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NEWFOUNDLAND AND LABRADOR
Department of Mines and Energy
Geological Survey

Till Geochemistry of the Gander map area

(NTS map sheet 2D/15)

Martin J. Batterson, David M. Taylor and Kevin Sheppard

OPEN FILE 2D/15/0398

St. John's, Newfoundland
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INTRODUCTION

Mapping of the Quaternary geology and associated sampling for till geochemistry was completed in the Gander Lake map area as part of ongoing efforts by the Geological Survey to provide complete till geochemistry coverage for at least the island portion of the province. This is a release of till geochemistry data from a limited number of samples collected in 1990. The associated text is from Batterson and Vatcher (1991). Data from this project will add to that collected from similar projects in the Bonavista Peninsula (Batterson and Taylor, 2001), Grand Falls – Mount Peyton area (Batterson *et al*., 1998), Hodges Hill area (Liverman *et al*., 2000) and the Buchans – Robert Arm Belt (Liverman *et al*., 1996).

LOCATION, ACCESS AND PHYSIOGRAPHY

The Gander map sheet (2D/15) is located in central Newfoundland, between 48° 45' and 49° 00' north latitude, and 54° 30' and 55° 00' west longitude (Figure 1). It contains the communities of Gander and Glenwood, both north of Gander Lake, but is otherwise uninhabited apart from scattered cabins. Access to most of the field area was reasonable. The area north of Gander Lake is covered by the Trans Canada Highway, and the road network around Gander. The southwest part of the area was accessible by all terrain vehicles via a logging road south of Glenwood. The Rodney Pond area was reached by all-terrain vehicle via the Mint Brook road from Gambo. The shoreline of Gander Lake was accessible by boat. Other areas, especially north of Rodney Pond, and between Hunt's Ponds and Rodney Pond, were not examined because they are only efficiently accessed by helicopter.

The Gander map area was divided into four geomorphological zones:

1) North of the Gander Lake basin, the contact between the Gander River Complex and Gander Group is marked by increasing elevations, from 150 m asl in the east to less than 110 m asl in the west. Topography underlain by Gander Group rocks is generally flat and featureless, compared to the irregular topography to the west. Surficial sediment is generally thin with numerous bedrock exposures, especially along the Trans Canada Highway. An exception is an area of till ridges oriented transverse to flow that occur in the Whitmans Pond area, north of Gander.

2) South of the Gander Lake basin is dominated by hilly topography, with elevations up to 250 m asl. Hillsides are commonly incised by small meltwater channels 5-10 metres wide and 2-3 metres deep. Streams drain the lowlands between hills, the larger streams being Hunts Brook and Fifteen Mile Brook. Surficial sediments are thicker, with rare bedrock outcrops. Till hummocks are common, especially in the bog covered lowlands south of Rodney Pond and around Hunt's Pond.

3) The west of the study area is dominated by glaciofluvial and alluvial sediments. The Southwest Gander river valley is about 6 km wide in the map area, having a flat, up to 1.5 km wide, valley floor. The valley contains eroded and terraced outwash up to an elevation of about 98 m asl, or 60 m above present river levels. Some sediment has been reworked by the present channel into an alluvial plain up to 1 km wide. Extensive outwash sediments occur around the Careless Brook valley, where terraces up to 40 metres high were noted. Meltwater outflow from the Southwest Gander and Careless Brook valleys and from the Northwest Gander river valley (southwest of map sheet) apparently flowed northward through The Outflow into the modern Gander River valley. A veneer of outwash sands and gravels overlying diamicton is common in this area and beach sediments up to 39 metres above Gander lake have been identified. Outwash sediments also fill the Hunt's Brook valley coming out of Hunt's Pond and entering Gander Lake at Hunt's Cove.

4) The dominant feature on the Gander map sheet is Gander Lake. The lake is 47 km long, an average of 1.9 km wide, has a surface area of 11,500 ha (Yoxall, 1981), and a

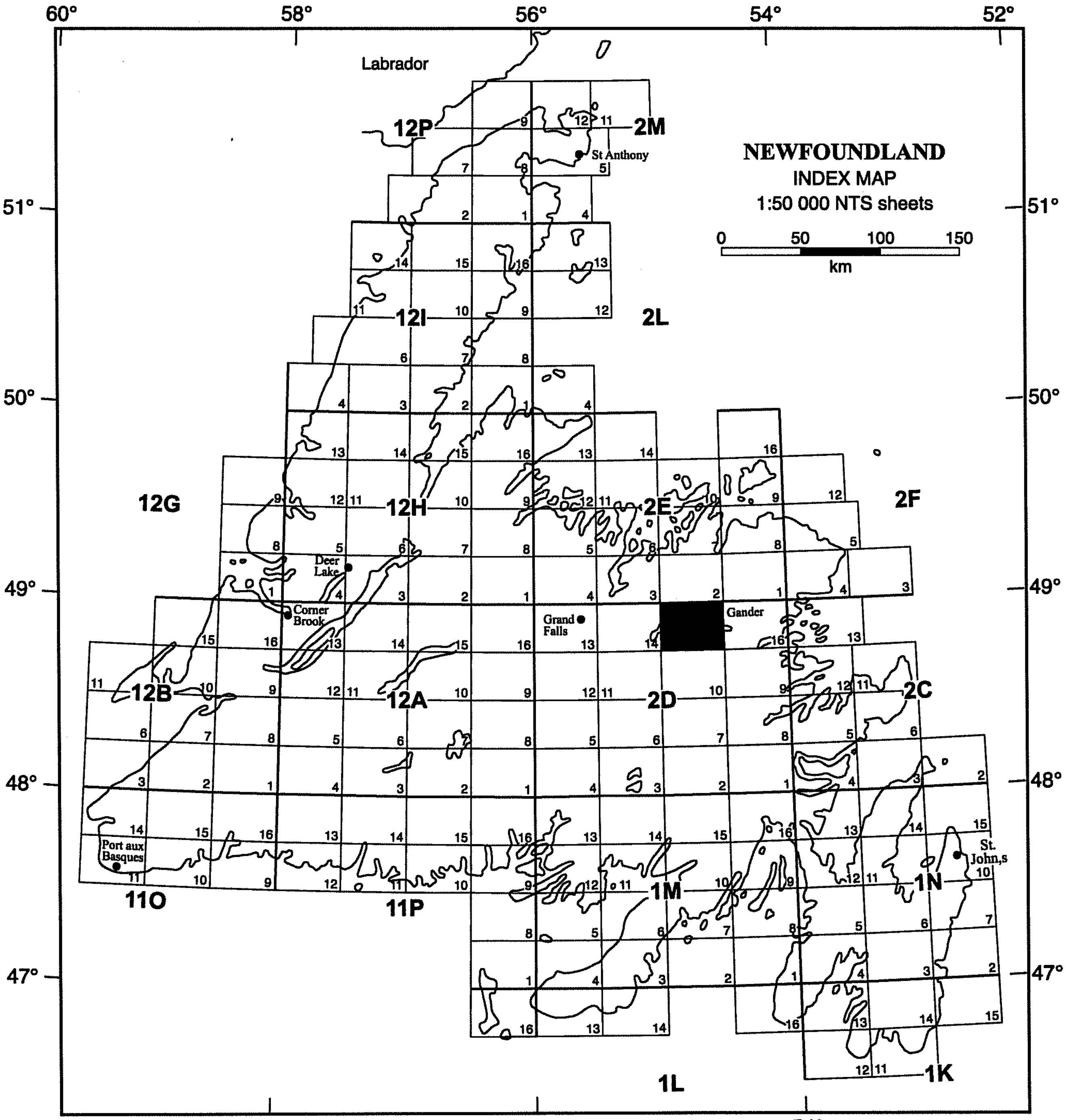

Figure 1. Index map.

surface elevation of 25 m asl. Although the bathymetry of the lake is unknown, Jenness (1960) reports soundings in the Fifteen Mile Brook area at a maximum of 274 m, or 249 m below present sea level. Murray (1882) reports sounding depths of 123 m off King's Point, decreasing to 93 m in the Northwest Brook Cove and 27 m at the extreme eastern end of the lake. Jenness (1960) suggests that the lake is a fjord of glacial origin, being aligned with known palaeo-ice flow directions, and having an outlet to the sea through a presently outwash-filled valley to the east. To the south of the lake hills rise to about 213 m asl, giving a maximum relief of at least 487 m for the trough. The Gander Lake basin contains little evidence of glaciofluvial or fluvial activity to the west of King's Point. The lake shore is dominated by bedrock, and valley sides are mostly composed of a till veneer or bedrock with a thin vegetation cover. Exceptions are thicker colluvial sediment on the north shore of the lake in the Gander area and extensive areas of glacial sediment found to the east of Fifteen Mile Brook. The hillside in this area is composed of diamicton, dissected by numerous closely spaced meltwater channels. Two small eskers were also identified on the aerial photographs in this area.

BEDROCK GEOLOGY

The study area straddles the boundary between the Gander and Dunnage tectonostratigraphic zones (Williams *et al.*, 1974; Figure 2). The Gander Zone constitutes the eastern part of the area and consists of a north-northeast trending belt of Ordovician quartz-rich sandstones, siltstones, pelites, semi-pelites, psammites and volcanic rocks of the Gander Group (Blackwood, 1982). The Dunnage Zone to the west comprises Middle Ordovician quartz-poor sandstone, shale, siltstone and conglomerate rocks of the Davidsville and Botwood groups, which non-conformably overly the Gander Group. The boundary between the two zones is faulted and has been previously known as the GRUB (Gander River Ultrabasic Belt), although the replacement term of Gander River complex was proposed by O'Neill and Blackwood (1989). Rocks of the Gander River complex are mainly composed of pyroxenite, which has been locally serpentinised, but also include local exposures of carbonate, talc, and gabbro. These rocks are exposed over a width of 3 km north of Gander Lake, but only in restricted areas between Gander Lake and Hunt's Pond to the south.

Both the Gander and Dunnage zones are intruded by a number of Devonian age granitic plutons (Figure 2). The granitic plutons exposed in the area have distinctive characteristics. To the west, granite of the Mount Peyton intrusive suite is a fine to medium grained, equigranular, pink to red weathering granite (Blackwood, 1982). Gabbro intrusions are commonly associated with this unit. The Middle Ridge granite in the south is generally a medium to coarse grained, muscovite-biotite, white to pale pink weathering granite. A granite in the Gillinghams Pond area is similar in character, except that biotite rarely occurs (O'Neill, 1990). Small plutons of this un-named granite occur to the west and northwest of Rodney Pond. The western part of the area is underlain by the Gander Lake granite, which contains potassium feldspar megacrysts in a biotite, quartz and feldspar matrix (O'Neill, 1990).

Historically, the main focus of mineral exploration in the area has been the ultramafic and associated rocks of the Gander River complex. Numerous asbestos, chromite and base metal showings have been identified (Newfoundland Department of Mines and Energy, 1984), following initial work by the Newfoundland and Labrador Corporation Limited (NALCO) in the 1950's (Blackwood, 1982). More recently, exploration activity has centred on gold and stibnite occurrences within sediments of the Davidsville Group. O'Neill (1990) postulated that the Gander Group sediments in this area and the aureoles around granitic intrusions may host precious metals.

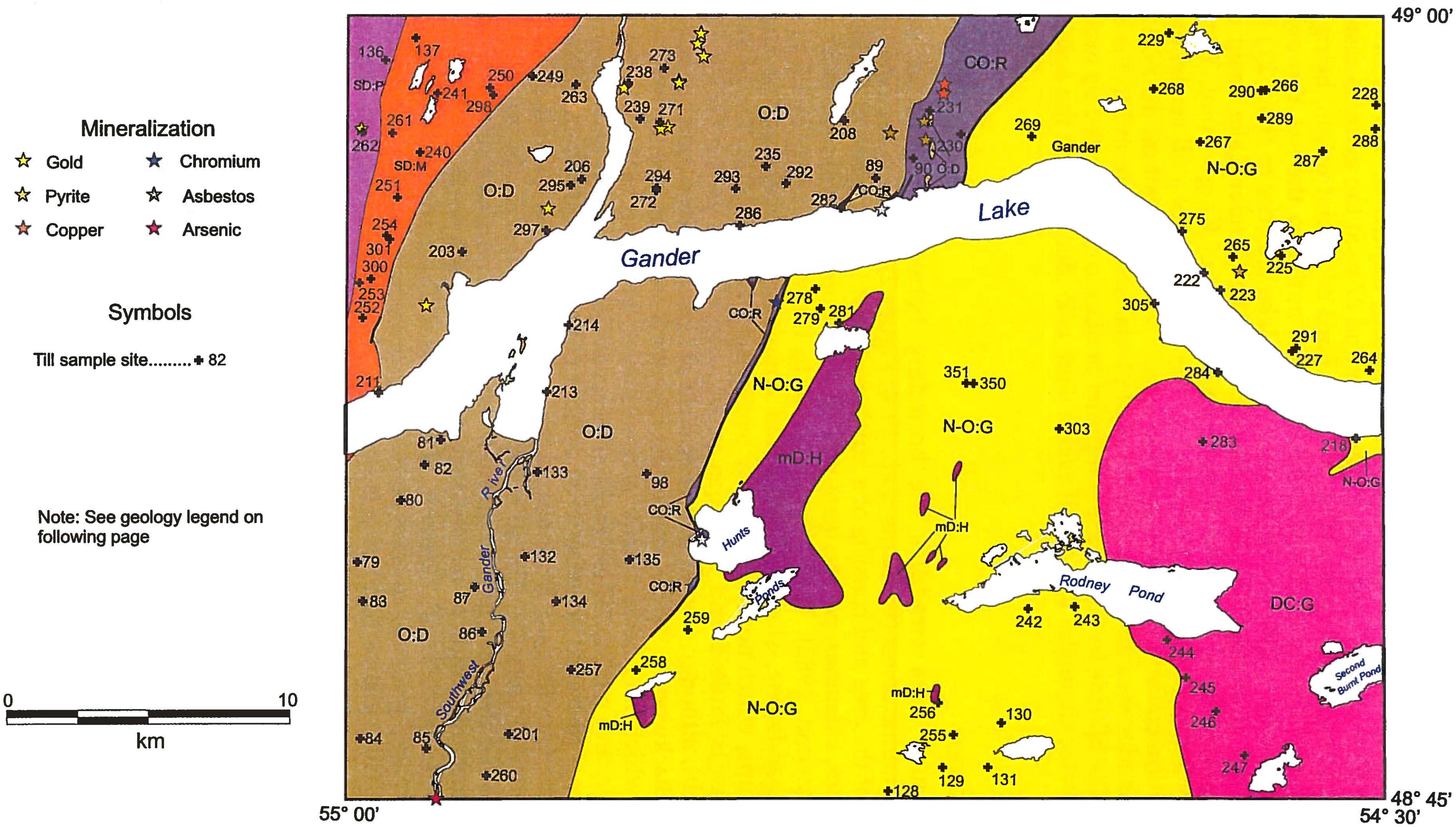

Figure 2. Bedrock geology and distribution of till sample sites.

Late Devonian to Mississippian

Gander Lake Granite

DC:G Massive, megacrystic, medium- to coarse-grained, biotite granite

Middle Devonian

Hunts Ponds Granite

mD:H Foliated, equigranular, muscovite-biotite-garnet granite

Early Silurian to Early Devonian

Mount Peyton Intrusive Suite

SD:P Equigranular, biotite granite and minor granodiorite; equigranular, mainly hornblende and pyroxene gabbro; diabase dykes

Ten Mile Lake formation

SD:M Purple to crimson shale interbedded with thin, pink sandstone beds and a few thick, pink to grey-green sandstone beds

Early to Late Ordovician

Davidsville Group

O:D Shale and thinly bedded siltstone and sandstone, probably representing distal turbidites; thickly bedded sandstone and minor shale and conglomerate, probably representing more proximal turbidites; minor limestone and felsic and mafic volcanic rocks

Late Cambrian to Early Ordovician

Gander River Complex

CO:R Ophiolite complex that includes pyroxenite, serpentinite, magnesite, gabbro, talc/tremolite zones, mafic flows and volcaniclastic rocks, trondhjemite and quartz porphyry

Neoproterozoic to Middle Ordovician

Gander Group

N-O:G Quartzitic sandstone, siltstone and shale and metamorphic equivalents; conglomerate, black shale and minor pillow lava

Glacial Geology

The Gander area straddles the 'inner' and 'outer drift zones' of Jenness (1960). The boundary between the two is marked by a discontinuous, boulder till moraine, although it is obscured in the Gander area due to the heavy vegetation cover (Jenness, 1960). Jenness suggests that this zonation evolved as a result of rapid retreat of ice from its terminal positions on the northeast coast to a major stillstand position marked by the moraine. The outer drift zone is characterised by thin ground moraine of local origin and glaciofluvial sediments in valleys flowing out from the inner drift zone area. Subsequent climatic amelioration led to final retreat of inland ice, much of which stagnated. The inner drift zone area is characterised by thick, locally-derived ground moraine, having a hummocky or ribbed surface topography. Jenness's description has largely been unchallenged since its publication. Lundqvist (1965) recorded several striations in the area, and Vanderveer and Taylor (1987), St. Croix and Taylor (1990) and Taylor and St. Croix (1989) described ice-flow patterns as showing an early eastward and a later north to northeastward flow.

SURFICIAL GEOLOGY

Ice-Flow History

The glacier erosional evidence (mostly striations) suggests at least two major flows affected the area. The first was generally eastward (100±20°) and is found across the whole area. In sites where two flows are encountered, the east flow is always preserved in the lee of, or crosscut by, a later ice flow that is generally north-northeastward (020±20°). The influence of Gander Lake is difficult to assess. The poor striation preservation potential on the metasediments that surround the lake shore means little striae data was derived from this area. The early flow parallels the lake in its central part and some valley-parallel striae are found in the southeast oriented part of the lake. Ice contact gravels and esker ridges identified in the Butts Pond area (Vanderveer *et al.*, 1987) at the eastern end of the lake suggests ice flowed through this area and into the sea. The later flow roughly parallels the Southwest Gander river valley and The Outflow in the west, but obliquely crosses Gander Lake in the east.

Similar ice-flow directions to those described above have been recorded to the south-west of the area by Proudfoot *et al.* (1988) on the Northwest Gander River map sheet (2D/11), and by St. Croix and Taylor (1990) to the west. A general southward flow across the Gander Lake area from a source in the Long Range Mountains postulated by St. Croix and Taylor (1990), based on southeastward directed striae on the north coast was only substantiated at one site, to the north of Gander Lake. Well oriented clast fabrics (i.e., $S1 \geq 0.7$ and $K \geq 1.0$) that may be indicative of ice flow directions (Harrison, 1957; Lawson, 1981; Dowdeswell and Sharp,1986; Woodcock, 1977) are generally consistent with the erosional data. Most have a roughly north-south orientation (350 ± 30°), although several show trends perpendicular to last ice flow (see Batterson et al, 1990 for more detail). These may either represent preservation of the earlier ice flow event or transverse fabrics from the later flow.

Surficial Mapping

Surficial mapping has been completed (Batterson, 1999). The focus of sedimentologic work was on diamictons, because these are the sediments most used in mineral exploration studies in drift covered areas. Detailed descriptions were made from north of Gander Lake (Batterson and Vatcher, 1991). South of the lake, where thicker drift is found, had few natural exposures and was beyond the time constraints of the backhoe. In this area only inferences about sediment characteristics can be made. Other major sediment types in the area are also described.

DIAMICTONS

The major sediment type in the area is a reddish-brown to grey, sandy diamicton. Reddish-brown diamictons are generally confined to the west of the area, the colour likely being derived from the red sediments of the Botwood Group (Blackwood, 1982). In the areas underlain by Gander Group sediments, diamictons are generally grey. Diamictons throughout the map area have a similar sand dominated matrix. The lack of variation is likely due to the consistency of bedrock that forms the bulk of the matrix. Field estimates of the clast content of diamictons vary between 30 and 75 percent, with an average of about 50 percent. Clast-to-clast contacts are common in the coarser grained diamictons. Occasionally, fragile clasts (e.g., well bedded, soft, shale) were found within the diamicton. Although grain size distributions have not been completed on these samples, diamictons in the area appear to be poorly sorted.

Diamictons are commonly slightly to highly compact, the degree of compaction being increasingly proportional to the fines content of the unit. Clasts are pebble to cobble sized; boulders account for less than 10 percent of clasts by volume. Clasts are generally sub-angular to sub-rounded, the degree of roundness mainly being related to the rock type. Granite clasts are commonly sub-rounded because of their hardness and texture. Metasediments are generally sub-angular. Similarly, preservation of abrasion features on clasts is related to rock type. Fine grained, hard, rock types (e.g., siltstones, rhyolites) are commonly striated in diamictons in the Gander area. Coarser grained, softer rock types (e.g., metasediments) rarely preserve striations. The upper surface of clasts commonly have a thin (< 0.2 mm) silt to fine sand coating that is difficult to remove by washing. Clast fabrics are variable. Strong fabrics (i.e., those with an S1 > 0.6 and K > 1.0) show clast orientations generally consistent with the last phase of ice movement (Batterson *et al.*, 1990).

In small exposures, or where moist, the diamictons appear massive. However, in larger exposures, particularly those which have been exposed for some time, sedimentary structures were found. Beneath cobbles and boulders a thin (2-5 grains thick) layer of sand or granule gravel is common, and rarely, oval lenses of moderately sorted sand and granule gravel were noted. Sub-horizontal to horizontal fissility is common.

The characteristics of diamictons outlined above are generally consistent with a subglacial meltout till origin (Dowdeswell and Sharp, 1985; Dreimanis, 1988; Lawson, 1981; Shaw, 1982). The striated clasts, their sub-rounded form and well oriented clast fabrics is indicative of basal transport. The presence of sorted layers beneath clasts and throughout diamicton units suggests the presence of water during deposition, and the presence of fragile clasts indicates a passive depositional process. In meltout tills, the clast fabric is inherited from the glacial transport process (Dreimanis, 1988) and is therefore commonly parallel to ice movement. Lawson (1981) however, notes the susceptibility of meltout tills to resedimentation during and following deposition which weakens clast fabrics. This could explain the variability of clast fabric noted in diamictons in this area that otherwise appear similar.

Glaciofluvial and Glaciolacustrine Sediments

Glaciofluvial sediments are common in valleys across the area. The areally largest deposits are within the Southwest Gander River valley, and within the area of The Outflow into modern Gander River. Thick exposures of sediment are rare, but where found they have a similar stratigraphy. Two terrace scarps within the Southwest Gander River valley, one 10 m and the other 20 m high and up to 50 m wide, show a basal unit of >5 m thick of moderate to well sorted, coarse to medium sand. This unit has interbeds of well-sorted coarse or medium sand, and has planar tabular cross bedding, with the direction of flow consistent with modern drainage (northward). This unit coarsens upwards into a 2-4 m thick sandy pebble gravel. The gravel has a 50-80 percent clast content, with sub-rounded to rounded, pebble to cobble clasts, of mixed rock types. The matrix is medium to coarse sand, with a silt/clay content of about 10 percent. Discontinuous beds of moderately sorted sands or granule gravels are common, especially beneath clasts. The beds are irregularly shaped, although roughly horizontal, and are up to 5 cm diameter and 2 cm thick. In abandoned borrow pits in the Hunt's Ponds area these beds were steeply dipping (40°). The B soil horizon is commonly cemented (orthic). Sediment similar to the upper sandy gravel is commonly exposed in glaciofluvial terrain across the area, up to 60 m above current river levels. Well-sorted sands and gravels are relatively rare, and apart from the Southwest Gander River valley were only found in the Careless Brook valley and in the Fifteen Mile Brook valley in an abandoned gravel pit.

Poorly sorted sands and gravels are consistent with deposition within glacial meltwater streams, which characteristically have rapid changes in discharge (Sugden and John, 1979). Similarly, steeply dipping beds of the type found at Hunt's Ponds are consistent with deposition in an ice contact environment (Sugden and John, 1979). However, the presence of thick, well sorted, cross bedded sands is puzzling, because they are atypical of glaciofluvial outwash environments. It is possible that these sediments reflect deposition within a sandy fluvial system (Walker and Cant, 1984), or deposition within a delta (Miall, 1984).

In the area of The Outflow glaciofluvial sediments commonly overlie diamictons, up to an elevation of about 60 m asl, or 35 m above the current river level. Glaciofluvial deposits at this elevation were not found elsewhere around the margins of Gander Lake. At Hunts Cove an outwash terrace associated with flow out of Hunts Brook is 5 m above current lake level, a similar elevation to deposits at the mouth of Fifteen Mile Brook. Much of the area between modern valleys along the lake exposes either diamictons or colluvium. Boulders along the lake shore are angular and of local provenance. This contrasts with The Outflow area where boulders are commonly rounded and of mixed rock types. This evidence suggests that water levels were higher in the area of The Outflow than elsewhere on Gander Lake.

