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PROSPECTOR'S ASSISTANCE PROGRAM

FINAL REPORT

MARK KOLEBABA

JANUARY 20, 1999

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Exploration Report – BC Prospectors Assistance Program

Introduction

This report is submitted to fulfill the Program Report requirement of the 1998 Prospector's Assistance Program for applicant Mark Kolebaba and prospecting partner.

The program focuses mainly on gemstone exploration in the Okanagan-Kootenay region. Primary commodities are beryl and corundum. Secondary commodities include gold and base metals.

Geochemical and heavy mineral sampling of stream and glacially derived sediments accompanied prospecting activities. The purpose of the reconnaissance program was to quickly and effectively evaluate the prospectivity of this large area for economic deposits. By April 1999 all geochemical and heavy mineral sampling results will be completed. By May 1999 we will be prepared to conduct more detailed follow-up sampling, mapping, prospecting and/or claim staking on the anomalous areas defined in 1998/1999. A budget of $41,000 was submitted for this program. Actual costs totalled $36,750. Funding from the BC Prospector's Assistance Program in the amount of $10,000 was obtained to offset the costs of fieldwork and logistical expenses.

Location and Access

The 1998 program area mainly covered the eastern half of NTS sheet 82E and western half of NTS sheet 82F. The area is bounded by longitude 119°15' to the west, and the Kootenay Lake area at longitude 116°45' to the east, the International Boundary to the south, and 50°10' to the north (figure 1). The dimensions of the area are approximately 100 x 150 km in size covering an area of about 15000km^2.

Physiographically, this includes the southern portions of, from west to east, the Okanagan Highland, Monashee Mountains, and Selkirk Mountains. Elevations range from 700m in the major valleys to over 2500m at Kokanee Glacier Provincial Park.

The program area is traversed by several major highways, including Hwy3 (which runs along the southern border), Hwy6 (which runs approximately E-W across the central portion of the area), and Hwy31 (which runs approximately N-S along the eastern limit of the area). To assist in the collection of the large heavy mineral samples and to cover more ground, logging roads accessible by four-wheel drive were the primary mode of transport. These roads were navigated using a 1:250,000 scale generalized logging road compilation map. Lodging was obtained in areas most convenient to the work sites. Base camps set up in Provincial parks, Provincial recreation sites, and motels were utilized for periods of 2-7 days at a time.

Geology

The southeastern Canadian Cordillera in British Columbia is comprised of a folded metamorphic and plutonic "core zone", the Omineca Crystalline Belt. This regional fold belt underwent prolonged intense orogenic activity involving regional metamorphism, severe penetrative deformation, plutonism, and large-scale uplift. The area of interest of this program is centered over the portions of the belt known as the Okanagan Plutonic and Metamorphic Complex to the north, and the Kootenay Arc Terrain to the east. Proterozoic basement rocks are overlain by extensive Lower Paleozoic (Carboniferous to Permian) oceanic and arc facies rocks, including ultramafic bodies, mainly near the Canada-US border. Plutonism, polyphase deformation, and high-grade contact and regional metamorphism created the Okanagan Complex during the Middle Jurassic to Early Cretaceous period. Compositions range from granite to granodiorite. Structural trends within the Shuswap Complex (including Okanagan Plutonic and Metamorphic Complex) are largely related to gneissic domes. Two domal structures are known within the complex. The Valhalla dome east of Arrow Lake, near the contact with the Kootenay Arc, and the Okanagan Gneiss Dome, southeast of Osoyoos in Washington.

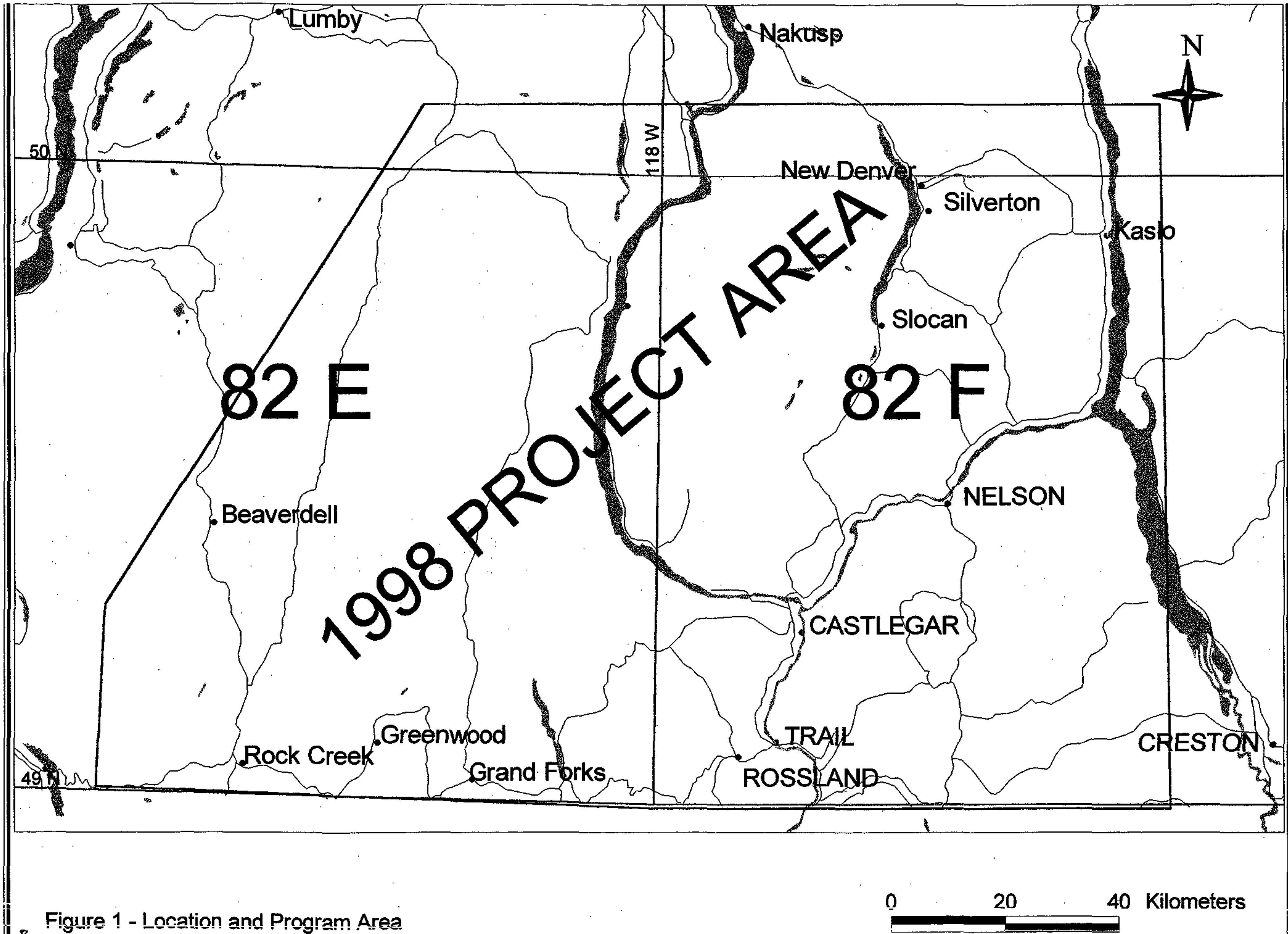


Figure 1 - Location and Program Area

The Kootenay Arc, an intensely deformed arc of metamorphic rocks convex to the east, envelops the eastern edge of the Okanagan Plutonic and Metamorphic Complex, and forms the western limit of the program area. Early Paleozoic deposition of fine grained clastic sediments occurred adjacent to a carbonate shelf (of the North American Craton). Continued weathering of the partially submerged Purcell Mountains and reworking by currents resulted in a Cambrian succession of quartzose sediments along the length of the arc. Black shale and then carbonate developed during Devonian time. Tectonic activity caused several episodes of volcanism, mainly through fissures west of the arc over a long period of time. A major orogenic event in the Middle Paleozoic resulted in further clastic deposition and was accompanied by extensive plutonism.

By the Late Triassic – Early Jurassic much of the eastern Omineca Crystalline Belt existed as a partially submerged ridge, and sediment deposition, volcanic activity and ultramafic intrusions occurred, related to eastward subduction (of the Kootenay Arc). Tectonism continued until early Tertiary time, causing extensive folding, faulting, granitoid plutonism (including the Nelson and surrounding plutons) and metamorphism of the arc over that period. Post-tectonic regional uplift and erosion was followed by thick successions of Eocene sedimentary deposition and unusually active alkaline volcanism. This resulted in a mixed assemblage of dacite, andesite and trachyte. Post Eocene erosion created a plateau upon which Miocene flood basalts flowed, covering paleo-placer deposits of gold, platinum and uranium. Quaternary glaciation and recent sedimentation did not markedly modify the topography.

Glaciation

Glaciation in southeast British Columbia occurred in up to 6 separate episodes between 1.6 million and 19,000 years ago. The Cordilleran Ice Sheet advanced along elongate N-S valleys between and over mountain ranges, plucking large blocks of outcrop and carrying sediment for long distances. The Okanagan and Kootenay lobes originated 800km to the north in the northern Selkirk Mountains, and flowed in a southerly to southeasterly direction. As the glaciers retreated, moraines were deposited and glacial lakes formed in the deeper valleys (such as the Okanagan, Arrow and Kootenay Lake valleys). The glacial moraines were reworked into glacio-fluvial and glacio-lacustrine deposits (often investigated as sources of aggregate), during retreat of the ice sheet 10,000 years ago.

Work History

Southeast British Columbia has a very rich history of mineral exploration and exploitation. Several historical mining camps lie within the proposed work area. Most activity since the 1800's has historically focussed on gold, base metals, and uranium. More recently industrial commodities such as dimension stone are being quarried as well. Table 1 provides a summary of the major mining camps in the proposed work area.

Table 1. – Major Mining Camps in the project area.

MINING CAMP	NTS	COMMODITIES	MINERALIZATION DESCRIPTION
Franklin Camp	82ENE	Ag, Au, Pb, Cu	Shear-hosted mineralization in Harper Ranch Gp. rocks
Lightening Peak Camp	82ENE	Ag, Au, Pb, Cu	Shear-hosted quartz veins as above ; 1 volcanogenic occurrence
Greenwood Camp	82ESE	Cu-Au, Pb-Zn-Cu, Ag-Pb,Zn	Porphyry and skarn; in accreted arc, back-arc, and oceanic terraines Also Carlin-type Au and epithermal Au occurrences
Burnt Basin Camp	82ESE	Ag-Zn-Pb	Sulphide mineralization
Sheep Creek Camp	82FSW	Au	Mesothermal quartz veins hosted by Quartzite RangeFm.
Salmo Belt	82FSW	Pb-Zn	Carbonate-hosted, Manto-type, and exhalative-type deposits
		T	Skarn deposit
Rossland Camp	82FSW	Au	Au-Cu veins in Rossland monzonite and Rossland Gp. rocks
Ymir-Nelson area	82FSW	Au-Ag	Rossland Gp. Hosted metallic vein deposits
		Mo,T,Au	Skarn deposits
Slocan Camp	82FNW	Au-Ag-Pb-Zn+/-Cd+/-Cu	Replacement deposits in limestone, and Mesozoic quartz-carbonate-sulphide veins in Nelson Batholith and area

Minfile Occurrences

There are 1380 mineral occurrences reported in the BC Minfile within the proposed project area. Of these, 1245 are metallic (Au,Cu,Pb,Ag,Zn,Mo,Sb,and Fe) occurrences. 67 occurrences are industrial (silica, dolomite, barite), aggregate or dimension stone of various lithologies. 28 are attributed to Uranium and Tungsten. 3 occurrences are manganese-rhodonite showings. 3 BC Minfile listings are described as hotsprings. One fluorite occurrence occurs within the 82FNW mapsheet. 2 graphite occurrences are present.

Seven BC Minfile occurrences are described as containing kyanite, andalusite or sillimanite as commodities. These occurrences are reliable indicators for the abundance of Al in lithologies, and also indicators of metamorphic grade. Since corundum is an Al oxide (Al_2O_3), these areas are prospective for sapphire, ruby, and industrial corundum deposits.

Ultramafic lithologies are defined by the occurrence of ultramafic-altered mineral occurrences in the BC Minfile, and "inferred" ultramafic bodies by anomalously high Cr, Co, Ni, values in government stream sediment sampling results. There are 17 BC Minfile localities within the proposed work area that are considered to be ultramafic rocks. These are based on reported occurrences of talc, magnesite, chromium, platinum, nickel, asbestos and soapstone.

Seven gemstone occurrences are recorded in BC Minfile within the proposed work area. Some of these are a peridote (olivine) occurrence within the Lightening Peak peridotite (82ENE018), the Picture Rock agate showing which has been exploited for lapidary-quality material (82ESE042), the Clear-cut rhodonite (82ESE241) prospect and Harp rhodonite (82FNE152) showing which occurs with garnet, and the Valhalla granite hosted Kimbarb vein and pegmatite-related molybdenum showing (82FSW326), which occurs with skarn xenoliths containing garnet and olivine of reported gemstone quality.

Corundum (ruby and sapphire) has been reported at two localities within the proposed work area. The Blu Moon (82FNW259) and Blu Starr (82FNW263) properties are pegmatite-hosted occurrences. At these localities, corundum occurs in high-grade metasedimentary augen gneisses of the Valhalla Complex (syenitic and monzonitic compositions). The corundum forms crystals up to 1-2cm. Gemstone corundum is associated with zircon , sphene and amphibole. This mineralization may be related to the fenite/nepheline syenite complexes north of Revelstoke.

Beryl is reported in two localities in the BC Minfile. At the Midge Creek showing (82FSE091), large blue green beryl crystals with garnet, magnetite and black tourmaline occur in pegmatite dykes that intrude the Cretaceous Bayonne granitoid batholith. Gem quality aquamarine has been reported at the Valhalla showing (82FNW251) in pegmatite dykes that intrude the Valhalla Mountains.

The 1998 work area is underexplored for gemstone deposits. Based on existing deposit models, other occurrences in the region, geochemical evidence, and the geological environments present, the 1998 work area is prospective for mineable deposits of corundum (sapphire/ruby) and beryl (emerald/aquamarine).

Commodities

Gemstones represent a large potential market for British Columbia, as few mines currently supply an increasing global demand. The demand for gemstones rises as personal disposable incomes rise. According to a survey quoted by the USGS, (in order of decreasing preference) diamonds, emeralds, sapphires and rubies are the favourite jewelry gemstones of US (North American) consumers.

Industrial beryllium is used principally in alloys to take advantage of its lightweight, high strength, and high thermal conductivity. 80% of all beryllium production in the US in 1998 was all used for electronic and electrical components, and aerospace and defense applications. The demand for industrial beryl is dependent on the fluctuating, although increasing, need for beryllium-aluminum alloys used in the electronics industry. Canada already provides most of the beryllium ore imported into the US.

Poor quality sapphire or emery can be mined for its abrasive qualities. To be competitive these must be high-grade deposits.

Exploration Targets

The project is a multi-commodity exploration approach focusing mainly on gemstone varieties of corundum and beryl. Samples are being picked for Secondary commodities including (coarse) gold and base metals. Corundum and beryl anomalies were investigated for gemstone potential and industrial mineral potential.

Corundum (Al_2O_3)

Gemstone varieties of corundum (sapphire and ruby) occur in moderately high-grade Al-rich contact-metasedimentary rocks (BC Deposit Profile #Q09), and in alkali basalts (BC Deposit Profile #Q10). Ruby is a Cr enriched variety of gemstone corundum and is commonly associated with ultramafic rocks. The origin of sapphires in alkali basalt is not well understood, however, geological evidence suggests that it is subduction zone related. Oceanic sediments and ophiolites subducted to a depth of approximately 90km will undergo metamorphism to corundum bearing eclogite. These rocks must remain at this depth for an extended period. At greater depths the temperature would be too high and the sapphires would be destroyed. Volatile rich alkali basaltic magmas generally form at a depth slightly below this depth. As the magma rises to the earth's surface, it passes through the corundumiferous eclogite. Corundum xenocrysts and eclogite xenoliths are carried to the surface very rapidly. Alkali basaltic rocks in the area were explored for this type of sapphire deposit.

Sapphire is commonly associated with aluminum rich sedimentary rocks. Metamorphism of aluminum rich pelitic rocks may lead to the development of economic concentrations of gemstone sapphires. Other sedimentary rocks may become enriched in aluminum through contact metamorphism and metasomatism during emplacement of aluminum rich alkali intrusive body such as syenites and monzonites. Partial melting and anatexis during high-grade metamorphism may lead to aluminum enrichment of rocks as the less refractory components are driven off leaving an aluminum rich rock. Sapphire mineralization in aluminum rich metasedimentary rocks is commonly associated with aluminosilicate minerals such as andalusite, kyanite or sillimanite.

Metamorphism of pelitic rocks or pegmatite dykes in contact with ultramafic rocks may lead to reaction zones characterized by vermiculite and chlorite after phlogopite. The reaction is commonly related to fluid migration along open fractures. If the system contains excess aluminum corundum crystals may develop.

Gem corundum has been reported in several localities along the Western Cordillera, from Yukon and Alaska, through British Columbia (Empress deposit, Blu Moon and Blu Starr deposits), and in Washington, Oregon, Wyoming (Yoho deposit) and California.

Emerald/Beryl ($Be_3Al_2Si_6O_{18}$)

Be and Cr are two constituents that generally do not occur together in nature, yet it is the two main constituents needed to form emerald. Emerald forms when Be-rich crustal rocks come in contact with Cr-rich oceanic and mantle ultramafic rocks. Several emerald deposits around the world occur in schistose rocks (BC Deposits Profile #Q07) and are associated with ultramafic rocks. Areas with ophiolitic rocks in highly metamorphosed terraines intruded by late granitic plutons are prospective.

The Columbian Muzo-type emerald deposit (BC Deposit Profile #Q06) is a target within the project area. In this type of deposit, emeralds occur in black shale associated with the influx of metasomatic fluids along major structures. Slightly elevated Cr values and a low K/Na ratio near the area of emerald mineralization characterize the black shale in the Muzo area. Chemical interaction between the hydrothermal fluids and the shale resulted in the growth of emerald crystals. This model is also known as the exometamorphic emerald deposit model.

Gem beryl has been described at many localities in the Western Cordillera. Occurrences of emerald and aquamarine are found in British Columbia, and a recent non-gem quality find along the NWT-Yukon border.

Secondary Targets

Gold and base metal deposits (including Kootenay Arc type) are likely to occur in these geological environments. Indicator minerals for these deposits are being identified for interpretation.

Exploration Program

The program was designed to assess the mineral potential of the large project area in one season. This approach requires long term commitment to exploration. The first pass is not likely to find a deposit immediately, however, it will indicate which areas are most likely to be mineralized. The strategy was to use a low density surficial material sampling survey, utilizing heavy mineral separation combined with geochemistry with low detection limits to separate prospective from non-prospective areas.

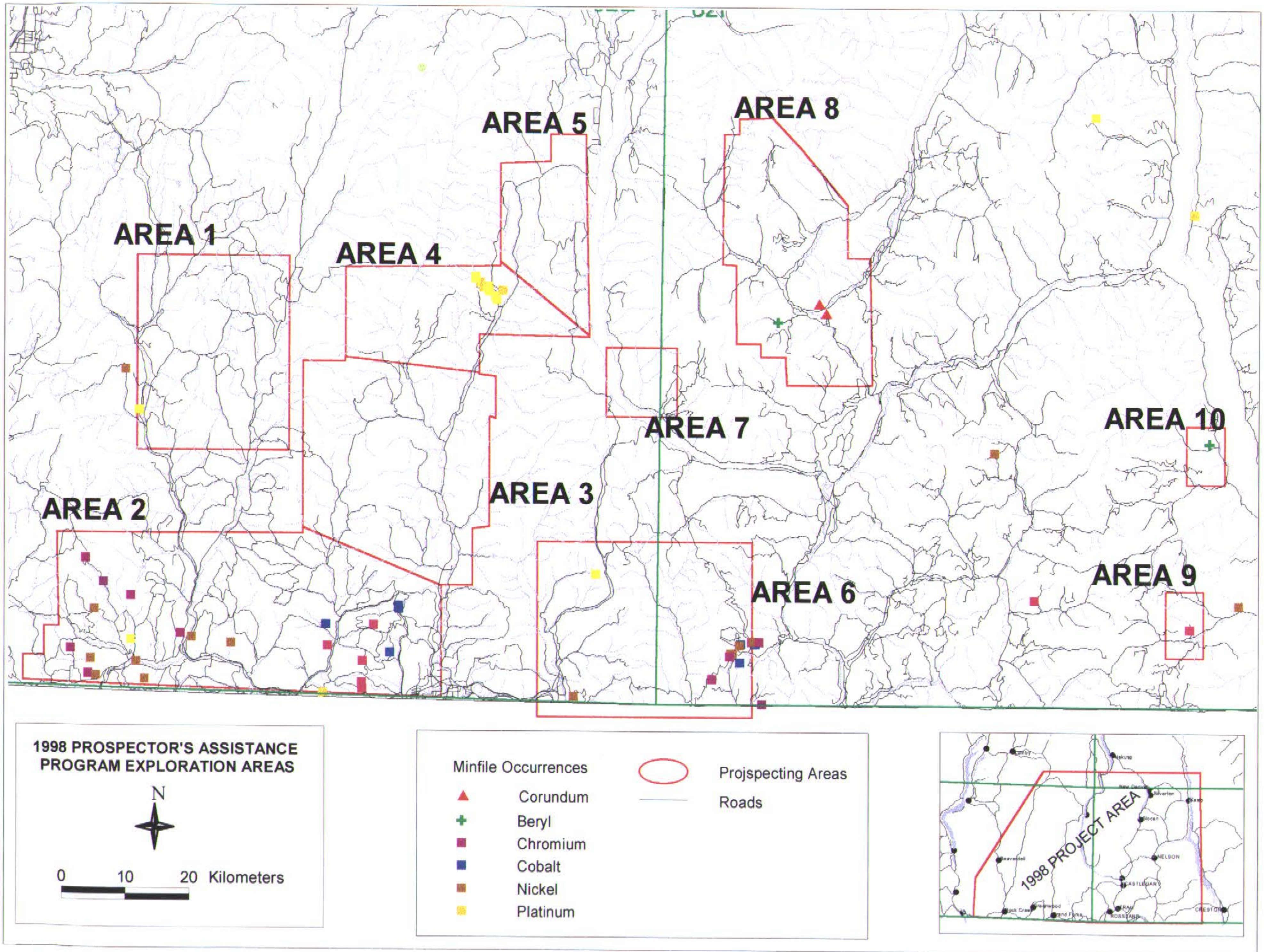
The 1998 work program consisted of prospecting and heavy mineral sampling in areas considered prospective for sapphire and emerald mineralization. Areas with ultramafic rocks, shale adjacent to ultramafic rocks, aluminum-rich metasedimentary rocks (especially those units with late syenitic intrusives nearby) and alkali basaltic and plutonic rocks were considered geological targets and were the main focus of exploration within the project area. Areas with known beryl and sapphire occurrences were also given priority. The selected areas are presented in figure 2.

Area selection for the 1998 prospecting project was based on identification of geological rock types commonly associated with gem corundum and gem beryl. Alkaline basalt and alkaline intrusive units are represented on the government geological maps for the area. Ultramafic rocks are poorly represented on the geological maps but are well represented in Minfile by commodities related to ultramafic rocks (figure 2). Aluminum rich sediments are only inferred by the geological maps and by a few aluminosilicate occurrences in Minfile. Sapphire and beryl occurrences in Minfile are discussed under Minfile Occurrences above.

