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PROSPECTOR'S ASSISTANCE PROGRAM

FINAL REPORT

MARK KOLEBABA

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Exploration Report – BC Prospectors Assistance Program

Introduction

This report is submitted to fulfill the Program Report requirement of the 1999 Prospector's Assistance Program for applicant Mark Kolebaba and prospecting partner.

Primary commodities were beryl and corundum (emerald and sapphire, gem or high grade industrial). This program comprised a reconnaissance component and a follow-up component to 1998 BC PAP sample results. Both parts focussed on gemstone exploration in the south Kootenay region. 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 a large area for economic deposits of sapphire corundum and/or emerald beryl.

A budget of $17,700 was submitted for this program. Actual costs totaled $19,982 (due to inclusion of additional work). 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 1999 program covered 6 separate areas. These areas are clustered in the eastern half of NTS sheet 82E, the western half of NTS sheet 82F, the eastern portion of NTS sheet 82L, and the western portion of NTS sheet 82K. The entire area is bounded by longitude 118°40' to the west, and the Kootenay Lake area at longitude 116°45' to the east, the International Boundary to the south, and 50°45' to the north (figure 1). The dimensions of the region are approximately 500 x 150 km in size.

Area 1	Boundary Creek	Follow-up
Area 2	Sheep Creek	Follow-up
Area 3	Lower Arrow Lake	Follow-up
Area 4	Summit Creek	Follow-up
Area 5	Nakusp Recon area	Reconnaissance
Area 6	Lumby Area	**NEW** Reconnaissance

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 and in the Slocan Ranges.

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 side of the area) and Hwy31A (which runs approximately E-W). Sampling and prospecting areas were accessed by major and minor highway routes, and mainly by an extensive network of logging roads. Exploration work was conducted by 4WD truck. Accommodation during the field portion of the program was mainly by camper trailer.

Regional 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 west, 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.

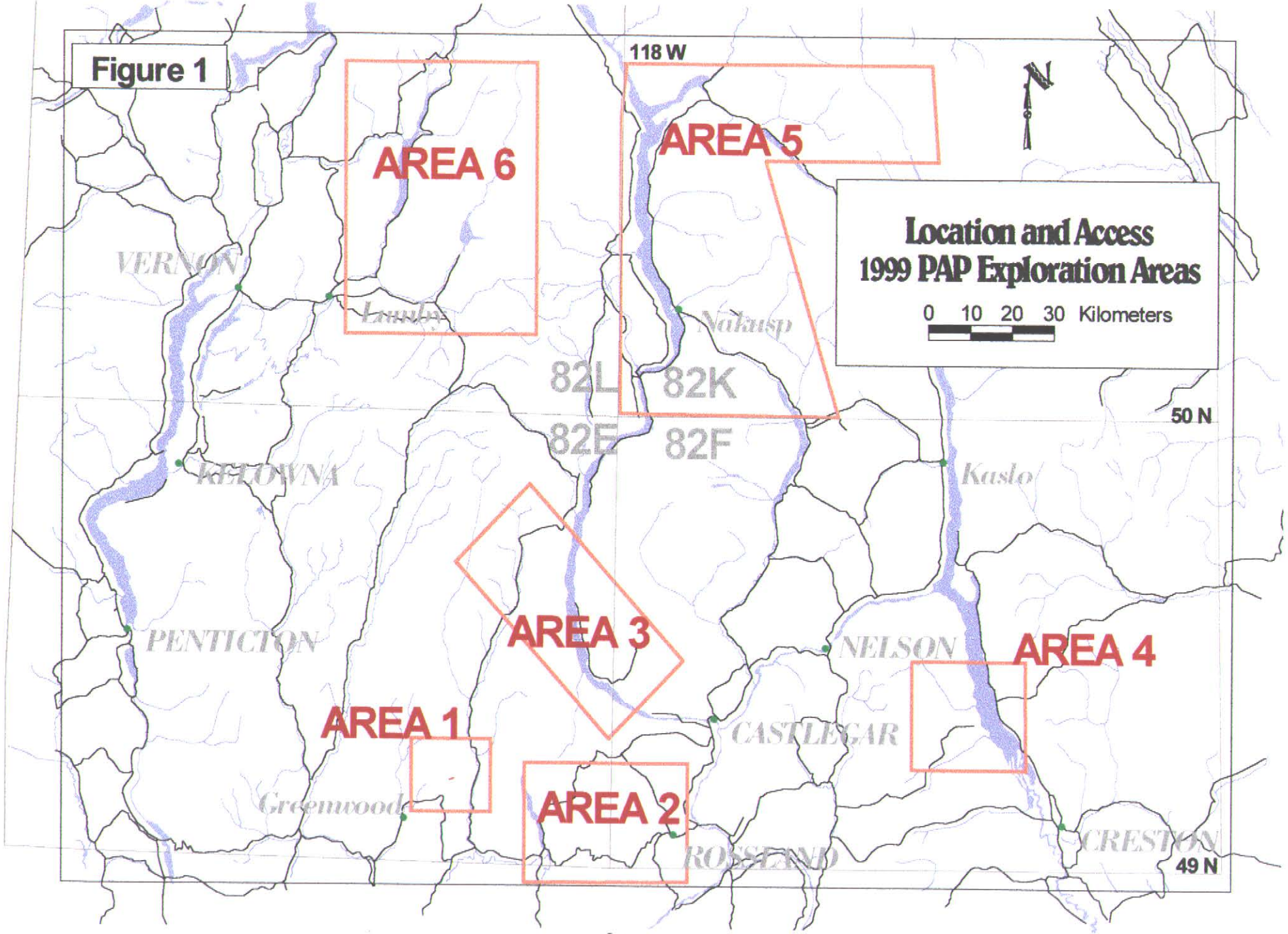


Figure 1
118 W
AREA 6
AREA 5
Location and Access
1999 PAP Exploration Areas
0 10 20 30 Kilometers
VERNON
Lumby
Nakusp
82L
82K
82E
82F
50 N
KELOWNA
Kaslo
AREA 3
PENTICTON
NELSON
AREA 4
AREA 1
CASTLEGAR
Greenwood
AREA 2
ROSSLAND
CRESTON
49 N

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 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 work area.

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

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
		W	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,W,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 400 mineral occurrences reported in the BC Minfile within the project areas. Of these, 367 are precious and base metal (Au,Cu,Pb,Ag,Zn,Mo,Sb, Cr, and Fe) occurrences. 21 occurrences are industrial (aluminosilicates, limestone, talc, magnetite) or dimensionstone of various lithologies. 6 are attributed to Uranium and Tungsten. 1 occurrence is a manganese-rhodonite showing. 8 BC Minfile listings are described as hotsprings, and all are located in reconnaissance work area 5. 1 fluorite occurrence occurs within the 82FNW mapsheet, and fluorite is also well known within and around the Rock Candy mine, just north of Area2. 1 graphite occurrence is present. A tantalum showing is also located east of Area3, in the Blu Starr prospect area. 1 beryl showing occurs in the south 82E mapsheet.

Of those listed above, 3 BC Minfile occurrences in Area5 (reconnaissance area) are described as containing kyanite or sillimanite as commodities. Several similar occurrences are reported in the adjacent Area6 to the northwest, in para- and ortho-gneisses. These occurrences are reliable indicators for the abundance of Al in lithologies, and also indicators of metamorphic grade. Since corundum is an Al oxide (Al2O3), 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, and Ni values in government stream sediment sampling results. There are 12 BC Minfile localities within the work areas that are considered to have ultramafic affinities. These are based on reported occurrences of talc, magnesite, chromium, platinum, nickel, and asbestos. Within and to the east of the Nakusp Recon area lie several nickel and talc showings within the Ordovician-aged fine clastic sediments of the Broadview Formation.

Corundum (ruby and sapphire) has been reported at two localities adjacent to the work area. The Blu Moon (82FNW259) and Blu Starr (82FNW263) properties are metamorphic pegmatite-hosted occurrences in a syenitic host. 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 has been found with zircon, iolite, (almandine) garnet, sphene and amphibole. This mineralization may be related to the fenite/nepheline syenite complexes north of Revelstoke. Noted from additional literature, a ¼" blue-green gem quality sapphire was recovered from old gold workings on the Pend D'Oreille River. In addition several sapphire grains were isolated from heavy mineral samples collected by the applicant under the 1998 Prospector's Assistance Program grant.

Beryl is reported in two localities in the region 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. Beryl occurs with tin and tungsten at the Tin City showing (082KNE071) east of the Nakusp Recon area.

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 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 1999 work area was chosen because it was underexplored for gemstone deposits. Based on existing deposit models, other occurrences in the region, geochemical evidence, and the geological environments present, the areas were considered prospective for mineable deposits of corundum (sapphire/ruby) and beryl (emerald/aquamarine).

Corundum (Al_2O_3)

Gemstone varieties of corundum (sapphire and ruby) occur in moderately high-grade aluminum rich 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 undergo metamorphism to corundum-bearing eclogite. Volatile rich alkali basaltic magmas, which generally form at a depth below 90 km rise to the earth's surface. During the ascent of the magma, it passes through the corundumiferous eclogite and carries corundum xenocrysts and eclogite xenoliths to the surface very rapidly. Alkali basaltic rocks in the area have been explored for this type of sapphire occurrence. Sapphires (with minor rubies) in alkali basaltic rocks occur in Eastern Australia.

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 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 they are the two main constituents needed to form emerald. Emerald forms when Be-rich crustal rocks come in contact with Cr-rich oceanic and mantle derived ultramafic rocks. Several emerald deposits around the world occur in schistose rocks (BC Deposits Profile #Q07) in contact with or near 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 several localities in the Western Cordillera. Occurrences of emerald and aquamarine are known in British Columbia.

1999 Field Program

A total of 104 20-40kg stream and glacially derived sediment samples were collected from the project area for heavy mineral picking., and 97 samples submitted for traditional geochemical analysis.. The field program took 59 mandays for two prospectors to complete (see table 2). The sample locations are found on figure 2. Descriptive fieldnotes are found in Appendix 2.

Follow-up Exploration Program

Four areas were selected for follow-up work based on heavy mineral sampling results from exploration work done in 1998. The work attempted to track the sources of anomalous geochemical (Be) and heavy mineral samples (sapphire) up-ice or up-stream by more detailed sampling and prospecting.

Area1 - Boundary Creek Area

The Boundary Creek Area is a region of extensive plutonism. Jurassic granites intrude Proterozoic sediments to the west and Devonian and Triassic sediments (and minor ultramafics) to the south. Late Cretaceous granodiorites intrude both the older sediments and the granitic rocks. The last major intrusive event was the emplacement of Eocene Coryell syenite. Remnant younger Eocene volcanic rocks cover parts of the area, and are probably trachytic flows related to the syenite.

Exploration target

- It was thought that sapphire may be related to peraluminous metasomatic alteration of sediments in contact with the late syenite intrusion. Sapphire-bearing pegmatite may have been emplaced along the contacts of the syenite intrusion. A low-level sapphire anomaly was detected during the 1998 sampling program, that indicated potential for a sapphire deposit in the area.
- It was also thought that emerald mineralization might be associated with pegmatitic or schistose rocks in this area. This was indicated by low level anomalous Be values from samples collected under the 1998 Prospector's Assistance Program grant.

Area2 - Sheep Creek Area

The Sheep Creek Area is underlain by Permian to Carboniferous sediments intruded by a granite of Jurassic age and later the large Eocene Coryell syenite which dominates the area. The sediments form a thin rim that wraps around the syenitic body. Ultramafic rocks occur within these sediments along the SW part of the area. A NE-SW trending belt of Jurassic basalt occurs along the SE portion of the Sheep Creek area, and small Eocene trachyitc flows cover the eastern margin of the syenite.

Exploration Target

- Follow-up sampling targeted a low level sapphire anomaly generated during the 1998 sampling program. Its presence indicated sapphire deposit potential for this area. Sapphire could have been associated with aluminum-saturated intrusives in contact with metasediment in this area, or possibly be pegmatite hosted.
- Ruby could have been associated with aluminum-saturated intrusives in contact with metasediment or ultramafic (Cr-bearing) rocks in this area.
- Emeralds might have been associated with metamorphosed sediments. Elevated Be values were reported from geochemical samples collected during 1998 sampling program.

Area3 - Lower Arrow Lake Area

Proterozoic and Paleozoic metasedimentary rocks are intruded by Jurassic granite. Cretaceous granodiorites intrude the NW part of the Lower Arrow Lakes Area. Eocene Syenite of the Coryell Intrusives intrude the NW part of the project area forming a large pluton that is in contact with the Proterozoic sediments along the west and granite-granodiorite to the east. Smaller syenite bodies intrude the SE part of the project and are in contact with the granite and the Paleozoic metasediments.

Exploration Target

- Sapphire was suspected to occur in pegmatite along syenite contacts in the NW portion of this area. This target was implied by the anomalous concentration of Tantalite, a Tantalum bearing mineral that is commonly found in these pegmatites. Similarly, BCMinefile records a tantalum occurrence near the Blu Starr property, a known sapphire deposit.
- In the SE part of the Lower Arrow Lake Area, sapphire in metasedimentary rocks was the exploration target. A low-level sapphire grain anomaly uncovered during the 1998 sampling program indicated sapphire deposit potential for the area.
- South of the tantalum grain anomalies (recovered under the 1998 Prospector's Assistance Program grant) are two Be geochemical anomalies. This coincidence indicated the possibility of emerald mineralization in a pegmatitic host.

Area4 - Summit Creek Area

The Summit Creek area is underlain by a series of parallel supracrustal layers oriented NNE-SSW, ranging from Precambrian on the east side to Cambrian and Ordovician ages on the west. Lithologies

include greenstones, arenites, conglomerates, greywackes and limestones. Minor Jurassic granite stocks intrude the south part of the area and Cretaceous granodiorite impinge on rocks east and west of the Summit Creek area.

