	1.96	0.92	12	139	10	120	30	8	38	<20		0.2	0.10	0.29
HP53	0.02	0.03	0.04	0.01	<5	634	<5	<5	2	<5	2	<20				94.66
HP53	0.01	0.07	0.02	<0.01	<5	274	<5	<5	3	<5	3	<20				97.11
HP53	0.05	0.36	0.08	0.12	<5	130	11	<5	6	<5	6	<20		10.3	0.38	0.49
HP53	0.03	0.01	0.03	0.06	<5	1028	<5	<5	1	<5	1	<20				94.46
HP53	0.03	1.47	0.05	0.10	<5	332	22	<5	7	6	9	<20		61.0	1.56	0.67
HP53	0.04	0.05	0.04	0.06	<5	976	<5	<5	3	10	2	<20				93.83
HP53	0.07	0.17	0.03	0.03	<5	930	<5	<5	2	<5	1	<20				94.06
HP53	0.02	0.28	0.06	0.11	<5	151	14	<5	4	<5	7	<20		25.0	0.42	1.60
HP54	0.15	0.01	0.07	0.32	<5	45	<5	23	7	10	13	<10		1.2	0.04	1.06
HP54	0.02	0.38	0.03	<0.01	<5	721	<5	<5	4	7	4	<10		0.2	0.01	94.69
HP54	<0.01	<0.01	<0.01	<0.01	<5	60	<5	<5	4	8	6	<10		0.8	0.03	99.90
HP54	9.24	>10.00	0.08	0.07	<5	361	<5	<5	6	9	7	<10		3.3	0.05	2.27
HP54	0.05	0.40	0.04	0.02	<5	765	<5	<5	4	7	5	<10		0.5	0.01	96.67
HP55	0.55	0.74	0.15	0.55	<5	69	<5	29						0.3	0.02	
HP55	8.75	>10.00	0.14	0.63	<5	73	46	22						9.9	0.66	
HP55	9.44	>10.00	0.06	0.08	<5	56	<5	<5						1.1	0.05	
HP55	0.37	0.53	0.12	0.41	<5	54	<5	23						0.3	0.02	
HP55	2.51	5.04	0.05	0.05	<5	24	8	<5						1.8	0.14	
HP55	3.03	>10.00	0.16	0.13	<5	680	206	10						65.0	22.49	
HP55	3.83	8.27	0.05	0.07	<5	40	9	<5						2.4	0.30	
HP55	4.08	>10.00	0.15	0.16	<5	648	252	<5						62.0	20.29	
HP55	6.09	>10.00	0.07	0.13	<5	113	65	10						11.6	3.67	
HP55	0.53	1.66	0.83	0.79	<5	365	52	151						33.0	1.06	
HP55	2.54	>10.00	0.18	0.12	<5	776	218	9						84.0	25.48	
HP55	6.25	>10.00	0.21	0.89	<5	91	45	40						8.8	0.78	
HP55	4.35	>10.00	0.42	1.33	<5	209	73	90						36.0	4.16	
HP55	3.43	>10.00	0.16	0.13	<5	782	160	7						78.0	23.56	
HP55	1.34	>10.00	0.18	0.11	<5	784	174	7						94.0	29.20	
HP55	2.96	>10.00	0.19	0.10	<5	664	186	12						56.0	24.70	
HP56	1.73	3.57	0.06	0.14	<5	60	7	<5	7	10	9	<10		1.7	0.26	
HP57	3.59	6.81	0.05	0.25	<5	37	26	8	5	16	10	<10		3.7	0.41	
HP58	0.22	0.04	0.12	0.46	<5	67	<5	24	9	10	7	<10		<0.2	0.01	
HP59	1.87	>10.00	0.09	0.08	<5	409	144	<5	4	10	7	<10		53.0	20.23	
KR1	0.11	0.65	0.06	0.06	<5	16	22	<5						8.4	0.42	
KR2	7.05	>10.00	0.03	0.07	<5	46	<5	<5						1.4	0.03	
KR3	0.97	1.73	0.09	0.06	<5	10	<5	<5						0.9	0.02	
KR4	2.04	3.98	0.04	0.05	<5	22	<5	<5						0.9	0.02	
KR5	5.41	>10.00	0.04	0.11	<5	37	8	<5						1.6	0.05	
KR6	2.71	5.54	0.04	0.07	<5	20	<5	<5						0.9	0.05	
MM1	0.25	0.92	0.69	0.17	15	20	<5	20								
MM2	0.62	1.63	0.76	0.18	16	30	6	24								
MM3	2.46	>10.00	1.64	0.87	12	336	8	64								
MM4	0.15	0.06	0.23	0.19	<5	64	<5	6								
MM5	8.49	>10.00	0.34	0.29	<5	>2000	<5	28								
MM6	2.59	1.17	0.05	0.02	<5	31	6	11								
MM7	0.14	0.41	0.14	0.28	<5	30	<5	19								
MM8	0.21	0.02	0.36	0.54	6	25	<5	44								
MM9	0.42	0.04	0.48	0.99	13	52	<5	74								
MM9	0.17	0.08	0.32	0.19	<5	320	<5	16								
