ERCB/AGS Open File Report 2008-06

Geological Evaluation of Garnet-Rich Beaches in East-Central Alberta, with Emphasis on Industrial Mineral and Diamondiferous Kimberlite Potential

Energy Resources Conservation Board

Alberta Geological Survey

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Abstract

The unique occurrence of garnet-rich beach sands in east-central Alberta has generated interest for its industrial-mineral potential, for its possible association with an undiscovered cluster(s) of diamondiferous kimberlite, and as a curiosity with regard to the genre and source of the 'purple beaches'.

This comprehensive report provides the first known physical and chemical account of all garnet species present in selected east-central Alberta beaches, along with discussion on indicator minerals for kimberlite, gold, and metamorphic/magmatic massive sulphide mineralization. Garnet reaches lithological proportions of up to 74 vol. % and consists overwhelmingly (up to 99%) of almandine, followed by decreasing abundances of grossular, spessartine, lherzolitic and harzburgitic pyrope, megacrystic Cr-pyrope, andradite and Cr-andradite. Other indicator minerals of interest recovered include clinopyroxene, ilmenite, gahnite, corundum, low-Cr diopside and apatite.

Deterrents to industrial garnet production in east-central Alberta include scattered garnet distributions, small (~250–500 µm) and weathered (rounded) garnet morphologies, and the potential for environmental and public conflict. Garnet production as a potential coproduct of sand and gravel, however, should warrant consideration by sand and gravel operators in the region. In addition, a small niche market should not be discounted, especially given the high concentrations of garnet and generally accessible infrastructure.

Observations presented in this study should be of particular interest to diamond explorers. Pyrope garnet was recovered from sample sites throughout east-central Alberta, with distinct clusters in the Marie Lake–Cold Lake–Wolf Lake and Calling Lake areas. Results from this study confirm the presence of subcalcic (G10) garnet in east-central Alberta and a G10:G9 ratio that is generally not present in other parts of Alberta. In addition, several lherzolitic garnets from this study plotted near the G10-G9 boundary line and have high values of Cr and knorringite.

The overriding mechanism for deposition of surficial materials in east-central Alberta is glaciation. Garnet species studied in this report originated from the last phase of ice flow during retreat of the Laurentide ice sheet and, therefore, were derived from areas north-northeast of the study area, along the westernmost margin of the Canadian Shield. Selected garnet species (i.e., pyrope) could be derived from a fairly local, near-surface source because of their unique composition and texture (e.g., orange-peel texture and kelyphitic rims) compared to surficial pyrope reported in other parts of the province. This raises the potential for the discovery of a cluster of kimberlites in east-central Alberta to northwestern Saskatchewan, possibly in the Cold Lake–St. Paul and Calling Lake areas, or directly to the north within, for example, the Cold Lake Air Weapons Range. Lastly, this study raises awareness of the potential for secondary deposits of diamond that might have been relocated and concentrated in the same manner as the garnet.

1 Introduction

During the late 1940s and 1950s, a local prospector reportedly extracted a fortune from the Sand River (NTS map area 73L) using an ultraviolet lamp at night to locate his 'mineral' (Chipeniuk, 1975, p. 262). Knowledge of the mineral in question (only reported as not being gold) died along with the prospector in the late 1950s. Despite this claim, subsequent exploration in east-central Alberta focused predominantly on oil and gas for the next 40-plus years. Mineral exploration in the area was rejuvenated in 1997 with the discovery of a field of diamondiferous kimberlite in north-central Alberta, a discovery that kick-started the Alberta diamond rush. With knowledge of the potential for an economic diamond deposit in Alberta, stories of the prospector exploring river gravels in the Sand River area with a UV lamp generate interest because diamonds are known to fluoresce.

Since then, east-central Alberta has garnered its fair share of attention from diamond explorers. This interest is because of knowledge of garnet-rich beaches throughout the area — a unique occurrence in Alberta — coupled with a geologically favourable environment for the discovery of kimberlite. Reports of garnet with favourable chemistry for the discovery of an unknown field of kimberlite, and garnet chemical compositions that appear to be unique to this area of the province, have provided further incentive to diamond explorers.

Kimberlite indicator-mineral (KIM) results from till, stream sediment and beach sand surveys in the area are publicly available, as is knowledge of these garnet-rich beach sands, yet there is no known comprehensive study on the proportions and compositions of garnet species present in the beach sands. The intent of this project, therefore, was to conduct a reconnaissance-scale sampling study of garnet-rich beach sands throughout east-central Alberta (Figure 1). The main objective is to report on the garnet species present, their proportions and chemical compositions, and to make inferences on their potential sources.

A second objective of the study is to evaluate the area surrounding the Cold Lake Air Weapons Range (CLAWR) for mineral potential. This might be of particular interest to industry because the Alberta Department of Energy, which issues and administers agreements relating to exploration and production of Alberta-owned (Crown) metallic and industrial minerals, has not yet accepted any applications for mineral permits in the CLAWR.

This work satisfies the long-term objectives of diamond- and kimberlite-related studies at the Alberta Geological Survey (AGS) intended to

- provide industry with the information necessary to evaluate the diamond potential of Alberta and expand Alberta's natural resource base;
- contribute updates to the geological map of Alberta and history/assemblage map of Western Canada;
- contribute to custodianship of Alberta's diamond potential, including deliverables, data sets, rock materials and knowledge;
- provide knowledge and advice to decision-makers in federal and provincial governments; and,
- generate public awareness and understanding about the potential for an economic diamond discovery in Alberta.

2 Study Area and Overview of Sample Sites

A synopsis of known garnet-rich beaches in east-central Alberta, as provided by local prospectors (*see* 'Acknowledgments'), is presented in Appendix 1. All beach-sand sites visited during this study contained garnet concentrated in a purple (garnet-rich) or black (oxide-rich) zone of sand in the wash zone that, in some instances, extends landward into the vegetation (Figure 2). Laterally (i.e., along the length of the

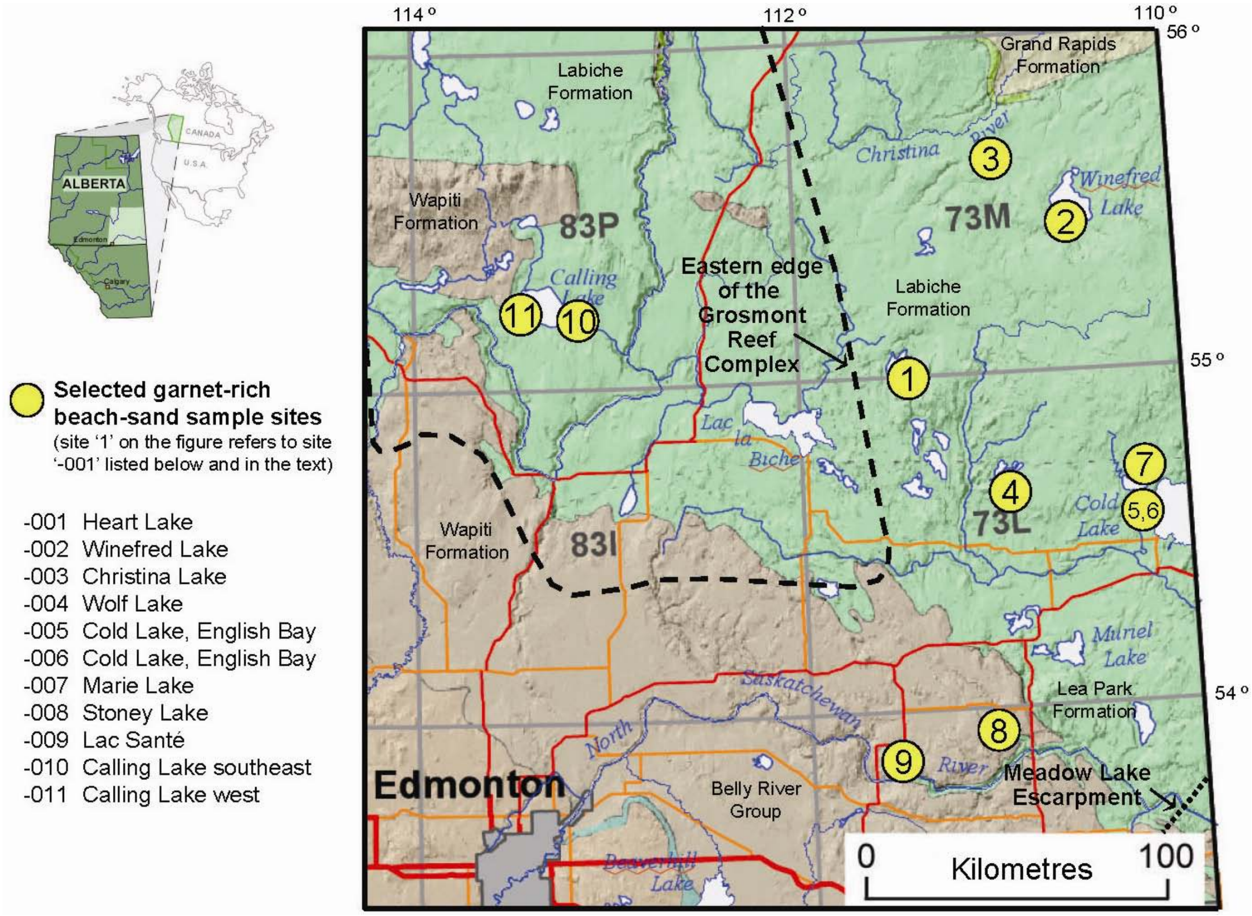

Figure 1. Location of selected garnet-rich beaches sampled in east-central Alberta. Geology base from Hamilton et al. (1999).

beach), the garnet-rich zones are best described as spotty, with visible garnet concentrations extending over distances of metres to hundreds of metres. The beach sands and their garnet species are described in detail in the 'Results' section of this report.

The primary technique for evaluating the garnet-rich beach sands is based on sampling of heavy-mineral indicators. Indicator minerals appear as transported grains in clastic sediments and can provide evidence for particular kinds of bedrock or specific types of mineralization and hydrothermal alteration. Their physical and chemical characteristics facilitate their preservation and identification in various sample media, such as till, glaciofluvial deposits, beach sand, stream sediment and soil. Thus, indicator minerals have become an important exploration method in the past 20 years for detecting a variety of ore deposit types, including diamondiferous kimberlite, gold, Ni-Cu, platinum-group elements (PGE), porphyry Cu, massive sulphide, and W.

During reconnaissance-scale fieldwork, 11 samples were collected from ten separate beaches. The sample sites encompass four 1:250 000 NTS map areas: 73E, 73L, 73M and 83P (Figure 1, Table 1). All sample sites were accessible by vehicle and selected by locating the area of beach sand with the highest visible garnet concentration. The sample nomenclature (e.g., RE06-GB-001) includes the initials of the sampler (RE), year (2006), project identifier (GB or garnet beach study) and site number (-001). For ease of reporting, the sample numbers are hereafter referred to using only the sample site component (e.g., -001). Sample sites -001 through -007 surround the CLAWR, which covers more than 1 million hectares

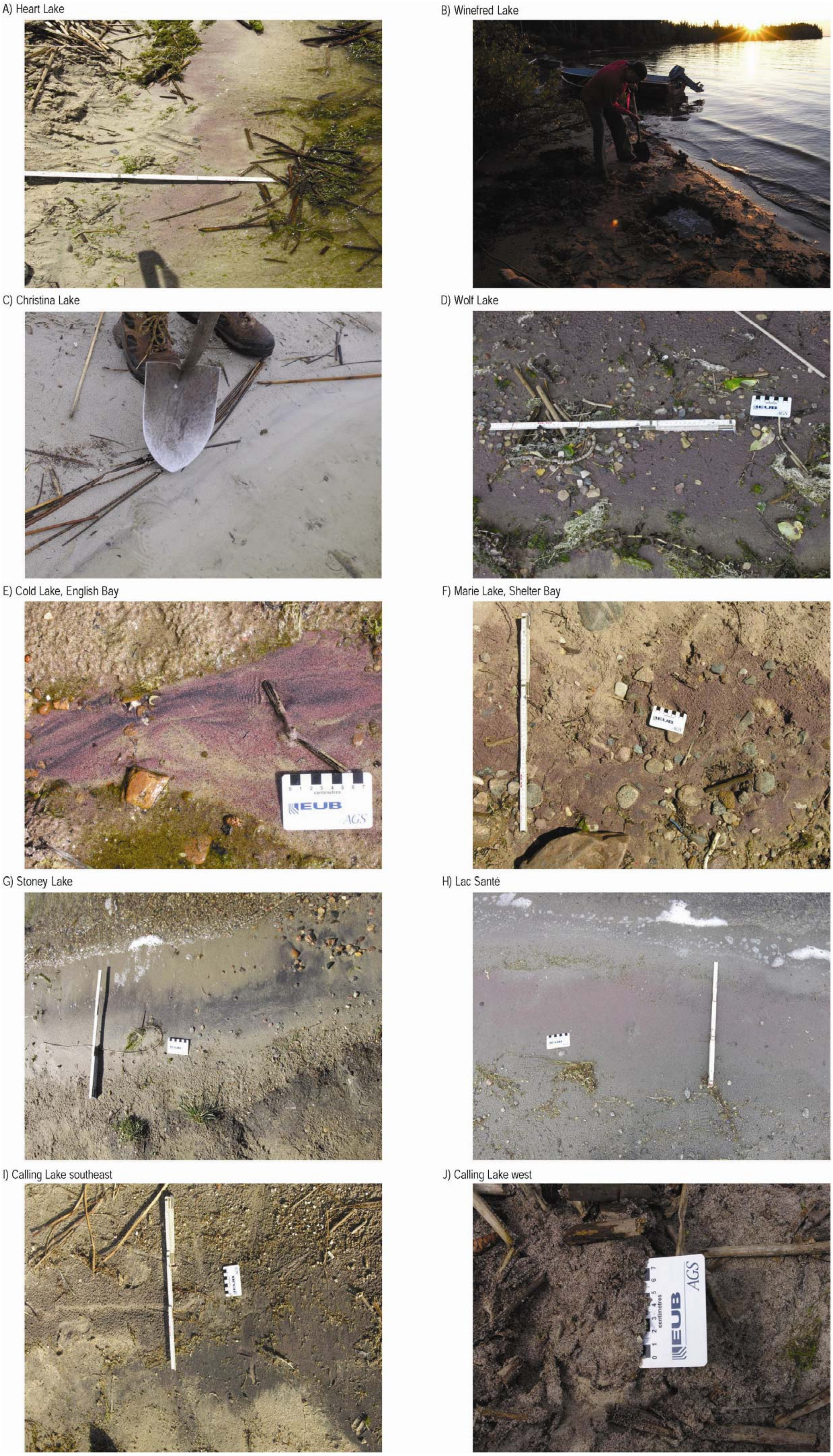

Figure 2. Example of distribution of garnet-rich sands at selected beaches in east-central Alberta.

Table 1. Location and general lithology of beach sands from selected beaches in east-central Alberta. Results use the average measurements from three 5 g samples. The table summarizes the data and images shown in Appendix 2.

Sample	General location	NTS sheet	UTM (Zone 12, NAD83)		Grain counts						Grain percentages		
			Easting (m)	Northing (m)	Quartz	Oxide	Garnet	Sulphide	Other	Total	Quartz	Oxide	Garnet
RE06-GB-001	Heart Lake	73L	472269	6097720	550	4	11	/	2	566	97.4	0.7	1.9
RE06-GB-002	Winefred Lake	73M	534837	6141883	533	8	2	/	4	546	97.6	1.4	0.2
RE06-GB-003	Christina Lake	73M	513625	6164078	498	5	7	/	1	510	97.7	1.0	1.3
RE06-GB-004	Wolf Lake	73L	502107	6057862	147	177	200	/	13	532	28.4	33.1	36.8
RE06-GB-005	Cold Lake, English Bay	73L	550706	6047916	77	101	347	/	6	530	14.9	18.9	65.0
RE06-GB-007	Marie Lake, Shelter Bay	73L	547823	6055914	233	60	267	/	4	563	41.1	10.8	47.6
RE06-GB-008	Stoney Lake	73E	494593	5968369	470	41	17	3	7	537	88.0	7.4	2.9
RE06-GB-009	Lac Santé	73E	463048	5965856	343	82	25	/	/	441	77.9	18.3	3.8
RE06-GB-010	Calling Lake southeast	83P	358086	6116998	250	169	130	/	10	553	48.0	28.8	22.5
RE06-GB-011	Calling Lake west	83P	348797	6122215	373	33	102	/	11	519	72.6	6.2	19.2
Note: Sample RE06-GB-006 (not listed here) is a duplicate sample of RE06-GB-005, taken at Cold Lake, English Bay													

(11 600 km^2) and is the only tactical bombing range in Canada; about half, or 541 000 hectares, of the CLAWR area is situated within Alberta. Sample -006 is a duplicate sample from site -005 (Cold Lake, English Bay). Southernmost samples -008 and -009 were collected to determine the extent of the garnet-rich beach sands in east-central Alberta. Samples -010 and -011 were collected from west of the remaining sample sites to test the Calling Lake beach sands, which have yielded some of the most chemically favourable pyropes in Alberta, and to see how Calling Lake garnet compares with that from sample sites located closer to the Alberta-Saskatchewan border.

3 General Geology

Seismic refraction and reflection studies indicate that the Archean and Proterozoic crust in east-central Alberta is likely around 35–40 km thick (Bouzidi et al., 2002). In the study area, an approximately 1000–1800 m thick sequence of Phanerozoic sedimentary rocks (Wright et al., 1994) overlies a complex suite of crystalline basement domains, the disposition of which is broadly based on available regional airborne geophysics and geochronology (Ross et al., 1991, 1994; Villeneuve et al., 1993). Basement rocks in the Cold Lake area border the Archean Hearne Subprovince and the Rimbey magmatic arc (1.98–1.78 Ga; Figure 3). The Rimbey magmatic arc underlies the Winefred Lake area and is characterized by a highly corrugated internal fabric comprising extremely high relief, northeast-trending, sinuous magnetic anomalies (Ross et al., 1994). To the north, the Rimbey magmatic arc is divided from the Taltson magmatic zone by the Snowbird Tectonic Zone (Figure 3).

The basement underlying Calling Lake borders the Buffalo Head Terrane, the Taltson magmatic zone and an unnamed domain (Ross et al., 1994; Figure 3). Basement underlying the northeastern portion of Calling Lake is part of the Taltson magmatic zone, a 1.99–1.93 Ga terrane (Bostock et al., 1991; McNicoll et al., 2000) that represents a magmatic arc related to collisional orogeny during the Proterozoic (Ross et al., 1991; Thériault and Ross, 1991). The northwestern portion of Calling Lake is underlain by basement of the Buffalo Head Terrane, an area of high positive magnetic relief with a northerly to northeasterly fabric (Ross et al., 1994). The bulk of the basement underlying Calling Lake is part of an unnamed domain with gravity and magnetic signatures similar to those of the Buffalo Head Terrane and Wabamun Domain (to the south-southwest), which could therefore be an extension of either one of these domains.

Overlying the basement, Phanerozoic strata have been deposited in two fundamentally different tectonosedimentary environments: a) Late Proterozoic to Middle Jurassic passive continental margin, and b) Middle Jurassic to Oligocene foreland basin. The Paleozoic to Jurassic platform succession, which is dominated by carbonate rocks, can be summarized as two periods of continental-margin sedimentation separated by cratonic inundations from the west, southeast and northwest (Kent, 1994). As a result, much of the Paleozoic succession consists of unconformity-bounded, thin to thick sequences of carbonate rocks interlayered with predominantly fine- to medium-grained clastic marine sedimentary rocks.

The overlying Middle Jurassic to Paleocene foreland basin succession formed in Alberta during active-margin orogenic evolution of the Canadian Cordillera (Dawson et al., 1994). Cretaceous rocks outcrop or subcrop over more than two-thirds of northern Alberta and are composed of alternating units of marine and nonmarine sandstone, shale, siltstone, mudstone and bentonite. The oldest Cretaceous unit in the study area belongs to the middle Cretaceous Labiche Formation that encompasses a large part of the study area (Figure 1). This formation is characterized by dark grey marine shale and silty shale with a fish scale–bearing lower unit. The Labiche is correlative with the Shaftesbury Formation and other mid– to early Late Cretaceous Colorado Group sedimentary rocks. The Late Cretaceous Lea Park Formation occurs directly south of Cold Lake and is composed of calcareous and noncalcareous marine shale with intercalated sandstone. The youngest documented unit in the area belongs to the Late Cretaceous Wapiti Formation and Belly River Group in the northwestern (Pelican Mountain uplands) and southwestern parts

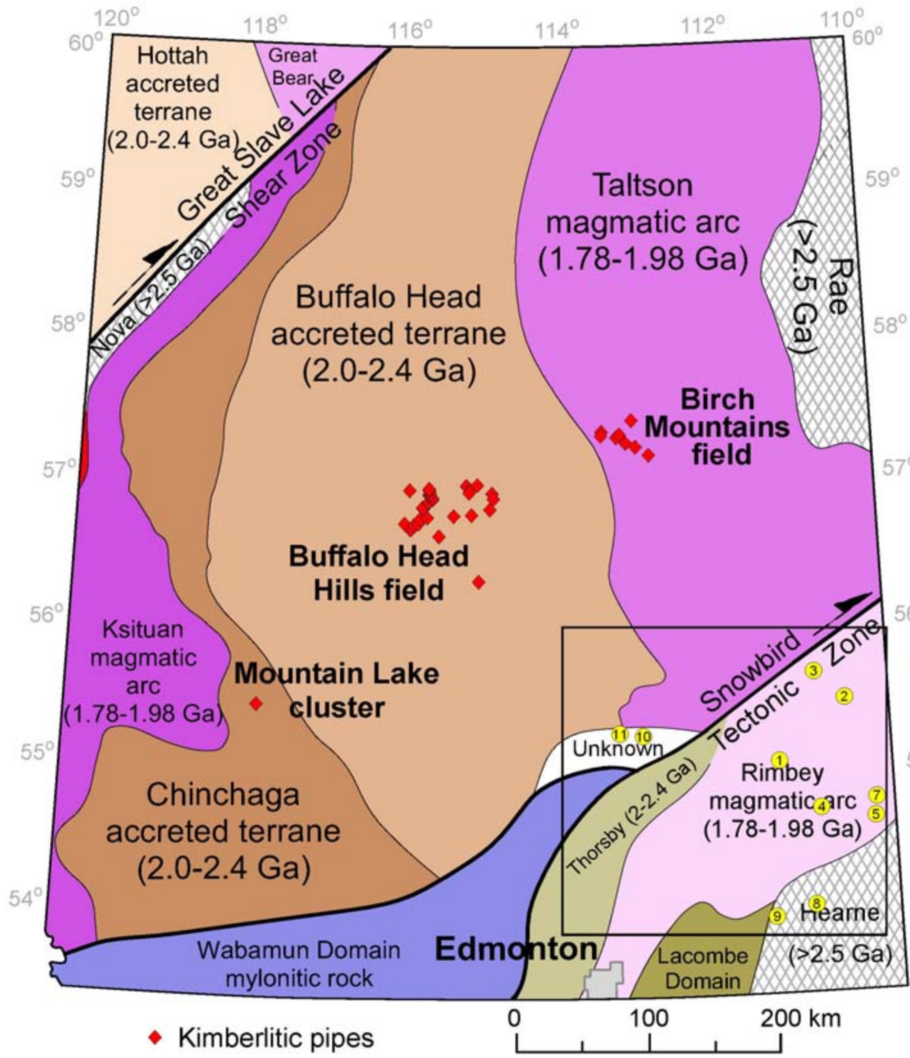

Figure 3. Inferred northern Alberta basement domains of Ross et al. (1994). Square denotes approximate outline of study area, with selected beach-sand sample locations (*see* Figure 1 for lake names).

of the study area, respectively; both units are composed of nonmarine, grey, feldspathic clayey sandstone that is often bentonitic.

Tertiary gravels occur on top of the Pelican Mountain uplands, which are located directly north-northwest of Calling Lake. These gravels are predominantly quartzite and chert gravel and cobbles of preglacial age (Campbell et al., 2001). Quaternary deposits form the local landforms over virtually all of northern Alberta. Ice sheets that originated from the northeast or north advanced across the plains at least five times (Fenton, 1984; Klassen, 1989); however, the surficial deposits in Alberta are primarily Late Wisconsinan in age and were deposited by the Laurentide continental and Cordilleran ice sheets between 23 000 and 11 000 years ago (Dyke et al., 2002). The majority of the surficial sediment in northern Alberta is till (glacial diamicton), with glaciolacustrine and glaciofluvial sediment (Andriashek and Fenton, 1989; Klassen, 1989). The nature of these deposits reflects broad aspects of the bedrock types, and patterns of glacial and glaciofluvial transport.

The surficial deposits in the study area are composed of a complex mixture of thick glacial drift, extensive glacial gravel and evidence of extensive glacial tectonism. Drift thickness is known to range from <25 m to >230 m, with multiple layers of till and glacial outwash (Gold et al., 1983; Campbell et al., 2001). A generally thick (>50 m), complex but well-preserved sequence of Pleistocene surficial deposits in the Sand River map area (NTS 73L) has been the subject of numerous Quaternary stratigraphic studies, predominantly during the late 1970s and 1980s (e.g., Gold, 1978; Andriashek and Fenton, 1979; Gold et al., 1983; Fenton and Andriashek, 1983; Andriashek, 1985; Andriashek and Fenton, 1989). The till and intertill stratigraphic record indicates several glaciations, probably as many as four. During the last period of glaciation, the Cold Lake glaciation, Andriashek and Fenton (1989) showed that the Laurentide Ice Sheet advanced in the form of three lobes: the Primose Lobe that advanced from the northeast, followed by the Seibert Lobe from the north and finally the Lac La Biche Lobe from the northwest (Figure 4).

The area contains major structural lineaments that include the Snowbird Tectonic Zone and the Meadow Lake Escarpment (Figures 3 and 1, respectively). The Snowbird Tectonic Zone is a major northeast-trending crustal lineament prominent on both aeromagnetic and gravity maps, and separates the Churchill Structural Province into two distinct basement domains, the Rae and Hearne subprovinces (Ross et al., 1991, 1994). During the Middle Devonian, a large part of the Siluro-Ordovician stratigraphy was eroded or faulted away to form a prominent Phanerozoic structural feature, the Meadow Lake Escarpment. The eastern edge of the Grosmont Reef Complex (Figure 1) correlates with several northwest-trending faults that extend through the Cold Lake area (Dufresne et al., 1996). Several authors (e.g., Sikabonyi and Rodgers, 1959; Dufresne et al., 1996; Eccles et al., 2001) have suggested that the edges of major reef formations, including the Grosmont, may be related to major structural features associated with tectonic uplift.

4 Exploration History

Since the discovery of diamondiferous kimberlites in northern Alberta in 1997, it is estimated industry has spent more than $100 million on exploration for diamonds within the province. Much of this expenditure has been in northern Alberta, where some 50 occurrences of ultrabasic to kimberlitic rocks have been discovered to date. The Buffalo Head Hills kimberlite field in north-central Alberta has produced the best diamond results to date, with 27 of 40 kimberlitic bodies yielding diamond. Mini-bulk and bulk samples of >10 tonnes have been collected from five Buffalo Head Hills bodies; three of these bodies (K14, K91 and K252) have reported diamond grades of between 12 and 55 carats per hundred tonnes (cpht).

To August 2008, no occurrences of ultramafic rocks have been discovered in east-central Alberta. The potential for discovery of diamondiferous kimberlite in this area, however, is considered high based on the following geological features and exploration results:

- Seismic refraction and reflection studies indicate that Archean and Proterozoic crust in east-central Alberta is likely around 35–40 km thick, a trait favourable for the formation and preservation of diamonds in the upper mantle.
- Deep-seated penetrative structures, such as the Meadow Lake Escarpment, Snowbird Tectonic Zone and linear margins of the Devonian Grosmont Reef Complex, could provide pathways for the ascent of kimberlitic magma during periodic tectonic activity associated with movement along major structural features.
- The number, diversity, morphology and chemistry of the KIMs that have been recovered by industry to date all reflect potential for the discovery of a new kimberlite field(s) in Alberta.
- The presence of numerous high- to moderate-quality magnetic anomalies, which could be indicative of kimberlite, has been reported by industry.

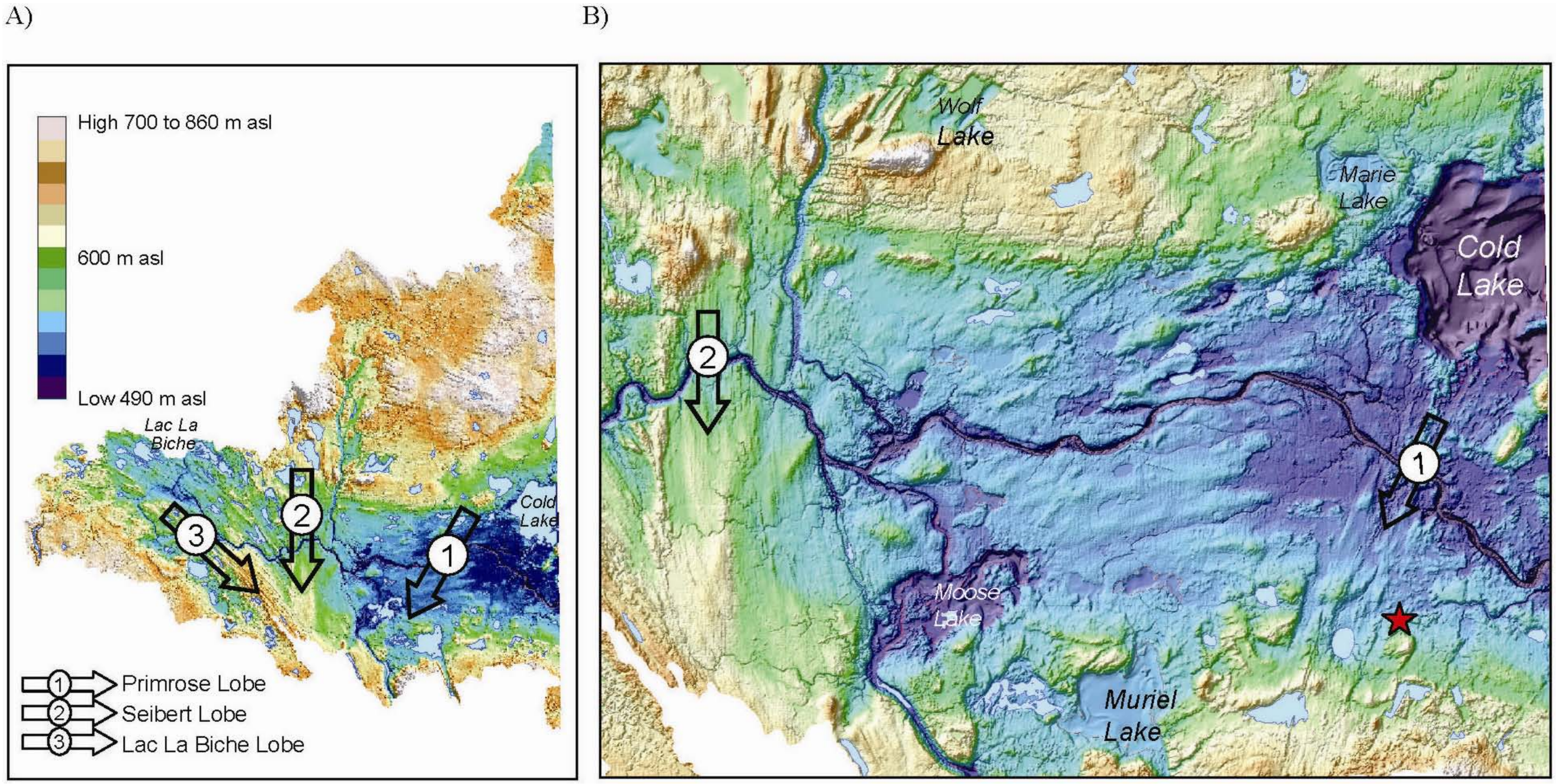

Figure 4. Bathymetry of the Cold Lake to Lac La Biche region: A) regional overview illustrating the three glacial lobes that formed during the Cold Lake glaciation (*after* Andriashek and Fenton, 1989); B) detailed bathymetry of the Cold Lake region, with the approximate location of a garnet-rich metamorphic erratic discovered by L. Andriashek (pers. comm., 2007).