Exploration Target

- Emerald mineralization was thought to occur in this area in schistose rocks. Elevated Be values were reported from geochemical samples collected during the 1998 sampling program. The presence of Cr-diopside and olivine grains in till samples indicated there may be ultramafic rocks in the area that could provide a source of chromium. Although a BC Minfile report exists for a small beryllium occurrence in a pegmatite dyke at Summit Creek, there may be more in the area.

Reconnaissance Exploration Program

One area was chosen for reconnaissance exploration under the 1999 Prospector's Assistance Program. A second area was added during the field program.

The objective of the reconnaissance portion of the program was to identify areas of interest for follow-up work (ultimately leading to land acquisition), and/or to confidently "sterilize" areas of unprospective ground quickly so that future exploration resources would be used elsewhere in more prospective areas. Low geochemical and heavy mineral thresholds for anomaly identification would determine areas of future follow-up work.

Work consisted of prospecting, and heavy mineral/geochemical sampling for sapphire and emerald mineralization. Metamorphosed intrusive rocks, shale, aluminum-rich metasedimentary rocks (especially those units with late syenitic intrusives nearby), and alkali intrusive rocks were considered geological targets and served as the main focus for prospecting within the project area.

20-40 kg samples were collected for heavy mineral picking along pseudo-lines down stream/ice and over prospective areas. In addition, smaller 500g samples were collected for geochemical analysis.

Area5 - Nakusp Recon Area

NW-SE trending bands of Cambrian to Devonian age sediments and Permian to Carboniferous basalt occur in the NE part of the region. The SW part of the area is dominated by fine clastic sediments of Triassic age intruded by minor Cretaceous granodiorite. These rocks are all intruded by a large elliptical Jurassic monzonite pluton in the centre of the area. Immediately west of the area is a large high grade metamorphic gneiss terrain (paragneiss and orthogneiss) with interbedded marbles.

Exploration Target

- Sapphire could be associated with the aluminum-saturated monzonite intrusive unit in contact with the metasediments. Heavy mineral samples were collected down-ice of the margins of the intrusive to test for this type of mineralization.

Emerald mineralization in the north part of the area was indicated by minfile occurrences of Be. Be occurrences are common along the entire length of the Foreland belt in BC. Geochemical samples were collected to test for additional Be over the remainder of Area5.

Area6 - Lumby Recon Area

This is a large high-grade metamorphic gneiss terrain (paragneiss and orthogneiss) with interbedded marbles to the east. It is part of the Shuswap Assemblage, and older than rocks of any other sampling area.

Exploration Target

- Sapphire could be associated with the aluminum-saturated metamorphosed intrusive unit. Aluminosilicates are reported in BCMinfile on the eastern side (kyanite, andalusite and sillimanite). Heavy mineral samples were collected in the centre of the unit to test for this type of mineralization.

Table2 – Prospecting Days

***Work days - June 17, 1999 to October 3, 1999**

DATE	PROJECT AREA	PROSPECTING DAYS	WORK PERFORMED
17-Jun-98	Boundary Creek	2	field sampling and prospecting
18-Jun-98	Boundary Creek	2	field sampling and prospecting
19-Jun-98	Boundary Creek	2	field sampling and prospecting
20-Jun-98	Boundary Creek	2	field sampling and prospecting
26-Jun-98	Boundary Creek	2	sample prep
27-Jun-98	Boundary Creek	2	sample prep
30-Jun-98	N. Arrow Lake Area	2	field sampling and prospecting
01-Jul-98	N. Arrow Lake Area	2	field sampling and prospecting
02-Jul-98	N. Arrow Lake Area	2	field sampling and prospecting
03-Jul-98	N. Arrow Lake Area	2	field sampling and prospecting
04-Jul-98	N. Arrow Lake Area	2	sample prep, data compilation
17-Jul-98	Nakusp Area	2	field sampling and prospecting
18-Jul-98	Nakusp Area	2	field sampling and prospecting
22-Jul-98	Nakusp Area	2	field sampling and prospecting
23-Jul-98	Nakusp Area	2	field sampling and prospecting
24-Jul-98	Nakusp Area	2	field sampling and prospecting
25-Jul-98	Nakusp Area	2	data compilation and sample prep
30-Jul-98	S. Arrow Lake Area	2	field sampling and prospecting
31-Jul-98	S. Arrow Lake Area	2	field sampling and prospecting
01-Aug-98	S. Arrow Lake Area	2	sample prep
10-Aug-98	S. Arrow Lake Area	2	field sampling and prospecting
11-Aug-98	S. Arrow Lake Area	2	field sampling and prospecting
24-Aug-98	S. Arrow Lake Area	2	sample prep
12-Sep-98	Summit Creek	1	field sampling and prospecting
13-Sep-98	Summit Creek	1	field sampling and prospecting
14-Sep-98	Summit Creek	1	sample prep
25-Sep-98	Sheep Creek	2	field sampling and prospecting
26-Sep-98	Sheep Creek	2	field sampling and prospecting
01-Oct-98	Lumby Area	2	field sampling and prospecting
02-Oct-98	Lumby Area	2	field sampling and prospecting
03-Oct-98	Lumby Area	2	sample prep
08-Oct-98		0	data compilation
09-Oct-98		0	data compilation
10-Oct-98		0	record-keeping, data compilation
		Total: 59 days	

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.

Figure 2

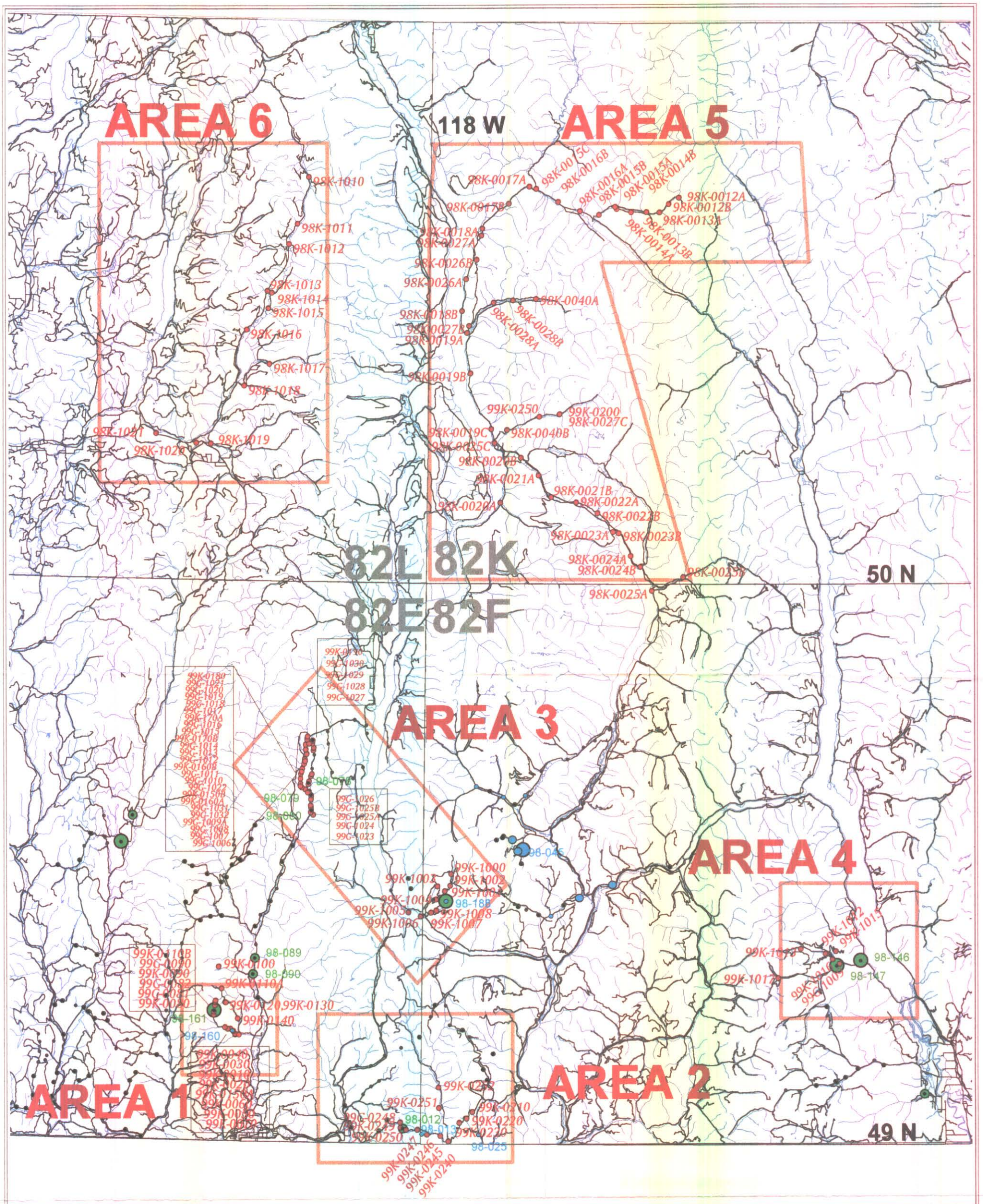


Figure 2 - Sample Locations

- 1999 Sample Locations

1998 Sapphire grains	1998 Be geochem
0	0 - 1
1	1 - 2.5
2 - 3	2.5 - 3
4 - 5	> 3
> 5	

— Roads

— Drainage

N

0 10 20 Kilometers

99-34 P9 12

Glacial till was the priority sample media. Where till was not available or where access was difficult, stream sediments were collected.. Colluvium was distinguished from parent glacial material where it was of obvious local provenance (i.e. local rock fragments in soil). Glaciofluvial material was noted where sampled but avoided due to difficulties in interpretation of distance traveled by the sediment.

Suitable sample sites were planned beforehand. 20 – 40kg 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.

Each surficial material 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.

Stream sediment samples were collected from trap sites where possible, ensuring collection of heavier minerals and fragments. One 20-30kg sample was collected per site, sieved to –6mm onsite. Samples on average filled one plastic sample bag (10liters).

Sample collection field notes for all samples collected during the 1999 field season are found in Appendix 2. Sample locations are displayed on figure 2.

Laboratory Procedures

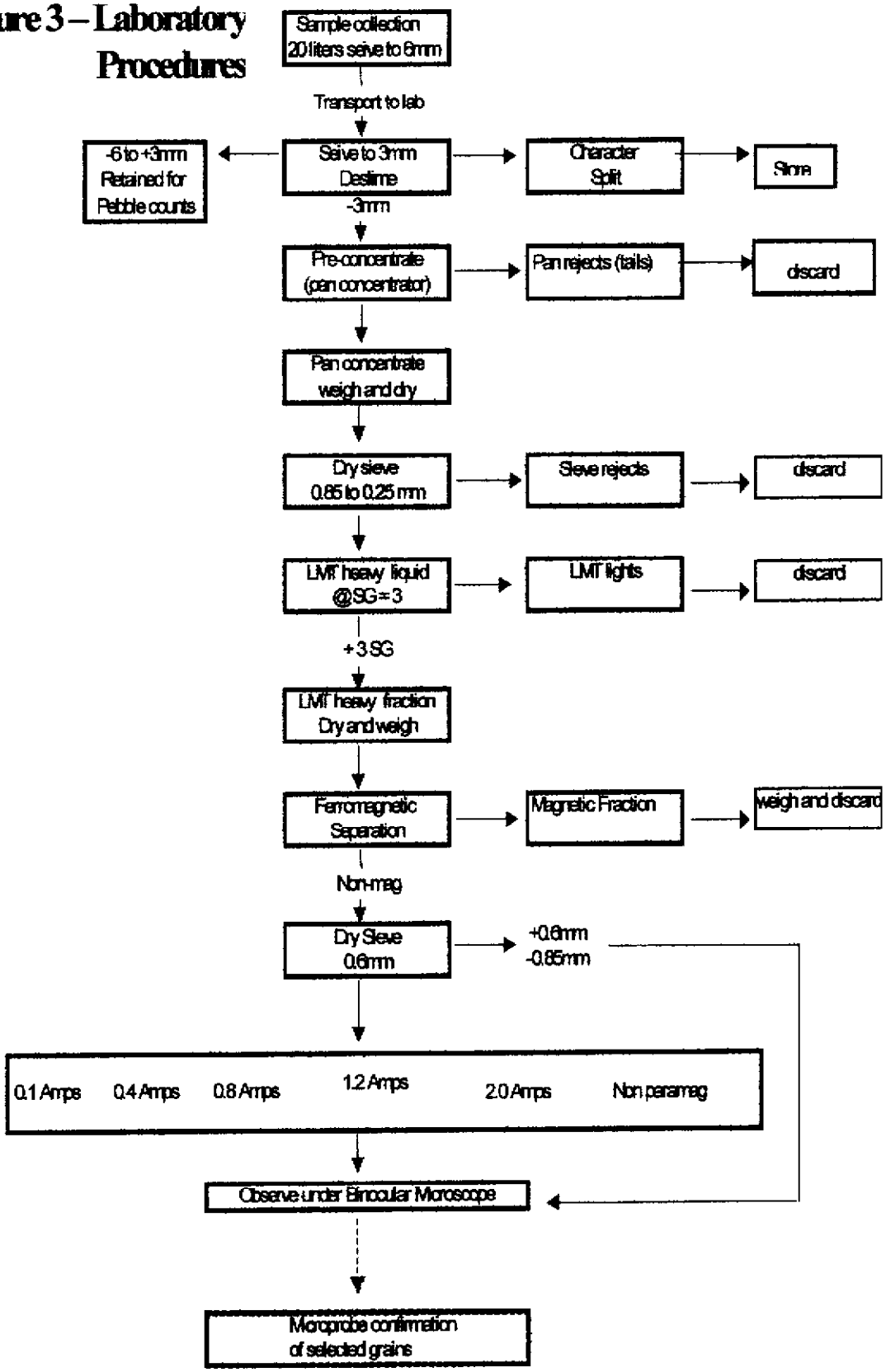
In the lab, the till and stream sediment samples were weighed and a 500g aliquot obtained from each 20-liter sample prior to processing. The aliquot was retained for sample character reference and selective geochemical analysis. The samples were then concentrated according to particle size, density and ferromagnetic nature of the grains. The laboratory steps are illustrated in Figure 3.