MM10	0.61	0.03	0.30	0.35	6	20	<5	44								
MM10	0.07	0.05	0.45	0.35	6	22	<5	19								

Map no.	Mg %	Ca %	Na %	K %	Nb ppm	Sr ppm	Y ppm	Zr ppm	Au ppb	Pt ppb	Pd ppb	Ge ppm	Ag g/mt	U (fluoro) ppm	P205 %	BaSO4 %
MM11	1.04	8.06	0.79	0.88	9	212	8	61								
MM12	0.07	0.10	0.70	0.20	<5	>2000	<5	21								
MM13	0.76	3.88	0.10	0.33	<5	119	21	19								
MM14	7.23	>10.00	0.42	0.48	<5	853	31	34								
MM15	1.58	5.16	0.11	0.23	5	92	9	64								
MM16	1.30	4.05	0.68	0.87	7	134	<5	50								
MM17																
MM18	0.32	>10.00	0.04	0.04	<5	652	<5	<5								
MM19	0.18	0.31	0.14	0.28	<5	110	5	45								
MM20	2.32	>10.00	2.13	0.58	7	151	11	38								
MM21	3.09	4.40	2.97	0.49	6	189	8	37								
MM22	0.84	0.11	0.24	0.51	<5	628	10	64								
MM23	0.41	5.78	0.64	0.55	6	137	30	36								
MM24	0.32	>10.00	0.24	0.16	6	548	<5	40								
MM25	0.59	0.22	1.46	1.15	18	99	<5	97								
MM26	2.47	2.71	2.06	0.63	9	106	6	43								
MM27	2.76	8.18	1.97	0.51	<5	261	7	19								
MM28	0.37	>10.00	0.25	0.05	<5	297	<5	<5								
MM29	0.42	0.04	0.30	0.16	<5	73	5	25								
MM30	1.22	0.98	1.10	1.81	43	190	34	171								
MM31	0.39	0.03	0.29	1.13	5	71	8	48								
MM32	1.44	0.34	1.00	1.47	12	940	31	138								
MM32	1.15	0.30	0.96	1.47	12	784	21	123								
MM32	0.76	0.36	0.52	1.02	7	155	12	64								
MM33	0.65	0.82	0.18	0.22	<5	179	10	34								
MM34	0.40	1.05	0.71	1.33	34	153	12	112								
MM35	0.25	0.05	0.30	0.56	<5	57	<5	32								
MM36	1.75	1.16	0.62	0.51	17	82	16	60								
MM36	2.01	1.48	0.45	0.34	10	81	11	24								
MM37	0.32	0.03	0.18	0.72	<5	114	10	54								
MM38	0.80	1.60	0.41	0.32	<5	213	11	28								
MM39	7.54	>10.00	0.56	0.26	<5	1197	<5	11								
MM40	0.11	0.08	0.20	0.27	<5	97	7	23								
MM41	0.31	0.12	0.33	0.50	15	65	<5	44								
MM42	2.35	1.63	0.59	0.66	15	101	8	29								
MM42	0.38	>10.00	0.45	0.86	7	285	7	73								
MM43	0.16	0.50	0.13	0.13	<5	148	<5	15								
MM44	0.54	>10.00	0.28	0.85	<5	568	5	45								
MM44	0.58	>10.00	0.12	0.19	<5	1200	<5	10								
MM45	0.13	0.35	0.17	0.20	<5	30	<5	20								
MM46	0.51	0.40	0.16	0.66	<5	106	8	30								
MM47	0.90	1.30	0.14	0.42	<5	204	6	21								
MM48	0.11	0.04	0.08	0.15	<5	19	<5	11								
MM49	0.11	0.13	0.07	0.04	<5	16	<5	<5								
MM49	5.93	>10.00	0.55	0.81	<5	431	31	42								
MM50	0.15	0.05	0.13	0.44	<5	58	6	22								
MM51	1.70	1.68	1.30	1.38	19	81	6	80								
MM52	0.73	0.11	1.23	1.71	8	176	13	79								
MM53	0.65	0.13	0.26	0.57	<5	79	8	59								
MM53	0.92	0.13	0.51	1.46	10	142	12	111								
MM54	1.38	0.16	0.51	1.54	11	446	12	120								
MM55	0.47	0.06	0.42	0.58	<5	399	7	42								
MM56	0.31	0.15	0.32	0.47	<5	343	7	53								
MM56	0.66	0.21	0.32	0.43	<5	429	10	54								
MM57	0.85	0.11	0.27	0.83	5	136	9	42								
MM58	0.19	0.13	0.08	0.10	<5	1371	<5	9								