Colluvial Sediments

On the north shore of Gander Lake, particularly in the vicinity of Gander and on the south shore in the area of Bluff Head, sediments interpreted as colluvium were found. Both these areas lie at the base of steep slopes. Sediment forms 3-4 m bluffs in these areas is composed of a clast-rich diamicton. Matrix is fine sand, with a silt/clay content of 10-15 percent, and forms 30 percent or less of the sediment. Clasts are pebble to cobble size, sub-angular to angular, and almost entirely of local origin. The unit is commonly clast supported, with clasts apparently dipping parallel to the slope. On the shore of Gander Lake, about 2 km southeast of Gander at the pumping station, colluvial sediments have incorporated at least 2 organic-rich horizons.

GLACIAL DISPERSAL PATTERNS

The glacial history of the Gander area is, as yet, poorly understood. The area has been affected by at least two glacial-flow events. The first was from a source to the west, and is consistent with regional ice-flow patterns described by St. Croix and Taylor (1990, this volume). This flow event transported sediment up to 25 km, although most material was probably transported less than 2 km. This eastward moving ice flow was parallel to Gander Lake, at least in its western part, and suggests that the lake has been modified or formed by glacial action. The depth of the lake, the eastern outlet valley that leads to Freshwater Bay, and its orientation with regards to palaeo-ice flow directions led Murray (1882) and Jenness (1960) to speculate that the lake is a fjord. It can be further speculated that Gander Lake was open to the sea at the onset of the last glacial period. No depositional evidence was found to support this suggestion, although it is likely that such evidence would lie below the current water level of the lake. The most recent flow direction, as shown by striae, clast provenance and fabrics, was generally north-northeastward, transverse to the lake. It is likely the Gander Lake valley was ice filled at this time.

As deglaciation proceeded, ice retreated towards the higher land to the south of the lake. Many of the glacial meltwater channels in this area were probably cut at this time. The Northeast and Southwest Gander River valleys acted as major conduits of meltwater drainage, containing streams that deposited sediments up to 60 m above the current river levels. Smaller valleys such as Careless Brook, Joe Batts Brook, and Salmon River also carried glacial meltwater. In the area of The Outflow higher water levels are shown by waterlain sediments near Lukeman Head, and the possible existence of deltaic deposits in the Southwest Gander River valley. The lack of these deposits to the east of Kings Point suggests that higher water levels did not extend to this area, possibly because the lake was ice filled at this time. However, it is also possible that higher water levels were the result of marine incursion. Raised marine features on the coast have not been examined in detail, but Grant (1980) reports late Wisconsinan marine limits near Musgrave Harbour on the north coast at 43 m asl, Marine limit at the coast at the eastern end of the lake has been reported at about 30 m asl (Jenness,1960; Grant, 1980), although it is difficult to explain the presence of ice contact sands and gravels, and eskers in the outlet valley at the eastern end of the lake if filled by marine water. Higher water levels drained through the modern Gander River valley. Remnant ice in Gander Lake stagnated, as did ice to the south of the lake. The Hunt's Brook and Fifteen Mile Brook valleys were meltwater conduits at this time.

During the Holocene, organic deposits developed in the poorer drained areas, and colluvial deposits formed at the base of the steeper slopes. Both these processes continue today, although vegetated slopes have retarded the rate of colluviation.

Implications for Mineral Exploration

Despite common erratics identified as originating from the Mount Peyton area to the west, transported by eastward flowing ice, evidence from striations and from clast fabrics suggests that the last sediment-moving ice flow event was north to north-northeastward. Most diamictons in the area have been interpreted as basal meltout tills. The sediment comprising basal meltout tills are, in general, further transported than a lodgement till (Dreimanis, 1988), but the clasts suggest that it is representative of the local bedrock, and is therefore a suitable sampling medium. Surface clast-rich diamictons however, should be avoided. These have been interpreted as supraglacial sediments, which are largely composed of far-travelled sediment. Glaciofluvial sediments should be avoided in any routine sampling program, as the sediment is derived through a fluvial transport system that may carry material long distances from its source. Colluvial sediments should not be sampled in association with diamicton samples, because of the differing transport histories. Colluvium is derived through slope processes, and therefore samples will be reflective of the up-slope, rather than up-ice direction.

Overall, the glacial history of the Gander area is complex. Mineral exploration activity in drift covered areas should identify the genetic environment of samples to examine their suitability to drift exploration programmes. Failure to do so may result in erroneous conclusions regarding the potential source of geochemical or float anomalies in the surficial environment.

GEOCHEMISTY

SAMPLING AND SAMPLE PREPARATION METHODS

Sediment sampling was from a small number of sites across the Gander Lake map area, guided by the surficial geology. Marine and fluvial/glaciofluvial sediment was avoided during the sampling programme. Most samples were BC- or C-soil horizon samples from tills, although in rare cases the lack of surface sediment necessitated the sampling of bedrock detritus. A total of 99 samples were collected. In the field, samples were placed in kraft-paper sample bags, and sent to the Geological Survey's Geochemical Laboratory in St. John's, where they were air-dried in ovens at 40°C and dry-sieved through 63 µm stainless steel sieves. The < 63 µm till fraction was used for geochemical analysis.

GEOCHEMICAL ANALYSIS

Analytical work was carried out at the Geological Survey's Geochemical Laboratory, with additional analyses from a commercial laboratory. The appended data listings contain all the field and analytical data from the till survey. To distinguish the different analytical methods/laboratories, the trace element variables are labeled with a combination of the element name, a numeric code and the unit of measurement.

A complete list of variables is given in Table 1, and a full listing of field and geochemical data is contained in Appendix B.

ANALYTICAL METHODS

Atomic absorption spectrophotometry (AAS)

Silver (Ag6) was determined on 0.5g aliquots of sample following digestion in 2 ml of concentrated HNO3 overnight at room temperature, and then in a water bath at 90°C for 2 h (Wagenbauer et al., 1983). For till the results maybe somewhat less than total.

Gravimetric Analysis (LOI)

Organic carbon content was estimated from the weight loss on ignition (LOI) during a controlled combustion in which 1g aliquots of sample were gradually heated to 500°C in air over a 3 h period. Accuracy can be judged from the results for reference materials (Table 2).

Inductively coupled plasma emission spectrometry (ICP)

For these analyses, the residue of the 1g aliquot of sample remaining from the LOI determination at 500∞C was digested in a mixture of 15mL of concentrated HF, 5mL of concentrated HCl and 5 mL of 50 volume percent HClO4 in a 100 mL teflon beaker, which was allowed to stand overnight before being heated to dryness on a hot-plate. The residue was taken up in 10 volume percent HCl by gentle heating on the hot plate, allowed to cool and made up to 50 mL with 10 volume percent HCl (Wagenbauer et al., 1983). For most elements dissolution is total; exceptions are Cr from chromite, Ba from barite and Zr from zircon as these minerals are not usually completely dissolved. Accuracy can be judged from the results for reference materials (Table 2).

The following elements were determined:

Aluminium, barium, beryllium, calcium, cerium, cobalt, chromium, copper, dysprosium, iron, gallium, potassium, lanthanum, lithium, magnesium, manganese, molybdenum, sodium, niobium, nickel, phosphorus, lead, scandium, strontium, titanium, vanadium, yttrium, zinc and zirconium (Al2, Ba2, Be2, Ca2, Ce2, Co2, Cr2, Cu2, Dy2, Fe2, Ga2, K2, La2, Li2, Mg2, Mn2, Mo2, Na2, Nb2, Ni2, P2, Pb2, Sc2, Sr2, Ti2, V2, Y2, Zn2 and Zr2, respectively)

Instrumental neutron activation analysis (INAA).

These analyses were carried out at Activation Laboratories Ltd., Ancaster, Ontario. On average 24g of sample was used for analysis, and the samples (with duplicates and control reference materials included incognito) were weighed and encapsulated in the Geochemical Laboratory of the Department of Mines and Energy in St. John's. Total contents of the following elements were determined quantitatively: silver, arsenic, gold, barium, bromine, calcium, cerium, cobalt, chromium, cesium, europium, iron, hafnium, mercury, iridium, lanthanum, lutetium, molybdenum, sodium, neodymium, nickel, rubidium, antimony, scandium, selinium, samarium, tin, strontium, tantalum, terbium, thorium, uranium, tungsten, ytterbium, zinc and zirconium. (Ag1, As1, Au1, Ba1, Br1, Ca1, Ce1, Co1, Cr1, Cs1, Eu1, Fe1, Hf1, Hg1, Ir1, La1, Lu1, Mo1, Na1, Nd1, Ni1, Rb1, Sb1, Sc1, Se1, Sm1, Sn1, Sr1, Ta1, Tb1, Th1, U1, W1 Yb1, Zn1, and Zr1 respectively).

QUALITY CONTROL

Data quality was monitored using laboratory duplicates (analytical precision only). Accuracy estimates are provided by the results from standard reference materials analysed with them (Tables 2 and 3). It should be emphasized that for mineral exploration, the relative variation of an element is of primary concern. Of the 44 elements determined, 15 were determined by both ICP and INAA (As, Ba, Ca, Ce, Co, Cr, Fe, La, Mo, Na, Ni, Sc, Sr, Zn, Zr), and two by INAA and AAS (Ag, Rb). To reduce the size of the data for presentation and statistical analysis, for these 17, the data from the method with the best quality determined from comparison with laboratory and field duplicates have been used (Ag6, As1, Ba2, Ca2, Ce2, Co2, Cr2, Fe2, La2, Mo2, Na2, Ni2, Rb6, Sc2, Sr2, Zn2, Zr2), although all are presented in the data listing (Appendix A). Duplicate and control data is not included in this report, but are available on request.

STATISTICAL ANALYSIS – FREQUENCY DISTRIBUTIONS

The frequency distributions of the geochemical data were examined using the program UNISTAT (Nolan, 1990), which provides histograms and cumulative frequency plots (cfp) and provides summary statistics (mean, geometric mean, standard deviation, coefficient of variation and range). Arithmetic data was plotted, and from the cumulative frequency plots (Appendix D, the breaks in slope of the curves were used to subdivide the element values into 4-6 natural population groups. These groups are represented by symbols that increase in size with increasing element levels in Figure 3 to 9.

INTERPRETATION OF GEOCHEMICAL DATA

Dot plot maps of selected elements (As, Au, Cu, Ni, Pb, Sb, and Zn) are presented in Figures 3 to 9. Other element plots are not presented in this open file, but are available on request. In view of the small number of samples collected (99) no interpretation of the data is attempted within this report. Individuals and companies are encouraged to undertake their own interpretation of the presented data.

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Table 1.Variable list and description of data.

VARIABLE	DESCRIPTION
Sample	Unique sample ID
NTS	NTS sheet (1:50 000)
Easting	UTM map coordinate
Northing	UTM map coordinate
Al2 pct	Aluminium, %, by ICP
As2	Arsenic, ppm, by ICP
Ba2 ppm	Barium, ppm, by ICP
Be2 ppm	Beryllium, ppm, by ICP
Ca2 pct	Calcium, %, by ICP
Cd2 ppm	Cadmium, ppm, by ICP
Ce2 ppm	Cerium, ppm, by ICP
Co2 ppm	Cobalt, ppm, by ICP
Cr2 ppm	Chromium, ppm, by ICP
Cu2 ppm	Copper, ppm, by ICP
Dy2 ppm	Dysprosium, ppm, by ICP
Fe2 pct	Iron, %, by ICP
K2 pct	Potassium, %, by ICP
La2 ppm	Lanthanum, ppm, by ICP
Li2 ppm	Lithium, ppm, by ICP
Mg2 pct	Magnesium, %, by ICP
Mo2 ppm	Molybdenum, ppm, by ICP
Mn2 ppm	Manganese, ppm, by ICP
Na2 pct	Sodium, %, by ICP
Nb2 ppm	Niobium, ppm, by ICP
Ni2 ppm	Nickel, ppm, by ICP
P2 ppm	Phosphorus, ppm, by ICP
Pb2 ppm	Lead, ppm, by ICP
Sc2 ppm	Scandium, ppm, by ICP
Sr2 ppm	Strontium, ppm, by ICP
Ti2 ppm	Titanium, ppm, by ICP
V2 ppm	Vanadium, ppm, by ICP
Y2 ppm	Yttrium, ppm, by ICP
Zn2 ppm	Zinc, ppm, by ICP
Zr2 ppm	Zirconium, ppm, by ICP
As1 ppm	Arsenic, ppm, by INAA
Au1 ppb	Gold, ppb, by INAA
Ag1 ppm	Silver, ppm, by INAA
Ba1 ppm	Barium, ppm, by INAA
Br1 ppm	Bromine, ppm, by INAA
Ca1 pct	Calcium, %, by INAA
Ce1 ppm	Cerium, ppm, by INAA
Co1 ppm	Cobalt, ppm, by INAA
Cr1 ppm	Chromium, ppm, by INAA
Cs1 ppm	Cesium, ppm, by INAA

Eu1 ppm	Europium, ppm, by INAA
Fe1 pct	Iron, %, by INAA
Hf1 ppm	Hafnium, ppm, by INAA
Hg1 ppm	Mercury, ppm, by INAA
Ir1 ppm	Iridium, ppm, by INAA
La1 ppm	Lanthanum, ppm, by INAA
Lu1 ppm	Lutetium, ppm, by INAA
Mo1 ppm	Molybdenum, ppm, by INAA
Na1 pct	Sodium, %, by INAA
Nd1 ppm	Neodymium, ppm, by INAA
Ni1 ppm	Nickel, ppm, by INAA
Rb1 ppm	Rubidium, ppm, by INAA
Sb1 ppm	Antimony, ppm, by INAA
Sc1 ppm	Scandium, ppm, by INAA
Se1 ppm	Selenium, ppm, by INAA
Sm1 ppm	Samarium, ppm, by INAA
Sn1 ppm	Tin, ppm, by INAA
Sr1 ppm	Strontium, ppm, by INAA
Ta1 ppm	Tantalum, ppm, by INAA
Tb1 ppm	Terbium, ppm, by INAA
Th1 ppm	Thorium, ppm, by INAA
U1 ppm	Uranium, ppm, by INAA
W1 ppm	Tungsten, ppm, by INAA
Yb1 ppm	Ytterbium, ppm, by INAA
Zn1 ppm	Zinc, ppm, by INAA
Zr1 ppm	Zirconium, ppm, by INAA
Ag6 ppm	Silver by AAS
Rb6 ppm	Rubidium by AAS
LOI pct	Loss-on-ignition, %, gravimetric
Site	Sample site number
Zone	UTM zone
Horizon	Soil horizon sampled
Depth	Sample depth (cm)

Table 2. Accuracy, till geochemical data by ICP, AAS and gravimetry. Results of analyses of CANMET Reference samples TILL-1 to 4 Observed values (Obs.) are compared against recommended values (Rec). Recommended values are from Govindaraju (1994). N=2 for Till-1 and Till-2. N=1 for Till-3 and Till-4.

		TILL-1		TILL-2		TILL-3		TILL-4	
		Obs.	Rec.	Obs.	Rec.	Obs.	Rec.	Obs.	Rec.
Al2	**Wt %**	6.8	7.3	8	8.5	6.15	6.5	7.29	7.6
Ba2	**ppm**	717	702	547	540	497	489	398	396
Be2	**ppm**	1.4	2.4	3.3	4.0	1.2	2.0	3.0	3.7
Ca2	**Wt %**	1.73	1.94	0.81	0.91	1.73	1.88	0.8	0.89
Cd2	**ppm**	0.1	?	0.2	?	0.0	?	0.1	?
Ce2	**ppm**	62.5	71	87.5	98	36	42	74	78
Co2	**ppm**	20	18	16	15	16	15	9	8
Cr2	**ppm**	59.5	65	67	74	108	123	43	53
Cu2	**ppm**	49.5	47	167	150	22	22	260	237
Dy2	**ppm**	4.5	?	3.8	?	2.3	?	3.5	?
Fe2	**Wt %**	4.85	4.81	3.84	3.84	2.77	2.78	3.99	3.97
K2	**Wt %**	1.77	1.84	2.31	2.55	1.89	2.01	2.43	2.70
La2	**ppm**	29	28	47	44	20	21	44	41
Li2	**ppm**	15.9	15	47	47	22.3	21	30.6	30
Mg2	**Wt %**	1.25	1.30	1.08	1.1	1.01	1.03	0.74	0.76
Mn2	**ppm**	1520	1420	758	780	503	520	458	490
Mo2	**ppm**	1	2	14	14	1	16.9	16	
Na2	**Wt %**	2.05	2.01	1.7	1.62	2.02	1.96	1.83	1.82
Nb2	**ppm**	9	10	17	20	6	7	14	15
Ni2	**ppm**	20	24	29	32	37	39	14	17
P2	**ppm**	967	930	747	750	491	490	927	880
Pb2	**ppm**	16.5	22	25.5	31	21	26	44	50
Sc2	**ppm**	13.9	13	12.2	12	10.2	10	11	10
Sr2	**ppm**	303	291	149	144	310	300	118	109
Ti2	**ppm**	5379	5990	5198	5300	2906	2910	4967	4840
V2	**ppm**	110	99	86	77	66	62	74	67
Y2	**ppm**	29	38	20.5	40	14	17	18	33
Zn2	**ppm**	94	98	124	130	54	56	71	70
Zr2	**ppm**	115	502	110	390	90	390	103	385
Rb6	**ppm**	36		137		47		153	
Ag6	**ppm**	0.1	0.2	0.2	0.2	1.3	1.6	0.2	<0.2
LOI	**Wt %**	6.2	6.3	6.6	6.8	3.7	3.6	4.4	4.4

Table 3. Accuracy of till geochemical data by INAA. Results of analyses of CANMET Reference samples TILL-1 to 4.Observed values (Obs.) are compared against recommended values (Rec). Recommended values are from Govindaraju (1994). N=2 for Till-1 and Till-2. N=1 for Till-3 and Till-4.

		TILL-1			**TILL-2**			**TILL-3**			**TILL-4**	
		Obs.	Rec.		Obs.	Rec.		Obs.	Rec.		Obs.	Rec.
As1 ppm		18	18		26.5	26		79	87		110	111
Au1 ppb		11.5	13		4	2		2	6		3	5
Ba1 ppm		675	702		535	540		450	489		410	395
Br1 ppm		5.5	6.4		11.5	12.2		3.9	4.5		8.4	8.6
Ca1 Wt %		1			-1			1			-1	
Ce1 ppm		66	71		95.5	98		33	42		75	78
Co1 ppm		17	18		14.5	15		13	15		8	8
Cr1 ppm		62	65		73.5	74		110	123		46	53
Cs1 ppm		0	1.0		10	12.0		2	1.7		10	12.0
Eu1 ppm		1.85	1.3		1.5	1.0		1	0.5		1.4	0.5
Fe1 Wt %		48.7	4.8		4	3.8		2.6	2.8		4	4.0
Hf1 ppm		12	13.0		10	11.0		5	8.0		10	10.0
La1 ppm		30.5	28		53	44		20	21		48	41
Lu1 ppm		0.68	0.6		0.64	0.6		0.25	<0.5		0.59	0.5
Mo1 ppm		-1	<5		15	14		-1	<5		21	16
Na1 Wt %		2.18	2.01		1.85	1.62		2.0	1.96		2.0	1.82
Nd1 ppm		28.5	26		41	36		18	16		34	30
Rb1 ppm		50	44		150	143		55	55		160	161
Sb1 ppm		7.3	7.8		0.85	0.8		0.9	0.9		1.3	1.0
Sc1 ppm		14	13		13	12		9.2	10		11	10
Sm1 ppm		5.9	5.9		7.7	7.4		3.1	3.3		6.4	6.1
Ta1 ppm		0.5	0.7		1.4	1.9		-0.2	<0.5		1.4	1.6
Tb1 ppm		0.5	1.1		1.3	1.2		-0.5	<0.5		1.1	1.1
Th1 ppm		5.4	5.6		19	18.4		4.1	4.6		17	17.4
U1 ppm		1.55	2.2		4.35	5.7		1.5	2.1		3.4	5.0
W1 ppm		-1	<4		-1	<2		-1	<4		160	204
Yb1 ppm		4.25	3.9		4.35	3.7		1.5	1.5		3.7	3.4
Zn1 ppm		127			153			74			59	
Zr1 Wt %		0.02			0.02			-0.01			0.02	

Table 4. Units, detection limits, ranges, medians and standard deviations of geochemical data. Values below detection are coded as half of the detection limit value. 94 samples were analysed using INAA, whereas ICP and AA analyses were conducted on 99 samples. All values are ppm unless otherwise stated.

	Detection limit	Minimum	Maximum	Mean	Median	Std. Dev.
Au1 (ppb)	1	0.5	49	6.6	4	8
Ag1	5	2.5	2.5	2.5	2.5	0
Ag6	0.1	0.05	0.2	0.1	0.1	0
Al2 (wt. %)	0.01	0.01	10.14	7.26	7.49	1.51
As1	0.5	5	1650	50.9	25.5	169.6
Ba1	50	25	800	412	410	115.1
Ba2	50	171	795	431	424.9	106.8
Be2	0.2	1.3	7	2.9	2.6	1.2
Br1	0.5	0.3	47	3.9	1.3	6.8
Ca1 (wt. %)	1	0.5	2	0.55	0.5	0.23
Ca2 (wt. %)	0.01	0.02	0.98	0.32	0.26	0.23
Cd2	0.1	0.05	1.1	0.1	0.1	0.1
Ce1	3	36	320	89.9	78	39.7
Ce2	2	35	315	86.9	77.4	38.9
Co1	1	1	88	20.1	17	14.1
Co2	2	2	152	28.8	22.6	23
Cr1	5	15	1200	165	120	167.7
Cr2	2	18	588	108.7	96.3	74.9
Cs1	1	2	30	7.3	6	4.5
Cu2	2	10	251	65.9	53.5	42.8
Dy2	0.2	2.2	8.1	4.1	3.8	1.2
Eu1	0.5	0.9	2.7	1.7	1.6	0.4
Fe1 (wt. %)	0.1	1.67	8.73	4.16	4.16	1.23
Fe2 (wt. %)	0.01	1.78	9.39	4.54	4.53	1.42
Hf1	1	5	31	9.9	9	4.6
Hg1	1	0.5	2	0.5	0.5	0.2
Ir1	5	2.5	2.5	2.5	2.5	0
K2 (wt. %)	0.01	0.74	3.05	2.16	2.14	0.43
La1	1	22	85	43.1	41.5	11.1
La2	1	19	80	39.8	38	10.2
Li2	0.2	24	165	47.5	44.7	18.4
Lu1	0.05	0.41	1.41	0.7	0.6	0.2
Mg2 (wt. %)	0.01	0.23	6.31	1.12	0.97	0.86
Mn2	2	170	7375	1521.1	1390.2	841.8
Mo1	1	0.5	37	2.9	2	4.2
Mo2	1	0.5	39.5	1.8	1.2	4.2
Na1 (wt. %)	0.1	0.64	2.2	1.34	1.34	0.33
Na2 (wt. %)	0.01	0.56	2.29	1.28	1.23	0.4

	Detection limit	Minimum	Maximum	Mean	Median	Std. Dev.
Nb2	2	4.3	22.7	14	13.7	3
Nd1	5	21	69	37.3	37	9.7
Ni1	2	2	620	52.4	2	116.8
Ni2	2	4	583	67.9	46.8	88
P2	5	235	3098	888.6	809	402.7
Pb2	2	12	180	32.1	25.4	22.3
Rb1	15	40	200	116	110	31.1
Rb2	10	30	195	108.5	108	32.9
Sb1	0.1	0.2	38	3.2	1.8	4.6
Sc1	0.1	6	35	16.1	16	4.7
Sc2	2	6	35	16.9	16.7	5
Se1	1	0.5	2	0.6	0.5	0.3
Sm1	0.1	3.4	13	7	6.7	1.7
Sn1 (wt. %)	1	0.01	0.01	0.01	0.01	0
Sr1 (wt. %)	0.05	0.03	0.03	0.03	0.03	0
Sr2	2	46	166	83	82	20.8
Ta1	0.2	0.1	3.4	1.1	1.1	0.6
Tb1	0.5	0.2	2.1	1.1	1.1	0.3
Ti2	5	2921	10893	5755	5798	1248
Th1	0.2	6.6	33	13.4	12	4.7
U1	0.5	1.8	9.2	3.2	2.9	1.2
V2	5	27	211	112.2	115.1	34.9
W1	1	0.2	9	1.3	0.2	2
Y2	2	12	46	23.2	21.6	7.6
Yb1	0.2	2.7	10.1	4.3	4.1	1.2
Zn1	5	25	226	110.5	108.5	39.9
Zn2	2	30	180	90.8	88.1	28.6
Zr1 (wt. %)	0.01	0.01	0.1	0.02	0.01	0.02
Zr2	2	82	310	128.6	119	36.2

Till Geochemistry Maps

Figure 3. Distribution of Antimony in till.