Initially, the sample were soaked briefly in water to disaggregate and wet all of the mineral grains. Well-compacted samples were soaked and agitated in a calgonite solution for an extended period of time to aid in disaggregation. Next, the sample was sieved to -3mm by hand. Several washings with clean water ensured that the sample was deslimed. The +3mm was discarded with the exception of about 500g which was retained for pebble count analysis at a later date. The deslimed –3mm material was pre-concentrated in a mechanical pan concentrator. On average, samples were reduced by 90-96% by weight. The pan concentrates were dried and weighed in a low-temperature drying oven.

Dried pan concentrates were sieved at 0.85mm and 0.25mm. If magnetite content was anomalously high a hand magnet was used to extract it. The +0.85mm and –0.25mm sieve fractions were weighed and stored. Heavy minerals were 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 were washed and dried. The LMT lights were discarded.

The +3.0sg heavy mineral fraction was further separated by magnetic characteristics. The ferromagnetic minerals were separated out initially using a hand magnet. The non-magnetic fraction was sieved to 0.6mm, and the +0.6mm fraction was sorted under a binocular microscope. The –0.6mm fraction was passed through a Frantz Isodynamic separator at 0.1, 0.4, 0.8, 1.2 and 2 amps. The +1.2 and +2amp fractions were then observed under binocular microscope for sapphire grain indicator mineral picking.

Figure 3 – Laboratory Procedures



Sample Processing

All 104 heavy mineral samples have been processed. These comprise stream sediment and glacially-derived sediment. Grain picking has been carried out for sapphire grains only due to time constraints and the focus of the heavy mineral program on that commodity. No microprobe work was carried out.

Appendix 3 outlines the results of heavy mineral sample processing and picking for sapphire grains for all samples.

97 samples were submitted to Chemex Laboratories of North Vancouver for multi-element geochemistry. The standard multielement package provided crushing, sieving to –80mesh, and Nitric, Hydrofluoric, Perchloric Total Acid Digestion, with ICP-AES analysis of each sample for 24 elements. This package was chosen because of the range of elements reported, and the fact that detection limits for Be are still low enough to detect low level anomalies similar to those reported last year (on the order of 4ppm or higher). Detection limits are as follows: Al 0.01%, Ba 10ppm, Be 0.5ppm, Bi 2ppm, Cd 0.5ppm, Ca 0.01%, Cr 1ppm, Co 1ppm, Cu 1ppm, Fe 0.01%, Pb 2ppm, Mg 0.01%, Mn 5ppm, Mo 1ppm, Ni 1ppm, P 10ppm, K 0.01%, Ag 0.2ppm, Na 0.01%, Sr 1ppm, Ti 0.01%, W 10ppm, V 1ppm and Zn 2ppm

Appendix 4 reports the multielement geochemistry analytical results, and a summary of anomalous samples is found in table 4. The anomalous threshold value for each element was arrived at by calculation of the following formula:

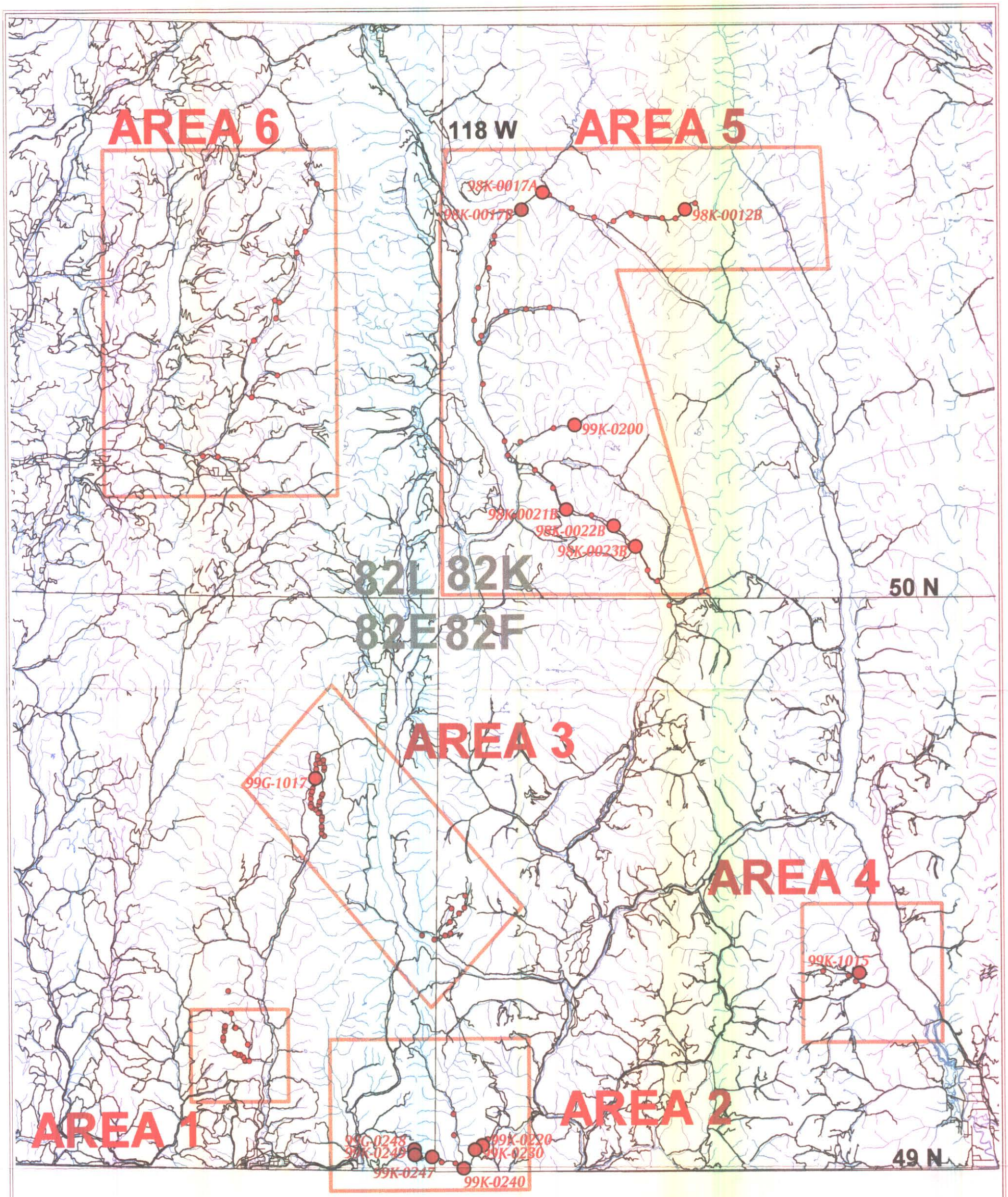
THRESHOLD = MEAN + (3* STD DEV)

For the purpose of this calculation, all samples below detection limit were equated to ½ detection limit (eg; <0.2ppm was converted to 0.1ppm). Results for all 97 samples were used.

Table 4 - Summary of Anomalous Samples Based on Statistical Threshold Value

	Ag_PPM	Al%	Ba_PPM	Be_PPM	Bi_PPM	Ca%	Cd_PPM	Co_PPM	Cr_PPM	Cu_PPM	Fe%	K%
# samples	97	97	97	97	97	97	97	97	97	97	97	97
SUM	19.90	764.74	102120.00	243.50	98.00	153.08	32.75	1331.00	6724.00	2351.00	307.21	237.64
MEAN	0.21	7.88	1052.78	2.51	1.01	1.58	0.34	13.72	69.32	24.24	3.17	2.45
STD DEV	0.33	1.23	311.30	1.07	0.10	2.11	0.54	9.17	63.06	25.79	1.15	0.78
THRESHOLD (mean + (3*std dev)	1.21	11.57	1986.69	5.72	1.31	7.91	1.96	41.23	258.57	101.61	6.60	4.79
# ANOMALOUS SAMPLES	2	1	1	1	1	1	2	1	3	1	1	0
	99G-1017	99K-0200	99K-0200	99K01015	98K-021B	98K-021B	98K-021B	98K-012B	99K-0220	98K-012B	98K-012B	
	98K-0022B						98K-023B		99K-0230			
									98K-012B			

	Mg%	Mn_PPM	Mo_PPM	Na%	Ni_PPM	P_PPM	Pb_PPM	Sr_PPM	Ti%	V_PPM	W_PPM	Zn_PPM
# samples	97	97	97	97	97	97	97	97	97	97	97	97
SUM	91.37	61880.00	79.50	227.22	3680.00	102450.00	2946.00	54556.00	30.44	8175.00	N/A	8500.00
MEAN	0.94	637.94	0.82	2.34	37.94	1056.19	30.37	562.43	0.31	84.28	N/A	87.63
STD DEV	0.65	298.90	0.95	0.75	59.80	600.81	13.74	311.32	0.10	37.39	N/A	43.94
THRESHOLD (mean + (3*std dev)	2.90	1534.63	3.68	4.60	217.33	2858.60	71.59	1496.38	0.60	196.46	N/A	219.45
# ANOMALOUS SAMPLES	3	2	2	1	4	3	2	1	3	3		1
	99K-0220	98K-012B	98K-017A	99K-0200	99K-0220	99K-0247	99K-0230	99K-0200	99G-0248	98K-012B		98K-023B
	99K-0230	98K-017A	98K-023B		99K-0230	99G-0248	98K-017A		99K-0249	98K-017B		
	98K-012B				99K-0240	99K-0249			98K-012B	98K-023B		
					98K-012B							



Anomalous Multi-Element Geochemistry Samples

- 1999 Sample Locations
- 1999 Anomalous samples (multi-element geochem)
- Roads
- Drainage

N

0 10 20 Kilometers

99-34 pg. 17

Results / Summary

Area 1 – Boundary Creek

This area was chosen for exploration work to follow-up a sapphire uncovered by sampling under the 1998 PAP. Aluminum-rich minerals such as corundum/sapphire are common where alkalic intrusives are found in contact with sedimentary rocks in a metamorphosed environment.

16 heavy mineral samples were collected (see Appendix 2). These comprise 11 till, 1glaciofluvial, and 4 stream sediment samples. Sandy-silty and sandy to glaciofluvial compositions dominate the till samples from this area. The clay component is small. The surficial sediment layer appears quite thick in this area. Oxidation of veneer and blanket tills is common. Some colluvium is also present.

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.

Follow-up heavy mineral sampling around sample 98-160 returned only one other sapphire grain. This grain was present in sample 99K-0040, a sandy till, immediately next to the anomalous sample from last year. Based on this result, further follow-up work for sapphire in this area is not recommended.

Area 2 – Sheep Creek

This area was chosen for exploration work to follow-up Be and sapphire occurrences. Alkalic intrusives (syenite) in contact with fine clastic metasediments and ultramafic rocks make the area prospective for sappire and emerald. A single beryl occurrence has been noted in the BC Minfile from this area.

Heavy mineral samples collected from the Sheep Creek area this year include 3 stream sediment and 7 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 veneer that is commonly oxidized to a reddish colour.

The regional ice flow direction is from the NNW to the SSE. Augite-goethite is the heavy mineral assemblage in this area.

Follow-up heavy mineral sampling in this area not only reproduced the 2 single-grain sapphire anomalies found last year, the anomalous area was expanded. Unfortunately, the low grain counts found suggest a rich deposit is not present in this area. The grains present can be explained by either low concentrations of the mineral in or around the syenite, or even as part of a very large dispersion train from the Blu Starr deposit to the NNE. Further follow-up is not recommended for sapphires.

Six surficial sediment samples from this area contain anomalous amounts of at least one element analyzed for in the 24-element package. Cr, Mg, Ni and Pb are likely anomalous due to the proximity of these samples to ultramafic bodies (and basalt). High P content reflects a concentration of the apatite crystals found in the Sheep Creek syenite.

Area 3 – Arrow Lake

The northwestern part of this area was chosen for exploration work in 1998 because of the presence of ultramafic rocks in an area intruded by syenite. The ultramafics may have provided a source of chrome for formation of emerald/green beryl. The 1999 follow-up concentrated on the Be and associated Ta grain anomalies from the 1998 program.

5 stream sediment and 2 till samples were collected to explore the untested mountain range to the west for sapphire grains. None were found.

The Southeastern part of this area was chosen for work in 1998 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. Follow-up work in 1999 centered on a sapphire grain anomaly from the 1998 program.

2 stream and 5 glacially-derived sediment heavy mineral samples were collected from this area. The till is compact, light to medium brown, and contains mainly subrounded pebbles and cobbles. The heavy mineral assemblage for these samples is dominated by augite, diopside, titanite and hornblende.

Although sapphire grains were confirmed up-ice and down-stream of the original single-grain anomaly, the very low grain counts suggest either a very distal source or simply very low concentrations of the mineral. The presence of such low quantities of sapphire may also be explained by dispersion from the Blu Starr deposit area to the NE by an earlier glaciation. Further exploration in the immediate area is not recommended.

A single sample in this area is anomalous in silver. There are silver-gold-copper showings in the area reported by BCMinfile.

Area 4 - Summit Creek

This area was chosen for exploration work in 1998 because of the reported occurrences of beryl and aluminosilicate minerals. The 1998 program uncovered elevated Be values and Tantulum/Columbite heavy mineral grains.1999 Follow-up work consisted of collection of geochemical samples as well as 2 stream and 5 till samples.

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

The till was mainly compact basal till, sandy and silty, with minor oxidation. The last glacial ice flow was from the NNW and ENE.

This area contains the only anomalous Be value from the multielement geochemistry. A value of 6.5, higher than that reported in the area during the 1998 program, was obtained. The central portion of the Summit Creek area is obviously anomalous in Be, but the low Cr values reported in this area suggest the formation of emerald is unlikely.