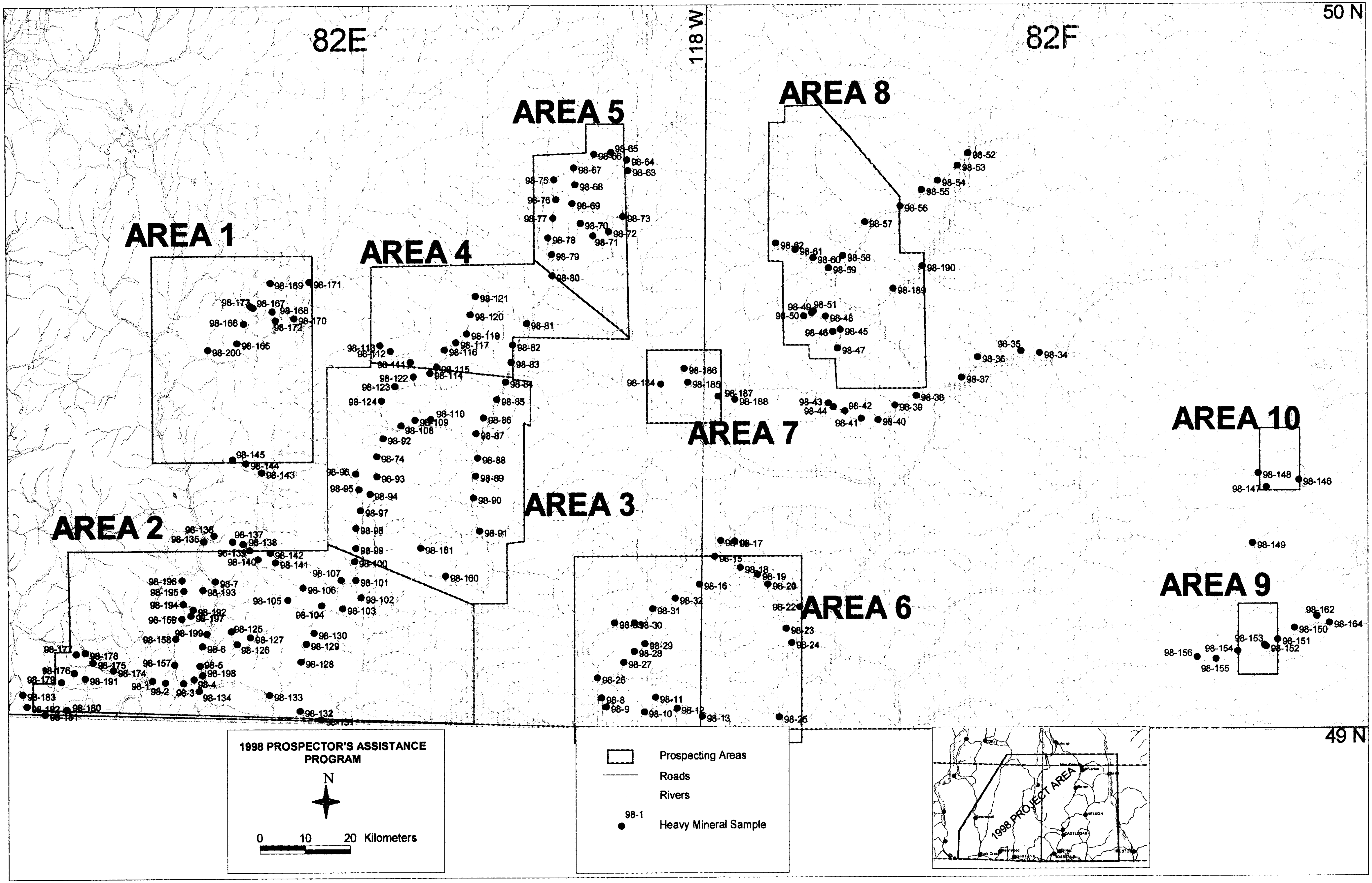
1998 Field Program

200 heavy mineral samples were collected from the project area. The field program was 32 days long, and consisted of 57 man-days (see table 2). The length of the program was more dependent on the number of samples collected rather than time spent in the field. Sample processing is slow and very costly (funding and time for sample processing - final report deadline of January 31 - limit the applicant). Sample processing is expected to be complete by April 31, 1999.

FIGURE 2



AREA 1
AREA 2
AREA 3
AREA 4
AREA 5
AREA 6
AREA 7
AREA 8
AREA 9
AREA 10
1998 PROSPECTOR'S ASSISTANCE
PROGRAM EXPLORATION AREAS
N
0
10
20
Kilometers
Minfile Occurrences
Corundum
Beryl
Chromium
Cobalt
Nickel
Platinum
Projspecting Areas
Roads
1998 PROJECT AREA
NELSON
CASTLEGAR
ROSSLAND
CRESTON



82E
82F
118 W
50 N
49 N
AREA 1
AREA 2
AREA 3
AREA 4
AREA 5
AREA 6
AREA 7
AREA 8
AREA 9
AREA 10
1998 PROSPECTOR'S ASSISTANCE PROGRAM
N
0 10 20 Kilometers
Prospecting Areas
Roads
Rivers
98-1
Heavy Mineral Sample
1998 PROJECT AREA
NELSON
CASTLEGAR

Prospecting within the geological target areas included confirmation of target rocks, identification of major structural features, and recognition of hydrothermal, metamorphic and metasomatic alteration and mineralization where possible. Identification of ice-direction indicators (eg; striae, flute marks, cirques, etc…) and type of surficial materials was recorded to aid in later interpretation.

Glacial till was the priority sample media. Where till was not available glaciofluvial sediments were collected. Streams were collected where there was no apparent glacial sediment for collection. Stream sediments were also collected down stream of areas with poor road access. Colluvium was not distinguished from parent glacial material unless it was of obvious local provenance (i.e. Local rock fragments in soil).

Suitable sample sites were planned beforehand. 20 – 30kg samples were collected 3-8km apart along pseudo-lines down stream/ice and over each prospective area. Each sample site was recorded on a 1:250,000 topographic map sheet. Descriptive notes on the sample material were recorded on a field note form.

Where well-developed glacial till or colluvium could not be obtained, stream sediment was sampled. Each sample was collected from a hand-dug pit and sieved immediately to -6mm. In general, approximately 20 liters of –6mm sieved sediment was collected for each sample. The oversize sieve fraction was left in the field and a rough percentage of size components estimated and recorded on the field note form. Each sample was then transferred to 2 plastic sample bags, labeled, tied shut, and weighed with a fish scale.

Depending on the availability of water, sample size was reduced for final transport by sieving to –0.85mm or –3mm either at a central location at the end of each day or at a later date. The weight of each size fraction was recorded. Samples were either transported to the lab immediately for processing or cached for pick-up at a later date. All caches were collected by October 20th, 1998.

Sample collection field notes for all samples collected during the 1998 field season are found in Appendix 2. Sample locations are outlined on figure 3.

Laboratory Procedures

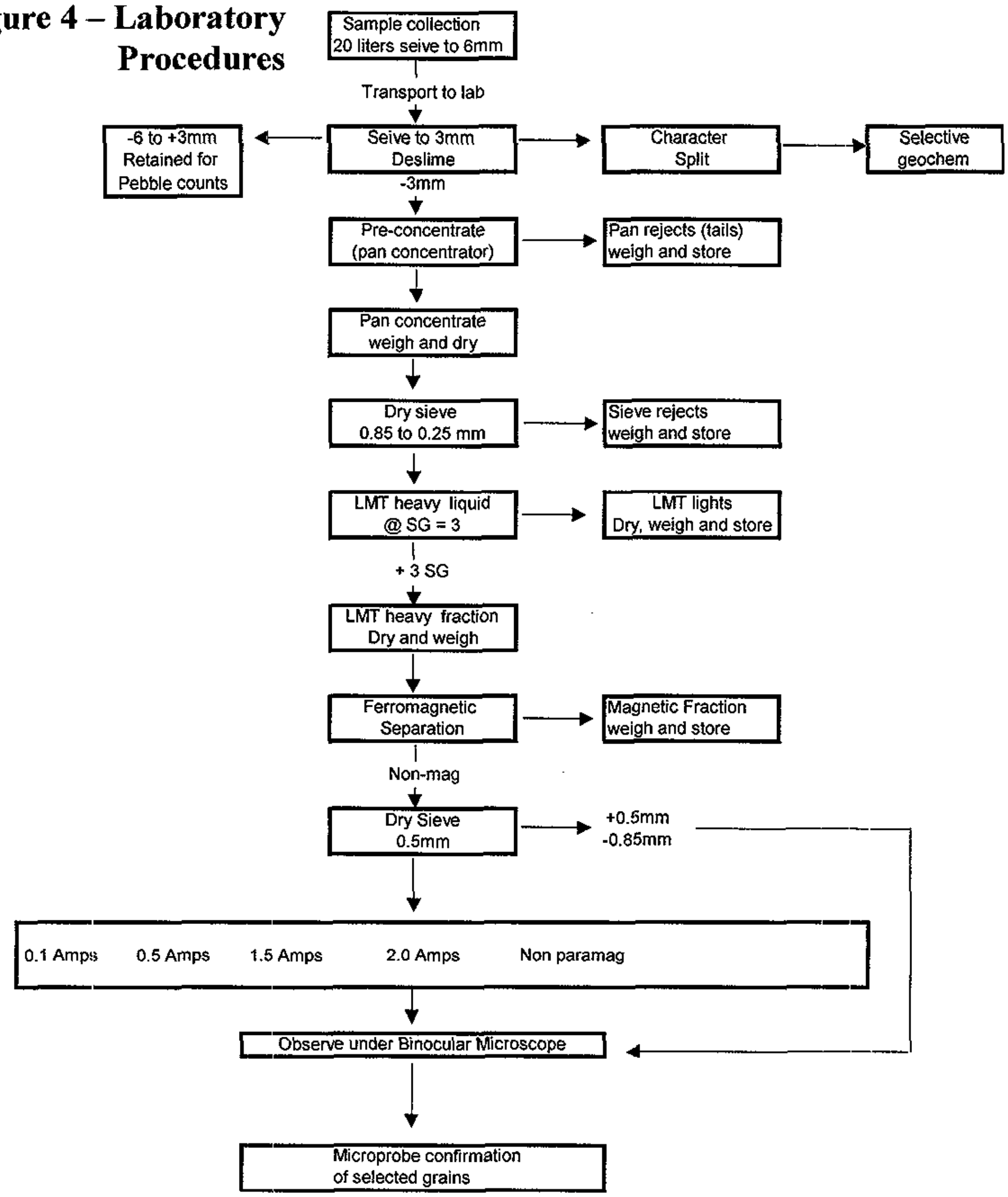
In the lab, the sample is weighed and a 500g aliquot obtained from each 20-liter sample prior to processing. The aliquot is retained for sample character reference and selective geochemical analysis. The samples are then concentrated according to particle size, density and ferromagnetic nature of the grains. The laboratory steps are illustrated in Figure 4.

Initially, the sample is soaked briefly in water to disaggregate and wet all of the mineral grains. Well-compacted samples are soaked and agitated in a calgonite solution for an extended period of time to aid in disaggregation. Next, the sample is sieved to 3mm by hand. Several washings with clean water ensure that the sample is deslimed. The +3mm is discarded with the exception of about 500g which is retained for pebble count analysis if needed. The deslimed –3mm material is pre-concentrated in a mechanical pan concentrator. On average, samples are reduced by 95-97% by weight. The pan concentrates are dried and weighed in a low temperature drying oven.

Dried pan concentrates are sieved at 0.85mm and 0.25mm. If magnetite content is anomalously high a hand magnet is used for extraction. The +0.85mm and –0.25mm sieve fractions are weighed and stored. Heavy minerals are separated from the -0.85+0.25mm fraction using Lithium Metatungstate (LMT), a water soluble non-toxic heavy liquid with a specific gravity of 3.0. The –3.0sg and + 3.0sg fractions are washed, dried, and weighed. The LMT lights are retained in storage.

The +3.0sg heavy mineral fraction is further separated by magnetic characteristics. The ferromagnetic minerals are separated out using a hand magnet. The non-magnetic fraction is sieved to 0.5mm, and the +0.5mm fraction is sorted under a binocular microscope. The –0.5mm fraction is passed through a Frantz Isodynamic separator at 0.1, 0.5, 1.2 and 2 amps. Each paramagnetic and nonparamagnetic fraction is observed under binocular microscope in two passes. The first pass is general assemblage identification, and the second is indicator mineral picking.

Figure 4 – Laboratory Procedures



Sample Processing Status

To date, all 200 samples have been pre-screened, pre-concentrated and sized for heavy liquid separation. A total of 69 are at the first grain picking stage. Another 42 samples have passed through heavy liquids and are ready for magnetic separation.

To complete the project, 80 additional samples must be separated using heavy liquids; a total of 131 samples must be magnetically separated and picked for sapphires.

Samples collected in areas favourable for emerald mineralization with Cr bearing indicator minerals will be selected for Be analysis by atomic absorption.

Appendix 3 outlines the status of sample processing for all samples. Preliminary picked and identified grains of interest are outlined in Table 4. All assemblage and picking results will be complete by April 31, 1999, and submitted as an addendum to this report.

138 samples have been selected for geochemical study. The character reference samples retained for each heavy mineral sample will be utilized for this purpose. They will be analyzed by full digestion AA at an accredited Canadian laboratory for Be content.

Results / Summary

Area 1

This area was chosen for exploration work because of the presence of alkali basalt and alkalic intrusive units (syenite). Metamorphism of these alkali-saturated rocks may provide excellent opportunity for creation of gem corundum minerals.

A total of 14 samples were collected in Area 1 (see Appendix 2). These are interpreted to comprise 11 till, 2 glaciofluvial, and 1 stream sediment sample. The dominant characteristic is that the till is almost all sandy to gravelly in composition. The material is light beige to brown with subangular to subrounded pebbles and cobbles.

The regional direction of the last glaciation has been mapped and observed to be from the NNW to the SSE in this area.

The dominant heavy mineral assemblage for the samples in this area is olivine-augite.

Area 2

This area was chosen for exploration work because of the presence of ultramafic rocks and alkali basalt may provide the right chemistry for creation of beryl/emerald or corundum.

A total of 60 heavy mineral samples were collected to test the prospectivity of Area 2 (see Appendix 2). These comprise 50 till, 8 glaciofluvial, 1 lacustrine, and 1 stream sediment sample. Composition of the till collected is highly variable in this area, ranging from 0-60% clay, 5-50% silt, 15-80% sand, and 5-50% gravel. More than one till is represented by colour, noted as dark brown and also light brown to grey.

The dominant glacial ice direction in Area 2 was from the NW to the SE to E approaching the US border. The surficial sediments have been classified by BCGS mapping as moraine and glaciofluvial sediments, with minor glaciolacustrine terrain west of Rock Creek.

The most abundant heavy minerals in the assemblage for this area are augite, diopside, and apatite, with minor hematite and/or goethite and titanite.

Area 3

This area was chosen for exploration work because alkalic intrusives are found in contact with sedimentary rocks *in a metamorphosed environment. Aluminum-rich minerals such as corundum may be present in such a setting.*

31 heavy mineral samples were collected to test this area for mineralization (see Appendix 2). These comprise 16 till, 6 glaciofluvial (including 1 esker sample), and 2 colluvium samples. Sandy-silty and sandy-gravelly compositions dominate the till samples from this area. The clay component is small. The surficial sediment layer appears quite thick in this area.

The regional glacial ice direction is from the NNW to SSE, with local scouring and deposition along N-S valleys.

Augite-titanite-diopside is the heavy mineral assemblage in this area. 5 gold grains were found in sample 98-86.

Area 4

This area was chosen for exploration work because of the presence of ultramafic in an area intruded by syenite. The ultramafics may have provided a source of chrome for formation of emerald/green beryl.

A total of 17 samples were collected from Area 4 (see Appendix 2). Of these, 9 have been interpreted as till, 6 as till/glaciofluvial, and 2 as colluvium samples. The average composition of till samples from this area is 10% clay, 20% silt, 30% sand and 40% gravel. The till is compact (difficult digging!), light to medium brown, and contains mainly subrounded pebbles and cobbles.

The regional glacial ice direction is from the NNW to SSE and N to S along valleys.

The heavy mineral assemblage from these samples is dominated by augite, diopside and titanite with hornblende.

Area 5

This area was chosen for exploration work because alkalic intrusives are in contact with metasediments, providing an Aluminum-rich metamorphic environemnt which may have been suitable for corundum formation.

A total of 16 samples were collected from this area, 12 of which were till, 2 glaciofluvial, and 2 colluvium. The till is mainly a beige to light brown sandy till with common subangular clasts (see Appendix 2).

The regional glacial ice direction is from the N to S in this area.

The heavy mineral assemblage from samples collected in this area is dominated by hornblende-augite-titanite northwest of the syenitic intrusion. Samples which overly the syenite are mostly represented by a garnet-augite-diopside-epidote assemblage with minor staurolite. The presence of kyanite was also noted.

Area 6

This area was chosen for exploration work because of the presence of alkalic intrusives (syenite) in contact with fine clastic metasediments and ultramafic rocks. A single beryl occurrence has been noted in the BC Minfile from this area.

Heavy mineral samples collected in this area include 4 till/colluvium, 5 stream sediment, and 25 till samples (see Appendix 2). Till samples consist predominantly of silty sandy till with minor clay and gravel components. The material is present as a thinner layer than the other areas (a veneer), and is commonly oxidized to a reddish colour.

The regional ice flow direction is from the NNW to the SSE. No heavy mineral assemblage information is available for Area 6 at this time.

Area 7

This area was chosen for exploration work because of the presence of alkalic intrusive rocks with black shale. The black shale may have provided the chrome necessary for formation of ruby corundum or emerald beryl.

10 samples were collected from this area. They comprise 7 till, 1 till/colluvium, and 2 glaciofluvial samples(see Appendix 2). The material is mainly sandy gravelly till with a very small fine component. The samples are all light brown/beige to grey in colour.

Augite-hornblende-diopside-titanite is the prevalent assemblage among samples from this area.

The last glacial ice direction was from NW to SE.

Area 8

This area was chosen for sampling because of the presence of alkalic intrusives (monzonite) in contact with aluminum-rich metasediments. This area also contains known (possibly economic) occurrences of gem quality corundum; the Blu Starr and Blu Moon deposits. The area was targeted for sample collection to test sampling and laboratory methods to ensure this program will be successful in identifying this kind of mineralization.

A total of 38 heavy mineral samples consists of 24 till, 11 glaciofluvial, 2 stream sediment, and one colluvium (see Appendix 2).

The heavy mineral assemblage consists of garnet, epidote, and trace kyanite.

The regional ice direction is from N to S along the Slocan Valley, but localized flow from the NE to SW and NNW to SSE are present.

Area 9

This area was chosen for exploration work because of the presence of ultramafic rocks (talc reported in BC Minfile) and reported occurrences of aluminosilicate minerals. Corundum formatio and/or beryl/emerald is likely.

A total of 11 samples were collected, consisting of 6 till, 3 stream sediment and 2 glaciofluvial samples. The till is mainly sandy in composition (see Appendix 2).

Hornblende-staurolite-kyanite is the dominant heavy mineral assemblage in this area.

Glacial ice movement exhibited a complex pattern in Area 9, flowing locally from NNW, NE and N southward.

Area 10

This area was chosen for exploration work because of the reported occurrences of beryl and aluminosilicate minerals.

6 samples were collected from this area, including 4 till, 1 stream sediment and 1 glaciofluvial sample. The till is coarse grained in nature (see Appendix 2).

Hornblende-garnet-diopside-kyanite is the dominant heavy mineral assemblage for this area.

Glacial ice flow was from the NNW and ENE.

Table 4 contains preliminary heavy mineral grain picking results to date.

Table 4

PRELIMINARY GRAIN PICKING RESULTS

SAMPLE	GOLD	CPY	EXOTIC GARNET	RUTILE	SPINEL	CR_DIOPSIDE	OLIVINE	COLUMBITE/ TANTALITE	FLOURITE
98-105	1	0	1	0	2	130	575	0	0
98-125	2	0	0	0	0	3	203	0	0
98-126	0	0	1	0	3	9	1203	0	0
98-127	1	0	0	0	0	8	249	0	2
98-128	8	0	0	0	8	13	360	0	1
98-129	7	0	1	0	1	13	186	0	0
98-130	0	0	0	0	22	310	411	0	0
98-131	2	0	2	0	1	0	6	0	0
98-132	1	0	0	0	1	63	1400	0	0
98-133	24	0	5	0	42	200	5100	0	15
98-134	9	0	3	0	219	4	10150	0	22
98-136	2	0	2	0	4	252	250	0	79
98-144	2	2	3	0	0	11	700	0	100
98-147	0	0	33	1	1	20000	5	2	0
98-148	1	0	3	0	1	2	0	3	0
98-149	1	0	2	0	0	2	0	0	0
98-151	0	0	0	0	0	0	0	0	0
98-152	0	0	0	0	0	2	0	1	0
98-153	0	0	2	0	1	0	0	1	0
98-154	9	1	0	0	0	0	0	0	0
98-155	1	3	0	0	0	0	0	1	0
98-156	0	0	1	0	0	2	0	0	0
98-157	1	0	2	0	108	50	0	0	0
98-158	2	0	6	0	4	34	233	0	2
98-159	9	0	0	0	7	77	610	0	0
98-168	3	0	0	0	4	410	0	0	0
98-169	0	0	0	0	4	49	0	0	0
98-178	11	0	0	0	0	5	0	0	0
98-184	0	0	0	0	0	0	0	0	0
98-186	5	0	0	0	0	0	0	0	0
98-187	18	0	1	0	0	10	2	0	0
98-189	2	0	4	0	1	1	0	0	0
98-190	9	0	0	0	0	25	3	0	0
98-192	0	0	1	0	4	337	22000	0	0
98-198	0	0	3	0	0	5	550	0	0
98-63	0	0	1	0	0	0	1	0	0
98-64	0	0	0	0	0	24	0	1	0
98-65	1	0	0	0	0	2	0	0	0
98-66	0	0	5	0	0	4	0	0	0
98-67	2	0	0	0	0	0	0	0	0
98-68	1	0	0	0	0	0	0	0	0
98-69	0	1	2	0	0	3	0	0	0
98-70	0	0	0	0	0	0	1	2	0
98-71	2	0	1	0	0	2	0	0	0
98-72	3	0	0	0	0	0	0	0	0
98-73	0	0	0	0	0	3	0	2	0
98-75	0	0	1	0	0	3	0	0	0
98-76	0	0	0	1	0	0	0	3	0
98-77	1	0	0	1	0	2	0	1	0
98-78	3	0	0	0	0	0	0	1	0
98-79	0	0	0	0	0	2	0	0	0
98-80	0	0	0	0	0	0	0	0	0
98-81	33	0	0	0	0	7	0	0	0
98-83	4	0	0	0	0	4	0	0	0
98-86	5	0	1	0	0	7	0	0	0
98-92	1	0	0	0	0	12	4	0	0

Summary

The proposed exploration program focused on gemstone commodities, which are under explored for in BC. Within the project area, most of the past exploration has been directed at gold, silver and other metal commodities. More recent exploration activity by Anglo-Swiss Industries for sapphire, garnet and iolite in the Slocan Valley, and the non-economic emerald find on the Yukon-NWT border suggests that this area of BC has good potential for hosting of a world class gemstone deposit. The project area contains several geological environments prospective for corundum and beryl gemstones.

Fieldwork was conducted in areas with favourable geology. At no further cost to the program and without deviation from the main focus, sample analysis includes investigation for metal and industrial commodities through heavy mineral grain picking and identification

A complete interpretation of results is not possible in this report due to lack of complete processing results. Lab results are anticipated to be in a final stage by April 31, 1999. An addendum to this final report (and to satisfy requirements of the Prospector's Assistance Program) will be submitted at that time.