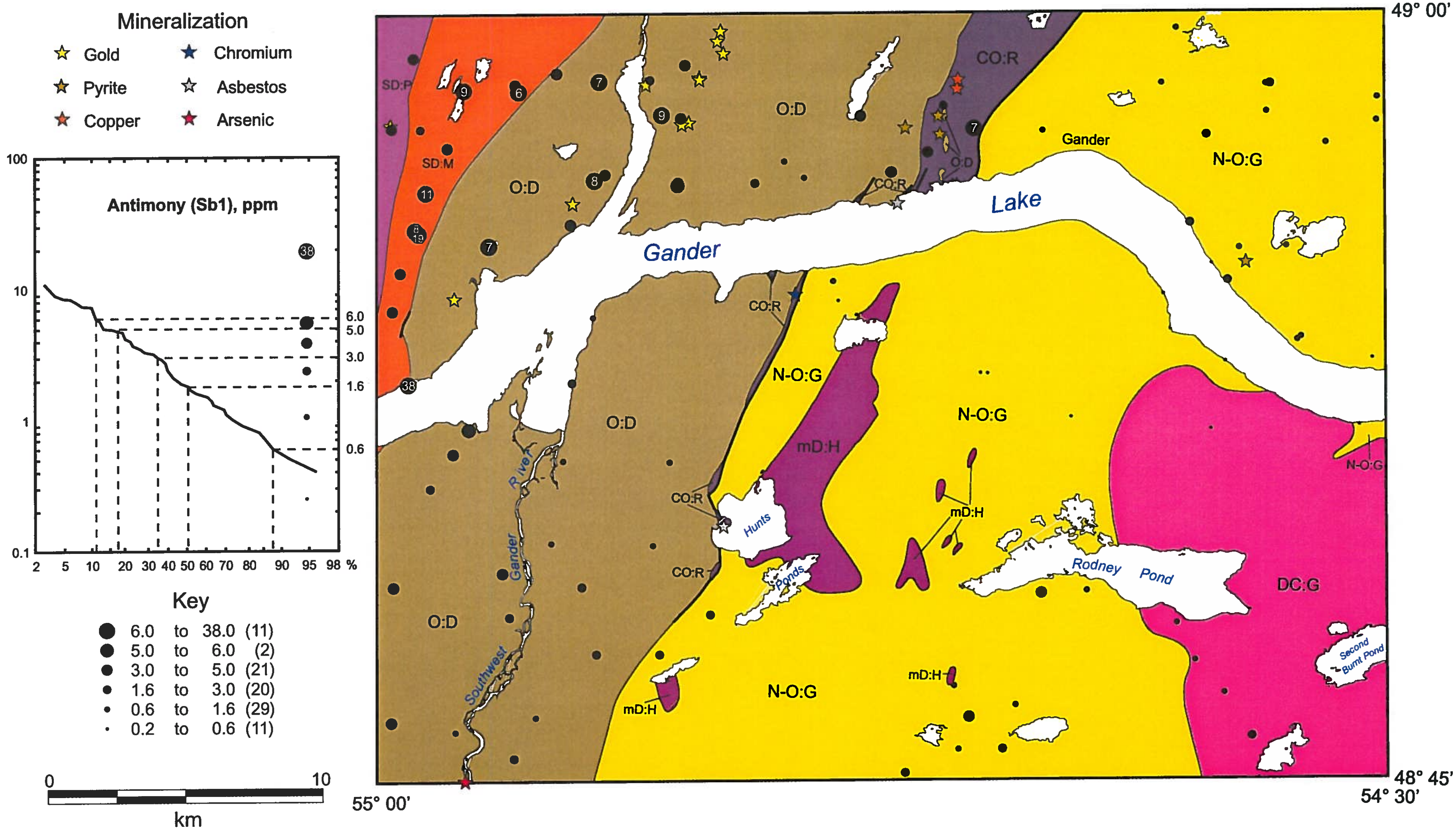


Figure 4. Distribution of Arsenic in till.

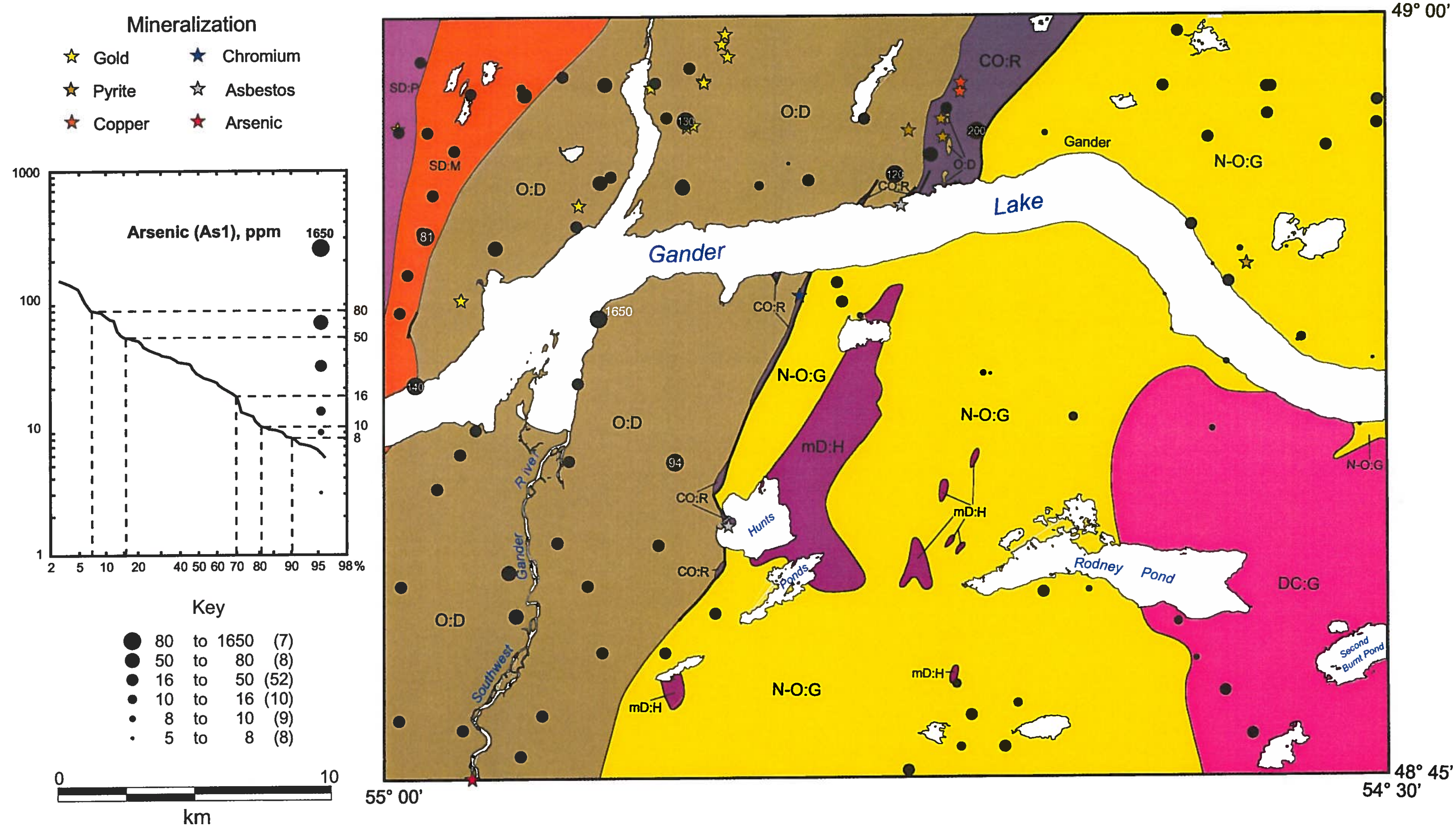


Figure 5. Distribution of Copper in till.

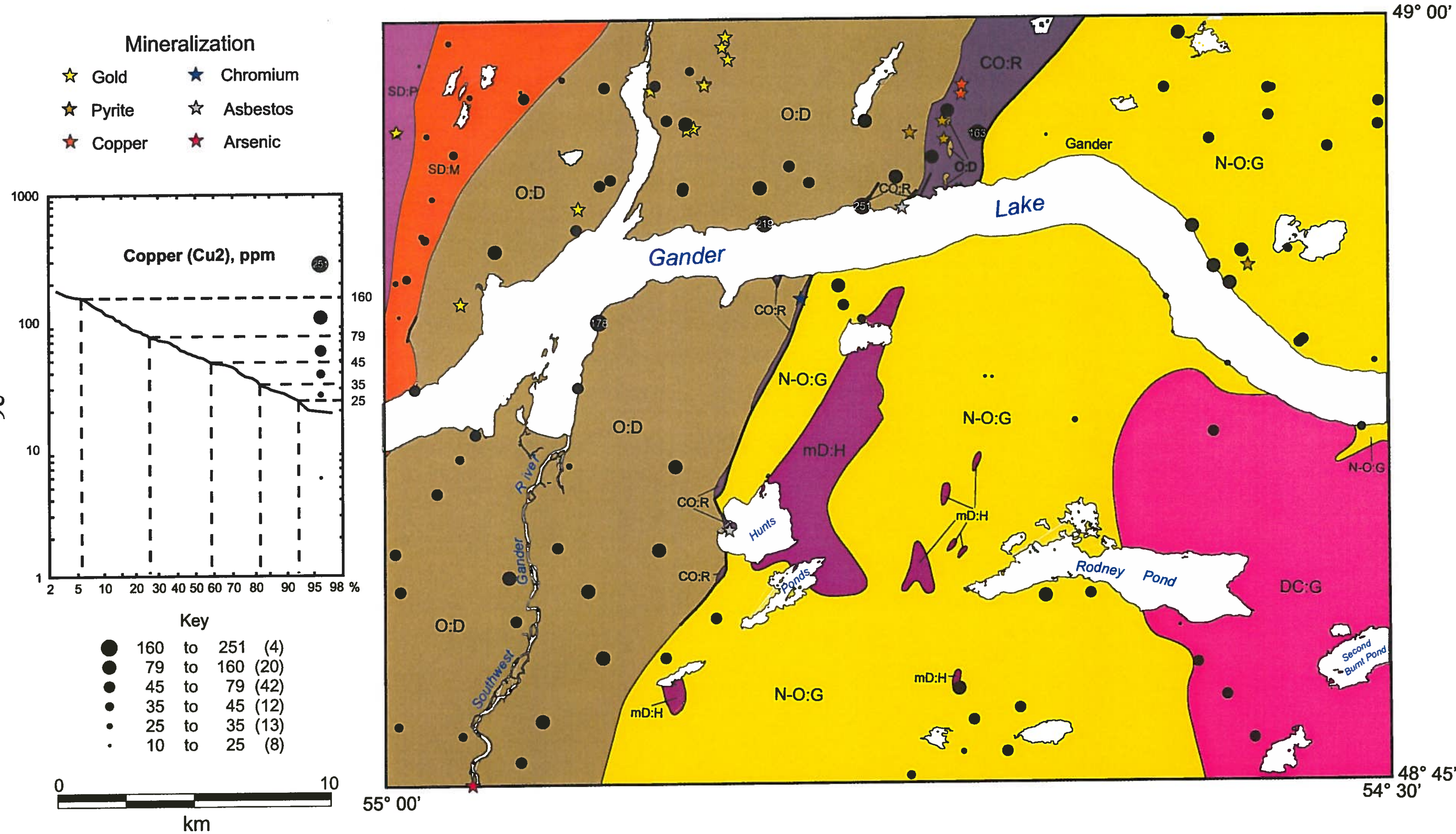


Figure 6. Distribution of Gold in till.

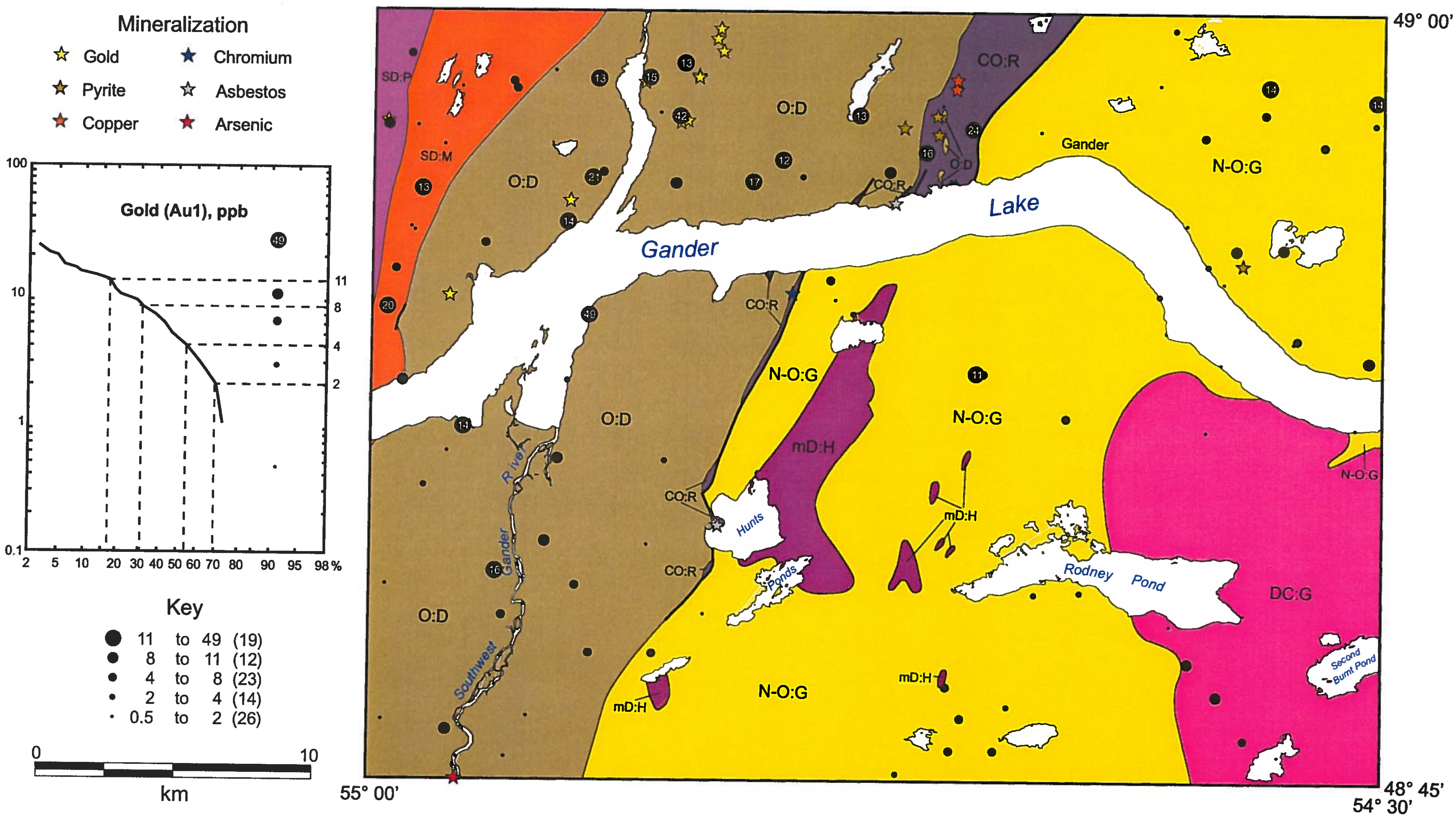


Figure 7. Distribution of Lead in till.

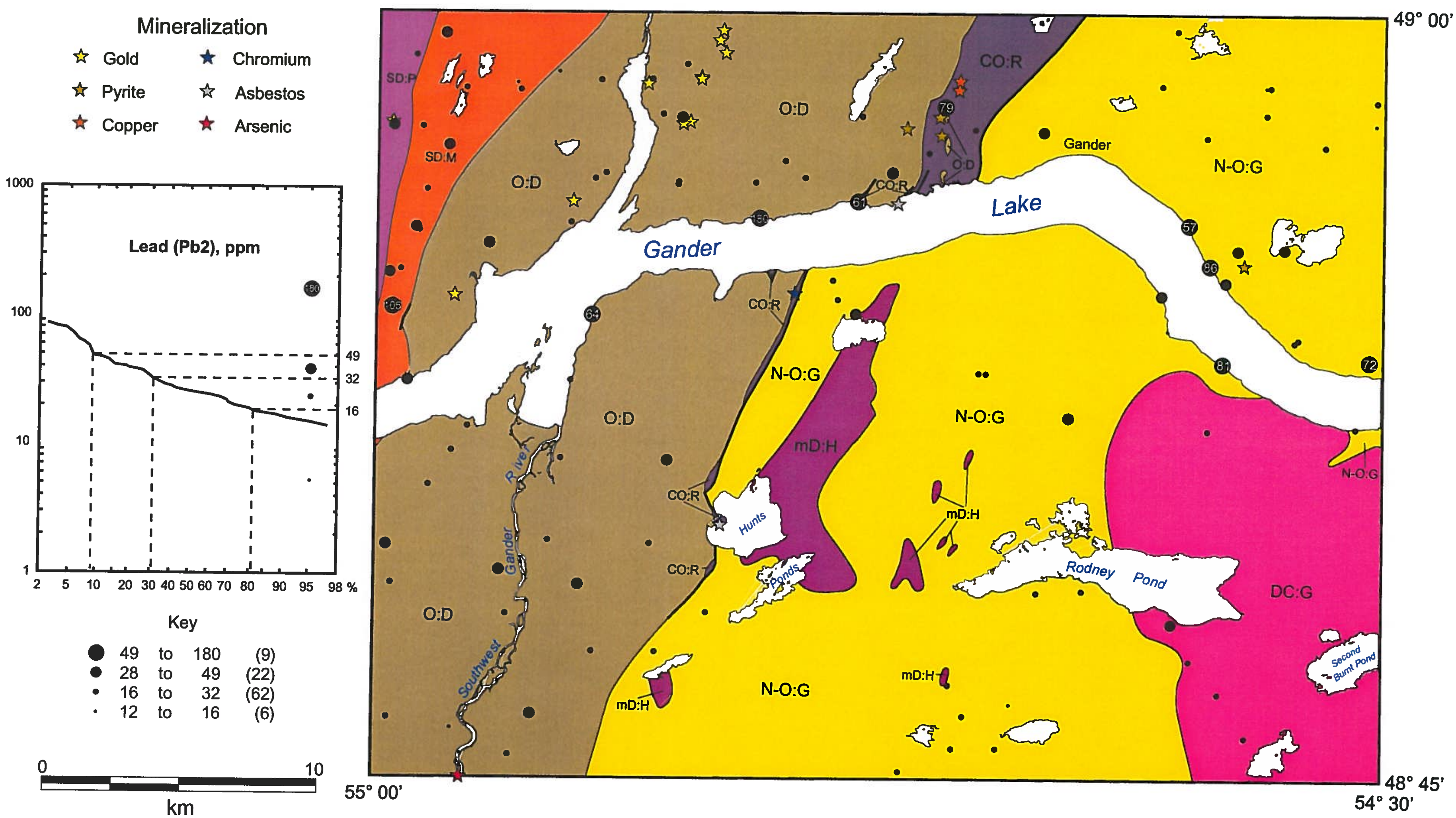


Figure 8. Distribution of Nickel in till.

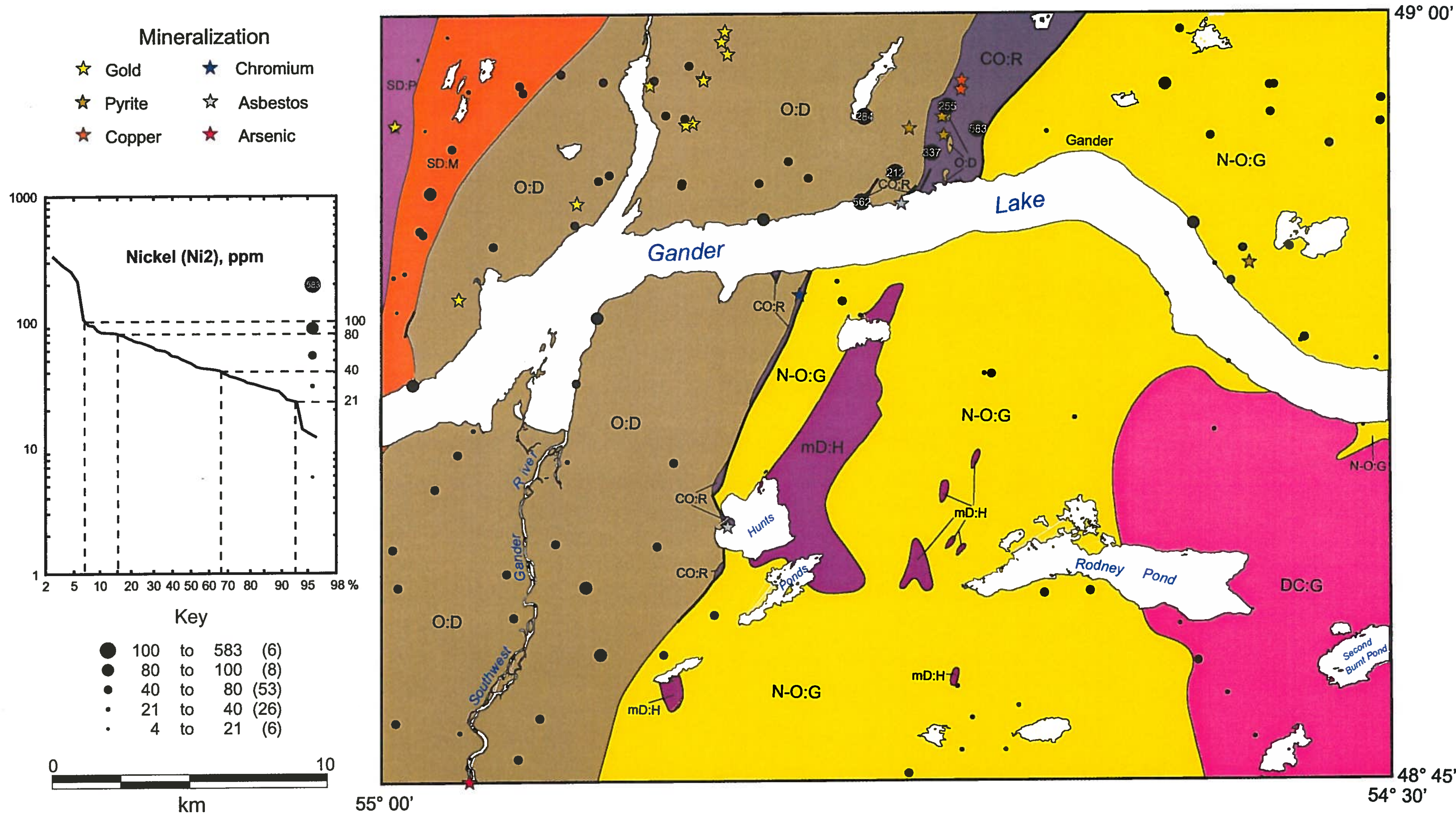
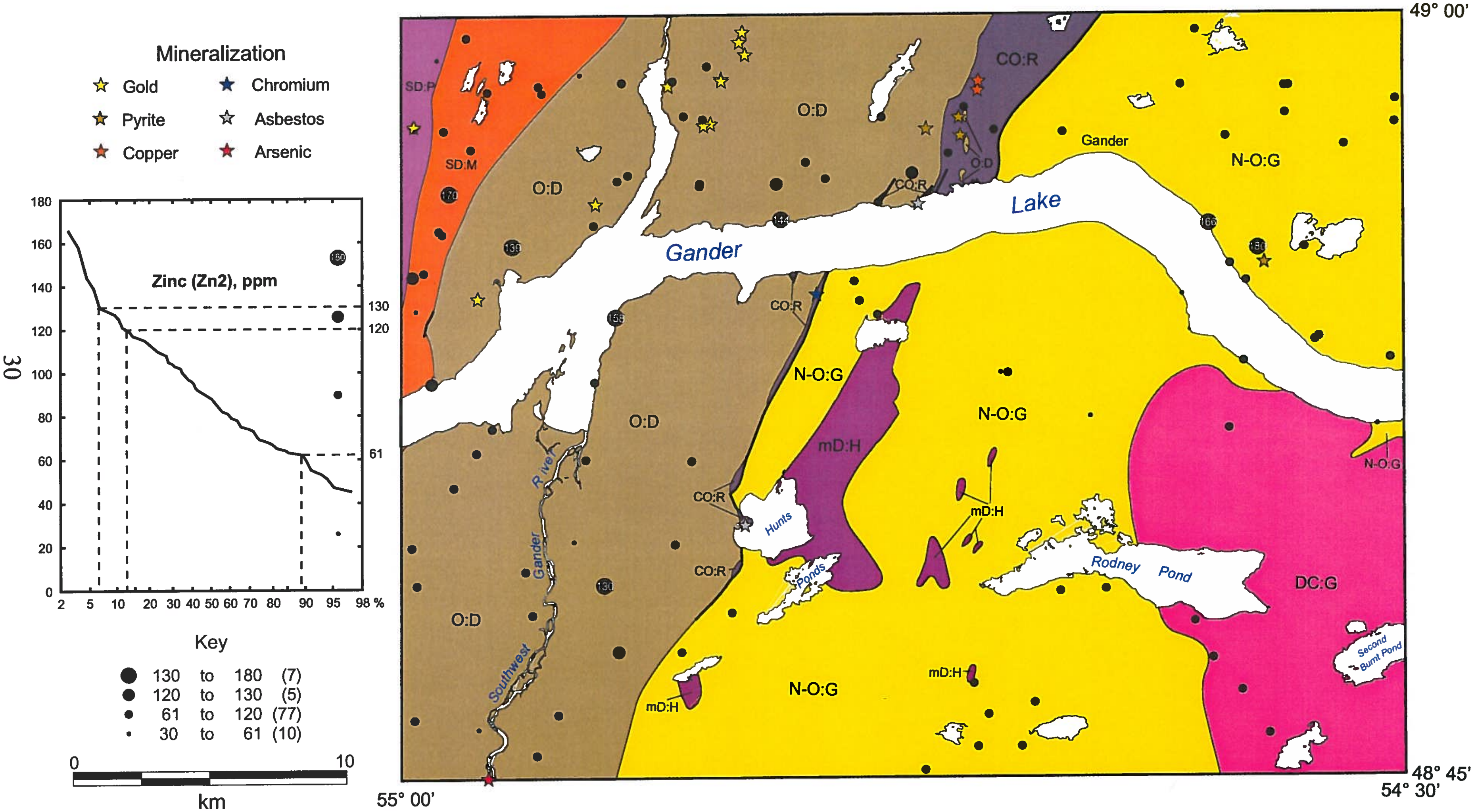


Figure 9. Distribution of Zinc in till.