- There is a close association between KIM concentrations with favourable chemistry, magnetic anomalies and basement structures.

This report uses the terms 'Cold Lake–St. Paul' and 'Calling Lake' to describe the regional geographic areas that have become symbolic of high diamond potential in east-central Alberta. These areas are commonly used in discussions on the diamond potential of east-central Alberta because they are the only regions in Alberta to have yielded multiple G10 subcalcic pyrope garnets. The authors note that KIM sampling density is still low in east-central Alberta, as it is for much of Alberta, and there may be anomalous garnet distributions throughout the area. For now, exploration has been focused in the Cold Lake–St. Paul and Calling Lake areas, and summarized below.

4.1 Cold Lake–St. Paul Region

During 1999, five glaciofluvial and stream-sediment samples were collected for Sunburst Mines Ltd. and Ice River Mining Ltd. along the Martineau River directly north of Cold Lake. Forty-three KIMs were recovered from the five samples. One sample (9TK010) yielded ten pyrope garnets, one Cr-diopside and one picroilmenite, and four of the five samples yielded pyrope garnets, including G1 or G2 pyrope comparable to kimberlite megacryst/macrocryst populations, lherzolitic G9 pyrope and harzburgitic G10 pyrope (Dufresne and Copeland, 1999). Sample 9TK008 yielded two subcalcic harzburgitic G10 pyrope garnets. Some of the garnets from 9TK008 and 9TK010 were up to 1.2 mm in diameter, and displayed orange-peel textures and partially preserved kelyphytic rims. Picroilmenite grains were characterized by elevated MgO (11–13 wt. %) and low total Fe as FeO (<40 wt. %), with some grains having high Cr_2O_3 (3.5 and 4.1 wt. %; Dufresne and Copeland, 1999). The low Fe and high MgO generally indicate a state of low oxygen fugacity within the kimberlite magma, a trait favourable for the preservation of diamond.

In 2000, Brilliant Mining Corp. confirmed recovery of KIMs from multiple sites on their Medley River property located along the north and west sides of Cold Lake, and that the results are encouraging based on the types, abundance and morphology of the minerals recovered. Dufresne and Noyes (2001a) confirmed by electron microprobe analysis (EMPA) that 4 of 25 pyrope garnets are subcalcic G10 pyrope. In addition, they reported pyrope garnets up to 1.0 mm in diameter with orange-peel texture, a trait that could indicate a proximal source.

In 2002, New Claymore Resources Ltd. collected 18 beach samples near the towns of St. Paul and Two Hills, about 85–130 km southwest of Cold Lake. Some 308 potential garnet grains were analyzed by EMPA, returning 12 G10 garnets and 105 G9 garnets (Rich, 2003). In addition, the analysis confirmed 26 Cr-diopsides, 17 low-Cr diopsides and 6 picroilmenites from the beach samples.

During 2005, Diamondex Resources Ltd. staked a large land package, consisting of more than 3 million acres in east-central Alberta and encompassing the Cold Lake–St. Paul area. The property, which is referred to as the Pegasus project, was acquired based on KIMs (including significant concentrations of G10 pyrope garnet, chromite, diopside and ilmenite), as well as interpreted geophysical targets. Diamondex has completed approximately 31 000 line-km of high-resolution airborne magnetic surveys (HRAM) with 100 m line spacing.

4.2 Calling Lake Region

The Calling Lake mineral permits were first staked in 1994 and 1996 by R. Haimila and 656405 Alberta Ltd. (Haimila, 1996). Subsequent beach sampling by Buffalo Diamonds Ltd. on the southwest and south shores of Calling Lake has yielded over 500 KIMs from four separate sites. Based on the recovery of 66 subcalcic G10 pyrope garnets and other indicator minerals, such as G1, G2, G7, G9 and G11 pyrope garnet, high-Cr diopside, high-Cr picroilmenite and high-Ti kimberlitic chromite, there is strong evidence for the presence of local diamondiferous kimberlite (Dufresne and Copeland, 2000; Turnbull, 2002). The

66 G10 garnets represent the highest concentration of such garnets known in Alberta. The potential for discovery of diamondiferous kimberlite is further supported by the discovery of a 0.005 carat, pale yellow rough diamond with grade L colour, along with olivine, in a basal till sample collected from the Calling River east of Calling Lake during 1998 (Dufresne and Copeland, 2000). In 1999–2000, Buffalo Diamonds Ltd. and New Claymore Resources Ltd. initiated a detailed follow-up exploration program that culminated in the drilling of 10 holes totalling 1041 m (Turnbull, 2002). The core, however, was held in confidence until the drill program was paid for. During February 2002, BHP Billiton optioned the property from Buffalo Diamonds and New Claymore and took possession of the drillcore from the 2000 program. It was subsequently reported that none of the holes had intersected ultramafic rocks.

In 2005, the Calling Lake area and Pelican Mountain uplands to the north were staked by Grizzly Diamonds Ltd. During 2006 and 2007, Grizzly Diamonds Ltd. and Stornoway Diamond Corporation completed a 25 000 line-km airborne magnetic survey and ground anomaly checks on the Call of the Wild property in the Pelican Mountain uplands area. Of the 47 airborne magnetic targets selected for follow-up exploration, 19 remain priorities for ground geophysical surveying and sampling.

5 Methodology

An important sampling criterion for this study was to evaluate the proportions of all the ordinary garnet species (pyrope, almandine, grossular, andradite and spessartine) in the beach sands and to collect any information that may suggest source region(s) of the indicator grains recovered. Three samples were taken from each site, for separate analysis as described below and shown in Figure 5.

1) A 10 kg sample was taken for indicator-mineral processing and picking. Rather than taking the sample by shovel, a 6.3 cm (inside diameter) tube was used to obtain a true cross-section of the beach sand. Tubes of beach sand were collected until 10 kg were obtained, as measured using a mechanical hanging scale (32 kg capacity with 1 kg resolution). Note that only 10 kg were taken because of the elevated concentration of garnet. The authors recommend that future exploratory sampling maintain standard KIM sampling protocols (e.g., Paulen, 2007; Prior et al., 2007). The 10 kg sample was sent to Overburden Drilling Management Limited, Nepean, Ontario for kimberlite indicator-mineral picking, with special instructions to pick all garnet species present in the heavy-mineral concentrate. Size fractions picked included the 0.25–0.5, 0.5–1 and 1–2 mm fractions. Paramagnetic separation on the 0.25–0.5 mm fraction included the <0.6, 0.6–0.8, 0.8–1 and >1 ampere fractions. Scanning electron microscope (SEM) checks were conducted in conjunction with garnet-species picking.

2) A 2 kg sample was taken for grain-size analysis using the same beach-sand collection technique described above. Grain-size analysis was completed by drying the sample and sifting the beach sand through a series of brass sieves ranging in size from >4.0 mm (#5) to <63 µm (#230).

3) A 2.9 cm (inside diameter) tube was pressed vertically down into the beach sand and capped on both ends to obtain a cross-section of the sample site. This tube was measured for magnetic susceptibility using a Bartington MS2C core logging sensor at the Physics Department, University of Alberta. The MS2C core logging sensor is designed for volume susceptibility measurements of sediment samples in nonmagnetic cores. The high resolution of the sensor permits cores to be logged at intervals down to approximately 20 mm. The cross-section tube was measured at 20 mm intervals by running the sample tube horizontally through the instrument from top to bottom, making sure to zero the instrument for each new sample tube. The cross-section core tube was also used to make physical observations, such as lithological grain counts.

Quantitative chemical analyses of major elements were obtained on mineral-grain separates using a JEOL8900 electron microprobe at the Department of Earth and Atmospheric Sciences, University of Alberta. The silicate grains were analyzed using an accelerating voltage of 20 kV, beam diameter of 1–10 µm and beam current of 20 nA. Peak and background counting times were 30 seconds. Standards, consisting of natural minerals from the Smithsonian microbeam set of standards (Jarosewich, 2002), were regularly analyzed to ensure the calibration remained valid throughout the probe session.

6 Results

This section presents the results of grain-size distribution, general lithology, garnet species, KIMs, gold grains, and metamorphic and magmatic massive-sulphide indicator minerals (MMSIM).

6.1 Grain-Size Distributions, General Lithology and Magmatic Susceptibility

Grain-size distributions were determined by sifting the beach material through a set of sieves that measured eight increments from >4000 µm to <63 µm. With the exception of Marie Lake, which has the only fraction of coarse sand to fine gravel (>4000 µm) of the beaches sampled, the grain sizes dominantly range between –1000 µm and +125 µm, with the 250–500 µm size being the dominant fraction (Figure 6).

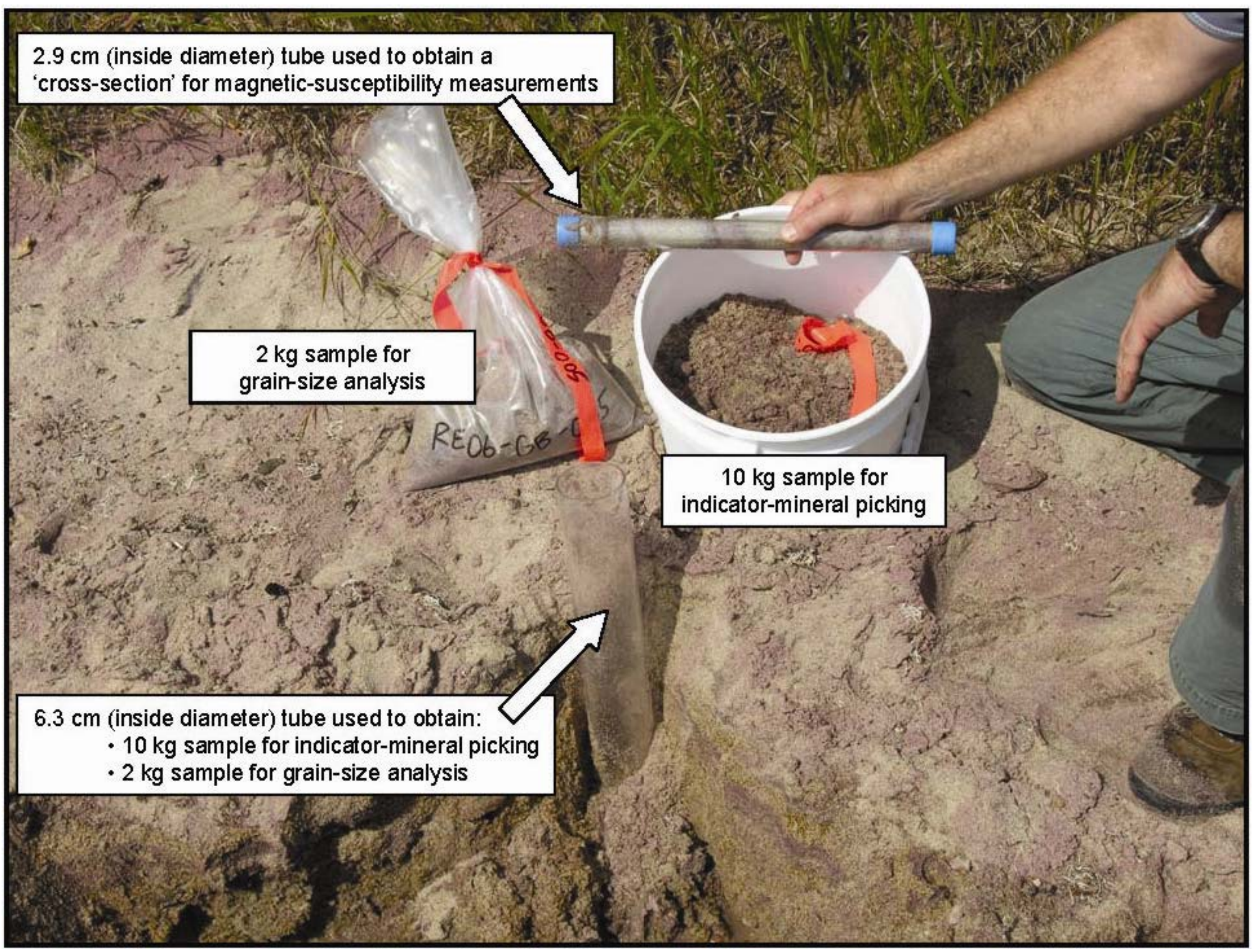

Figure 5. Beach-sand sampling methodology. Three samples were taken at each site: a 10 kg pail for indicator-mineral picking, a 2 kg sample for grain-size analysis and a 'tube' sample to obtain a cross-section of the site for magnetic-susceptibility measurements and physical observations.

The general lithology of the beach-sand samples was obtained by counting quartz, oxide, garnet and sulphide grains from three separate 5 g samples taken from garnet-rich, oxide-rich and representative sand sections along the cross-section core tubes that were collected from each sample site; these counts are presented in Appendix 2 and as average values in Table 1. Beach sands from Heart Lake, Winefred Lake and Christina Lake are dominated quartz (>96%). The Wolf Lake beach sands have a fairly even distribution of quartz (14%–43%), oxide (29%–38%) and garnet (25%–53%). Cold Lake (English Bay) beach sands are dominated by garnet (60%–74%), followed by oxide (11%–29%) and quartz (10%–28%). Marie Lake has nearly equal proportions of quartz (28%–50%) and garnet (41%–56%), with minor oxide (8%–16%). Stoney Lake is dominated by quartz (81%–94%), followed by oxides (5%–12%) and minor garnet (<6%). Lac Santé has elevated distributions of quartz (79%–81%) and oxide (15%–21%) grains. Calling Lake southeast has highly variable quartz (23%–92%), oxide (4%–46%) and garnet (2%–35%). Calling Lake west has abundant quartz (63%–84%), followed by garnet (11%–24%).

Appendix 2 shows little correlation between the garnet-rich fractions and high-oxide layers, which are characterized by high magnetic susceptibility likely related to ilmenite accumulation. This is taken as evidence of mechanical sorting caused by wave action, where heavier oxide minerals are susceptible to settling in or near the wash zone, whereas the lighter garnet grains (relative to oxide grains) characteristically travel to the above-wash zone. Based on this observation, it is recommended that prospectors wishing to investigate beach sands not forget the landward-vegetated area as a possible sample site for garnet-rich sand.

6.2 Garnet Species

The heavy-mineral fraction of all samples includes and is often dominated by garnet. The garnet species (only) are presented in Table 2 (also on CD) and are separated by their size and paramagnetic fractions. In all samples collected during this study, the garnet consists overwhelmingly (>99%) of almandine, followed by grossular, spessartine and pyrope (Figure 7a). Most of this almandine is pink to pink-red, but some grains are orange. With the exception of Winefred Lake, all samples contain minor (tens of grains) grossular and/or spessartine, which are typically orange and do not differ sufficiently in paramagnetism from orange almandine (i.e., confirmed by SEM). Heart Lake, Wolf Lake and Cold Lake yielded a few brown and yellow andradite grains, including one or two grains of green Cr-andradite. Garnets that will be of interest to diamond explorers include peridotitic Cr-pyrope and megacrystic Cr-pyrope.

Garnet EMPA data (728 total analyses) are presented in Appendix 3 (also on CD), including core and rim measurements from almandine, pink almandine, grossular, spessartine, pyrope, low-Cr pyrope, Cr grossular and andradite. In Appendix 3 (also on CD), three separate means of classification are provided, including

1) physical grain types identified during heavy-mineral-indicator processing, some of which were identified by semiquantitative EDS analysis;
2) geochemical grain types identified by entering EMPA data from this study into the mineral identification program MinIdent-Win (Smith and Higgins, 2001); minerals identified include a score, or a 'matching index' calculation of mineral identification probability, where a score of 1000 represents a perfect match; and
3) stoichiometric garnet end-member calculations based on EMPA data from this study; values are in per cent and total 100%.

The MinIdent (Smith and Higgins, 2001) mineral classification was preferred for garnet classification, in which case the analyses included, in decreasing number of analyses: almandine (340 spots probed), grossular (146), almandine-spessartine series (99), pyrope (43), spessartine (25), knorringite to knorringite-pyrope series (18), almandine-pyrope series (17), grossular-uvarovite series (9), low-Cr

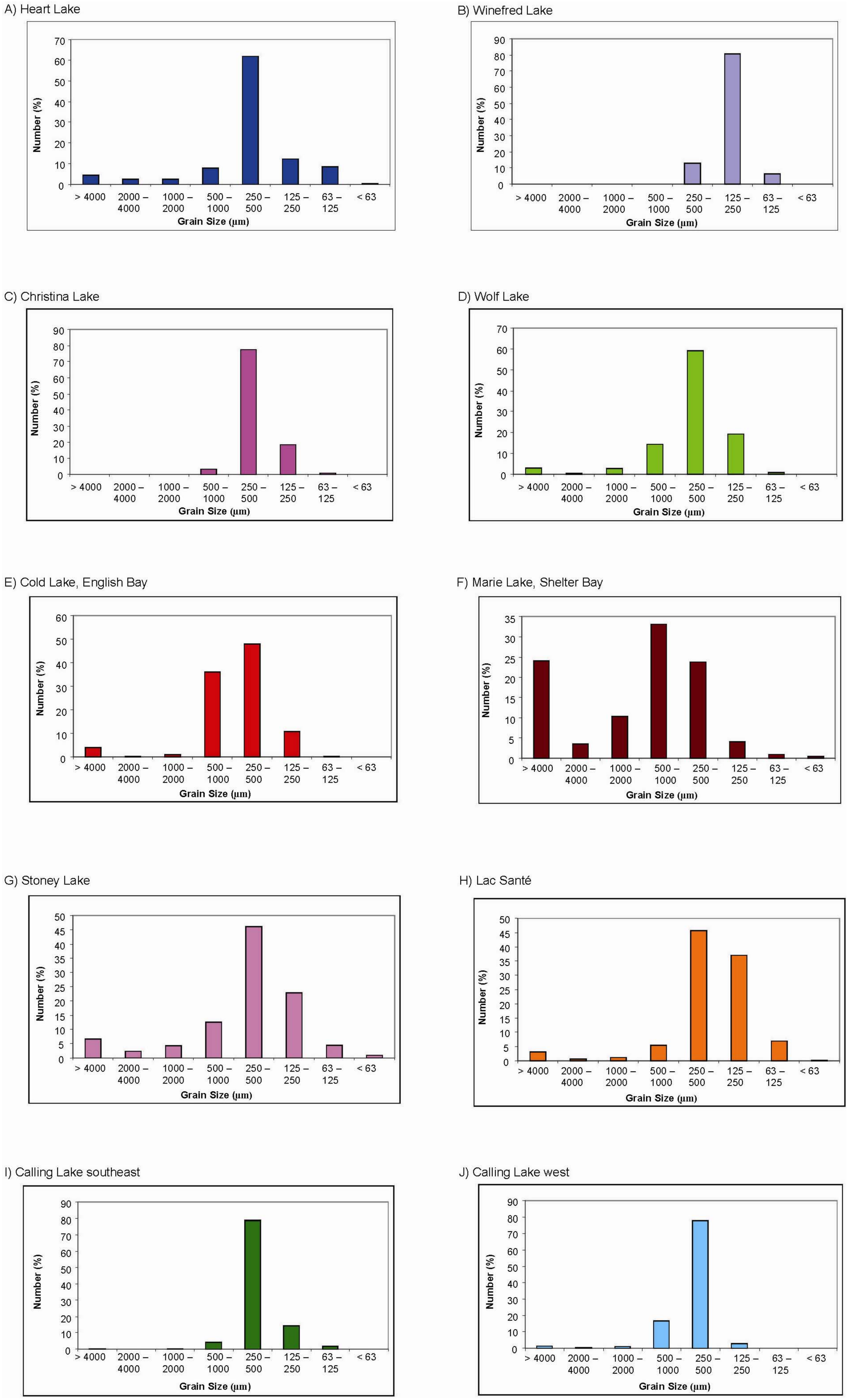

Figure 6. Grain-size distributions at selected beaches in east-central Alberta.

Table 2. Summary of garnet species in beach sands from selected beaches in east-central Alberta.

Sample number	Garnet mineral species	Size fraction (mm)							Remarks
				0.25-0.5 mm fraction					
				Paramagnetic separation (amperes)					
		1.0 to 2.0	0.5 to 1.0	<0.6 amp	+0.6-0.8 amp	+0.8-1 amp	>1.0 amp	Total	
		Number of grains							
RE06-GB-001 (Heart Lake)	All minerals	~80	~2000	~20,000	~53,000	~15,000	~10,000	**~100,000**	SEM checks from 0.5-1.0 mm fraction: 1 brown andradite candidate = 1 andradite; and 10 orange spessartine versus almandine candidates = 1 spessartine, 2 Mn-almandine, and 7 almandine. SEM checks from 0.25-0.5 mm fraction: 12 pale orange grossular versus almandine candidates = 1 grossular; 10 almandine and 1 Cr-poor pyrope; and 22 orange spessartine versus almandine candidates = 1 spessartine, 1 Mn-almandine and 20 almandine Also picked 50 representative pink almandine, 20 potential pale orange grossular and 20 potential orange spessartine from 0.25-0.5 mm fraction.
	Almandine	~50 (60%)	~1800 (90%)	~18,000 (90%)	~45,000 (90%)	~7500 (50%)	~50 (Tr)	**~70,000 (70%)**	
	Grossular	0	0	0	0	0	~20 (Tr)	**~20 (Tr)**	
	Andradite	0	1 (Tr)	0	0	0	0	**1 (Tr)**	
	Spessartine (MMSIM)	0	1 (Tr)	~50 (Tr)	0	0	1 (Tr)	**~50 (Tr)**	
	Cr-grossular (MMSIM)	0	0	0	0	0	0	**0**	
	Cr-pyrope (KIM)	0	0	0	0	0	0	**0**	
	Cr-poor pyrope (KIM)	0	0	0	0	0	1 (Tr)	**1 (Tr)**	
	Pyrope-almandine (KIM)	0	0	0	0	0	0	**0**	
RE06-GB-002 (Winefred Lake)	All minerals	NS	NS	NA	NA	NA	NA	**~800**	SEM checks from 0.25-0.5 mm fraction: 3 pale orange to red-orange almandine versus spessartine candidates = 3 almandine. Also picked 50 representative pink to pink-red almandine from 0.25-0.5 mm fraction.
	Almandine	0	0	0	0	0	0	**~300 (40%)**	
	Grossular	0	0	0	0	0	0	**0**	
	Andradite	0	0	0	0	0	0	**0**	
	Spessartine (MMSIM)	0	0	0	0	0	0	**0**	
	Cr-grossular (MMSIM)	0	0	0	0	0	0	**0**	
	Cr-pyrope (KIM)	0	0	0	0	0	0	**0**	
	Cr-poor pyrope (KIM)	0	0	0	0	0	0	**0**	
	Pyrope-almandine (KIM)	0	0	0	0	0	0	**0**	
RE06-GB-003 (Christina Lake)	All minerals	2	~300	~15,000	~10,000	~13,000	~12,000	**~50,000**	SEM checks from 0.5-1.0 mm fraction: 2 grey to pink spessartine versus almandine candidates = 2 Mn-almandine. SEM checks from 0.25-0.5 mm fraction: 10 pale to very pale orange (>1.0 amp) grossular versus almandine candidates = 7 grossular, 2 almandine and 1 pyrope-almandine; 4 orange (<0.6 amp) spessartine candidates = 1 spessartine and 3 Mn-almandine; 8 orange (0.6-0.8 amp) spessartine versus almandine candidates = 1 spessartine, 2 Mn-almandine, 4 almandine and 1 grossular; and 8 orange (0.8-1.0 mm) spessartine versus almandine candidates = 8 almandine. Also picked 50 representative pink to pink-red almandine, 50 potential pale orange
	Almandine	1 (50%)	~270 (90%)	~10,000 (70%)	~7500 (75%)	~6500 (50%)	~100 (0.5%)	**~24,000 (50%)**	
	Grossular	0	0	0	~10 (Tr)	~5 (Tr)	~25 (Tr)	**~40 (Tr)**	
	Andradite	0	0	0	0	0	0	**0**	
	Spessartine (MMSIM)	0	0	~50 (Tr)	~30 (Tr)	0	0	**~80 (Tr)**	
	Cr-grossular (MMSIM)	0	0	0	0	0	0	**3 (Tr)**	
	Cr-pyrope (KIM)	0	0	0	0	0	0	**0**	
	Cr-poor pyrope (KIM)	0	0	0	0	0	2 (Tr)	**2 (Tr)**	
	Pyrope-almandine (KIM)	0	0	0	0	0	1 (Tr)	**1 (Tr)**	
RE06-GB-004 (Wolf Lake)	All minerals	~45	~3500	~370,000	~350,000	~60,000	~50,000	**~800,000**	SEM checks from 0.5-1.0 mm fraction: 1 black andradite versus tourmaline candidate = 1 andradite; and 5 orange spessartine versus almandine candidates = 5 almandine. SEM checks from 0.25-0.5 mm fraction: 22 pale orange grossular (>1.0 amp) versus almandine candidates = 16 grossular, 3 almandine, 2 andalusite and 1 titanite; 2 yellow andradite candidates = 1 andradite and 1 spessartine; and 20 orange spessartine (<0.6 amp) versus almandine candidates = 3 spessartine, 2 Mn-almandine,14 almandine and 1 staurolite. Also picked 50 representative pink to pink-red almandine, 50 potential orange spessartine and 50 potential pale orange grossular from 0.25-0.5 mm fraction.
	Almandine	~30 (70%)	~3300 (95%)	~350,000 (95%)	~330,000 (95%)	~30,000 (50%)	~250 (0.5%)	**~700,000 (85%)**	
	Grossular	0	0	0	0	0	~100 (Tr)	**100 (Tr)**	
	Andradite	0	1 (Tr)	1 (Tr)	0	0	0	**1 (Tr)**	
	Spessartine (MMSIM)	0	0	~50 (Tr)	0	0	0	**~50 (Tr)**	
	Cr-grossular (MMSIM)	0	0	0	0	0	2 (Tr)	**2 (Tr)**	
	Cr-pyrope (KIM)	0	0	0	0	0	6 (Tr)	**6 (Tr)**	
	Cr-poor pyrope (KIM)	0	0	0	0	0	1 (Tr)	**1 (Tr)**	
	Pyrope-almandine (KIM)	0	0	0	0	0	0	**0**	
RE06-GB-005 (Cold Lake, English Bay)	All minerals	16	~13,000	~600,000	~600,000	~50,000	~40,000	**~1,300,000**	SEM checks from 0.5-1.0 mm fraction: 5 pale orange grossular versus almandine candidates = 3 grossular and 2 almandine; 3 dark grey dodecahedral spessartine candidates = 1 spessartine, 1 Mn-almandine and 1 almandine; and 2 orange spessartine versus almandine candidates = 2 almandine. SEM checks from 0.25-0.5 mm fraction: 25 pale orange grossular (>1.0 amp) candidates = 23 grossular and 2 almandine; 3 yellow andradite (0.6-0.8 amp) versus siderite candidates = 3 andradite; and 11 orange spessartine (<0.6 amp) candidates = 7 spessartine and 4 almandine. Also picked 50 pink to pink-red almandine, 40 potential orange spessartine and 30 potential pale orange grossular from 0.25-0.5 mm fraction.
	Almandine	15 (95%)	~11,000 (85%)	~500,000 (85%)	~550,000 (90%)	~40,000 (80%)	~200 (0.5%)	**~1,100,000 (85%)**	
	Grossular	0	3 (Tr)	0	0	0	~100 (Tr)	**100 (Tr)**	
	Andradite	0	0	0	3 (Tr)	0	0	**3 (Tr)**	
	Spessartine (MMSIM)	0	1 (Tr)	~100 (Tr)	0	0	0	**~100 (Tr)**	
	Cr-grossular (MMSIM)	0	0	0	0	0	1 (Tr)	**1 (Tr)**	
	Cr-pyrope (KIM)	0	0	0	0	1 (Tr)	5 (Tr)	**6 (Tr)**	
	Cr-poor pyrope (KIM)	0	0	0	0	0	1 (Tr)	**1 (Tr)**	
	Pyrope-almandine (KIM)	0	0	0	0	0	0	**0**	
RE06-GB-006 (Cold Lake, English Bay) *	All minerals	15	~13,000	~700,000	~600,000	~65,000	~50,000	**~1,400,000**	SEM checks from 0.25-0.5 mm fraction: 12 pale orange grossular (>1.0 amp) versus almandine candidates = 9 grossular, 2 pyrope-almandine and 1 zircon; and 25 orange spessartine (<0.6 amp) versus almandine candidates = 7 spessartine, 3 Mn-almandine and 15 almandine. Also picked 50 pink almandine, 50 potential pale orange grossular and 50 potential orange spessartine from 0.25-0.5 mm fraction.
	Almandine	14 (95%)	~12,500 (95%)	~670,000 (95%)	~570,000 (95%)	~50,000 (80%)	~250 (0.5%)	**~1,300,000 (90%)**	
	Grossular	0	0	0	0	0	~80 (Tr)	**~80 (Tr)**	
	Andradite	0	0	0	0	0	0	**0**	
	Spessartine (MMSIM)	0	0	~100 (Tr)	0	0	0	**~100 (Tr)**	
	Cr-grossular (MMSIM)	0	0	0	0	0	0	**0**	
	Cr-pyrope (KIM)	0	0	0	0	0	4 (Tr)	**4 (Tr)**	
	Cr-poor pyrope (KIM)	0	0	0	0	0	2 (Tr)	**2 (Tr)**	
	Pyrope-almandine (KIM)	0	0	0	0	0	0	**0**	
RE06-GB-007 (Marie Lake, Shelter Bay)	All minerals	113	~7000	~450,000	~300,000	~80,000	~35,000	**~900,000**	SEM checks from 0.5-1.0 mm fraction: 2 black spessartine candidates = 2 almandine. SEM checks from 0.25-0.5 mm fraction: and 20 pale orange grossular (>1.0 amp) versus almandine candidates = 12 grossular, 7 almandine and 1 Cr-poor pyrope; and 10 orange spessartine (<0.6 amp) versus almandine candidates = 2 spessartine, 6 almandine and 2 Mn-almandine. Also picked 50 pink to pink-red almandine, 50 potential pale orange grossular and 50 potential orange spessartine from 0.25-0.5 mm fraction.
	Almandine	30 (95%)	~11,000 (95%)	~440,000 (98%)	~280,000 (95%)	~70,000 (90%)	0	**~800,000 (85%)**	
	Grossular	0	0	0	0	0	~100 grossular (Tr)	**~100 (Tr)**	
	Andradite	0	0	0	0	0	0	**0**	
	Spessartine (MMSIM)	0	0	~100 (Tr)	0	0	0	**~100 (Tr)**	
	Cr-grossular (MMSIM)	0	0	0	0	0	1 (Tr)	**1 (Tr)**	
	Cr-pyrope (KIM)	0	0	0	0	0	13 (Tr)	**13 (Tr)**	
	Cr-poor pyrope (KIM)	0	0	0	0	0	3 (Tr)	**3 (Tr)**	
	Pyrope-almandine (KIM)	0	0	0	0	0	0	**0**	
RE06-GB-008 (Stoney Lake)	All minerals	113	~7000	~300,000	~250,000	~20,000	~20,000	**~600,000**	SEM checks from 0.5-1.0 mm fraction: 4 pale orange grossular versus almandine candidates = 2 grossular, 1 almandine and 1 spessartine; 4 orange spessartine versus almandine candidates = 3 spessartine and 1 almandine. SEM checks from 0.25-0.5 mm fraction: 13 pale orange grossular (>1.0 amp) candidates = 13 grossular; 3 other pale orange grossular (0.8-1.0 amp) candidates = 3 almandine; 6 pale yellow andradite (0.6-0.8 amp) candidates = 1 spessartine and 5 siderite; 5 orange spessartine (<0.6 amp) candidates = 5 spessartine; and 2 other orange spessartine (0.8-1.0 amp) candidates = 2 almandine. Also picked 50 potential pink to pink-red almandine, 60 potential pale orange grossular and 30 potential orange spessartine from 0.25-0.5 mm fraction.
	Almandine	56 (50%)	~6000 (85%)	~250,000 (80%)	~200,000 (80%)	~10,000 (50%)	0	**~450,000 (75%)**	
	Grossular	0	2 (Tr)	0	0	0	~150 (0.5%)	**~150 (Tr)**	
	Andradite	0	0	0	0	0	0	**0**	
	Spessartine (MMSIM)	0	0	0	0	0	0	**0**	
	Cr-grossular (MMSIM)	0	0	0	0	0	0	**0**	
	Cr-pyrope (KIM)	0	0	0	0	0	1 (Tr)	**1 (Tr)**	
	Cr-poor pyrope (KIM)	0	4 (Tr)	~80 (Tr)	1 (Tr)	0	0	**~80 (Tr)**	
	Pyrope-almandine (KIM)	0	0	0	0	0	0	**0**	
RE06-GB-009 (Lac Santé)	All minerals	~100	~3500	~200,000	~200,000	~25,000	~14,000	**~440,000**	SEM checks from 0.5-1.0 mm fraction: 3 spessartine versus almandine candidates = 1 spessartine, 1 Mn-almandine and 1 almandine. SEM checks from 0.25-0.5 mm fraction: 10 pale orange grossular versus almandine candidates = 9 grossular and 1 zircon and 15 orange spessartine versus almandine candidates = 3 spessartine, 2 Mn-almandine and 10 almandine. Also picked 50 pink to pink-red almandine, 50 potential pale orange grossular and 50 potential orange spessartine from 0.25-0.5 mm fraction.
	Almandine	~85 (85%)	~3200 (90%)	~180,000 (90%)	~190,000 (95%)	~20,000 (80%)	~100 (Tr)	**~390,000 (90%)**	
	Grossular	0	0	0	0	0	~100 (Tr)	**~100 (Tr)**	
	Andradite	0	0	0	0	0	0	**0**	
	Spessartine (MMSIM)	0	0	0	0	0	0	**0**	
	Cr-grossular (MMSIM)	0	0	0	0	0	0	**0**	
	Cr-pyrope (KIM)	0	0	0	0	0	3 (Tr)	**3 (Tr)**	
	Cr-poor pyrope (KIM)	0	~10 (Tr)	~200 (Tr)	0	0	0	**0**	
	Pyrope-almandine (KIM)	0	0	0	0	0	0	**0**	
RE06-GB-010 (Calling Lake southeast)	All minerals	11	~600	~90,000	~140,000	~50,000	~45,000	**~325,000**	Also picked 50 pink to pink-red almandine, 60 potential pale orange grossular and 25 potential orange spessartine from 0.25-0.5 mm fraction.
	Almandine	8 (85%)	~500 (80%)	~43,000 (50%)	~70,000 (50%)	~20,000 (40%)	0	**~135,000 (40%)**	
	Grossular	0	0	0	0	0	~150 (Tr)	**~150 (Tr)**	
	Andradite	0	0	0	0	0	0	**0**	
	Spessartine (MMSIM)	0	0	~25 (Tr)	0	0	0	**~25 (Tr)**	
	Cr-grossular (MMSIM)	0	0	0	0	0	0	**0**	
	Cr-pyrope (KIM)	0	0	0	0	0	1 (Tr)	**1 (Tr)**	
	Cr-poor pyrope (KIM)	0	0	0	0	0	0	**0**	
	Pyrope-almandine (KIM)	0	0	0	0	0	0	**0**	
RE06-GB-011 (Calling Lake west)	All minerals	22	~3500	~600,000	~250,000	~45,000	~65,000	**~950,000**	SEM checks from 0.5-1.0 mm fraction: 1 pale orange grossular candidate = 1 grossular; 1 red-orange spessartine versus almandine candidate = 1 almandine; and 10 orange spessartine candidates = 2 spessartine and 8 almandine. SEM checks from 0.25-0.5 mm fraction: 10 pale orange grossular (>1.0 amp) versus almandine candidates = 10 grossular; and 20 orange spessartine (<0.6 amp) versus almandine candidates = 2 spessartine, 3 Mn-almandine and 15 almandine. Also picked 50 pink to pink-red almandine, 55 potential pale orange grossular and 25 potential orange spessartine from 0.25-0.5 mm fraction.
	Almandine	21 (99%)	~3250 (95%)	~500,000 (85%)	~190,000 (75%)	~20,000 (45%)	0	**~700,000 (75%)**	
	Grossular	0	1 (Tr)	0	0	~20 (Tr)	~150 (Tr)	**~170 (Tr)**	
	Andradite	0	0	0	0	0	0	**0**	
	Spessartine (MMSIM)	0	2 (Tr)	~50 (Tr)	0	0	0	**~50 (Tr)**	
	Cr-grossular (MMSIM)	0	0	0	1 (Tr)	0	0	**1 (Tr)**	
	Cr-pyrope (KIM)	0	0	0	0	0	6 (Tr)	**6 (Tr)**	
	Cr-poor pyrope (KIM)	0	0	0	0	0	0	**0**	
	Pyrope-almandine (KIM)	0	0	0	0	0	0	**0**	