MM58	0.02	0.02	0.03	0.02	<5	26	<5	<5								
MM59	0.42	0.02	0.29	0.35	<5	309	6	40								
MM59	0.56	0.04	0.71	0.88	7	422	9	90								

Map no.	Mg %	Ca %	Na %	K %	Nb ppm	Sr ppm	Y ppm	Zr ppm	Au ppb	Pt ppb	Pd ppb	Ge ppm	Ag g/mt	U (fluoro) ppm	P205 %	BaSO4 %
MM59	0.34	0.05	0.61	0.29	<5	379	6	46								
MM59	0.43	0.07	0.61	0.57	5	472	7	67								
MM60	0.27	0.06	0.17	0.25	<5	340	<5	43								
MM61	0.50	2.42	0.41	0.19	<5	274	19	18								
MM62	0.01	>10.00	0.22	0.04	<5	>2000	136	7								
MM63	0.56	0.93	0.46	0.96	6	214	16	63								
MM64	0.31	0.97	1.48	0.67	<5	86	15	53								
MM65	0.44	0.24	0.37	1.07	8	114	12	88								
MM66	1.39	5.30	0.84	0.18	<5	778	8	20								
MM67	0.80	0.93	0.27	0.86	<5	341	20	34								
MM67	0.79	0.52	1.17	1.23	6	217	21	78								
MM67	0.85	0.52	0.21	0.80	<5	137	12	33								
MM67	1.65	1.81	1.24	1.76	10	242	29	98								
MM67	0.84	0.55	1.36	1.33	9	192	20	72								
MM68	0.94	0.60	0.23	0.89	<5	105	12	37								
MM68	0.83	0.40	0.53	1.45	12	38	16	41								
MM69	0.28	2.09	0.11	0.23	<5	45	9	19								
MM70	0.53	0.22	2.24	0.90	7	39	<5	62								
MM71	0.53	1.11	0.33	0.67	<5	107	11	59								
MM72	2.00	3.16	1.72	1.09	24	71	8	81								
MM73	0.95	0.25	1.03	1.79	13	171	20	121								
MM74	0.85	1.50	0.45	0.11	<5	424	22	12								
MM75	0.89	1.44	0.24	0.44	<5	84	10	33								
MM76	0.28	0.36	0.15	0.21	<5	71	5	19								
MM77	0.46	2.44	0.30	0.70	<5	94	13	56								
MM78	0.97	2.31	2.20	1.02	11	170	14	65								
MM79	1.54	4.19	3.65	0.85	15	182	20	92								
MM80	0.64	>10.00	0.12	0.23	<5	610	<5	10								
MM81	0.16	1.50	0.07	0.10	<5	63	10	9								
MM82	0.71	1.35	1.09	1.31	8	126	11	74								
MM83	0.02	0.01	0.04	0.04	<5	7	<5	<5								
MM84	4.67	6.57	3.63	0.26	8	352	16	32								
MM85	3.63	7.81	3.18	0.83	8	732	11	34								
MM86	4.66	>10.00	0.20	0.27	<5	>2000	13	11								
MM87	0.57	0.35	0.50	0.16	<5	81	8	38								
MM88	3.68	7.06	3.75	0.50	7	353	16	44								
MM89	0.70	1.38	2.11	0.68	8	66	<5	46								
MM90	0.36	0.02	0.46	0.92	7	73	6	58								
MM91	0.53	0.16	0.35	0.59	6	86	7	48								
MM92	0.02	0.28	0.04	0.04	<5	27	<5	6								
MM93	1.26	2.86	0.06	0.09	<5	105	8	7								
MM94	0.50	0.32	0.28	0.15	<5	184	12	40								
MM95	0.54	0.12	0.18	0.05	<5	494	<5	19								
MM96	0.11	0.03	0.16	0.11	<5	382	<5	30								
MM97	3.65	8.53	2.96	0.42	5	487	16	51								
MM98	0.18	0.35	2.18	1.31	<5	176	7	28								
MM99	0.19	1.35	1.79	1.60	5	173	13	47								
MM100	0.44	4.80	0.22	0.07	<5	403	75	<5								
MM101	5.11	6.40	2.46	0.88	8	319	17	11								
MM102	3.61	6.38	3.18	0.53	8	582	21	59								
MM103	5.21	8.44	3.06	0.40	9	542	16	41								
MM104	0.14	0.03	0.26	0.58	<5	23	6	23								
MM105	3.75	6.11	2.92	0.78	7	790	17	55								
MM106	8.29	>10.00	0.10	0.13	<5	108	<5	8								
MM107	0.40	>10.00	0.07	0.10	<5	117	7	<5								