Appendices

Gander site data

Sample	Site	NTS	Zone	Easting	Northing
4000	79	2D/15	21	647175	5409800
4001	80	2D/15	21	648650	5412025
4002	81	2D/15	21	650000	5414200
4003	82	2D/15	21	649450	5413300
4004	83	2D/15	21	647400	5408425
4005	84	2D/15	21	647450	5403550
4007	85	2D/15	21	649800	5403250
4008	86	2D/15	21	651650	5407450
4009	87	2D/15	21	651350	5409025
4011	89	2D/15	21	665100	5423950
4012	90	2D/15	21	666400	5424700
4014	98	2D/15	21	657325	5413200
4015	201	2D/15	21	652700	5403850
4016	203	2D/15	21	650550	5420900
4018	206	2D/15	21	654700	5423600
4019	208	2D/15	21	663925	5425950
4022	211	2D/15	21	647750	5415800
4023	213	2D/15	21	653700	5416000
4024	214	2D/15	21	654400	5418400
4025	218	2D/15	21	682350	5415200
4026	222	2D/15	21	676800	5420950
4027	223	2D/15	21	677400	5420350
4028	225	2D/15	21	679500	5421650
4029	227	2D/15	21	680000	5418250
4030	228	2D/15	21	682650	5427100
4031	229	2D/15	21	675275	5429425
4032	230	2D/15	21	668050	5425600
4033	231	2D/15	21	666925	5426400
4034	235	2D/15	21	661200	5424250
4035	238	2D/15	21	656250	5427050
4036	239	2D/15	21	656700	5425800
4037	240	2D/15	21	648950	5424400
4038	241	2D/15	21	649500	5426500
4039	242	2D/15	21	670950	5408825
4040	243	2D/15	21	672600	5408950
4041	244	2D/15	21	675900	5407875
4042	245	2D/15	21	676600	5406550
4043	246	2D/15	21	677700	5405400
4044	247	2D/15	21	678750	5403850
4045	249	2D/15	21	652850	5427200
4046	250	2D/15	21	651350	5426750
4047	251	2D/15	21	648200	5422775
4048	252	2D/15	21	647100	5418450
4049	253	2D/15	21	646950	5419700
4050	254	2D/15	21	647850	5421400
4051	255	2D/15	21	668450	5404275
4052	255	2D/15	21	668450	5404275
4053	256	2D/15	21	667875	5405400
4054	257	2D/15	21	654850	5406200

Gander site data

Sample	Site	NTS	Zone	Easting	Northing
4055	258	2D/15	21	657150	5406250
4056	259	2D/15	21	658950	5407725
4057	260	2D/15	21	651950	5402350
4058	261	2D/15	21	647950	5425050
4059	262	2D/15	21	646900	5425050
4060	263	2D/15	21	654400	5426950
4061	264	2D/15	21	682750	5417650
4062	265	2D/15	21	677800	5421550
4063	266	2D/15	21	678750	5427500
4064	267	2D/15	21	676500	5425600
4065	268	2D/15	21	674800	5427425
4066	269	2D/15	21	670550	5425600
4067	271	2D/15	21	657400	5425700
4068	272	2D/15	21	657350	5423275
4069	273	2D/15	21	657500	5427625
4070	275	2D/15	21	675975	5422400
4072	278	2D/15	21	663100	5419950
4073	278	2D/15	21	663100	5419950
4074	279	2D/15	21	663300	5419250
4075	281	2D/15	21	663975	5418750
4076	282	2D/15	21	663900	5422850
4077	283	2D/15	21	676950	5414925
4078	284	2D/15	21	677400	5417400
4079	286	2D/15	21	660350	5422125
4080	287	2D/15	21	680830	5425410
4081	287	2D/15	21	680830	5425410
4082	288	2D/15	21	682650	5426260
4083	288	2D/15	21	682650	5426260
4084	289	2D/15	21	678650	5426500
4085	290	2D/15	21	678590	5427490
4086	291	2D/15	21	680130	5418360
4087	292	2D/15	21	661940	5423670
4088	293	2D/15	21	660160	5423430
4089	294	2D/15	21	657360	5423370
4090	295	2D/15	21	654320	5423380
4091	297	2D/15	21	653500	5421750
4092	298	2D/15	21	651480	5426500
4094	300	2D/15	21	647350	5419850
4095	301	2D/15	21	647980	5421280
4097	303	2D/15	21	671860	5415230
4098	305	2D/15	21	675080	5419790
4100	128	2D/15	21	666200	5402200
4101	129	2D/15	21	668100	5403100
4102	130	2D/15	21	670125	5404750
4103	131	2D/15	21	669700	5403150
4104	132	2D/15	21	653100	5410150
4105	133	2D/15	21	653450	5413150
4106	134	2D/15	21	654250	5408600
4107	135	2D/15	21	656800	5410150

Gander site data

Sample	Site	NTS	Zone	Easting	Northing
4108	136	2D/15	21	647625	5427625
4109	137	2D/15	21	648675	5428450
4150	350	2D/15	21	668790	5416740
4151	351	2D/15	21	668530	5416750

Sample	NTS	Site	Easting	Northing	Au1	Ag1	Ag6	Al2	As1	Ba1	Ba2	Be2	Br1	Ca1	Ca2	Cd2	Ce1	Ce2	Co1
					ppb	ppm	ppm	wt. %	ppm	ppm	ppm	ppm	ppm	wt. %	wt. %	ppm	ppm	ppm	ppm
4000	2D/15	79	647175	5409800			0.1	8.73			303	2.2			0.23	0.05		64	
4001	2D/15	80	648650	5412025	2	2.5	0.2	7.88	23	400	368	2	14	0.5	0.24	0.05	72	65	21
4002	2D/15	81	650000	5414200	14	2.5	0.2	7.13	36	420	386	2.2	0.3	0.5	0.19	0.05	69	67	16
4003	2D/15	82	649450	5413300	0.5	2.5	0.2	7.07	24	370	358	1.8	3.8	0.5	0.2	0.05	63	61	13
4004	2D/15	83	647400	5408425	0.5	2.5	0.1	7.6	37	280	402	2.2	0.3	0.5	0.28	0.05	63	65	17
4005	2D/15	84	647450	5403550	0.5	2.5	0.05	7.11	35	340	372	1.8	2.2	0.5	0.35	0.05	73	72	18
4007	2D/15	85	649800	5403250	10	2.5	0.05	4.55	38	240	200	1.5	0.3	0.5	0.75	0.05	70	67	11
4008	2D/15	86	651650	5407450	6	2.5	0.05	6.09	56	330	286	1.8	0.3	0.5	0.47	0.05	99	95	27
4009	2D/15	87	651350	5409025	16	2.5	0.05	7.3	78	440	391	2.2	0.3	0.5	0.25	0.05	86	77	47
4011	2D/15	89	665100	5423950	8	2.5	0.05	7.54	120	800	795	3	2.2	0.5	0.11	0.05	85	80	48
4012	2D/15	90	666400	5424700	16	2.5	0.05	6.33	78	480	390	2.3	0.3	0.5	0.49	0.05	69	71	54
4014	2D/15	98	657325	5413200	3	2.5	0.05	5.41	94	25	221	1.9	1.2	0.5	0.47	0.2	140	145	37
4015	2D/15	201	652700	5403850	0.5	2.5	0.05	7.49	35	280	351	2.4	4.8	0.5	0.31	0.05	85	89	34
4016	2D/15	203	650550	5420900	4	2.5	0.1	8.81	68	500	530	3.5	0.3	0.5	0.05	0.05	94	84	31
4018	2D/15	206	654700	5423600	4	2.5	0.1	7.47	47	410	420	2.4	0.3	0.5	0.26	0.05	71	69	23
4019	2D/15	208	663925	5425950	13	2.5	0.1	6.75	47	360	405	2.1	0.3	0.5	0.18	0.05	85	77	52
4022	2D/15	211	647750	5415800	8	2.5	0.1	9.84	140	640	589	3.5	0.3	2	0.05	0.05	120	95	51
4023	2D/15	213	653700	5416000	3	2.5	0.1	7.6	48	440	386	2.3	5	1	0.18	0.05	78	49	31
4024	2D/15	214	654400	5418400	49	2.5	0.1	9.45	1650	490	556	2.4	8.5	0.5	0.02	0.05	83	69	76
4025	2D/15	218	682350	5415200	0.5	2.5	0.05	6.13	5.6	270	269	6.3	3.4	0.5	0.79	0.1	74	82	7
4026	2D/15	222	676800	5420950	3	2.5	0.1	7.7	5	520	533	3.3	13	0.5	0.13	0.05	320	315	13
4027	2D/15	223	677400	5420350	0.5	2.5	0.05	7.37	18	460	457	3.3	7.9	0.5	0.49	0.05	210	197	27
4028	2D/15	225	679500	5421650	9	2.5	0.05	8.77	5.7	580	622	3.5	0.3	0.5	0.3	0.05	100	97	15
4029	2D/15	227	680000	5418250	0.5	2.5	0.05	6.93	7	400	427	3.2	6.4	0.5	0.54	0.05	99	62	13
4030	2D/15	228	682650	5427100	14	2.5	0.05	5.54	25	300	316	1.9	0.3	1	0.62	0.05	71	72	18
4031	2D/15	229	675275	5429425	3	2.5	0.05	6.13	31	410	377	3.1	0.3	0.5	0.75	0.05	140	137	24
4032	2D/15	230	668050	5425600	24	2.5	0.05	7.89	200	550	444	2.8	0.3	0.5	0.45	0.05	66	64	88
4033	2D/15	231	666925	5426400	0.5	2.5	0.05	5.91	26	250	284	2.9	2.9	0.5	0.93	0.05	100	95	46
4034	2D/15	235	661200	5424250	12	2.5	0.05	9.11	7.2	590	453	2.7	0.3	0.5	0.05	0.05	110	69	17
4035	2D/15	238	656250	5427050	15	2.5	0.05	7.26	17	400	550	2.4	0.3	0.5	0.06	0.05	89	77	24
4036	2D/15	239	656700	5425800	0.5	2.5	0.05	7.74	40	590	525	2.7	0.3	0.5	0.12	1.1	86	72	22
4037	2D/15	240	648950	5424400	0.5	2.5	0.05	6.51	38	510	373	2.2	0.3	0.5	0.04	0.5	69	82	14
4038	2D/15	241	649500	5426500	0.5	2.5	0.05	5.73	31	360	380	2.3	1.5	0.5	0.33	0.2	87	75	17
4039	2D/15	242	670950	5408825	3	2.5	0.05	9.43	17	340	625	3.7	1.6	0.5	0.26	0.05	73	219	10
4040	2D/15	243	672600	5408950	2	2.5	0.05	8.49	9.4	470	540	4.3	0.3	2	0.26	0.1	210	109	17
4041	2D/15	244	675900	5407875	0.5	2.5	0.05	7.5	12	410	472	2.7	0.3	0.5	0.21	0.05	110	57	15
4042	2D/15	245	676600	5406550	8	2.5	0.05	0.01	9.5	410	474	2.7	4.2	0.5	0.24	0.05	62	79	11
4043	2D/15	246	677700	5405400	9	2.5	0.05	7.28	18	430	428	3.1	2.1	0.5	0.41	0.05	80	84	15
4044	2D/15	247	678750	5403850	5	2.5	0.05	7.12	20	330	389	3.1	2.6	0.5	0.35	0.1	73	77	14
4045	2D/15	249	652850	5427200	1	2.5	0.05	6	18	410	385	1.9	0.3	0.5	0.17	0.05	62	63	11
4046	2D/15	250	651350	5426750	6	2.5	0.05	6.79	12	360	380	2	9.1	0.5	0.11	0.1	61	58	9
4047	2D/15	251	648200	5422775	13	2.5	0.1	8.71	30	400	521	2.2	25	0.5	0.18	0.1	78	69	12
4048	2D/15	252	647100	5418450	20	2.5	0.05	7.09	35	680	425	2	21	0.5	0.23	0.2	65	41	1
4049	2D/15	253	646950	5419700			0.05	9.56			259	2			0.05	0.05		59	
4050	2D/15	254	647850	5421400	0.5	2.5	0.05	8.1	35	480	369	1.9	9	0.5	0.04	0.05	71	56	12
4051	2D/15	255	668450	5404275	6	2.5	0.05	6.63	12	370	366	2.6	9.1	0.5	0.42	0.05	61	78	9

Sample	NTS	Site	Easting	Northing	Au1	Ag1	Ag6	Al2	As1	Ba1	Ba2	Be2	Br1	Ca1	Ca2	Cd2	Ce1	Ce2	Co1
					ppb	ppm	ppm	wt. %	ppm	ppm	ppm	ppm	ppm	wt. %	wt. %	ppm	ppm	ppm	ppm
4052	2D/15	255	668450	5404275	7	2.5	0.05	6.61	27	380	374	2.6	1.8	0.5	0.4	0.1	82	88	14
4053	2D/15	256	667875	5405400	5	2.5	0.05	0.01	13	380	475	4.4	3.6	0.5	0.5	0.05	88	90	13
4054	2D/15	257	654850	5406200	4	2.5	0.1	8.45	41	210	376	2.3	12	0.5	0.15	0.05	85	87	23
4055	2D/15	258	657150	5406250	6	2.5	0.1	7.89	33	360	391	2.3	0.3	0.5	0.12	0.05	69	71	19
4056	2D/15	259	658950	5407725	0.5	2.5	0.1	7.56	33	350	378	2.3	0.3	0.5	0.19	0.1	62	68	18
4057	2D/15	260	651950	5402350	0.5	2.5	0.1	6.13	38	290	272	1.7	4.1	0.5	0.63	0.1	74	79	22
4058	2D/15	261	647950	5425050	0.5	2.5	0.1	6.23	23	410	443	2.6	3.6	0.5	0.48	0.1	160	155	8
4059	2D/15	262	646900	5425050	9	2.5	0.05	6.16	32	430	471	2.6	4.4	0.5	0.54	0.05	65	69	2
4060	2D/15	263	654400	5426950	13	2.5	0.1	6.28	73	480	533	2.2	0.3	0.5	0.09	0.05	78	70	28
4061	2D/15	264	682750	5417650	10	2.5	0.1	7.97	7.3	500	572	2.9	3.7	0.5	0.24	0.05	55	53	10
4062	2D/15	265	677800	5421550	9	2.5	0.1	10.14	9.4	460	629	4.3	25	0.5	0.12	0.05	110	103	17
4063	2D/15	266	678750	5427500	14	2.5	0.05	7.59	23	450	494	2.7	0.3	0.5	0.42	0.05	84	55	17
4064	2D/15	267	676500	5425600	7	2.5	0.05	7.62	28	430	531	2.6	0.3	0.5	0.26	0.05	98	86	21
4065	2D/15	268	674800	5427425	0.5	2.5	0.05	6.76	31	400	408	2.2	2.6	0.5	0.61	0.05	74	74	19
4066	2D/15	269	670550	5425600	0.5	2.5	0.1	7.75	9	430	447	2.2	6.5	0.5	0.37	0.05	36	35	13
4067	2D/15	271	657400	5425700	42	2.5	0.05	8.28	130	470	437	2.2	0.3	0.5	0.05	0.05	91	83	35
4068	2D/15	272	657350	5423275	9	2.5	0.05	8.61	50	640	591	3.1	0.3	0.5	0.11	0.05	73	70	15
4069	2D/15	273	657500	5427625	13	2.5	0.05	7.49	45	520	444	2.2	0.3	0.5	0.11	0.05	65	61	14
4070	2D/15	275	675975	5422400	0.5	2.5	0.05	8.76	49	630	602	3.7	10	0.5	0.2	0.05	150	137	34
4072	2D/15	278	663100	5419950	0.5	2.5	0.05	7.73	24	410	451	4.5	3.4	0.5	0.82	0.05	150	142	17
4074	2D/15	279	663300	5419250	0.5	2.5	0.05	7.69	20	340	460	4.6	2.7	0.5	0.98	0.05	120	119	18
4075	2D/15	281	663975	5418750	2	2.5	0.05	8.74	9.8	430	378	7	2.7	0.5	0.29	0.05	170	139	11
4076	2D/15	282	663900	5422850			0.1	6.15			546	2.8			0.05	0.05		87	
4077	2D/15	283	676950	5414925	1	2.5	0.05	7.53	9	270	348	7	3.4	0.5	0.45	0.05	87	86	10
4078	2D/15	284	677400	5417400	0.5	2.5	0.1	7.51	8.3	320	419	6.2	12	0.5	0.71	0.05	88	81	9
4079	2D/15	286	660350	5422125			0.05	9.65			471	3.5			0.05	0.1		102	
4080	2D/15	287	680830	5425410	2	2.5	0.05	8.23	6.6	580	615	3.2	0.3	0.5	0.54	0.05	78	82	17
4083	2D/15	288	682650	5426260	0.5	2.5	0.05	7.04	23	440	430	2.2	0.3	0.5	0.58	0.05	70	66	18
4084	2D/15	289	678650	5426500	4	2.5	0.05	7.51	18	460	519	2.8	0.3	0.5	0.32	0.05	76	78	16
4085	2D/15	290	678590	5427490	1	2.5	0.05	7.24	22	380	469	2.3	0.3	0.5	0.5	0.05	55	61	17
4086	2D/15	291	680130	5418360	5	2.5	0.05	7.93	10	470	554	3.4	0.3	0.5	0.39	0.05	97	104	15
4087	2D/15	292	661940	5423670	2	2.5	0.05	8.13	22	450	368	2.3	0.3	0.5	0.05	0.05	66	71	18
4088	2D/15	293	660160	5423430	17	2.5	0.05	8.32	12	430	392	2.4	0.3	0.5	0.05	0.05	110	72	30
4089	2D/15	294	657360	5423370	2	2.5	0.05	8.13	42	460	528	2.8	0.3	0.5	0.1	0.1	71	71	14
4090	2D/15	295	654320	5423380	21	2.5	0.05	8.97	69	450	576	3.1	0.3	0.5	0.05	0.1	72	78	18
4091	2D/15	297	653500	5421750	14	2.5	0.05	7.45	49	530	508	2.7	0.3	0.5	0.1	0.05	78	77	19
4092	2D/15	298	651480	5426500	7	2.5	0.05	7.17	52	420	468	2.4	0.3	0.5	0.23	0.1	63	70	14
4094	2D/15	300	647350	5419850	4	2.5	0.05	6.56	21	370	515	2.6	1.1	0.5	0.07	0.1	76	63	19
4095	2D/15	301	647980	5421280	0.5	2.5	0.05	6.49	81	360	448	2.3	0.3	0.5	0.06	0.05	88	84	21
4097	2D/15	303	671860	5415230	4	2.5	0.05	7.13	11	350	347	5.5	2.5	0.5	0.57	0.05	79	83	10
4098	2D/15	305	675080	5419790	3	2.5	0.05	6.08	5.6	380	297	5.5	9.2	0.5	0.83	0.1	180	152	11
4100	2D/15	128	666200	5402200	2	2.5	0.05	6.94	22	340	372	2.3	1.4	0.5	0.27	0.05	66	70	14
4101	2D/15	129	668100	5403100	6	2.5	0.05	6.35	15	290	339	2.3	2.8	0.5	0.4	0.05	68	71	10
4102	2D/15	130	670125	5404750	3	2.5	0.05	8.19	10	560	580	2.8	7.7	0.5	0.41	0.1	120	115	15
4103	2D/15	131	669700	5403150	5	2.5	0.05	6.11	33	350	321	2.4	0.3	0.5	0.32	0.05	73	67	14
4104	2D/15	132	653100	5410150	9	2.5	0.05	5.22	31	220	237	1.8	0.3	1	0.58	0.1	58	62	12
4105	2D/15	133	653450	5413150	9	2.5	0.05	7.58	25	240	171	1.3	47	0.5	0.39	0.1	41	39	13

Sample	NTS	Site	Easting	Northing	Au1	Ag1	Ag6	Al2	As1	Ba1	Ba2	Be2	Br1	Ca1	Ca2	Cd2	Ce1	Ce2	Co1
					ppb	ppm	ppm	wt. %	ppm	ppm	ppm	ppm	ppm	wt. %	wt. %	ppm	ppm	ppm	ppm
4106	2D/15	134	654250	5408600	7	2.5	0.1	8.56	31	240	392	2.7	0.3	0.5	0.02	0.05	71	108	13
4107	2D/15	135	656800	5410150	0.5	2.5	0.05	8.63	31	460	435	2.5	3.6	0.5	0.13	0.1	83	83	25
4108	2D/15	136	647625	5427625	4	2.5	0.05	6.02	18	440	476	2.6	0.3	0.5	0.58	0.2	97	98	5
4109	2D/15	137	648675	5428450			0.05	5.91			407	2.8			0.58	0.05		192	
4150	2D/15	350	668790	5416740	7	2.5	0.05	7.61	7.9	320	341	5.8	11	0.5	0.39	0.05	77	81	10
4151	2D/15	351	668530	5416750	11	2.5	0.05	6.6	8.2	220	279	5.8	6.9	0.5	0.63	0.05	96	103	9