Area 5 - Nakusp

This area was chosen for reconnaissance for both commodities. Heavy mineral samples were collected to test for sapphire mineralization. Sapphire mineralization was most likely where the aluminum-saturated monzonite came into contact with metasediments. The NNW-striking strata in the northern portion of the area was considered favourable for emerald potential.

10 stream sediment and 31 glacially-derived sediment (including 26 till, 3 colluvium, 2 glaciofluvial) samples were collected from the area. Fissile basal till was common. Both silty-sandy till and gravelly-sandy till are well represented in this area, with colluvium developed locally. The till is generally light brown to brown.

The last glacial event flowed approximately NNW to SSE and N to S in the area. Only one single-grain sapphire grain anomaly was found. Follow-up for sapphire is not warranted.

This area contains seven samples anomalous in at least one element of the 24-elements analyzed for. On the eastern side, sample 98K-012B in 9 metals. This is not surprising since it is located in a very rich metalliferous belt, and surrounded by Cu-Au-Ag-Pb-Zn-Fe showings, as described by BCMinfile. Two samples in the northwestern part of the area are anomalous in V, Mn, Pb and Mo. This can be explained by the fact that they both lie down-ice and in the same strata as ultramafic bodies to the north (asbestos and talc reported by BCMinfile). Samples in the southern portion of this area are rich in Cd, Mo, Zn, Ag,, Bi and V. These samples reinforce the presence of molybdenite showings and Ag-Pb-Zn mineralization reported in the BCMinfile.

Area 6 - Lumby

This area was added to the program after submittal of the 1999 PAP proposal. It was chosen for reconnaissance for sapphire because of the many aluminosilicate occurrences reported in the area in BCMinfile.

12 heavy mineral samples were collected to test for sapphire mineralization. The samples were all stream samples, and the program was designed to test drainage basins on both sides of the Shuswap River Valley.

Hornblende-garnet+/-sillimanite was the major assemblage found.

No sapphires were discovered in this area. No anomalous values were returned by geochemical analysis.

BRITISH COLUMBIA
PROSPECTORS ASSISTANCE PROGRAM
PROSPECTING REPORT FORM (continued)

B. TECHNICAL REPORT

- One technical report to be completed for each project area.
- **Refer to Program Requirements/Regulations 15 to 17, page 6.**
- If work was performed on claims a copy of the applicable assessment report may be submitted in lieu of the supporting data (see section 16) required with this TECHNICAL REPORT.

Name MARK KOLEBABA Reference Number 99/2000 P84

LOCATION/COMMODITIES

Project Area (as listed in Part A) Boundary Creek MINFILE No. if applicable —

Location of Project Area NTS 82E Lat 49.2 N Long 118.5W

Description of Location and Access access by 4WD truck on logging roads.

Main Commodities Searched For Emerald, Sapphire

Known Mineral Occurrences in Project Area -see report attached-

WORK PERFORMED

1. Conventional Prospecting (area) yes
2. Geological Mapping (hectares/scale) No
3. Geochemical (type and no. of samples) 97 geochem/soil samples, 104 heavy mineral samples
4. Geophysical (type and line km) No
5. Physical Work (type and amount) No -sampling-
6. Drilling (no. holes, size, depth in m, total m) No
7. Other (specify)

SIGNIFICANT RESULTS

Commodities None. Claim Name —

Location (show on map) Lat. 49.22N Long 118.51W Elevation

Best assay/sample type 1 Sapphire grain, heavy mineral sample.

Description of mineralization, host rocks, anomalies See report - attached.

Supporting data must be submitted with this TECHNICAL REPORT

Information on this form is confidential for one year from the date of receipt subject to the provisions of the *Freedom of Information Act*.

BRITISH COLUMBIA
PROSPECTORS ASSISTANCE PROGRAM
PROSPECTING REPORT FORM (continued)

B. TECHNICAL REPORT

- One technical report to be completed for each project area.
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Name MARK KOLEBABA Reference Number 99/2000 P84

LOCATION/COMMODITIES

Project Area (as listed in Part A) Sheep Creek MINFILE No. if applicable —

Location of Project Area NTS 82 E/F Lat 49N Long 118W

Description of Location and Access access by 4WD truck on logging roads.

Main Commodities Searched For Emerald, Sapphire

Known Mineral Occurrences in Project Area - see report attached -

WORK PERFORMED

1. Conventional Prospecting (area) yes
2. Geological Mapping (hectares/scale) No
3. Geochemical (type and no. of samples) 97 geochem/soil samples, 104 heavy mineral samples
4. Geophysical (type and line km) No
5. Physical Work (type and amount) No - sampling -
6. Drilling (no. holes, size, depth in m, total m) No
7. Other (specify)

SIGNIFICANT RESULTS

Commodities None. Claim Name —

Location (show on map) Lat. 49.02N Long ~~118.00~~ 117.98W Elevation ~~0~~

Best assay/sample type six geochem soils high in Cr, Mg, Ni, Pb, Ti, or P
few sapphire grains picked from heavy mineral samples.

Description of mineralization, host rocks, anomalies See report - attached.

Supporting data must be submitted with this TECHNICAL REPORT

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BRITISH COLUMBIA
PROSPECTORS ASSISTANCE PROGRAM
PROSPECTING REPORT FORM (continued)

B. TECHNICAL REPORT

- One technical report to be completed for each project area.
- **Refer to Program Requirements/Regulations 15 to 17, page 6.**
- If work was performed on claims a copy of the applicable assessment report may be submitted in lieu of the supporting data (see section 16) required with this TECHNICAL REPORT.

Name MARK KOLEBABA Reference Number 99/2000 P84

LOCATION/COMMODITIES

Project Area (as listed in Part A) Arrow Lake MINFILE No. if applicable —

Location of Project Area NTS 82E Lat 49.6 N Long 118.1 W

Description of Location and Access access by 4WD truck on logging roads.

Main Commodities Searched For Emerald, Sapphire

Known Mineral Occurrences in Project Area – see report attached –

WORK PERFORMED

1. Conventional Prospecting (area) yes
2. Geological Mapping (hectares/scale) No
3. Geochemical (type and no. of samples) 97 geochem/soil samples, 104 heavy mineral samples
4. Geophysical (type and line km) No
5. Physical Work (type and amount) No – sampling –
6. Drilling (no. holes, size, depth in m, total m) No
7. Other (specify)

SIGNIFICANT RESULTS

Commodities None. Claim Name —

Location (show on map) Lat. 49.68 N Long 118.33 W Elevation

Best assay/sample type 1 high Ag value in geochem sampling.
2 single grain sapphire samples in heavy mineral sampling

Description of mineralization, host rocks, anomalies See report - attached.

Supporting data must be submitted with this TECHNICAL REPORT

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BRITISH COLUMBIA
PROSPECTORS ASSISTANCE PROGRAM
PROSPECTING REPORT FORM (continued)

B. TECHNICAL REPORT

- One technical report to be completed for each project area.
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Name MARK KOLEBABA Reference Number 99/2000 P84

LOCATION/COMMODITIES

Project Area (as listed in Part A) Summit Creek MINFILE No. if applicable —

Location of Project Area NTS 82F Lat 49.3N Long 116.8W

Description of Location and Access access by 4WD truck on logging roads.

Main Commodities Searched For Emerald, Sapphire

Known Mineral Occurrences in Project Area -see report attached-

WORK PERFORMED

1. Conventional Prospecting (area) yes
2. Geological Mapping (hectares/scale) No
3. Geochemical (type and no. of samples) 97 geochem/soil samples, 104 heavy mineral samples
4. Geophysical (type and line km) No
5. Physical Work (type and amount) No -sampling-
6. Drilling (no. holes, size, depth in m, total m) No
7. Other (specify)

SIGNIFICANT RESULTS

Commodities None. Claim Name —

Location (show on map) Lat. 49.35N Long 116.86W Elevation

Best assay/sample type No sapphires. High Be from multielement geochem.

Description of mineralization, host rocks, anomalies See report - attached.

Supporting data must be submitted with this TECHNICAL REPORT

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BRITISH COLUMBIA
PROSPECTORS ASSISTANCE PROGRAM
PROSPECTING REPORT FORM (continued)

B. TECHNICAL REPORT

- One technical report to be completed for each project area.
- **Refer to Program Requirements/Regulations 15 to 17, page 6.**
- If work was performed on claims a copy of the applicable assessment report may be submitted in lieu of the supporting data (see section 16) required with this TECHNICAL REPORT.

Name MARK KOLEBABA Reference Number 99/2000 P84

LOCATION/COMMODITIES

Project Area (as listed in Part A) Nakusp MINFILE No. if applicable —

Location of Project Area NTS 82K Lat 50.4N Long 117.7W

Description of Location and Access access by 4WD truck on logging roads.

Main Commodities Searched For Emerald, Sapphire

Known Mineral Occurrences in Project Area - see report attached -

WORK PERFORMED

1. Conventional Prospecting (area) yes
2. Geological Mapping (hectares/scale) No
3. Geochemical (type and no. of samples) 97 geochem/soil samples, 104 heavy mineral samples
4. Geophysical (type and line km) No
5. Physical Work (type and amount) No - sampling -
6. Drilling (no. holes, size, depth in m, total m) No
7. Other (specify)

SIGNIFICANT RESULTS

Commodities None. Claim Name —

Location (show on map) Lat see map report. Long Elevation

Best assay/sample type high V, Mn, Pb, Mo, Cd, Zn, Ag, Bi, or V in 7 geochem soil samples. 1 sapphire/corundum grain in heavy mineral samples.

Description of mineralization, host rocks, anomalies see report - attached.

Supporting data must be submitted with this TECHNICAL REPORT

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BRITISH COLUMBIA
PROSPECTORS ASSISTANCE PROGRAM
PROSPECTING REPORT FORM (continued)

B. TECHNICAL REPORT

- One technical report to be completed for each project area.
- **Refer to Program Requirements/Regulations 15 to 17, page 6.**
- If work was performed on claims a copy of the applicable assessment report may be submitted in lieu of the supporting data (see section 16) required with this TECHNICAL REPORT.

Name MARK KOLEBABA Reference Number 99/2000 84

LOCATION/COMMODITIES

Project Area (as listed in Part A) Lumby MINFILE No. if applicable —

Location of Project Area NTS 82L Lat 50.5N Long 118.6W

Description of Location and Access access by 4WD truck on logging roads.

Main Commodities Searched For Emerald, Sapphire

Known Mineral Occurrences in Project Area - see report attached -

WORK PERFORMED

1. Conventional Prospecting (area) yes
2. Geological Mapping (hectares/scale) No
3. Geochemical (type and no. of samples) 97 geochem/soil samples, 104 heavy mineral samples
4. Geophysical (type and line km) No
5. Physical Work (type and amount) No - sampling -
6. Drilling (no. holes, size, depth in m, total m) No
7. Other (specify)

SIGNIFICANT RESULTS

Commodities None. Claim Name —

Location (show on map) Lat. — Long — Elevation

Best assay/sample type None.

Description of mineralization, host rocks, anomalies see report - attached.