The applicant and exploration partner each have 13 years of experience conducting large scale reconnaissance projects for gems and metal commodities. They are committed to discovery of economic deposits through good exploration practices.

Appendix 2 - Sample Collection

SAMPLE	TYPE	CLAY_%	SILT_%	SAND_%	GRAVEL_%	COMPACTION	TEXTURE	CLASTS	DEPTH	COLOUR	MOISTURE	SITE_DESC	WEIGHT	NO_BAGS	SITE_RATIN	TILL_TYPE	SEIVE_SIZE	WET_DRY	OVERSIZE_%
98-1	till	5.0	10.0	50.0	35.0	medium	sandy till		30	med brown	damp	road cut on Hwy 3	10.0	1.00			3	dry	35
98-2	till	5.0	5.0	50.0	40.0	medium	sandy gravelly till		40	dk brown	damp	road cut on Hwy 3		1.00			3	dry	50
98-3	till					loose	gravel sand till		10	dk brown	dry			1.00	poor	veneer	3	dry	60
98-4	till		20.0	30.0	10.0	tight	clay till		30	grey brown	wet	road cut down-ice of SW trending drumlin		1.00	mod		3	dry	20
98-5	till	5.0	5.0	40.0	50.0		gravel sand till		30	dk brown	damp	cut face down-ice of UM target			mod		3	dry	50
98-6	till		20.0	40.0	10.0	loose	clayey sandy till		20	dk brown	dry	road cut on steep hill in UM		1.00	mod		3	dry	10
98-7	till		10.0	50.0	20.0	loose	sandy hill		40	dk brown	dry	road cut		1.00	mod	veneer	3	dry	20
98-8	till	0.0	10.0	50.0	40.0	loose	gravelly silty sand	Locally derived (basalt/gabbro) v ang to subang fragments 2-10cm (mostly fine), sandy, minor organics.Pyrite	20	med rich brown	damp	roadcut on E-facing slope	17.0	1.00	good	veneer	3	dry	20
98-9	till		60.0	5.0	25.0	medium	gravelly silt	stratified; dk brown to 5" with ang frags basalt and granite, med reddish br below less angular frags	35	dk brown;brown red	damp		15.5	1.00		veneer and o/c	3	dry	25
98-10	till		30.0	50.0	10.0	medium	sandy till	mod distance travelled; rnd to subrnd and broken granitoid gneiss frags 1-10cm	30	brown red	damp	road cut 10m S below road	17.5	1.00	mod	veneer	3	dry	10
98-11	till		40.0	40.0	10.0	medium	silty sandy till	stratified oxidized red/brown silty sand to 35cm;grey brown clay and cs sandy till below w/1-3cm felsic granitoids	45	red brown; grey	damp	road cut 3m above E side of road	13.5	1.00	good		3	dry	10
98-12	till		50.0	25.0	10.0	medium	sandy silty till	semi-locally derived rounded pea sized syenite frags	35	chocolate brown grey	damp	roadcut 10m above road	15.5	1.00	mod	veneer	3	dry	10
98-13	till		20.0	15.0	5.0	medium	clayey siltytill	1-5cm subrounded granitoid fragments	30	chocolate brown grey	damp	roadcut 2m S of road		1.00	good	blanket	3	dry	5
98-14	till		50.0	5.0	35.0	loose	oxidized 15cm orange-brown horizon above lt brown grey silty sandy horizon	rounded 2-8cm granitoids in deeper horizon	30	lt brown grey	dry	roadcut 1m above road	15.0	1.00	good	veneer	3	dry	50
98-15	till		15.0	20.0	30.0	medium	clayballs with sand; locally derived	round to subangular 1-5cm frags	35	brown grey	wet	roadcut 2m SW of road	16.5	1.00	mod	o/c and till	3	dry	30
98-16	till/colluvium		40.0	30.0	10.0	medium	red colluvium? On top; brown till horizon below	angular 1-3cm locally derived frags	40	red brown	wet	steep roadcut 2m above road	13.5	1.00	mod	colluvium/veneer	3	dry	10
98-17	till	5.0	35.0	50.0	10.0	medium	heterogeneous(pockets)	subrnd to subang 1-15cm frags various lithology		chocolate brown	dry	roadcut 3m below road		1.00	mod	veneer	3	dry	10
98-18	till/colluvium		30.0	35.0	5.0	tight	good range of grainsizes; colluvium on top, till underneath	1-20cm various lithology frags; next to blk carbonaceous fg sed o/c	60	red/brown above; choc brown below	dry	roadcut 2m above road	14.5	1.00	good	colluvium/veneer	3	dry	5
98-19	till/colluvium		50.0	15.0	25.0	tight	organic rich			med brown	damp	roadcut 1m below road	7.5	1.00			20	wet	60
98-20	till		30.0	25.0	20.0	medium	clay till		20	dk brown grey	damp	logging roadcut 1m above road	17.5	1.00	mod	veneer/blanket	3	dry	20
98-21	stream		10.0	15.0	60.0		stream fines	trap site between boulders	15		wet	high Energy river	6.0	1.00			20	wet	
98-22	till		20.0	20.0	20.0	medium	clay till	few5-10cm rnd heterolithic frags, lots of ang fg fissile sed frags	35	dk grey brown	damp	roadcut 1m above rd		1.00	poor	unknown	3	dry	20
98-23	till		20.0	20.0	25.0	medium	20cm top horizon fissile sandy clayey till; normal till below	heterolithic gravel and rounded burnt wood laths	40	chocolate brown red	wet	3m level roadcut		1.00	mod	veneer	3	dry	25
98-24	till		60.0	15.0	15.0	tight	fissile till	subrnd heterolithic 5-15cm frags, no wood	20	brown grey	dry	hwy roadcut	16.0	1.00	good	veneer	3	dry	
98-25	stream		10.0	30.0	50.0	loose	S-flowing stream	fines from W edge of stream	25		wet	stream	12.5	1.00			20	wet	70
98-26	till		50.0	30.0	10.0		good range grain sizes	1-5cm multilithic rnd to ang frags	30	med grey brown	dry	roadcut 1m above road		1.00	good	veneer/blanket	3	dry	10
98-27	till		35.0	40.0	10.0	loose	frsh looking till	10% rnd to subang multilithic frags; granitoids	25	med brown	damp	roadcut off loggin road	17.0	1.00	good	veneer	3	dry	10
98-28	till		20.0	60.0	5.0	loose		2-10cm subang to subrnd granitoid frags	25	med brown	dry	roadcut in forest		1.00		veneer	3	dry	5
98-29	till		55.0	20.0	5.0	tight	v silty	3-10cm rnd granitoid frags	40	grey brown	damp	S-facing roadcut in forest		1.00	good	veneer	3	dry	5
98-30	till/colluvium		40.0	40.0	10.0	loose	clay silty till	2-10cm subang frags(seds) and rnd frags(granitoids)	40	brown	damp	roadcut	14.5	1.00		colluvium/veneer	3	dry	10
98-31	till	0.0	10.0	30.0	60.0	medium	rocky fg sandy till	subrnd to subang frags; mostly syenite. mica	40	brown	damp	roadcut 1m above hwy	15.0	1.00	good	veneer	3	dry	60
98-32	till	0.0	20.0	60.0	20.0	medium	silty sandy till	20% subrnd multilithic frags 2-10cm	40	brown yellow	damp	roadcut in fresh logging	18.0	1.00	good	veneer	3	dry	20
98-33	stream						v. steep valley; many streams flow in to this one.3m wide	high energy W flowing; rnd grains to ang; lots biotite									20	wet	90
98-34	colluvium/glaciofluvial	4.0	10.0	85.0	1.0	loose	15cm dk br colluvium on top; lt br fg sandy glaciofluvial below	well sorted w/minor v angular granite frags	45	dk brown, chocolate	damp	roadcut 3m above hwy	31.0	2.00	poor	colluvium/fluvial	3	dry	1
98-35	till		30.0	20.0	40.0	medium	v rocky, covered in moss	all types rock frags, burnt wood	70	dk brown/chocolate	damp	roadcut 10m from rd; flat	24.0	2.00	mod	veneer	3	dry	50
98-36	till		25.0	45.0	20.0	medium	veneer till over rotting bedrock	v mafic med gr rnd to ang hbl tonalite	40	med brown	damp	steep roadcut 3m above rd	30.5	2.00	mod	o/c and till	3	dry	20
98-37	till	5.0	35.0	50.0	10.0	medium	fine sandy till;rocky w/ depth	subrnd to subang frags var lithologies	40	med-lt brown	dry	steep roadcut; 1m above	27.0	2.00	mod	veneer	3	dry	12

SAMPLE	TYPE	CLAY_%	SILT_%	SAND_%	GRAVEL_%	COMPACTION	TEXTURE	CLASTS	DEPTH	COLOUR	MOISTURE	SITE_DESC	WEIGHT	NO_BAGS	SITE_RATIN	TILL_TYPE	SEIVE_SIZE	WET_DRY	OVERSIZE_%
98-38	till		30.0	20.0	20.0	tight	hard clay balls; fissile	granitic frags rnd to subang	35	grey brown	wet	v steep tall roadcut	17.0	1.00	mod	veneer	20	wet	15
98-39	till		80.0	5.0	0.0	tight	fg silty till w/ minor sand	no oversize except organics	35	brown grey	dry	roadcut 1m flat	33.0	3.00	mod	fluvial?	3	dry	0
98-40	glaciofluvial?	0.0	0.0	40.0	60.0	loose	cs sand, v well sorted		40	dk med brown	dry	roadcut 2m flat	43.5	3.00	mod	glaciofluvial	3	dry	60
98-41	till	5.0	30.0	30.0	35.0	loose	sandy till	subrn granitoid frags	30	red brown	dry	roadcut 1m above	32.5	2.00	mod	veneer	3	dry	55
98-42	till	5.0	50.0	40.0	5.0	medium	gritty silty till	no clasts	40	redbrown	damp	roadcut 10m flat	33.0	2.00	mod	veneer	3	dry	5
98-43	till		20.0	20.0	50.0	medium	gravelly till	1-15cm rnd to subrnd var lith (granitoid)	40	med brown	damp	roadcut 2m above rd beside river	47.5	2.00	mod	veneer	20	wet	50
98-44	stream																20	wet	60
98-45	till	0.0	10.0	70.0	20.0	loose	cs sand /washed till; close to met granitoid	pink garnets	35	red brown	damp	1m above roadcut	34.0	2.00	mod	blanket	3	dry	20
98-46	till		5.0	80.0	5.0	medium	f-m gr sandy till w/ rotten grd	ang rotten grd frags and red metamorphic gts	30	red brown	wet	logging roadcut 1m above road	45.0	2.00	mod	o/c and till			
98-47	till	5.0	5.0	40.0	50.0		sandy till on o/c	augen gneiss	30	redbrown	damp	fresh logging roadcut top of mtn	35.0	2.00	mod	o/c and till	3	dry	50
98-48	till	0.0	10.0	80.0	10.0	loose	v loose scree	2% garnets (no beryl); met augen/schlieren gneiss	25	lt brown	dry	roadcut at beryl showing	36.0	2.00	mod	blanket			
98-49	till/glaciofluvial	0.0	0.0	90.0	10.0	loose	v sandy adjacent to leuco-augen gneiss w/ gts		35	lt brown / white	d	roadcut 2m above	34.0	2.00	mod	blanket			
98-50	till		20.0	60.0	10.0	medium	sandy silty till	leuco monz w/ fspar phenos	30	redbrown	dry	roadcut in valley w/ mtns around	35.0	2.00					
98-51	stream	0.0	5.0	25.0	70.0							mtn stream 120degrees, med flow, 3m wide, high E	36.0	1.00	good	stream	20	wet	70
98-52	glaciofluvial	0.0	0.0	95.0	5.0	loose	mg sandy; salt and pepper	1-5cm v rnd granitoid cobbles	50	brown and wht / grey	dry	1m above steep roadcut	25.5	1.50	mod	glaciofluvial			
98-53	till		10.0	35.0	45.0	medium	clayey sandy till grading to sandy at depth		45	grey	dry	2m above roadcut	42.0	2.00	mod	blanket			
98-54	till	5.0	10.0	70.0	15.0	medium	v sandy w/ minor clay and silt	2-10cm subang to subrnd granitoids	65	med brown	damp	7m above roadcut	48.0	2.00	mod	blanket			
98-55	till	0.0	5.0	35.0	60.0	medium	sandy rocky till	1-7cm subrnd to subang felsic and mafic frags	35	med brown	damp	1m roadcut; flat; moss	33.0	2.00	mod	veneer	3	dry	60
98-56	till/glaciofluvial	0.0	2.0	33.0	65.0		v sandy till	1-5cm rnd cobbles, 30cm boulders	60	brown	damp	2m roadcut	36.0	2.00	mod	blanket	2	dry	65
98-57	till/glaciofluvial	0.0	5.0	80.0	15.0	medium	v sandy till	1-5cm rnd pebbles; var lith, gran	35	redbrown	damp	1m roadcut; flat; moss	33.0	2.00	mod	blanket	3	dry	15
98-58	glaciofluvial	0.0	0.0	95.0	5.0	loose	v sandy; cs/fg layered		35	lt brown	dry	1m steep roadcut	37.0	2.00	mod	glaciofluvial			
98-59	till	0.0	10.0	50.0	40.0		sandy rocky till	cobbles and boulders	40	dk med brown	damp	1m roadcut; flat; moss	38.0	2.00	mod	blanket			
98-60	till	0.0	10.0	65.0	25.0		sandy silty till	1-10cm subrnd to subang var lith frags	25	med brown	dry	2m roadcut	34.0	2.00	mod	blanket	3	dry	25
98-61	till/glaciofluvial	0.0	10.0	70.0	20.0		f-cs gr sandy till;glaciofluvial below 35cm		50	medbrown	damp	roadcut	32.0	2.00	mod	glaciofluvial			
98-62	till	0.0	10.0	60.0	30.0	medium	v sandy f-cs gr till	1-15cm subrnd cobbles and pebbles var lith	30	med chocolate brown	dry	steep 2m roadcut	34.0	2.00	mod	blanket	3	dry	30
98-63	colluvium						powdery silt on fractured syenite w/ gabbro		30	lt brown beige	v dry	o/c	24.0	2.00	mod	veneer	3	dry	20
98-64	glaciofluvial	5.0	20.0	60.0	15.0	tight	sandy silty glaciofluvial	rnd to subrnd pebbles	25	lt taupe	vdry	1km from v graded streambed in roadcut	34.0	2.00	mod	glaciofluvial	3	dry	15
98-65	till/colluvium	0.0	30.0	45.0	15.0	tight	velvety w/ some grit	1-4cm v rnd pebbles	25	beige	v dry	1m flat roadcut	29.0	2.00	mod	blanket	3	dry	20
98-66	colluvium/glaciofluvial		30.0	45.0	15.0	tight	velvety but fg sandy	15% 1-3cm rnd pebbles and 10cm pebbles	25	lt beige	vdry	roadcut 1m above	34.0	2.00	mod		3	dry	15
98-67	till/colluvium		25.0	40.0	25.0	tight		1-10cm subang and minor subrnd pebbles	30	lt beige	v dry	1m above roadcut	40.0	2.00	mod	blanket	3	dry	25
98-68	till/colluvium				20.0		velvety, locally derived	1-10cm subang to ang pebbles	30	beige ochre	dry	1m above roadcut	37.0	2.00	mod	blanket	3	dry	20
98-69	till		20.0	40.0	30.0	loose	velvety, light;fissile	2-8cm locally derived fissile rock	20	lt beige	v dry	0.5m above roadcut	38.0	2.00		veneer	3	dry	30
98-70	till		15.0	60.0	15.0	medium	sandy till	1-10cm subrnd to subang pebbles	25	lt beige	v dry	2m above roadcut	37.0	2.00		blanket	3	dry	15
98-71	colluvium		30.0	40.0	10.0	medium	wood and local material	minor ang to subang clasts	20	lt brown red	v dry	10m on roadcut; flat	23.5	2.00	poor	o/c and till	3	dry	20
98-72	till		20.0	30.0	40.0	medium	o/c everywhere	3-10cm ang granitoid frags w/ rare v rnd pebbles 5-10cm	25	reddish brown	v dry	4m below steep lgging roadcut	30.0	2.00	poor	o/c and till	3	dry	40
98-73	till		40.0	20.0	20.0		silty till, soft	2-5cm angular clasts; hard; fissile	25	med brown beige	v dry	2m above roadcut	30.0	2.00	mod	blanket	3	dry	20
98-74	till	0.0	20.0	50.0	30.0	tight	sandy till	1-3cm irreg subang frags; occ 4-6cm rnd	35	beige red	damp	roadcut	38.0	2.00	mod	blanket	3	dry	30
98-75	till		25.0	45.0	20.0		v powdery silty matrix	2-10cm ang to subrnd clasts	25	beige yello	v dry	roadcut 1m above	34.5	2.00		blanket	3	dry	20
98-76	till		30.0	40.0	20.0	loose	rocky	2-10cm ang to subang clasts	20	lt brown beige	v dry	1m above roadcut	35.0	2.00	mod	blanket	3	dry	20
98-77	till/glaciofluvial	0.0	10.0	30.0	60.0	medium	v pebbly; gravelly sand	2-15cm ang w/ subrnd edges	25	beige	v dry	1m above roadcut	42.0	2.00	mod	blanket	3	dry	60
98-78	till colluvium		30.0	15.0	35.0	medium	velvety texture w/ white broken bedrock	90% 2-8cm local granitoid clasts	35	beige red	vdry	roadcut	27.0	2.00	mod	blanket	3	dry	35
98-79	till/glaciofluvial	0.0	5.0	30.0	65.0	loose	sandy to pebbly	1-10cm and 1-2cm subang to subrnd	30	lt brown beige	dry	roadcut logged/disturbed	41.0	2.00	mod	blanket	3	dry	65
98-80	till		35.0	25.0	20.0	loose	silty sandy till, soft, powdery	1-5cm subrnd var liths	35	lt brown	v dry	roadcut at fork at 30 km mark	31.0	2.00	mod	blanket	3	dry	20
98-81	till		20.0	20.0	40.0	tight	very compact/pebbly	2-10cm subrnd to subang frags/pebbles	30	lt brown	v dry	1m above rdcut; steep; 10m north of mafic volc clastic o/c	41.0	2.00		blanket	3	dry	40
98-82	till/colluvium		40.0	25.0	10.0		powdery silty w/ some grit	1-4cm subrnd to subang frags	35	lt beige	dry	1m roadcut	30.0	2.00	mod	blanket	3	dry	10

SAMPLE	TYPE	CLAY_%	SILT_%	SAND_%	GRAVEL_%	COMPACTION	TEXTURE	CLASTS	DEPTH	COLOUR	MOISTURE	SITE_DESC	WEIGHT	NO_BAGS	SITE_RATIN	TILL_TYPE	SEIVE_SIZE	WET_DRY	OVERSIZE_%
98-83	glaciofluvial	0.0	0.0	20.0	80.0	loose	m-cs gr sand and gravel	2-20cm v rnd felsic and mafic intrusives w/ minor bslt	35	lt brown	dry		27.0	2.00	mod	blanket	3	dry	80
98-84	glaciofluvial		50.0	5.0	1.0	tight	clay/silt	tr 1-3cm rnd pebbles	35	lt brown red	dry	roadcut; flat	29.0	2.00	mod		3	dry	1
98-85	esker	0.0	0.0	50.0	50.0	loose	sandy gravel	2-20cm rnd pebbles	25	beige brown	dry	3m roadcut	39.0	2.00	mod	blanket	3	dry	50
98-86	till/colluvium		20.0	35.0	35.0	loose	sandy gravelly till	local ang granitoid frags and fractured o/c	25	lt brown	dry	scree slope 2m above rd	41.0	2.00	mod	veneer	3	dry	35
98-87	glaciofluvial	0.0	10.0	50.0	40.0	loose	sandy gravelly	2-20cm rnd cobbles and pebbles	35	beige lt brown	dry	flat roadcut	39.0	2.00	mod	blanket	3	dry	40
98-88	till	5.0	20.0	40.0	35.0	loose	sandy till	35% 1-15cm subang to subrnd clasts	20	lt brown	dry	roadcut at bottom of valley	34.5	2.00	mod	blanket	3	dry	35
98-89	till		15.0	30.0	35.0	medium	caly/silt w/ grit	1-5cm subrnd to subang irreg pebbles	40	lt brown	dry	4m below roadcut	36.0	2.00	mod	blanket	3	dry	35
98-90	till	5.0	10.0	55.0	30.0	medium	sandy till	1-4cm and rare 10cm irreg shaped subang to subrnd clasts	30	lt brown	dry	roadcut 2m above; steep	42.0	2.00	mod	blanket	3	dry	30
98-91	glaciofluvial	0.0	10.0	40.0	50.0	loose	sand	1-15cm rnd cobbles and pebbles	30	beige	dry	4m steep roadcut	39.0	2.00	poor	blanket	3	dry	50
98-92	till		40.0	20.0	25.0	tight	sity clay-rich till	1-3cm irreg subang frags	25	lt brown	damp	roadcut	25.0	2.00	mod	blanket	3	dry	25
98-93	till	0.0	20.0	50.0	30.0	tight	sandy silty till	1-3cm irreg subang frags	30	beige lt grey	dry	roadcut (E)	42.0	2.00	mod	blanket	3	dry	30
98-94	glaciofluvial	0.0	5.0	45.0	40.0	loose	v sandy and gravelly; mostly cs gr sand	<1-20cm rnd clasts	30	beige	dry	8m roadcut	42.0	2.00	mod	blanket	3	dry	40
98-95	till/colluvium	0.0	15.0	35.0	50.0		gravelly sandy till	1-5cm and 10-20cm subang frags (minor rnd) syenite and granite	35	beige	dry	10m roadcut	38.0	2.00	mod	blanket	3	dry	50
98-96	till	0.0	15.0	35.0	50.0	medium		1-4cm and 10-25cm ang and rnd frags; var lith	50	beige	dry	3m roacut	42.0	2.00	mod	blanket	3	dry	50
98-97	till/glaciofluvial	0.0	10.0	45.0	45.0		f-cs gr sand w/ gravel and cobbles	1-15cm mostly rnd (minor ang) cobbles and pebbles	50	med brown	dry	1m roadcut	37.0	2.00	mod	blanket	3	dry	45
98-98	till	0.0	5.0	35.0	60.0	medium	v sandy rocky till	1-15cm subang to subrnd frags	40	med brown	dry	0.5m above roadcut	39.0	2.00	mod	blanket	3	dry	60
98-99	till	0.0	20.0	35.0	45.0	tight	sandy silty till w/gravel below 25cm; silty clayey above	1-3cm and 10-20cm frags	40	grey brown red	dry	roadcut	36.0	2.00	mod	blanket	3	dry	45
98-100	till	0.0	20.0	40.0	40.0	tight	sandy silty till	0.5-2cm subang to subrnd frags, and 10-25cm rnd	40	med brown red	dry	0.5m flat roadcut	37.0	2.00	mod	blanket	3	dry	40
98-101	till		20.0	30.0	40.0	medium	gravelly till	1-15cm subang to subrnd frags	35	lt brown	dry	1m roadcut	42.0	2.00	mod	blanket	3	dry	40
98-102	till	5.0	20.0	35.0	40.0	tight	gravelly sandy till	1-15cm subrnd to subang	40	lt brown red	dry	roadcut; flat	38.0	2.00	mod	blanket	3	dry	40
98-103	till		15.0	30.0	30.0		clay sandy till	subrnd peccles	40	lt brown beige	dry		38.0	2.00	mod	blanket	3	dry	30
98-104	till	0.0	30.0	40.0	30.0	medium		1-10cm subrnd frags	85	lt brown	dry	10m roadcut	38.0	2.00	mod	blanket	3	dry	30
98-105	till		15.0	35.0	40.0	tight	sandy till	1-4cm irreg subang frags	35	beige	dry	roadcut; flat	39.0	2.00	mod	blanket	3	dry	40
98-106	till	5.0	20.0	40.0	35.0	medium	sandy silty till	1-15cm rnd frags; smaller are subang to subrnd	40	beige to lt grey	dry	1m roadcut	34.0	2.00	mod	blanket	3	dry	35
98-107	till		35.0	35.0	15.0	tight	v. hard silty sandy till	1-5cm subang to subrnd	30	beige	dry	1m roadcut; steep	39.0	2.00	mod	blanket	3	dry	15
98-108	till	0.0	5.0	50.0	45.0	loose	sandy till w/ m-cs gr sand	1-15cm subang irreg frags	35	med brown	damp	1m roadcut	38.5	2.00	mod	blanket	3	dry	45
98-109	till	0.0	5.0	45.0	40.0	medium	sandy till w/ m-cs gr sand	2-20cm subrnd to subang frags	35	med brown	damp	roadcut	38.0	2.00	mod	blanket	3	dry	40
98-110	till	0.0	15.0	55.0	30.0		silty till w/ gravel	2-10cm subrnd frags	35	med brown	damp	roadcut	40.0	2.00	mod	blanket	3	dry	30
98-111	till				30.0	medium	sandy silty till	1-10cm subrnd dominated by dk grey cs gr fold	40	med brown	dry	flat roadcut	40.0	2.00	mod	blanket	3	dry	30
98-112	till/glaciofluvial	0.0	0.0	50.0	40.0	loose	v sandy m-cs gr sand	mainly subrnd frags	30	med brown	damp	roadcut on valley	40.0	2.00	mod	blanket	3	dry	40
98-113	till	0.0	5.0	50.0	45.0	medium	sandy till	2-15cm subang to subrnd frags; lg subrnd granitoid boulders everywhere	35	lt brown	dry	2m roadcut	37.0	2.00	mod	blanket	3	dry	40
98-114	till	0.0	20.0	45.0	35.0	medium	silty sandy till w/ clumps of till	1-10cm subrnd; >10cm rnd mostly granitoids	30	lt brown	dry	6m roadcut; steep	39.5	2.00	mod	blanket	3	dry	35
98-115	till/glaciofluvial	0.0	10.0	25.0	65.0	medium	sandy till/glaciofluvial?	rocky w/ rnd cobbles and pebbles;w/ 20% 1-25cm subang	35	lt brown	dry	steep roadcut	36.0	2.00	mod	blanket	3	dry	65
98-116	glaciofluvial	0.0	5.0	80.0	15.0	loose	v sandy; f-cs gr	1-3cm subang pebbles w/ broken corners	40	lt brown red	dry		36.5	2.00	mod	blanket	3	dry	15
98-117	glaciofluvial	0.0	15.0	50.0	35.0		m-cs sand	2-10cm rnd to subrnd pebbles	40	lt brown red	dry	5m roadcut	37.0	2.00	mod	blanket	3	dry	35
98-118	till	0.0	15.0	65.0	20.0	tight	sandy glaciofluvial?		40	lt brown	damp		19.5	1.00	mod	blanket	3	dry	20
98-119	till		15.0	45.0	20.0	tight	clayey sandy		40	grey	damp		19.5	1.00	mod	blanket	3	dry	20
98-120	till		32.0	32.0	26.0	medium	silty sand till		35	med brown	dry	roadcut	33.0	2.00	mod	blanket	3	dry	30
98-121	till		15.0	45.0	25.0	medium	good range: clay to gravel	1-10cm subang to subrnd frags	40	med brown grey	damp	roadcut; flat	39.0	2.00	mod	blanket	3	dry	25
98-122	till		25.0	40.0	25.0	tight	silty sandy till	1-5cm and 10-20cm subang w/ good range of grain sizes	40	med brown grey	dry	roadcut; steep	40.0	2.00	mod	blanket	3	dry	25
98-123	till	0.0	20.0	50.0	30.0		sandy till; m-cs gr sand	1-15cm , mostly 1-5cm subang frags	40	red brown	damp	roadcut	37.0	2.00	mod	blanket	3	dry	30
98-124	till/colluvium	0.0	30.0	45.0	25.0	medium	local source; biot flakes	1-5cm subang to subrnd; leucogranite	40	lt brown	dry	roadcut	40.0	2.00	mod	blanket	3	dry	25
98-125	till		30.0	30.0	5.0	tight	clayey silty till; coarser with depth	1-3cm subang to subrnd irreg rare frags	40	grey top; lt brown beige b	dry	roadcut	29.0	2.00	mod	blanket	3	dry	5
98-126	till		35.0	25.0	10.0	medium	clayey good till	1-5cm subang to subrnd frags	35	lt brown	dry	roadcut	37.0	2.00	mod	blanket	3	dry	10