Sample	Co2	Cr1	Cr2	Cs1	Cu2	Dy2	Eu1	Fe1	Fe2	Hf1	Hg1	Ir1	K2	La1	La2	Li2	Lu1	Mg2	Mn2	Mo1
	ppm	ppm	ppm	ppm	ppm	ppm	ppm	wt. %	wt. %	ppm	ppm	ppb	wt. %	ppm	ppm	ppm	ppm	wt. %	ppm	ppm
4000	17		121		57	3.5			5.13				1.67		33	56.4		0.92	830	
4001	28	160	122	4	53	3	1.2	3.43	3.98	9	0.5	2.5	1.85	31	31	51.4	0.43	1.01	2640	4
4002	20	120	80	5	47	4.5	1.6	4.13	4.08	10	0.5	2.5	2.06	44	39	40.8	0.76	0.85	1347	0.5
4003	16	120	93	4	37	2.9	1.5	3.94	3.95	8	0.5	2.5	1.85	35	30	44	0.58	0.97	1017	2
4004	23	120	96	4	51	4.6	1.7	4.5	4.64	8	0.5	2.5	2.14	45	42	47	0.67	1.04	1367	6
4005	23	140	97	4	44	3.2	1.4	4.02	4.31	8	0.5	2.5	1.73	35	33	41.8	0.52	1.14	1462	8
4007	14	320	90	2	37	3.4	1.9	3.23	3.11	17	0.5	2.5	0.91	41	39	23.6	0.79	0.72	1799	0.5
4008	36	180	83	3	74	4.4	1.5	3.72	4.37	14	0.5	2.5	1.48	35	37	37.2	0.53	1.01	2358	0.5
4009	64	150	99	4	129	4.4	1.9	5.38	6.04	10	0.5	2.5	1.96	40	39	47.9	0.55	1.26	2316	0.5
4011	64	380	198	11	111	5	1.9	6.29	7.03	6	0.5	2.5	2.34	40	42	52.1	0.6	1.99	2473	0.5
4012	74	580	358	8	146	6.1	2.5	7.43	7.45	6	0.5	2.5	1.71	42	41	44.7	0.84	3.73	2439	6
4014	52	190	81	3	157	4.4	1.8	3.52	4.01	12	0.5	2.5	1.27	44	51	36.1	0.49	0.86	2383	3
4015	48	130	102	5	136	3.1	1.5	4.17	4.56	7	0.5	2.5	1.93	42	41	52.6	0.55	1.2	2029	7
4016	40	120	109	23	85	4.3	2.1	5.68	5.47	8	0.5	2.5	2.9	55	45	46.4	0.79	0.95	2086	7
4018	33	150	100	7	55	3.9	1.9	4.54	4.67	8	0.5	2.5	2.13	43	38	43.5	0.68	1.09	1464	3
4019	69	1000	286	6	103	3.5	1.6	7.16	8.03	11	0.5	2.5	2	40	39	46.8	0.52	2.36	2778	0.5
4022	66	150	126	30	79	4.7	2.7	5.59	4.99	9	0.5	2.5	3.05	70	49	49.6	0.88	0.76	1486	3
4023	41	140	105	4	74	3	1.8	4.88	4.69	6	0.5	2.5	1.87	45	25	52.9	0.6	1.18	1843	7
4024	100	150	140	23	178	3.4	1.7	7.56	8.72	8	0.5	2.5	2.43	42	37	62.2	0.51	2.02	1895	0.5
4025	8	63	45	5	36	3	1.2	1.7	1.78	8	0.5	2.5	2.13	40	42	28.7	0.51	0.37	734	2
4026	16	83	80	8	79	5.1	1.5	4.16	4.72	13	0.5	2.5	2.33	52	57	45.9	0.51	1.04	923	4
4027	35	220	107	7	125	6.2	2.4	4.8	4.58	12	0.5	2.5	2.18	63	54	46.8	0.83	1.36	1091	3
4028	19	130	100	11	45	4.2	2.2	4.41	4.37	10	0.5	2.5	2.8	61	55	56.4	0.77	1.3	940	3
4029	17	100	76	4	49	3.7	2.1	3.45	3.61	11	0.5	2.5	1.94	56	29	30.2	0.74	0.91	1193	6
4030	23	190	92	3	70	4.1	1.6	3.74	4.02	11	0.5	2.5	1.42	39	37	24	0.66	0.89	1190	5
4031	30	330	118	10	86	6.4	2.6	4.44	4.3	10	0.5	2.5	1.71	56	51	40.4	0.7	1.06	1287	37
4032	105	610	393	14	163	3.9	1.7	8.73	8.04	5	0.5	2.5	2.3	40	34	66.1	0.65	4.87	2330	0.5
4033	55	1200	333	5	97	4.2	1.5	5.35	5.75	11	0.5	2.5	1.56	33	34	34.9	0.44	4.08	1574	0.5
4034	33	130	126	11	66	2.7	2.4	4.52	5.82	11	0.5	2.5	2.52	63	37	70	0.82	1.3	1813	7
4035	30	120	86	7	48	4.1	1.8	5.77	4.43	6	0.5	2.5	2.38	54	42	34.6	0.57	0.81	1701	6
4036	20	110	85	7	46	4.8	1.9	4.34	4.57	10	0.5	2.5	2.61	50	42	44.1	0.74	0.89	1229	7
4037	23	95	78	6	36	4.1	1.7	4.34	4.24	8	0.5	2.5	2.27	45	35	36.5	0.79	0.36	1390	3
4038	14	150	47	10	31	5.8	1.4	3.6	3.09	15	0.5	2.5	2.25	33	32	25.4	0.64	0.44	1089	0.5
4039	23	78	107	3	104	5.5	1.2	2.53	4.71	22	0.5	2.5	2.98	28	45	55.1	0.79	1.24	1530	0.5
4040	21	95	97	11	74	3.8	2.2	4.43	4.38	8	0.5	2.5	2.6	46	46	60	0.74	1.09	1436	0.5
4041	14	96	90	8	24	2.5	1.9	3.98	3.43	7	0.5	2.5	2.27	47	31	48.1	0.62	0.89	1110	5
4042	21	96	92	7	52	2.9	1.3	3.38	4.13	9	0.5	2.5	2.26	35	33	47.1	0.58	1.01	1458	0.5
4043	20	93	79	6	65	3.3	1.5	3.67	3.83	8	0.5	2.5	2.1	37	35	43	0.65	0.88	1455	0.5
4044	19	96	78	5	56	3	1.4	3.51	3.74	8	0.5	2.5	2	35	35	42	0.56	0.84	1333	3
4045	15	92	61	4	25	3.2	1.4	2.91	3	10	0.5	2.5	1.97	34	32	40.2	0.69	0.61	744	2
4046	12	110	72	5	22	3.1	1	2.27	2.68	11	0.5	2.5	2.02	29	31	51.4	0.52	0.54	634	0.5
4047	14	220	122	16	27	4.5	1.8	5.27	5.8	12	0.5	2.5	1.66	36	36	165.3	0.56	0.6	859	2
4048	2	30	19	11	20	3.8	1.5	2.72	2.15	31	0.5	2.5	2.34	29	23	29.7	1.41	0.23	257	0.5
4049	21		85		30	3.2			5.46				1.5		30	50		0.27	2096	
4050	15	150	100	9	30	2.2	1.2	4.72	4.23	13	0.5	2.5	1.99	38	30	52.6	0.64	0.52	171	0.5
4051	18	120	71	6	60	3.7	1.1	2.42	3.28	11	0.5	2.5	1.92	30	37	37.7	0.5	0.78	1270	0.5

Sample	Co2	Cr1	Cr2	Cs1	Cu2	Dy2	Eu1	Fe1	Fe2	Hf1	Hg1	Ir1	K2	La1	La2	Li2	Lu1	Mg2	Mn2	Mo1
	ppm	ppm	ppm	ppm	ppm	ppm	ppm	wt. %	wt. %	ppm	ppm	ppb	wt. %	ppm	ppm	ppm	ppm	wt. %	ppm	ppm
4052	19	100	73	6	72	3.6	1.4	3.29	3.47	9	0.5	2.5	1.9	36	35	42.1	0.61	0.82	1405	0.5
4053	19	95	80	14	93	3.6	1.8	3.53	3.67	8	0.5	2.5	2.27	43	41	58.6	0.66	0.95	1507	5
4054	32	120	113	5	84	3	1.4	4.81	5.01	6	0.5	2.5	2.11	35	31	61	0.54	1.26	1448	6
4055	30	110	107	5	70	3.6	1.7	4.7	4.95	6	0.5	2.5	2.1	40	38	53.3	0.59	1.23	1793	4
4056	27	100	98	4	59	3.5	1.6	4.15	4.69	5	0.5	2.5	2.05	42	42	51.8	0.56	1.16	1761	2
4057	33	120	77	3	70	3.5	1.7	3.23	3.49	10	0.5	2.5	1.47	42	40	34.4	0.67	0.95	1474	0.5
4058	11	38	33	4	27	6.4	1.2	2.28	2.55	24	0.5	2.5	2.74	29	31	24.4	0.97	0.4	775	0.5
4059	4	15	18	3	19	6.9	1.1	1.67	2.02	27	0.5	2.5	2.88	27	33	24.2	0.99	0.24	500	0.5
4060	37	160	76	6	70	4.1	2.1	4.79	4.66	11	0.5	2.5	2.05	43	34	37.9	0.75	0.88	1947	0.5
4061	13	93	86	7	29	3	1.2	3.71	3.85	8	2	2.5	2.45	33	30	34.4	0.62	0.88	877	2
4062	24	120	123	11	87	4.2	1.4	4.76	5.65	7	0.5	2.5	2.61	41	43	66.1	0.47	1.21	1081	3
4063	24	180	116	12	44	4.2	2	4.74	4.65	10	0.5	2.5	2.39	53	33	37.4	0.73	1.24	1296	0.5
4064	28	160	102	5	75	3.3	1.9	4.62	4.73	10	0.5	2.5	2.31	49	40	36.9	0.68	1.16	1655	4
4065	25	290	144	4	70	4.3	1.6	4.66	4.81	8	0.5	2.5	1.81	42	40	35.5	0.56	1.39	1263	0.5
4066	17	360	149	7	19	2.4	0.9	3.78	4.08	7	0.5	2.5	2.05	22	20	46.1	0.52	1.35	930	2
4067	49	110	116	5	116	3.6	2.2	6.34	6.56	6	0.5	2.5	2.11	51	43	55.1	0.64	1.42	3492	3
4068	20	100	99	7	56	6	1.9	4.54	4.73	8	0.5	2.5	2.72	53	48	48.4	0.86	0.97	1100	1
4069	19	92	89	7	43	2.8	1.7	4.13	4.22	7	0.5	2.5	2.13	49	30	45.2	0.87	0.98	1082	0.5
4070	48	110	111	10	113	5.3	2.6	5.25	5.32	6	0.5	2.5	2.54	61	54	57.2	0.75	1.32	1695	8
4072	24	140	110	11	96	4.5	1.9	3.9	4.56	9	0.5	2.5	2.14	60	63	67.6	0.63	1.15	1465	0.5
4074	23	140	109	8	64	4.8	2	3.8	4.43	10	0.5	2.5	2.12	59	66	65.3	0.69	1.05	1306	3
4075	13	120	91	13	40	3.9	2.4	3.55	3.83	16	0.5	2.5	2.48	85	79	106.8	0.72	0.72	700	0.5
4076	101		588		251	6.5			9.39				1.92		44	40.2		6.31	2490	
4077	14	100	80	10	46	3	1.3	2.79	2.89	7	0.5	2.5	2.5	46	44	62.1	0.49	0.72	909	3
4078	12	95	80	14	34	2.8	1.1	3.92	4.53	8	0.5	2.5	2.11	37	38	73.1	0.41	0.78	700	5
4079	152		161		219	8.1			8.62				2.77		48	72.2		1.34	7375	
4080	23	110	98	6	46	3.8	1.7	4.28	4.68	7	0.5	2.5	2.64	47	45	39.5	0.61	1.29	1445	0.5
4083	23	210	128	4	46	3.7	1.6	4.44	4.81	7	0.5	2.5	2.09	40	37	37.9	0.52	1.72	1909	0.5
4084	22	120	91	5	57	3.9	1.8	4.19	4.53	7	0.5	2.5	2.31	47	45	38.3	0.63	1.13	1339	3
4085	23	190	114	5	49	4	1.5	4.21	4.84	7	0.5	2.5	2.1	39	38	36.7	0.55	1.32	1230	0.5
4086	20	110	89	5	62	4.7	1.9	4.02	4.47	9	0.5	2.5	2.4	56	55	41.7	0.66	1.17	1205	0.5
4087	35	200	115	5	69	2.4	1.5	4.55	6.15	7	0.5	2.5	2.2	41	36	66.9	0.54	1.31	2178	3
4088	39	130	115	8	81	2.9	1.8	5.84	6.52	6	0.5	2.5	2.24	53	36	74.1	0.47	1.34	3076	2
4089	20	90	92	7	46	5	1.6	4.22	4.63	8	0.5	2.5	2.71	46	44	45.2	0.74	0.94	1219	4
4090	27	100	113	8	66	5.5	1.7	4.87	5.57	6	0.5	2.5	2.77	48	47	51.1	0.7	1.17	1460	2
4091	25	91	82	6	52	5.4	1.8	4.24	4.47	9	0.5	2.5	2.51	48	44	42	0.82	0.9	1454	2
4092	21	88	78	6	47	4.6	1.4	3.98	4.73	8	0.5	2.5	2.48	36	38	42.9	0.65	0.87	1457	2
4094	25	81	62	6	45	4.9	2.1	4.58	4.75	14	0.5	2.5	2.57	37	30	33.8	0.96	0.34	2908	5
4095	27	110	71	8	42	5.8	2.1	4.41	4.62	15	0.5	2.5	2.5	41	37	38.8	0.99	0.35	1637	0.5
4097	12	87	68	8	32	3.1	1.2	2.32	2.43	7	0.5	2.5	2.39	45	47	52	0.43	0.66	900	0.5
4098	13	170	99	7	35	6.1	2.5	3.23	3.44	18	0.5	2.5	1.77	76	79	27.9	0.77	0.5	1584	6
4100	19	100	80	3	39	3.3	1.3	3.4	3.76	7	0.5	2.5	1.9	31	30	41.6	0.54	0.95	1293	3
4101	14	100	73	3	28	3.2	1.2	3.05	3.17	8	0.5	2.5	1.78	30	29	42.9	0.53	0.8	1126	3
4102	19	110	87	10	52	4.1	1.6	3.89	3.91	9	0.5	2.5	2.61	40	35	55	0.69	1.17	1170	0.5
4103	18	110	65	3	46	3.3	1.4	3.37	3.33	10	0.5	2.5	1.76	33	30	35.5	0.59	0.73	1370	0.5
4104	17	300	89	4	54	3.3	1.3	3.15	3.44	12	0.5	2.5	1.05	32	32	30.1	0.55	0.92	1333	2
4105	15	220	97	4	28	2.6	1	4.42	4.8	9	0.5	2.5	0.74	22	19	31.1	0.42	0.66	1119	0.5

Sample	Co2	Cr1	Cr2	Cs1	Cu2	Dy2	Eu1	Fe1	Fe2	Hf1	Hg1	Ir1	K2	La1	La2	Li2	Lu1	Mg2	Mn2	Mo1
	ppm	ppm	ppm	ppm	ppm	ppm	ppm	wt. %	wt. %	ppm	ppm	ppb	wt. %	ppm	ppm	ppm	ppm	wt. %	ppm	ppm
4106	36	100	120	4	155	3.1	1.4	3.2	5.83	10	0.5	2.5	2.27	31	44	73.6	0.58	1.34	1600	1
4107	36	120	118	9	89	3.6	1.6	5.02	5.51	6	0.5	2.5	2.36	51	49	62.6	0.58	1.45	1979	4
4108	5	17	22	6	10	7.5	1.5	1.99	2.04	24	0.5	2.5	2.86	34	34	23.7	1.27	0.3	549	0.5
4109	10		44		26	7.8			3.16				2.47		37	24.2		0.45	1306	
4150	14	130	106	11	19	2.8	1.2	2.68	3.11	6	0.5	2.5	2.15	41	43	60.5	0.41	0.81	910	3
4151	11	140	91	8	14	3.8	1.4	1.91	2.02	9	0.5	2.5	2.17	54	57	35	0.56	0.59	957	4

Sample	Mo2	Na1	Na2	Nb2	Nd1	Ni1	Ni2	P2	Pb2	Rb1	Rb6	Sb1	Sc1	Sc2	Se1	Sm1	Sn1	Sr1	Sr2	Ta1
	ppm	wt. %	wt. %	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	wt. %	wt. %	ppm	ppm
4000	2		0.86	9			51	777	47		83			15.5					62	
4001	2	1.09	1.1	10	24	2	57	678	23	76	80	2.9	17	17.2	0.5	5.3	0.01	0.03	74	0.1
4002	1	1.52	1.38	12	37	2	39	548	24	94	92	5.7	16	17.6	0.5	6.9	0.01	0.03	72	0.7
4003	1	1.46	1.33	11	33	2	44	450	16	84	80	3.5	15	15.6	0.5	5.7	0.01	0.03	77	0.1
4004	0.5	1.47	1.35	11	37	2	47	671	17	110	96	4.2	18	18.5	0.5	7.2	0.01	0.03	93	1.1
4005	0.5	1.36	1.23	13	32	2	47	710	24	100	71	3.1	17	17.7	0.5	5.7	0.01	0.03	82	1
4007	0.5	1.6	1.42	18	36	81	30	979	15	41	56	0.9	10	9.8	0.5	6.8	0.01	0.03	117	1.5
4008	1	1.34	1.5	13	29	2	47	1040	30	60	81	2.7	15	15.9	0.5	6.2	0.01	0.03	102	0.1
4009	1.3	1.22	1.27	10	40	2	73	1231	38	110	111	3.5	21	20.8	0.5	7.7	0.01	0.03	91	1.7
4011	0.5	0.8	0.71	12	33	2	212	1024	37	130	110	4.9	26	26.6	0.5	7.1	0.01	0.03	62	1.2
4012	1.1	1.18	0.93	9	38	320	337	736	30	71	70	3.3	33	34.6	0.5	8.7	0.01	0.03	70	0.1
4014	1.2	1.24	1.38	16	38	120	64	1123	48	53	50	1.5	12	12.2	0.5	7.9	0.01	0.03	102	1.5
4015	1.7	1.28	1.21	14	39	2	66	874	38	85	90	1.5	15	16.4	0.5	6.6	0.01	0.03	101	0.1
4016	1.7	0.64	0.59	18	51	170	66	860	41	170	166	7.3	22	20.9	0.5	8.8	0.01	0.03	55	1.1
4018	0.5	1.24	1.09	13	37	120	66	735	25	100	99	4	17	17.9	0.5	7.4	0.01	0.03	83	1.3
4019	0.5	0.85	0.85	9	33	620	284	772	26	100	92	3.2	21	21.4	0.5	6.6	0.01	0.03	60	1.4
4022	4.4	1.04	0.65	18	63	2	82	577	35	160	163	38	28	25.8	0.5	10	0.01	0.03	70	1.5
4023	0.5	1.57	1.42	11	42	2	55	426	24	110	76	2	18	18.5	0.5	7.3	0.01	0.03	106	1.1
4024	0.5	0.91	0.88	4	30	2	94	1117	64	100	96	0.8	30	30	0.5	6.6	0.01	0.03	87	0.1
4025	0.5	2.17	2.29	10	37	2	14	1197	25	150	150	0.2	5.8	6.1	0.5	6	0.01	0.03	114	1.8
4026	1.3	1.15	1.22	22	37	2	31	435	86	120	123	0.5	15	14.7	0.5	6.6	0.01	0.03	52	1
4027	2	1.46	1.28	16	68	2	79	928	37	120	104	1.6	16	15.7	0.5	11	0.01	0.03	82	1.6
4028	0.5	1.23	1.08	19	49	2	42	1032	45	160	163	0.8	18	18.2	0.5	9	0.01	0.03	64	0.9
4029	0.5	1.76	1.74	17	47	2	36	1132	28	98	81	0.8	12	13.1	0.5	8.5	0.01	0.03	103	1.7
4030	0.5	1.53	1.45	13	33	2	42	929	23	75	56	1	14	14.4	0.5	6.2	0.01	0.03	94	1.4
4031	39.5	1.62	1.45	15	50	2	63	973	28	90	79	1.1	17	16.5	0.5	11	0.01	0.03	99	1
4032	0.5	0.93	0.61	10	35	550	583	627	30	150	118	7.4	35	32.9	0.5	6.7	0.01	0.03	63	0.8
4033	0.5	1.14	1.14	10	28	620	255	1262	79	60	61	1.9	20	18.8	0.5	5.6	0.01	0.03	86	0.1
4034	1.2	1.3	0.69	15	52	2	70	594	18	150	134	1	19	19.8	0.5	9.5	0.01	0.03	62	1.9
4035	1.5	0.94	0.92	15	45	71	59	661	28	120	121	2.9	19	16.7	0.5	7.6	0.01	0.03	62	1.2
4036	1.5	1.12	1.02	16	42	2	53	640	19	140	138	8.5	17	18.2	0.5	8.2	0.01	0.03	65	1.3
4037	0.5	1.12	0.91	13	40	2	43	921	40	140	103	4.9	17	15.6	0.5	7.2	0.01	0.03	121	0.8
4038	1.3	0.8	1.44	16	26	2	23	620	25	100	108	9	14	14.2	0.5	5.5	0.01	0.03	74	0.7
4039	1.4	1.2	1.2	20	27	2	42	1196	22	100	159	4	13	20.7	0.5	5.7	0.01	0.03	80	0.7
4040	1.2	1.33	1.23	16	48	2	41	1000	27	150	149	1	19	17.4	0.5	9.1	0.01	0.03	87	1
4041	1.6	1.31	1.2	16	43	2	32	648	47	160	118	0.9	16	14.8	0.5	7.9	0.01	0.03	77	1.2
4042	0.5	1.36	1.27	16	30	120	41	716	23	140	113	1.2	14	15.7	0.5	5.1	0.01	0.03	83	1
4043	0.5	1.58	1.45	14	28	2	38	991	20	110	104	1.5	15	15.8	0.5	6	0.01	0.03	96	1.1
4044	1.2	1.48	1.46	13	26	2	34	779	20	91	101	1.8	14	14.7	0.5	5.5	0.01	0.03	90	1
4045	3.4	1.16	1.07	17	30	2	42	235	14	98	94	3.2	12	12.7	0.5	5.3	0.01	0.03	64	1.3
4046	1.2	0.91	0.95	14	21	210	41	443	13	95	111	3.2	12	12.5	0.5	4.6	0.01	0.03	55	0.8
4047	1.4	0.7	0.64	10	31	2	95	1638	28	110	98	11	16	16	0.5	6.4	0.01	0.03	103	0.1
4048	3.7	1.2	0.95	23	22	2	4	600	105	150	133	3.7	18	11.5	0.5	5.3	0.01	0.03	46	2.8
4049	1.8		0.56	11			28	3098	39		91			15.1					67	
4050	0.5	0.99	0.86	13	30	2	47	722	33	140	109	8.4	14	12.3	1	4.8	0.01	0.03	63	1.1
4051	1.2	0.95	1.62	13	25	2	30	809	17	98	91	3.3	13	13.7	0.5	4.7	0.01	0.03	97	0.1