*** Duplicate sample of RE06-GB-005**

A)

B)

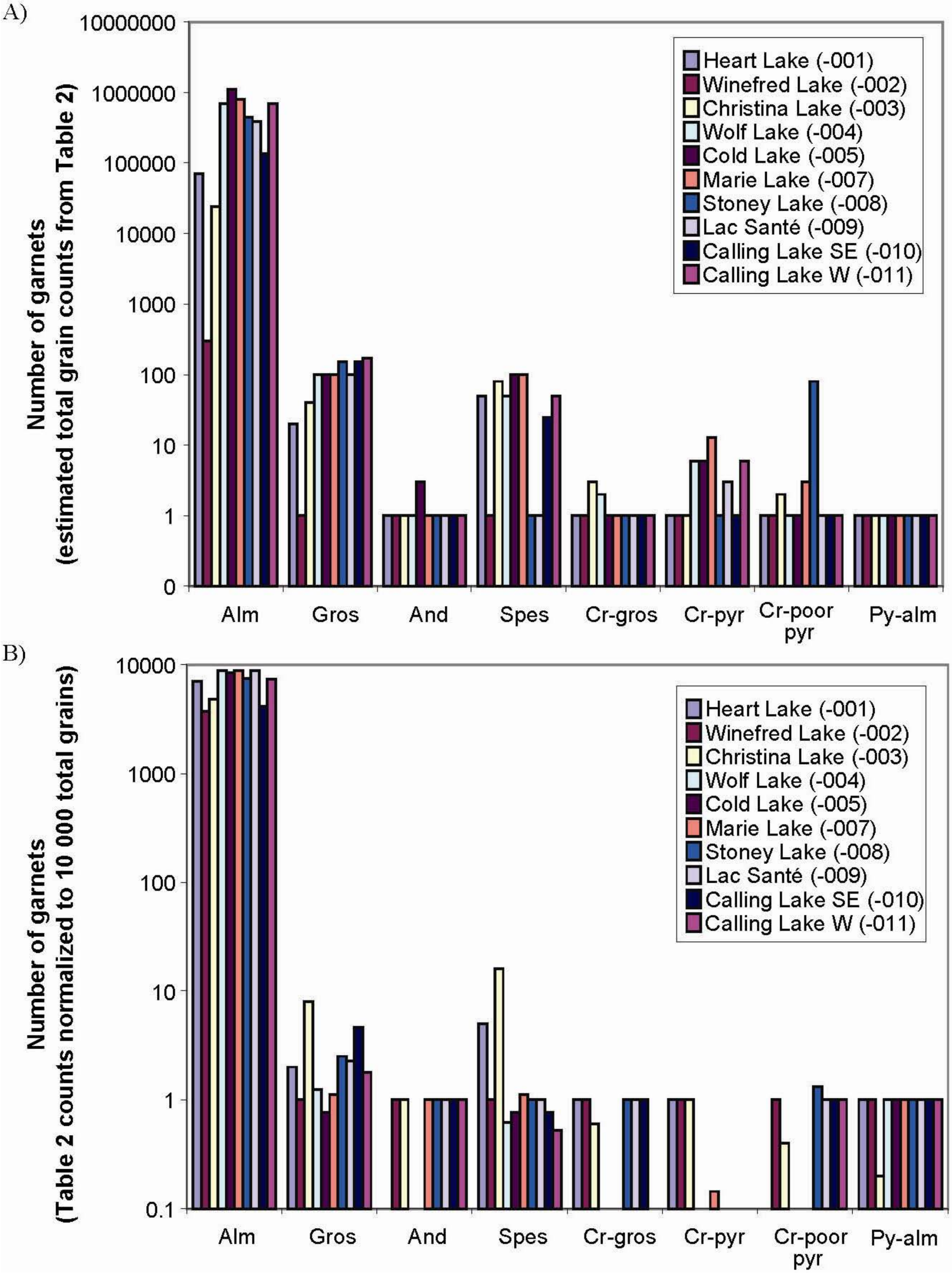

Figure 7. Geographic distribution of garnet species as estimated from Table 2: A) total estimated grain counts; B) garnet grain counts normalized to 10 000 total grains. Abbreviations: alm, almandine; gros, grossular; and, andradite; spes, spessartine; Cr-gros, Cr-grossular; Cr-pyr, Cr-pyrope; Cr-poor pyr, Cr-poor pyrope; py-alm, pyrope-almandine.

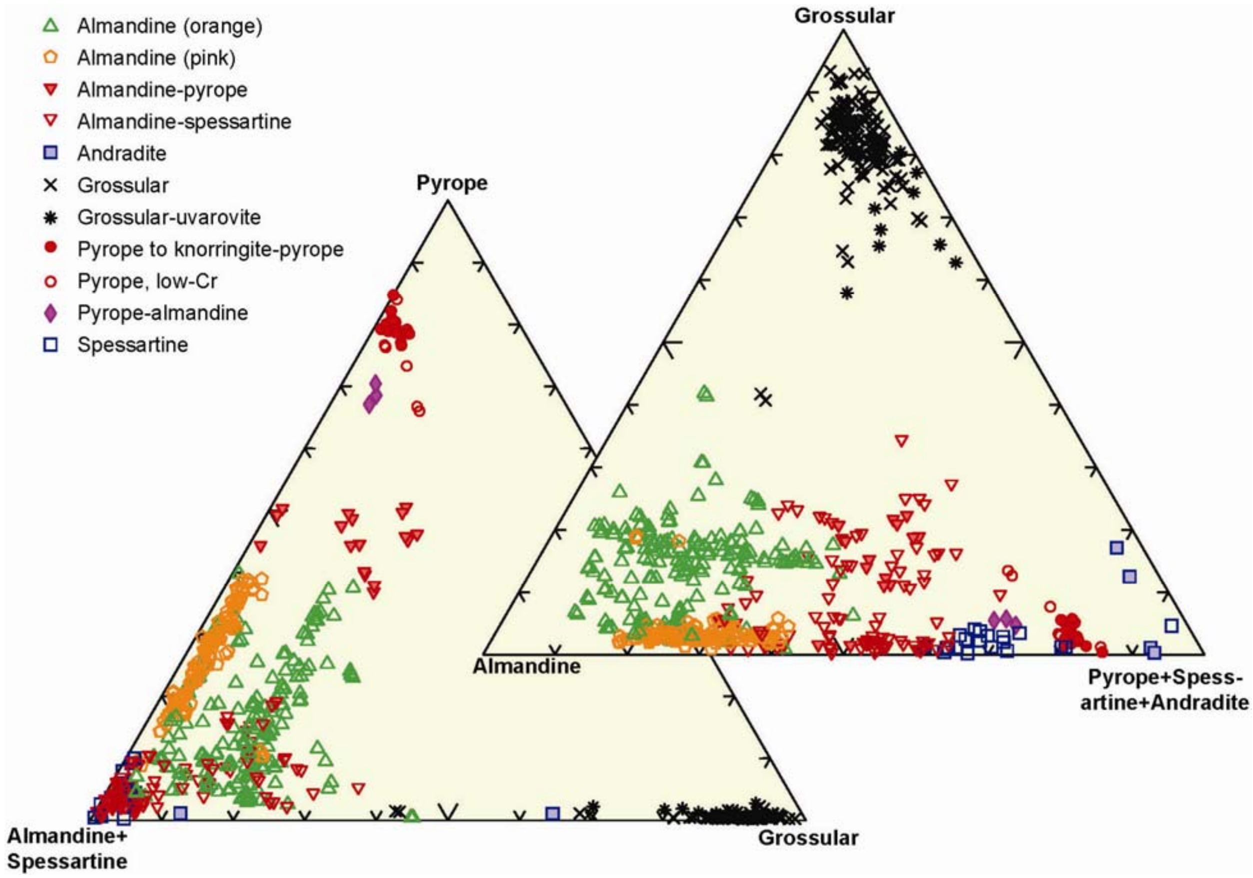

Figure 8. Geochemical distribution of garnet species from east-central Alberta beach sands.

pyrope (8), andradite (5), pyrope-almandine series (3) and uvarovite (1). These species are shown in Figure 8 on the ternary plots of almandine+spessartine vs. pyrope vs. grossular, and almandine vs. grossular vs. pyrope+spessartine+andradite. The geochemical distribution shows the predominance of almandine, followed by grossular and spessartine. Orange and pink almandine are chemically distinct from each other, with orange almandine having a higher grossular component (i.e., CaO). Isomorphous mixed series are evident, particularly between pyrope and between almandine and almandine and spessartine. This series is often called the 'pyralspite series' and, in this dataset, dominates in comparison to the other common isomorphous series uvarovite-grossular-andradite, or the 'ugrandite series'. Smaller species groups, such as pyrope and andradite, stand out as small isolated clusters relative to almandine-series garnet. Grains originally identified as garnet but identified as other minerals by MinIdent include staurolite, amphibole-group minerals (e.g., pargasite, hornblende, tschermakite) and piedmontite.

With respect to geographic distribution, the various garnet species appear to be distributed fairly evenly from site to site, with the exception of a few anomalous trends (Figure 7a). Importantly to diamond explorers, Cr-pyrope is more abundant at the Wolf Lake, Cold Lake, Marie Lake and Calling Lake west sample sites relative to other sites analyzed in this study. Caution is advised when making these kinds of observations, as the abundance of pyrope in these areas correlates with high total garnet grain counts. When the garnet species counts are normalized to 10 000, their patterns of distribution change. The normalized diagrams (Figure 7b) show that Cr-pyrope is elevated in the Heart Lake, Winefred Lake and Christina Lake areas. Caution is also advised for the normalized trend, because the geographic distribution of pyrope could be further complicated by a local kimberlite source. A second significant observation of the normalized garnet distribution is that spessartine and grossular grain counts are elevated in the northern sample sites (Christina and Heart lakes), which may have implications for garnet paragenesis.

6.3 Kimberlite-Indicator Minerals

A summary of the KIM grains is presented in Table 3. In addition to the aforementioned pyrope and knorringite EMPA data, Appendix 3 (also on CD) also includes analytical results from clinopyroxene (18 grains analyzed), ilmenite (11) and chromite (9).

With the exception of Winefred Lake, all beach sands sampled yielded KIMs dominated by garnet peridotite and clinopyroxene, followed by ilmenite, eclogitic garnet and chromite. No forsteritic olivine was recovered. The highest total KIM grain counts were from Marie Lake (16 grains), Calling Lake west (15) and Cold Lake (14). Christina Lake and Stoney Lake both had 7 KIMs recovered, followed by Calling Lake southeast (6 grains), Lac Santé (4) and Heart Lake (2). Most KIMs fall in the 0.25–0.5 mm size fraction, with 0.5–1 mm ilmenite grains (Table 3).

Figure 9 shows that, based on samples from this study, pyrope garnet was recovered throughout east-central Alberta, with two distinct clusters in the general area of Marie Lake (12 grains)–Wolf Lake (6)–Cold Lake (5), and at Calling Lake west (6). Pyrope garnet is dominantly lherzolite, with two grains, one each from Wolf Lake and Cold Lake, plotting in the harzburgitic G10 field (Figure 9). Several pyropes from Marie Lake plot near the G9–G10 boundary line and have high Cr_2O_3 (13 wt. %), knorringite ($Mg_3Cr_2Si_3O_{12}$) values of between 22 and 23, Mg# ($100Mg/(Mg+Fe^{2+})$) of 84 and Cr# ($100Cr/(Cr+Al)$) between 37 and 38. In addition, high-Cr_2O_3 pyrope (i.e., >6 wt. %), which in some cases straddles the G9–G10 boundary line, is common in beach sands from Marie Lake, Lac Santé and Calling Lake (southeast and west).

Figure 10 shows that clinopyroxene grains were recovered from Winefred Lake (1 grain), Wolf Lake (2), Cold Lake (2), Stoney Lake (1), Lac Santé (1), Calling Lake southeast (5) and Calling Lake west (6). Based on the Al_2O_3 vs. Cr_2O_3 plot of Ramsay (1992), the majority of the clinopyroxene is derived from garnet peridotite followed by spinel lherzolite and pyroxenite, and eclogite or cognate paragenesis. Garnet lherzolitic–type clinopyroxene, which plots along a compositional line between the jadeite and kosmochlor (Morris et al., 2002), was recovered from Calling Lake southeast and west (4 grains total), and from Winefred Lake and Wolf Lake (1 grain each). One clinopyroxene grain from Calling Lake southeast yielded 5.8 wt. % Al_2O_3 and 1.7 wt. % Na_2O, and may be derived from eclogite. Finally, one clinopyroxene grain from Wolf Lake has a calculated temperature within the diamond stability field (approximately 1090º–1120ºC), based on the single-grain thermometry of Finnerty and Boyd (1987) and Nimis and Taylor (2000).

Only a few oxide grains were analyzed. Chrome spinels were recovered from beach sands at Heart Lake, Christina Lake, Wolf Lake, Cold Lake, Stoney Lake and Calling Lake west (Figure 11). None of the grains plotted within the MgO-Cr_2O_3 diamond-inclusion field or near the xenocryst trend prevalent in diamondiferous kimberlite of the Buffalo Head Hills field (Hood and McCandless, 2004). A chromite from Heart Lake has high Cr# (87) but low MgO (3.5 wt. %; Mg# = 16) and high FeO (33.1 wt. %). One chromite from Stoney Lake has high Mg# (63) and NiO (0.28 wt. %) but low Cr# (17).

Four ilmenite grains were picked from the Cold Lake and Stoney Lake beach sands, with one ilmenite grain each from Christina Lake, Wolf Lake and Calling Lake west (Figure 12). Two ilmenite grains from Cold Lake and Stoney Lake are classified as nonkimberlitic grains due to their low MgO (<1.2 wt. %) and Cr_2O_3 (<0.06 wt. %). The single low-MgO grain from Stoney Lake falls on the 0 wt. % Fe_2O_3 reference line and therefore could belong to a high-TiO_2 mineral other than ilmenite. The rest of the ilmenite grains fall on the kimberlitic side of the Wyatt et al. (2004) kimberlitic ilmenite boundary reference line, although caution should be exercised because some of these grains have Cr_2O_3 values of <0.5 wt. %.

Table 3. Summary of kimberlite-indicator minerals in beach sands from selected beaches in east-central Alberta.

		Weight (g)											Number of grains																		
		<2.0 mm Table concentrate											Kimberlite-indicator minerals																		
				0.25-2.0 mm Heavy liquid separation S.G 3.20									1.0 to 2.0 mm						0.5 to 1.0 mm						0.25 to 0.5 mm						
						Nonferromagnetic HMC																									
							Processed split																								
									Total																						
Sample Number	General location	Total	-0.25 mm	Heavy Liquid Lights	Mag HMC	Total	%	Weight	<0.25 mm (wash)	0.25 to 0.5 mm	0.5 to 1.0 mm	1.0 to 2.0 mm [1]	GP	GO	DC	IM	CR	FO	GP	GO	DC	IM	CR	FO	GP	GO	DC	IM	CR	FO	Total
RE06-GB-001	Heart Lake	888.4	730.4	145.1	0.03	12.90	100	12.90	1.3	9.60	1.8	0.20	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	2
RE06-GB-002	Winefred Lake	940.5	938.9	1.6	0.00	0.03	100	0.03	0.0	0.03	0.0	0.00	No sample						No sample						0	0	0	0	0	0	0
RE06-GB-003	Christina Lake	1,246.6	1,068.2	158.6	0.03	19.80	100	19.80	5.9	13.80	0.1	0.01	0	0	0	0	0	0	0	0	0	0	0	0	1	2	1	1	2	0	7
RE06-GB-004	Wolf Lake	2,780.9	2,058.2	301.2	13.90	407.60	25	101.90	14.1	84.10	3.5	0.20	0	0	0	0	0	0	0	0	0	1	0	0	6	1	2	0	1	0	11
RE06-GB-005	Cold Lake	4,743.0	1,212.1	493.9	43.00	2,994.00	5	149.80	4.1	132.10	13.6	0.05	0	0	0	0	0	0	0	0	0	1	0	0	6	1	2	3	1	0	14
RE06-GB-006	Cold Lake [2]	4,878.9	1,264.9	468.4	41.60	3,104.00	5	155.20	3.7	138.50	12.9	0.06	0	0	0	0	0	0	0	0	0	0	0	0	4	2	0	1	0	0	7
RE06-GB-007	Marie Lake	2,389.8	937.0	403.2	3.60	1,046.00	10	104.60	4.8	88.20	11.5	0.10	0	0	0	0	0	0	0	0	0	0	0	0	13	3	0	0	0	0	16
RE06-GB-008	Stoney Lake	1,028.3	903.1	48.6	1.80	74.80	100	74.80	6.7	60.70	6.9	0.50	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	3	1	0	7
RE06-GB-009	Lac Santé	1,492.1	1,411.0	16.4	0.80	63.90	100	63.90	13.9	46.30	3.2	0.50	0	0	0	0	0	0	0	0	0	0	0	0	3	0	1	0	0	0	4
RE06-GB-010	Calling Lake SW	1,076.0	899.8	128.5	0.20	47.50	100	47.50	13.2	33.70	0.6	0.04	0	0	0	0	0	0	0	0	0	0	0	0	1	0	5	0	0	0	6
RE07-GB-011	Calling Lake west	2,271.8	695.0	1,054.2	3.1	519.5	20	103.9	8.4	92.1	3.3	0.07	0	0	0	0	0	0	0	0	0	0	0	0	6	0	6	1	2	0	15

[1] Values greater than 0.1 g were weighed only to one decimal place; the zero was added in the second decimal position to facilitate column alignment.

[2] Duplicate sample

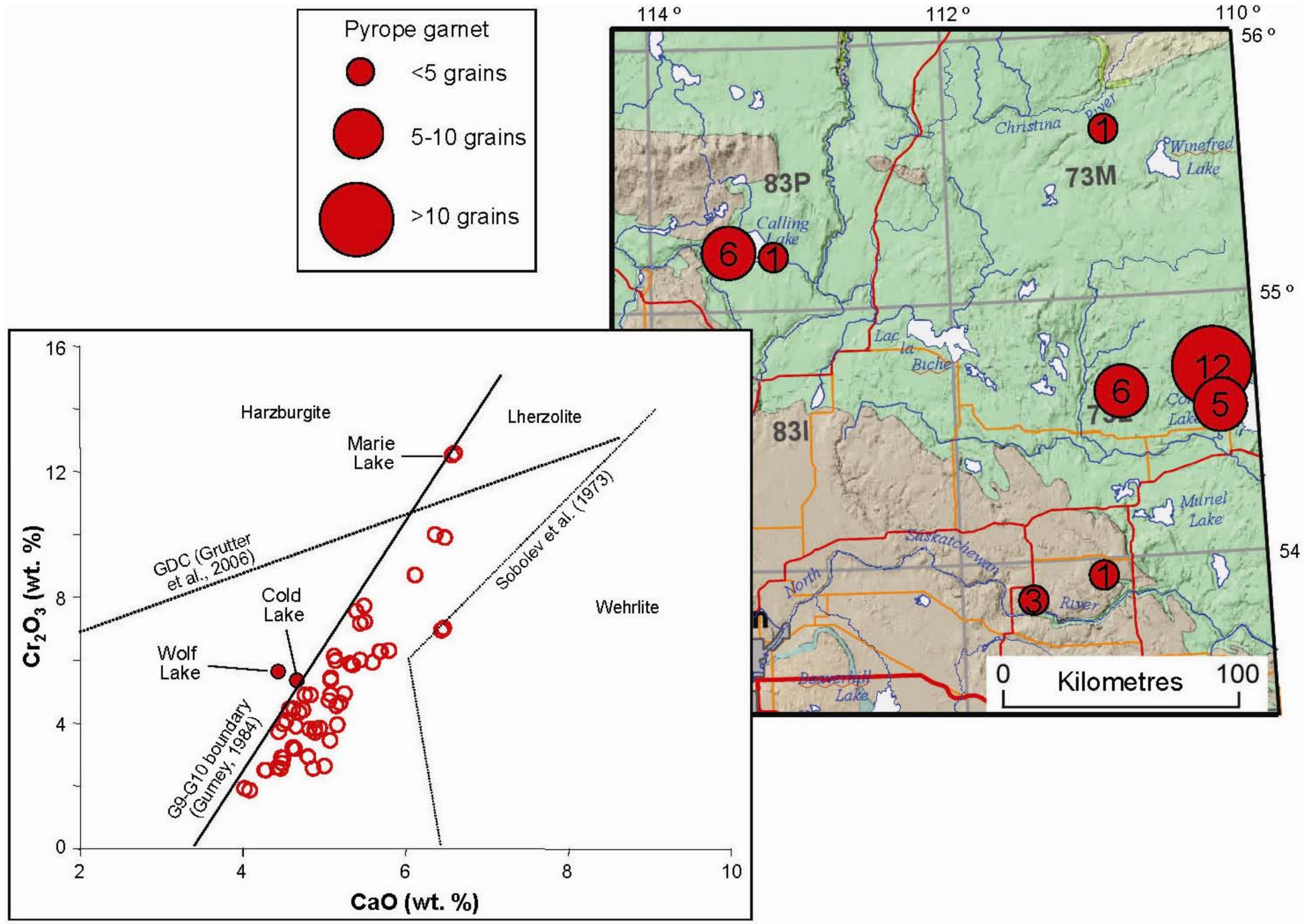

Figure 9. Distribution and CaO-Cr_2O_3 geochemistry of high-Cr (>2 wt. %) pyrope garnet from garnet-rich beach sands in east-central Alberta. Abbreviation: GDC, graphite-diamond constraint.

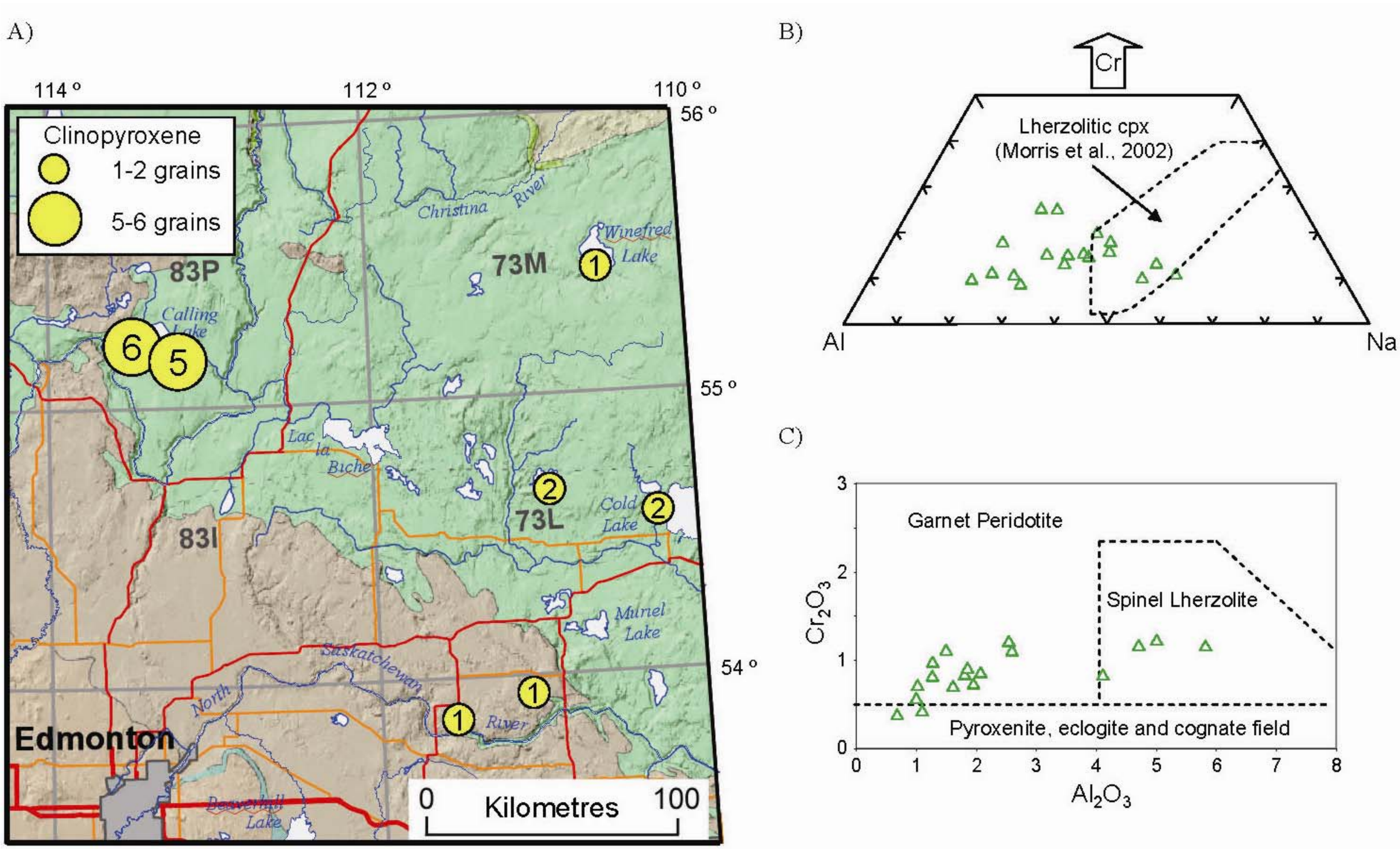

Figure 10. Distribution and Al-Cr-Na and Al_2O_3-Cr_2O_3 geochemistry of clinopyroxene from garnet-rich beach sands in east-central Alberta.

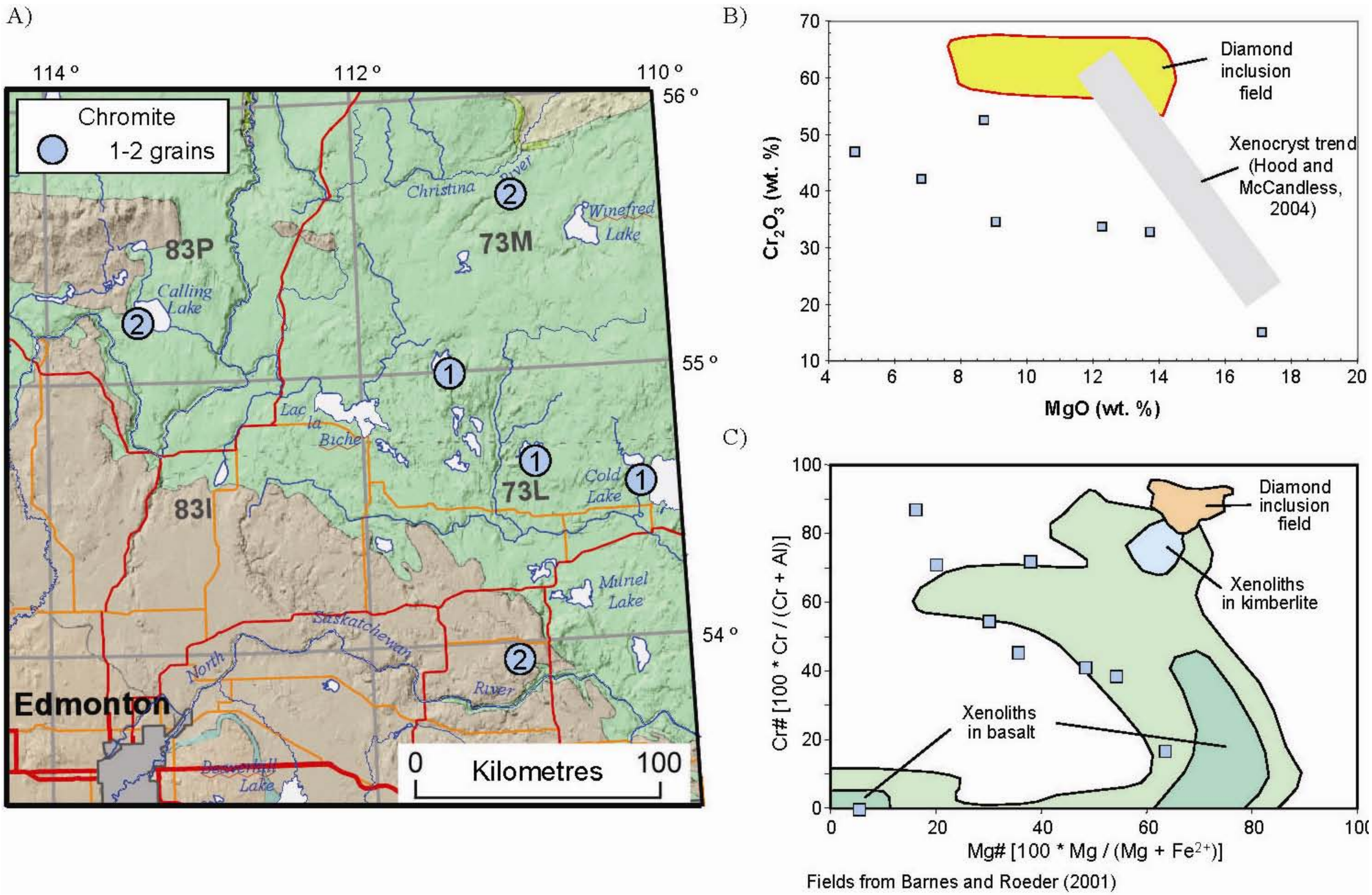

Figure 11. Distribution and MgO-Cr_2O_3 and Mg#-Cr# geochemistry of chromite from garnet-rich beach sands in east-central Alberta.