Supporting data must be submitted with this TECHNICAL REPORT

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APPENDIX 2

SAMPLE COLLECTION FIELD NOTES

Sample ID	TYPE	MISC/DESC	CLAY%	SILT%	SAND%	GRAVEL%	COMPACTION	TEXTURE/DESC	CLASTS/DESC	DEPTH (cm)	COLOUR	MOISTURE	SITE_DESC	NO. BAGS	SITE RATING	TILL TYPE	AREA
99K-170A	S	f-v cs gr sand	0	10	30	60	l	md stream flowing E (McFarlane?)	md to submd pebs	15	pink br		Composite sample from 3 sites on S bank	1	g	blanket	LOWER ARROW LK
99K-1017	S	cs sand	0	5	25	70		7m wide Cultus Ck, cs sand collected from between rocks				wet	under bridge and downstream	2			SUMMIT CK
99K-1016	T	sandy clayey till	20	15	50	15	m	sandy clayey till	2-20cm and, submd and subang pebs, pegmatite	30	lt br	damp	3m steep roadcut	2	m	blanket	SUMMIT CK
99K-1015	T	silty sandy till	10	25	50	15	m	nice vfg sandy till	2-25cm submd var lith and subang local phyllite pebs	30	lt br	dry	roadcut/slum on S side McGregor Mtn	2	g	blanket	SUMMIT CK
99K-1014	T	nice sandy till	10	15	65	10	t	possibly basal till, packed clay to gravel	2-30cm submd pebs of var lith	40	lt br	dry	flat roadcut by bridge	2	g	blanket	SUMMIT CK
99K-1013	S						l	mg sand to gravel, var lith; 6m wide stream, mod E.	md to submd frags and grains	20	var	wet	gravel bar near S edge of river, both sides	2	g		SUMMIT CK
99K-1012	T	powdery uniform till	25	10	50	15	l	fine sand with high clay component, velvety, light	2-4cm and 10-30cm subang to submd pebs	35	med br	dry	3m roadcut	2	m	blanket	SUMMIT CK
99K-1010	S	cs sand	0	0	20	80		5m wide river, med E, cs sand only	Lg grd and peg bldrs	20	var	wet	sample collected under bridge, Laib Ck	2	m		SUMMIT CK
99K-1009	T	nice till	5	15	50	20	l	f-cs gr sandy till, mica-rich	2-8cm submd to subang grd pebs	35	lt br	dry	stepp roadcut near river	2	g	blanket	SUMMIT CK
99K-1008	T	basal till	10	30	30	30	t	powdery till with bldrs, gravel and sand		100	grey br	dry	ditch	2	g		LOWER ARROW LK
99K-1007	GL	sand	0	0	80	20	l	sand with gravel, not sorted with deoth		100			excavation site	2			LOWER ARROW LK
99K-1006	S	coarse sandy gravel	0	0	50	50		coarse sandy gravel	2m wide stream			wet	sand pockets between boulders and cobbles	1			LOWER ARROW LK
99K-1005	S	coarse sand						coarse sand from fast flowing 3m wide stream	sand traps between bldrs		br	wet		1			LOWER ARROW LK
99K-1004	T	basal till	10	20	50	20	t	fissile sandy gravelly till		200	lt br	damp	roadcut	2	g		LOWER ARROW LK
99K-1003	GL	sand						sand with gravel, med sand	disturbed pile			dry		2	m		LOWER ARROW LK
99K-1002	C	till/colluvium	0	20	80	20	m	silty colluvium on top, sandy till below. Organics		150	grey br	damp	1m roadcut	2			LOWER ARROW LK
99K-1001	T	sandy gravelly till	0	5	60	35	m	sandy gravelly till with angular clasts		150	grey br	dry	roadcut on W slope	2	g		LOWER ARROW LK
99K-1000	T	sandy cobbly till	5	10	55	30	m	sandy cobbly till with angular clasts		200	grey	damp	flat roadcut	2	g		LOWER ARROW LK
99K-0252	S	scarce sand	0	0	10	90	l	dry creek bed	10-50cm md bldrs and cobbles	5		dry	Freddy Ck - road washed out	1	g		SHEEP CK
99K-0251	S	sand and gravel	0	0	10	90		3m wide slow moving river (Sheep Ck)		10		wet	between rocks	2			SHEEP CK
99K-0250	T	till	20	20	40	20	l	syenite-weathering till, sandy clayey silty till	rock frags syenite subang to ang	20	lt br yellow	dry	steep roadcut on N slope of mtn	1	g	blanket	SHEEP CK
99K-0250	T	sandy till	0	0	70	30	l	washed sandy till, poor range of gr sizes	2-20cm ang to submd grd pebs	40	blond	dry	3m steep roadcut	2	g	blanket	NAKUSP
99K-0249	T	nice till	20	30	40	10		nice till with local syenite component		20	lt br red	dry	W-facing roadcut	1	g	blanket	SHEEP CK
99K-0247	T	nice till	20	20	50	10		possible basal till with cs gr till clasts	2-15cm subang to submd var lith pebs	35	med br	dry	W-facing steep roadcut	2	g	blanket	SHEEP CK
99K-0246	T	nice till	30	20	40	10	t	basal till, layered and compact, clay-rich with grit	2-10cm submd to subang pebs		lt br grey	wet	N-facing roadcut	2	g	blanket	SHEEP CK
99K-0245	S	stream	0	10	25	65	l	10m wide Sheep Ck, between rocks		10		wet	S of bridge on E bank	2	g		SHEEP CK
99K-0240	T	nice till	25	25	30	20	l	clayey silty sandy till	1-5cm equant and elongate subang pebs	35	med br	dry	steep W-facing roadcut	2	g	blanket	SHEEP CK
99K-0230	T	nice till	20	30	30	20		till	2-10cm subang to submd mostly bslt pebs	30	lt br	dry	5m roadcut	2	g	blanket	SHEEP CK
99K-0220	T	silty clayey sandy till	30	30	25	15		silty clayey sandy till; nice till	equant 2-15cm subang clasts	35	lt br	dry	roadcut on WSW slope	2	g	blanket	SHEEP CK
99K-0210	T	sandy till	20	15	45	20	m	sandy till with clay, good till	subang equant pebs, mostly grd and bslt	30	lt br	dry	3m roadcut on W slope	2	m	blanket	SHEEP CK
99K-0200	T	sandy till	0	10	60	30	m	v sandy poorly mixed (washed?) till	2-20cm submd to subang grd frags	35	med br	damp	steep 10m roadcut	2	g	blanket	NAKUSP
99K-0190	T	basal sandy till	5	25	45	25	t	hardpacked till, sandy silty	1-30cm submd to md cobbles, var lith	30	br grey	dry	roadcut on steep E-facing slope	1	g	blanket	LOWER ARROW LK
99K-0180	T	sandy gravelly basal till	10	20	45	25	m	till with clumps of partially consolidated till	subang to md frags of var lith	40	grey br	damp	roadcut on SW slope	1	g	blanket	LOWER ARROW LK
99K-0170B	S	f m and cs gr sand	0	10	70	20	l	8m wide m-fast flowing river			lt br pink	wet	collected from eddy after bridge	1	g		LOWER ARROW LK
99K-0160B	S	stream	0	0	30	70	l	high Estream flowing N, 10deg slope, 3-4m wide, perennial	md clast, var lith, var size			wet	stream bottom in eddy, at 2 culverts above road	1	g		LOWER ARROW LK
99K-0160A	S	stream	0	5	90	5	l	high E s-flowing perennial stream, 10m wide, 1m deep centre	m-cs gr pink/br sand		pink/br	wet	n of bridge on sandy beach in water	1			LOWER ARROW LK
99K-0150B	S	stream	0	5	80	15	l	meandering stream flowing S, sample taken at bend, 1ft deep, modrat	4m wide		lt-med br/grey	wet	trapsite near bank, sand bar developing	1			LOWER ARROW LK
99K-0150A	S							quiet meandering stream in valley	cs gr sand and pebbles		pink		quiet meandering stream	1			BOUNDARY CK
99K-0140	T	possibly colluvium	5	25	55	15	m	sandy with velvety silt texture	grd frags and pebs submd		med - dk br	damp	1m roadcut	2	g	veneer	BOUNDARY CK
99K-0130	T	sandy clayey till	20	10	55	15	m	sand is f-m gr		45	med br grey	damp	base of 3m roadcut, flat valley	2	g	blanket	BOUNDARY CK
99K-0120	T	v cs gr till	5	10	55	30	l	locally derived? Sand, f to cs gr		30	deep red br	damp	base of steep 10m roadcut	2			BOUNDARY CK
99K-0110B	S		0	5	15	80		high E stream 2m wide, 15deg slope			br		trapsite at edge of stream before cluvert	1			BOUNDARY CK
99K-0110A	S							high E, 2m wide stream on steep grade(20deg)			pink/buff	wet	trapsite close to bank between bldrs	1			BOUNDARY CK
99K-0100	T	sandy, nice till	5	15	60	20	m	oxidized,nice till	20% frags/pebs 1-5cm subang (rotten schist) to submd	30	dk red br	damp	roadcut	2	g	veneer	BOUNDARY CK
99K-0090	T	silty sand or glaciofluvial	0	70	25	5	l	uniform except for 50-100cm pockets of cs gr sand, oxidized		35	red br	damp	level cadcut	1			BOUNDARY CK
99K-0080	T	silty till w/ sand and clay	15	60	20	5	m	more sandy w/ depth, exposed pebbles on top	grd, white/buff md to subang pebs, <2-5cm	35	med br grey	damp	roadcut on mod slope	2	g	blanket	BOUNDARY CK
99K-0070	GL	maybe sandy till	5	5	80	10	m	v sandy (f-cs gr) glaciofluvial or till. Very homogeneous		30	med red br	damp	roadcut 1m above rd	2	m	blanket	BOUNDARY CK
99K-0060	T	sandy, nice till	5	15	55	25	m	at contact between R1 and R3 samples		40	med red br	damp	slope above roadcut, above o/c	2	g	veneer	BOUNDARY CK
99K-0050	T	silty sandy till	15	40	35	10	l	red-grey below 5cm	oxidized submd t md pebbles	40	med red br	damp	roadcut	2	g	blanket	BOUNDARY CK
99K-0040	T	sandy till with clay	10	15	50	25	m	pnk rocks on slope common	gneissic/granitic md pebbles, .5-15cm	30	med-dk br	damp	10m roadcut, valley bottom	2	m	blanket	BOUNDARY CK
99K-0030	T	sandy clayey till	15	10	55	20	m	well mixed, possibly till with earlier esker component	lg and sm md gneissic bldrs and cobbles	35	med br	damp	roadcut	2	g	blanket	BOUNDARY CK
99K-0020	T	till and colluvium	5	40	25	30	m	silty coluuvium with till component	5-25cm ang and md frags abundant, grd	30	med br	damp	10m roadcut, valley bottom	2	m	veneer	BOUNDARY CK
99K-0010	S	stream	5	5	40	50	l	sandy gravelly	more pebbles on surface		br pink	wet	7m wide stream,fast, flowing E, sand bar 3m below 60cm water fe	2			BOUNDARY CK
99G-1032	GT	sandy silty till	10	20	40	30	m	sandy silty till, f-mg sand, oxidized		15	red br	dry	roadcut on mod slope	1	g	blanket	LOWER ARROW LK
99G-1031	GGL	sandy till or glaciofluvial	0	10	30	60	t	pebs in v sandy matrix (f-mg sand)	1-5cm submd and md gravel and pebs	15	grey br	damp	flat roadcut in valley	1	m	blanket	LOWER ARROW LK
99G-1030	GT	sandy silty till	10	20	40	30		sandy silty till, oxidized	1-5cm submd to subang frags	25	red br - grey br	damp	2m roadcut on slope	1	g	blanket	LOWER ARROW LK
99G-1029	GT	till/glaciofluvial	0	5	80	15	m	v sandy, m-cs gr granitic composition	submd to subang cs gr grd pebs and cobbles	30	lt br beige	dry	steep roadcut on valley edge	1	m	blanket	LOWER ARROW LK
99G-1028	GT	till/glaciofluvial	5	10	55	30	m	v cs sandy material	1-15cm submd to md pebs		med br	dry	roadcut	1	m	blanket	LOWER ARROW LK
99G-1027	GT	silty till	20	40	20	20	l	silty till with some soil development	1-5cm submd pebs	20	lt br beige	dry	1m roadcut on edge of valley	1	g	blanket	LOWER ARROW LK
99G-1026	GT	silty till	5	50	35	10	l	oxidized silty till, powdery blanket till with some soil development	minor submd frags	20	red br - grey br	dry	1m roadcut on hill	1	m	blanket	LOWER ARROW LK
99G-1025B	GT	glaciofluvial	0	10	80	10		sandy glaciofluvial on top of till, oxidized	1-10cm md pebs	15	red br - grey br	dry	2m roadcut	1	g	blanket	LOWER ARROW LK
99G-1025A	GT	silty sandy basal till	10	30	40	20	m	silty sandy basal till with till clumps, overlain by sandy (glaciofluvial?)		30	med grey br	dry	2m roadcut	1	g	blanket	LOWER ARROW LK
99G-1024	GT	sandy pebbly till	5	20	60	15	m	sandy pebbly till with fg - cs sand	1-20cm (avg 3cm) submd to subang pebs	30	br red grey	dry	roadcut in valley	1	g	blanket	LOWER ARROW LK
99G-1023	GT	till/glaciofluvial	0	10	40	50	t	sandy pebbly till	1-50cm (avg 3cm) submd to md pebs	20	red br - grey br	dry	lg valley bottom	1	m	blanket	LOWER ARROW LK
99G-1022	GT	silty sandy till	20	30	40	10		silty sandy oxidized till	1-5cm submd grd frags and pebs	25	deep red br	dry	flat roadcut in valley	1	g	blanket	LOWER ARROW LK
99G-1021	GT	silty till	10	45	30	15	m	silty till	ang to submd pebs of var lith (grd - mafic grd)	35	red br - grey br	dry	1m roadcut on w-dipping slope	1	g	blanket	LOWER ARROW LK
99G-1020	GT	sandy till	5	20	55	20	m	sandy till with f-mg sand	1-5cm submd to subang pebs	30	med dk br	dry	1m roadcut on w-dipping slope	1	g	blanket	LOWER ARROW LK
99G-1019	GT	silty till	5	35	20	40	l	as 99G-1018, but fg silt matrix and more subang pebs		20	red br - grey br	dry	1m roadcut on w-dipping slope	1	g	blanket	LOWER ARROW LK
99G-1018	GT	silty till	5	50	30	15	l	silty till with f-mg sand, oxidized	1-5cm md to submd pebs	30	red br - grey br	dry	2m roadcut	1	g	blanket	LOWER ARROW LK
99G-1017	GT	v sandy till, basal?	20	5	50	25	m	oxidized silty surface 20cm with grey/red/br cs gr sandy/gravelly till with	1-5cm subang to submd pebs	30	deep red br	dry	1m roadcut on w-dipping slope	1			LOWER ARROW LK
99G-1016	GT	till/glaciofluvial	0	5	80	15		v sandy (f-cs gr), oxidized	2-30cm mostly grd, submd to md pebs	20	deep red br	dry	e side of valley	1	m	blanket	LOWER ARROW LK
99G-1015	GT	sandy till	5	25	60	10		gritty f-mg sandy till, oxidized	1-3cm md to submd minor pebs	30	red br - grey br	dry	flat, 10m from road	1	m		LOWER ARROW LK
99G-1014	GT	sandy till	0	20	60	20	m	f-cs gr sand, sandy till	1-5cm submd to md grd pebs	20	medbr	dry	flat roadcut on valley bottom	1		blanket	LOWER ARROW LK
99G-1013	GT	silty till/colluvium	5	45	35	15		well mixed till/colluvium, oxidized	1-10cm subanf to submd grd pebs		br red		3m roadcut	1	g	blanket	LOWER ARROW LK
99G-1012	GT	silty sand y till	5	40	35	20	m	nice till with well mixed gr sizes	1-5cm subang to sumd frags	30	rich red br	dry	flat, 2m form road	1	g	blanket	LOWER ARROW LK