Sample	Mo2	Na1	Na2	Nb2	Nd1	Ni1	Ni2	P2	Pb2	Rb1	Rb6	Sb1	Sc1	Sc2	Se1	Sm1	Sn1	Sr1	Sr2	Ta1
	ppm	wt. %	wt. %	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	wt. %	wt. %	ppm	ppm
4052	0.5	1.6	1.54	12	32	2	34	826	24	86	94	1.8	14	15.4	0.5	5.9	0.01	0.03	94	1.3
4053	0.5	1.65	1.61	15	38	2	31	1102	23	140	136	1.3	16	17.8	2	6.7	0.01	0.03	106	2.1
4054	1.4	1.13	1	13	31	2	82	697	29	100	100	1.6	17	17.9	0.5	5.5	0.01	0.03	83	0.6
4055	1.3	1.26	1.12	12	38	2	57	763	24	96	93	2.4	17	18.6	0.5	6.6	0.01	0.03	86	0.8
4056	1.3	1.24	1.2	13	35	2	53	728	19	100	98	1.6	15	17.1	0.5	6.3	0.01	0.03	95	0.7
4057	1.2	1.59	1.59	15	39	2	43	927	19	70	58	1.8	12	13.1	0.5	6.7	0.01	0.03	106	1.1
4058	1.7	1.7	1.93	16	28	120	13	466	26	130	150	2.8	14	13.4	0.5	5.8	0.01	0.03	62	1.3
4059	1.7	1.72	2.09	16	24	170	4	361	33	130	151	3	10	10.9	0.5	5.4	0.01	0.03	58	0.1
4060	1.7	1.05	0.86	12	37	2	76	797	32	110	95	7.3	16	16.1	0.5	8	0.01	0.03	50	1.1
4061	1.7	1.34	1.18	19	25	2	24	721	72	130	138	0.5	16	17	0.5	4.9	0.01	0.03	66	1.6
4062	1.9	0.88	0.96	17	33	2	60	1071	41	120	150	0.8	19	19.3	0.5	6.3	0.01	0.03	62	0.1
4063	0.5	1.38	1.19	16	43	2	54	896	19	130	113	1.8	18	18.8	0.5	8.2	0.01	0.03	81	1.5
4064	1	1.4	1.23	15	38	150	59	903	25	110	114	1.9	18	18.3	0.5	7.6	0.01	0.03	69	1.3
4065	0.5	1.57	1.43	14	32	2	82	719	20	95	83	1.2	18	19.8	0.5	6.2	0.01	0.03	100	1.6
4066	1.1	1.45	1.33	16	24	2	36	529	40	120	118	0.6	17	18.3	0.5	3.4	0.01	0.03	84	1.3
4067	0.5	1.21	1.07	13	44	2	61	936	40	87	91	3.2	23	24.4	0.5	8.4	0.01	0.03	82	1.3
4068	1.4	1.13	0.93	14	50	2	60	551	17	140	150	5	19	20.5	0.5	8.6	0.01	0.03	75	1.2
4069	0.5	1.02	1.11	12	41	2	51	355	17	130	103	4.7	17	16.4	0.5	7.9	0.01	0.03	72	1.1
4070	2	1.29	1.14	14	57	110	86	882	57	140	140	1.7	15	18.6	0.5	11	0.01	0.03	70	1.5
4072	0.5	1.61	1.87	16	46	2	43	1448	26	110	113	0.7	16	17.5	0.5	9.1	0.01	0.03	146	1.8
4074	0.5	1.75	1.97	16	46	210	42	1452	25	130	111	0.4	15	15.6	0.5	9.2	0.01	0.03	166	1.7
4075	1.5	1.73	1.8	20	69	120	29	1274	38	170	175	0.5	12	11.3	0.5	12	0.01	0.03	85	2.3
4076	5.3		0.71	8			562	1288	61		83			28.4					49	
4077	0.5	1.88	1.87	15	45	2	35	1204	30	200	195	0.4	11	11	0.5	6.7	0.01	0.03	96	1.8
4078	2.3	1.7	1.98	15	29	2	24	1642	81	120	131	0.4	12	11.7	0.5	5.6	0.01	0.03	125	0.1
4079	14.7		0.96	10			83	2665	180		131			32.9					80	
4080	0.5	1.46	1.39	16	37	2	40	883	17	140	137	0.6	16	17.6	0.5	7	0.01	0.03	98	1.1
4083	0.5	1.42	1.38	13	39	2	78	796	12	99	97	1.4	16	17.6	0.5	6.4	0.01	0.03	96	1.1
4084	0.5	1.42	1.38	15	38	2	47	850	16	120	113	1.2	15	16.3	0.5	7.3	0.01	0.03	85	1.1
4085	0.5	1.35	1.38	13	34	130	69	796	14	100	99	1.5	16	18.4	0.5	6	0.01	0.03	93	1
4086	0.5	1.49	1.53	16	47	2	42	985	26	110	116	0.8	14	16.3	0.5	8.4	0.01	0.03	94	1.3
4087	0.5	1.42	0.9	12	31	2	69	595	19	94	102	1.2	16	17.1	0.5	6.3	0.01	0.03	67	1.1
4088	1.2	0.82	0.82	12	42	2	74	754	26	98	111	2.3	19	18.4	0.5	7.7	0.01	0.03	58	0.1
4089	1.9	1.09	1.07	15	43	2	53	628	24	130	147	4.8	17	18.6	0.5	7.5	0.01	0.03	69	0.8
4090	2.3	0.83	0.78	16	39	2	65	729	22	140	154	7.9	19	20.9	0.5	7.3	0.01	0.03	61	1.3
4091	1.9	1.26	1.2	14	41	74	47	677	24	160	134	4.9	17	17.3	0.5	8.2	0.01	0.03	65	1.3
4092	1.3	0.95	1.04	14	35	52	59	647	23	120	133	6	15	16.7	0.5	5.9	0.01	0.03	68	1.3
4094	0.5	1.34	1.3	14	37	97	38	882	25	170	131	4.7	16	15.9	0.5	7.7	0.01	0.03	94	1.3
4095	6.5	1.01	0.96	13	42	2	79	933	29	120	127	19	17	17.4	0.5	8.2	0.01	0.03	59	1.5
4097	0.5	1.96	2.02	12	33	2	29	933	40	180	175	0.5	9.4	9.8	0.5	6.7	0.01	0.03	97	1.7
4098	0.5	2.05	2.23	19	64	2	23	1704	37	93	98	0.4	9.4	7.8	0.5	13	0.01	0.03	128	3.4
4100	0.5	1.4	1.43	13	26	88	41	653	19	110	93	2	15	16	0.5	5.3	0.01	0.03	81	1
4101	1.2	1.53	1.57	13	28	2	32	700	18	110	85	1.5	12	12.1	1	4.7	0.01	0.03	94	1.2
4102	1.2	1.62	1.48	15	36	130	32	904	15	150	135	0.9	19	19.1	2	6.6	0.01	0.03	88	1.2
4103	1.2	1.68	1.57	12	31	2	33	835	17	110	84	2.1	13	12.7	0.5	5.7	0.01	0.03	87	1
4104	1.1	1.39	1.44	13	30	2	46	833	16	63	41	1.2	11	11.3	0.5	5.2	0.01	0.03	105	1.4
4105	1.4	1.03	1.08	9	22	2	28	946	22	40	30	0.7	10	10.4	2	3.6	0.01	0.03	76	0.1

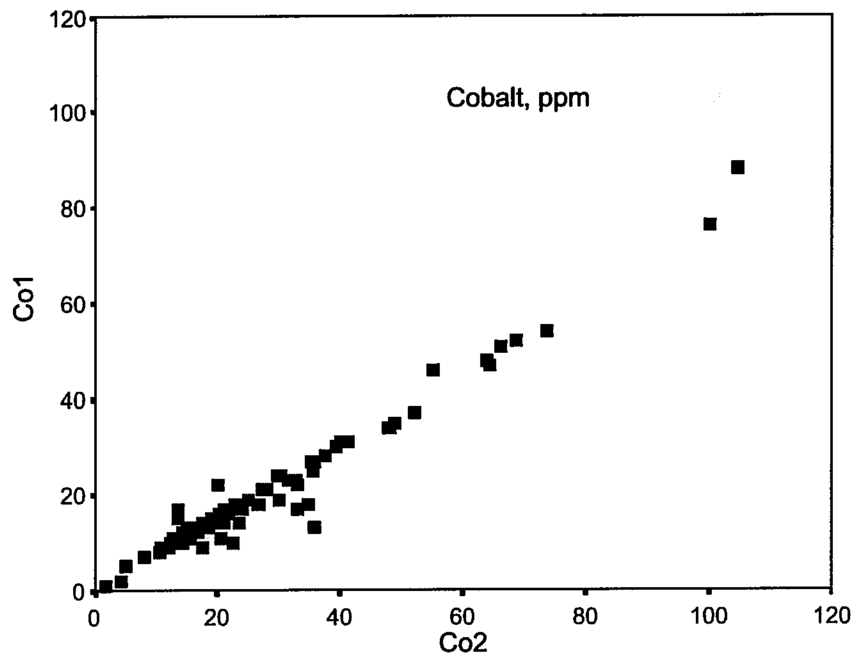
Sample	Mo2	Na1	Na2	Nb2	Nd1	Ni1	Ni2	P2	Pb2	Rb1	Rb6	Sb1	Sc1	Sc2	Se1	Sm1	Sn1	Sr1	Sr2	Ta1
	ppm	wt. %	wt. %	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	wt. %	wt. %	ppm	ppm
4106	3.2	1.59	1.01	14	32	72	82	739	46	110	114	2.1	12	18.3	0.5	5.4	0.01	0.03	81	1.1
4107	0.5	1.03	0.97	14	38	69	71	745	27	110	114	1.5	18	19.6	0.5	6.7	0.01	0.03	91	1.5
4108	1.5	2.2	2.21	14	39	2	4	500	21	160	150	3.5	11	11.3	2	7.4	0.01	0.03	63	1.4
4109	1.3		1.91	18			12	767	35		37			13.4					68	
4150	1.1	1.63	1.8	14	36	85	45	823	24	140	37	0.3	10	11.2	0.5	6.1	0.01	0.03	91	2.2
4151	0.5	2.05	2.16	11	44	110	36	1373	25	160	59	0.3	7.2	7.5	0.5	7.9	0.01	0.03	100	1.1

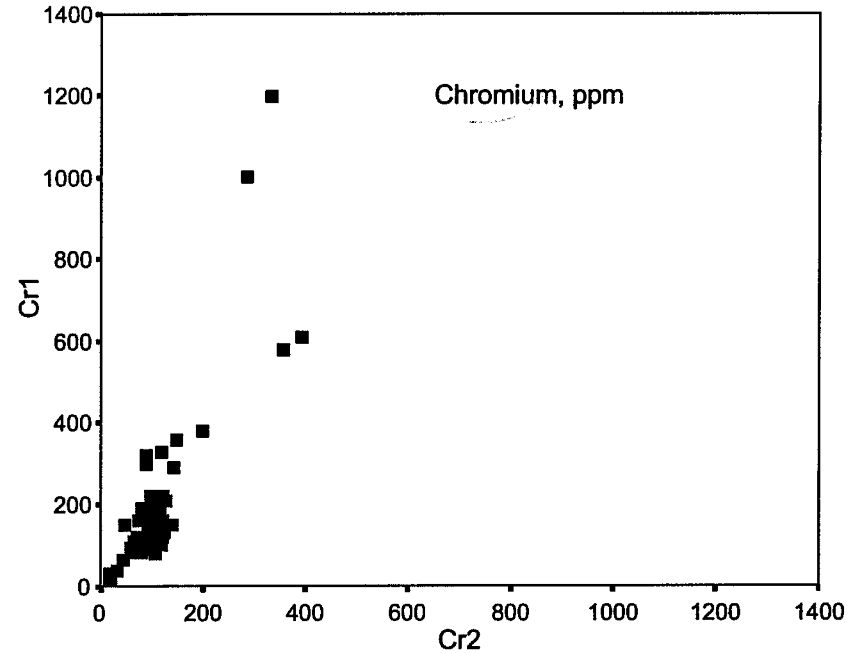
Sample	Tb1	Th1	Ti2	U1	V2	W1	Y2	Yb1	Zn1	Zn2	Zr1	Zr2
	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	wt. %	ppm
4000			4617		120		18			114		129
4001	0.8	9.8	5158	2.6	119	3	18	3.2	55	74	0.01	117
4002	1	12	5244	2.7	105	0.2	27	4.4	78	79	0.02	133
4003	1	10	5443	2.9	109	0.2	17	3.9	88	74	0.01	115
4004	1.2	11	5119	2.6	126	0.2	30	4.2	135	90	0.02	123
4005	1.1	9.2	6123	1.8	115	0.2	19	3.4	71	73	0.01	112
4007	1.3	8.9	10893	2.9	71	0.2	20	4.9	55	47	0.03	124
4008	1.2	11	6989	3.1	100	3	23	4.1	63	80	0.01	132
4009	1.4	12	5120	3.2	136	2	23	4.3	75	111	0.04	128
4011	1.3	12	4945	2.7	163	0.2	31	4.6	150	127	0.04	115
4012	1.8	9.6	4828	9.2	161	0.2	37	5.1	119	102	0.01	93
4014	1.2	15	9426	3	85	0.2	20	3.5	91	90	0.01	116
4015	0.2	11	6868	3.3	125	0.2	16	3.5	100	95	0.01	116
4016	1.6	16	6523	3.7	143	0.2	25	4.7	206	139	0.02	137
4018	1.4	11	5941	2.4	123	0.2	24	4.1	110	98	0.02	121
4019	1	13	4453	3.5	126	0.2	23	3.8	150	108	0.01	119
4022	0.2	16	7003	5.5	211	6	29	5.7	209	129	0.02	170
4023	1.1	11	4762	2	118	0.2	19	4	106	81	0.01	111
4024	1.2	16	2921	4	194	4	18	3.9	150	158	0.01	144
4025	1	15	3874	3.4	42	3	17	3.3	25	30	0.01	107
4026	0.2	33	9005	3.8	108	3	29	4	99	90	0.01	153
4027	1.7	22	6828	4.6	109	0.2	32	5.2	132	116	0.03	139
4028	1.3	15	7146	2.9	124	9	23	4.5	140	108	0.03	152
4029	1.3	17	7415	3.2	90	4	22	4.6	106	65	0.03	137
4030	0.9	9.7	6359	2.2	91	4	23	3.8	102	62	0.01	105
4031	1.5	12	6930	3.3	99	0.2	35	4.8	98	85	0.02	95
4032	1	11	4633	2.4	175	0.2	24	3.8	226	119	0.01	92
4033	1	12	5649	7.3	132	3	24	3.5	110	110	0.01	110
4034	1.3	15	5403	4	166	0.2	17	5.2	171	116	0.01	118
4035	1	13	5798	2.5	112	0.2	23	3.7	191	102	0.02	138
4036	1.3	13	5210	2.5	117	0.2	30	4.7	143	108	0.02	132
4037	1	12	4618	2.6	86	0.2	25	5.1	134	98	0.01	159
4038	0.8	13	5065	2.3	64	0.2	35	4.5	110	67	0.03	206
4039	1.2	12	6939	3.4	137	2	27	5.9	83	100	0.04	128
4040	1.1	22	5962	3.6	123	0.2	18	4.6	146	96	0.02	117
4041	1	15	6192	2.6	110	0.2	15	3.9	111	68	0.02	116
4042	0.8	10	6219	3.4	114	0.2	17	3.5	108	87	0.01	118
4043	0.8	13	6162	2.7	101	0.2	18	3.8	110	74	0.01	114
4044	0.9	10	6002	2.1	97	3	18	3.4	95	70	0.02	113
4045	1	9.9	6152	2.9	77	3	19	4.2	72	55	0.02	142
4046	1.2	9.7	5238	2.6	87	0.2	20	3.8	93	64	0.04	136
4047	1.2	11	3937	3.3	129	0.2	26	4.4	210	170	0.04	130
4048	1.3	18	5062	6.5	41	8	27	10.1	25	45	0.09	256
4049			4605		100		21			127		130
4050	0.8	12	4483	1.9	95	0.2	16	4.2	150	103	0.01	137
4051	1	9.7	6184	3.6	80	3	21	4	65	62	0.02	111

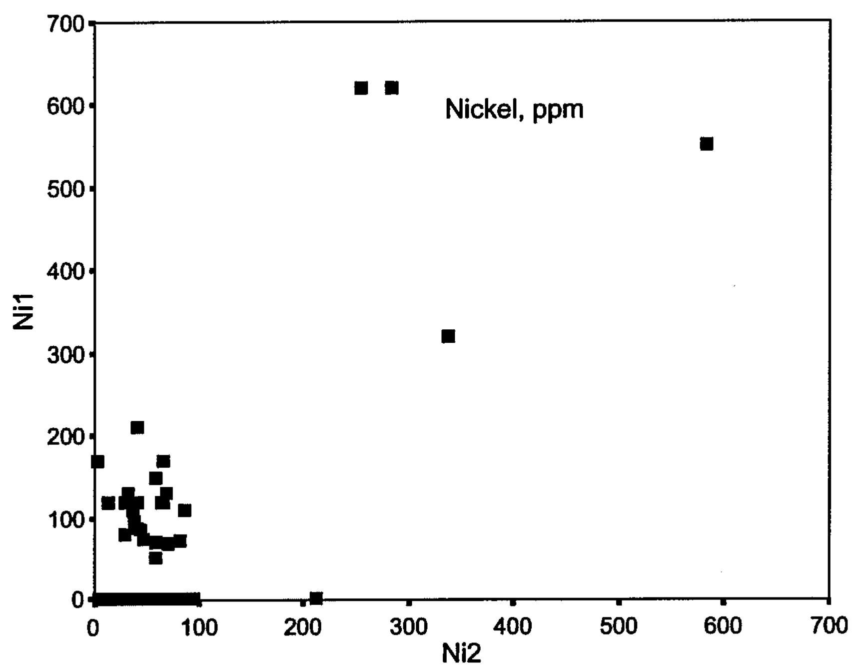
Sample	Tb1	Th1	Ti2	U1	V2	W1	Y2	Yb1	Zn1	Zn2	Zr1	Zr2
	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	wt. %	ppm
4052	0.9	11	6135	2.6	84	0.2	18	4	92	65	0.02	111
4053	1	12	6498	3.4	103	4	19	4	103	78	0.02	107
4054	0.9	12	5879	2.5	138	0.2	17	3.4	145	125	0.01	115
4055	0.9	10	5907	2	135	0.2	22	3.8	137	102	0.01	114
4056	1.1	9	5890	2.3	128	0.2	22	3.4	122	90	0.01	107
4057	1.1	9.9	7798	2.5	88	0.2	20	4.2	73	64	0.03	128
4058	1.2	20	3977	4.3	44	0.2	39	7.3	84	62	0.05	225
4059	1	14	3773	4.4	27	0.2	45	7.2	70	59	0.07	264
4060	1.4	12	4871	3.1	88	0.2	25	4.9	116	113	0.01	128
4061	0.7	9.2	7452	2.3	126	0.2	18	3.8	115	67	0.01	132
4062	1	21	5884	2.6	134	0.2	24	3.4	190	180	0.01	124
4063	1.1	13	6514	2.6	125	0.2	26	4.7	116	83	0.01	133
4064	1.3	14	6576	3.2	120	0.2	19	4.3	94	89	0.01	125
4065	1	9.8	6528	2.8	123	0.2	26	3.8	100	81	0.01	92
4066	0.6	6.6	6991	2.3	144	0.2	15	3.2	102	78	0.01	100
4067	1.3	11	6239	2.4	159	5	20	4	148	111	0.01	119
4068	1.7	13	4737	2.2	138	0.2	39	5.6	140	104	0.02	131
4069	1.4	12	4851	2.9	120	0.2	17	5.2	133	78	0.01	124
4070	1.3	15	5422	4.2	134	0.2	27	5	187	166	0.02	120
4072	1.6	21	6539	3.8	118	0.2	21	4.9	79	75	0.01	100
4074	1.4	19	6792	4.2	114	0.2	21	5.2	130	74	0.01	92
4075	1.8	30	5787	6.5	82	0.2	16	5.5	92	82	0.03	170
4076			3418		158		34			115		93
4077	1	18	4399	4.9	72	6	14	2.9	53	62	0.01	103
4078	0.9	13	4911	5.2	89	6	14	3	75	84	0.03	82
4079			4466		181		46			144		142
4080	1.1	12	5946	2.2	123	2	22	4	128	92	0.01	114
4083	0.8	10	5620	2.6	131	0.2	21	3.6	126	86	0.01	100
4084	1.1	12	6099	2.4	121	0.2	21	4.1	115	88	0.01	111
4085	1	9.8	5754	2.5	131	0.2	24	3.5	109	88	0.01	99
4086	1	15	6463	3	120	4	24	4.3	104	93	0.02	127
4087	1.2	9.8	4745	2.1	153	0.2	12	3.7	131	117	0.01	103
4088	1.1	14	5006	3.2	158	0.2	16	3.4	150	121	0.03	113
4089	1.3	12	5318	1.8	131	6	31	5.1	115	105	0.01	134
4090	1.2	11	5523	2.6	177	6	34	4.5	118	120	0.01	125
4091	1.4	13	4866	2.6	116	0.2	33	5.3	137	104	0.01	140
4092	1.1	11	5115	2.3	115	0.2	27	4	122	115	0.01	130
4094	1.3	13	4363	3.1	90	0.2	26	6	127	89	0.02	167
4095	2.1	14	4439	3.3	79	0.2	33	6.1	128	97	0.02	171
4097	1.2	20	4595	3.6	66	0.2	15	2.8	71	53	0.01	107
4098	2.1	29	8048	3.9	75	0.2	26	5.9	74	44	0.1	115
4100	1.1	9.7	5847	2.2	104	0.2	17	3.6	75	70	0.01	119
4101	1.1	9.6	5966	3.1	85	0.2	17	3.5	77	68	0.02	115
4102	1.4	18	6584	2.1	114	5	22	4.2	112	81	0.01	103
4103	1.1	11	5818	2.7	80	0.2	16	4.2	101	64	0.02	119
4104	1.1	9.2	7862	2	83	0.2	16	3.7	57	54	0.02	115
4105	0.8	7.4	5415	2.1	83	0.2	12	2.7	97	75	0.01	90

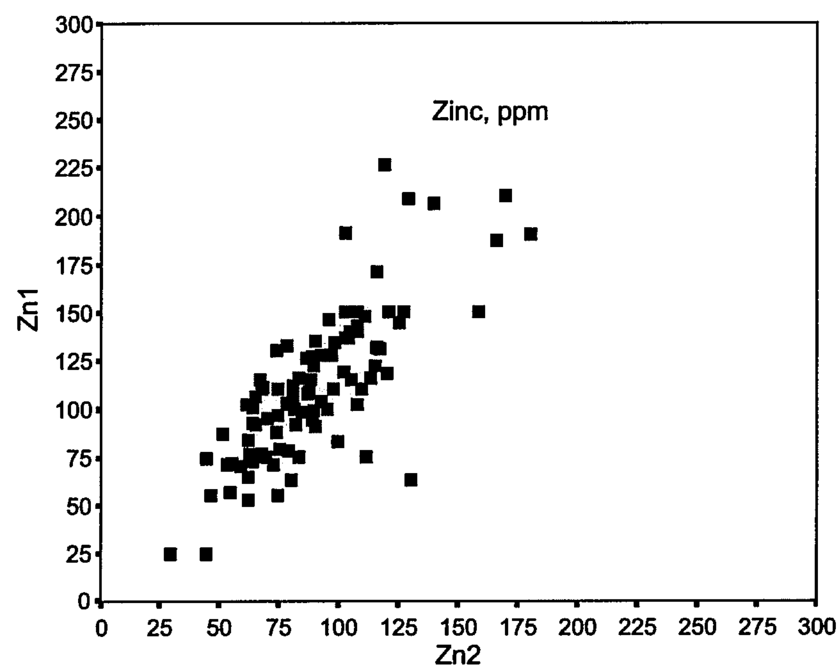
Sample	Tb1	Th1	Ti2	U1	V2	W1	Y2	Yb1	Zn1	Zn2	Zr1	Zr2
	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	wt. %	ppm
4106	1	10	6447	2.4	156	0.2	13	3.6	63	130	0.01	117
4107	1.4	11	6026	2.1	165	0.2	18	3.5	102	108	0.01	118
4108	1.7	15	4037	3.9	32	0.2	45	8.6	87	51	0.02	228
4109			6566		62		43			69		310
4150	0.8	16	4959	3.2	82	0.2	12	2.7	77	63	0.01	101
4151	1.1	24	4593	4.1	51	0.2	16	3.1	25	45	0.01	117