Kimberlitic ilmenite grains with >1 wt. % Cr_2O_3 occur at Christina Lake, Clear Lake, Stoney Lake and Calling Lake west, with one ilmenite grain from Calling Lake west having 3.4 wt. % Cr_2O_3. Most of the potentially kimberlitic ilmenite grains have high MgO (>10.3 wt. %) and fall within or near the high MgO field characteristic of ilmenite from diamondiferous bodies in the Buffalo Head Hills kimberlite field (Hood and McCandless, 2004).

6.4 Gold Grain Counts, Morphology and Dimensions

A summary of the gold grain counts, morphology and dimensions is presented in Table 4. Based on nonmagnetic heavy-mineral concentrates of between 32 and 41 g, minor grains of visible gold were recovered from Cold Lake (2 grains), Stoney Lake (5), Lac Santé (4), Calling Lake southeast (2) and Calling Lake west (6). All of the grains were reshaped, suggestive of transportation over a significant distance. The largest gold grain, from Cold Lake, was 125 µm by 200 µm. Calculated visible gold assays, which are based on the weight of the gold and that of the respective heavy-mineral concentrate, include 56 ppb (Lac Santé), 83 ppb (Calling Lake southeast), 122 ppb (Stoney Lake), 177 ppb (Calling Lake west) and 265 ppb (Cold Lake) — well below that of placer gold deposits such as the historic Klondike district in the Yukon. No gold grains were recovered from Heart Lake, Winefred Lake, Christina Lake, Wolf Lake or Marie Lake.

6.5 Metamorphic and Magmatic Massive-Sulphide Indicator Minerals

Metamorphic and magmatic massive-sulphide indicator minerals (MMSIM), including sulphide/arsenide, Mg/Mn/Al/Cr and phosphate minerals, are sought after because they are more resistant than sulphides and are diagnostic of specific types of sulphide deposits, such as volcanosedimentary massive sulphides in medium- to high-grade regional metamorphic terrains, skarn and greisen deposits, and magmatic Ni-Cu sulphides (Russell et al., 1999; Averill, 2001; Somarin, 2004; Helmy, 2005). A number of MMSIMs were recovered in beach sands from this study and are summarized in Table 5 (also on CD) and below. None of the MMSIM grains has been analyzed for chemistry, but their presence and proportions suggest a mineral assemblage of almandine/epidote to almandine-hornblende/epidote (±diopside±rutile±staurolite±kyanite±apatite).

Most samples contain minor (tens of grains) grossular, spessartine and gahnite. Both grossular and spessartine are orange and do not differ sufficiently in paramagnetism from orange almandine, in which case it was necessary to confirm these grains by SEM or EMPA. Gahnite ($ZnAl_2O_4$) and red (chrome?) rutile are widely distributed. Based on the results of this study, anomalous distributions of blue-green gahnite include Lac Santé (12 grains), Wolf Lake (11) and Cold Lake (10), with between 1 and 7 grains occurring at the other sample sites. Red rutile was also prevalent at Cold Lake, from which about 200 grains were observed, followed by Wolf Lake with about 50 grains. Multicoloured spinels (e.g., blue-grey, grey, pale blue-green, pale purple, pale pink, blue-green) were recovered from all sites and are particularly abundant at Cold Lake (~400 grains), Calling Lake west (~300) and Wolf Lake (~200).

Ruby corundum and sapphire corundum were recovered from all sites (1–2 grains), with Stoney Lake having 6 sapphire corundum grains. Low-Cr diopside was also recovered from all sites, with the highest grain counts at Cold Lake (15 grains), Calling Lake southeast (13), Christina Lake (12) and Calling Lake west (11). Some samples yielded a few brown and yellow andradite grains (Heart Lake, Wolf Lake and Cold Lake). One or two grains of green Cr-grossular were recovered from Wolf Lake, Cold Lake, Marie Lake, Lac Santé and Calling Lake west.

The sulphide minerals chalcopyrite and molybdenite occur in trace amounts. A single grain of chalcopyrite was recovered from each of Heart Lake, Wolf Lake, Stoney Lake, Lac Santé and Calling Lake southeast. A single molybdenite grain was recovered from Calling Lake southeast. Pyrite is more abundant, with between 10 and approximately 1000 pyrite grains recovered from beach sands sampled in

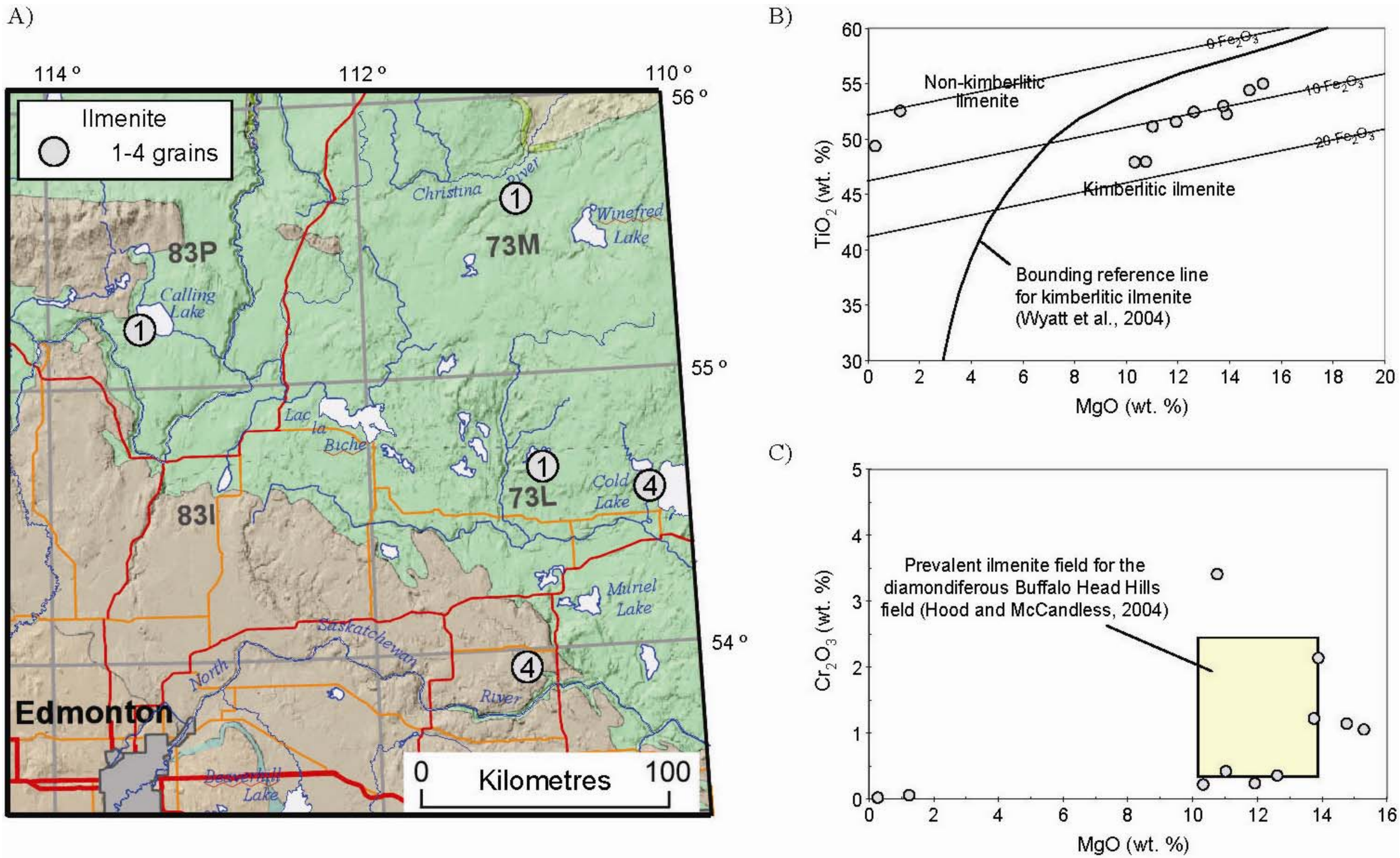

Figure 12. Distribution and MgO-TiO_2 and MgO-Cr_2O_3 geochemistry of ilmenite from garnet-rich beach sands in east-central Alberta.

Table 4. Summary of gold grain counts, morphology and dimensions of beach sands from selected beaches in east-central Alberta.

Sample number	General location	Number of visible gold grains				Nonmag HMC weight (g)	Calculated visible gold assay (ppb)				Dimensions (microns)		
		Total	Reshaped	Modified	Pristine		Total	Reshaped	Modified	Pristine	Thickness	Width	Length
RE06-GB-001	Heart Lake	0	0	0	0	40.0	0	0	0	0	No visible gold		
RE06-GB-002	Winefred Lake	0	0	0	0	35.6	0	0	0	0	No visible gold		
RE06-GB-003	Christina Lake	0	0	0	0	36.4	0	0	0	0	No visible gold		
RE06-GB-004	Wolf Lake	0	0	0	0	38.0	0	0	0	0	No visible gold		
RE06-GB-005	Cold Lake	2	2	0	0	38.0	265	265	0	0	27	100	175
											31	125	200
RE06-GB-006	Cold Lake (1)	0	0	0	0	37.6	0	0	0	0	No visible gold		
RE06-GB-007	Marie Lake	0	0	0	0	31.6	0	0	0	0	No visible gold		
RE06-GB-008	Stoney Lake	5	5	0	0	34.4	122	122	0	0	8	25	50
											10	50	50
											13	50	75
											15	50	100
											25	100	150
RE06-GB-009	Lac Santé	4	4	0	0	34.4	56	56	0	0	8	25	50
											10	50	50
											15	50	100
											18	50	125
RE06-GB-010	Calling Lake SE	2	2	0	0	39.2	83	83	0	0	13	50	75
											25	125	125
RE07-GB-011	Calling Lake west	6	6	0	0	41.2	177	177	0	0	3	15	15
											3	15	15
											5	25	25
											13	50	75
											15	50	100
											31	150	175

(1) Duplicate sample of RE06-GB-005

this study. The areas with pyrite grain counts are, in order from highest to lowest, Stoney Lake, Christina Lake, Lac Santé, Wolf Lake, Cold Lake and Calling Lake west. Phosphate minerals are not abundant. Apatite ranged from 0 to 20 grains, the latter recovered at Calling Lake southeast. Monazite was recovered from Cold Lake (3 grains) and Stoney Lake (1). Other MMSIMs that occur in trace amounts (<10 grains) and are distributed throughout the study area include kyanite, sillimanite, tourmaline and staurolite. Twenty grains of staurolite were recovered from Lac Santé.

7 Discussion and Conclusions

7.1 Overview of Industrial Garnet Production and Considerations for East-Central Alberta

World production of industrial garnet in 2005 was estimated at 450 000 tonnes, with the most significant producers including Australia, United States, China, India, Czech Republic, Pakistan, Russia, Turkey and Ukraine. Canada joined the list of suppliers in 2005. Currently, the United States is the largest consumer and accounts for nearly 16% of the world consumption of industrial garnet (Evans and Moyle, 2006).

Table 5. Summary of metamorphic/magmatic massive-sulphide indicator minerals in beach sands from selected beaches in east-central Alberta.

Sample number (General location)	Sulphide/arsenide and related minerals (0.25-0.5 mm fraction)				Mg/Mn/Al/Cr minerals (0.25-0.5 mm fraction)												Phosphates		Remarks	Picked Grains
	>1 amp			<1.0 amp	>1.0 amp					0.8-1.0 amp		<0.8 amp					>1.0 amp			
	% Cpy	Misc. Prime MMSIMs	% Py	% Gth	# Grains + Colour Spinel	Misc. Prime MMSIMs	% Red Rutile	% Ky	% Sil	% Tm	% St	% Sps	% Fay	% Opx	% Cr		% Ap	% Mz	Remarks	Picked Grains
RE06-GB-001 (Heart Lake)	Tr (1 gr)	0	0	0	2 blue-green, blue gahnite; ~60 (0.5%) blue-grey, grey, pale blue-green, pale purple, pale pink, blue-green spinel	Tr ruby corundum (2 gr) Tr low-Cr diopside (2 gr)	0	Tr	2	3	2	Tr	0	Tr	Tr (1 gr; see KIM data)		0	Tr	Almandine/epidote-diopside assemblage. SEM checks from 0.25-0.5 mm fraction: 4 blue-green gahnite versus spinel candidates = 1 gahnite and 3 spinel; and 1 blue gahnite versus spinel candidate = 1 gahnite.	0.5-1.0 mm fraction: 1 pale purple spinel 1 spessartine (see garnet data) 0.25-0.5 mm fraction: 1 chalcopyrite 2 gahnite 23 representative spinel 2 ruby corundum 2 low-Cr diopside 1 spessartine (see garnet data) 1 chromite (picked as KIM)
RE06-GB-002 (Winefred Lake)	0	0	0	0	0	0	0	Tr	8	1	0	0	0	Tr	0		0	0	Undersized concentrate; therefore not electromagnetically separated and mineral assemblage not listed. Main minerals are almandine, hornblende, augite, epidote and sillimanite.	
RE06-GB-003 (Christina Lake)	0	0	1 (~100 gr)	0	2 blue-green gahnite; ~60 (0.5%) blue-grey, grey, pale blue-green, pale purple, pink, blue-green spinel	Tr ruby corundum (2 gr) Tr sapphire corundum (1 gr) Tr low-Cr diopside (12 gr)	Tr (4 gr)	15	Tr	4	3	Tr	0	Tr	Tr (2 gr; see KIM data)		5	Tr	Almandine-hornblende/epidote-diopside- kyanite assemblage. SEM checks from 0.25-0.5 mm fraction: 5 blue-green gahnite versus spinel candidates = 2 gahnite and 3 spinel.	0.25-0.5 mm fraction: 2 gahnite 33 representative spinel 2 ruby corundum 1 sapphire corundum 12 low-Cr diopside 4 red rutile 4 representative spessartine (see garnet data) 2 chromite (picked as KIMs)
RE06-GB-004 (Wolf Lake)	Tr (1 gr)	0	Tr (~15 gr)	0	11 blue-green, blue gahnite; ~200 (0.5%) pale purple, pale blue, pale blue-grey, pale blue-green, pale pink, blue-green spinel	Tr ruby corundum (3 gr) Tr sapphire corundum (1 gr) Tr Cr-grossular (2 gr) Tr low-Cr diopside (10 gr)	Tr (~50 gr)	4	Tr	5	2	Tr	0	Tr	Tr (1 gr; see KIM data)		0	0	Almandine/epidote-diopside assemblage. SEM checks from 0.25-0.5 mm fraction: 15 blue-green gahnite versus spinel candidates = 10 gahnite and 5 spinel; 1 blue gahnite versus spinel candidate = 1 gahnite; and 2 green Cr-garnet candidates = 2 Cr-grossular.	0.5-1.0 mm fraction: 1 spessartine (see garnet data) 0.25-0.5 mm fraction: 1 chalcopyrite 11 gahnite 35 representative spinel 3 ruby corundum 1 sapphire corundum 2 Cr-grossular 10 low-Cr diopside 15 representative red rutile 4 representative spessartine (see garnet data) 1 chromite (picked as KIM)
RE06-GB-005 (Cold Lake)	0	0	Tr (~15 gr)	0	10 blue-green gahnite; ~400 (1%) pale purple, pale blue, grey, pale blue-green, pale pink, blue-green spinel	Tr ruby corundum (1 gr) Tr sapphire corundum (1 gr) Tr Cr-grossular (1 gr) Tr low-Cr diopside (15 gr)	0.5 (~200 gr)	2	3	15	2	Tr	0	Tr	Tr (1 gr; see KIM data)		4	3	Almandine/epidote-staurolite-diposide assemblage. SEM checks from 0.25-0.5 mm fraction: 20 blue-green gahnite versus spinel candidates = 10 gahnite and 10 spinel; 1 Cr-garnet candidate = 1 Cr-grossular; and 4 yellow brown fayalite versus siderite candidates = 4 siderite.	0.5-1.0 mm fraction: 1 pale purple spinel 1 spessartine (see garnet data) 0.25-0.5 mm fraction: 10 gahnite 35 representative spinel 1 ruby corundum 1 sapphire corundum 1 Cr-grossular 15 low-Cr diopside 20 representative red rutile 7 representative spessartine (see garnet data) 4 siderite resembling fayalite 1 chromite (picked as KIM)
RE06-GB-006 (Cold Lake) (1)	0	0	0	0	7 blue-green gahnite; ~200 (0.5%) pale blue, pale blue-green, pale purple, grey, blue-green spinel	Tr Cr-grossular (3 gr) Tr low-Cr diopside (7 gr)	Tr (~50 gr)	2	Tr	5	5	Tr	0	0	0		4	1	Almandine/diopside-epidote assemblage. SEM checks from 0.25-0.5 mm fraction: 14 blue-green gahnite versus spinel candidates = 7 gahnite and 7 spinel; and 3 Cr-garnet candidates = 3 Cr-grossular.	0.5-1.0 mm fraction: 3 pale blue, pale purple spinel 0.25-0.5 mm fraction: 7 gahnite 37 representative spinel 3 Cr-grossular 7 low-Cr diopside 25 representative red rutile 7 representative spessartine (see garnet data)
RE06-GB-007 (Marie Lake)	0	0	0	0	7 blue-green gahnite; ~100 pale blue-grey, pale blue-green, grey, pale purple, blue-green spinel	Tr Cr-grossular (1 gr) Tr low-Cr diopside (8 gr)	Tr (~30 gr)	1	3	3	8	Tr	0	0	0		2	0	Almandine/epidote assemblage. SEM check from 0.5-1.0 mm fraction: 1 blue-green gahnite versus spinel candidate = 1 spinel. SEM checks from 0.25-0.5 mm fraction: 12 blue-green gahnite versus spinel candidates = 7 gahnite and 5 spinel.	0.5-1.0 mm fraction: 1 spinel 0.25-0.5 mm fraction: 7 gahnite 35 representative spinel 1 Cr-grossular 8 low-Cr diopside 10 representative red rutile 2 representative spessartine (see garnet data)
RE06-GB-008 (Stoney Lake)	Tr (1 gr)	0	5 (~1000 gr)	0	6 blue-green gahnite; 1 black Cr-spinel; 1 black hercynite; ~100 (0.5%) pale purple, pale blue, pale blue-green, grey, blue-green, colourless spinel	Tr sapphire corundum (6 gr) Tr low-Cr diopside (2 gr)	Tr (17 gr)	4	Tr	4	7	Tr	0	Tr	Tr (1 gr; see KIM data)		10	1	Almandine/epidote-black rutile assemblage. SEM checks from 0.25-0.5 mm fraction: 1 colourless octahedral diamond versus spinel candidate = 1 spinel; and 7 blue-green gahnite versus spinel candidates = 6 gahnite and 1 spinel.	0.5-1.0 mm fraction: 1 pale blue spinel 4 spessartine (see garnet data) 0.25-0.5 mm fraction: 1 chalcopyrite 6 gahnite 1 Cr-spinel (see KIM notes) 1 hercynite (see KIM notes) 42 representataive spinel 6 sapphire corundum 2 low-Cr diopside 17 red rutile 6 representative spessartine (see garnet data) 1 chromite (picked as KIM)
RE06-GB-009 (Lac Santé)	Tr (1 gr)	0	0.3 (~50 gr)	0	12 blue-green gahnite; ~150 (1%) pale purple, pale blue, pale blue-green, blue-green spinel	Tr sapphire corundum (1 gr) Tr Cr-grossular (1 gr) Tr low-Cr diopside (1 gr)	0	5	Tr	2	20	Tr	0	0	0		5	0	Almandine/epidote-staurolite assemblage. SEM checks from 0.25-0.5 mm fraction: 15 blue-green gahnite versus spinel candidates = 12 gahnite and 3 spinel; 1 blue sapphire corundum versus kyanite candidate = 1 sapphire corundum; and 1 Cr-garnet candidate = 1 Cr-grossular.	0.5-1.0 mm fraction: 1 pale purple spinel 0.25-0.5 mm fraction: 1 chalcopyrite 12 gahnite 23 representative spinel 1 sapphire corundum 1 Cr-grossular 1 low-Cr diopside 3 representative spessartine (see garnet data)
RE06-GB-010 (Calling Lake southeast)	Tr (1 gr)	Tr molybdenite (1 gr)	0	0	1 blue-green gahnite; ~100 pale purple, pale blue, pale blue-green, grey, blue-green spinel	Tr ruby corundum (1 gr) Tr sapphire corundum (1 gr) Tr low-Cr diopside (13 gr)	Tr (1 gr)	20	Tr	3	10	Tr	0	0.5	0		20	Tr	Almandine-hornblende/epidote-kyanite- apatite assemblage. SEM check from 0.5-1.0 mm fraction: 1 blue-green gahnite versus spinel candidate = 1 spinel. SEM checks from 0.25-0.5 mm fraction: 6 blue-green gahnite versus spinel candidates = 1 gahnite and 5 spinel.	0.5-1.0 mm fraction: 1 spinel 0.25-0.5 mm fraction: 1 chalcopyrite 1 molybdenite 1 gahnite 45 representative spinel 1 ruby corundum 1 sapphire corundum 13 low-Cr diopside 1 red rutile
RE07-GB-011 (Calling Lake west)	0	0	Tr (8 gr)	0	1 blue-green gahnite; ~300 (0.5%) pale blue, pale purple, pale blue-green, grey, blue-green spinel	Tr ruby corundum (2 gr) Tr uvarovite (1 gr) Tr low-Cr diopside (11 gr)	Tr (11 gr)	20	5	3	5	Tr	0	Tr	Tr (2 gr; see KIM data)		8	Tr	Almandine-hornblende/epidote-kyanite assemblage. SEM checks from 0.25-0.5 mm fraction: 18 blue-green gahnite versus spinel candidates = 1 gahnite and 17 spinel; and 1 emerald green Cr-garnet candidate = 1 uvarovite (counted as Cr-grossular on garnet species log).	0.5-1.0 mm fraction: 2 spessartine (see garnet data) 0.25-0.5 mm fraction: 1 gahnite 47 representative spinel 2 ruby corundum 1 uvarovite 11 low-Cr diopside 11 red rutile 2 chromite (picked as KIMs) 2 representative spessartine (see garnet data)

(1) Duplicate sample of RE06-GB-05

The majority of industrial garnet is used as a loose-grain abrasive because of its hardness (6.0–7.5 on the Mohs scale of mineral hardness). High-quality garnet has been used for optical-lens grinding and plate-glass grinding for over a century and, in more recent years, as an abrasive for scratch-free lapping of semiconductor materials and other metals. Lower quality industrial garnet is used as a filtration medium in water-purification systems because it is relatively inert and resists chemical degradation. Other industrial applications include the manufacture of coated abrasives, hydrocutting and the finishing of wood, leather, hard rubber, felt and plastics. Finally, garnet has been gradually replacing silica sand in the blast-cleaning market because of health risks associated with the inhalation of airborne crystalline silica dust (Harris, 2000).

Most industrial-grade garnet is obtained from gneiss, amphibolite, schist, skarn and igneous rocks, and from alluvium derived from erosion of these rocks. Canada has garnet deposits in British Columbia, Labrador, Manitoba, New Brunswick, Newfoundland, Nova Scotia, Ontario and Quebec (Harben and Kuzvart, 1996). Garnet deposits in Eastern Canada consist largely of almandine in high-grade regionally metamorphosed rocks, with garnet grades ranging from 15 to 100 vol. %. Garnet deposits in Western Canada are mostly in skarns and consist of andradite and grossular. Total Canadian garnet reserves are not known, but one of these deposits, the Crystal Peak skarn deposit on Mount Riordan, British Columbia, has at least 40 million tonnes (Mt) of reserves containing 80 vol. % garnet (andradite and grossular; Grond et al., 1991; Mathieu et al., 1991).

Alluvial industrial garnet production occurs in the United States in deposits downstream from mica-garnet schist rocks (e.g., Hampton Creek Canyon, Nevada; Emerald, Carpenter and Meadow creeks, Idaho) or metamorphosed rocks eroded from local mountain ranges (e.g., Ruby River, Montana). The main alluvial industrial garnet producer in the United States is Idaho, where almandine garnet–bearing gravels, about 1–1.2 m thick, contain 8% to 15% garnet; these alluvium deposits also produce gem garnet and rare 'star garnet' (Austin, 1995).

Several companies in Alberta, including Brilliant Mining Corporation and Ice River Mining Ltd., have considered garnet as an industrial mineral worth investigation, and preliminary evaluations were conducted in the Cold Lake area. Unfortunately, the results of these evaluations are not publicly available. A comparison between the garnet concentrations observed in this study and those of producing alluvial deposits in Idaho, however, indicate that the potential for industrial garnet production in east-central Alberta, particularly the Cold Lake area, warrants consideration. In addition to industrial garnet, some of the garnets observed in this study have good colour and are free of inclusions and flaws. Thus, there is also potential for gem-quality garnet production.

The following excerpt from Evans and Moyle (2006) provides a useful set of factors that must be considered by companies interested in industrial garnet production in east-central Alberta:

> Evaluation of garnet deposits to determine their suitability for industrial production includes the following factors: size and grade of reserves, mining conditions, garnet quality, location of the deposit relative to markets, and milling costs. Reserves should contain a minimum of 2 million tonnes of ore with a cutoff grade of about 20 vol. % garnet. Various environmental, social, and physical factors can preclude mining, such as proximity to houses, historical sites, national monuments, archeologic or paleontologic sites, wildlife refuges, and municipal watersheds, and may include local zoning regulations, environmental regulations, and configuration and structure of the deposit. After initial crushing, almandite or almandite-pyrope should be present as fine- to coarse-grained discrete crystals that are free of such inclusions as quartz, mica, hornblende, feldspar, and alteration products. As discussed below, andradite and grossularite also have their uses but are inferior to almandite in specific gravity and hardness. The specific gravity and hardness of the garnet should be uniform, and the crystals should not be highly weathered or friable.

Based on consideration of these factors, major deterrents to industrial garnet production in east-central Alberta include

- the scattered distributions and general discontinuity of garnet-rich beach sands that would influence tonnage and grade calculations;
- the abundance of small (~250–500 µm) and highly weathered (rounded) grain morphologies that could reduce abrasiveness; and,
- the fact that some of these beach sands represent recreational beaches, which could create environmental and public conflict.

Nevertheless, the conclusion is that garnet could be an economically feasible resource in east-central Alberta, particularly when coupled as a coproduct of sand and gravel production, which continues to be an important resource commodity in Alberta. A jig system could easily be added at the end of the gravel sorting process to concentrate garnet. In addition, a small niche market should not be discounted. As is the case with many of the industrial minerals, successful production is dependent on the operator providing a product of interest to a local market. A small-scale garnet operation could market, for example, decorative sand. Environmentally friendly products, such as blast-cleaning sand, water-purification filter material and even play-box sand, may be successful locally if the product can be produced at costs lower than out-of-province garnet operations.

7.2 Source of Garnet: Geological Reasoning

Andriashek and Fenton (1989) considered several possibilities for the origin of surficial deposits in the Sand River map area:

- glaciofluvial material derived from the Canadian Shield as defined by the presence of granitic clasts (e.g., Empress Formation)
- till characterized by the scarcity of carbonate material and abundance of quartz; this material is derived from a distal source, and possibly related to the quartz sandstone of the Athabasca Basin, located in northeastern Alberta and northwestern Saskatchewan (e.g., Bonnyville Formation)
- till with a considerable amount of carbonate clasts (e.g., Marie Creek Formation); pebble orientations from this unit indicate a north-northwest to south-southeast flow direction that roughly parallels the trend of Devonian carbonate outcrops in northeastern Alberta
- glaciolacustrine sediments deposited by proglacial lakes that formed during glacial advances (e.g., Ethel Lake Formation)
- glaciofluvial and glaciolacustrine reworked material from glacially thrust landforms that are overridden and remoulded by glacial advances (e.g., Grand Centre Formation, Reita Lake Member)

While their interpretations demonstrate the complexity of predicting the source of materials contributing to beach sands in east-central Alberta, it is clear that 1) the overriding mechanism for deposition of surficial materials in this area is glaciation, and 2) a broad conclusion pertaining to the current study is that the garnet species studied in this report must have originated from an up-ice source north of the study area. Furthermore, the high concentration of metamorphic garnet (almandine, grossular and spessartine) in the beach sands suggests that the most logical source scenario is glaciofluvial material derived from the westernmost margin of the Canadian Shield. This theory is supported by Andriashek and Fenton (1989), who reported that the highest concentrations of igneous materials occur in the uppermost till units of the Sand River area. In other words, the uppermost till unit in this area correlates with the last-removed Canadian Shield rocks (i.e., the current Phanerozoic-Shield margin) as erosion the Shield rocks propagated westward.

Appendix 4 shows the garnet distributions from surficial-sampling KIM surveys in Saskatchewan (Swanson et al., 2005); the images show that a pronounced cluster of pyrope, almandine and grossular garnet occurs at approximately the same latitude as that of the present study but on the Saskatchewan side of the border. It is possible, therefore, that the Saskatchewan and Cold Lake–St. Paul garnets described in this report are derived from a similar source. Unfortunately, the exact extent of the Saskatchewan garnet cluster near the Cold Lake area is not known. Like Alberta, there has been no sampling directly north of the cluster of anomalous garnets because access to the CLAWR is restricted, and there is only sparse surficial KIM sampling north of latitude 58º. At present, the Saskatchewan garnet cluster appears to be far enough away from, and therefore not related to, the Fort à la Corne kimberlite field (Appendix 4). It is therefore possible to conclude that garnets on both sides of the border were derived from the westernmost margin of the Canadian Shield.

Another geological consideration that could contribute to the origin of garnet is the timing of garnet deposition in east-central Alberta. If the garnet is part of complex surficial deposits representative of multiple glacial events and processes, then one might anticipate reduced garnet concentrations due to mixing. In this case, garnet accumulation would be associated with the last glacial event, the Primrose Lobe, which flowed in a south-southwesterly direction parallel to the westernmost margin of the Canadian Shield. Alternatively, it is possible that glaciotectonism provided the mechanism for exhumation and concentration of garnet-rich layers from the underlying surficial deposits. Andriashek and Fenton (1989) provided an excellent summary of glaciotectonic features in the Sand River map area. Garnet-rich beaches, such as those on Marie Lake and Wolf Lake, occur in areas associated with glacial thrusting and/or hill-hole pairs, where glaciers have gouged a depression (i.e., lake) that is coupled with a down-ice hill. Additional fieldwork (including coring) on the garnet distribution in the vertical dimension is required to further investigate this idea.

7.3 Source of Garnet: Indicator-Mineral Reasoning

With respect to paragenetic and/or depositional evidence based on the morphology of the garnets collected in this study, Dill (2007) showed that isometric minerals such as garnet are better suited for provenance studies than environment analysis because their inherited morphological differences are not modified by sedimentary processes in proximal placer deposits. Regarding paragenesis, garnet species from this report are indicative of at least two separate sources. Almandine-grossular-spessartine garnet species, which dominate the beach sands, could be indicative of a number of environments, including schist, gneiss, quartzite and other metamorphic rocks, pegmatite, and skarn deposits. Of greater importance to diamond explorers, the presence of high-Cr and G10 pyrope garnet is suggestive of a kimberlitic source. Additional discussion on these two potential sources follows.