SAMPLE	TYPE	CLAY_%	SILT_%	SAND_%	GRAVEL_%	COMPACTION	TEXTURE	CLASTS	DEPTH	COLOUR	MOISTURE	SITE_DESC	WEIGHT	NO_BAGS	SITE_RATIN	TILL_TYPE	SEIVE_SIZE	WET_DRY	OVERSIZE_%
98-127	till		50.0	25.0	10.0	medium		1-3cm ang and subang to subrnd, irreg frags	35	lt brown	dry	roadcut	36.0	2.00	mod	blanket	3	dry	10
98-128	till	5.0	10.0	25.0	60.0	tight	v rocky	1-10cm subang to subrnd frags; rare rnd 20-30cm irreg frags	40	lt brown grey	dry	1m above 4m roadcut	38.0	2.00	mod	blanket	3	dry	60
98-129	till		35.0	20.0	20.0	medium	clayey silty till with felsic volc bldrs nearby	1-10cm irreg subrnd frags	30	lt brown	dry	roadcut	30.0	2.00	mod	blanket	3	dry	20
98-130	till		25.0	35.0	25.0	loose	clayey silty sandy till	1-10cm irreg subrnd frags	20	lt brown grey		roadcut 100m past Cu Mtn mine	40.0	2.00	mod	blanket	3	dry	25
98-131	glaciofluvial		20.0	35.0	25.0			1-20cm rnd to subrnd frags	30	lt brown	dry	10m roadcut	36.5	2.00	mod	blanket	3	dry	25
98-132	glaciofluvial	0.0	3.0	95.0	2.0	loose	all med gr sand	1-5cm rnd pebbles	20	lt brown grey	dry	3m roadcut in valley	28.0	2.00	mod	blanket	3	dry	2
98-133	glaciofluvial	0.0	10.0	80.0	10.0	loose	f-mg sand top 20cm; cs gr sand below	1-15cm rnd pebbles to subrnd	30	lt brown grey	dry	4m roadcut	38.5	2.00	mod	blanket	3	dry	10
98-134	till/glaciofluvial							subrnd to subang											
98-135	till		30.0	40.0	20.0	loose		1-10cm subrnd to subang, incl pink fspar-phyroc volc	20	beige	dry	roadcut	38.0	2.00	mod	blanket	3	dry	20
98-136	till	5.0	20.0	50.0	25.0	medium	var comp from 3 sites; rocky	rnd to subrnd subang fspar phyric volc	20	lt brown	dry	flat 5m roadcut	37.0	2.00	mod	blanket	3	dry	25
98-137	till	5.0	5.0	55.0	35.0	medium	sandy gravel till	1-10cm subang to subrnd irreg and rnd cobbles	25	lt brown	dry		42.5	2.00	mod	blanket	3	dry	35
98-138	till		30.0	35.0	15.0	medium	clayrich and sandy	1-10cm subrnd frags	25	beige grey	dry	steep E-facing roadcut	34.0	2.00	mod	blanket	3	dry	15
98-139	till		20.0	40.0	30.0	tight	sandy silty till	1-8cm subrnd to subang irreg frags	40	beige	dry		36.0	2.00	mod	blanket	3	dry	30
98-140	till		10.0	35.0	40.0	medium		1-4cm subang frags	30	beige	dry	1m roadcut	39.5	2.00	mod	blanket	3	dry	40
98-141	till	5.0	25.0	35.0	35.0	medium	rocky silty till	1-6cm subrnd to subang w/ rare 20cm rnd cobbles	25	beige grey	dry	roadcut	38.0	2.00	mod	blanket	3	dry	35
98-142	till		20.0	30.0	40.0		sandy silty till		35	beige	damp	roadcut	37.0	2.00	mod	blanket	3	dry	40
98-143	till		20.0	30.0	35.0		sandy silty till	irreg subang frags	30	beige lt brown	dry	1m above roadcut	38.0	2.00	mod	blanket	3	dry	35
98-144	till		20.0	35.0	35.0	medium	sandy till w/ 1-10cm subang to subrnd frags		20	beige lt brown	dry	4m steep roadcut	42.0	2.00	mod	blanket	3	dry	35
98-145																			
98-146	till		30.0	20.0	30.0	loose	clayey bouldery poorly sorted till		30	med brown	dry	steep roadcut near lake	25.0	2.00	mod	blanket	3	dry	20
98-147	till	5.0	20.0	40.0	35.0	loose	sandy till, poorly sorted	rnd and ang clasts	50	lt brown	dry	roadcut on surface	37.0	2.00	good		3	dry	30
98-148	till		20.0	30.0	40.0	medium	sand gravellytill		50	dkgrey	wet	sideof mtn road	57.0	2.75	good	blanket	-9		-9
98-149	till		20.0	30.0	20.0		bouldery clay till		35	greygreen		steep; 30m cutface	43.0	2.00			-9		
98-150	till	2.0	10.0	58.0	30.0	medium	sandy till	rnd and subang clasts;no sorting	40	med brown	damp	30m cutface	40.0	2.00	good		3		30
98-151	till/glaciofluvial		65.0	5.0	10.0	loose	silty till and fine sand (gf) in two layers	1cm pebbles, 30cm boulders	30	orange brown	dry	roadcut	28.0	2.00	poor		3	dry	35
98-152	glaciofluvial	0.0	0.0	40.0	60.0	loose	gravelly f-mg sand; well sorted	clasts rnd to ang	40		dry	roadcut 40m	30.0	2.00	mod		3	dry	50
98-153	till	1.0	9.0	70.0	20.0	medium	sandy till on mica schist neartalc showing	ang to subang clasts	50	lt brown	damp	roadcut; on bedrock	37.0	2.00	good		3	dry	2
98-154	till	5.0	20.0	40.0	35.0	medium	sandy pebbly till; poorly sorted; bouldery surface		40	grey brown	damp	40m roadcut	35.0	2.00	mod	blanket	3	dry	30
98-155	till		15.0	2.0	3.0	tight	talc-like texture with gritty pockets		50	beige	dry	2m roadcut	48.0	3.00	poor		-9		
98-156	till		15.0	40.0	35.0		sandy gravelly till.v bouldery		30	dk brown	wet	3m roadcut	40.0	2.00	good		3	dry	30
98-157	till		30.0	20.0	40.0	medium	silty gravellytill	var lith(10%pebble congl, 10%green chl fractured volc rock), variable ang	30	beige	dry	roadcut	35.0	2.00	mod	blanket	3	dry	35
98-158	till		30.0	20.0	40.0	medium	gravel till and clay	small pebbles ang, lg pebbles rnd	40	lt brown	dry	roadcut in flat	39.0	2.00			3		35
98-159	till	5.0	10.0	45.0	40.0	medium	sandy gravelly till.v bouldery	poorly sorted, no layering	30	lt brown	dry	roadcut on slope	36.0	2.00	mod	blanket	3		40
98-160	till		25.0	40.0	25.0	tight	var lith	1-4cm subang irreg frags, occ rnd	35	lt beige red	dry	roadcut 2m above; steep	36.0	2.00	mod	blanket	3	dry	25
98-161	till	0.0	15.0	70.0	15.0	medium	v sandy till	var lith sbrnd to subang frags 1-4cm	30	med to lt brown	dry	roadcut	34.0	2.00	mod	blanket	3	dry	15
98-162	stream	0.0	0.0	30.0	70.0		cs gravel					bldery high E 2m stream		0.50	poor				
98-163	stream						sand and gravel	Corn Ck, high water deposit	0		damp		36.0	2.00			3	dry	45
98-164	stream	0.0	0.0	30.0	70.0	loose	gravel	30m wide high E river	0		wet	Summit Creek	26.5	1.50	mod		3	dry	30
98-165	till	0.0	20.0	70.0	10.0	medium	partially sorted sand	pebbles all <1cm	75	lt grey	dry	flat bottom valley	34.5	2.00	mod		3	dry	5
98-166	till	0.0	10.0	55.0	35.0	tight	sandy till w/ no layering or sorting; volc bx o/c	bolders, cobbles.pebbles	100	med br	damp	bottom of 30m roadcut, E-sloping	38.0	2.00	good		3	dry	30
98-167	glaciofluvial	0.0	0.0	95.0	5.0	loose	cs well sorted layered sand; finer w/depth; bslt bx nearby	clasts rnd and granitic	80	beige	dry	roadcut in valley	41.0	2.00			3	dry	5
98-168	till	0.0	20.0	30.0	50.0	medium	gravelly sandy silty till	v boldery	50	beige	dry	mod sloping roadcut	36.5	2.00	good		3	dry	50
98-169	till	5.0	10.0	45.0	40.0	tight	sandy till	ang to subrnd coated pebbles	35	med br	damp	roadcut in sm valley	37.0	2.00	good	blanket	3	dry	30
98-170	till	2.0	3.0	15.0	80.0	medium	ang rock frags w/ gravelly till; possible congl rock frag		40	lt grey	dry	roadcut	38.0	2.00		veneer	3	dry	70
98-171	till	0.1	15.0	25.0	59.5		well compacted gravelly sandy till w/ fine sand	ang and subrnd pebbles and cobbles	40	dk brown	damp		32.5	2.00			3	dry	50
98-172	till		30.0	53.0	25.0	medium	sandy silty till		30	lt orange	dry	roadcut in valley	29.0	2.00	mod		3	dry	20

SAMPLE	TYPE	CLAY_%	SILT_%	SAND_%	GRAVEL_%	COMPACTION	TEXTURE	CLASTS	DEPTH	COLOUR	MOISTURE	SITE_DESC	WEIGHT	NO_BAGS	SITE_RATIN	TILL_TYPE	SEIVE_SIZE	WET_DRY	OVERSIZE_%
98-173	stream	0.0	0.0	60.0	40.0	loose	cs sand and gravel	med flow 2m wide flood bar	0	dk brown	wet	flood bar	37.0	2.00			3	dry	40
98-174	till		60.0	25.0	5.0		silty till, powdery; maybe ablation	v few boulders	50	lt orange	dry	flat plateau		2.00	mod		3	dry	
98-175	till	5.0	52.5	30.0	12.5	medium	2 horizons; silty powdery on top, sandy (granitic) below			or and grey	dry	roadcuton mod slope	35.0	2.00	mod		3	dry	15
98-176	till		50.0	25.0	20.0	medium	silty till	ang clasts	25	or br	damp	roadcut	33.0	2.00	mod		3	dry	15
98-177	till	5.0	45.0	30.0	20.0		silty powdery till	bouldrs abund w/ ang to subang clasts	30	or br	dry		31.0	2.00			3	dry	15
98-178	till	0.0	50.0	30.0	20.0	medium	silty powdery till	v few boulders	30	or br	dry	roadside	34.0	2.00	mod		3	dry	15
98-179	lacustrine/glaciofluvial	0.0	0.0	95.0	5.0	medium	v well sorted sand	subrn 1cm or less granitic clasts	40	yellow	damp	flat under tree		2.00	mod		-9		
98-180	till	0.0	20.0	50.0	30.0	tight	sandy till, maybe 2 tills	abund coated subang pebbles	40	lt grey green	dry	3m roadcut		2.00	good		3	dry	25
98-181	till	0.0	10.0	60.0	30.0	tight	sandy till; gravel below 40cm; topsoil on top (contam?)	subang coated cobbles, bldrs, pebles	50	white grey	dry	steep roadcut	38.5	2.00	good		3	dry	25
98-182	till/glaciofluvial	5.0	5.0	80.0	10.0	medium	sandy till		25	green	damp	3m roadcut on drumlin		2.00	mod		-9		
98-183	till	5.0	40.0	15.0	40.0	medium	silty powdery till.poor in sand component	subang cobbles and boulders	100	dk brown orange	dry	roadcut	32.0	2.00	poor		3	dry	40
98-184	till/colluvium	0.0	10.0	10.0	80.0	loose	till matrix	v ang pnk syenite frags	30	yellow grey	dry	roadcut 5m	26.0	2.00	poor		3	dry	70
98-185	till	0.0	5.0	50.0	45.0	medium	sandy till	subang to submd var pebble lith	30	dk brown	damp	2m roadcut	39.0	2.00			3	dry	40
98-186	till		30.0	20.0	25.0	medium	silty clayey till	alkalic-looking subangto subrnd pebbles	30	dk grey	damp	o/c	34.0	2.00		o/c and till	3	dry	20
98-187	glaciofluvial	0.0	0.0	80.0	10.0	loose	sand from a slough		0	brown	damp	roadcut	34.0	2.00	poor		-9		
98-188	till		20.0	30.0	10.0	tight	clayey sandy fissiletill	sed, gran, porphyrycobbles	100	dk brown	damp	roadcutin lg valley	38.0	2.00			3	dry	5
98-189	till		40.0	5.0	5.0	v tight	clayey, silty below	organic-rich	60	green blue and red	dry	flat	22.5	2.00	poor				
98-190	glaciofluvial	0.0	0.0	60.0	40.0	medium	sandy gravel till	boulders and cobbles abund	40	rust brown	damp	gravelpit	32.0	2.00	mod		3	dry	30
98-191	glaciofluvial	0.0	0.0	90.0	10.0	loose	f to cs sand, mod sorting, layered 1-2cm bands	subang to submd few pebbles; fewer boulders	35		dry	roadcut; 4m	35.0	2.00	mod		3	dry	5
98-192	till	0.0	10.0	20.0	40.0	tight	sandy gravelly till downice of contact	subang pebbles	30	med grey orange	dry	slope	33.0	2.00	good		3		30
98-193	till		40.0	20.0	20.0	medium	silty till	well rnd abund unsorted cobbles	30	lt orange	dry	roadcut on sm plateau	31.0	2.00	poor		3	dry	20
98-194	till	0.0	5.0	60.0	35.0	medium	sandy till	ang to submd boulders and pebbles	40	lt brown	dry	powerline roadcut	33.0	2.00	good		3		30
98-195	till	5.0	10.0	50.0	35.0	medium	upper silty, grades to sandy	high pebbles	40	lt brown	dry	roadcut	35.0	2.00	mod	blanket	3	dry	30
98-196	till	0.0	10.0	60.0	30.0	medium	sandy till	ang pebbles and boulders	200	med brown	dry	roadcut	33.0	2.00			3	dry	20
98-197	till	5.0	25.0	45.0	25.0	medium	sandy silty till		35	lt brown	dry	flat plateau	33.5	2.00	good	veneer	3	dry	20
98-198	stream	0.0	0.0	75.0	25.0	loose	sandy gravelly	N-S flow	20		damp	under bridge in rock creek	36.0	2.00	good		3		60
98-199	till		25.0	30.0	25.0	medium	sandy silty gravelly till	rnd boulders	40	lt brown	dry	roadcut	31.0	2.00	good		3	dry	20
98-200	glaciofluvial	0.0	10.0	80.0	10.0		sandy	mod sorted;boulders rare	100	ltbrown beige	damp	roadcut steepon river	36.0	2.00	mod		3	dry	5

Appendix 3. Sample Processing Status

SAMPLE	COARSE SEIVE	PRE CONCENCENTRATE	SEIVE (-0.85+0.25mm)	HEAVY LIQUID	MAGNETIC SEPARATION	ASSEMBLAGE	PRELIMINARY PICKING
98-1	Y	Y	Y	Y			
98-2	Y	Y	Y	Y			
98-3	Y	Y	Y	Y			
98-4	Y	Y	Y	Y			
98-5	Y	Y	Y	Y			
98-6	Y	Y	Y	Y			
98-7	Y	Y	Y	Y			
98-8	Y	Y	Y	Y			
98-9	Y	Y	Y	Y			
98-10	Y	Y	Y	Y			
98-11	Y	Y	Y	Y			
98-12	Y	Y	Y	Y			
98-13	Y	Y	Y	Y			
98-14	Y	Y	Y	Y			
98-15	Y	Y	Y	Y			
98-16	Y	Y	Y	Y			
98-17	Y	Y	Y	Y			
98-18	Y	Y	Y	Y			
98-19	Y	Y	Y	Y			
98-20	Y	Y	Y	Y			
98-21	Y	Y	Y	Y			
98-22	Y	Y	Y	Y			
98-23	Y	Y	Y	Y			
98-24	Y	Y	Y	Y			
98-25	Y	Y	Y	Y			
98-26	Y	Y	Y	Y			
98-27	Y	Y	Y	Y			
98-28	Y	Y	Y	Y			
98-29	Y	Y	Y	Y			
98-30	Y	Y	Y	Y			
98-31	Y	Y	Y	Y			
98-32	Y	Y	Y	Y			
98-33	Y	Y	Y	Y			
98-34	Y	Y	Y				
98-35	Y	Y	Y				
98-36	Y	Y	Y				
98-37	Y	Y	Y				
98-38	Y	Y	Y				
98-39	Y	Y	Y				
98-40	Y	Y	Y				
98-41	Y	Y	Y				
98-42	Y	Y	Y				
98-43	Y	Y	Y				
98-44	Y	Y	Y				
98-45	Y	Y	Y				
98-46	Y	Y	Y				
98-47	Y	Y	Y				
98-48	Y	Y	Y				
98-49	Y	Y	Y				
98-50	Y	Y	Y				
98-51	Y	Y	Y				
98-52	Y	Y	Y				
98-53	Y	Y	Y				
98-54	Y	Y	Y				
98-55	Y	Y	Y				
98-56	Y	Y	Y				
98-57	Y	Y	Y				

SAMPLE	COARSE SEIVE	PRE CONCENCENTRATE	SEIVE (-0.85+0.25mm)	HEAVY LIQUID	MAGNETIC SEPARATION	ASSEMBLAGE	PRELIMINARY PICKING
98-58	Y	Y	Y				
98-59	Y	Y	Y				
98-60	Y	Y	Y				
98-61	Y	Y	Y				
98-62	Y	Y	Y				
98-63	Y	Y	Y	Y	Y	Y	Y
98-64	Y	Y	Y	Y	Y	Y	Y
98-65	Y	Y	Y	Y	Y	Y	Y
98-66	Y	Y	Y	Y	Y	Y	Y
98-67	Y	Y	Y	Y	Y	Y	Y
98-68	Y	Y	Y	Y	Y	Y	Y
98-69	Y	Y	Y	Y	Y	Y	Y
98-70	Y	Y	Y	Y	Y	Y	Y
98-71	Y	Y	Y	Y	Y	Y	Y
98-72	Y	Y	Y	Y	Y	Y	Y
98-73	Y	Y	Y	Y	Y	Y	Y
98-74	Y	Y	Y				
98-75	Y	Y	Y	Y	Y	Y	Y
98-76	Y	Y	Y	Y	Y	Y	Y
98-77	Y	Y	Y	Y	Y	Y	Y
98-78	Y	Y	Y	Y	Y	Y	Y
98-79	Y	Y	Y	Y	Y	Y	Y
98-80	Y	Y	Y	Y	Y	Y	Y
98-81	Y	Y	Y	Y	Y	Y	Y
98-82	Y	Y	Y				
98-83	Y	Y	Y	Y	Y	Y	Y
98-84	Y	Y	Y				
98-85	Y	Y	Y				
98-86	Y	Y	Y	Y	Y	Y	Y
98-87	Y	Y	Y				
98-88	Y	Y	Y				
98-89	Y	Y	Y				
98-90	Y	Y	Y				
98-91	Y	Y	Y				
98-92	Y	Y	Y	Y	Y	Y	Y
98-93	Y	Y	Y				
98-94	Y	Y	Y				
98-95	Y	Y	Y				
98-96	Y	Y	Y				
98-97	Y	Y	Y				
98-98	Y	Y	Y				
98-99	Y	Y	Y				
98-100	Y	Y	Y				
98-101	Y	Y	Y				
98-102	Y	Y	Y				
98-103	Y	Y	Y				
98-104	Y	Y	Y				
98-105	Y	Y	Y	Y	Y	Y	Y
98-106	Y	Y	Y				
98-107	Y	Y	Y				
98-108	Y	Y	Y				
98-109	Y	Y	Y				
98-110	Y	Y	Y				
98-111	Y	Y	Y				
98-112	Y	Y	Y				
98-113	Y	Y	Y				
98-114	Y	Y	Y				
98-115	Y	Y	Y				
98-116	Y	Y	Y				
98-117	Y	Y	Y				
98-118	Y	Y	Y				