APPENDIX 2

SAMPLE COLLECTION FIELD NOTES

Sample ID	TYPE	MISC/DESC	CLAY%	SILT%	SAND%	GRAVEL%	COMPACTION	TEXTURE/DESC	CLASTS/DESC	DEPTH (cm)	COLOUR	MOISTURE	SITE_DESC	NO. BAGS	SITE RATING	TILL TYPE	AREA
99G-1011	GT	v sandy till	0	10	80	10		well mixed fg to cs sand	1-3cm rnd grd pebs	30	med br	damp	flat roadcut	1	g	blanket	LOWER ARROW LK
99G-1010	GT	silty sandy till	0	50	30	20		less oxidized below 20cm, becomes stiony below 20cm	v rnd 1-3cm pebs	35	red br - grey br	dry	flat roadcut	1	g	blanket	LOWER ARROW LK
99G-1009A	T	silty till	10	30	40	20	l	locall-derived(grd)	1-5cm ang frags local grd and 5-20cm rnd fpebs	31	pale pink/buff	dry	valley bottom	2		blanket	LOWER ARROW LK
99G-1009	GT	nice till	5	15	50	20	l	f-cs gr sandy till, mica-rich	2-8cm submd to subang grd pebs	35	lt br	dry	stepp roadcut near river	2	g	blanket	SUMMIT CK
99G-1008	GT	silty till/glaciofluvial	5	45	35	15	m	fine grained, homogeneous, oxidized	1-15cm pebbles, submd			damp	logged area in valley bottom	1	g	blanket	LOWER ARROW LK
99G-1007	GT	till/glaciofluvial	10	35	40	15	m	oxidized sandy/silty till or glaciofluvial	1-30cm pebbles rnd to submd	30	med - dk red br	dry	flat, valley bottom	1	g	blanket	LOWER ARROW LK
99G-1006	GT	sandy basal till	10	20	50	20	m	fissile basal till but cs gr (gard-derived)	subang to rnd 1-10cm cobbles		lt beige/pink	wet	roadcut on edge of mtn	1	g	veneer	LOWER ARROW LK
99G-0248	GT		10	20	50	20	l	syenite weathering till with pea-sized grd pebs	ang to subang grd pebs	10	lt br - yellw grey	dry	S-facing steep roadcut		g	blanket	SHEEP CK
99G-0090	GT	silty sand or glaciofluvial	0	70	25	5	l	uniform except for 50-100cm pockets of cs gr sand, oxidized		35	red br	damp	level oadcut	1			BOUNDARY CK
99G-0082	GL	mainly silt	0	80	10	10	m	oxidized, homogeneous	minor rnd frags 1-2cm	25	red br	wet	roadcut, slight slope S	1	m	blanket	BOUNDARY CK
99G-0081	GT	sandy silty till					m			20	red br	wet	flat roadcut	1	m	blanket	BOUNDARY CK
98K-1021	S		0	0	100	0	m	sandy beach at confluence of 2 streams	f-mg sand		dk grey	wet	boat launch, Hwy6	2	m		LUMBY
98K-1020	S		0	0	5	95	l	5m wide river, high E. Sand sampled	lg boulders 25cm-3m with minor sand	10	grey	wet	below road and lg culvert	2	g		LUMBY
98K-1019	S	Cherry Ck	0	10	80	10		sandy shore, mg dk grey sand	10m wide stream, deep in centre		dk grey	wet		2	m		LUMBY
98K-1018	S		0	10	30	60	l	5m wide stream, mod-high E with sandy shore, cobbles throughtout	mafic gneiss and some basalt	10	dk grey	wet	trap between rocks	2	m		LUMBY
98K-1017	S		10	35	50	5		f-mg sand on bank of 10m wide S-flowing river	uniform material	20		wet		2	p		LUMBY
98K-1016	S	2 creeks	0	0	15	85	m	1m wide Cks in 3m cobble-lined bed, med-low E, sampled 2 creeks	few fines	20		wet		2	m		LUMBY
98K-1015	S		0	10	60	30	l	5m wide stream belowRainbow falls, med/high E, stream flows W	dominated by grd grains			wet	sand/gravel bar	2	m		LUMBY
98K-1014	S		0	40	60	0	l	cs sand bar in silty river, low E	mainly grd	10	var	dry	inside corner of bend, slow moving river	1	p		LUMBY
98K-1013	S		0	0	20	80		5m wide bldry river , mod E, flowing W	cs sand	10		damp	west side of bridge, Star Ck	2			LUMBY
98K-1012	S		0	0	20	80		2m widebraided strm sampled at very edge, dry river bed	pebbly bank in flat valley	10		wet	med to low E	2	m		LUMBY
98K-1011	S		0	2	28	70	l	2m wide with 5m wide bldr bed	bldrs 10cm-2m, md, mainly grd, white			damp	from dry bed, 4 pockets between rocks	2	g		LUMBY
98K-1010	S		0	10	15	75	m	30m wide, med to fast flowing	washed out bridge	20	var	damp	dry gravel bed inside bank of bend in river	2	g		LUMBY
98K-0040B	T	sandy till	10	15	35	35	m	irreg clay pods in sandy till. Clay abund below 30cm	2-30cm submd to subang pebs	35	med br, grey clay	dry	steep 5m roadcut	2	g	blanket	NAKUSP
98K-0040A	T	sandy till	0	5	60	35		v sandy till, m-cs gr, oxidized patches	2-40cm (avg 5-10cm) subang to submd grd frags	40	red br	dry	1m flat roadcut	2	g	blanket	NAKUSP
98K-0028B	T	sandy till	0	0	50	50	m	cs sandy till	5-30cm mainly grd md to subang cobbles and bldrs	40	lt br	dry	2m steep roadcut	2	g	blanket	NAKUSP
98K-0028A	T	v sandy till	0	5	55	40	m	cobbly sandy till, mostly mg sand, grd source	90% submd grd cobbles, 10% black metaseds	40	lt br	dry	base of roadcut	2	g	blanket	NAKUSP
98K-0027C	S	stream	0	5	60	35	l	high E fast S-flowing river, hvy-min rich	mostly grd pebs/cobbles	15	grey	wet	gravel and sand bar on N side, bridge	1	g		NAKUSP
98K-0027B	T	silty sandy till	10	30	35	25	m	silty sandy till with good range of gr sizes	2-20cm v rnd to saubang pebs and cobbles	40	lt br	dry	1m steep roadcut	2	g	blanket	NAKUSP
98K-0027A	S	stream	0	20	60	20	l	fg to cs gr sand, partially oxidized, organics common		10	grey br	wet	N edge of W-flowing Payne R	1	g		NAKUSP
98K-0026B	T	basal till	5	10	60	20	t	silty sandy compact basal till, oxidized br above 20cm	1-15cm rnd subang frags	40	wht/br	dry	roadcut	2	g	blanket	NAKUSP
98K-0026A	T	nice silty till	10	60	20	10	t	nice silty till with minor sand on surface (sand incl.)	2-15cm submd to subang pebs		grey		2m up 10m roadcut, slope	2	g	blanket	NAKUSP
98K-0025C	S	stream	0	0	85	15		mostly sand, some gravel, from high E W-flowing river, flooded		20	grey and pink	wet	at bridge, Kuskanax R	1	g		NAKUSP
98K-0025B	T	till/colluvium	0	15	35	40	m	gravelly sandy till with colluvium;slumped	1-10cm dk grey ang metased pebs and submd var lith	35	med br	dry	slump at base of 15m steep slope	2	m	blanket	NAKUSP
98K-0025A	S	stream	0	5	55	40	l	gravel and sand		10	grey	wet	Carpenter Ck, E of bridge; sand bars	1	g		NAKUSP
98K-0024B	S	stream	0	30	70	0	l	well sorted beach sand, high E 10m wide river flowing W	high water		grey	wet	Wilson Ck, 10m E of bridge	1	g		NAKUSP
98K-0024A	C	till/colluvium	5	15	70	10	l	sandy till/colluvium	5-30cm submd to md cobbles and pebs	35	med br	dry	3m roadcut	2	g	blanket	NAKUSP
98K-0023B	C	sandy colluvium	5	25	45	25	l	fine to cs gr sandy colluvium with some till						1			NAKUSP
98K-0023A	S	stream	0	10	60	30	l	good mix of fine sand to gravel, med-high E stream			grey	wet	edge of 3m wide stream under bridge	1			NAKUSP
98K-0022B	GL	glaciofluvial sandy	10	20	60	10	m	cobbles in f-cs gr sand matrix	10-30cm rnd to submd cobbles	35	lt br	dry	1m flat roadcut	2	g	blanket	NAKUSP
98K-0022A	T	till/glaciofluvial	0	5	75	20	m	till-like but mostly sand	2-10cm submd to subang pebs	35	br	damp		1	g	blanket	NAKUSP
98K-0021B	C	limestone-derivative	35	25	20	20		till/colluvium on top of white weathered lime layer	gritty but clay-rich	40	buff and br	damp	steep roadcut	2	g	blanket	NAKUSP
98K-0021A	T	rocky till	10	25	45	20	m	rocky bldry sandy till	5-15cm submd to subang frags	40	med br	dry	1m roadcut, not steep	2	m	blanket	NAKUSP
98K-0020B	T	basal till	5	20	65	10	t	sandy silty packed basal till with fg sand	1-5cm submd to md pebs	40	grey br	damp	1m roadcut	2	g	blanket	NAKUSP
98K-0020A	S	stream	0	0	60	40		3m wide high E w-flowing stream	submd cobbles and bldrs		dk grey	wet	sand bar on S side	1	g		NAKUSP
98K-0019C	T	basal till	80	5	10	5	t	tight packed fissile basal clay till, sandy layer on top	2-5cm rnd pebs	40	grey	dry	1m roadcut	2	g	blanket	NAKUSP
98K-0019B	S	stream	0	15	50	35	m	1m wide stream, organics and fg sand mixed with cs gr sand and grav	2-20cm submd pebs		dk grey br	wet	sand bar in centre	1	g		NAKUSP
98K-0019A	S	stream	0	10	85	5	l	20m wide high E river at mouth of Arrow Lk	biotite and quartz abundant			wet	trap site in shallows under bridge	1	m		NAKUSP
98K-0018B	T	till/glaciofluvial	0	5	45	40	m	sandy till with washed sand below 30cm	2-30cm submd to subang pebs	40	blond br	dry	2m roadcut on E slope	2	m	blanket	NAKUSP
98K-0018A	T	silty till/glaciofluvial	30	35	25	10		poor silty till with glaciofluvial silt on top	5-25cm v rnd pebs and cobbles	30	lt - med br	dry	1m roadcut	2	m	blanket	NAKUSP
98K-0017B	T	sandy silty till	10	30	50	20	t	sandy silty till, nice	2-10cm rnd to submd pebs, incl phyllite	30	grey br	dry	roadcut	2	g	blanket	NAKUSP
98K-0017A	T	nice silty sandy till	25	30	30	15		nice silty sandy till	2-10cm rnd to submd pebs	25	med grey br	wet	steep roadcut, NW slope	2	g	blanket	NAKUSP
98K-0016B	T	silty till	5	30	10	55	t	rocky silty till	1-25cm rnd and submd pebs and cobbles	40	dk br	damp	1m up on 10m roadcut	2	g	blanket	NAKUSP
98K-0016A	T	silty till	15	20	15	50		rocky silty till	1-15cm submd to ang grd and metaseds frags	30	med br	dry	2m roadcut	2	m		NAKUSP
98K-0015C	S	stream	5	35	50	10	m	silt and sand (probably tights)	3m stream, high water, mod flow N	20	grey	wet	inside bend, good trap site not found	1	p		NAKUSP
98K-0015B	T	silty clayey till	25	45	20	10	t	fissile (basal) till, nice till	1-10cm submd to ang pebs		br grey	damp	2m roadcut	2	g	blanket	NAKUSP
98K-0015A	S	stream						stream 15-20m wide, silt-laden, very fast flowing runoff	lots of phyllite chips, old mining upstream		dk grey green	wet	river flowwing at 70deg az	1	g		NAKUSP
98K-0014B	T	silty till	5	70	20	5		silty till with fg sand	1-10cm submd to subang pebs	25	med red br	dry	roadcut on hill	2	g	blanket	NAKUSP
98K-0014A	T	silty till	15	45	25	15	m	silty till, oxidized	ang and submd frags	25	dk red br	wet	roadcut on steep N-facing slope	2	m	blanket	NAKUSP
98K-0013B	GL	glaciofluvial	0	5	85	10	m	sand	3-20cm ang metased frags, and var lith pebs	20	br	damp	beside heli-ski lodge	2	m	blanket	NAKUSP
98K-0013A	T	silty till	25	60	10	5	m	silty till with minor 5cm clay pods. Till more gritty with depth		40	dull grey br	damp	logging roadcut	2	g	blanket	NAKUSP
98K-0012B	T	nice till/colluvium	50	30	10	10	m	nice till with colluvium development	1-5cm submd grd frags rare, 5-15cm ang grey metseds	10	br	damp	roadcut on steep E-facing slope	2	m	blanket	NAKUSP
98K-0012A	T		50	20	25	5	m	clayey sandy till, transported	1-15cm rnd grd and ang local grey metased frags		med br	wet	transported till (dumped by truck from 1-2km up road)	2	p	blanket	NAKUSP

Appendix 3

SAPPHIRE/CORUNDUM GRAIN PICKING RESULTS*

SAMPLE	SAPPHIRE
98K-0012A	0
98K-0012B	0
98K-0013A	0
98K-0013B	0
98K-0014A	0
98K-0014B	0
98K-0015A	0
98K-0015B	0
98K-0015C	0
98K-0016A	0
98K-0016B	0
98K-0017A	0
98K-0017B	0
98K-0018A	0
98K-0018B	0
98K-0019A	0
98K-0019B	0
98K-0019C	0
98K-0020A	0
98K-0020B	0
98K-0021A	0
98K-0021B	0
98K-0022A	0
98K-0022B	0
98K-0023A	0
98K-0023B	0
98K-0024A	1
98K-0024B	0
98K-0025A	1
98K-0025B	0
98K-0025C	0
98K-0026A	0
98K-0026B	0
98K-0027A	0
98K-0027B	0
98K-0027C	0
98K-0028A	0
98K-0028B	0
98K-0040A	0
98K-0040B	0
98K-1010	0
98K-1011	0
98K-1012	0
98K-1013	0

SAMPLE	SAPPHIRE
98K-1014	0
98K-1015	0
98K-1016	0
98K-1017	0
98K-1018	0
98K-1019	0
98K-1020	0
98K-1021	0
99K-0010	0
99K-0020	0
99K-0030	0
99K-0040	1
99K-0050	0
99K-0060	0
99K-0070	0
99K-0080	0
99K-0090	0
99K-0100	0
99K-0110A	0
99K-0110B	0
99K-0120	0
99K-0130	0
99K-0140	0
99K-0150A	0
99K-0150B	0
99K-0160A	0
99K-0160B	0
99K-0170A	0
99K-0170B	0
99K-0180	0
99K-0190	0
99K-0200	0
99K-0210	1
99K-0220	2
99K-0230	0
99K-0240	1
99K-0245	0
99K-0246	1
99K-0247	0
99K-0249	0
99K-0250	0
99K-0251	1
99K-0252	0
99K-1000	2

SAMPLE	SAPPHIRE
99K-1001	0
99K-1002	1
99K-1003	0
99K-1004	0
99K-1005	0
99K-1006	1
99K-1007	0
99K-1008	0
99K-1009	0
99K-1010	0
99K-1012	0
99K-1013	0
99K-1014	0
99K-1015	0
99K-1016	0
99K-1017	0

*all grains were identified by visual inspection (ie; not SEM-checked or probed)

APPENDIX 4

ANALYTICAL RESULTS

Chemex Labs Ltd.