7.3.1 Indicators of Kimberlite Paragenesis

Averill (2001, 2007) summarized the benefit of using MMSIMs to help evaluate an area for metallic mineral potential. Grossular and spessartine have been associated with metamorphosed volcanogenic massive sulphide (VMS), sedimentary exhalative (SEDEX) and Broken Hill–type (BHT) deposits. Gahnite ($ZnAl_2O_4$) and red (chrome?) rutile may be of importance because they are considered excellent indicators for potential metamorphosed magmatic massive-sulphide mineralization. Green Cr-garnet (e.g., Cr-grossular) and ruby (Cr-bearing) corundum can be indicators of Ni-Cu-PGE mineralization; they form as hybrid Fe-Al, Mg-Al and Cr-Al refractory minerals when dynamic sulphide saturation was induced by assimilation of Si- and Al-rich rocks into the Fe- and Mg-rich melt.

Although the suite of MMSIM grains recovered in this study may be indicative of metamorphosed volcanogenic massive sulphide and Ni-Cu-PGE parageneses, they are probably more representative in northern Alberta of ultramafic rocks. Multicoloured spinel grain types have been associated with kimberlite fields in Canada. For example, Friske et al. (2003) identified hercynite as a common indicator mineral near the Buffalo Head Hills kimberlite field. Green Cr-garnet and corundum could also be sourced from ultramafic sources related to kimberlite. For example, green Cr-garnet has been reported in the Mud Lake kimberlite at Drybones Bay, NWT, with compositions of 15–20 wt. % CaO and 12 wt. %

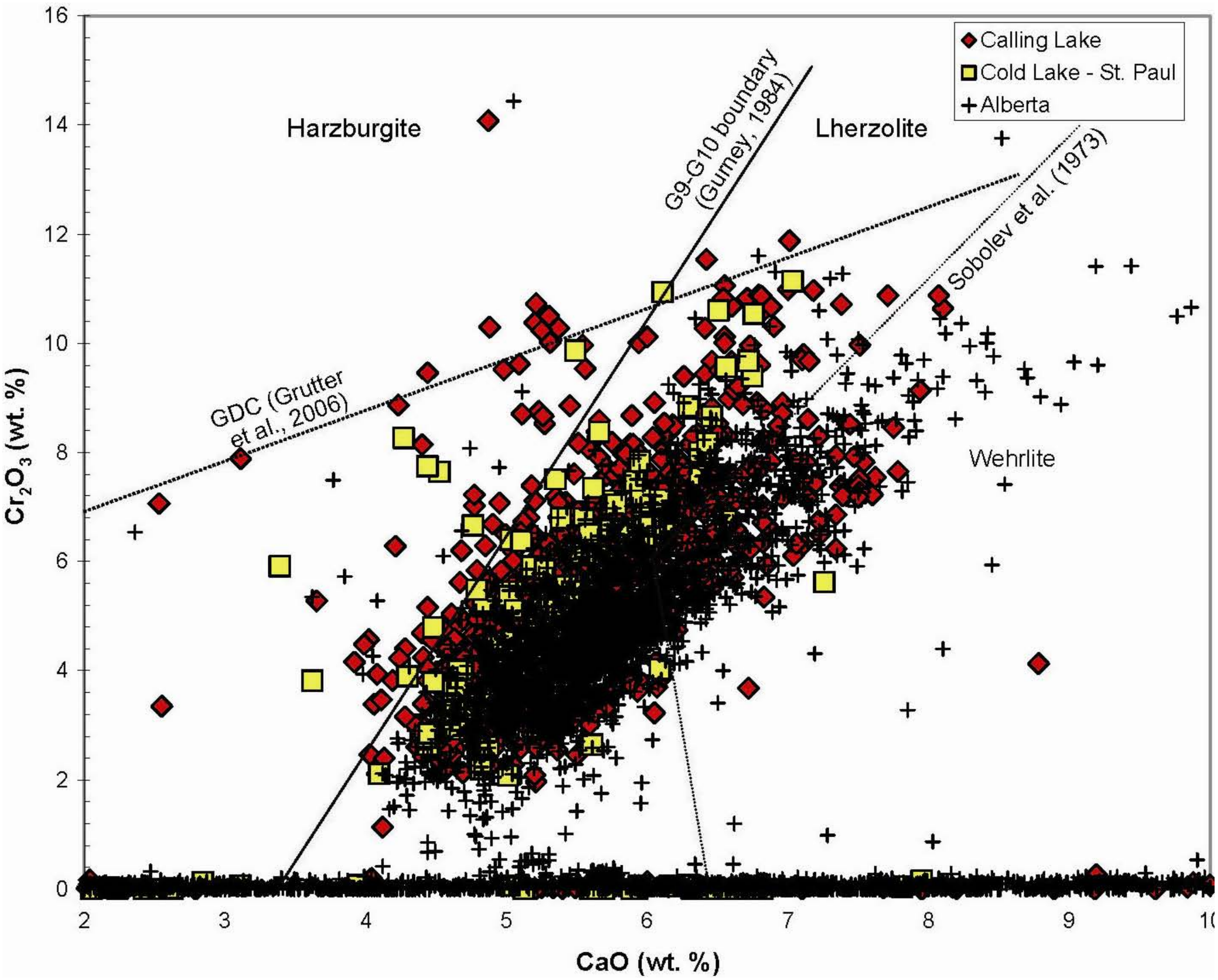

Figure 13. Cr_2O_3-CaO compositions of garnet sampled in various surficial media throughout Alberta, with garnet from the Cold Lake–St. Paul and Calling Lake areas highlighted for comparison. Data sources: Haimila (1996, 1998), Dufresne and Copeland (2000, 2001), Dufresne and Noyes (2001a, b), Eccles et al. (2002), Turnbull (2002), Rich (2003) and Dufresne and Eccles (2005). Abbreviation: GDC, graphite-diamond constraint.

Cr_2O_3 (Snowfield Development Corp., 2003). In addition, Cr-corundum is present in the northern part of the Buffalo Head Hills, where it has been linked to the presence of Mg-Al spinel in these kimberlites (Hood and McCandless, 2004).

The contention that MMSIMs recovered in this study are representative of ultramafic rocks is supported by the presence and composition of the pyropes recovered. In contrast to known garnet EMPA data from various surficial media sampled throughout Alberta and garnet xenocrysts from kimberlitic bodies, both of which are dominated by G9 calcic lherzolitic garnet (Eccles et al., 2002; Eccles and Weiss, 2003; Hood and McCandless, 2004; Dufresne and Eccles, 2005; Eccles and Simonetti, 2008), G10 subcalcic pyrope garnets are prominent in east-central Alberta (Figure 13). In fact, the Cold Lake–St. Paul and Calling Lake areas are the only areas in Alberta to have yielded multiple G10 subcalcic pyrope garnets from surficial samples.

The unique distribution of G10 garnet in this area must be considered an indication that an undiscovered kimberlite cluster, or clusters, with high diamond potential exist(s) in, or up-ice of, east-central Alberta. In the case of pyrope garnet, their morphologies are important, particularly because Dufresne and Copeland

(1999) and Dufresne and Noyes (2001a) reported large diameter (up to 1.2 mm) pyropes with orange peel texture and kelyphitic rims that are often suggestive of a proximal source. The present work did not recover significant pyrope or G10 garnet from Winefred Lake or Christina Lake, which are located in the northern part of the study area. This raises the possibly that kimberlite could occur in Cold Lake–St. Paul and Calling Lake areas, or within the CLAWR. Alternatively, as was pointed out earlier, pyrope grain counts may correlate with total garnet grain counts, so more detailed KIM surveys may be required to determine whether the pyrope garnet is sourced locally in the Cold Lake–St. Paul and Calling Lake areas, within the CLAWR or farther north.

7.3.2 Indicators of Metamorphic Paragenesis

To consider possible sources for the almandine-grossular-spessartine garnet, some detective work was completed using AGS archival samples. During surficial mapping investigations in the 1980s, L. Andriashek (pers. comm., 2007) discovered garnet-rich metamorphic erratics in a farmer's boulder field southwest of Cold Lake (Figure 4b). The garnet erratics, which were located at 552000E, 6008000N (Zone 12, NAD 83) were discovered while following a set of north-northeast-trending flutes that propagate from/towards Cold Lake, likely as part of the southwestward propagating Primose Lobe (Figure 4; Andriashek and Fenton, 1989).

In situ EMPA analyses of garnet from the Andriashek erratic are geochemically identical to the pink almandine recovered from the beach sands (Figure 14). It is therefore possible to say with certainty that at least some of the garnet species in the study were derived from areas dominated by metamorphic rocks, most likely located to the north-northeast.

Garnetiferous gneiss similar to the Andriashek erratic is extremely common in western Laurentia and could be sourced within either the Churchill Province or the Slave Province. If a more local source is envisioned, the Lloyd and Mudjatik domains, located northeast of the study area and south of the Athabasca Basin, represent possible sources. Finally, other garnet-rich rocks of different compositions (e.g., amphibolite, silicate-facies iron formation, garnetiferous psammite and psammopelite) in, for example, the Lloyd and Mudjatik domains could have contributed the different garnet species evident in the beach sands of east-central Alberta.

7.4 Potential for Secondary Diamonds

Since the discovery of economic deposits of diamond in Canada didn't occur until the early 1990s, diamond exploration in Canada is only in its infancy. As such, the search for placer deposits of diamond has received little attention in this country. Secondary diamonds have been reported, however, from garnet-rich beach sands in the Arctic. For example, Shear Minerals Ltd. reported an octahedral diamond in pyrope-rich beach sand adjacent to kimberlites on the Churchill Diamond project, Nunavut (Strand, 2006).

The concentration of garnet-rich beach sands in east-central Alberta, coupled with knowledge of the existence of pyrope garnet species with favourable diamondiferous kimberlite composition, should raise awareness of the potential for secondary deposits of diamond in this area. If an undiscovered cluster of diamondiferous kimberlite occurs in, or north of, the Cold Lake–Calling Lake area, then diamonds may have been relocated and concentrated in much the same way that the garnet has. Test sample(s) of garnet-rich beach sands, analyzed by traditional diamond-recovery techniques (e.g., caustic fusion), is recommended.

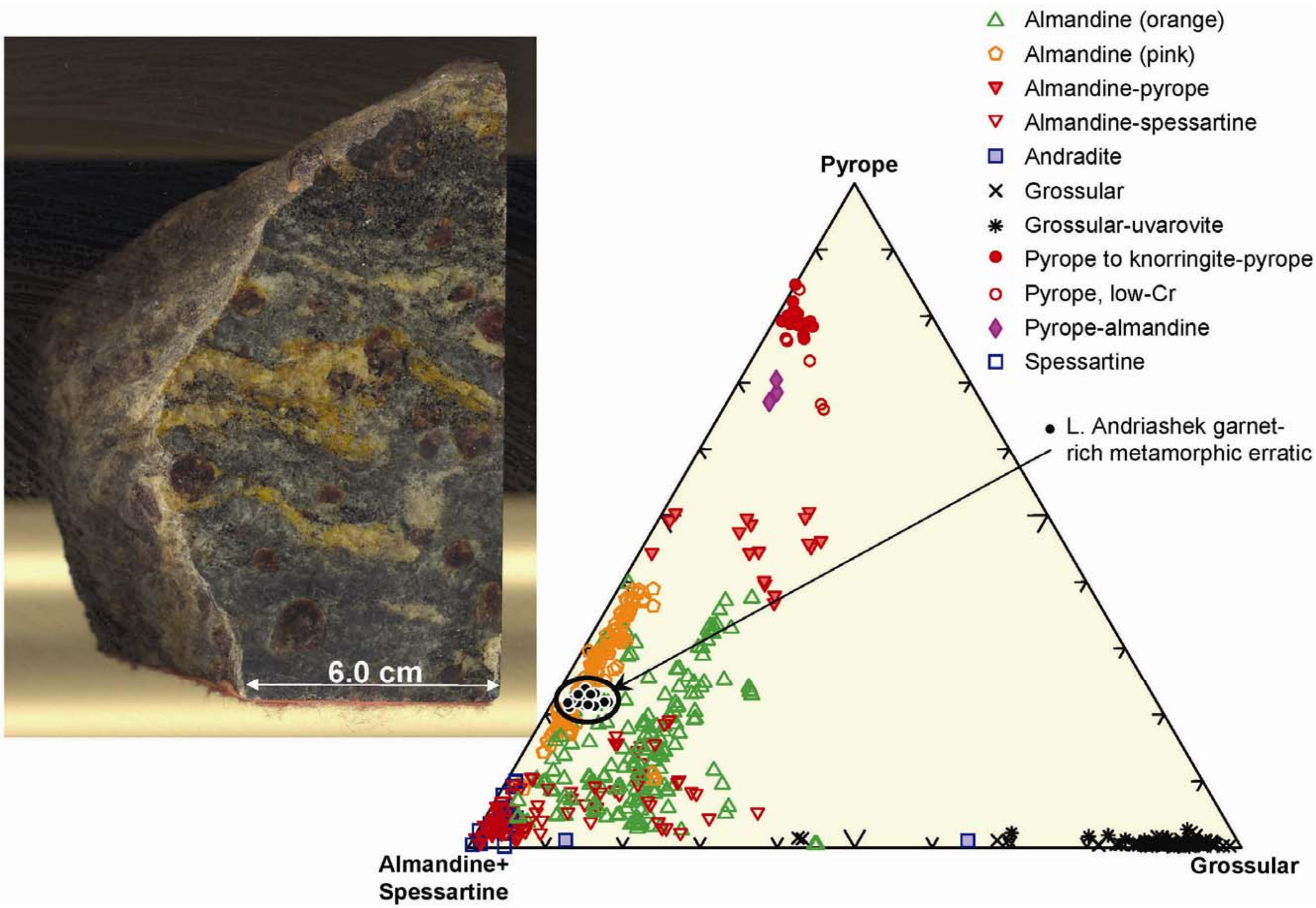

Figure 14. Garnet-rich metamorphic erratic discovered by L. Andriashek (pers. comm., 2007) and its geochemical comparison with beach sand garnet from this study.

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Appendices

Appendix 1 – Garnet-Rich Beaches in East-Central Alberta (Information Gathered from Various Prospectors)

In most cases because of the prevailing winds, the beaches on the northwest and southeast ends of the lakes are most productive for garnet. The shape of the lake also has to be considered, with long-shore currents accumulating garnet in areas with considerable wave action.

Cold Lake Area

- Cold Lake (English Bay) has a garnet-rich beach right at the English Bay campground.
- Marie Lake has garnet-rich beaches in various locales around the lake, including the north side campground.

Winefred Lake Area

- No garnet was observed at Winefred Lake north, but many of the garnet beaches on the southwest, south and east sides carry garnet.
- Kirby Lake (west of Winefred Lake) has spotty occurrences, but garnet was observed at the north end near the airstrip and near the north-side boat launch.

Bonnyville Area

- Moose Lake has garnet along the north side and black sands on the south side.
- Muriel Lake has garnet on the southeast, south and southwest beaches.

Frog Lake Area

- Whitney Lake (near Frog Lake) has garnet and abundant black sand.
- Frog Lake has garnet beaches on the east side directly down the lake from Sputinow.

Lac La Biche Area

- Square Lake (near Lac La Biche) has garnet near the boat launch on the southeast end and some spotty garnet beaches around the lake.
- Wolf Lake has excellent garnet beaches, including the one at the south side campsite.
- Heart Lake has garnet beaches on the east side that are accessible by boat only.
- Lac La Biche has several garnet beaches around the lake.

Calling Lake Area

- Garnetiferous beach extends from the south shore at the boat launch and spottily along the southwestern and western shores.

Slave Lake Area

- Slave Lake has garnets on the beaches in a number of places along the north side.

St. Paul Area

- Lac Santé has numerous garnets at the boat launch on the east side.

- Lower Therien has garnet at the north end by the private beach.
- Upper Therien has garnet all along the south shore, directly south of the townsite.
- Garner Lake, directly north of Spedden, has garnet along the southeast side by the boat launch.
- Vincent Lake has spotty occurrences of garnet along the northeast side.
- Chicken Lake has garnet at the beach on the north end by the boat launch.
- Stoney Lake has great garnets at the south end by the campsite.

Appendix 2 – Magnetic Susceptibility and General Lithology of Beach Sands in East-Central Alberta

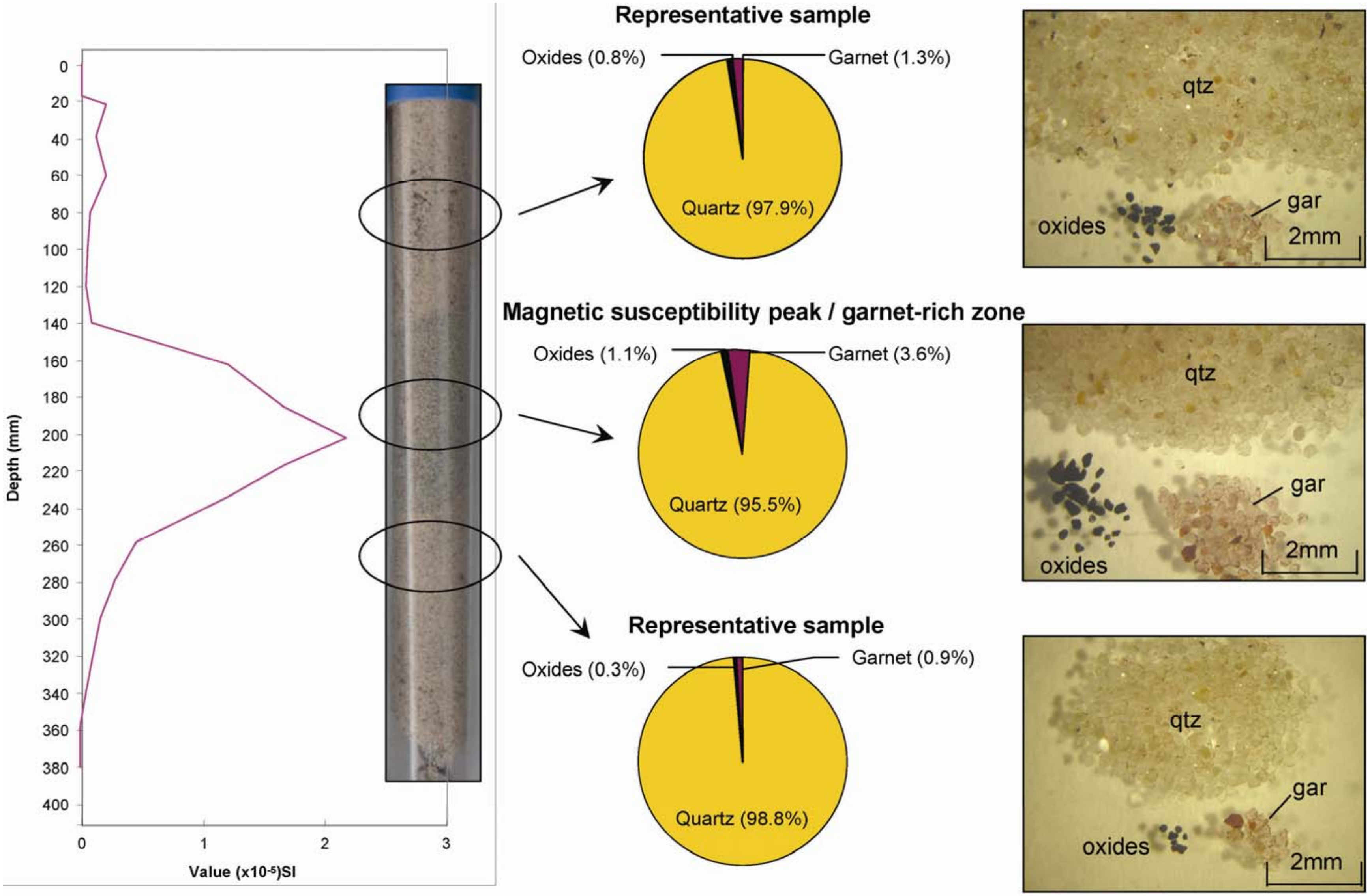

Figure 15. Magnetic susceptibility and general lithology of beach sand at Heart Lake (sample RE06-GB-001).

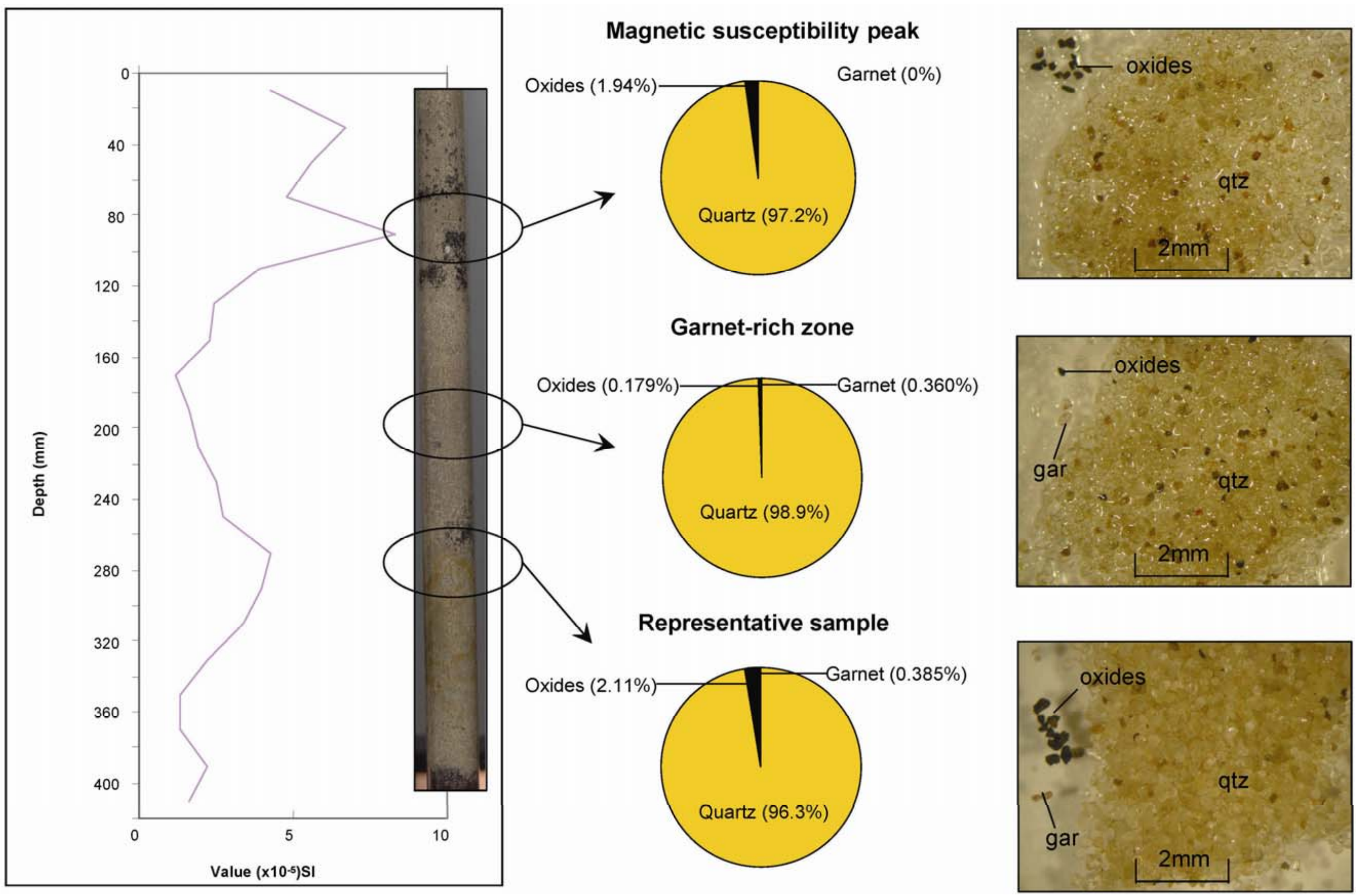

Figure 16. Magnetic susceptibility and general lithology of beach sand at Winefred Lake (sample RE06-GB-002).

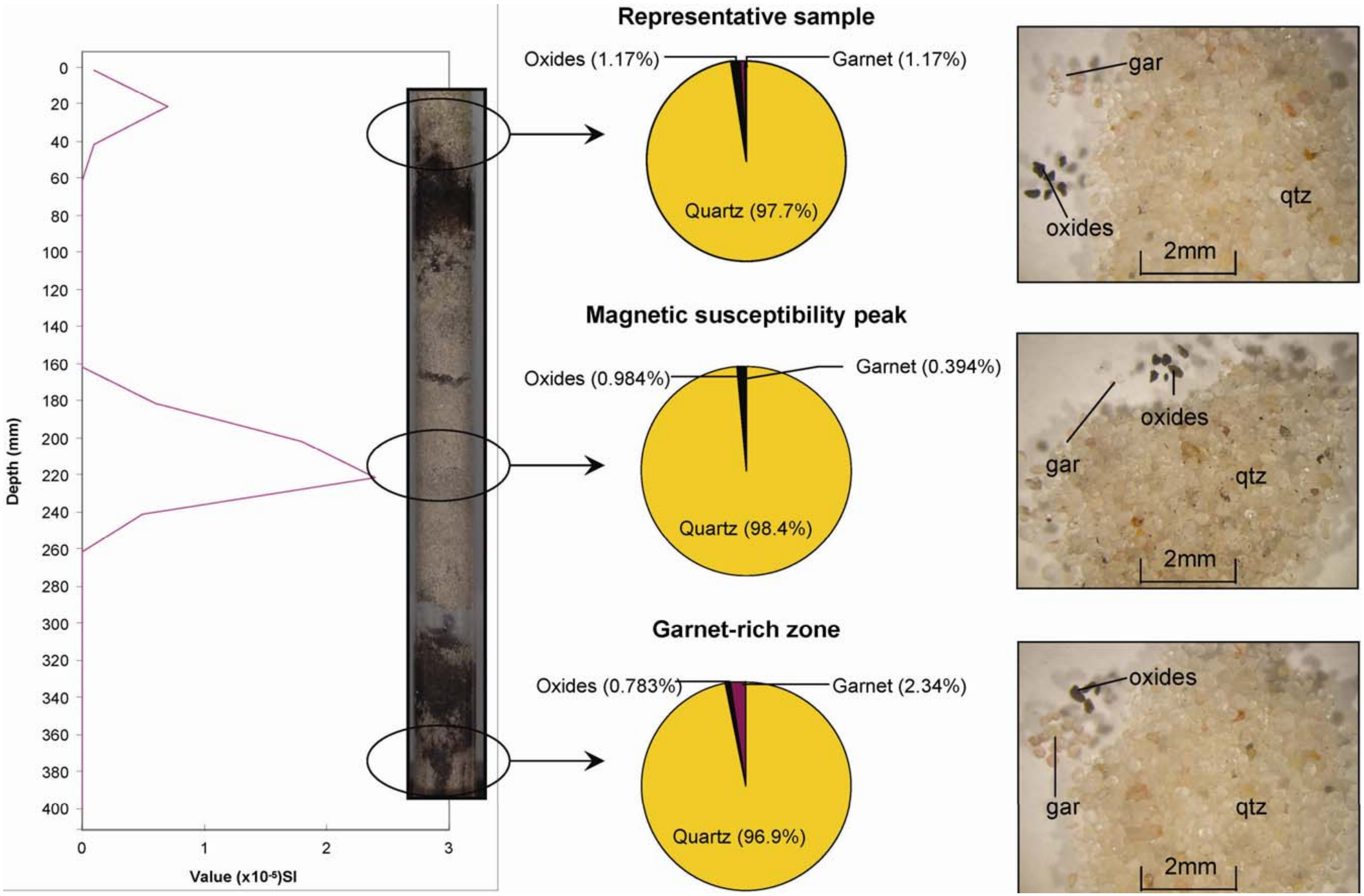

Figure 17. Magnetic susceptibility and general lithology of beach sand at Christina Lake (sample RE06-GB-003).

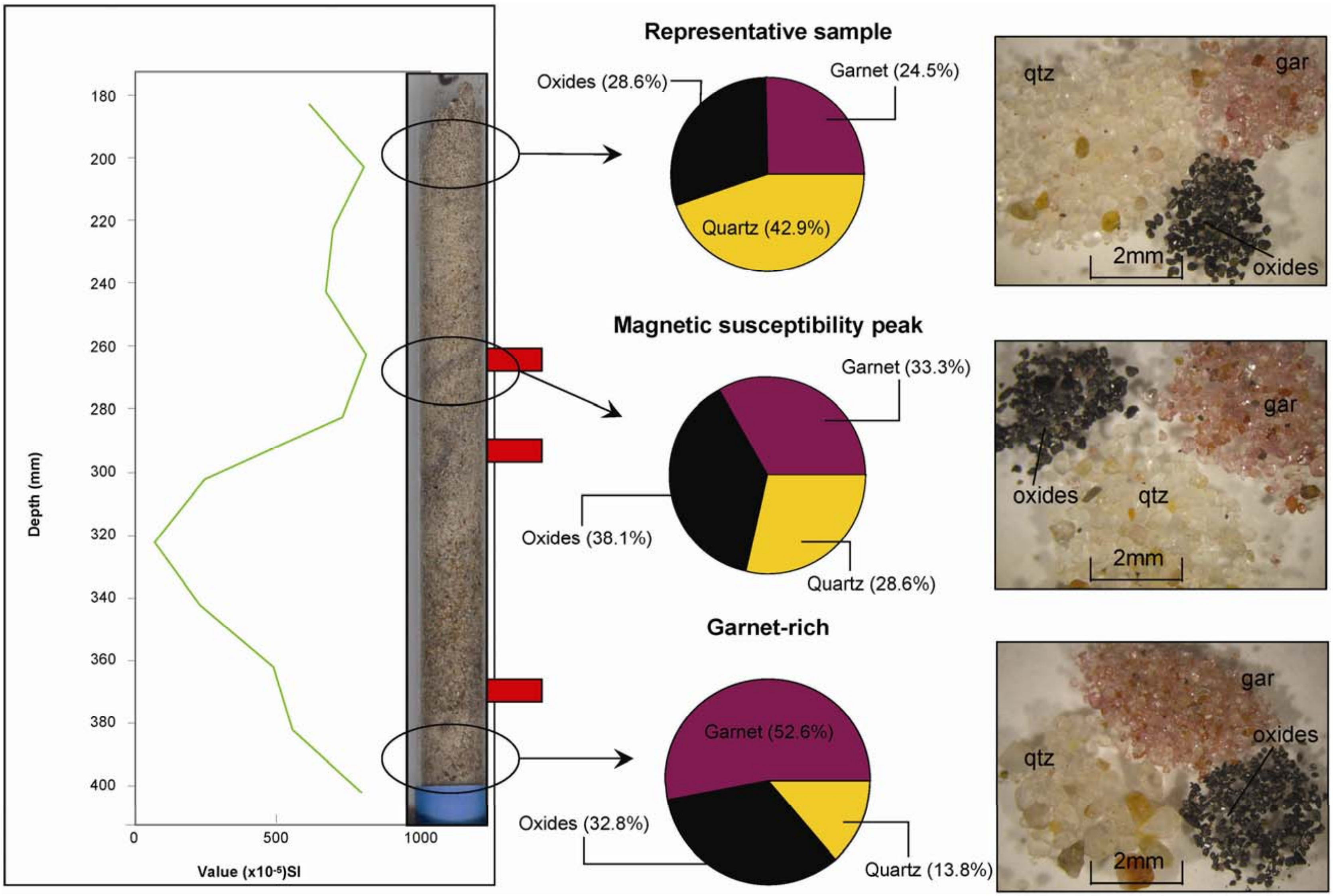

Figure 18. Magnetic susceptibility and general lithology of beach sand at Wolf Lake (sample RE06-GB-004). Garnet-rich horizons are highlighted by the red arrows.