SAMPLE	COARSE SEIVE	PRE CONCENCENTRATE	SEIVE (-0.85+0.25mm)	HEAVY LIQUID	MAGNETIC SEPARATION	ASSEMBLAGE	PRELIMINARY PICKING
98-119	Y	Y	Y				
98-120	Y	Y	Y				
98-121	Y	Y	Y				
98-122	Y	Y	Y				
98-123	Y	Y	Y				
98-124	Y	Y	Y				
98-125	Y	Y	Y	Y	Y	Y	Y
98-126	Y	Y	Y	Y	Y	Y	Y
98-127	Y	Y	Y	Y	Y	Y	Y
98-128	Y	Y	Y	Y	Y	Y	Y
98-129	Y	Y	Y	Y	Y	Y	Y
98-130	Y	Y	Y	Y	Y	Y	Y
98-131	Y	Y	Y	Y	Y	Y	Y
98-132	Y	Y	Y	Y	Y	Y	Y
98-133	Y	Y	Y	Y	Y	Y	Y
98-134	Y	Y	Y	Y	Y	Y	Y
98-135	Y	Y	Y				
98-136	Y	Y	Y	Y	Y	Y	Y
98-137	Y	Y	Y				
98-138	Y	Y	Y				
98-139	Y	Y	Y				
98-140	Y	Y	Y				
98-141	Y	Y	Y				
98-142	Y	Y	Y				
98-143	Y	Y	Y				
98-144	Y	Y	Y	Y	Y	Y	Y
98-145	Y	Y	Y				
98-146	Y	Y	Y				
98-147	Y	Y	Y	Y	Y	Y	Y
98-148	Y	Y	Y	Y	Y	Y	Y
98-149	Y	Y	Y	Y	Y	Y	Y
98-150	Y	Y	Y				
98-151	Y	Y	Y	Y	Y	Y	Y
98-152	Y	Y	Y	Y	Y	Y	Y
98-153	Y	Y	Y	Y	Y	Y	Y
98-154	Y	Y	Y	Y	Y	Y	Y
98-155	Y	Y	Y	Y	Y	Y	Y
98-156	Y	Y	Y	Y	Y	Y	Y
98-157	Y	Y	Y	Y	Y	Y	Y
98-158	Y	Y	Y	Y	Y	Y	Y
98-159	Y	Y	Y	Y	Y	Y	Y
98-160	Y	Y	Y				
98-161	Y	Y	Y				
98-162	Y	Y	Y				
98-163	Y	Y	Y				
98-164	Y	Y	Y				
98-165	Y	Y	Y				
98-166	Y	Y	Y				
98-167	Y	Y	Y				
98-168	Y	Y	Y	Y	Y	Y	Y
98-169	Y	Y	Y	Y	Y	Y	Y
98-170	Y	Y	Y				
98-171	Y	Y	Y				
98-172	Y	Y	Y				
98-173	Y	Y	Y				
98-174	Y	Y	Y				
98-175	Y	Y	Y				
98-176	Y	Y	Y				
98-177	Y	Y	Y				
98-178	Y	Y	Y	Y	Y	Y	Y
98-179	Y	Y	Y				

SAMPLE	COARSE SEIVE	PRE CONCENCENTRATE	SEIVE (-0.85+0.25mm)	HEAVY LIQUID	MAGNETIC SEPARATION	ASSEMBLAGE	PRELIMINARY PICKING
98-180	Y	Y	Y				
98-181	Y	Y	Y				
98-182	Y	Y	Y				
98-183	Y	Y	Y				
98-184	Y	Y	Y	Y	Y	Y	Y
98-185	Y	Y	Y				
98-186	Y	Y	Y	Y	Y	Y	Y
98-187	Y	Y	Y	Y	Y	Y	Y
98-188	Y	Y	Y				
98-189	Y	Y	Y	Y	Y	Y	Y
98-190	Y	Y	Y	Y	Y	Y	Y
98-191	Y	Y	Y				
98-192	Y	Y	Y	Y	Y	Y	Y
98-193	Y	Y	Y				
98-194	Y	Y	Y				
98-195	Y	Y	Y				
98-196	Y	Y	Y				
98-197	Y	Y	Y				
98-198	Y	Y	Y	Y	Y	Y	Y
98-199	Y	Y	Y				
98-200	Y	Y	Y				

PROSPECTORS ASSISTANCE PROGRAM, MARK KOLEBABA
ADDENDUM TO FINAL REPORT, 1998/1999

At the time of writing the final report (Jan 31, 1999), all 200 samples had been pre-screened, pre-concentrated and sized for heavy liquid separation. A total of 69 were at the first picking stage. Another 42 samples had undergone heavy liquid separation and were ready for magnetic separation.

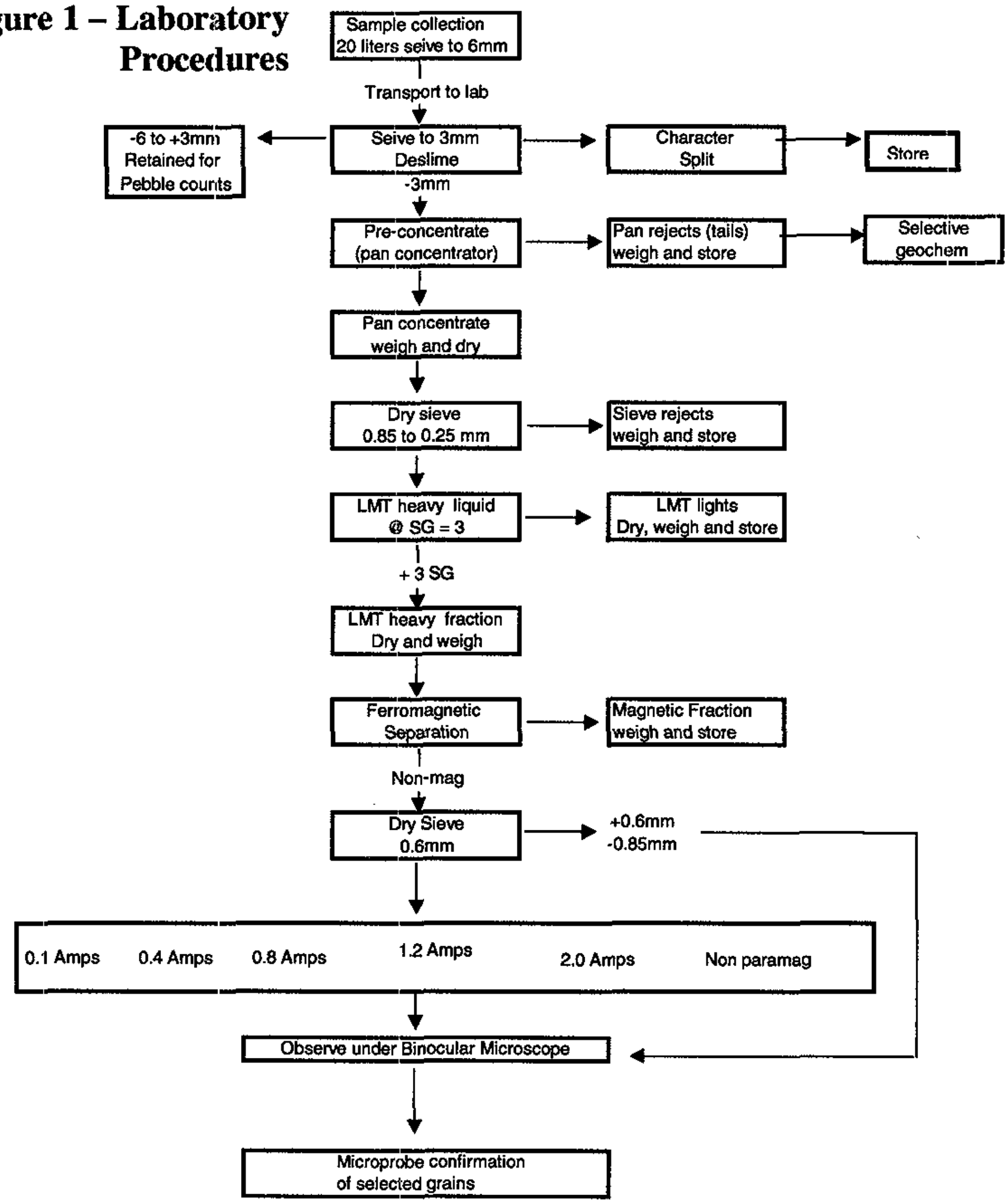
Since that time, heavy liquid separation, magnetic separation, and indicator mineral grain picking has been completed on all 200 samples. Results are attached, in tabular form and as maps.

Samples collected in areas favourable for emerald mineralization with Cr bearing indicator minerals have been selected for Be analysis by atomic absorption. 121 samples have been selected for geochemical study. 500g of each sample has been submitted to Chemex Labs. Each has been pulverized, fully digested and analyzed by AA for Be content. Results are attached in tabular form and as a map.

Laboratory Procedures

In the lab, the sample is weighed and a 500g aliquot obtained from each 20-liter sample prior to processing. The aliquot is retained for sample character reference. The samples are then concentrated according to particle size, density and ferromagnetic nature of the grains. The laboratory steps are illustrated in Figure 1.

Figure 1 – Laboratory Procedures



<u>Sample Preparation</u>

- Initially, the sample is soaked briefly in water to disaggregate and wet all of the mineral grains. Well-compacted samples are soaked and agitated in a calgonite solution for a short period of time to aid in disaggregation. Next, the sample is sieved to 3mm by hand. Several washings with clean water ensure that the sample is deslimed. The +3mm fraction is discarded with the exception of about 500g which is retained for pebble count analysis if needed. The deslimed –3mm material is pre-concentrated in a mechanical pan concentrator.

Mechanical Pan Concentrator

- The mechanical pan concentrator used in sample processing is depicted in photo 1. A constant flow of water and sediment (a slurry) is fed through the hopper to the centre of the pan. The mechanized panning motion of the machine causes lighter grains to migrate towards the outside of the pan with centrifugal motion, and throws water and lighter grains off the pan continuously as the pan revolves. The action is like that of gold panning. Heavier grains tend to "sink" to the base of the pan and remain there. The resultant concentrate is left behind in the central part of the pan. A 30kg sample takes approximately 30 minutes to complete this step. On average, samples are reduced by 95-97% by weight. The pan concentrates are dried and weighed in a low temperature drying oven. The lights are retained for further processing and analysis for Be.
  - Brightly coloured resin density tracer cubes are added to the sample before panning. These aid in determination of the end of the process. The purpose of pan preconcentration is to concentrate the denser mineral grains and reduce the size of the sample to facilitate heavy liquid separation. Visual inspection of grains thrown off the pan is made under the microscope periodically. As a general rule of thumb, panning is complete at the appearance of hornblende (density range of 3.1 –3.3) in the reject. Recovery of density tracers averaged 88% over 20 samples.

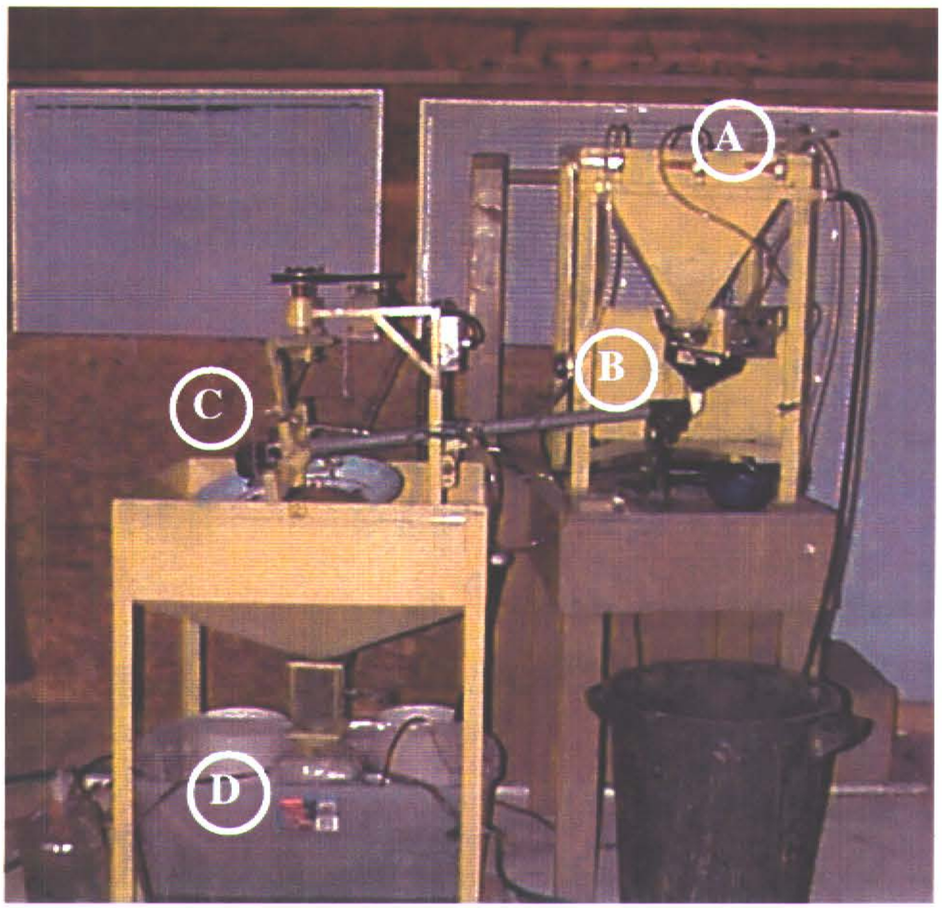


Photo 1 -- The Pan Concentrator. The sample is fed wet into the hopper (A). It is supplied at a steady rate into a funnel (B) where it is mixed with water. The slurry is passed into the center of the pan (C), where the panning action causes light grains to be washed off the edges, and heavy grains collect at the bottom. Lights are collected in the original bag (D).

Intermediate Sieve

- Dried pan concentrates are sieved at 0.85mm and 0.25mm using standard Tyler sieves and an improvised sieve shaker (photo 2). If magnetite content is anomalously high a hand magnet (photo 3) is used for extraction at this point. The +0.85mm and –0.25mm sieve fractions are weighed and stored.
- Sieving at this stage is not 100% effective. Sample concentrates are sieved again at 0.25, 0.6, and 0.85mm after heavy liquid separation.

- The density of the liquid is monitored and kept at 3.0 by the addition of resin density tracers of 2.9, 3.0, and 3.1 sg. After use the heavy liquid is evaporated in a restaurant-style warming pan until the 3.0sg resin tracer is floating. It is then stored in sealed polypropylene bottles until required again. When necessary, the liquid is filtered to remove impurities which impart a dark colouration. Photo 5 illustrates the heavy liquid evaporator setup.

- The LMT heavy fraction and LMT light fraction are dried in a low-temperature drying oven. The light fraction is discarded.

Photo5 – heavy liquid recycling and evaporating apparatus. The warming trays (A) contain dilute heavy liquid which is evaporated by heating and operation of the fan(B). Containers used for dilute heavy liquid recycling are kept under the table (C).

Final Sieve

- The LMT concentrate is further concentrated by removing magnetite and pyrrhotite with a hand magnet. Sample concentrates are sieved again at 0.25, 0.6, and 0.85mm in mini-sieves after heavy liquid separation. The +.85mm, +.6-.85mm, and –.25mm fractions are weighed and stored.

Magnetic Separation

- The +3.0sg heavy mineral fraction is further separated based on its magnetic characteristics. The Frantz Isodynamic Separator, model L1, is depicted in photo 6. With a forward slope of 25° and side slope of 15°, the grains are passed in a slow steady stream along a vibrating chute which runs between the poles of an adjustable amperage electromagnet. The "non-magnetic" +.25–0.6mm fraction is passed through a Frantz Isodynamic Separator at 0.1A (to remove remaining magnetite and pyrrhotite in rock fragments), 0.4A, 0.8A, 1.2A and 2A. Each fraction is weighed and reserved for visual inspection.
  - Pure silica sand is run between samples to clear any mineral grains which are stuck along the mechanism. The chute is removed periodically and cleaned with a brush to prevent contamination.

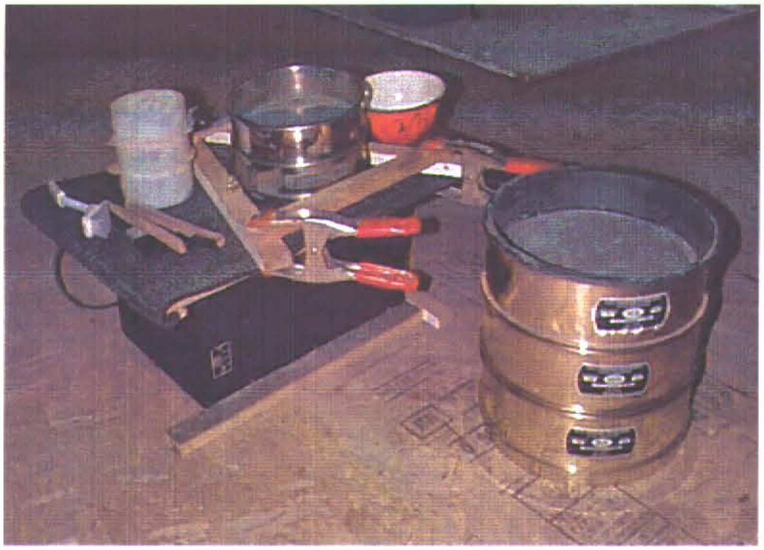


Photo2 – Assortment of seives used in heavy mineral sample processing.

Photo3 – Hand magnet used to separate magnetite and pyrrhotite grains from the samples.

Heavy Liquid Separation

- Heavy minerals are separated from the -0.85+0.25mm fraction using Lithium Metatungstate (LMT), a water-soluble heavy liquid with a specific gravity of 3.0. No fume hood is necessary due to the non-toxic nature of this chemical.
  - Photo 4 shows how the heavy liquid apparatus is used. A quantity of LMT with sg=3.0 is poured into the separatory funnel. The pre-concentrated sample is added and mixed well to wet all grains. At intervals of 5-10 minutes the surface cap of grains is gently agitated to release any trapped heavy minerals. Heavy minerals with sg>3.0 sink and collect in the flexible tubing below the funnel. When the separation is complete, the bottom clasp is opened until all the heavy minerals flow out and clear LMT flows freely. The clasp is then closed to prevent seepage of the lighter minerals floating on top of the liquid. Each fraction is released separately into a mini-sieve (<.2mm). The sieve is placed in a funnel over a vacuum flask to remove as much liquid as possible. The liquid that flows through is re-used immediately. The sample is then washed with water, and the LMT+water recycled.

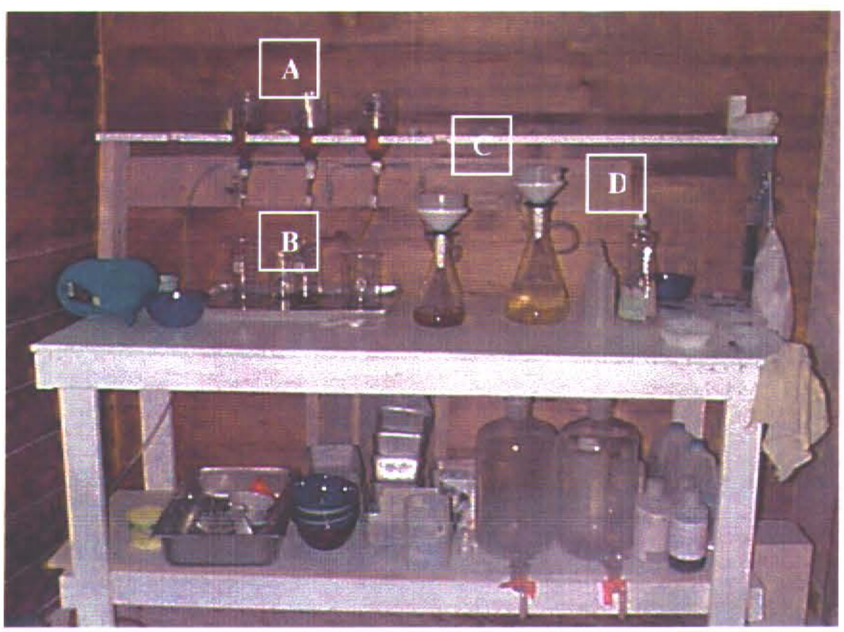


Photo4 – heavy liquid aparatus. The liquid and sample are placed in separatory funnels(A), and stirred. After all heavy grains have sunk, they are released from the bottom of the funnel (B) into screens. The heavy liquid is recycled using a vacuum pump (not shown) with hoses (C). Washing sample with water takes place in the same manner (D).