Analytical Chemists * Geochemists * Registered Assayers
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British Columbia, Canada V7J 2C1
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WEST VANCOUVER, BC
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Comments: ATTN: M. KOLEBABA

Page Number :1-A
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Certificate Date: 27-JAN-00
Invoice No. :I0010826
P.O. Number :1009
Account :QXQ

CERTIFICATE OF ANALYSIS A0010826

SAMPLE	PREP CODE		Ag ppm AAS	Al % (ICP)	Ba ppm (ICP)	Be ppm (ICP)	Bi ppm (ICP)	Ca % (ICP)	Cd ppm (ICP)	Co ppm (ICP)	Cr ppm (ICP)	Cu ppm (ICP)	Fe % (ICP)	K % (ICP)	Mg % (ICP)	Mn ppm (ICP)
98K-0012A	201	202	0.4	6.12	520	1.5	< 2	0.35	< 0.5	35	67	60	5.68	1.27	0.57	1320
98K-0012B	201	202	0.2	7.51	1760	1.5	< 2	0.62	< 0.5	68	305	128	8.35	1.25	3.03	1885
98K-0013A	201	202	< 0.2	7.23	780	2.0	< 2	0.27	< 0.5	24	103	56	4.60	1.99	1.03	665
98K-0013B	201	202	< 0.2	6.22	520	1.5	< 2	0.11	< 0.5	17	60	37	4.52	1.78	0.64	350
98K-0014A	201	202	0.8	8.01	690	2.0	< 2	0.68	< 0.5	32	85	91	5.92	1.82	0.76	630
98K-0014B	201	202	0.2	9.16	880	2.0	< 2	0.24	< 0.5	23	101	44	4.58	2.30	0.95	640
98K-0015B	201	202	0.2	9.20	990	2.5	< 2	0.21	< 0.5	23	121	47	4.98	2.70	1.21	640
98K-0016A	201	202	0.2	7.01	970	1.5	< 2	0.29	< 0.5	19	97	52	3.98	2.28	0.76	1240
98K-0016B	201	202	0.2	6.03	890	1.5	< 2	0.78	< 0.5	23	124	50	4.32	1.48	1.11	840
98K-0017A	201	202	< 0.2	4.85	340	0.5	< 2	2.03	< 0.5	38	135	94	5.21	0.96	2.21	1870
98K-0017B	201	202	< 0.2	6.58	780	1.5	< 2	1.04	< 0.5	28	159	77	5.04	1.42	2.06	1065
98K-0018A	201	202	< 0.2	5.84	690	1.5	< 2	1.48	< 0.5	12	74	17	2.88	1.23	1.07	540
98K-0018B	201	202	< 0.2	7.83	1000	2.5	< 2	1.43	< 0.5	10	50	12	2.33	2.42	0.64	480
98K-0019C	201	202	< 0.2	8.54	800	2.0	< 2	2.46	< 0.5	18	87	19	3.81	2.21	1.59	700
98K-0020B	201	202	< 0.2	6.09	960	1.5	< 2	1.17	< 0.5	8	31	6	1.78	2.46	0.44	430
98K-0021A	201	202	< 0.2	7.72	900	2.5	< 2	0.63	< 0.5	11	41	16	2.32	2.54	0.58	295
98K-0021B	201	202	0.2	3.38	510	0.5	2	21.1	4.5	13	43	98	2.00	0.93	0.59	1295
98K-0022A	201	202	< 0.2	8.01	1470	2.5	< 2	0.93	< 0.5	10	35	14	2.41	3.13	0.53	440
98K-0022B	201	202	1.6	7.98	1220	3.5	< 2	0.90	< 0.5	13	50	12	2.87	2.25	0.61	640
98K-0023B	201	202	0.2	6.99	1020	1.0	< 2	1.83	3.5	24	122	95	4.43	2.07	1.54	750
98K-0024A	201	202	0.2	5.86	920	1.5	< 2	1.09	0.5	12	75	45	2.78	1.83	1.02	585
98K-0025B	201	202	0.2	7.11	900	2.0	< 2	1.22	0.5	18	69	46	3.37	1.86	1.04	725
98K-0026A	201	202	< 0.2	7.15	1040	2.0	< 2	2.76	< 0.5	10	42	15	2.13	2.42	0.72	495
98K-0026B	201	202	< 0.2	8.18	870	1.5	< 2	2.52	< 0.5	20	170	61	3.12	1.91	1.99	620
98K-0027B	201	202	< 0.2	8.43	760	2.0	< 2	2.32	< 0.5	24	194	63	3.81	2.04	2.66	800
98K-0028A	201	202	< 0.2	8.41	1160	2.5	< 2	1.04	< 0.5	7	26	3	1.86	3.02	0.47	375
98K-0028B	201	202	< 0.2	8.24	1130	2.0	< 2	2.61	< 0.5	18	130	23	3.33	2.71	1.88	660
98K-0040A	201	202	< 0.2	8.48	1220	3.0	< 2	1.78	< 0.5	11	51	7	2.61	3.10	0.92	635
98K-0040B	201	202	< 0.2	8.74	1280	2.5	< 2	2.55	< 0.5	15	74	19	2.67	3.09	1.45	560
99G-0081	201	202	< 0.2	8.21	1080	3.5	< 2	1.34	< 0.5	9	57	9	2.94	3.76	0.75	465
99G-0082	201	202	< 0.2	8.46	1070	3.5	< 2	1.07	< 0.5	8	43	7	2.99	3.69	0.51	430
99G-0090	201	202	< 0.2	8.46	1060	3.5	< 2	0.94	< 0.5	9	50	9	2.95	3.55	0.57	395
99G-0248	201	202	< 0.2	7.53	850	5.5	< 2	2.84	< 0.5	19	74	19	5.33	2.30	1.93	1160
99G-0250	201	202	0.2	8.01	1020	4.5	< 2	1.48	< 0.5	12	60	29	3.25	2.90	0.91	665
99G-1006	201	202	< 0.2	8.51	1150	4.5	< 2	0.74	< 0.5	7	23	8	2.58	3.78	0.41	595
99G-1007	201	202	< 0.2	8.79	800	2.5	< 2	1.21	< 0.5	10	40	20	3.29	2.14	0.63	595
99G-1008	201	202	0.2	9.41	700	2.0	< 2	1.24	< 0.5	9	20	17	2.48	1.61	0.48	720
99G-1009	201	202	0.4	7.45	560	5.5	< 2	1.34	< 0.5	11	44	18	2.50	1.95	1.24	635
99G-1010	201	202	< 0.2	7.94	1320	2.5	< 2	0.94	< 0.5	5	24	5	1.77	3.08	0.36	265
99G-1011	201	202	0.2	7.46	1250	2.0	< 2	1.15	< 0.5	5	23	3	1.74	2.83	0.36	315

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Project :
Comments: ATTN: M. KOLEBABA

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Certificate Date: 27-JAN-00
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P.O. Number :1009
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CERTIFICATE OF ANALYSIS A0010826

SAMPLE	PREP CODE		Mo ppm (ICP)	Na % (ICP)	Ni ppm (ICP)	P ppm (ICP)	Pb ppm AAS	Sr ppm (ICP)	Ti % (ICP)	V ppm (ICP)	W ppm (ICP)	Zn ppm (ICP)				
98K-0012A	201	202	< 1	0.73	50	1070	60	95	0.15	78	< 10	132				
98K-0012B	201	202	3	1.15	250	2610	16	59	0.61	202	< 10	188				
98K-0013A	201	202	< 1	0.88	67	960	42	77	0.32	100	< 10	108				
98K-0013B	201	202	< 1	0.87	33	1130	68	50	0.25	62	< 10	96				
98K-0014A	201	202	1	0.98	57	910	52	132	0.22	86	< 10	112				
98K-0014B	201	202	< 1	1.04	55	770	30	107	0.26	107	< 10	146				
98K-0015B	201	202	< 1	1.13	58	400	28	97	0.27	121	< 10	112				
98K-0016A	201	202	2	1.00	50	960	36	54	0.21	97	< 10	132				
98K-0016B	201	202	1	1.31	68	870	22	173	0.28	118	< 10	98				
98K-0017A	201	202	5	1.56	113	1670	74	128	0.50	134	< 10	110				
98K-0017B	201	202	1	1.38	89	980	30	164	0.48	103	< 10	126				
98K-0018A	201	202	< 1	1.67	28	510	14	254	0.37	98	< 10	48				
98K-0018B	201	202	< 1	3.39	20	490	26	1285	0.23	60	< 10	50				
98K-0019C	201	202	< 1	2.77	34	680	16	477	0.43	148	< 10	70				
98K-0020B	201	202	< 1	2.37	12	330	12	642	0.18	49	< 10	36				
98K-0021A	201	202	< 1	2.43	20	390	28	654	0.29	58	< 10	64				
98K-0021B	201	202	< 1	0.82	51	860	12	554	0.14	78	< 10	152				
98K-0022A	201	202	< 1	2.70	17	420	20	961	0.26	61	< 10	74				
98K-0022B	201	202	< 1	2.53	21	590	30	857	0.33	71	< 10	110				
98K-0023B	201	202	7	1.59	59	1080	20	316	0.32	247	< 10	362				
98K-0024A	201	202	1	1.67	34	830	16	342	0.24	97	< 10	100				
98K-0025B	201	202	3	1.55	49	910	24	377	0.27	125	< 10	132				
98K-0026A	201	202	< 1	2.61	17	440	24	894	0.22	58	< 10	48				
98K-0026B	201	202	< 1	2.44	80	360	18	486	0.30	106	< 10	70				
98K-0027B	201	202	< 1	2.54	110	330	22	691	0.32	113	< 10	90				
98K-0028A	201	202	< 1	3.88	12	190	16	1175	0.20	44	< 10	62				
98K-0028B	201	202	< 1	3.37	81	460	14	1210	0.31	112	< 10	70				
98K-0040A	201	202	< 1	3.48	22	750	18	1200	0.28	77	< 10	66				
98K-0040B	201	202	< 1	3.42	34	320	14	972	0.25	89	< 10	60				
99G-0081	201	202	< 1	2.60	16	1320	28	692	0.35	79	< 10	58				
99G-0082	201	202	3	2.80	15	1340	26	666	0.34	75	< 10	80				
99G-0090	201	202	< 1	2.60	14	1260	28	624	0.33	72	< 10	78				
99G-0248	201	202	< 1	2.30	27	3030	30	656	0.63	136	< 10	116				
99G-0250	201	202	1	2.55	20	1660	56	644	0.38	76	< 10	100				
99G-1006	201	202	< 1	3.09	7	1240	48	621	0.34	58	< 10	78				
99G-1007	201	202	< 1	2.37	14	1740	40	429	0.37	73	< 10	128				
99G-1008	201	202	3	2.40	9	1330	24	361	0.33	46	< 10	84				
99G-1009	201	202	< 1	1.86	17	880	22	201	0.31	63	< 10	72				
99G-1010	201	202	< 1	2.67	7	620	22	624	0.23	42	< 10	40				
99G-1011	201	202	< 1	2.59	6	880	26	625	0.21	45	< 10	34				