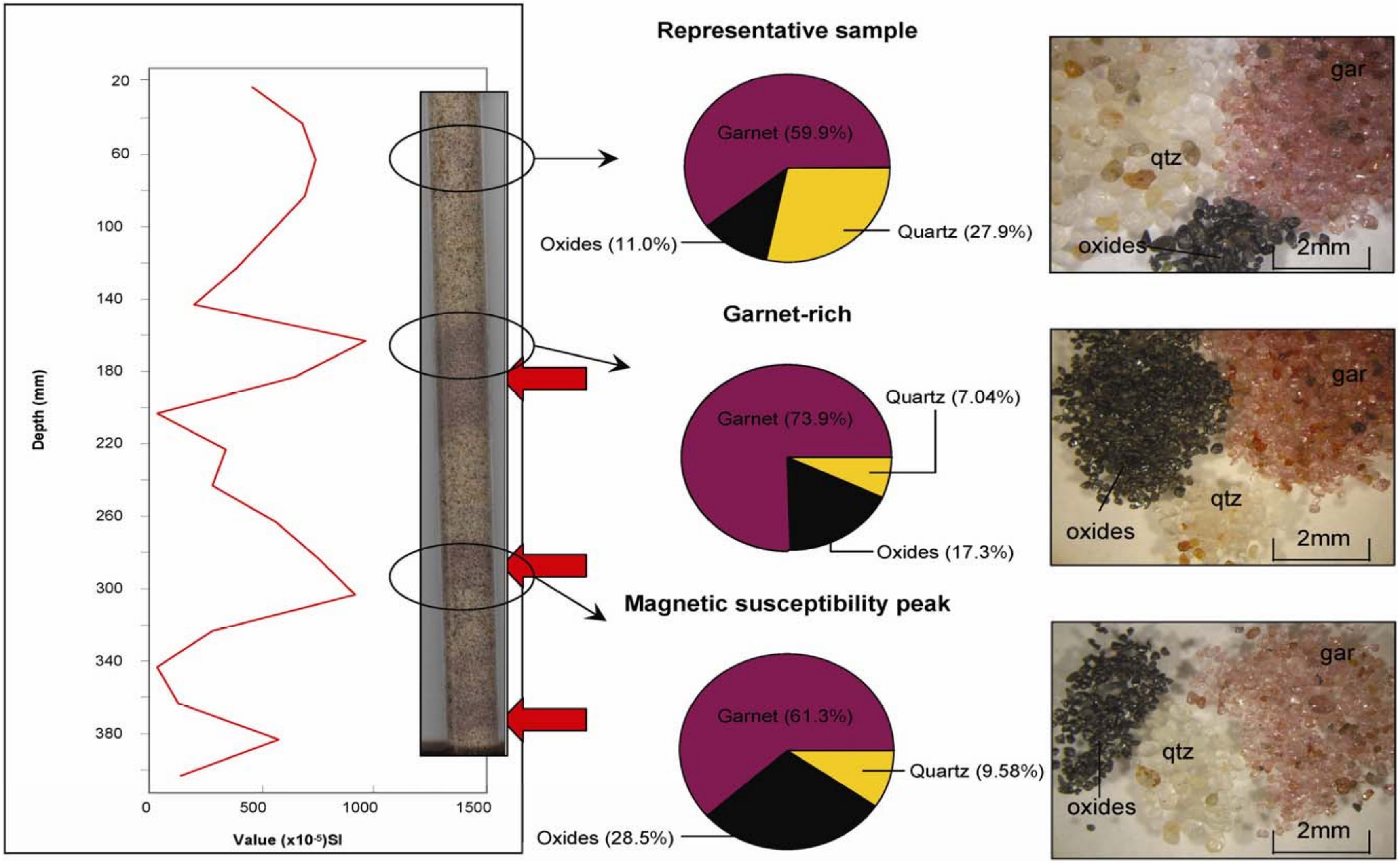

Figure 19. Magnetic susceptibility and general lithology of beach sand at Cold Lake (sample RE06-GB-005). Garnet-rich horizons are highlighted by the red arrows.

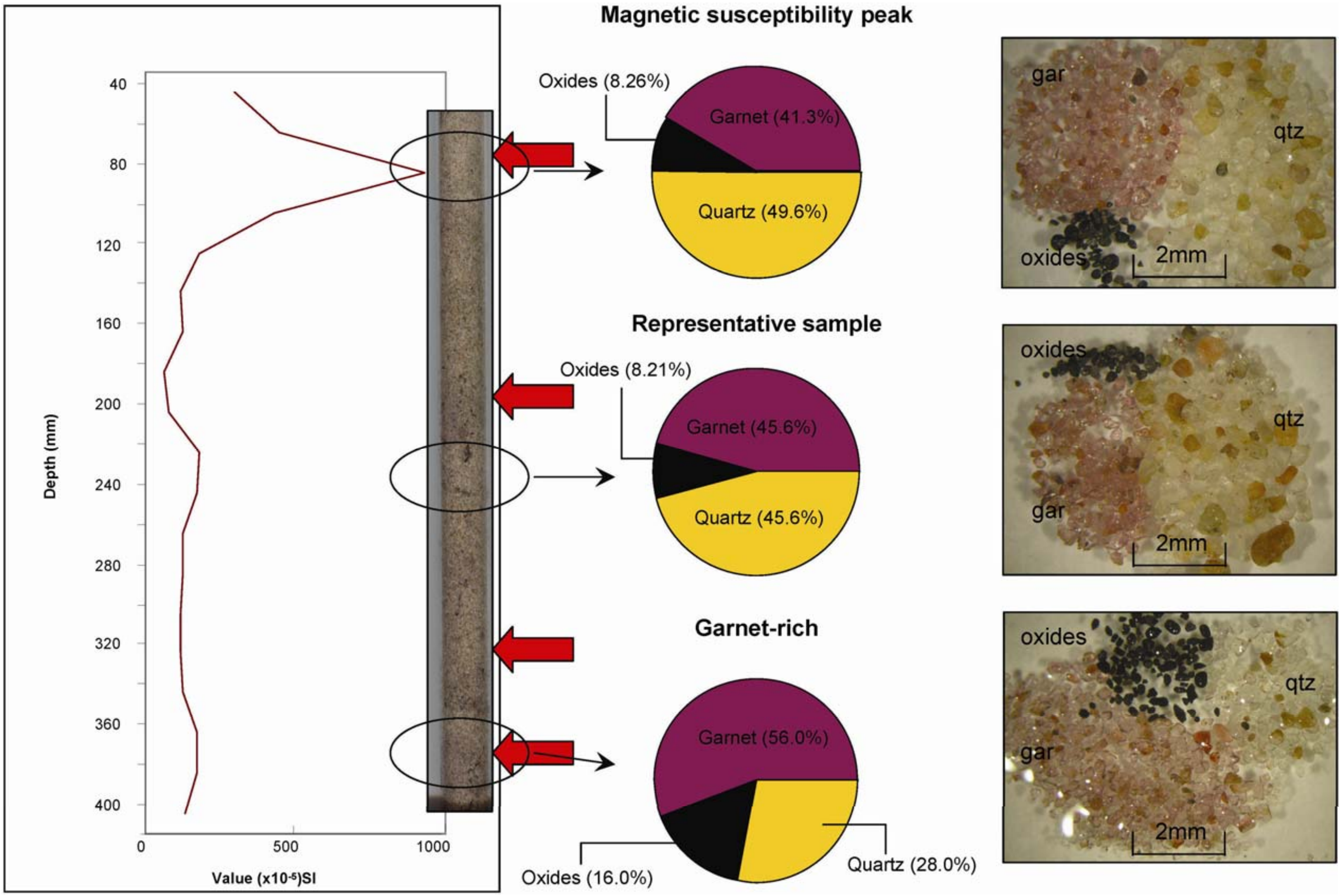

Figure 20. Magnetic susceptibility and general lithology of beach sand at Shelter, Bay, Marie Lake (sample RE06-GB-007). Garnet-rich horizons are highlighted by the red arrows.

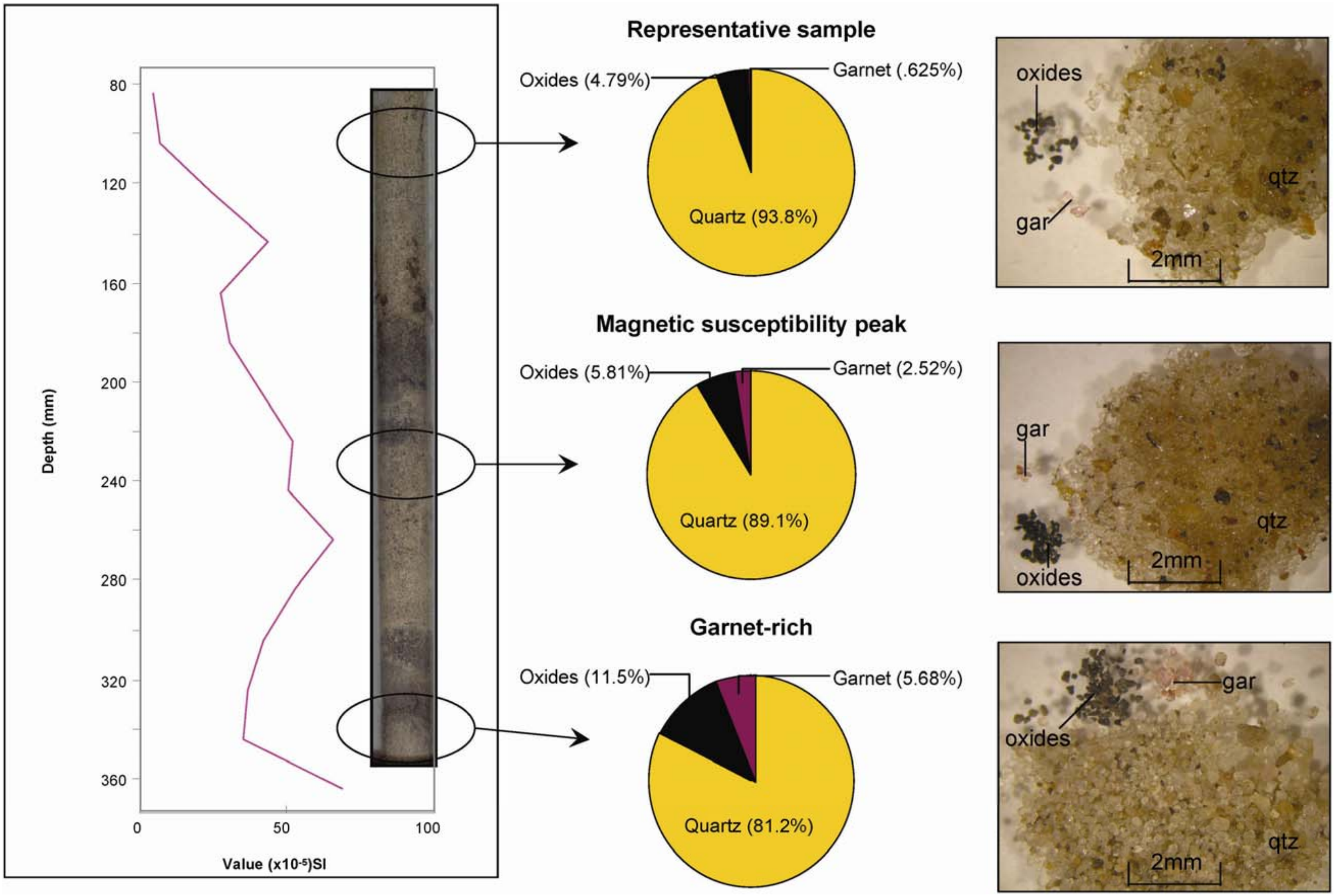

Figure 21. Magnetic susceptibility and general lithology of beach sand at Stoney Lake (sample RE06-GB-008).

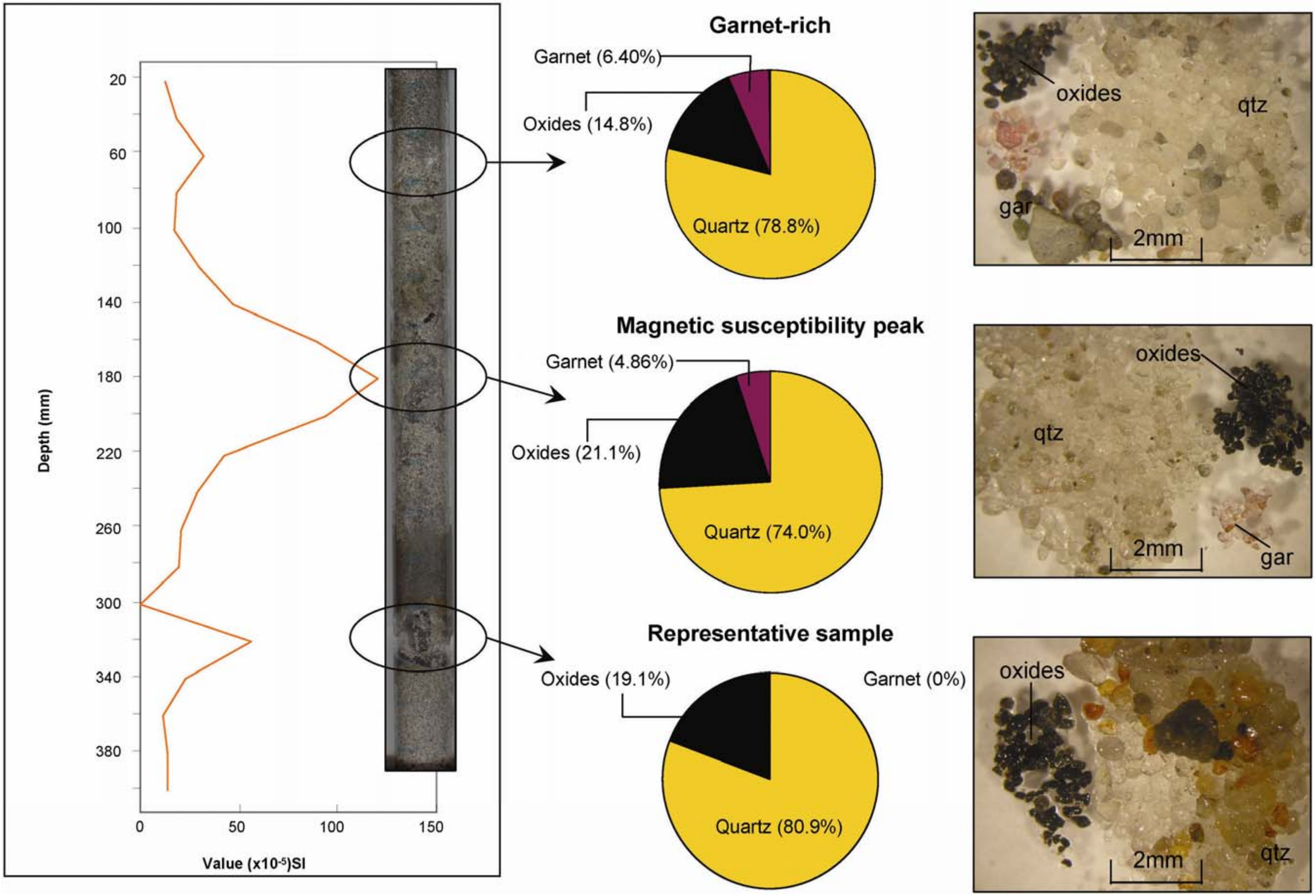

Figure 22. Magnetic susceptibility and general lithology of beach sand at Lac Santé (sample RE06-GB-009).

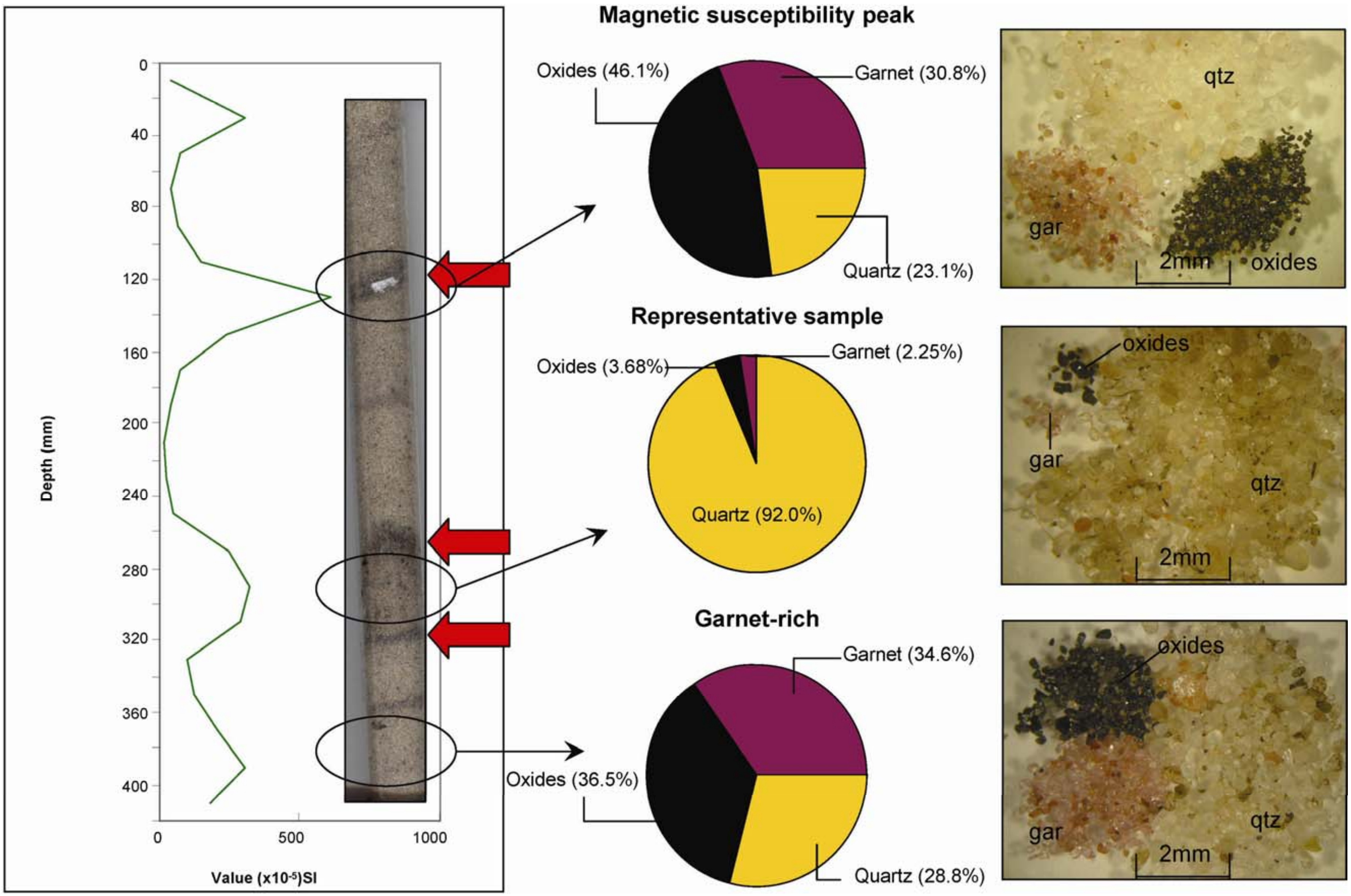

Figure 23. Magnetic susceptibility and general lithology of beach sand at Calling Lake southeast (sample RE06-GB-010).

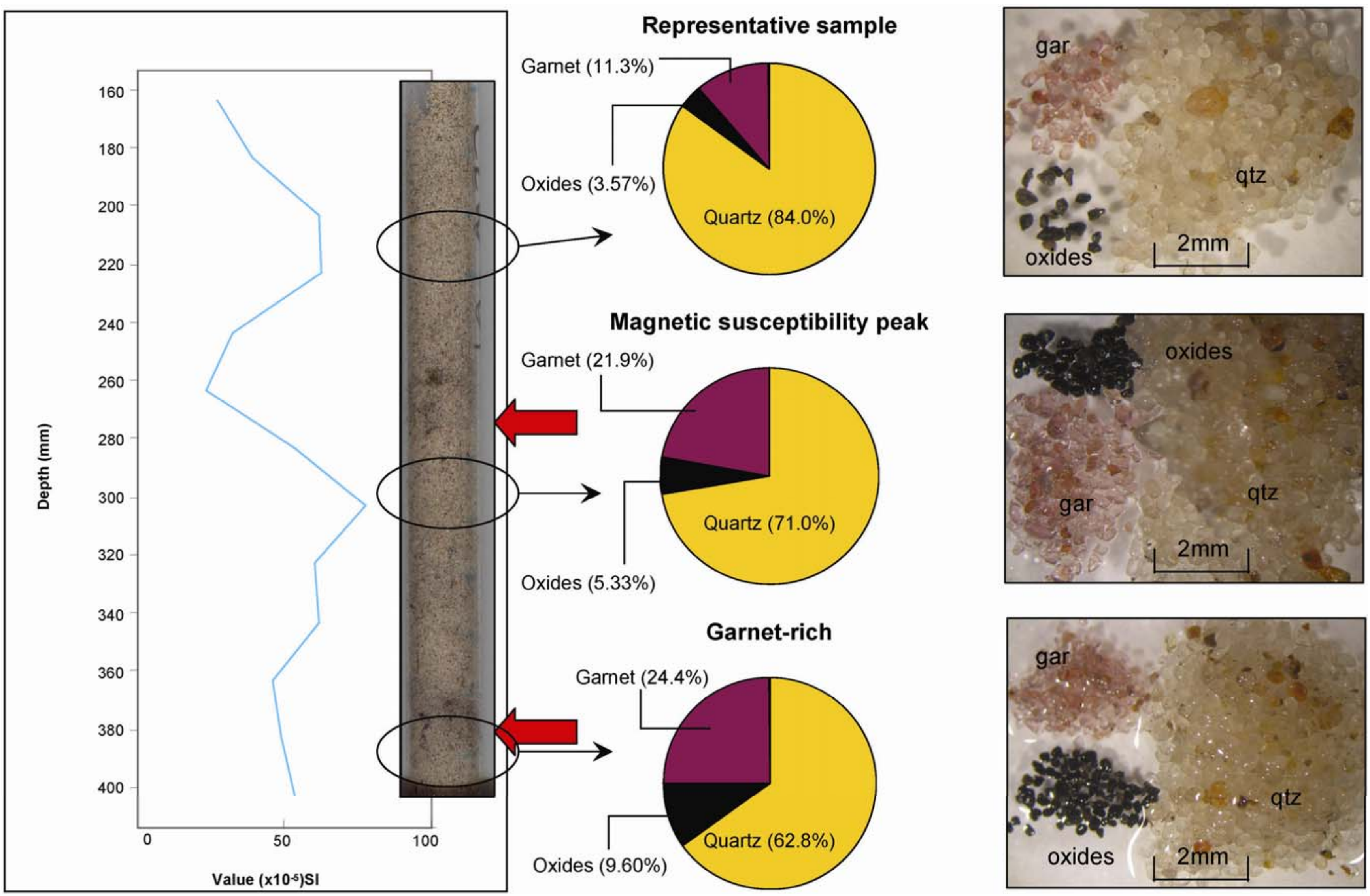

Figure 24. Magnetic susceptibility and general lithology of beach sand at Calling Lake west (sample RE06-GB-011).

Appendix 3 –Electron Microprobe Analytical Results for Garnet-Rich Beach Sands in East-Central Alberta: A) Garnet (All Species), B) Non-Garnet Kimberlite-Indicator Minerals (Clinopyroxene, Chromite and Ilmenite), and C) Garnet from a Garnetiferous Pelitic Gneiss Erratic Discovered in the Area

Table 6. Electron microprobe analytical results for garnet.

[1] Physical grain types identified during heavy-mineral indicator processing, some of which were identified by semi-quantive EDS analysis.
[2] Geochemical grain types identified by entering EMPA data from this study into the program MinIdent-Win (Smith and Higgins, 2001). The score is a "matching index" calculation of mineral identification probability where a score of 1000 represents a perfect match.
[3] Stoichiometric garnet end member calculations based on EMPA data from this study. Values are in per cent and total 100%.