Appendix C: Comparison plots

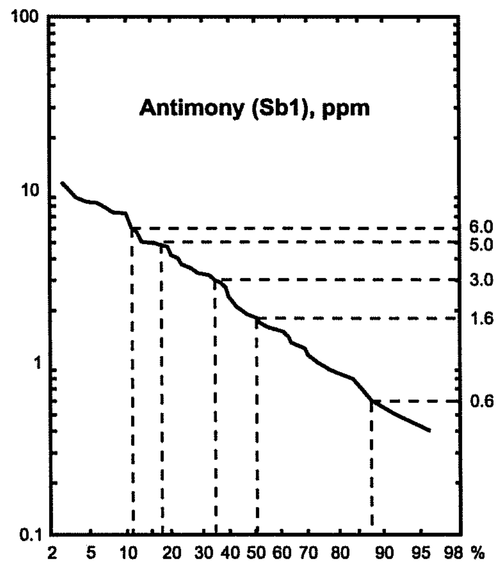


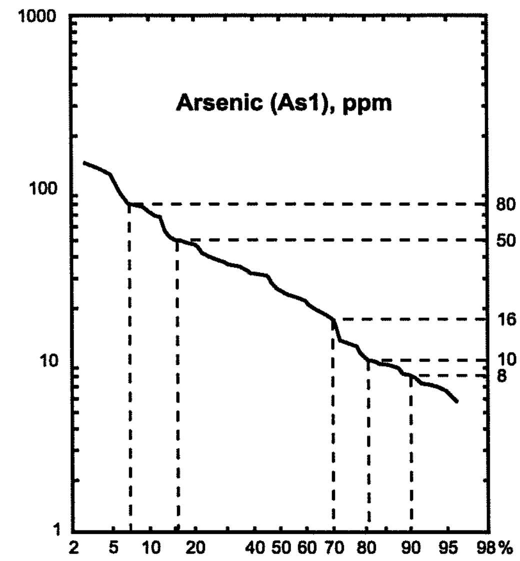


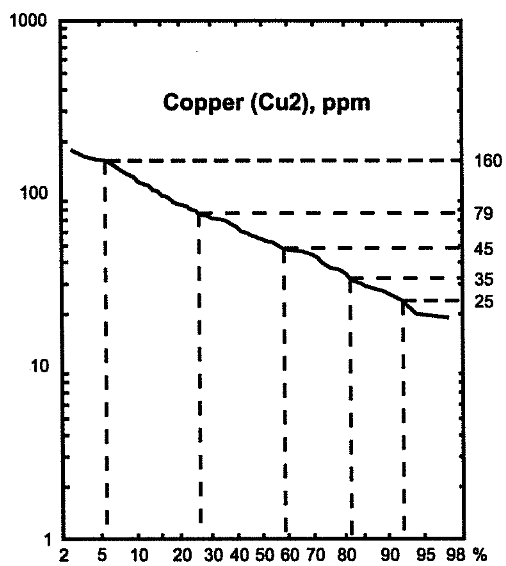


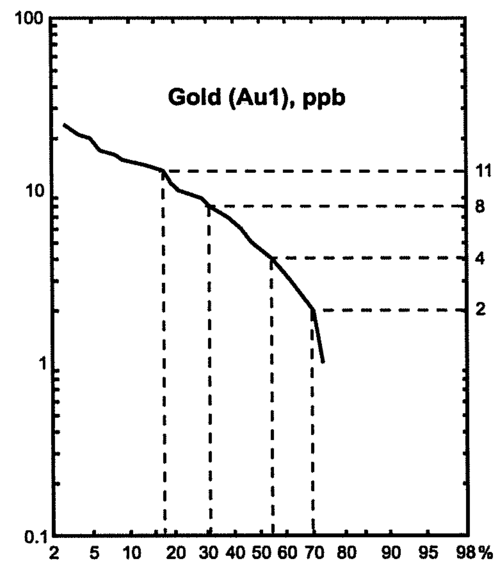


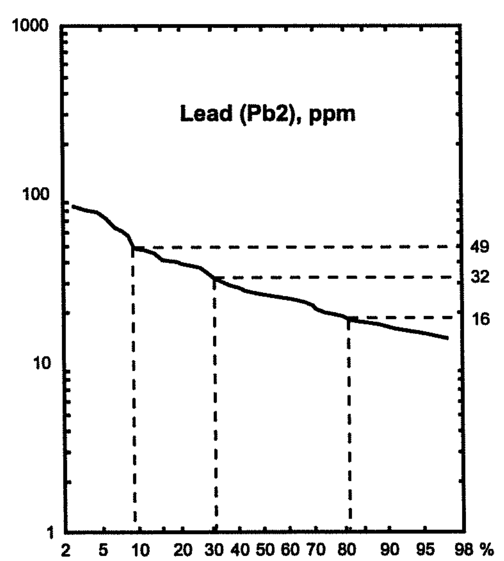
Appendix D: Cumulative Frequency plots

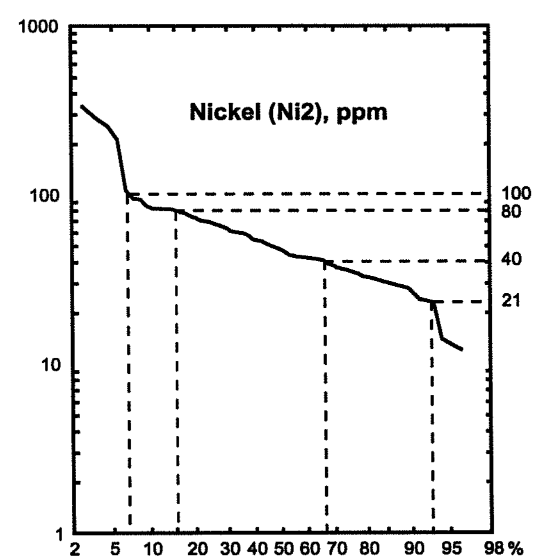




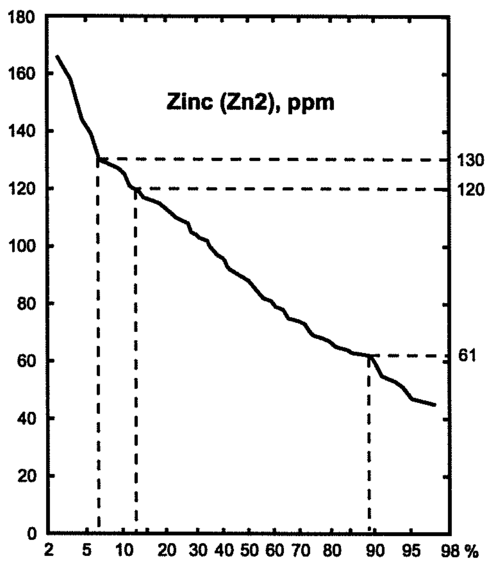








Appendix D: Cumulative Frequency plots



Correlation Coefficients

	Au1	Ag6	Al2	As1	Ba1	Ba2	Be2	Br1	Ca1	Ca2	Cd2	Ce1	Ce2	Co1	Co2	Cr1	Cr2	Cs1	Cu2	Dy2	Eu1
Au1	**1.00**	-0.01	0.10	0.21	0.23	0.18	-0.10	-0.22	0.09	-0.26	-0.13	-0.14	-0.18	0.08	0.14	0.08	0.11	0.15	0.15	0.02	0.10
Ag6	-0.01	**1.00**	0.22	0.15	-0.03	0.07	-0.17	0.18	0.08	-0.27	-0.14	-0.10	-0.14	0.12	0.15	0.06	0.22	-0.02	0.12	-0.10	-0.10
Al2	0.10	0.22	**1.00**	0.00	0.48	0.45	0.28	0.03	0.01	-0.52	-0.15	0.18	0.03	0.21	0.26	-0.02	0.52	0.45	0.24	-0.09	0.21
As1	0.21	0.15	0.00	**1.00**	0.15	0.01	-0.46	-0.34	0.08	-0.35	0.05	-0.15	-0.17	0.60	0.58	0.25	0.20	-0.11	0.40	0.29	0.28
Ba1	0.23	-0.03	0.48	0.15	**1.00**	0.71	0.19	-0.19	0.01	-0.43	-0.05	0.16	-0.04	0.23	0.20	-0.09	0.21	0.50	0.13	0.28	0.45
Ba2	0.18	0.07	0.45	0.01	0.71	**1.00**	0.42	-0.16	-0.03	-0.34	-0.07	0.25	0.17	0.18	0.21	-0.24	0.21	0.47	0.21	0.42	0.39
Be2	-0.10	-0.17	0.28	-0.46	0.19	0.42	**1.00**	0.14	-0.05	0.18	-0.10	0.52	0.59	-0.17	-0.10	-0.30	0.05	0.54	0.13	0.25	0.18
Br1	-0.22	0.18	0.03	-0.34	-0.19	-0.16	0.14	**1.00**	-0.13	0.20	0.08	0.08	0.10	-0.33	-0.33	-0.04	-0.06	0.14	-0.16	-0.21	-0.42
Ca1	0.09	0.08	0.01	0.08	0.01	-0.03	-0.05	-0.13	**1.00**	0.02	0.07	0.04	-0.03	0.12	0.10	0.13	0.07	-0.03	0.14	-0.03	0.12
Ca2	-0.26	-0.27	-0.52	-0.35	-0.43	-0.34	0.18	0.20	0.02	**1.00**	0.00	0.11	0.21	-0.26	-0.36	0.19	-0.20	-0.20	-0.18	0.08	-0.15
Cd2	-0.13	-0.14	-0.15	0.05	-0.05	-0.07	-0.10	0.08	0.07	0.00	**1.00**	-0.04	0.04	-0.20	-0.21	-0.25	-0.32	-0.01	-0.19	0.18	-0.11
Ce1	-0.14	-0.10	0.18	-0.15	0.16	0.25	0.52	0.08	0.04	0.11	-0.04	**1.00**	0.72	0.28	0.18	0.06	0.11	0.41	0.32	0.35	0.52
Ce2	-0.18	-0.14	0.03	-0.17	-0.04	0.17	0.59	0.10	-0.03	0.21	0.04	0.72	**1.00**	0.08	0.14	-0.09	0.03	0.20	0.39	0.45	0.21
Co1	0.08	0.12	0.21	0.60	0.23	0.18	-0.17	-0.33	0.12	-0.26	-0.20	0.28	0.08	**1.00**	0.93	0.52	0.56	0.07	0.73	0.22	0.57
Co2	0.14	0.15	0.26	0.58	0.20	0.21	-0.10	-0.33	0.10	-0.36	-0.21	0.18	0.14	0.93	**1.00**	0.47	0.64	0.02	0.83	0.18	0.48
Cr1	0.08	0.06	-0.02	0.25	-0.09	-0.24	-0.30	-0.04	0.13	0.19	-0.25	0.06	-0.09	0.52	0.47	**1.00**	0.65	0.03	0.32	-0.01	0.25
Cr2	0.11	0.22	0.52	0.20	0.21	0.21	0.05	-0.06	0.07	-0.20	-0.32	0.11	0.03	0.56	0.64	0.65	**1.00**	0.26	0.56	0.00	0.31
Cs1	0.15	-0.02	0.45	-0.11	0.50	0.47	0.54	0.14	-0.03	-0.20	-0.01	0.41	0.20	0.07	0.02	0.03	0.26	**1.00**	0.05	0.12	0.34
Cu2	0.15	0.12	0.24	0.40	0.13	0.21	0.13	-0.16	0.14	-0.18	-0.19	0.32	0.39	0.73	0.83	0.32	0.56	0.05	**1.00**	0.22	0.40
Dy2	0.02	-0.10	-0.09	0.29	0.28	0.42	0.25	-0.21	-0.03	0.08	0.18	0.35	0.45	0.22	0.18	-0.01	0.00	0.12	0.22	**1.00**	0.45
Eu1	0.10	-0.10	0.21	0.28	0.45	0.39	0.18	-0.42	0.12	-0.15	-0.11	0.52	0.21	0.57	0.48	0.25	0.31	0.34	0.40	0.45	**1.00**
Fe1	0.20	0.17	0.47	0.48	0.47	0.40	-0.08	-0.27	0.07	-0.47	-0.22	0.20	-0.07	0.79	0.74	0.45	0.67	0.34	0.54	0.17	0.56
Fe2	0.20	0.23	0.56	0.43	0.34	0.37	-0.03	-0.25	-0.01	-0.50	-0.20	0.09	0.00	0.70	0.78	0.38	0.76	0.20	0.66	0.16	0.41
Hf1	-0.01	-0.07	-0.38	-0.09	-0.14	-0.11	-0.13	0.10	0.02	0.21	0.22	0.19	0.14	-0.31	-0.32	-0.01	-0.38	-0.15	-0.22	0.34	0.00
Hg1	0.10	0.17	0.09	-0.15	0.12	0.14	0.06	0.08	-0.02	-0.03	-0.06	-0.17	-0.16	-0.13	-0.14	-0.12	-0.05	0.03	-0.13	-0.13	-0.14
K2	0.07	-0.10	0.46	-0.11	0.57	0.74	0.59	-0.15	-0.06	-0.30	0.08	0.28	0.31	-0.07	-0.03	-0.50	-0.05	0.51	-0.01	0.35	0.19
La1	-0.01	-0.13	0.36	-0.01	0.40	0.32	0.46	-0.26	0.05	-0.10	-0.18	0.59	0.34	0.36	0.28	0.11	0.27	0.45	0.29	0.27	0.77
La2	-0.04	-0.09	0.27	-0.04	0.12	0.29	0.59	-0.16	-0.01	0.07	-0.05	0.50	0.70	0.20	0.26	0.05	0.28	0.31	0.43	0.47	0.45
Li2	0.02	0.18	0.73	-0.01	0.21	0.23	0.28	0.13	-0.02	-0.41	-0.22	0.21	0.15	0.21	0.30	0.03	0.51	0.48	0.38	-0.23	0.13
Lu1	0.09	-0.14	0.01	0.24	0.48	0.42	0.10	-0.35	0.08	-0.13	0.13	0.14	0.06	0.01	-0.01	-0.25	-0.17	0.16	-0.06	0.55	0.56
Mg2	0.05	0.12	0.38	0.17	0.25	0.32	0.07	-0.19	-0.02	-0.12	-0.34	0.09	0.11	0.63	0.71	0.44	0.79	0.05	0.72	0.02	0.28
Mn2	0.18	0.03	0.08	0.49	0.03	0.05	-0.15	-0.36	0.04	-0.29	-0.12	0.11	0.09	0.76	0.82	0.37	0.43	-0.12	0.67	0.10	0.42
Mo1	-0.17	0.11	0.15	-0.06	-0.05	-0.01	0.17	0.05	0.10	-0.13	-0.08	0.20	0.07	0.21	0.16	0.01	0.17	0.09	0.13	-0.04	0.26
Mo2	0.04	0.22	0.20	0.14	0.12	0.21	0.05	0.04	0.00	-0.33	0.14	0.13	0.12	-0.02	0.02	-0.25	-0.05	0.12	0.02	0.27	0.00
Na1	-0.28	-0.12	-0.33	-0.46	-0.34	-0.31	0.31	0.13	0.03	0.67	-0.09	0.14	0.23	-0.43	-0.42	-0.18	-0.30	-0.24	-0.25	-0.08	-0.10
Na2	-0.33	-0.22	-0.50	-0.47	-0.47	-0.32	0.27	0.25	0.02	0.79	0.04	0.14	0.29	-0.47	-0.53	-0.20	-0.50	-0.28	-0.31	0.02	-0.25
Nb2	-0.16	-0.17	0.05	-0.35	0.24	0.36	0.39	0.06	0.02	0.17	0.08	0.34	0.34	-0.26	-0.30	-0.29	-0.25	0.21	-0.16	0.23	0.19
Nd1	-0.05	-0.18	0.26	0.04	0.34	0.28	0.42	-0.35	0.12	-0.07	-0.10	0.58	0.35	0.33	0.27	0.04	0.20	0.36	0.24	0.34	0.80
Ni1	0.09	-0.08	-0.10	0.10	-0.08	0.02	0.08	0.00	-0.15	0.09	-0.02	0.03	0.11	0.11	0.14	0.11	0.10	0.03	0.07	0.14	0.03

Correlation Coefficients

	Au1	Ag6	Al2	As1	Ba1	Ba2	Be2	Br1	Ca1	Ca2	Cd2	Ce1	Ce2	Co1	Co2	Cr1	Cr2	Cs1	Cu2	Dy2	Eu1
Ni2	0.14	0.18	0.31	0.57	0.22	0.23	-0.13	-0.29	0.04	-0.41	-0.22	0.07	0.02	0.78	0.85	0.53	0.75	0.12	0.68	0.15	0.41
P2	-0.04	-0.20	0.03	-0.18	-0.26	-0.08	0.36	0.16	-0.05	0.30	-0.03	0.44	0.45	0.06	0.13	0.22	0.15	0.16	0.26	0.14	0.24
Pb2	0.04	0.21	0.22	0.08	0.17	0.12	0.26	0.25	-0.04	-0.18	-0.09	0.46	0.32	0.20	0.19	0.03	0.19	0.41	0.24	0.18	0.18
Rb1	0.02	-0.13	0.34	-0.21	0.46	0.51	0.58	-0.02	-0.01	-0.20	0.01	0.24	0.14	-0.23	-0.24	-0.45	-0.14	0.59	-0.27	0.13	0.14
Rb2	-0.01	-0.09	0.44	-0.21	0.49	0.65	0.57	-0.08	-0.07	-0.23	0.13	0.26	0.24	-0.20	-0.13	-0.53	-0.10	0.50	-0.06	0.21	0.10
Sb1	0.18	0.11	-0.01	0.69	0.25	0.19	-0.41	-0.35	-0.02	-0.53	0.17	-0.25	-0.26	0.29	0.29	-0.04	-0.05	-0.05	0.08	0.35	0.13
Sc1	0.26	0.16	0.46	0.43	0.58	0.50	-0.06	-0.31	0.08	-0.46	-0.18	0.15	-0.09	0.70	0.66	0.28	0.59	0.37	0.48	0.19	0.48
Sc2	0.19	0.20	0.51	0.43	0.47	0.56	0.07	-0.33	0.03	-0.43	-0.23	0.08	0.04	0.68	0.76	0.27	0.71	0.24	0.65	0.25	0.40
Se1	-0.01	-0.15	-0.08	-0.12	-0.01	-0.04	-0.08	0.20	-0.06	0.10	0.16	-0.02	-0.01	-0.24	-0.26	-0.08	-0.16	0.03	-0.19	-0.10	-0.19
Sm1	0.06	-0.16	0.25	0.15	0.42	0.37	0.39	-0.38	0.07	-0.07	-0.10	0.63	0.35	0.43	0.35	0.11	0.22	0.40	0.31	0.48	0.91
Sr2	-0.32	-0.15	-0.26	-0.19	-0.49	-0.39	0.10	0.17	0.13	0.59	0.08	0.06	0.16	-0.11	-0.09	0.13	-0.07	-0.21	0.02	-0.15	0.00
Ta1	-0.04	-0.28	-0.08	-0.12	0.09	0.05	0.26	-0.07	0.08	0.17	0.06	0.27	0.15	-0.11	-0.13	-0.08	-0.11	0.16	-0.08	0.09	0.30
Tb1	0.06	-0.24	0.06	0.24	0.28	0.21	0.11	-0.24	-0.14	-0.04	0.11	0.31	0.19	0.18	0.16	0.03	0.01	0.16	0.12	0.47	0.60
Ti2	-0.13	-0.08	-0.06	-0.20	-0.12	0.01	0.08	-0.02	0.14	0.33	-0.11	0.19	0.26	0.06	0.02	0.17	0.03	-0.17	0.19	-0.02	0.17
Th1	-0.04	-0.10	0.22	-0.24	0.29	0.34	0.64	0.15	-0.03	0.02	0.02	0.78	0.55	-0.03	-0.11	-0.23	-0.10	0.54	0.03	0.36	0.36
U1	0.02	-0.04	-0.13	-0.17	0.01	0.05	0.41	0.23	-0.08	0.24	-0.16	0.48	0.44	-0.10	-0.07	-0.07	-0.05	0.32	0.07	0.27	0.21
V2	0.18	0.25	0.65	0.31	0.42	0.48	0.07	-0.26	0.03	-0.47	-0.25	0.01	-0.03	0.61	0.71	0.29	0.82	0.22	0.63	0.05	0.33
W1	0.09	-0.05	0.11	-0.13	0.09	0.13	0.20	0.09	0.09	0.05	0.00	0.13	0.16	-0.09	-0.07	-0.20	-0.10	0.08	0.09	0.03	-0.05
Y2	0.06	0.00	-0.08	0.38	0.39	0.47	0.09	-0.24	-0.05	-0.05	0.19	0.17	0.22	0.25	0.20	-0.02	0.01	0.10	0.16	0.92	0.41
Yb1	0.07	-0.14	0.02	0.27	0.50	0.43	0.09	-0.26	0.04	-0.13	0.13	0.26	0.13	0.03	0.01	-0.16	-0.14	0.18	-0.01	0.67	0.58
Zn1	0.16	0.10	0.52	0.28	0.55	0.58	0.08	-0.27	0.06	-0.54	-0.10	0.18	-0.06	0.54	0.49	0.15	0.46	0.44	0.32	0.18	0.50
Zn2	0.17	0.22	0.63	0.43	0.45	0.47	0.06	-0.24	-0.05	-0.64	-0.15	0.21	0.12	0.65	0.71	0.23	0.62	0.33	0.60	0.21	0.44
Zr1	0.00	-0.06	-0.15	-0.07	0.02	0.09	0.09	0.07	0.02	0.08	0.19	0.19	0.08	-0.22	-0.29	-0.14	-0.32	0.05	-0.19	0.33	0.18
Zr2	0.14	0.05	0.07	0.18	0.33	0.28	-0.08	-0.09	-0.06	-0.39	0.18	0.14	0.01	-0.08	-0.14	-0.34	-0.36	0.06	-0.23	0.38	0.18

Correlation Coefficients

	Fe1	Fe2	Hf1	Hg1	K2	La1	La2	Li2	Lu1	Mg2	Mn2	Mo1	Mo2	Na1	Na2	Nb2	Nd1	Ni1	Ni2	P2	Pb2
Au1	0.20	0.20	-0.01	0.10	0.07	-0.01	-0.04	0.02	0.09	0.05	0.18	-0.17	0.04	-0.28	-0.33	-0.16	-0.05	0.09	0.14	-0.04	0.04
Ag6	0.17	0.23	-0.07	0.17	-0.10	-0.13	-0.09	0.18	-0.14	0.12	0.03	0.11	0.22	-0.12	-0.22	-0.17	-0.18	-0.08	0.18	-0.20	0.21
Al2	0.47	0.56	-0.38	0.09	0.46	0.36	0.27	0.73	0.01	0.38	0.08	0.15	0.20	-0.33	-0.50	0.05	0.26	-0.10	0.31	0.03	0.22
As1	0.48	0.43	-0.09	-0.15	-0.11	-0.01	-0.04	-0.01	0.24	0.17	0.49	-0.06	0.14	-0.46	-0.47	-0.35	0.04	0.10	0.57	-0.18	0.08
Ba1	0.47	0.34	-0.14	0.12	0.57	0.40	0.12	0.21	0.48	0.25	0.03	-0.05	0.12	-0.34	-0.47	0.24	0.34	-0.08	0.22	-0.26	0.17
Ba2	0.40	0.37	-0.11	0.14	0.74	0.32	0.29	0.23	0.42	0.32	0.05	-0.01	0.21	-0.31	-0.32	0.36	0.28	0.02	0.23	-0.08	0.12
Be2	-0.08	-0.03	-0.13	0.06	0.59	0.46	0.59	0.28	0.10	0.07	-0.15	0.17	0.05	0.31	0.27	0.39	0.42	0.08	-0.13	0.36	0.26
Br1	-0.27	-0.25	0.10	0.08	-0.15	-0.26	-0.16	0.13	-0.35	-0.19	-0.36	0.05	0.04	0.13	0.25	0.06	-0.35	0.00	-0.29	0.16	0.25
Ca1	0.07	-0.01	0.02	-0.02	-0.06	0.05	-0.01	-0.02	0.08	-0.02	0.04	0.10	0.00	0.03	0.02	0.02	0.12	-0.15	0.04	-0.05	-0.04
Ca2	-0.47	-0.50	0.21	-0.03	-0.30	-0.10	0.07	-0.41	-0.13	-0.12	-0.29	-0.13	-0.33	0.67	0.79	0.17	-0.07	0.09	-0.41	0.30	-0.18
Cd2	-0.22	-0.20	0.22	-0.06	0.08	-0.18	-0.05	-0.22	0.13	-0.34	-0.12	-0.08	0.14	-0.09	0.04	0.08	-0.10	-0.02	-0.22	-0.03	-0.09
Ce1	0.20	0.09	0.19	-0.17	0.28	0.59	0.50	0.21	0.14	0.09	0.11	0.20	0.13	0.14	0.14	0.34	0.58	0.03	0.07	0.44	0.46
Ce2	-0.07	0.00	0.14	-0.16	0.31	0.34	0.70	0.15	0.06	0.11	0.09	0.07	0.12	0.23	0.29	0.34	0.35	0.11	0.02	0.45	0.32
Co1	0.79	0.70	-0.31	-0.13	-0.07	0.36	0.20	0.21	0.01	0.63	0.76	0.21	-0.02	-0.43	-0.47	-0.26	0.33	0.11	0.78	0.06	0.20
Co2	0.74	0.78	-0.32	-0.14	-0.03	0.28	0.26	0.30	-0.01	0.71	0.82	0.16	0.02	-0.42	-0.53	-0.30	0.27	0.14	0.85	0.13	0.19
Cr1	0.45	0.38	-0.01	-0.12	-0.50	0.11	0.05	0.03	-0.25	0.44	0.37	0.01	-0.25	-0.18	-0.20	-0.29	0.04	0.11	0.53	0.22	0.03
Cr2	0.67	0.76	-0.38	-0.05	-0.05	0.27	0.28	0.51	-0.17	0.79	0.43	0.17	-0.05	-0.30	-0.50	-0.25	0.20	0.10	0.75	0.15	0.19
Cs1	0.34	0.20	-0.15	0.03	0.51	0.45	0.31	0.48	0.16	0.05	-0.12	0.09	0.12	-0.24	-0.28	0.21	0.36	0.03	0.12	0.16	0.41
Cu2	0.54	0.66	-0.22	-0.13	-0.01	0.29	0.43	0.38	-0.06	0.72	0.67	0.13	0.02	-0.25	-0.31	-0.16	0.24	0.07	0.68	0.26	0.24
Dy2	0.17	0.16	0.34	-0.13	0.35	0.27	0.47	-0.23	0.55	0.02	0.10	-0.04	0.27	-0.08	0.02	0.23	0.34	0.14	0.15	0.14	0.18
Eu1	0.56	0.41	0.00	-0.14	0.19	0.77	0.45	0.13	0.56	0.28	0.42	0.26	0.00	-0.10	-0.25	0.19	0.80	0.03	0.41	0.24	0.18
Fe1	**1.00**	0.87	-0.39	-0.06	0.12	0.40	0.14	0.35	0.06	0.60	0.52	0.19	-0.01	-0.58	-0.69	-0.27	0.34	0.02	0.77	0.01	0.25
Fe2	0.87	**1.00**	-0.36	-0.07	0.10	0.25	0.23	0.48	-0.05	0.70	0.61	0.13	0.10	-0.55	-0.71	-0.34	0.20	0.07	0.80	0.12	0.24
Hf1	-0.39	-0.36	**1.00**	-0.04	-0.08	-0.18	-0.08	-0.42	0.34	-0.47	-0.25	-0.29	0.18	0.15	0.23	0.31	-0.12	0.06	-0.34	0.13	0.04
Hg1	-0.06	-0.07	-0.04	**1.00**	0.09	-0.12	-0.15	-0.13	-0.01	-0.05	-0.14	0.00	0.11	0.00	-0.04	0.16	-0.15	-0.06	-0.15	-0.06	0.16
K2	0.12	0.10	-0.08	0.09	**1.00**	0.32	0.35	0.23	0.44	0.02	-0.11	-0.02	0.22	-0.13	-0.13	0.44	0.33	0.09	-0.03	-0.14	0.14
La1	0.40	0.25	-0.18	-0.12	0.32	**1.00**	0.68	0.26	0.32	0.22	0.17	0.37	-0.08	0.05	-0.08	0.28	0.91	-0.03	0.25	0.24	0.19
La2	0.14	0.23	-0.08	-0.15	0.35	0.68	**1.00**	0.28	0.11	0.27	0.16	0.19	0.06	0.10	0.07	0.28	0.62	0.09	0.23	0.41	0.21
Li2	0.35	0.48	-0.42	-0.13	0.23	0.26	0.28	**1.00**	-0.20	0.43	0.17	0.17	0.09	-0.20	-0.37	-0.13	0.19	-0.03	0.38	0.11	0.21
Lu1	0.06	-0.05	0.34	-0.01	0.44	0.32	0.11	-0.20	**1.00**	-0.19	-0.03	0.01	0.23	0.04	-0.11	0.40	0.43	0.07	-0.06	-0.16	-0.02
Mg2	0.60	0.70	-0.47	-0.05	0.02	0.22	0.27	0.43	-0.19	**1.00**	0.50	0.08	-0.18	-0.22	-0.33	-0.19	0.16	0.06	0.70	0.06	0.06
Mn2	0.52	0.61	-0.25	-0.14	-0.11	0.17	0.16	0.17	-0.03	0.50	**1.00**	0.15	-0.09	-0.31	-0.38	-0.30	0.19	0.14	0.58	0.20	0.09
Mo1	0.19	0.13	-0.29	0.00	-0.02	0.37	0.19	0.17	0.01	0.08	0.15	**1.00**	0.12	0.03	-0.09	0.08	0.36	-0.02	0.15	-0.04	0.18
Mo2	-0.01	0.10	0.18	0.11	0.22	-0.08	0.06	0.09	0.23	-0.18	-0.09	0.12	**1.00**	-0.26	-0.30	0.19	0.02	-0.06	0.07	-0.13	0.32
Na1	-0.58	-0.55	0.15	0.00	-0.13	0.05	0.10	-0.20	0.04	-0.22	-0.31	0.03	-0.26	**1.00**	0.85	0.16	0.10	-0.01	-0.54	0.24	-0.14
Na2	-0.69	-0.71	0.23	-0.04	-0.13	-0.08	0.07	-0.37	-0.11	-0.33	-0.38	-0.09	-0.30	0.85	**1.00**	0.25	-0.04	-0.03	-0.65	0.20	-0.23
Nb2	-0.27	-0.34	0.31	0.16	0.44	0.28	0.28	-0.13	0.40	-0.19	-0.30	0.08	0.19	0.16	0.25	**1.00**	0.26	0.00	-0.39	-0.03	0.09
Nd1	0.34	0.20	-0.12	-0.15	0.33	0.91	0.62	0.19	0.43	0.16	0.19	0.36	0.02	0.10	-0.04	0.26	**1.00**	-0.03	0.24	0.23	0.15
Ni1	0.02	0.07	0.06	-0.06	0.09	-0.03	0.09	-0.03	0.07	0.06	0.14	-0.02	-0.06	-0.01	-0.03	0.00	-0.03	**1.00**	0.13	-0.02	0.07