CERTIFICATION: _____

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Certificate Date: 27-JAN-00
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SAMPLE	PREP CODE		Ag ppm AAS	Al % (ICP)	Ba ppm (ICP)	Be ppm (ICP)	Bi ppm (ICP)	Ca % (ICP)	Cd ppm (ICP)	Co ppm (ICP)	Cr ppm (ICP)	Cu ppm (ICP)	Fe % (ICP)	K % (ICP)	Mg % (ICP)	Mn ppm (ICP)
99G-1012	201	202	< 0.2	8.97	1030	2.5	< 2	0.89	< 0.5	8	25	11	2.27	2.26	0.43	430
99G-1013	201	202	< 0.2	7.43	1170	2.0	< 2	0.93	< 0.5	6	22	5	1.74	2.45	0.28	285
99G-1014	201	202	1.0	8.20	700	3.5	< 2	1.33	< 0.5	7	14	16	1.93	1.74	0.38	970
99G-1015	201	202	0.6	7.46	1100	2.0	< 2	1.10	< 0.5	8	56	4	2.73	2.18	0.66	460
99G-1016	201	202	0.4	7.34	990	2.0	< 2	1.21	< 0.5	9	22	8	2.33	2.00	0.32	400
99G-1017	201	202	2.6	8.39	1170	2.5	< 2	0.99	< 0.5	7	35	10	2.13	2.53	0.42	460
99G-1018	201	202	< 0.2	7.62	1210	2.5	< 2	1.09	< 0.5	7	25	6	1.83	2.50	0.38	330
99G-1019	201	202	< 0.2	8.87	1060	2.0	< 2	1.19	< 0.5	9	23	9	2.42	2.17	0.45	400
99G-1020	201	202	0.2	7.83	1080	2.0	< 2	1.18	< 0.5	8	31	9	1.99	2.20	0.45	395
99G-1021	201	202	< 0.2	8.28	1030	2.5	< 2	1.27	< 0.5	8	37	10	2.31	2.07	0.46	530
99G-1022	201	202	< 0.2	8.09	980	2.5	< 2	0.86	< 0.5	7	27	11	2.26	2.41	0.36	700
99G-1023	201	202	0.2	8.37	900	2.5	< 2	0.87	< 0.5	8	34	12	2.68	2.25	0.50	505
99G-1024	201	202	< 0.2	8.14	1130	2.0	< 2	1.19	< 0.5	7	32	7	2.04	2.61	0.50	350
99G-1025A	201	202	< 0.2	8.12	1280	2.5	< 2	1.04	< 0.5	5	23	3	1.77	3.07	0.43	390
99G-1025B	201	202	1.0	8.32	1080	2.5	< 2	1.50	< 0.5	9	33	8	2.81	2.38	0.54	440
99G-1026	201	202	< 0.2	10.65	920	3.5	< 2	0.96	< 0.5	11	25	26	3.88	1.81	0.59	530
99G-1027	201	202	< 0.2	9.23	890	2.0	< 2	1.25	< 0.5	10	22	11	2.70	1.94	0.49	615
99G-1028	201	202	0.8	8.19	1230	2.0	< 2	0.95	< 0.5	5	18	1	1.89	2.99	0.33	360
99G-1029	201	202	< 0.2	8.58	1360	2.0	< 2	1.28	< 0.5	7	27	6	2.09	2.72	0.49	475
99G-1030	201	202	< 0.2	8.37	1150	2.0	< 2	1.18	< 0.5	7	26	8	2.09	2.18	0.43	405
99G-1031	201	202	< 0.2	7.83	1140	3.0	< 2	1.09	< 0.5	10	42	11	2.76	3.13	0.60	665
99G-1032	201	202	< 0.2	7.82	1200	2.5	< 2	0.92	< 0.5	7	37	8	2.42	3.04	0.45	350
99K-0020	201	202	< 0.2	8.02	1290	2.5	< 2	1.85	< 0.5	18	59	64	3.81	2.44	1.18	1210
99K-0030	201	202	< 0.2	8.54	1220	3.0	< 2	1.48	< 0.5	10	65	13	3.50	3.64	0.73	755
99K-0040	201	202	< 0.2	8.80	1340	4.5	< 2	1.41	< 0.5	12	71	19	3.50	3.88	0.93	800
99K-0050	201	202	< 0.2	8.56	1110	2.5	< 2	1.33	< 0.5	9	53	14	3.27	3.25	0.63	450
99K-0060	201	202	0.2	8.30	1030	3.0	< 2	1.35	< 0.5	9	45	15	3.17	2.83	0.58	635
99K-0070	201	202	< 0.2	8.47	1170	3.0	< 2	1.52	< 0.5	12	49	16	3.65	3.49	0.78	610
99K-0080	201	202	< 0.2	8.83	1250	3.5	< 2	1.30	< 0.5	9	64	10	3.46	4.09	0.75	455
99K-0090	201	202	< 0.2	8.77	1120	4.0	< 2	1.03	< 0.5	8	53	7	3.01	3.93	0.60	395
99K-0100	201	202	< 0.2	8.47	1290	4.0	< 2	1.58	< 0.5	11	91	13	3.55	3.01	1.00	495
99K-0120	201	202	< 0.2	8.57	1190	4.0	< 2	1.23	< 0.5	6	53	1	2.96	4.39	0.52	390
99K-0130	201	202	< 0.2	8.08	1270	3.5	< 2	1.43	< 0.5	9	110	4	3.06	3.69	0.83	450
99K-0140	201	202	< 0.2	8.42	1120	3.5	< 2	1.51	< 0.5	9	77	12	3.47	3.18	0.78	610
99K-0180	201	202	< 0.2	7.91	1300	2.0	< 2	1.39	< 0.5	7	36	5	1.91	2.72	0.58	405
99K-0190	201	202	< 0.2	7.10	1260	1.5	< 2	1.08	< 0.5	5	20	3	1.31	2.67	0.27	235
99K-0200	201	202	< 0.2	12.90	2530	3.0	< 2	2.41	< 0.5	19	147	13	3.87	4.69	1.66	1035
99K-0210	201	202	< 0.2	3.59	590	0.5	< 2	0.81	< 0.5	11	106	12	1.93	0.96	1.02	415
99K-0220	201	202	< 0.2	7.65	1250	2.0	< 2	1.90	0.5	28	320	26	4.54	2.15	3.43	790
99K-0230	201	202	< 0.2	7.25	1020	2.5	< 2	1.67	< 0.5	36	384	25	4.40	2.37	3.28	1070

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: KOLEBABA, MARK

4102 BURKEHILL RD.
WEST VANCOUVER, BC
V7V 8M2

Project :
Comments: ATTN: M. KOLEBABA

Page Number :2-B
Total Pages :3
Certificate Date: 27-JAN-00
Invoice No. :I0010826
P.O. Number :1009
Account :QXQ

CERTIFICATE OF ANALYSIS A0010826

SAMPLE	PREP CODE		Mo ppm (ICP)	Na % (ICP)	Ni ppm (ICP)	P ppm (ICP)	Pb ppm AAS	Sr ppm (ICP)	Ti % (ICP)	V ppm (ICP)	W ppm (ICP)	Zn ppm (ICP)				
99G-1012	201	202	2	1.96	11	940	34	373	0.27	49	< 10	102				
99G-1013	201	202	< 1	2.43	7	650	22	522	0.20	43	< 10	62				
99G-1014	201	202	< 1	2.48	5	720	26	348	0.19	40	< 10	156				
99G-1015	201	202	< 1	2.33	17	770	28	524	0.26	64	< 10	72				
99G-1016	201	202	< 1	2.49	6	580	26	520	0.25	46	< 10	50				
99G-1017	201	202	< 1	2.48	12	750	32	494	0.24	47	< 10	60				
99G-1018	201	202	< 1	2.74	9	810	26	583	0.20	46	< 10	56				
99G-1019	201	202	< 1	2.47	8	1110	24	487	0.30	56	< 10	82				
99G-1020	201	202	< 1	2.37	12	840	24	519	0.24	48	< 10	54				
99G-1021	201	202	< 1	2.45	17	1770	24	497	0.28	49	< 10	60				
99G-1022	201	202	2	2.69	8	1120	38	450	0.25	50	< 10	82				
99G-1023	201	202	1	2.47	11	1240	36	418	0.30	61	< 10	110				
99G-1024	201	202	< 1	2.62	11	760	30	558	0.25	53	< 10	78				
99G-1025A	201	202	< 1	2.79	7	880	32	596	0.24	46	< 10	48				
99G-1025B	201	202	< 1	2.67	13	1220	30	597	0.31	65	< 10	68				
99G-1026	201	202	1	2.01	12	1390	38	353	0.31	67	< 10	100				
99G-1027	201	202	< 1	2.22	10	1130	32	419	0.33	60	< 10	118				
99G-1028	201	202	< 1	2.68	5	650	34	578	0.19	37	< 10	62				
99G-1029	201	202	< 1	2.84	10	600	32	674	0.24	51	< 10	66				
99G-1030	201	202	1	2.56	8	910	32	635	0.25	48	< 10	82				
99G-1031	201	202	< 1	2.80	12	1330	42	581	0.27	67	< 10	72				
99G-1032	201	202	< 1	2.71	9	580	34	577	0.26	62	< 10	76				
99K-0020	201	202	< 1	2.30	42	1480	30	487	0.43	94	< 10	128				
99K-0030	201	202	< 1	2.72	16	1290	32	653	0.39	96	< 10	84				
99K-0040	201	202	< 1	3.12	26	1410	36	758	0.33	87	< 10	110				
99K-0050	201	202	< 1	2.45	15	800	32	560	0.37	81	< 10	68				
99K-0060	201	202	1	2.51	15	640	30	510	0.36	78	< 10	108				
99K-0070	201	202	< 1	2.76	13	1230	28	650	0.37	110	< 10	78				
99K-0080	201	202	< 1	2.67	18	1220	28	711	0.41	87	< 10	60				
99K-0090	201	202	< 1	2.80	16	1460	34	679	0.35	73	< 10	74				
99K-0100	201	202	< 1	2.55	28	1700	34	882	0.38	98	< 10	88				
99K-0120	201	202	< 1	2.97	10	1230	28	802	0.31	72	< 10	52				
99K-0130	201	202	1	2.71	32	1180	28	815	0.32	77	< 10	64				
99K-0140	201	202	< 1	2.60	21	1400	30	713	0.34	92	< 10	76				
99K-0160	201	202	< 1	2.69	14	1040	20	582	0.27	55	< 10	44				
99K-0190	201	202	< 1	2.91	6	700	20	641	0.17	34	< 10	22				
99K-0200	201	202	< 1	5.11	113	1250	42	1660	0.43	116	< 10	122				
99K-0210	201	202	< 1	0.86	86	730	22	275	0.18	51	< 10	52				
99K-0220	201	202	< 1	2.00	259	1710	42	628	0.41	123	< 10	96				
99K-0230	201	202	< 1	2.00	389	1390	92	599	0.39	104	< 10	142				

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To: KOLEBABA, MARK

4102 BURKEHILL RD.
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CERTIFICATE OF ANALYSIS A0010826

SAMPLE	PREP CODE		Ag ppm AAS	Al % (ICP)	Ba ppm (ICP)	Be ppm (ICP)	Bi ppm (ICP)	Ca % (ICP)	Cd ppm (ICP)	Co ppm (ICP)	Cr ppm (ICP)	Cu ppm (ICP)	Fe % (ICP)	K % (ICP)	Mg % (ICP)	Mn ppm (ICP)
99K-0240	201	202	0.2	7.85	860	3.0	< 2	1.32	< 0.5	27	235	93	4.37	2.59	2.27	920
99K-0246	201	202	< 0.2	8.04	1540	3.5	< 2	2.31	< 0.5	16	77	15	4.03	2.90	1.42	850
99K-0247	201	202	< 0.2	7.84	1690	3.5	< 2	2.72	< 0.5	20	119	14	5.43	2.51	1.51	835
99K-0249	201	202	< 0.2	8.24	890	3.0	< 2	2.61	< 0.5	20	75	24	4.54	1.82	2.03	1025
99K-0250	201	202	< 0.2	8.41	1810	2.5	< 2	2.82	< 0.5	10	49	3	2.70	2.12	0.74	630
99K-1000	201	202	< 0.2	8.06	1240	1.0	< 2	2.84	< 0.5	14	44	11	3.49	1.81	1.13	685
99K-1001	201	202	< 0.2	8.10	1240	1.5	< 2	2.99	< 0.5	19	55	39	4.20	1.86	1.58	885
99K-1002	201	202	< 0.2	7.55	1120	1.5	< 2	2.49	< 0.5	13	39	13	3.45	1.62	1.13	670
99K-1003	201	202	< 0.2	7.52	1130	1.0	< 2	2.41	< 0.5	12	49	12	3.26	1.68	1.05	590
99K-1004	201	202	< 0.2	8.97	950	2.0	< 2	2.18	0.5	12	26	10	3.64	1.67	1.18	680
99K-1007	201	202	< 0.2	7.83	1100	2.0	< 2	1.83	< 0.5	14	68	57	3.59	3.30	0.97	755
99K-1008	201	202	< 0.2	8.25	1090	2.5	< 2	2.06	< 0.5	10	31	35	2.64	2.85	0.78	530
99K-1009	201	202	< 0.2	7.91	1250	2.5	< 2	0.99	< 0.5	7	37	6	2.62	1.77	0.52	390
99K-1012	201	202	< 0.2	7.84	600	3.0	< 2	1.01	< 0.5	16	45	29	3.25	1.48	0.86	490
99K-1014	201	202	< 0.2	4.36	410	1.0	< 2	0.30	< 0.5	12	61	12	2.29	1.11	0.67	845
99K-1015	201	202	< 0.2	8.38	630	6.5	< 2	0.61	< 0.5	9	42	29	2.40	2.10	0.56	575
99K-1016	201	202	< 0.2	8.21	590	4.5	< 2	1.19	< 0.5	14	54	18	3.16	2.30	1.26	465

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99K-0240	201	202	< 1	2.14	274	1480	56	510	0.32	87	< 10	164				
99K-0246	201	202	< 1	3.03	27	2840	40	1165	0.46	109	< 10	80				
99K-0247	201	202	< 1	3.00	30	3590	32	1250	0.55	168	< 10	70				
99K-0249	201	202	< 1	2.09	36	3020	38	653	0.68	119	< 10	114				
99K-0250	201	202	< 1	3.92	21	620	18	1355	0.35	84	< 10	78				
99K-1000	201	202	< 1	2.35	9	1490	18	533	0.39	135	< 10	58				
99K-1001	201	202	< 1	2.34	17	1360	20	552	0.40	141	< 10	80				
99K-1002	201	202	< 1	2.32	12	1160	24	506	0.37	111	< 10	78				
99K-1003	201	202	< 1	2.38	12	1030	16	456	0.31	114	10	60				
99K-1004	201	202	< 1	2.12	7	1160	64	433	0.42	94	< 10	206				
99K-1007	201	202	< 1	2.70	26	1260	56	750	0.28	133	< 10	68				
99K-1008	201	202	1	2.68	12	370	24	772	0.27	108	< 10	56				
99K-1009	201	202	< 1	2.67	10	500	28	564	0.26	63	< 10	64				
99K-1012	201	202	< 1	1.47	36	770	22	186	0.40	79	< 10	90				
99K-1014	201	202	< 1	0.46	25	540	12	71	0.17	45	< 10	36				
99K-1015	201	202	< 1	1.86	14	410	22	117	0.33	60	< 10	68				
99K-1016	201	202	< 1	1.61	22	680	20	159	0.41	98	< 10	62				

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