Sample ID	Probe mount	Grain ID	Grain size (mm)	Probe spot	TiO_2	SiO_2	K_2O	Na_2O	FeO	Cr_2O_3	Al_2O_3	CaO	MgO	MnO	P_2O_5	NiO	V_2O_3	Total	Grain type (physical ID)[1]	Grain type (geochemical ID)[2]		Stoichiometric garnet end member calculations (%)[3]							
																					Score	Spess	Almand	Andr	Ti-Andr	Uvar	Knorr	Gross	Pyrope
RE06-GB-001	GB1	1	0.5-1.0	Core	0.046	38.43	0.003	0	27.358	0	21.403	7.092	4.355	1.937	0.02	0.004	0.004	100.652	Almandine	Almandine	972	4.3	58.9	1.2	0.1	0.0	0.0	18.5	16.9
RE06-GB-001	GB1	2	0.5-1.0	Core	0.05	38.297	0	0.013	26.788	0	21.101	9.812	2.895	1.683	0.017	0.006	0.02	100.682	Almandine	Almandine	924	3.7	57.3	2.1	0.1	0.0	0.0	25.4	11.3
RE06-GB-001	GB1	3	0.5-1.0	Core	0.039	38.211	0	0.026	27.162	0	20.803	6.804	4.06	3.298	0	0	0.008	100.411	Almandine	Almandine	975	7.3	57.5	3.2	0.1	0.0	0.0	16.0	15.9
RE06-GB-001	GB1	4	0.5-1.0	Core	0.004	37.988	0.002	0.032	33.61	0	21.381	1.542	5.427	0.813	0.065	0	0.014	100.878	Almandine	Almandine	928	1.8	72.7	0.7	0.0	0.0	0.0	3.7	21.1
RE06-GB-001	GB1	5	0.5-1.0	Core	0.024	37.823	0	0.014	35.37	0	20.944	2.591	3.89	0.202	0	0	0.01	100.868	Almandine	Almandine	903	0.5	76.8	1.9	0.1	0.0	0.0	5.5	15.3
RE06-GB-001	GB1	6	0.25-0.5	Core	0	36.844	0.001	0.048	34.988	0	20.348	4.192	1.183	2.563	0	0	0	100.167	Almandine	Almandine	876	5.8	77.1	2.4	0.0	0.0	0.0	9.9	4.7
RE06-GB-001	GB1	7	0.25-0.5	Core	0.055	38.346	0	0.031	28.386	0.005	21.275	6.845	4.712	0.939	0.004	0.014	0.027	100.639	Almandine	Almandine	969	2.1	60.5	1.7	0.2	0.0	0.0	17.3	18.2
RE06-GB-001	GB1	8	0.25-0.5	Core	0.051	37.28	0	0.032	33.674	0.007	20.544	7.599	1.033	0.129	0.031	0	0	100.38	Almandine	Almandine	867	0.3	73.7	2.3	0.2	0.0	0.0	19.4	4.1
RE06-GB-001	GB1	9	0.25-0.5	Core	0.044	38.645	0	0.004	27.005	0	21.586	7.285	5.249	0.989	0	0.003	0.033	100.843	Almandine	Almandine	974	2.2	57.5	1.1	0.1	0.0	0.0	18.9	20.2
RE06-GB-001	GB1	10	0.25-0.5	Core	0.035	37.92	0.001	0.029	34.464	0.016	21.157	3.167	3.975	0.157	0.031	0.011	0.018	100.981	Almandine	Almandine	916	0.3	75.0	1.2	0.1	0.1	0.0	7.7	15.6
RE06-GB-001	GB1	11	0.25-0.5	Core	0.209	38.773	0.001	0.026	4.791	0.001	20.446	33.225	0.122	0.783	0.037	0.004	0.007	98.425	Almandine	Grossular	981	1.7	6.4	5.8	0.6	0.0	0.0	85.0	0.5
RE06-GB-001	GB1	12	0.25-0.5	Core	0.009	37.775	0	0	34.779	0.082	21.004	4.866	2.242	0.255	0.028	0	0.012	101.052	Almandine	Almandine	891	0.6	76.7	1.1	0.0	0.3	0.0	12.5	8.9
RE06-GB-001	GB1	13	0.25-0.5	Core	0.061	37.533	0	0.03	35.793	0	20.622	5.532	1.335	0.387	0.039	0	0	101.332	Almandine	Almandine	864	0.9	77.9	2.5	0.2	0.0	0.0	13.2	5.3
RE06-GB-001	GB1	14	0.25-0.5	Core	0.403	39.015	0	0.003	6.571	0.004	17.731	35.435	0.105	0.117	0.043	0	0.07	99.497	Almandine	Grossular	972	0.3	2.7	17.2	1.2	0.0	0.0	78.2	0.4
RE06-GB-001	GB1	15	0.25-0.5	Core	0.111	38.166	0	0.018	30.426	0.085	21.377	3.766	5.663	1.059	0.011	0.015	0.029	100.726	Almandine	Almandine	970	2.3	65.3	0.8	0.3	0.3	0.0	9.2	21.8
RE06-GB-001	GB1	16	0.25-0.5	Core	0.574	41.909	0	0.054	8.119	1.535	21.235	4.498	21.415	0.294	0.031	0.02	0.025	99.709	Almandine	Low-Cr pyrope	986	0.6	12.9	4.7	1.5	4.3	0.0	1.0	75.0
RE06-GB-001	GB1	17	0.25-0.5	Core	0.041	38.993	0	0.002	29.327	0.01	21.534	4.581	6.529	0.462	0.028	0	0.008	101.515	Almandine	Almandine	974	1.0	61.5	2.0	0.1	0.0	0.0	10.4	24.9
RE06-GB-001	GB1	18	0.25-0.5	Core	0.206	39.632	0	0	5.417	0	20.394	33.556	0.147	0.348	0.01	0.004	0.035	99.749	Almandine	Grossular	982	0.8	6.7	7.3	0.6	0.0	0.0	84.1	0.6
RE06-GB-001	GB1	19	0.25-0.5	Core	0.02	38.376	0	0.022	29.84	0	21.343	6.556	3.54	1.611	0	0	0.027	101.335	Almandine	Almandine	954	3.6	64.2	1.4	0.1	0.0	0.0	17.0	13.8
RE06-GB-001	GB1	20	0.25-0.5	Core	0.07	37.821	0.004	0.027	33.074	0	20.626	4.147	1.746	3.335	0	0.011	0.011	100.872	Almandine	Almandine	908	7.6	73.2	2.4	0.2	0.0	0.0	9.5	7.0
RE06-GB-001	GB1	21	0.25-0.5	Core	0	38.37	0	0	33.799	0.016	21.738	0.911	6.135	0.397	0.055	0	0.012	101.433	Pink almandine	Almandine	918	0.9	73.0	0.1	0.0	0.0	0.0	2.4	23.6
RE06-GB-001	GB1	22	0.25-0.5	Core	0	38.227	0	0.043	34.337	0	21.565	1.745	4.345	1.424	0.018	0.002	0.014	101.72	Pink almandine	Almandine	918	3.2	74.8	0.3	0.0	0.0	0.0	4.8	16.9
RE06-GB-001	GB1	23	0.25-0.5	Core	0.014	39.261	0	0.114	26.836	0.105	22.229	2.152	9.718	0.748	0	0.01	0	101.187	Pink almandine	Almandine	961	1.6	56.0	0.1	0.0	0.3	0.0	5.8	36.2
RE06-GB-001	GB1	24	0.25-0.5	Core	0.024	39.13	0.001	0.025	29.037	0.005	22.172	1.094	9.306	0.245	0.053	0	0.022	101.114	Pink almandine	Almandine	943	0.5	61.3	0.1	0.1	0.0	0.0	2.9	35.1
RE06-GB-001	GB1	25	0.25-0.5	Core	0.01	39.141	0	0.022	30.868	0.034	22.027	1.196	7.759	0.326	0.017	0.002	0.013	101.415	Pink almandine	Almandine	944	0.7	66.2	0.2	0.0	0.1	0.0	3.1	29.7
RE06-GB-001	GB1	26	0.25-0.5	Core	0.013	38.205	0	0.04	34.174	0.049	21.65	1.012	4.472	2.143	0	0	0	101.758	Pink almandine	Almandine	916	4.7	74.8	0.0	0.0	0.2	0.0	2.8	17.4
RE06-GB-001	GB1	27	0.25-0.5	Core	0.017	38.745	0.001	0.036	32.318	0	21.895	1.034	7.046	0.514	0.163	0.01	0	101.779	Pink almandine	Almandine	933	1.1	69.0	0.3	0.0	0.0	0.0	2.7	26.9
RE06-GB-001	GB1	28	0.25-0.5	Core	0.005	37.866	0	0.009	36.079	0.002	21.398	1.09	3.913	0.896	0.075	0.006	0	101.339	Pink almandine	Almandine	887	2.0	79.5	0.1	0.0	0.0	0.0	3.0	15.4
RE06-GB-001	GB1	29	0.25-0.5	Core	0.041	38.568	0	0.025	31.197	0.055	21.892	1.134	7.969	0.28	0.089	0	0.019	101.269	Pink almandine	Almandine	940	0.6	66.1	0.1	0.1	0.2	0.0	2.8	30.1
RE06-GB-001	GB1	30	0.25-0.5	Core	0.005	39.706	0	0.02	27.026	0.022	22.316	2.057	10.419	0.274	0.001	0.013	0.048	101.907	Pink almandine	Almandine	947	0.6	55.4	1.0	0.0	0.1	0.0	4.5	38.5
RE06-GB-001	GB1	31	0.25-0.5	Core	0.002	38.41	0	0.017	33.391	0.017	21.578	1.246	5.658	1.088	0.023	0.006	0.005	101.441	Pink almandine	Almandine	929	2.4	72.1	0.6	0.0	0.1	0.0	2.9	21.9
RE06-GB-001	GB1	32	0.25-0.5	Core	0.003	38.425	0.007	0.003	32.522	0.013	21.897	1.114	6.568	0.909	0.045	0	0.004	101.51	Pink almandine	Almandine	935	2.0	69.8	0.0	0.0	0.0	0.0	3.0	25.1
RE06-GB-001	GB1	33	0.25-0.5	Core	0.024	37.185	0	0	32.379	0	20.969	1.12	2.173	7.026	0.03	0	0.012	100.918	Pink almandine	Almandine	900	15.9	72.2	0.4	0.1	0.0	0.0	2.8	8.7
RE06-GB-001	GB1	34	0.25-0.5	Core	0.007	37.506	0	0.018	35.412	0.021	21.285	1.006	4.858	0.391	0.07	0	0.006	100.58	Pink almandine	Almandine	899	0.9	77.3	0.2	0.0	0.1	0.0	2.6	18.9
RE06-GB-001	GB1	36	0.5-1.0	Core	0.021	37.606	0.002	0.013	26.247	0.017	21.068	0.486	0.965	14.768	0	0	0.016	101.209	Mn almandine	Almandine-Spessartine-series	900	34.3	60.2	0.0	0.1	0.1	0.0	1.4	3.9
RE06-GB-001	GB1	37	0.5-1.0	Core	0.029	36.829	0	0.069	27.009	0	20.629	0.246	0.369	14.723	0.005	0	0	99.908	Mn almandine	Almandine-Spessartine-series	878	34.7	62.7	0.1	0.1	0.0	0.0	0.9	1.5
RE06-GB-001	GB1	38	0.25-0.5	Core	0.027	36.484	0	0.082	22.136	0.013	20.056	2.493	0.566	16.369	0	0.012	0.009	98.247	Mn almandine	Almandine-Spessartine-series	945	38.9	50.8	1.7	0.1	0.0	0.0	6.1	2.4
RE06-GB-001	GB1	39	0.5-1.0	Core	0.008	36.084	0	0.005	27.031	0.02	1.73	31.981	0.036	0.462	0.022	0.004	0	97.383	Andradite	Andradite	910	1.0	6.9	90.7	0.0	0.1	0.0	1.1	0.1
RE06-GB-001	GB1	40	0.25-0.5	Core	0.113	38.627	0	0.013	5.592	0	18.52	34.493	0.064	0.371	0.041	0.011	0.011	97.856	Grossular	Grossular	980	0.8	3.2	13.6	0.3	0.0	0.0	81.8	0.2
RE06-GB-001	GB1	41	0.25-0.5	Core	0.206	39.441	0.002	0.013	6.645	0.011	18.748	34.006	0.099	0.447	0.014	0.01	0.098	99.74	Grossular	Grossular	983	1.0	5.1	13.8	0.6	0.0	0.0	79.1	0.4
RE06-GB-001	GB1	42	0.25-0.5	Core	0.443	27.695	0.007	0	12.499	0.028	52.37	0	2.08	0.054	0.014	0	0.038	95.228	Grossular	Staurolite	999	0.3	76.9	-1.2	1.2	0.0	0.1	0.0	22.7
RE06-GB-001	GB1	43	0.25-0.5	Core	0.438	42.171	0	0.054	9.87	0.522	22.113	5.406	19.149	0.388	0.016	0.013	0.046	100.186	Grossular	Low-Cr pyrope	980	0.8	17.0	4.1	1.2	1.5	0.0	7.3	68.2
RE06-GB-001	GB1	44	0.25-0.5	Core	0.183	38.706	0	0	9.118	0.053	19.287	29.938	0.108	1.441	0.015	0.006	0.156	99.011	Grossular	Grossular	989	3.2	13.1	10.1	0.5	0.2	0.0	72.5	0.4
RE06-GB-001	GB1	45	0.25-0.5	Core	0.073	40.106	0	0.024	19.593	0.161	21.883	5.434	12.442	0.508	0.062	0	0.027	100.313	Grossular	Almandine-Pyrope-series	985	1.1	38.6	2.8	0.2	0.5	0.0	11.0	45.8
RE06-GB-001	GB1	46	0.25-0.5	Core	0.904	38.504	0	0.023	7.246	0.028	17.124	33.929	0.062	0.401	0.024	0	0.068	98.313	Grossular	Grossular	981	0.9	4.4	17.3	2.7	0.1	0.0	74.4	0.2
RE06-GB-001	GB1	47	0.25-0.5	Core	0.192	39.243	0	0.014	7.948	0	19.97	29.774	0.086	2.166	0.021	0.006	0.02	99.44	Grossular	Grossular	989	4.8	11.9	8.1	0.6	0.0	0.0	74.4	0.3
RE06-GB-001	GB1	48	0.25-0.5	Core	0.457	38.642	0	0.039	7.459	0	17.818	33.92	0.018	0.183	0.037	0	0.035	98.608	Grossular	Grossular	982	0.4	5.7	15.9	1.4	0.0	0.0	76.6	0.1
RE06-GB-001	GB1	49	0.25-0.5	Core	0.074	40.236	0.004	0.02	21.486	0	22.095	7.653	9.908	0.297	0.011	0.002	0.014	101.8	Grossular	Almandine	950	0.6	42.6	2.7	0.2	0.0	0.0	17.5	36.4
RE06-GB-001	GB1	50	0.25-0.5	Core	0.046	36.395	0	0.025	15.128	0.002	20.223	0.274	0.083	26.081	0.081	0.02	0	98.358	Spessartine	Spessartine	914	62.9	35.8	0.4	0.1	0.0	0.0	0.4	0.4
RE06-GB-002	GB1	1	0.25-0.5	Core	0.004	38.338	0	0.135	32.908	0	21.46	3.135	4.802	0.504	0.008	0	0.005	101.299	Almandine	Almandine	939	1.1	70.9	0.9	0.0	0.0	0.0	8.5	18.6
RE06-GB-002	GB1	2	0.25-0.5	Core	0.019	39.108	0	0.049	30.393	0.031	22.055	1.416	8.126	0.339	0.068	0.002	0.005	101.611	Almandine	Almandine	948	0.7	64.4	0.3	0.1	0.1	0.0	3.7	30.8
RE06-GB-002	GB1	3	0.25-0.5	Core	0.048	39.48	0	0.03	27.811	0.037	22.055	0.804	10.465	0.431	0.014	0.008	0.02	101.203	Almandine	Almandine	933	0.9	57.6	1.2	0.1	0.1	0.0	0.9	39.2
RE06-GB-002	GB1	4	0.25-0.5	Core	0	38.338	0.006	0.029	33.561	0.011	21.297	1.177	5.398	1.156	0.044	0	0.026	101.043	Almandine	Almandine	926	2.6	72.8	1.4	0.0	0.0	0.0	2.1	21.1
RE06-GB-002	GB1	5	0.25-0.5	Core	0	37.757	0	0.037	33.211	0.001	21.296	1.376	5.215	1.432	0.04	0	0.019	100.384	Almandine	Almandine	932	3.2	72.4	0.6	0.0	0.0	0.0	3.5	20.4
RE06-GB-002	GB1	6	0.25-0.5	Core	0.037	38.208	0	0	31.634	0	20.975	6.949	2.536	1.043	0.017	0	0.009	101.408	Almandine	Almandine	921	2.3	68.1	2.4	0.1	0.0	0.0	17.1	10.0
RE06-GB-002	GB1	7	0.25-0.5	Core	0.003	38.476	0	0.014	33.35	0	21.506	1.698	4.669	1.67	0	0.015	0	101.401	Almandine	Almandine	931	3.7	73.1	0.6	0.0	0.0	0.0	4.2	18.3
RE06-GB-002	GB1	8	0.25-0.5	Core	0.005	38.168	0	0.014	32.197	0	21.558	1.336	6.486	0.6	0.044	0	0.023	100.431	Almandine	Almandine	938	1.3	69.8	0.3	0.0	0.0	0.0	3.4	25.1
RE06-GB-002	GB1	9	0.25-0.5	Core	0.048	38.539	0	0.018	28.825	0.048	21.504	1.982	8.373	0.525	0.039	0.01	0.004	99.915	Almandine	Almandine	963	1.1	61.2	1.2	0.1	0.1	0.0	4.0	32.1
RE06-GB-002	GB1	10	0.25-0.5	Core	0.022	38.392	0	0.015	30.707	0	21.455	2.835	4.661	2.495	0.023	0.005	0	100.61	Almandine	Almandine	964	5.6	67.8	0.5	0.1	0.0	0.0	7.6	18.4
RE06-GB-002	GB1	11	0.25-0.5	Core	0	38.02	0	0.021	35.936	0.006	21.448	1.466	3.341	1.078	0.046	0.007	0.002	101.371	Almandine	Almandine	887	2.4	80.0	0.0	0.0	0.0	0.0	4.3	13.3
RE06-GB-002	GB1	12	0.25-0.5	Core	0.014	38.253	0	0.025	33.522	0.016	21.517	1.232	5.604	0.741	0.073	0.002	0.001	101	Almandine	Almandine	925	1.6	73.0	0.4	0.0	0.0	0.0	3.1	21.8
RE06-GB-002	GB1	13	0.25-0.5	Core	0.031	37.95	0	0.017	32.379	0	21.355	1.221	6.477	0.391	0.033	0.009	0.001	99.864	Almandine	Almandine	934	0.9	70.4	0.6	0.1	0.0	0.0	2.8	25.2
RE06-GB-002	GB1	14	0.25-0.5	Core	0	38.505	0.007	0	32.446	0.035	21.628	1.335	6.094	0.821	0.033	0.023	0	100.927	Almandine	Almandine	937	1.8	70.7	0.3	0.0	0.1	0.0	3.3	23.7
RE06-GB-002	GB1	15	0.25-0.5	Core	0.005	39.101	0.002	0.004	30.724	0	21.829	1.086	7.96	0.517	0.065	0	0.008	101.301	Almandine	Almandine	944	1.1	65.4	1.0	0.0	0.0	0.0	2.0	30.5
RE06-GB-002	GB1	16	0.25-0.5	Core	0.049	38.679	0	0.003	28.756	0.028	20.992	6.892	4.821	0.529	0	0.022	0.042	100.813	Almandine	Almandine	965	1.2	60.7	3.2	0.1	0.1	0.0	15.9	18.8
RE06-GB-002	GB1	17	0.25-0.5	Core	0.092	38.829	0.002	0.041	21.389	0.009	21.497	2.793	7.814	7.473	0.009	0.004	0.043	99.995	Almandine	Almandine	982	16.4	45.4	1.4	0.3	0.0	0.0	6.2	30.2
RE06-GB-002	GB1	18	0.25-0.5	Core	0.024	39.074	0	0.014	29.344	0.02	23.911	0.787	8.202	0.525	0.126	0.006	0.015	102.048	Almandine	Almandine	932	1.2	64.4	0.0	0.1	0.1	0.0	2.2	32.1
RE06-GB-003	GB1	1	0.25-0.5	Core	0.073	38.365	0	0.033	29.648	0	20.974	6.813	4.339	0.554	0	0	0.024	100.823	Almandine	Almandine	957	1.2	62.7	2.8	0.2	0.0	0.0	16.1	16.9
RE06-GB-003	GB1	2	0.25-0.5	Core	0.071	38.544	0.004	0	23.621	0.025	21.064	13.93	2.555	0.457	0.031	0.007	0.045	100.354	Almandine	Aluminferropargasite	847	1.0	50.0	2.6	0.2	0.1	0.0	36.2	10.0
RE06-GB-003	GB1	3	0.25-0.5	Core	0.019	38.685	0	0.001	32.602	0.043	21.921	0.871	6.154	0.962	0.114	0	0.008	101.38	Almandine	Almandine	931	2.1	71.4	0.0	0.1	0.1	0.0	2.3	24.0
RE06-GB-003	GB1	4	0.25-0.5	Core	0.133	38.642	0.002	0.033	23.624	0.048	21.166	6.464	8.196	0.867	0.024	0	0.028	99.227	Almandine	Almandine	983	1.9	48.9	2.7	0.4	0.1	0.0	14.7	31.3
RE06-GB-003	GB1	5	0.25-0.5	Core	0.211	38.993	0	0.024	19.789	0.132	21.482	12.783	5.715	0.74	0.04	0	0.023	99.932	Almandine	Aluminferrotschermakite	927	1.6	41.4	1.5	0.6	0.4	0.0	32.7	21.8
RE06-GB-003	GB1	6	0.25-0.5	Core	0.109	36.899	0.012	0.002	32.692	0	19.969	7.208	1.396	0.815	0	0.002	0.019	99.123	Almandine	Almandine	886	1.9	71.6	3.7	0.3	0.0	0.0	16.9	5.6
RE06-GB-003	GB1	7	0.25-0.5	Core	0.141	39.26	0.005	0.014	23.719	0.019	21.833	9.592	5.918	0.461	0.027	0	0.031	101.02	Almandine	Almandine	951	1.0	50.1	1.0	0.4	0.1	0.0	24.9	22.6
RE06-GB-003	GB1	8	0.25-0.5	Core	0.177	38.423	0	0.004	21.13	0.005	21.392	5.732	4.57	8.637	0.036	0	0.033	100.139	Almandine	Almandine	970	19.3	46.4	0.5	0.5	0.0	0.0	15.2	18.0
RE06-GB-003	GB1	9	0.25-0.5	Core	0.185	39.151	0.003	0.053	24.815	0	21.465	8.142	6.391	0.482	0.015	0.001	0.051	100.754	Almandine	Almandine	970	1.0	51.8	2.2	0.5	0.0	0.0	20.0	24.5
RE06-GB-003	GB1	10	0.25-0.5	Core	0.023	39.599	0	0.032	23.577	0.036	22.353	0.833	13.266	0.306	0.03	0	0.057	100.112	Almandine	Almandine-Pyrope-series	937	0.6	48.2	0.7	0.1	0.1	0.0	1.5	48.8
RE06-GB-003	GB1	11	0.25-0.5	Core	0.027	38.468	0.001	0	30.522	0.012	21.586	1.109	7.699	0.398	0.065	0	0.021	99.908	Pink almandine	Almandine	945	0.9	66.1	0.6	0.1	0.0	0.0	2.4	29.9
RE06-GB-003	GB1	12	0.25-0.5	Core	0.042	37.902	0	0.008	34.161	0.06	21.449	0.782	4.942	1.11	0.065	0.004	0.026	100.551	Pink almandine	Almandine	913	2.5	75.7	0.0	0.1	0.2	0.0	1.9	19.5
RE06-GB-003	GB1	13	0.25-0.5	Core	0.016	38.326	0	0	33.24	0	21.59	1.662	4.758	1.351	0.009	0	0.017	100.969	Pink almandine	Almandine	931	3.0	73.5	0.0	0.0	0.0	0.0	4.7	18.8
RE06-GB-003	GB1	14	0.25-0.5	Core	0.009	39.152	0	0	27.211	0.047	21.975	1.357	10.188	0.365	0.024	0.003	0.044	100.375	Pink almandine	Almandine	944	0.8	57.1	0.8	0.0	0.1	0.0	2.7	38.4
RE06-GB-003	GB1	15	0.25-0.5	Core	0	39.167	0	0.022	28.423	0.033	22.067	1.278	9.135	0.43	0.022	0.006	0.011	100.594	Pink almandine	Almandine	951	0.9	60.6	0.2	0.0	0.1	0.0	3.3	34.8
RE06-GB-003	GB1	16	0.25-0.5	Core	0	37.518	0	0.183	33.357	0.016	21.28	1.221	4.267	1.928	0.083	0	0.007	99.86	Pink almandine	Almandine	923	4.3	74.3	0.0	0.0	0.1	0.0	4.4	16.9
RE06-GB-003	GB1	17	0.25-0.5	Core	0.012	39.305	0.002	0.001	25.389	0.044	21.939	1.148	11.63	0.291	0.021	0.012	0.009	99.803	Pink almandine	Almandine-Pyrope-series	930	0.6	52.6	1.3	0.0	0.1	0.0	1.6	43.7
RE06-GB-003	GB1	18	0.25-0.5	Core	0.025	39.585	0.002	0.009	27.563	0.02	22.345	1.11	10.157	0.235	0.094	0.011	0.02	101.176	Pink almandine	Almandine	939	0.5	58.2	0.1	0.1	0.1	0.0	2.9	38.2
RE06-GB-003	GB1	19	0.25-0.5	Core	0.049	38.371	0	0.018	31.662	0.06	21.6	2.012	6.441	0.259	0.022	0	0.032	100.526	Pink almandine	Almandine	947	0.6	68.8	0.2	0.1	0.2	0.0	5.2	25.0
RE06-GB-003	GB1	21	0.25-0.5	Core	0.121	37.395	0	0.017	20.143	0	20.923	2.024	1.524	16.883	0	0.002	0.02	99.052	Mn almandine	Almandine-Spessartine-series	968	40.1	47.3	0.0	0.4	0.0	0.0	5.8	6.4
RE06-GB-003	GB1	22	0.25-0.5	Core	0.198	37.905	0	0.02	20.417	0.014	20.972	4.362	3.866	11.48	0.015	0	0.01	99.259	Mn almandine	Almandine-Spessartine-series	973	26.2	45.5	0.8	0.6	0.0	0.0	11.3	15.5
RE06-GB-003	GB1	23	0.25-0.5	Core	0.112	37.783	0	0.043	20.799	0.004	21.042	7.798	0.933	11.073	0.004	0	0.013	99.604	Mn almandine	Almandine-Spessartine-series	925	25.6	47.5	0.1	0.3	0.0	0.0	22.6	3.8
RE06-GB-003	GB1	24	0.25-0.5	Core	0.005	36.918	0	0.02	19.368	0	20.625	0.785	1.401	19.426	0	0.004	0.002	98.554	Mn almandine	Almandine-Spessartine-series	952	46.2	45.5	0.0	0.0	0.0	0.0	2.4	5.9
RE06-GB-003	GB1	25	0.25-0.5	Core	0.03	37.164	0	0.167	27.017	0.02	20.75	2.351	1.007	11.081	0.018	0	0.01	99.615	Mn almandine	Almandine-Spessartine-series	897	25.9	62.2	0.2	0.1	0.1	0.0	7.5	4.1
RE06-GB-003	GB1	26	0.25-0.5	Core	0.015	40.651	0	0	15.03	0.007	22.605	8.972	12.354	0.316	0.014	0	0.006	99.97	Low Cr pyrope	Almandine-Pyrope-series	935	0.7	30.1	1.4	0.0	0.0	0.0	22.3	45.5
RE06-GB-003	GB1	27	0.25-0.5	Core	0.464	27.514	0	0.018	13.352	0.02	53.209	0.014	1.735	0.228	0	0.005	0.033	96.592	Low Cr pyrope	Staurolite	998	1.4	79.8	-0.9	1.3	0.0	0.1	0.0	18.4
RE06-GB-003	GB1	28	0.25-0.5	Core	0.248	42.064	0	0.042	7.627	3.215	20.701	4.615	20.955	0.346	0.031	0	0.02	99.864	Pyrope	Pyrope	993	0.7	13.2	3.0	0.7	8.3	0.8	0.0	73.4
RE06-GB-003	GB1	29	0.25-0.5	Core	0.011	36.695	0	0.054	19.013	0.007	20.376	0.585	2.245	18.882	0.241	0.005	0	98.114	Spessartine	Almandine-Spessartine-series	958	44.7	43.9	0.8	0.0	0.0	0.0	1.2	9.4
RE06-GB-003	GB1	30	0.25-0.5	Core	0.036	36.665	0	0.026	16.023	0	20.201	0.096	1.457	23.178	0.235	0.018	0	97.935	Spessartine	Almandine-Spessartine-series	931	55.9	37.5	0.3	0.1	0.0	0.0	0.0	6.2
RE06-GB-003	GB1	31	0.25-0.5	Core	0.054	36.367	0	0	18.224	0	19.959	0.274	0.766	21.689	0.063	0.005	0.007	97.408	Spessartine	Almandine-Spessartine-series	929	52.9	43.0	0.7	0.2	0.0	0.0	0.0	3.3
RE06-GB-003	GB1	32	0.25-0.5	Core	0.228	37.936	0	0.027	6.066	0	19.724	30.517	0.123	2.598	0.022	0	0.067	97.308	Grossular	Grossular	988	5.7	8.5	7.1	0.7	0.0	0.0	77.5	0.5
RE06-GB-003	GB1	33	0.25-0.5	Core	0.414	38.569	0	0.007	6.003	0.007	18.567	34.036	0.102	0.256	0.023	0.015	0.104	98.103	Grossular	Grossular	982	0.6	4.7	12.6	1.2	0.0	0.0	80.5	0.4
RE06-GB-003	GB1	34	0.25-0.5	Core	0.201	39.513	0.001	0.009	4.707	0.009	19.738	35.149	0.112	0.35	0	0	0.095	99.884	Grossular	Grossular	977	0.8	3.3	10.1	0.6	0.0	0.0	84.8	0.4
RE06-GB-003	GB1	35	0.25-0.5	Core	0.074	37.069	0	0.017	18.107	0.02	20.526	0.49	0.222	22.36	0.014	0.003	0.007	98.909	Grossular	Almandine-Spessartine-series	919	54.2	43.3	0.0	0.2	0.1	0.0	1.3	0.9
RE06-GB-003	GB1	36	0.25-0.5	Core	0.963	39.082	0	0.007	4.755	0	18.743	34.658	0.13	0.158	0.045	0	0.057	98.598	Grossular	Grossular	973	0.3	2.8	11.2	2.8	0.0	0.0	82.3	0.5
RE06-GB-003	GB1	37	0.25-0.5	Core	0.781	38.377	0	0.01	7.038	0.025	17.797	31.885	0.096	1.655	0.024	0	0.083	97.771	Grossular	Grossular	990	3.7	6.0	14.3	2.3	0.1	0.0	73.2	0.4
RE06-GB-003	GB1	38	0.25-0.5	Core	0.206	39.049	0.002	0	5.807	0	20	32.582	0.138	0.582	0.025	0.001	0.02	98.412	Grossular	Grossular	988	1.3	7.5	7.7	0.6	0.0	0.0	82.4	0.5
RE06-GB-003	GB1	39	0.25-0.5	Core	0.837	38.996	0	0.023	3.779	0.147	19.412	35.107	0.115	0.104	0.019	0.005	0.169	98.713	Grossular	Grossular	966	0.2	2.5	8.4	2.4	0.5	0.0	85.5	0.4
RE06-GB-003	GB1	40	0.25-0.5	Core	0.854	39.004	0.004	0.009	4.771	0.01	19.382	34.469	0.114	0.211	0.03	0.005	0.026	98.889	Grossular	Grossular	975	0.5	4.3	9.0	2.5	0.0	0.0	83.3	0.4
RE06-GB-003	GB1	41	0.25-0.5	Core	0.776	38.166	0	0	4.281	0	20.092	33.477	0.055	0.896	0.038	0.004	0.01	97.795	Grossular	Grossular	978	1.9	5.9	5.0	2.3	0.0	0.0	84.6	0.2
RE06-GB-004	GB1	1	0.25-0.5	Core	0.225	41.616	0	0.027	7.135	3.839	20.138	4.939	20.889	0.36	0.03	0.005	0.053	99.256	Pyrope	Pyrope	991	0.7	12.3	2.9	0.6	9.2	1.7	0.0	72.5
RE06-GB-004	GB1	2	0.25-0.5	Core	0	36.472	0.003	0.035	6.974	5.641	18.974	4.432	20.031	0.406	0.011	0.001	0.032	93.012	Pyrope	Pyrope	940	0.8	14.3	0.0	0.0	11.8	5.6	0.0	67.5
RE06-GB-004	GB1	4	0.25-0.5	Core	0.131	40.081	0.001	0.005	7.541	3.812	19.148	4.818	11.79	0.355	0.029	0.001	0.049	87.761	Pyrope	Pyrope-Almandine-series	931	1.0	21.5	0.0	0.4	12.2	0.0	5.0	59.9
RE06-GB-004	GB1	5	0.25-0.5	Core	0.38	39.214	0	0.03	6.609	4.943	17.434	5.248	9.416	0.273	0.012	0.007	0.043	83.609	Pyrope	Pyrope-Almandine-series	880	0.9	21.7	0.0	1.2	16.6	0.0	4.5	55.1
RE06-GB-004	GB1	6	0.25-0.5	Core	0.203	38.8	0	0.021	7.013	3.72	19.119	4.439	11.629	0.338	0.016	0.005	0.028	85.331	Pyrope	Pyrope-Almandine-series	925	1.0	20.7	0.0	0.6	12.2	0.0	4.1	61.3
RE06-GB-004	GB1	7	0.25-0.5	Core	1.499	40.002	0	0.079	6.719	3.007	18.341	4.785	15.198	0.279	0.012	0.024	0.045	89.99	Low Cr pyrope	Pyrope	944	0.7	16.1	0.8	4.4	9.4	0.0	1.1	67.5
RE06-GB-004	GB1	8	0.5-1.0	Core	0.012	37.451	0	0	30.659	0.009	20.362	6.751	1.184	3.514	0.011	0	0.004	99.957	Almandine	Almandine	908	8.1	67.5	3.0	0.0	0.0	0.0	16.6	4.8
RE06-GB-004	GB1	9	0.5-1.0	Core	0.013	37.799	0	0.036	31.231	0	21.343	1.105	4.49	2.977	0	0	0	98.994	Almandine	Almandine	944	6.9	71.4	0.0	0.0	0.0	0.0	3.4	18.3
RE06-GB-004	GB1	10	0.5-1.0	Core	0	37.656	0	0	20.483	0.008	20.975	3.094	2.042	14.851	0	0	0.003	99.112	Almandine	Almandine-Spessartine-series	977	34.9	47.5	0.1	0.0	0.0	0.0	9.1	8.4
RE06-GB-004	GB1	11	0.5-1.0	Core	0.041	37.953	0	0.026	30.796	0.018	20.718	7.263	2.384	1.121	0.006	0.002	0.011	100.339	Almandine	Almandine	923	2.5	67.1	2.6	0.1	0.1	0.0	18.1	9.5
RE06-GB-004	GB1	12	0.5-1.0	Core	0.006	37.615	0	0.002	30.768	0.009	21.217	2.546	2.576	5.887	0.046	0	0.009	100.681	Almandine	Almandine	934	13.4	69.0	0.0	0.0	0.0	0.0	7.3	10.3
RE06-GB-004	GB1	13	0.25-0.5	Core	0.066	37.817	0	0.045	30.994	0.001	20.678	8.686	1.459	0.751	0	0.011	0.009	100.517	Almandine	Almandine	889	1.7	67.4	2.6	0.2	0.0	0.0	22.3	5.8
RE06-GB-004	GB1	14	0.25-0.5	Core	0.046	37.987	0	0.045	26.833	0	21.033	6.713	3.485	4.032	0.025	0.003	0.015	100.217	Almandine	Almandine	970	9.0	58.1	1.7	0.1	0.0	0.0	17.4	13.7
RE06-GB-004	GB1	15	0.25-0.5	Core	0.004	37.925	0	0.021	33.709	0.004	20.96	4.941	3.031	0.272	0.012	0	0.018	100.897	Almandine	Almandine	914	0.6	73.3	1.9	0.0	0.0	0.0	12.2	12.0
RE06-GB-004	GB1	16	0.25-0.5	Core	0.125	38.719	0	0.026	26.326	0.018	21.422	6.354	6.564	1.011	0.018	0.005	0.02	100.608	Almandine	Almandine	986	2.2	55.2	1.9	0.4	0.1	0.0	15.3	25.1
RE06-GB-004	GB1	17	0.25-0.5	Core	0.011	37.674	0	0.015	29.785	0	20.861	7.234	2.938	1.519	0.004	0	0.059	100.1	Almandine	Almandine	940	3.4	64.5	2.0	0.0	0.0	0.0	18.5	11.6
RE06-GB-004	GB1	18	0.25-0.5	Core	0.033	38.199	0	0.113	30.693	0.016	20.9	6.177	4.26	0.37	0.034	0.005	0.024	100.824	Almandine	Almandine	951	0.8	64.9	2.9	0.1	0.0	0.0	14.7	16.5
RE06-GB-004	GB1	19	0.25-0.5	Core	0	37.946	0	0.007	28.898	0	20.726	6.543	2.418	3.697	0	0	0.009	100.244	Almandine	Almandine	945	8.4	63.1	2.6	0.0	0.0	0.0	16.3	9.7
RE06-GB-004	GB1	20	0.25-0.5	Core	0.028	37.602	0	0.115	31.079	0.015	20.658	6.531	2.138	1.78	0.036	0	0.007	99.989	Almandine	Almandine	923	4.0	68.1	2.2	0.1	0.0	0.0	17.0	8.5
RE06-GB-004	GB1	21	0.25-0.5	Core	0.073	39.944	0.001	0.018	22.842	0.014	22.338	1.251	13.55	0.614	0	0	0.016	100.661	Almandine	Almandine-Pyrope-series	950	1.3	45.9	1.4	0.2	0.0	0.0	1.7	49.5
RE06-GB-004	GB1	22	0.25-0.5	Core	0.165	37.539	0	0.053	24.261	0.054	20.849	10.201	2.329	3.5	0.022	0.006	0.007	98.986	Almandine	Almandine	915	7.9	53.4	1.0	0.5	0.2	0.0	27.7	9.3
RE06-GB-004	GB1	23	0.25-0.5	Core	0	36.257	0	0.018	23.958	0	20.199	1.277	1.073	14.931	0	0.007	0	97.72	Mn almandine	Almandine-Spessartine-series	929	35.6	55.9	0.7	0.0	0.0	0.0	3.2	4.5
RE06-GB-004	GB1	24	0.25-0.5	Core	0.058	37.977	0	0.017	20.879	0	20.42	5.909	4.756	8.893	0	0.019	0.013	98.941	Mn almandine	Almandine	968	20.1	44.0	3.9	0.2	0.0	0.0	12.9	18.9
RE06-GB-004	GB1	25	0.5-1.0	Core	0.393	35.479	0	0.025	25.75	0	1.915	30.197	0.124	1.224	0.039	0.016	0.079	95.241	Andradite	Andradite	935	2.9	6.7	88.2	1.4	0.0	0.0	0.3	0.5
RE06-GB-004	GB1	26	0.25-0.5	Core	0.307	47.731	0.304	0.869	13.556	0	6.946	11.649	13.869	0.307	0	0	0.058	95.596	Spessartine	magnesiohornblende	986	0.9	-20.1	47.6	0.9	0.0	0.0	0.0	70.7
RE06-GB-004	GB1	27	0.25-0.5	Core	0.058	35.755	0	0.06	15.149	0.002	19.389	2.565	0.623	22.507	0	0	0	96.108	Spessartine	Almandine-Spessartine-series	950	54.7	34.4	2.8	0.2	0.0	0.0	5.2	2.7
RE06-GB-004	GB1	28	0.25-0.5	Core	0.526	35.897	0	0.048	4.256	0.029	16.159	4.013	1.586	31.554	0.01	0	0.01	94.088	Spessartine	Spessartine	959	79.8	0.0	11.4	1.7	0.0	0.1	0.0	7.0
RE06-GB-004	GB1	29	0.25-0.5	Core	0.144	37.134	0	0.015	10.772	0.226	19.289	11.382	0.997	17.445	0	0	0.039	97.443	Spessartine	Almandine-Spessartine-series	873	40.9	21.1	5.6	0.4	0.7	0.0	27.0	4.1
RE06-GB-004	GB1	30	0.25-0.5	Core	0.068	36.674	0	0.029	22.033	0	20.117	0.863	0.931	17.592	0.015	0	0.004	98.326	Spessartine	Almandine-Spessartine-series	936	42.2	51.1	1.5	0.2	0.0	0.0	1.1	3.9
RE06-GB-004	GB1	31	0.25-0.5	Core	0.005	37.534	0	0.014	33.679	0	20.88	2.358	3.4	2.178	0	0.011	0.012	100.071	Spessartine	Almandine	922	4.9	74.6	1.3	0.0	0.0	0.0	5.5	13.6
RE06-GB-004	GB1	32	0.25-0.5	Core	0.047	38.146	0	0.011	27.014	0.046	20.732	6.642	5.989	0.909	0.027	0	0.012	99.575	Spessartine	Almandine	981	2.0	56.3	3.6	0.1	0.1	0.0	14.7	23.2
RE06-GB-004	GB1	33	0.25-0.5	Core	0.074	36.888	0	0.014	32.547	0	20.028	7.149	1.611	0.591	0	0.002	0.012	98.916	Spessartine	Almandine	891	1.4	71.3	3.5	0.2	0.0	0.0	17.1	6.5
RE06-GB-004	GB1	34	0.25-0.5	Core	0.076	37.361	0	0.017	30.353	0	20.369	6.471	3.564	0.908	0	0	0.004	99.123	Spessartine	Almandine	947	2.0	65.3	3.3	0.2	0.0	0.0	15.0	14.1
RE06-GB-004	GB1	35	0.25-0.5	Core	0.161	38.419	0	0.031	22.995	0	20.907	7.674	8.329	0.404	0.017	0	0.044	98.981	Spessartine	Almandine	970	0.9	46.5	3.7	0.5	0.0	0.0	16.9	31.6
RE06-GB-004	GB1	36	0.25-0.5	Core	0.031	37.268	0	0	30.914	0.004	20.142	7.066	2.595	1.182	0.007	0	0.038	99.247	Spessartine	Almandine	926	2.7	66.7	4.0	0.1	0.0	0.0	16.2	10.4
RE06-GB-004	GB1	37	0.25-0.5	Core	0.073	36.492	0.001	0.105	27.756	0	19.903	2.546	0.746	10.605	0	0.008	0.002	98.237	Spessartine	Almandine-Spessartine-series	885	25.2	63.5	2.3	0.2	0.0	0.0	5.7	3.1
RE06-GB-004	GB1	38	0.25-0.5	Core	0.057	38.373	0	0	27.638	0.028	21.118	5.843	5.765	1.264	0.021	0.007	0	100.114	Spessartine	Almandine	984	2.8	58.6	2.3	0.2	0.1	0.0	13.7	22.3
RE06-GB-004	GB1	39	0.25-0.5	Core	0.034	37.467	0	0.004	32.545	0	20.336	7.942	0.791	0.771	0	0.011	0.012	99.913	Spessartine	Almandine	870	1.8	71.9	3.1	0.1	0.0	0.0	20.0	3.2
RE06-GB-004	GB1	40	0.25-0.5	Core	0.076	37.857	0	0.043	30.381	0.037	20.979	6.88	3.396	0.293	0	0	0.007	99.949	Grossular	Almandine	939	0.7	66.2	1.5	0.2	0.1	0.0	17.9	13.4
RE06-GB-004	GB1	41	0.25-0.5	Core	0.059	37.384	0	0.006	31.526	0	20.754	4.639	1.864	3.636	0	0.008	0.007	99.883	Grossular	Almandine	923	8.3	70.6	1.2	0.2	0.0	0.0	12.2	7.5
RE06-GB-004	GB1	42	0.25-0.5	Core	0.211	38.672	0	0	5.855	0	19.862	32.363	0.109	1.114	0.01	0	0.014	98.21	Grossular	Grossular	988	2.4	7.5	7.9	0.6	0.0	0.0	81.2	0.4
RE06-GB-004	GB1	43	0.25-0.5	Core	0.25	39.535	0	0.008	4.417	0.029	19.878	34.359	0.106	0.301	0.044	0.007	0.08	99.014	Grossular	Grossular	975	0.7	3.6	8.8	0.7	0.1	0.0	85.7	0.4
RE06-GB-004	GB1	44	0.25-0.5	Core	0.171	39.059	0.005	0.008	4.371	0	20.354	33.027	0.123	1.128	0.014	0.005	0.017	98.282	Grossular	Grossular	980	2.5	5.2	6.4	0.5	0.0	0.0	85.0	0.5
RE06-GB-004	GB1	45	0.25-0.5	Core	0.422	38.925	0	0	6.517	0.029	19.333	32.652	0.082	0.604	0.044	0	0.009	98.617	Grossular	Grossular	989	1.3	7.6	9.8	1.2	0.1	0.0	79.6	0.3
RE06-GB-004	GB1	46	0.25-0.5	Core	0.02	37.081	0	0.014	1.768	19.856	5.242	33.137	0.075	0.177	0.025	0.003	0.034	97.432	Grossular	Uvarovite	970	0.4	-1.9	9.0	0.1	65.3	0.0	26.9	0.3
RE06-GB-004	GB1	47	0.25-0.5	Core	0.359	39.107	0	0.031	3.068	0.051	20.345	34.697	0.134	0.341	0.018	0.007	0.026	98.184	Grossular	Grossular	976	0.7	2.6	6.0	1.0	0.2	0.0	88.9	0.5
RE06-GB-004	GB1	48	0.25-0.5	Core	0.54	27.366	0.002	0	13.191	0.035	52.634	0.011	1.366	0.292	0	0	0.014	95.451	Grossular	Staurolite	997	1.9	82.8	-1.4	1.5	0.0	0.1	0.0	15.2
RE06-GB-004	GB1	49	0.25-0.5	Core	0.269	38.747	0	0.025	8.239	0	19.531	31.87	0.079	0.136	0.006	0	0.023	98.925	Grossular	Grossular	989	0.3	11.5	9.4	0.8	0.0	0.0	77.7	0.3
RE06-GB-004	GB1	50	0.25-0.5	Core	0.368	39.202	0	0.013	6.749	0.003	19.219	32.89	0.089	0.589	0.018	0	0.048	99.188	Grossular	Grossular	988	1.3	7.3	10.9	1.1	0.0	0.0	79.0	0.3
RE06-GB-004	GB1	51	0.25-0.5	Core	0.283	38.605	0	0	7.159	0.007	18.379	33.296	0.111	0.385	0.017	0	0.051	98.293	Grossular	Grossular	987	0.8	6.4	13.8	0.8	0.0	0.0	77.6	0.4
RE06-GB-004	GB1	52	0.25-0.5	Core	0.2	39.413	0	0.024	5.578	0	19.166	33.843	0.118	0.827	0.036	0.01	0.044	99.259	Grossular	Grossular	983	1.8	4.1	11.9	0.6	0.0	0.0	81.2	0.5
RE06-GB-005	GB1	1	0.25-0.5	Core	0.068	42.362	0.003	0.034	7.274	3.888	20.588	4.65	21.437	0.374	0.015	0.019	0.036	100.748	Pyrope	Pyrope	990	0.7	12.4	2.9	0.2	8.8	2.1	0.0	72.9
RE06-GB-005	GB1	2	0.25-0.5	Core	0.21	42.64	0.005	0.076	7.662	2.714	21.356	4.48	21.626	0.35	0.028	0.02	0.028	101.195	Pyrope	Pyrope	989	0.7	12.8	3.3	0.6	7.6	0.0	0.2	75.0
RE06-GB-005	GB1	3	0.25-0.5	Core	0.146	42.227	0	0.02	6.402	6.299	18.226	5.793	21.264	0.282	0.017	0	0.047	100.723	Pyrope	Knorringite-Pyrope-series	986	0.6	9.4	5.0	0.4	9.4	8.4	0.0	66.8
RE06-GB-005	GB1	4	0.25-0.5	Core	0	41.894	0	0.038	7.282	5.351	19.46	4.666	21.121	0.448	0	0	0.035	100.295	Pyrope	Pyrope	989	0.9	12.6	2.7	0.0	9.3	5.9	0.0	68.6
RE06-GB-005	GB1	5	0.25-0.5	Core	0.009	37.698	0	0.022	36.361	0	21.255	1.974	2.901	1.17	0.032	0.014	0.007	101.443	Pyrope	Almandine	881	2.6	80.2	0.3	0.0	0.0	0.0	5.3	11.4
RE06-GB-005	GB1	6	0.5-1.0	Core	0.05	38.01	0	0.01	36.55	0.028	21.224	3.499	1.639	1.197	0	0.006	0.008	102.221	Almandine	Almandine	864	2.7	80.8	0.7	0.1	0.1	0.0	9.1	6.5
RE06-GB-005	GB1	7	0.5-1.0	Core	0	38.108	0	0.011	30.6	0	21.411	4.779	3.781	2.558	0.008	0.021	0.028	101.305	Almandine	Almandine	960	5.7	66.2	0.8	0.0	0.0	0.0	12.6	14.7
RE06-GB-005	GB1	8	0.5-1.0	Core	0.068	38.903	0	0.006	23.99	0	21.724	9.424	6.278	0.471	0.022	0	0.03	100.916	Almandine	Almandine	953	1.0	49.8	1.5	0.2	0.0	0.0	23.9	23.7
RE06-GB-005	GB1	9	0.5-1.0	Core	0.202	36.25	0	0.031	0.918	0.017	20.641	1.623	0.054	37.188	0	0.001	0	96.925	Almandine	Spessartine	920	92.2	2.2	0.0	0.6	0.1	0.0	4.6	0.2
RE06-GB-005	GB1	10	0.5-1.0	Core	0	38.086	0	0.007	20.137	0	20.82	6.012	1.953	13.428	0	0	0.02	100.463	Almandine	Almandine-Spessartine-series	971	30.7	44.0	2.2	0.0	0.0	0.0	15.2	7.9
RE06-GB-005	GB1	11	0.25-0.5	Core	0.011	37.525	0	0.023	17.018	0	20.194	6.122	2.035	16.273	0.059	0.015	0.011	99.286	Almandine	Almandine-Spessartine-series	985	37.5	36.2	3.7	0.0	0.0	0.0	14.2	8.3
RE06-GB-005	GB1	12	0.25-0.5	Core	0.097	37.319	0	0.05	22.125	0	20.453	0.47	0.322	19.099	0	0.001	0	99.936	Almandine	Almandine-Spessartine-series	917	45.6	51.4	1.1	0.3	0.0	0.0	0.3	1.4
RE06-GB-005	GB1	13	0.25-0.5	Core	0.08	37.265	0	0.021	19.865	0.012	20.388	0.218	1.63	20.242	0.093	0	0.008	99.822	Almandine	Almandine-Spessartine-series	942	47.6	44.9	0.5	0.2	0.0	0.0	0.0	6.7
RE06-GB-005	GB1	14	0.25-0.5	Core	0.135	37.557	0	0.031	25.003	0.026	20.575	6.488	1.155	9.24	0.032	0	0.023	100.265	Almandine	Almandine	910	21.2	55.2	2.0	0.4	0.1	0.0	16.5	4.7
RE06-GB-005	GB1	15	0.25-0.5	Core	0.404	27.234	0.006	0.004	13.932	0	53.011	0.012	1.771	0.135	0	0.014	0.025	96.548	Almandine	Staurolite	996	0.8	80.8	-1.0	1.1	0.0	0.0	0.0	18.3