Correlation Coefficients

	Fe1	Fe2	Hf1	Hg1	K2	La1	La2	Li2	Lu1	Mg2	Mn2	Mo1	Mo2	Na1	Na2	Nb2	Nd1	Ni1	Ni2	P2	Pb2
Ni2	0.77	0.80	-0.34	-0.15	-0.03	0.25	0.23	0.38	-0.06	0.70	0.58	0.15	0.07	-0.54	-0.65	-0.39	0.24	0.13	**1.00**	0.01	0.13
P2	0.01	0.12	0.13	-0.06	-0.14	0.24	0.41	0.11	-0.16	0.06	0.20	-0.04	-0.13	0.24	0.20	-0.03	0.23	-0.02	0.01	**1.00**	0.32
Pb2	0.25	0.24	0.04	0.16	0.14	0.19	0.21	0.21	-0.02	0.06	0.09	0.18	0.32	-0.14	-0.23	0.09	0.15	0.07	0.13	0.32	**1.00**
Rb1	0.00	-0.09	-0.08	0.06	0.77	0.31	0.20	0.23	0.34	-0.20	-0.33	0.03	0.12	0.06	-0.04	0.30	0.35	0.11	-0.19	-0.06	0.21
Rb2	0.02	0.04	-0.01	0.11	0.86	0.23	0.30	0.29	0.35	-0.06	-0.23	-0.06	0.23	-0.06	-0.10	0.45	0.25	0.03	-0.12	-0.08	0.18
Sb1	0.32	0.26	0.11	-0.15	0.11	-0.18	-0.23	-0.07	0.39	-0.09	0.24	-0.11	0.27	-0.59	-0.54	-0.24	-0.07	0.04	0.37	-0.44	-0.09
Sc1	0.82	0.70	-0.35	0.01	0.26	0.29	0.06	0.33	0.17	0.60	0.46	0.13	0.03	-0.55	-0.66	-0.14	0.25	0.03	0.64	-0.15	0.18
Sc2	0.75	0.80	-0.41	0.01	0.29	0.24	0.23	0.42	0.12	0.78	0.57	0.10	0.04	-0.48	-0.59	-0.17	0.22	0.07	0.73	-0.06	0.09
Se1	-0.12	-0.17	0.10	-0.03	-0.01	-0.21	-0.23	-0.02	0.00	-0.19	-0.21	-0.11	0.01	0.12	0.13	-0.08	-0.13	-0.06	-0.28	0.00	-0.17
Sm1	0.41	0.27	-0.03	-0.15	0.34	0.90	0.61	0.17	0.53	0.18	0.28	0.28	0.02	0.04	-0.09	0.23	0.93	0.04	0.28	0.28	0.21
Sr2	-0.27	-0.26	-0.04	-0.09	-0.39	0.07	0.15	-0.06	-0.26	-0.04	0.01	0.08	-0.47	0.55	0.62	-0.01	0.08	-0.16	-0.20	0.48	-0.19
Ta1	-0.16	-0.21	0.16	0.12	0.18	0.36	0.26	-0.10	0.28	-0.15	-0.08	0.05	-0.10	0.37	0.24	0.35	0.40	0.05	-0.14	0.15	0.04
Tb1	0.16	0.13	0.21	-0.16	0.21	0.43	0.31	0.05	0.53	0.06	0.16	0.05	0.06	0.02	-0.07	0.10	0.47	0.18	0.16	0.20	0.02
Ti2	-0.14	-0.16	0.12	0.15	-0.17	0.17	0.20	-0.13	0.01	0.18	0.05	0.15	-0.08	0.18	0.26	0.60	0.13	-0.10	-0.14	0.12	-0.08
Th1	0.01	-0.09	0.23	-0.16	0.56	0.55	0.45	0.15	0.28	-0.16	-0.19	0.04	0.12	0.16	0.15	0.39	0.52	0.08	-0.14	0.31	0.45
U1	-0.12	-0.11	0.35	-0.11	0.16	0.21	0.28	0.05	0.18	-0.15	-0.08	-0.05	0.15	0.20	0.21	0.20	0.23	0.18	-0.08	0.33	0.40
V2	0.73	0.85	-0.52	0.07	0.21	0.25	0.24	0.56	-0.04	0.83	0.51	0.17	0.03	-0.48	-0.64	-0.18	0.19	0.01	0.75	-0.04	0.14
W1	-0.09	-0.05	0.09	-0.06	0.14	0.01	0.11	0.05	-0.05	0.01	-0.11	0.01	0.04	-0.01	0.07	0.18	-0.03	-0.25	-0.16	0.22	0.14
Y2	0.27	0.21	0.27	-0.09	0.34	0.17	0.27	-0.28	0.59	0.03	0.11	-0.04	0.29	-0.25	-0.16	0.17	0.22	0.09	0.19	-0.07	0.11
Yb1	0.10	0.01	0.49	-0.06	0.38	0.31	0.15	-0.17	0.90	-0.18	-0.02	-0.11	0.24	-0.04	-0.10	0.38	0.40	0.02	-0.03	-0.06	0.04
Zn1	0.78	0.66	-0.34	0.03	0.38	0.39	0.11	0.38	0.24	0.39	0.29	0.15	0.04	-0.56	-0.66	-0.07	0.35	0.02	0.56	-0.09	0.13
Zn2	0.83	0.89	-0.30	-0.10	0.28	0.32	0.28	0.56	0.06	0.56	0.49	0.16	0.26	-0.62	-0.77	-0.19	0.28	0.07	0.76	0.09	0.35
Zr1	-0.19	-0.27	0.44	-0.09	0.09	-0.02	0.01	-0.14	0.36	-0.36	-0.19	-0.09	0.29	0.04	0.12	0.30	0.06	-0.07	-0.27	0.08	0.09
Zr2	0.00	-0.12	0.51	0.08	0.43	0.08	-0.06	-0.20	0.53	-0.39	-0.16	-0.11	0.36	-0.29	-0.21	0.34	0.12	0.02	-0.13	-0.21	0.21

Correlation Coefficients

	Rb1	Rb2	Sb1	Sc1	Sc2	Se1	Sm1	Sr2	Ta1	Tb1	Ti2	Th1	U1	V2	W1	Y2	Yb1	Zn1	Zn2	Zr1	Zr2
Au1	0.02	-0.01	0.18	0.26	0.19	-0.01	0.06	-0.32	-0.04	0.06	-0.13	-0.04	0.02	0.18	0.09	0.06	0.07	0.16	0.17	0.00	0.14
Ag6	-0.13	-0.09	0.11	0.16	0.20	-0.15	-0.16	-0.15	-0.28	-0.24	-0.08	-0.10	-0.04	0.25	-0.05	0.00	-0.14	0.10	0.22	-0.06	0.05
Al2	0.34	0.44	-0.01	0.46	0.51	-0.08	0.25	-0.26	-0.08	0.06	-0.06	0.22	-0.13	0.65	0.11	-0.08	0.02	0.52	0.63	-0.15	0.07
As1	-0.21	-0.21	0.69	0.43	0.43	-0.12	0.15	-0.19	-0.12	0.24	-0.20	-0.24	-0.17	0.31	-0.13	0.38	0.27	0.28	0.43	-0.07	0.18
Ba1	0.46	0.49	0.25	0.58	0.47	-0.01	0.42	-0.49	0.09	0.28	-0.12	0.29	0.01	0.42	0.09	0.39	0.50	0.55	0.45	0.02	0.33
Ba2	0.51	0.65	0.19	0.50	0.56	-0.04	0.37	-0.39	0.05	0.21	0.01	0.34	0.05	0.48	0.13	0.47	0.43	0.58	0.47	0.09	0.28
Be2	0.58	0.57	-0.41	-0.06	0.07	-0.08	0.39	0.10	0.26	0.11	0.08	0.64	0.41	0.07	0.20	0.09	0.09	0.08	0.06	0.09	-0.08
Br1	-0.02	-0.08	-0.35	-0.31	-0.33	0.20	-0.38	0.17	-0.07	-0.24	-0.02	0.15	0.23	-0.26	0.09	-0.24	-0.26	-0.27	-0.24	0.07	-0.09
Ca1	-0.01	-0.07	-0.02	0.08	0.03	-0.06	0.07	0.13	0.08	-0.14	0.14	-0.03	-0.08	0.03	0.09	-0.05	0.04	0.06	-0.05	0.02	-0.06
Ca2	-0.20	-0.23	-0.53	-0.46	-0.43	0.10	-0.07	0.59	0.17	-0.04	0.33	0.02	0.24	-0.47	0.05	-0.05	-0.13	-0.54	-0.64	0.08	-0.39
Cd2	0.01	0.13	0.17	-0.18	-0.23	0.16	-0.10	0.08	0.06	0.11	-0.11	0.02	-0.16	-0.25	0.00	0.19	0.13	-0.10	-0.15	0.19	0.18
Ce1	0.24	0.26	-0.25	0.15	0.08	-0.02	0.63	0.06	0.27	0.31	0.19	0.78	0.48	0.01	0.13	0.17	0.26	0.18	0.21	0.19	0.14
Ce2	0.14	0.24	-0.26	-0.09	0.04	-0.01	0.35	0.16	0.15	0.19	0.26	0.55	0.44	-0.03	0.16	0.22	0.13	-0.06	0.12	0.08	0.01
Co1	-0.23	-0.20	0.29	0.70	0.68	-0.24	0.43	-0.11	-0.11	0.18	0.06	-0.03	-0.10	0.61	-0.09	0.25	0.03	0.54	0.65	-0.22	-0.08
Co2	-0.24	-0.13	0.29	0.66	0.76	-0.26	0.35	-0.09	-0.13	0.16	0.02	-0.11	-0.07	0.71	-0.07	0.20	0.01	0.49	0.71	-0.29	-0.14
Cr1	-0.45	-0.53	-0.04	0.28	0.27	-0.08	0.11	0.13	-0.08	0.03	0.17	-0.23	-0.07	0.29	-0.20	-0.02	-0.16	0.15	0.23	-0.14	-0.34
Cr2	-0.14	-0.10	-0.05	0.59	0.71	-0.16	0.22	-0.07	-0.11	0.01	0.03	-0.10	-0.05	0.82	-0.10	0.01	-0.14	0.46	0.62	-0.32	-0.36
Cs1	0.59	0.50	-0.05	0.37	0.24	0.03	0.40	-0.21	0.16	0.16	-0.17	0.54	0.32	0.22	0.08	0.10	0.18	0.44	0.33	0.05	0.06
Cu2	-0.27	-0.06	0.08	0.48	0.65	-0.19	0.31	0.02	-0.08	0.12	0.19	0.03	0.07	0.63	0.09	0.16	-0.01	0.32	0.60	-0.19	-0.23
Dy2	0.13	0.21	0.35	0.19	0.25	-0.10	0.48	-0.15	0.09	0.47	-0.02	0.36	0.27	0.05	0.03	0.92	0.67	0.18	0.21	0.33	0.38
Eu1	0.14	0.10	0.13	0.48	0.40	-0.19	0.91	0.00	0.30	0.60	0.17	0.36	0.21	0.33	-0.05	0.41	0.58	0.50	0.44	0.18	0.18
Fe1	0.00	0.02	0.32	0.82	0.75	-0.12	0.41	-0.27	-0.16	0.16	-0.14	0.01	-0.12	0.73	-0.09	0.27	0.10	0.78	0.83	-0.19	0.00
Fe2	-0.09	0.04	0.26	0.70	0.80	-0.17	0.27	-0.26	-0.21	0.13	-0.16	-0.09	-0.11	0.85	-0.05	0.21	0.01	0.66	0.89	-0.27	-0.12
Hf1	-0.08	-0.01	0.11	-0.35	-0.41	0.10	-0.03	-0.04	0.16	0.21	0.12	0.23	0.35	-0.52	0.09	0.27	0.49	-0.34	-0.30	0.44	0.51
Hg1	0.06	0.11	-0.15	0.01	0.01	-0.03	-0.15	-0.09	0.12	-0.16	0.15	-0.16	-0.11	0.07	-0.06	-0.09	-0.06	0.03	-0.10	-0.09	0.08
K2	0.77	0.86	0.11	0.26	0.29	-0.01	0.34	-0.39	0.18	0.21	-0.17	0.56	0.16	0.21	0.14	0.34	0.38	0.38	0.28	0.09	0.43
La1	0.31	0.23	-0.18	0.29	0.24	-0.21	0.90	0.07	0.36	0.43	0.17	0.55	0.21	0.25	0.01	0.17	0.31	0.39	0.32	-0.02	0.08
La2	0.20	0.30	-0.23	0.06	0.23	-0.23	0.61	0.15	0.26	0.31	0.20	0.45	0.28	0.24	0.11	0.27	0.15	0.11	0.28	0.01	-0.06
Li2	0.23	0.29	-0.07	0.33	0.42	-0.02	0.17	-0.06	-0.10	0.05	-0.13	0.15	0.05	0.56	0.05	-0.28	-0.17	0.38	0.56	-0.14	-0.20
Lu1	0.34	0.35	0.39	0.17	0.12	0.00	0.53	-0.26	0.28	0.53	0.01	0.28	0.18	-0.04	-0.05	0.59	0.90	0.24	0.06	0.36	0.53
Mg2	-0.20	-0.06	-0.09	0.60	0.78	-0.19	0.18	-0.04	-0.15	0.06	0.18	-0.16	-0.15	0.83	0.01	0.03	-0.18	0.39	0.56	-0.36	-0.39
Mn2	-0.33	-0.23	0.24	0.46	0.57	-0.21	0.28	0.01	-0.08	0.16	0.05	-0.19	-0.08	0.51	-0.11	0.11	-0.02	0.29	0.49	-0.19	-0.16
Mo1	0.03	-0.06	-0.11	0.13	0.10	-0.11	0.28	0.08	0.05	0.05	0.15	0.04	-0.05	0.17	0.01	-0.04	-0.11	0.15	0.16	-0.09	-0.11
Mo2	0.12	0.23	0.27	0.03	0.04	0.01	0.02	-0.47	-0.10	0.06	-0.08	0.12	0.15	0.03	0.04	0.29	0.24	0.04	0.26	0.29	0.36
Na1	0.06	-0.06	-0.59	-0.55	-0.48	0.12	0.04	0.55	0.37	0.02	0.18	0.16	0.20	-0.48	-0.01	-0.25	-0.04	-0.56	-0.62	0.04	-0.29
Na2	-0.04	-0.10	-0.54	-0.66	-0.59	0.13	-0.09	0.62	0.24	-0.07	0.26	0.15	0.21	-0.64	0.07	-0.16	-0.10	-0.66	-0.77	0.12	-0.21
Nb2	0.30	0.45	-0.24	-0.14	-0.17	-0.08	0.23	-0.01	0.35	0.10	0.60	0.39	0.20	-0.18	0.18	0.17	0.38	-0.07	-0.19	0.30	0.34
Nd1	0.35	0.25	-0.07	0.25	0.22	-0.13	0.93	0.08	0.40	0.47	0.13	0.52	0.23	0.19	-0.03	0.22	0.40	0.35	0.28	0.06	0.12
Ni1	0.11	0.03	0.04	0.03	0.07	-0.06	0.04	-0.16	0.05	0.18	-0.10	0.08	0.18	0.01	-0.25	0.09	0.02	0.02	0.07	-0.07	0.02

Correlation Coefficients

	Rb1	**Rb2**	**Sb1**	**Sc1**	**Sc2**	**Se1**	**Sm1**	**Sr2**	**Ta1**	**Tb1**	**Ti2**	**Th1**	**U1**	**V2**	**W1**	**Y2**	**Yb1**	**Zn1**	**Zn2**	**Zr1**	**Zr2**
Ni2	-0.19	-0.12	0.37	0.64	0.73	-0.28	0.28	-0.20	-0.14	0.16	-0.14	-0.14	-0.08	0.75	-0.16	0.19	-0.03	0.56	0.76	-0.27	-0.13
P2	-0.06	-0.08	-0.44	-0.15	-0.06	0.00	0.28	0.48	0.15	0.20	0.12	0.31	0.33	-0.04	0.22	-0.07	-0.06	-0.09	0.09	0.08	-0.21
Pb2	0.21	0.18	-0.09	0.18	0.09	-0.17	0.21	-0.19	0.04	0.02	-0.08	0.45	0.40	0.14	0.14	0.11	0.04	0.13	0.35	0.09	0.21
Rb1	**1.00**	0.78	-0.01	0.12	0.03	0.12	0.31	-0.25	0.35	0.16	-0.32	0.57	0.23	-0.02	0.04	0.08	0.28	0.26	0.11	0.02	0.28
Rb2	0.78	**1.00**	0.05	0.15	0.18	0.02	0.24	-0.31	0.24	0.17	-0.15	0.51	0.21	0.16	0.18	0.20	0.33	0.26	0.22	0.18	0.31
Sb1	-0.01	0.05	**1.00**	0.38	0.34	-0.03	0.01	-0.48	-0.24	0.17	-0.35	-0.21	-0.16	0.18	-0.10	0.53	0.42	0.31	0.37	0.20	0.47
Sc1	0.12	0.15	0.38	**1.00**	0.86	-0.15	0.34	-0.37	-0.11	0.20	-0.09	0.04	-0.09	0.74	0.06	0.34	0.18	0.66	0.67	-0.16	0.05
Sc2	0.03	0.18	0.34	0.86	**1.00**	-0.15	0.28	-0.28	-0.14	0.16	-0.02	-0.09	-0.17	0.90	0.06	0.34	0.11	0.60	0.73	-0.23	-0.08
Se1	0.12	0.02	-0.03	-0.15	-0.15	**1.00**	-0.19	-0.01	0.04	-0.03	-0.04	-0.04	-0.10	-0.21	0.05	-0.12	-0.03	-0.04	-0.13	-0.02	-0.08
Sm1	0.31	0.24	0.01	0.34	0.28	-0.19	**1.00**	0.02	0.36	0.63	0.07	0.56	0.31	0.22	-0.05	0.36	0.54	0.40	0.34	0.13	0.17
Sr2	-0.25	-0.31	-0.48	-0.37	-0.28	-0.01	0.02	**1.00**	0.12	-0.07	0.32	-0.09	0.02	-0.22	0.06	-0.31	-0.24	-0.36	-0.37	-0.07	-0.44
Ta1	0.35	0.24	-0.24	-0.11	-0.14	0.04	0.36	0.12	**1.00**	0.31	0.16	0.34	0.18	-0.20	0.01	0.00	0.25	-0.12	-0.22	0.09	0.06
Tb1	0.16	0.17	0.17	0.20	0.16	-0.03	0.63	-0.07	0.31	**1.00**	-0.07	0.30	0.22	0.04	-0.10	0.38	0.61	0.11	0.16	0.28	0.25
Ti2	-0.32	-0.15	-0.35	-0.09	-0.02	-0.04	0.07	0.32	0.16	-0.07	**1.00**	-0.12	-0.09	0.02	0.13	-0.10	-0.03	-0.17	-0.18	0.03	-0.11
Th1	0.57	0.51	-0.21	0.04	-0.09	-0.04	0.56	-0.09	0.34	0.30	-0.12	**1.00**	0.58	-0.16	0.13	0.19	0.36	0.15	0.08	0.20	0.32
U1	0.23	0.21	-0.16	-0.09	-0.17	-0.10	0.31	0.02	0.18	0.22	-0.09	0.58	**1.00**	-0.20	0.15	0.15	0.32	-0.14	-0.07	0.31	0.16
V2	-0.02	0.16	0.18	0.74	0.90	-0.21	0.22	-0.22	-0.20	0.04	0.02	-0.16	-0.20	**1.00**	0.02	0.11	-0.06	0.63	0.78	-0.29	-0.17
W1	0.04	0.18	-0.10	0.06	0.06	0.05	-0.05	0.06	0.01	-0.10	0.13	0.13	0.15	0.02	**1.00**	0.06	-0.01	-0.16	-0.03	0.06	0.07
Y2	0.08	0.20	0.53	0.34	0.34	-0.12	0.36	-0.31	0.00	0.38	-0.10	0.19	0.15	0.11	0.06	**1.00**	0.67	0.29	0.25	0.32	0.43
Yb1	0.28	0.33	0.42	0.18	0.11	-0.03	0.54	-0.24	0.25	0.61	-0.03	0.36	0.32	-0.06	-0.01	0.67	**1.00**	0.22	0.11	0.46	0.60
Zn1	0.26	0.26	0.31	0.66	0.60	-0.04	0.40	-0.36	-0.12	0.11	-0.17	0.15	-0.14	0.63	-0.16	0.29	0.22	**1.00**	0.76	-0.11	0.14
Zn2	0.11	0.22	0.37	0.67	0.73	-0.13	0.34	-0.37	-0.22	0.16	-0.18	0.08	-0.07	0.78	-0.03	0.25	0.11	0.76	**1.00**	-0.14	0.11
Zr1	0.02	0.18	0.20	-0.16	-0.23	-0.02	0.13	-0.07	0.09	0.28	0.03	0.20	0.31	-0.29	0.06	0.32	0.46	-0.11	-0.14	**1.00**	0.42
Zr2	0.28	0.31	0.47	0.05	-0.08	-0.08	0.17	-0.44	0.06	0.25	-0.11	0.32	0.16	-0.17	0.07	0.43	0.60	0.14	0.11	0.42	**1.00**