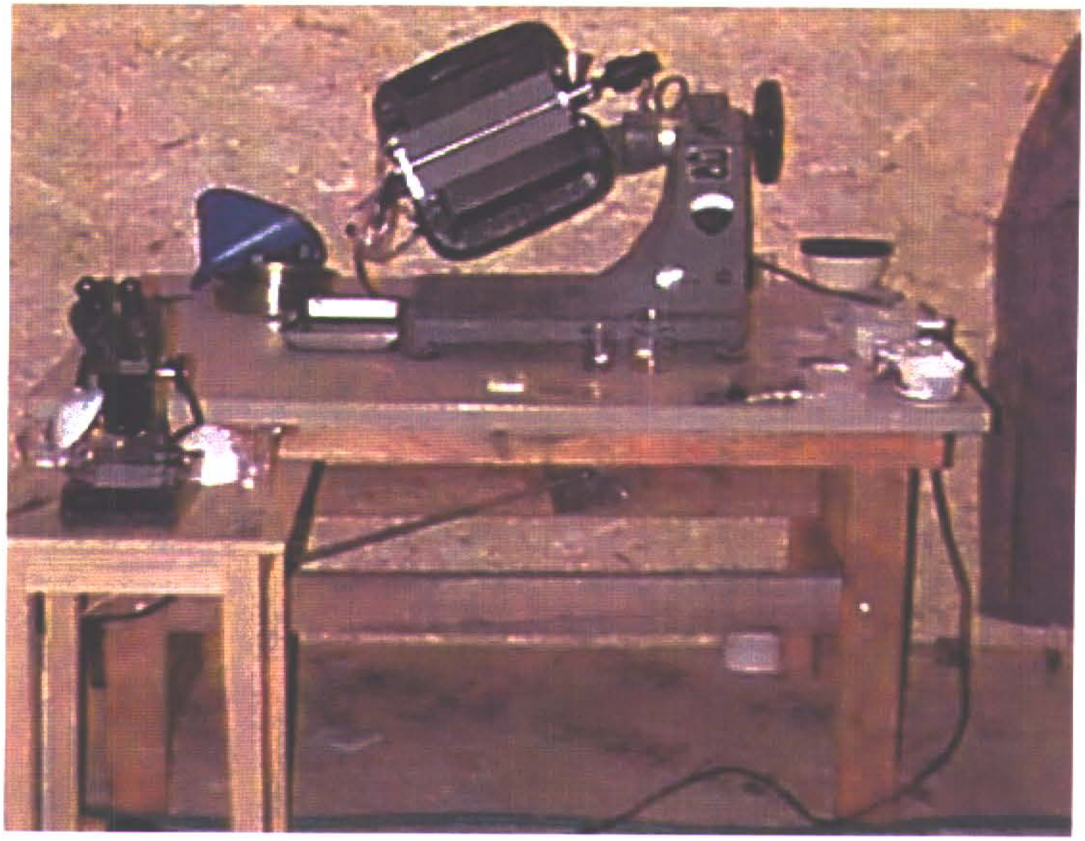
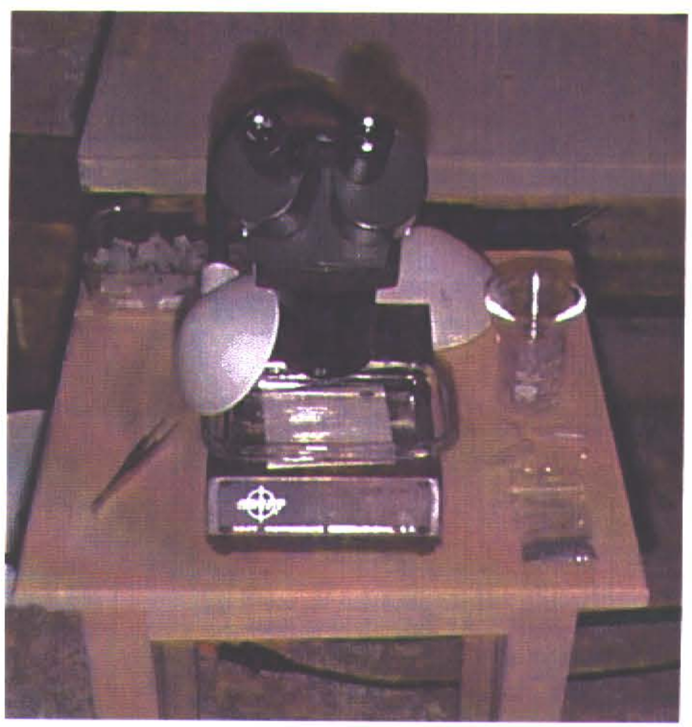


Photo6 – Frantz Isodynamic Separator is used to separate heavy mineral grains based on their magnetic susceptibilities. Separations are carried out at 0.1,0.4,0.8,1.2, and 2.0A.

Grain Identification

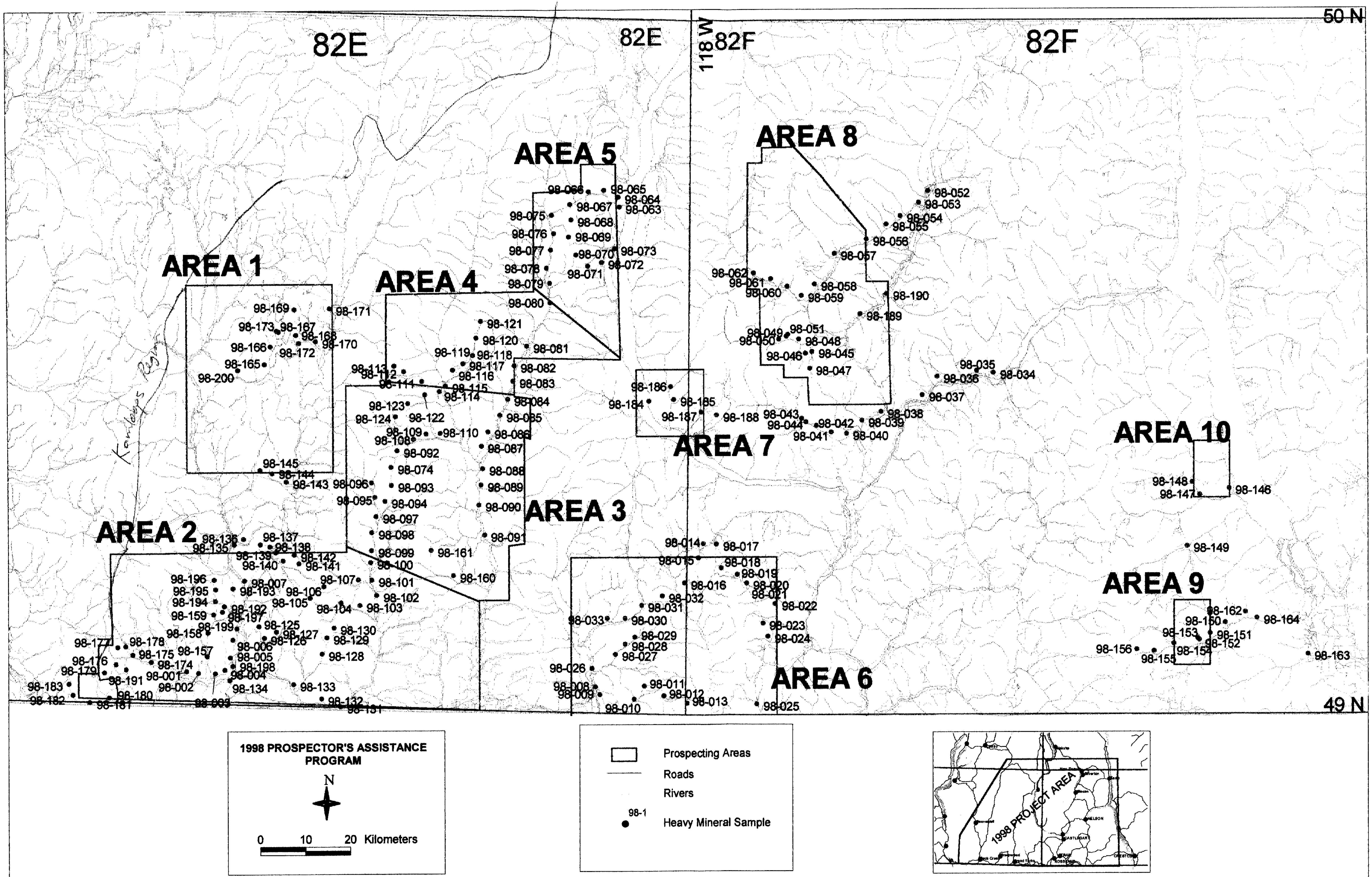
- Each resultant +.25-.6mm >3sg fraction is visually inspected under the stereo microscope in two passes (photo 7). The purpose of the first pass is general assemblage identification, and the second is indicator mineral picking. Each fraction of specific magnetic susceptibility contains characteristic minerals, and this assists mineral identification.



- The +.6-.85mm fraction is examined for indicator minerals if minerals of interest are discovered in the +.25-.6mm fraction.
- If necessary, mineral grains are sent for microprobe analysis for confirmation.

<u>Grain Recovery</u>

- Several samples were spiked with crushed brightly coloured resin density tracers before pan concentration. These were picked out in the final grain identification stage. Average recovery of these grains was 84%. This indicates that the results of this program are reproducible, reliable, and comparable to recoveries of commercial laboratories using similar processes.



82E
82E
118 W
82F
82F
50 N
49 N
AREA 1
AREA 2
AREA 3
AREA 4
AREA 5
AREA 6
AREA 7
AREA 8
AREA 9
AREA 10
1998 PROSPECTOR'S ASSISTANCE PROGRAM
N
0 10 20 Kilometers
Prospecting Areas
Roads
Rivers
98-1
Heavy Mineral Sample
1998 PROJECT AREA

RESULTS

Chemex Labs Ltd.
Analytical Chemists * Geochemists * Registered Assayers
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V1Y 1Y1

Project :
Comments: ATTN: MARK KOLE

Page Number :1
Total Pages :4
Certificate Date: 17-MAR-1999
Invoice No. :I9913638
P.O. Number :
Account :QXQ

CERTIFICATE OF ANALYSIS A9913638

SAMPLE	PREP CODE		Be ppm
98-1	1388	220	1.8
98-2	1388	220	1.5
98-3	1388	220	1.5
98-5	1388	220	1.4
98-6	1388	220	1.4
98-7	1388	220	1.5
98-8	1388	220	0.6
98-9	1388	220	1.1
98-10	1388	220	1.4
98-11	1388	220	1.7
98-12	1388	220	2.6
98-13	1388	220	2.2
98-14	1388	220	1.9
98-16	1388	220	2.0
98-19	1388	220	1.8
98-22	1388	220	1.6
98-23	1388	220	1.3
98-24	1388	220	1.5
98-25	1388	220	1.7
98-26	1388	220	1.1
98-34	1388	220	2.3
98-37	1388	220	2.2
98-38	1388	220	2.0
98-39	1388	220	2.1
98-40	1388	220	1.9
98-41	1388	220	1.8
98-44	1388	220	1.9
98-45	1388	220	0.8
98-46	1388	220	1.1
98-47	1388	220	1.0
98-48	1388	220	1.5
98-49	1388	220	1.7
98-50	1388	220	1.7
98-51	1388	220	1.8
98-58	1388	220	2.1
98-59	1388	220	2.2
98-60	1388	220	2.5
98-61	1388	220	2.0
98-78	1388	220	2.1
98-79	1388	220	2.4

CERTIFICATION: [signature]

Chemex Labs Ltd.

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Project :
Comments: ATTN: MARK KOLE

Certificate Date: 17-MAR-1999
Invoice No. : I9913638
P.O. Number :
Account :QXQ

CERTIFICATE OF ANALYSIS A9913638

SAMPLE	PREP CODE		Be ppm
98-80	1388	220	2.2
98-81	1388	220	2.0
98-82	1388	220	1.9
98-85	1388	220	2.2
98-87	1388	220	2.3
98-89	1388	220	2.8
98-90	1388	220	2.9
98-91	1388	220	1.9
98-96	1388	220	1.5
98-97	1388	220	1.8
98-98	1388	220	1.7
98-101	1388	220	1.6
98-103	1388	220	2.1
98-108	1388	220	1.6
98-109	1388	220	1.4
98-110	1388	220	1.5
98-111	1388	220	1.6
98-112	1388	220	1.3
98-113	1388	220	1.2
98-114	1388	220	1.5
98-115	1388	220	2.4
98-116	1388	220	1.4
98-117	1388	220	1.6
98-118	1388	220	1.8
98-119	1388	220	1.5
98-120	1388	220	1.8
98-121	1388	220	2.3
98-122	1388	220	1.6
98-123	1388	220	1.4
98-124	1388	220	1.6
98-125	1388	220	1.5
98-126	1388	220	1.3
98-127	1388	220	1.3
98-128	1388	220	1.7
98-129	1388	220	1.6
98-130	1388	220	2.4
98-131	1388	220	1.6
98-132	1388	220	1.7
98-133	1388	220	1.7
98-134	1388	220	1.6

CERTIFICATION: ________

Chemex Labs Ltd.
Analytical Chemists * Geochemists * Registered Assayers
212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221 FAX: 604-984-0218

To: KOLE, MARK **

244 POPLAR POINT DR.
KELOWNA, BC
V1Y 1Y1

Project :
Comments: ATTN: MARK KOLE

Certificate Date: 17-MAR-1999
Invoice No. :19913638
P.O. Number :
Account :QXQ

CERTIFICATE OF ANALYSIS A9913638

SAMPLE	PREP CODE		Be ppm
98-135	1388	220	1.9
98-136	1388	220	1.8
98-138	1388	220	1.6
98-139	1388	220	2.1
98-140	1388	220	2.5
98-141	1388	220	1.5
98-142	1388	220	1.7
98-143	1388	220	1.4
98-145	1388	220	1.8
98-146	1388	220	3.9
98-147	1388	220	4.2
98-149	1388	220	1.3
98-150	1388	220	1.6
98-151	1388	220	1.7
98-152	1388	220	1.7
98-153	1388	220	1.4
98-154	1388	220	1.3
98-157	1388	220	1.7
98-158	1388	220	1.5
98-160	1388	220	1.2
98-161	1388	220	3.3
98-163	1388	220	2.8
98-164	1388	220	1.9
98-165	1388	220	1.6
98-167	1388	220	1.8
98-170	1388	220	3.1
98-171	1388	220	2.9
98-174	1388	220	1.9
98-175	1388	220	1.8
98-177	1388	220	1.7
98-179	1388	220	2.0
98-181	1388	220	1.6
98-182	1388	220	1.5
98-183	1388	220	1.7
98-185	1388	220	1.4
98-186	1388	220	1.3
98-188	1388	220	4.1
98-191	1388	220	1.6
98-198	1388	220	1.7
98-199	1388	220	1.7

CERTIFICATION:

Chemex Labs Ltd.

Analytical Chemists * Geochemists * Registered Assayers
212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221 FAX: 604-984-0218

To: KOLE, MARK

244 POPLAR POINT DR.
KELOWNA, BC
V1Y 1Y1

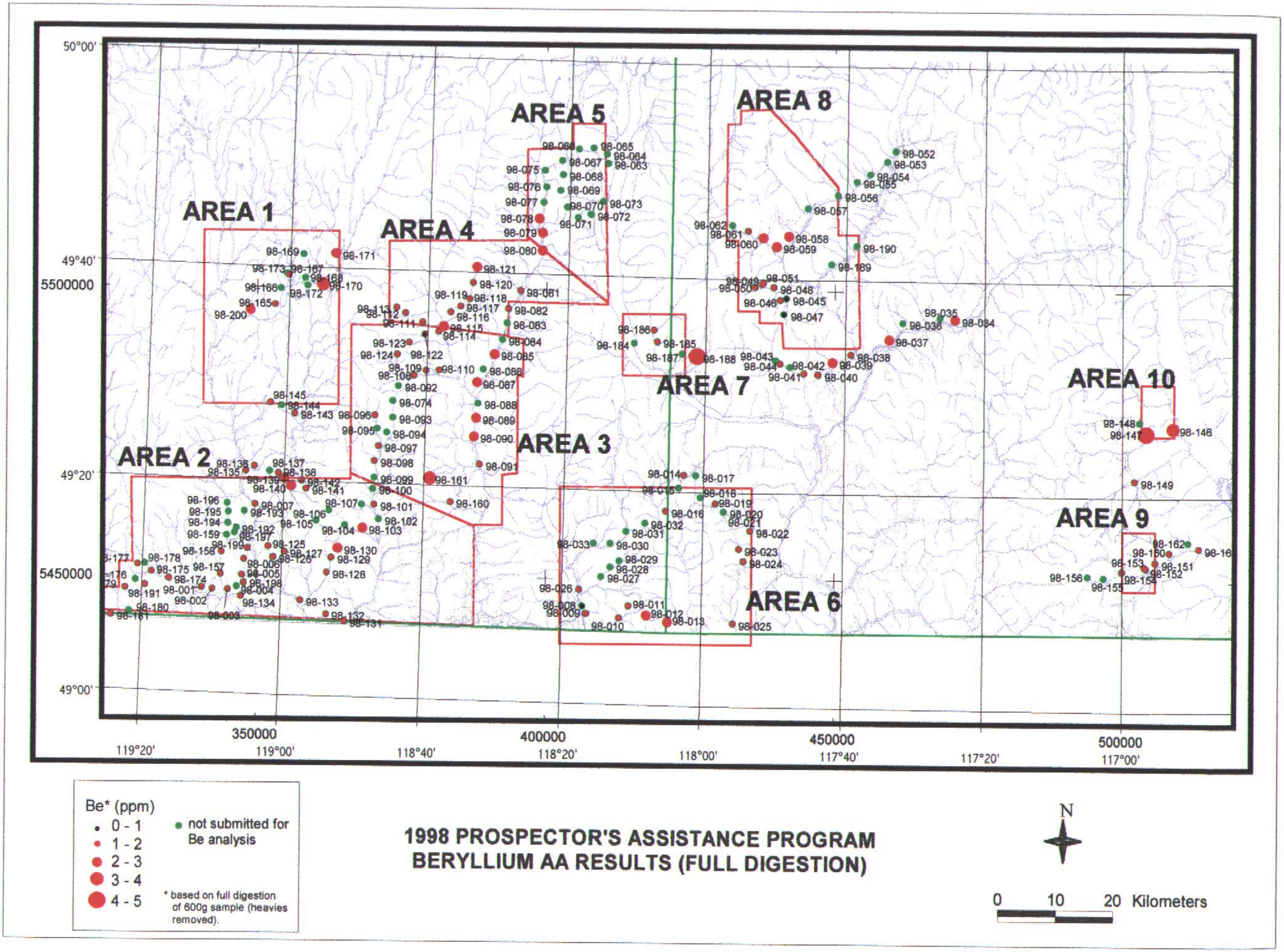
Project :
Comments: ATTN: MARK KOLE

Certificate Date: 17-MAR-1999
Invoice No. : I9913638
P.O. Number :
Account :QXQ

CERTIFICATE OF ANALYSIS A9913638

SAMPLE	PREP CODE		Be ppm									
98-200	138B	220	2.2									

CERTIFICATION: [signature]



1998 PROSPECTOR'S ASSISTANCE PROGRAM
BERYLLIUM AA RESULTS (FULL DIGESTION)

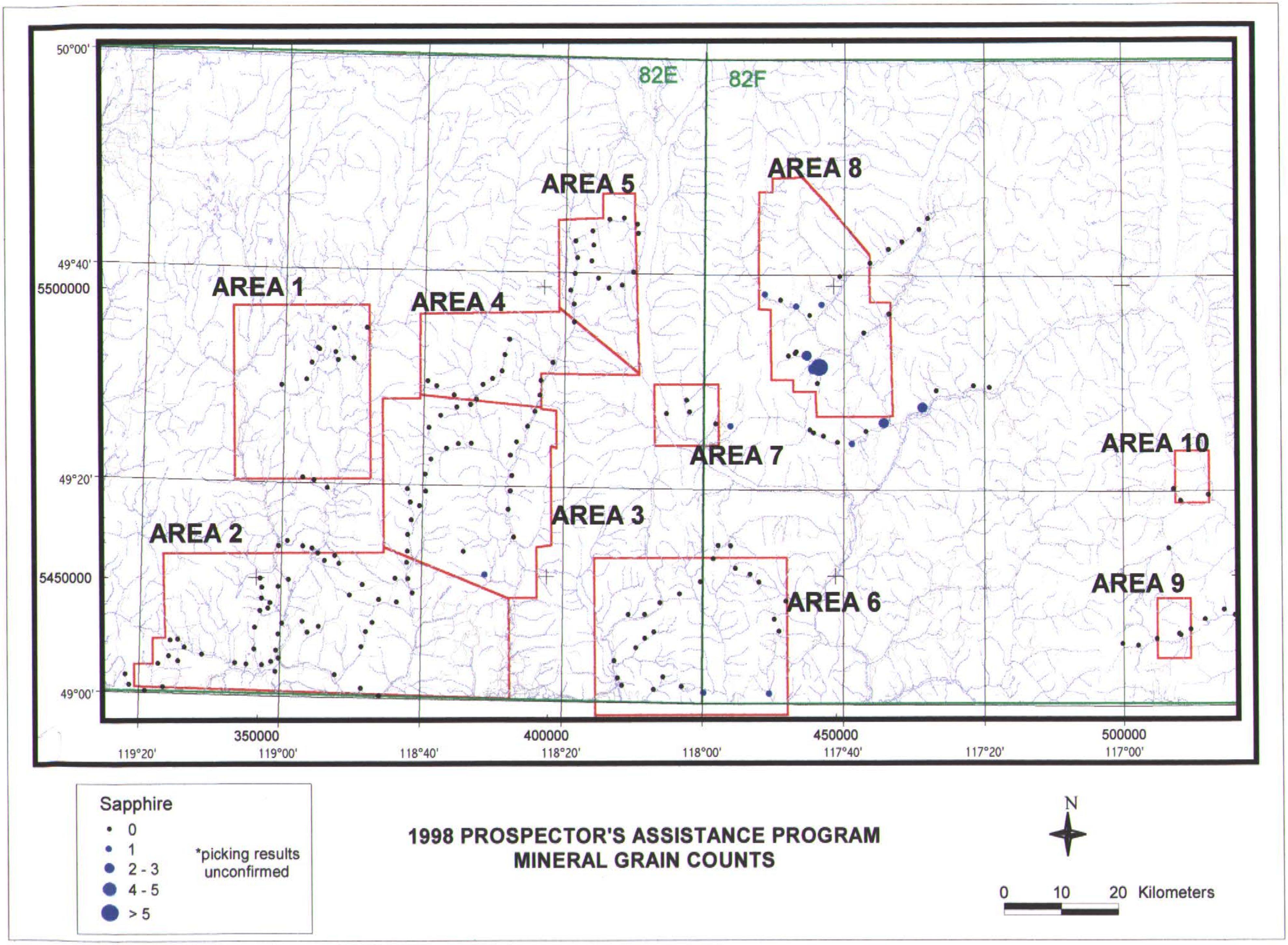
GRAIN PICKING RESULTS

SAMPLE	SAPPHIRE	GOLD	CPY	EXOTIC_GARNET	RUTILE	SPINEL	GR_DIOPSIDE	OLIVINE	COLUMBITE_	FLOURITE	OTHER
98-1	0	0	0	1	0	0	6	1500	0	19	3chromite
98-2	0	0	0	0	0	0	3	1200	0	26	13chromite
98-3	0	0	0	0	0	0	1	185	0	7	6chromite
98-4	0	0	2	0	0	0	0	79	0	21	16pyrite
98-5	0	0	1	0	0	0	0	43	0	3	
98-6	0	0	0	0	0	0	0	0	0	0	
98-7	0	2	0	0	0	0	0	0	0	0	
98-8	0	1	0	0	0	0	0	0	0	0	
98-9	0	0	0	0	0	0	0	0	0	0	
98-10	0	0	0	0	0	0	4	50	0	0	
98-11	0	0	0	0	0	0	0	0	0	0	
98-12	0	0	0	0	0	0	0	0	0	0	
98-13	1	0	0	0	1	0	0	0	0	0	1barite
98-14	0	0	0	0	1	0	0	0	0	14	
98-15	0	0	0	0	0	0	0	0	0	5	
98-16	0	0	0	0	0	0	0	0	0	0	
98-17	0	1	0	0	0	0	0	0	0	11	
98-18	0	0	0	0	0	0	20	0	0	0	2ilmenite
98-19	0	0	0	0	0	0	3	0	0	0	
98-20	0	0	0	1	0	0	0	0	0	0	1galena
98-21	0	0	0	0	0	0	0	0	0	0	
98-22	0	0	0	0	0	0	0	0	0	0	
98-23	0	0	0	0	1	0	0	0	0	0	1molybdenite?
98-24	0	0	2	0	20	1	1	0	0	0	3pyrite,hematite
98-25	1	0	12	0	0	0	0	0	0	0	3sphalerite,2galena
98-26	0	0	0	0	0	0	0	0	0	0	
98-27	0	1	2	0	1	0	0	0	0	2	
98-28	0	0	1	0	0	0	0	0	0	0	
98-29	0	0	0	0	0	0	0	0	0	0	
98-30	0	0	0	0	0	0	0	0	0	0	
98-31	0	1	0	0	0	0	0	0	0	0	
98-32	0	0	0	0	0	0	0	0	0	0	
98-33	0	0	1	0	0	0	0	0	0	0	
98-34	0	0	0	0	0	0	0	0	0	2	
98-35	0	0	0	0	0	0	0	0	0	0	3pyrite
98-36	0	0	1	0	0	0	0	0	0	0	
98-37	2	1	0	1	0	0	0	0	0	0	1spalerite
98-38	1	0	0	2	3	0	0	0	0	0	pyrite
98-39	0	0	1	0	1	0	1	0	1	0	
98-40	1	0	0	0	1	0	0	0	0	0	1tourmaline
98-41	0	0	1	3	0	0	2	1	0	0	1green mica
98-42	0	1	2	1	2	0	0	0	0	0	
98-43	0	0	0	0	0	0	0	5	0	0	
98-44	0	0	3	0	0	0	0	0	0	0	
98-45	8	0	1	3	0	0	0	2	0	1	
98-46	3	0	0	0	0	0	0	0	0	0	
98-47	0	0	0	0	0	0	0	0	0	0	
98-48	3	0	0	1	0	0	2	1	0	0	
98-49	0	0	1	0	0	0	0	0	0	0	
98-50	0	0	0	0	0	0	0	0	0	0	
98-51	0	0	0	0	0	0	0	0	0	0	
98-52	0	0	0	0	0	0	0	0	0	0	
98-53	0	0	0	0	0	0	0	0	0	0	
98-54	0	0	0	0	0	0	0	0	0	1	
98-55	0	0	1	0	0	0	3	0	0	0	
98-56	0	0	0	0	0	0	1	0	0	0	
98-57	0	0	0	0	0	0	0	0	0	0	2pyrite
98-58	0	0	0	1	0	1	7	2	0	1	
98-59	0	0	0	0	0	0	2	0	0	0	
98-60	1	0	0	0	0	0	0	0	0	0	
98-61	0	0	0	0	0	0	0	0	0	1	8pyrite
98-62	1	0	0	0	0	0	0	0	0	2	
98-63	0	0	0	1	0	0	0	1	0	0	
98-64	0	0	0	0	0	0	24	0	1	0	
98-65	0	1	0	0	0	0	2	0	0	0	
98-66	0	0	0	5	0	0	4	0	0	0	
98-67	0	2	0	0	0	0	0	0	0	0	
98-68	0	1	0	0	0	0	0	0	0	0	1chromite
98-69	0	0	1	2	0	0	3	0	0	0	3chromite
98-70	0	0	0	0	0	0	0	1	2	0	

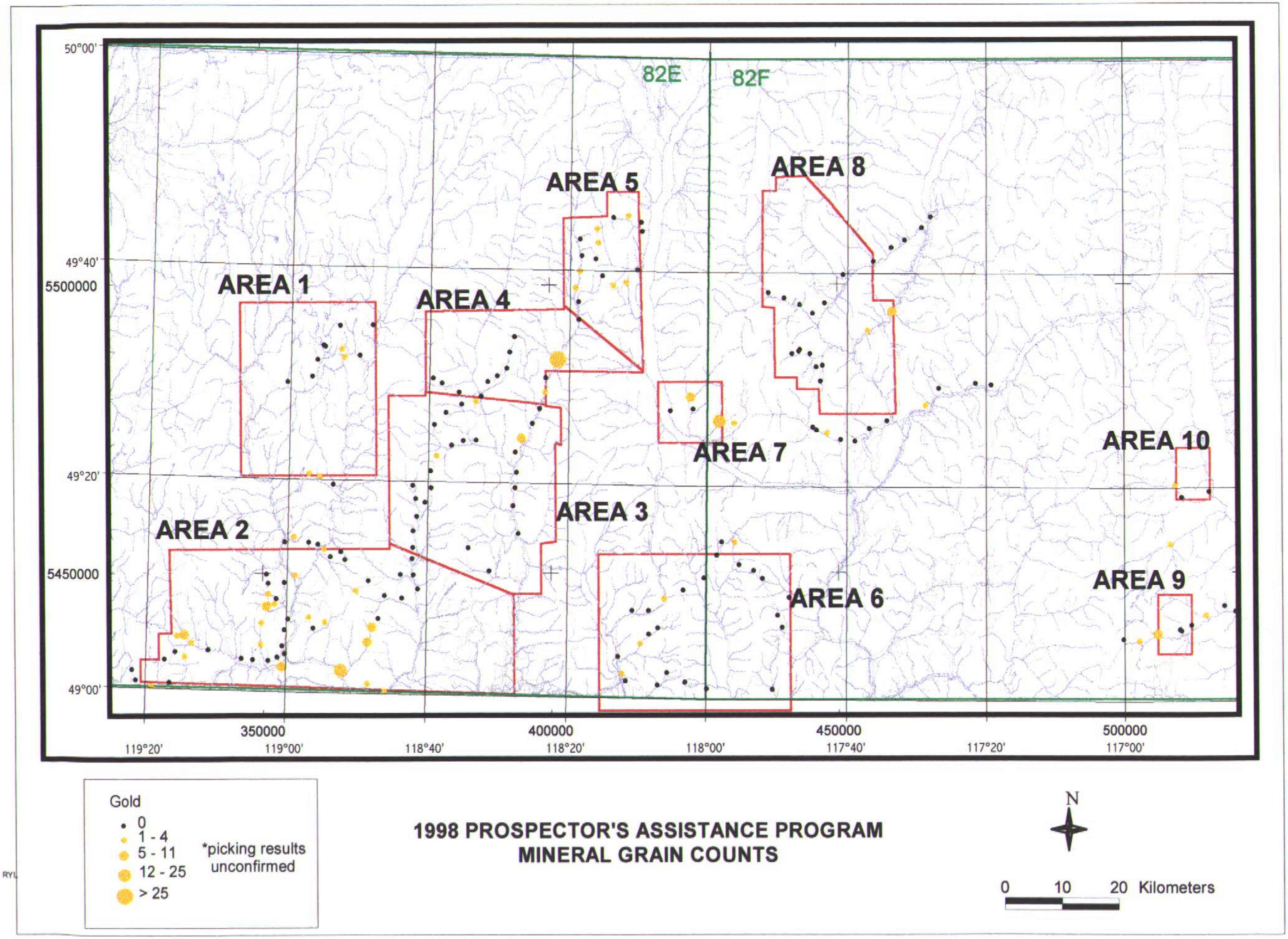
SAMPLE	SAPPHIRE	GOLD	CPY	EXOTIC_GARNET	RUTILE	SPINEL	GR_DIOPSIDE	OLIVINE	COLUMBITE_	FLOURITE	OTHER
98-71	0	2	0	1	0	0	2	0	0	0	24pyrite
98-72	0	3	0	0	0	0	0	0	0	0	
98-73	0	0	0	0	0	0	3	0	2	0	
98-74	0	0	0	0	0	0	1	6	0	0	
98-75	0	0	0	1	0	0	3	0	0	0	
98-76	0	0	0	0	1	0	0	0	3	0	
98-77	0	1	0	0	1	0	2	0	1	0	
98-78	0	3	0	0	0	0	0	0	1	0	
98-79	0	0	0	0	0	0	2	0	0	0	
98-80	0	0	0	0	0	0	0	0	0	0	
98-81	0	33	0	0	0	0	7	0	0	0	
98-82	0	0	0	0	0	0	0	0	0	0	2chromite
98-83	0	4	0	0	0	0	4	0	0	0	
98-84	0	0	0	0	0	0	0	0	0	0	1ilmenite
98-85	0	0	0	0	0	0	2	0	0	0	2ilmenite
98-86	0	5	0	1	0	0	7	0	0	0	
98-87	0	0	0	0	0	0	0	0	0	0	1ilmenite
98-88	0	0	0	0	0	0	0	0	0	0	
98-89	0	0	0	0	0	0	0	0	0	0	
98-90	0	0	0	0	0	0	0	0	0	0	3ilmenite
98-91	0	0	0	0	0	0	0	0	0	3	
98-92	0	1	0	0	0	0	12	4	0	0	
98-93	0	0	0	0	0	0	0	0	0	0	1pyrite
98-94	0	0	0	0	0	0	0	0	0	0	
98-95	0	0	1	0	0	0	3	0	0	0	
98-96	0	0	0	0	0	0	2	1	0	0	
98-97	0	0	0	0	0	0	0	0	0	0	
98-98	0	0	0	0	0	0	0	0	0	0	1pyrite
98-99	0	0	0	0	0	0	0	0	0	0	
98-100	0	0	0	1	0	0	0	0	0	0	
98-101	0	0	0	2	0	0	0	0	0	0	
98-102	0	0	0	0	0	0	0	0	0	0	
98-103	0	0	0	0	0	0	0	0	0	0	
98-104	0	0	0	0	0	0	0	0	0	0	
98-105	0	1	0	1	0	2	130	575	0	0	
98-106	0	0	0	0	0	1	43	135	0	0	
98-107	0	0	2	0	0	0	0	0	0	0	3pyrite
98-108	0	0	0	0	0	0	0	2	0	0	
98-109	0	0	0	0	0	0	0	0	0	0	
98-110	0	0	0	0	0	0	0	0	0	0	
98-111	0	0	0	0	0	0	0	0	0	0	
98-112	0	0	0	0	0	0	1	0	0	0	
98-113	0	0	0	0	0	0	0	0	0	0	
98-114	0	1	0	0	0	0	1	0	0	0	
98-115	0	0	0	0	0	0	0	0	0	0	
98-116	0	0	1	0	0	0	0	0	0	0	
98-117	0	0	0	0	0	0	0	0	0	2	
98-118	0	0	0	0	1	0	0	0	0	1	3amethyst
98-119	0	0	0	0	0	0	0	0	0	1	
98-120	0	0	0	0	0	0	0	0	0	0	
98-121	0	0	0	0	0	0	2	0	0	0	barite
98-122	0	0	0	0	0	0	3	0	0	0	
98-123	0	0	0	0	0	0	1	2	0	0	barite
98-124	0	0	0	0	0	0	0	0	0	0	
98-125	0	2	0	0	0	0	3	203	0	0	
98-126	0	0	0	1	0	3	9	1203	0	0	
98-127	0	1	0	0	0	0	8	249	0	2	
98-128	0	8	0	0	0	8	13	360	0	1	2pyrite
98-129	0	7	0	1	0	1	13	186	0	0	
98-130	0	0	0	0	0	22	310	411	0	0	
98-131	0	2	0	2	0	1	0	6	0	0	
98-132	0	1	0	0	0	1	63	1400	0	0	
98-133	0	24	0	5	0	42	200	5100	0	15	
98-134	0	9	0	3	0	219	4	10150	0	22	
98-135	0	0	0	0	0	0	0	100	0	68	
98-136	0	2	0	2	0	4	252	250	0	79	
98-137	0	0	0	0	0	1	27	200	0	44	
98-138	0	0	0	0	0	0	12	318	0	0	
98-139	0	1	1	0	0	1	14	125	0	0	
98-140	0	0	0	0	0	0	0	0	0	0	
98-141	0	0	0	0	0	0	0	0	0	0	

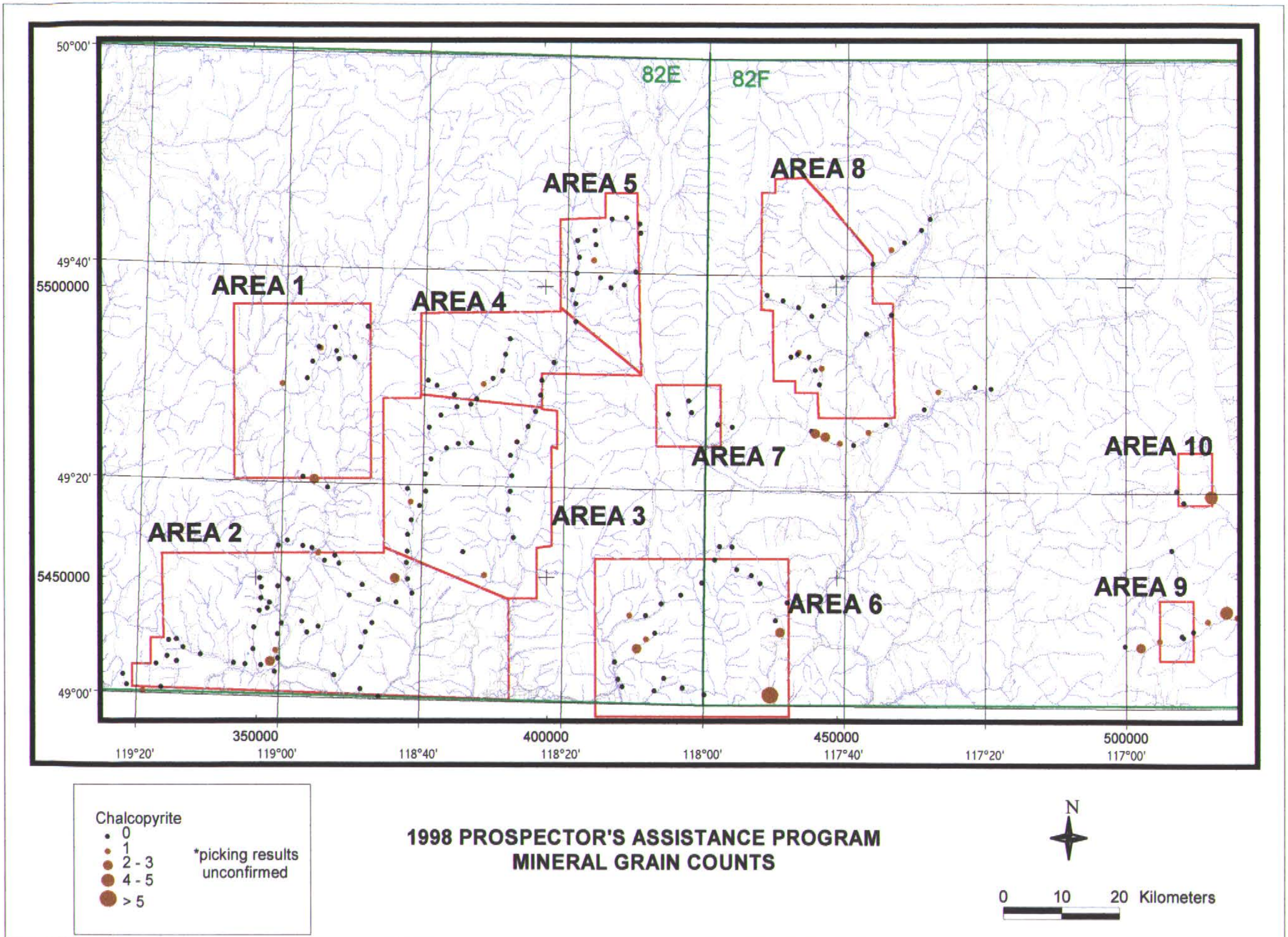
SAMPLE	SAPPHIRE	GOLD	CPY	EXOTIC_GARNET	RUTILE	SPINEL	GR_DIOPSIDE	OLIVINE	COLUMBITE_	FLOURITE	OTHER
98-142	0	0	0	0	0	0	9	400	0	2	
98-143	0	0	0	0	0	0	2	400	0	88	
98-144	0	2	2	3	0	0	11	700	0	100	
98-145	0	1	0	0	0	0	0	400	0	76	
98-146	0	0	5	1	0	0	0	90	0	0	2molybdenite?
98-147	0	0	0	33	1	1	20000	5	2	0	
98-148	0	1	0	3	0	1	2	0	3	0	
98-149	0	1	0	2	0	0	2	0	0	0	
98-150	0	2	1	0	0	0	14	0	1	0	
98-151	0	0	0	0	0	0	0	0	0	0	
98-152	0	0	0	0	0	0	2	0	1	0	
98-153	0	0	0	2	0	1	0	0	1	0	
98-154	0	9	1	0	0	0	0	0	0	0	
98-155	0	1	3	0	0	0	0	0	1	0	
98-156	0	0	0	1	0	0	2	0	0	0	
98-157	0	1	0	2	0	108	50	0	0	0	
98-158	0	2	0	6	0	4	34	233	0	2	
98-159	0	9	0	0	0	7	77	610	0	0	
98-160	1	0	1	0	0	0	12	0	1	0	
98-161	0	0	0	0	0	0	23	0	0	0	
98-162	0	0	4	0	0	0	0	0	1	0	
98-163	0	0	0	0	0	0	0	0	0	0	
98-164	0	0	1	0	0	0	0	0	0	0	
98-165	0	0	0	0	0	0	37	25	0	0	
98-166	0	0	0	0	0	0	42	5	0	0	
98-167	0	0	1	0	0	0	120	0	0	0	
98-168	0	3	0	0	0	4	410	0	0	0	
98-169	0	0	0	0	0	4	49	0	0	0	
98-170	0	0	0	0	0	0	0	0	0	0	
98-171	0	0	0	0	0	0	13	0	0	0	
98-172	0	1	0	0	0	1	45	0	0	0	
98-173	0	0	0	0	0	0	100	0	0	0	
98-174	0	0	0	0	0	0	0	85	0	0	
98-175	0	1	0	0	0	0	3	0	0	0	
98-176	0	0	0	0	0	0	3	34	0	0	
98-177	0	1	0	0	0	0	3	0	0	0	
98-178	0	11	0	0	0	0	5	0	0	0	
98-179	0	0	0	0	0	0	0	51	0	0	
98-180	0	0	0	0	0	0	0	28	0	1	
98-181	0	1	1	0	0	0	2	23	0	0	
98-182	0	0	0	0	0	0	0	4	0	0	3sphalerite
98-183	0	0	0	0	0	0	0	12	0	0	
98-184	0	0	0	0	0	0	0	0	0	0	
98-185	0	0	0	0	0	0	0	0	0	0	
98-186	0	5	0	0	0	0	0	0	0	0	
98-187	0	18	0	1	0	0	10	2	0	0	
98-188	1	2	0	0	0	0	2	0	0	0	
98-189	0	2	0	4	0	1	1	0	0	0	
98-190	0	9	0	0	0	0	25	3	0	0	
98-191	0	1	0	0	0	0	0	9	0	0	
98-192	0	0	0	1	0	4	337	22000	0	0	
98-193	0	0	0	0	0	0	0	4	0	0	2pyrite
98-194	0	1	0	0	0	1	4	330	0	0	1chromite
98-195	0	0	0	0	0	1	9	200	0	0	
98-196	0	0	0	0	0	0	5	122	0	0	
98-197	0	1	0	0	0	4	64	1000	0	0	
98-198	0	0	0	3	0	0	5	550	0	0	
98-199	0	0	0	0	0	3	0	1000	0	2	3chromite
98-200	0	0	1	1	0	0	0	350	0	0	

*GOLD represents gold grains > 0.25mm only
*EXOTIC GARNET represents suspected non-almandine (orange, purple, green,deep red)
*all grains are identified by visual inspection (ie; not SEM-checked or probed)

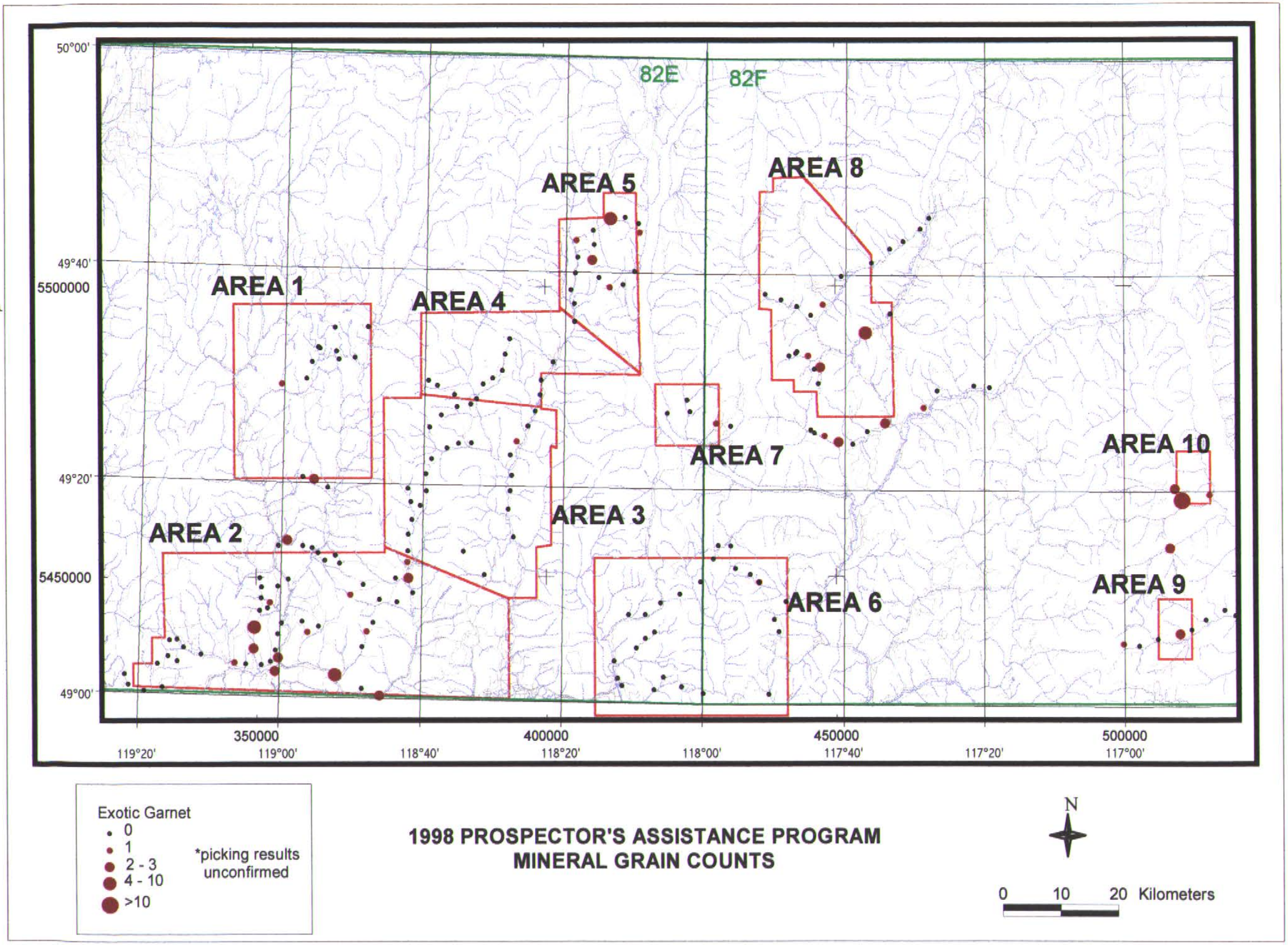


1998 PROSPECTOR'S ASSISTANCE PROGRAM
MINERAL GRAIN COUNTS

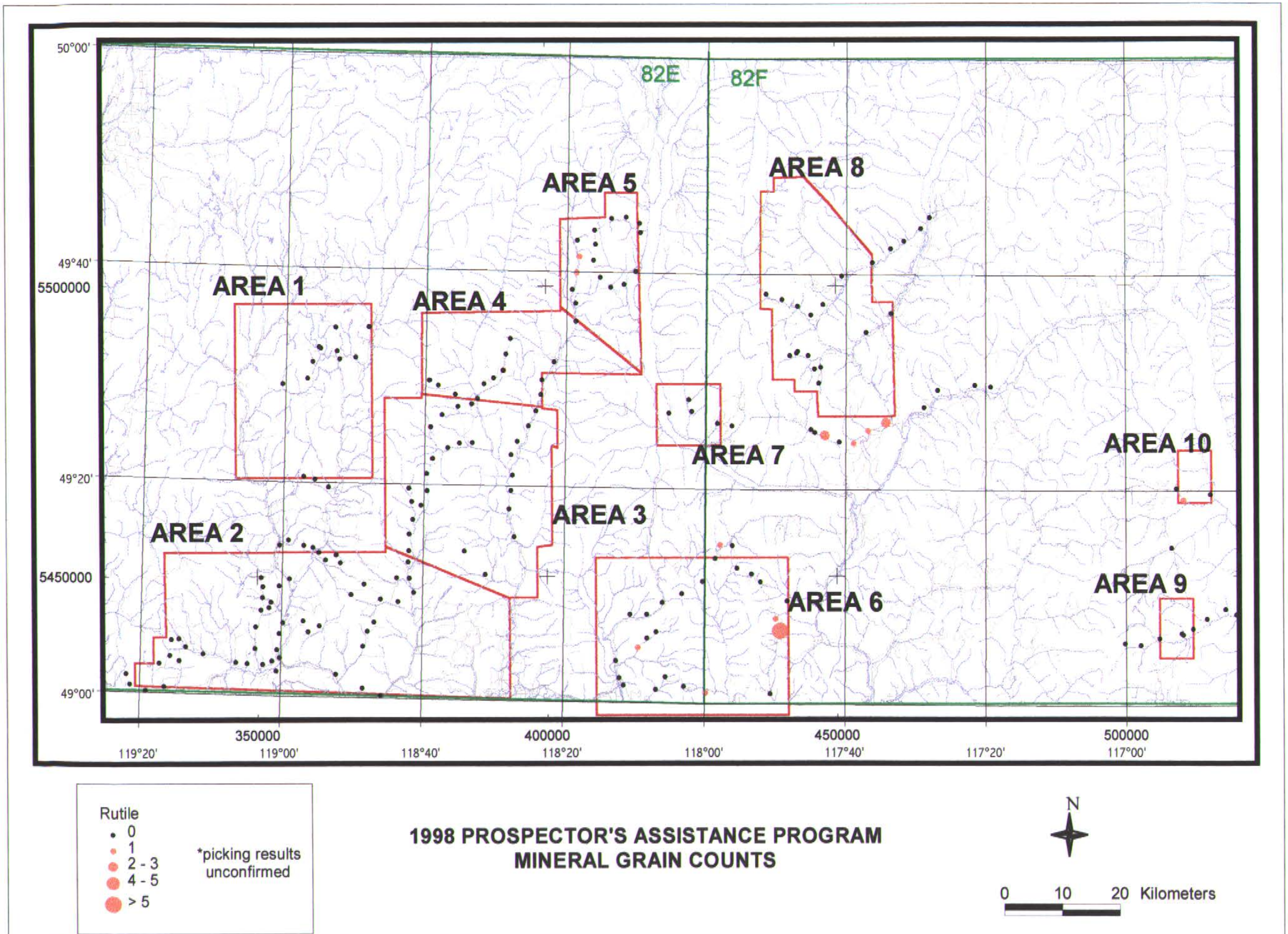

82E
82F
AREA 1
AREA 2
AREA 3
AREA 4
AREA 5
AREA 6
AREA 7
AREA 8
AREA 9
AREA 10
50°00'
49°40'
49°20'
49°00'
5500000
5450000
350000
400000
450000
500000
119°20'
119°00'
118°40'
118°20'
118°00'
117°40'
117°20'
117°00'
Gold
0
1 - 4
5 - 11
12 - 25
> 25
*picking results unconfirmed
1998 PROSPECTOR'S ASSISTANCE PROGRAM
MINERAL GRAIN COUNTS
N
0 10 20 Kilometers



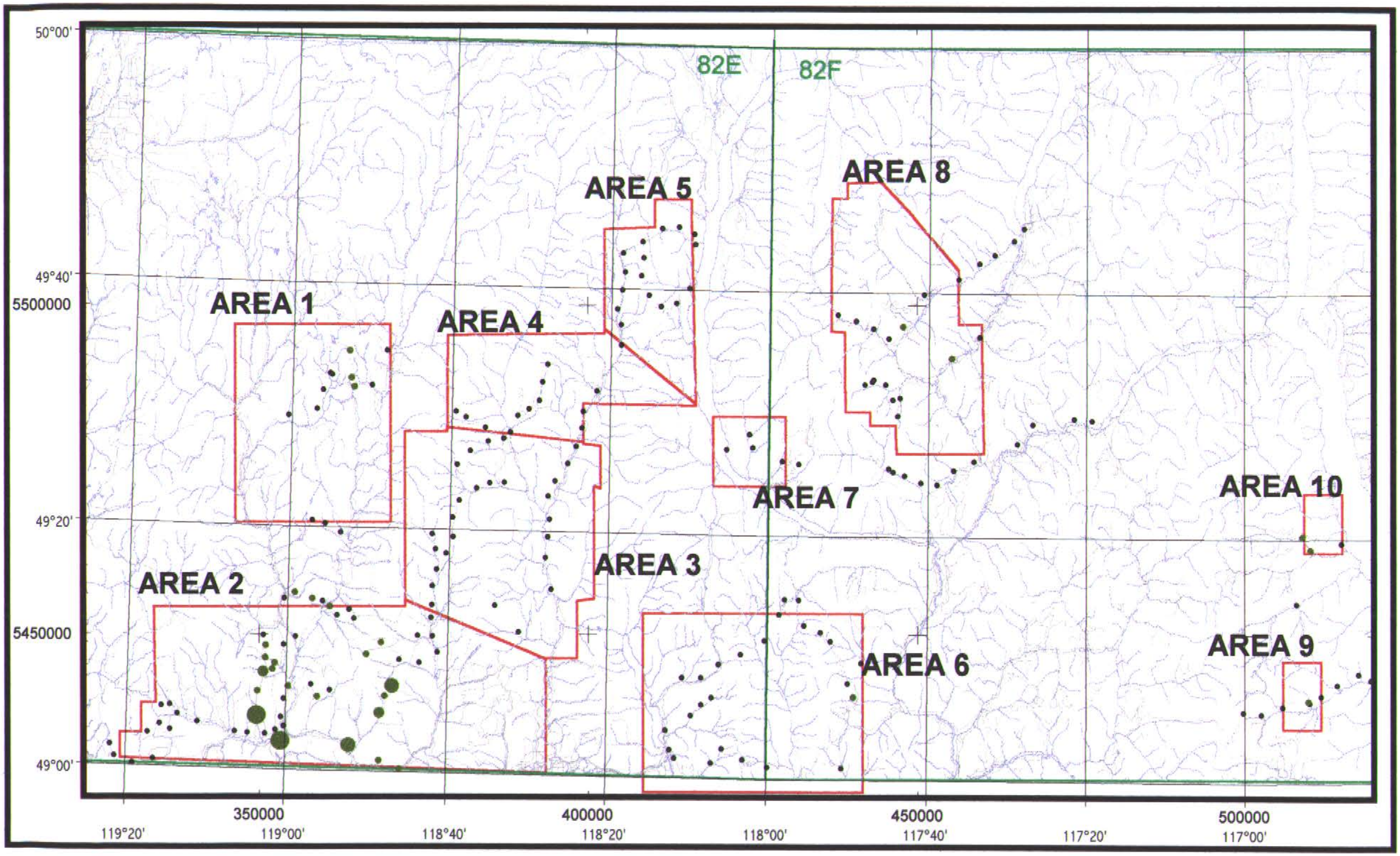
1998 PROSPECTOR'S ASSISTANCE PROGRAM
MINERAL GRAIN COUNTS



1998 PROSPECTOR'S ASSISTANCE PROGRAM
MINERAL GRAIN COUNTS



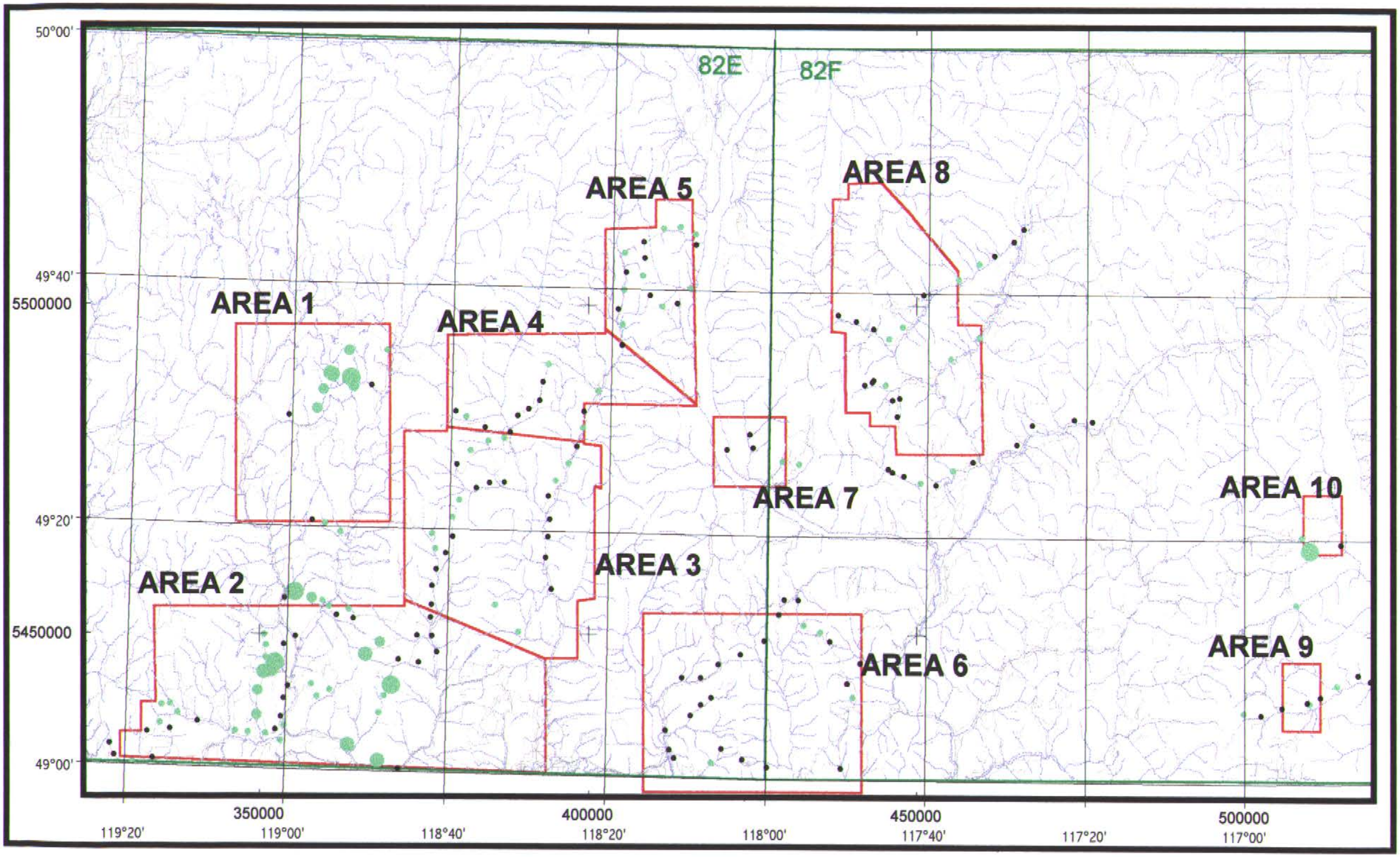
1998 PROSPECTOR'S ASSISTANCE PROGRAM
MINERAL GRAIN COUNTS



Spinel
- 0
- 1 - 5
- 6 - 20
- 21 - 100
- > 100

*picking results unconfirmed

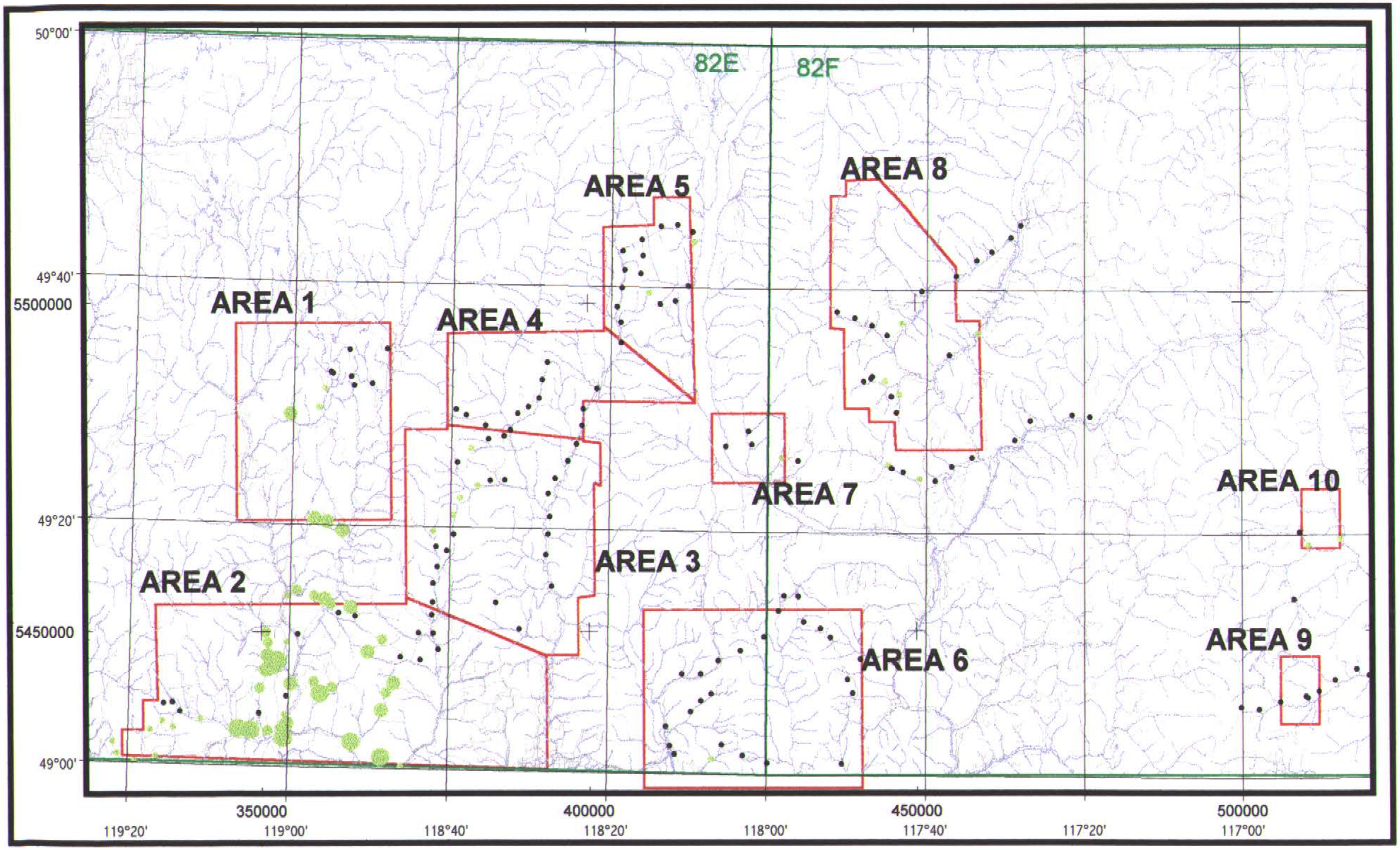
1998 PROSPECTOR'S ASSISTANCE PROGRAM
MINERAL GRAIN COUNTS



Chrome Diopside
- 0
- 1 - 25
- 26 - 50
- 51 - 200
- > 200

*picking results unconfirmed

1998 PROSPECTOR'S ASSISTANCE PROGRAM
MINERAL GRAIN COUNTS



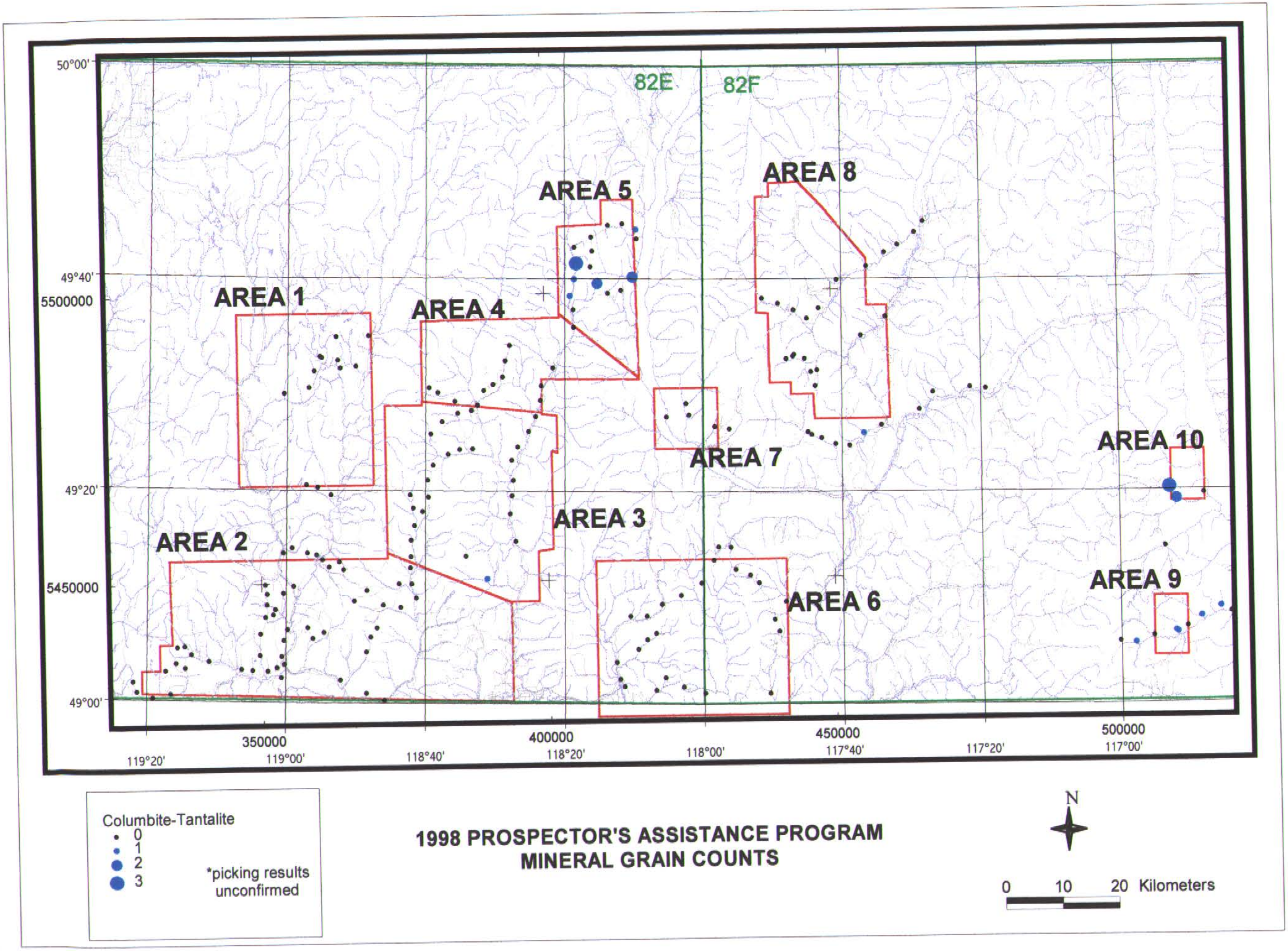
Olivine
- 0
- 1 - 100
- 101 - 300
- 301 - 1000
- > 1000

*picking results unconfirmed

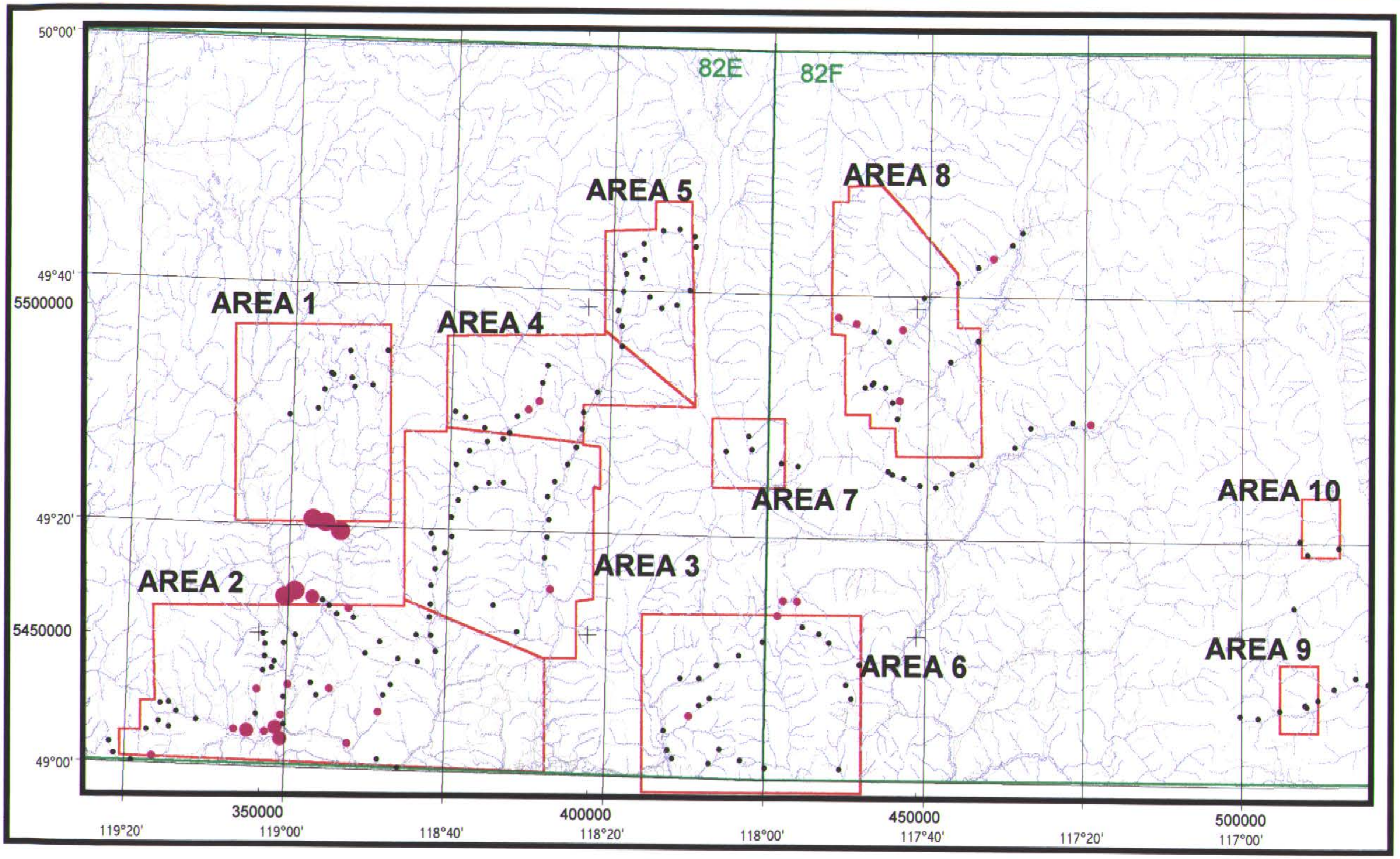
1998 PROSPECTOR'S ASSISTANCE PROGRAM
MINERAL GRAIN COUNTS

N

0 10 20 Kilometers



1998 PROSPECTOR'S ASSISTANCE PROGRAM
MINERAL GRAIN COUNTS



Fluorite
- 0
- 1 - 20
- 21 - 50
- > 50

*picking results unconfirmed

1998 PROSPECTOR'S ASSISTANCE PROGRAM
MINERAL GRAIN COUNTS

N

0 10 20 Kilometers