Table 6 (continued)

Sample ID	Probe mount	Grain ID	Grain size (mm)	Probe spot	TiO_2	SiO_2	K_2O	Na_2O	FeO	Cr_2O_3	Al_2O_3	CaO	MgO	MnO	P_2O_5	NiO	V_2O_3	Total	Grain type (physical ID)[1]	Grain type (geochemical ID)[2]		Stoichiometric garnet end member calculations (%)[3]							
																					Score	Spess	Almand	Andr	Ti-Andr	Uvar	Knorr	Gross	Pyrope
RE06-GB-005	GB1	16	0.25-0.5	Core	0	38.668	0	0.01	31.559	0.022	21.673	1.055	7.541	0.722	0.017	0	0.003	101.27	Pink almandine	Almandine	940	1.6	66.8	1.1	0.0	0.1	0.0	1.8	28.7
RE06-GB-005	GB1	17	0.25-0.5	Core	0.041	39.03	0.004	0.016	29.988	0.018	22.063	1.019	8.911	0.307	0.076	0.003	0.006	101.482	Pink almandine	Almandine	941	0.7	63.0	0.4	0.1	0.1	0.0	2.3	33.5
RE06-GB-005	GB1	18	0.25-0.5	Core	0.035	38.699	0	0.024	30.842	0.011	21.843	0.993	8.41	0.381	0.032	0.021	0.013	101.304	Pink almandine	Almandine	940	0.8	64.7	0.7	0.1	0.0	0.0	1.9	31.7
RE06-GB-005	GB1	19	0.25-0.5	Core	0.004	39.053	0	0.028	27.659	0.026	21.817	1.138	10.088	0.296	0.047	0	0.013	100.169	Pink almandine	Almandine	941	0.6	57.9	1.3	0.0	0.1	0.0	1.9	38.2
RE06-GB-005	GB1	20	0.25-0.5	Core	0.038	39.011	0	0.008	31.353	0.011	21.973	1.15	7.898	0.351	0.043	0	0.02	101.856	Pink almandine	Almandine	940	0.8	66.2	0.6	0.1	0.0	0.0	2.5	29.9
RE06-GB-005	GB1	21	0.25-0.5	Core	0	39.191	0	0.004	28.641	0.009	21.912	1.162	9.825	0.29	0.041	0.011	0.001	101.087	Pink almandine	Almandine	941	0.6	59.4	1.4	0.0	0.0	0.0	1.7	36.9
RE06-GB-005	GB1	22	0.25-0.5	Core	0.022	39.432	0	0	28.706	0.025	22.059	1.229	9.822	0.243	0.039	0	0.01	101.587	Pink almandine	Almandine	941	0.5	59.5	1.2	0.1	0.1	0.0	2.0	36.7
RE06-GB-005	GB1	23	0.25-0.5	Core	0.032	38.153	0	0.005	32.106	0.001	21.503	0.767	7.697	0.408	0.019	0.003	0	100.694	Pink almandine	Almandine	930	0.9	67.8	1.1	0.1	0.0	0.0	0.9	29.2
RE06-GB-005	GB1	24	0.25-0.5	Core	0.017	38.826	0	0.016	28.402	0	22.016	1.095	9.831	0.246	0.095	0	0.005	100.549	Pink almandine	Almandine	941	0.5	59.5	0.4	0.0	0.0	0.0	2.6	36.9
RE06-GB-005	GB1	25	0.25-0.5	Core	0.015	38.155	0	0	32.467	0.017	21.561	0.968	6.598	0.483	0.07	0.006	0.022	100.362	Pink almandine	Almandine	931	1.1	70.6	0.2	0.0	0.1	0.0	2.4	25.6
RE06-GB-005	GB1	26	0.25-0.5	Core	0	38.437	0.007	0.01	29.073	0.015	21.157	7.59	3.89	1.145	0	0.002	0.017	101.343	Mn almandine	Almandine	953	2.5	61.3	2.5	0.0	0.0	0.0	18.6	15.0
RE06-GB-005	GB1	27	0.25-0.5	Core	0.73	42.672	0.003	0.082	7.732	1.613	20.812	4.557	22.234	0.253	0.028	0.01	0.04	100.766	Andradite	Pyrope	979	0.5	10.5	7.0	1.9	2.9	1.6	0.0	75.6
RE06-GB-005	GB1	28	0.25-0.5	Core	0.092	37.065	0	0.008	18.841	0.03	20.671	4.784	1.448	15.567	0.039	0.02	0.015	98.58	Spessartine	Almandine-Spessartine-series	979	36.4	43.4	0.2	0.3	0.1	0.0	13.6	6.0
RE06-GB-005	GB1	29	0.25-0.5	Core	0.489	37.384	0	0.031	11.645	0	19.205	5.621	1.19	23.256	0	0.02	0	98.841	Spessartine	Almandine-Spessartine-series	952	55.0	23.1	5.9	1.5	0.0	0.0	9.5	4.9
RE06-GB-005	GB1	30	0.25-0.5	Core	0.123	37.406	0.003	0.023	16.487	0.028	19.909	5.984	0.897	18.44	0.021	0	0.017	99.338	Spessartine	Almandine-Spessartine-series	969	43.1	35.3	4.0	0.4	0.1	0.0	13.3	3.7
RE06-GB-005	GB1	31	0.25-0.5	Core	0.116	36.734	0	0.005	7.486	0.025	20.199	0.27	0.216	33.192	0.295	0	0	98.538	Spessartine	Spessartine	969	80.7	17.5	0.5	0.4	0.0	0.1	0.0	0.8
RE06-GB-005	GB1	32	0.25-0.5	Core	0.096	37.029	0	0.025	10.74	0.003	19.96	0.333	1.229	29.025	0.106	0	0.002	98.548	Spessartine	Spessartine	967	69.9	23.8	0.9	0.3	0.0	0.0	0.0	5.2
RE06-GB-005	GB1	33	0.25-0.5	Core	0.051	38.001	0	0	14.151	0.027	19.957	10.356	0.507	16.682	0.027	0.001	0.022	99.782	Spessartine	Almandine-Spessartine-series	900	38.7	28.9	5.2	0.2	0.1	0.0	25.0	2.1
RE06-GB-005	GB1	34	0.25-0.5	Core	0.104	36.975	0	0.058	17.358	0	19.901	1.364	0.656	22.178	0	0.011	0.006	98.611	Spessartine	Almandine-Spessartine-series	943	53.4	39.4	2.7	0.3	0.0	0.0	1.5	2.8
RE06-GB-005	GB1	35	0.25-0.5	Core	0.04	36.061	0	0.034	20.679	0.009	19.931	0.306	0.296	20.169	0	0	0	97.525	Spessartine	Almandine-Spessartine-series	917	48.9	48.8	1.0	0.1	0.0	0.0	0.0	1.2
RE06-GB-005	GB1	36	0.25-0.5	Core	0.037	36.789	0	0.029	20.848	0.01	20.236	0.292	0.317	20.521	0.04	0	0.001	99.12	Spessartine	Almandine-Spessartine-series	917	49.1	48.5	0.9	0.1	0.0	0.0	0.0	1.3
RE06-GB-005	GB1	37	0.25-0.5	Core	0	37.272	0.005	0.034	21.48	0	20.516	2.576	1.271	16.611	0	0	0	99.765	Spessartine	Almandine-Spessartine-series	963	38.7	48.3	1.7	0.0	0.0	0.0	6.1	5.2
RE06-GB-005	GB1	38	0.25-0.5	Core	0.232	39.508	0	0.044	22.262	0.117	21.759	6.168	9.601	0.353	0	0	0.056	100.1	Spessartine	Almandine	968	0.8	46.1	1.5	0.7	0.4	0.0	14.4	36.2
RE06-GB-005	GB1	39	0.25-0.5	Core	0.081	37.993	0.003	0.041	12.48	0.024	20.542	6.662	2.66	19.066	0.018	0	0.028	99.598	Spessartine	Almandine-Spessartine-series	981	43.6	26.2	3.0	0.2	0.1	0.0	16.2	10.7
RE06-GB-005	GB1	40	0.25-0.5	Core	0.045	36.483	0	0.01	24.947	0	20.125	0.231	0.723	16.178	0	0.014	0	98.756	Spessartine	Almandine-Spessartine-series	903	38.5	57.7	0.6	0.1	0.0	0.0	0.0	3.0
RE06-GB-005	GB1	41	0.25-0.5	Core	0.22	39.31	0	0.025	24.899	0.088	21.682	6.615	8.116	0.527	0.014	0	0.049	101.545	Spessartine	Almandine	980	1.1	50.8	2.0	0.6	0.3	0.0	15.0	30.3
RE06-GB-005	GB1	42	0.25-0.5	Core	0.067	37.235	0	0.023	15.91	0	20.344	0.819	1.617	22.669	0	0	0	98.684	Spessartine	Almandine-Spessartine-series	950	54.1	36.5	1.5	0.2	0.0	0.0	0.9	6.8
RE06-GB-005	GB1	43	0.25-0.5	Core	0.136	35.852	0	0	19.714	0	19.786	0.287	0.825	20.247	0.169	0	0.006	97.022	Spessartine	Almandine-Spessartine-series	929	49.1	46.5	0.4	0.4	0.0	0.0	0.0	3.5
RE06-GB-005	GB1	44	0.25-0.5	Core	0.014	36.779	0	0	22.849	0.006	4.189	33.438	0.008	0.476	0.009	0.008	0	97.776	Andradite	Andradite	941	1.1	3.6	78.2	0.0	0.0	0.0	17.1	0.0
RE06-GB-005	GB1	45	0.25-0.5	Core	0	35.878	0	0.024	27.664	0	0.06	32.909	0.184	0.128	0.018	0	0	96.865	Andradite	HydroAndradite	866	0.3	3.8	95.1	0.0	0.0	0.0	0.0	0.7
RE06-GB-005	GB1	46	0.25-0.5	Core	0	36.879	0	0.003	23.599	0.019	3.757	32.277	0.06	1.199	0.021	0.009	0.013	97.836	Andradite	Andradite	944	2.7	4.1	80.4	0.0	0.1	0.0	12.5	0.2
RE06-GB-005	GB1	47	0.5-1.0	Core	0.279	39.306	0	0.017	5.286	0.004	19.378	33.961	0.162	0.422	0.054	0	0.041	98.91	Grossular	Grossular	981	0.9	4.4	10.6	0.8	0.0	0.0	82.7	0.6
RE06-GB-005	GB1	48	0.5-1.0	Core	0.27	35.262	0	0.021	6.559	0.035	18.409	31.989	0.165	0.214	0.044	0	0.027	92.995	Grossular	Grossular	966	0.5	9.1	8.5	0.8	0.1	0.0	80.4	0.6
RE06-GB-005	GB1	49	0.5-1.0	Core	0.329	37.069	0.001	0.036	2.329	0.027	19.962	35.239	0.059	0.034	0.056	0.013	0.045	95.199	Grossular	Grossular	985	0.1	2.0	4.7	1.0	0.1	0.0	91.9	0.2
RE06-GB-005	GB1	50	0.25-0.5	Core	0.093	39.299	0	0.002	2.097	0	20.779	36.01	0.062	0.215	0.029	0.002	0	98.588	Grossular	Grossular	979	0.5	0.8	5.6	0.3	0.0	0.0	92.7	0.2
RE06-GB-005	GB1	51	0.25-0.5	Core	0.222	38.816	0	0	3.692	0	20.233	34.598	0.139	0.586	0.028	0	0.006	98.32	Grossular	Grossular	978	1.3	3.4	6.8	0.6	0.0	0.0	87.3	0.5
RE06-GB-005	GB1	52	0.25-0.5	Core	0.124	39.765	0.007	0.008	5.305	0	20.801	32.97	0.169	0.398	0.016	0.006	0.03	99.599	Grossular	Grossular	983	0.9	7.5	5.9	0.4	0.0	0.0	84.8	0.6
RE06-GB-005	GB1	53	0.25-0.5	Core	0.223	39.705	0.001	0	4.996	0	19.137	34.869	0.132	0.301	0.004	0.006	0.034	99.408	Grossular	Grossular	975	0.7	2.5	12.4	0.6	0.0	0.0	83.3	0.5
RE06-GB-005	GB1	54	0.25-0.5	Core	0.521	38.698	0	0.012	3.366	0.301	19.686	34.764	0.057	0.28	0.023	0	0.031	97.739	Grossular	Grossular	972	0.6	2.6	7.0	1.5	0.9	0.0	87.1	0.2
RE06-GB-005	GB1	55	0.25-0.5	Core	0.11	38.631	0.006	0	7.111	0.011	19.272	32.294	0.056	0.81	0.039	0.013	0.044	98.397	Grossular	Grossular	989	1.8	8.5	10.5	0.3	0.0	0.0	78.7	0.2
RE06-GB-005	GB1	56	0.25-0.5	Core	0.221	39.43	0.001	0.02	5.018	0.007	20.615	33.184	0.146	0.438	0.027	0.006	0.036	99.149	Grossular	Grossular	982	1.0	6.9	5.9	0.6	0.0	0.0	85.1	0.6
RE06-GB-005	GB1	57	0.25-0.5	Core	0.478	36.703	0	0.028	3.139	11.32	10.521	31.962	0.348	0.886	0.043	0.002	1.339	96.769	Grossular	Grossular-Uvarovite-series	982	2.1	0.8	9.7	1.5	37.2	0.0	47.2	1.4
RE06-GB-006	GB2	2	0.25-0.5	Core	0.642	41.17	0	0.07	7.38	6	18.37	5.44	20.11	0.38	0.019	0	0.04	99.621	Pyrope	Knorringite-Pyrope-series	988	0.8	13.2	2.4	1.8	10.1	7.1	0.0	64.7
RE06-GB-006	GB2	2	0.25-0.5	Rim	0.675	42	0	0.091	7.32	5.92	18.73	5.59	20.49	0.366	0.053	0.014	0.054	101.302	Pyrope	Knorringite-Pyrope-series	985	0.7	12.6	2.7	1.8	10.0	6.7	0.0	65.4
RE06-GB-006	GB2	3	0.25-0.5	Core	0.724	41.73	0	0.081	7.19	4.46	19.17	4.62	21.34	0.276	0.033	0.017	0.041	99.683	Pyrope	Pyrope	987	0.6	11.6	4.1	2.0	6.1	6.6	0.0	69.1
RE06-GB-006	GB2	3	0.25-0.5	Rim	0.737	41.84	0	0.079	7.17	4.44	19.18	4.57	20.97	0.272	0.034	0.013	0.05	99.354	Pyrope	Pyrope	988	0.6	11.9	3.8	2.0	6.3	6.3	0.0	69.1
RE06-GB-006	GB2	4	0.25-0.5	Core	0.03	41.86	0.007	0.065	8.06	2.63	21.76	5	20.01	0.486	0	0	0.01	99.918	Pyrope	Pyrope	992	1.0	15.5	0.8	0.1	7.4	0.0	4.7	70.6
RE06-GB-006	GB2	4	0.25-0.5	Rim	0.047	42.28	0	0.029	7.99	2.56	22.04	4.86	19.9	0.504	0.06	0	0.009	100.28	Pyrope	Pyrope	991	1.0	15.8	0.3	0.1	7.2	0.0	5.0	70.7
RE06-GB-006	GB2	5	0.25-0.5	Core	0.042	36.97	0	0.032	25.39	0.01	20.92	0.39	1.307	15.47	0	0.01	0	100.54	Almandine	Almandine-Spessartine-series	911	35.6	57.8	0.0	0.1	0.0	0.0	1.1	5.3
RE06-GB-006	GB2	5	0.25-0.5	Rim	0.044	36.87	0	0.023	25.18	0	20.96	0.634	1.271	15.36	0	0	0	100.341	Almandine	Almandine-Spessartine-series	916	35.5	57.4	0.0	0.1	0.0	0.0	1.8	5.2
RE06-GB-006	GB2	6	0.25-0.5	Core	0.051	37.54	0	0.045	25.98	0.009	20.71	3.91	1.81	10.55	0.019	0	0	100.623	Almandine	Almandine-Spessartine-series	922	24.0	57.2	1.8	0.2	0.0	0.0	9.5	7.3
RE06-GB-006	GB2	6	0.25-0.5	Rim	0.044	37.94	0.009	0.043	25.71	0	21.31	4.14	1.643	10.63	0	0	0	101.47	Almandine	Almandine-Spessartine-series	923	24.0	57.3	0.1	0.1	0.0	0.0	11.8	6.5
RE06-GB-006	GB2	7	0.25-0.5	Core	0.016	36.99	0	0.09	27.58	0	20.65	1.039	0.649	13.75	0	0	0	100.765	Almandine	Almandine-Spessartine-series	887	31.7	62.2	0.9	0.0	0.0	0.0	2.6	2.6
RE06-GB-006	GB2	7	0.25-0.5	Rim	0.009	37.88	0	0.045	26.13	0	21.33	2.76	0.554	13.05	0	0	0	101.759	Almandine	Almandine-Spessartine-series	911	30.1	59.4	0.0	0.0	0.0	0.0	8.3	2.2
RE06-GB-006	GB2	8	0.25-0.5	Core	0.067	38.01	0	0.029	30.08	0.033	20.87	7.2	1.78	3.27	0	0	0.009	101.347	Almandine	Almandine	922	7.3	65.1	2.2	0.2	0.1	0.0	18.1	7.0
RE06-GB-006	GB2	8	0.25-0.5	Rim	0.038	37.94	0	0.022	30.27	0.036	20.88	7.08	1.76	3.23	0.025	0	0.008	101.289	Almandine	Almandine	922	7.2	65.6	2.1	0.1	0.1	0.0	17.9	6.9
RE06-GB-006	GB2	9	0.25-0.5	Core	0.06	37.9	0	0.039	24.63	0	21.54	10.89	1.559	4.12	0.013	0	0.01	100.761	Almandine	Almandine	889	9.1	54.0	0.0	0.2	0.0	0.0	30.6	6.1
RE06-GB-006	GB2	9	0.25-0.5	Rim	0.065	38.69	0	0	24.66	0	21.86	10.99	1.307	4.39	0	0	0	101.962	Almandine	Almandine	882	9.8	54.2	0.0	0.2	0.0	0.0	30.7	5.1
RE06-GB-006	GB2	10	0.25-0.5	Core	0.071	38.59	0	0.019	25.39	0	21.8	7.24	5	2.99	0.013	0.014	0	101.127	Almandine	Almandine	984	6.5	54.4	0.2	0.2	0.0	0.0	19.6	19.1
RE06-GB-006	GB2	10	0.25-0.5	Rim	0.093	39.4	0	0.034	25.33	0.029	22.42	7.23	5.04	2.94	0.034	0.014	0.028	102.592	Almandine	Almandine	983	6.4	54.3	0.0	0.3	0.1	0.0	19.7	19.3
RE06-GB-006	GB2	11	0.25-0.5	Core	0.038	38.4	0	0.012	28.53	0.011	21.28	6.92	3.68	2.33	0.031	0	0.011	101.243	Almandine	Almandine	963	5.1	61.1	1.7	0.1	0.0	0.0	17.6	14.3
RE06-GB-006	GB2	11	0.25-0.5	Rim	0.035	38.22	0	0	28.48	0.03	21.38	6.92	3.66	2.36	0	0	0.024	101.108	Almandine	Almandine	963	5.2	61.3	1.0	0.1	0.1	0.0	18.1	14.2
RE06-GB-006	GB2	12	0.25-0.5	Core	0.029	38.24	0.006	0.013	29.14	0	21.34	7.86	2.17	2.56	0.018	0	0.012	101.388	Almandine	Almandine	929	5.7	63.5	0.9	0.1	0.0	0.0	21.2	8.5
RE06-GB-006	GB2	12	0.25-0.5	Rim	0.022	38.53	0	0.009	28.92	0	21.43	7.89	2.12	2.65	0.015	0	0.009	101.595	Almandine	Almandine	929	5.9	63.3	0.9	0.1	0.0	0.0	21.4	8.4
RE06-GB-006	GB2	13	0.25-0.5	Core	0.061	37.75	0	0	35.5	0.013	21.49	3.76	2.68	0.53	0.029	0	0	101.813	Almandine	Almandine	891	1.2	77.8	0.0	0.2	0.0	0.0	10.3	10.5
RE06-GB-006	GB2	13	0.25-0.5	Rim	0.043	37.87	0	0.022	35.53	0	21.43	3.78	2.68	0.524	0.025	0	0.01	101.914	Almandine	Almandine	891	1.2	77.7	0.1	0.1	0.0	0.0	10.5	10.5
RE06-GB-006	GB2	14	0.25-0.5	Core	0	37.83	0	0.027	34.43	0	21.42	1.314	2.52	4.56	0.05	0	0	102.15	Almandine	Almandine	894	10.2	76.0	0.0	0.0	0.0	0.0	3.9	9.9
RE06-GB-006	GB2	14	0.25-0.5	Rim	0.01	37.78	0	0.035	34.46	0.009	21.5	1.309	2.58	4.34	0	0	0.016	102.038	Almandine	Almandine	895	9.7	76.2	0.0	0.0	0.0	0.0	3.8	10.2
RE06-GB-006	GB2	15	0.25-0.5	Core	0	38.07	0	0.032	35.77	0	21.82	0.653	2.33	3.75	0	0.007	0	102.432	Pink almandine	Almandine	870	8.5	80.1	0.0	0.0	0.0	0.0	2.0	9.3
RE06-GB-006	GB2	15	0.25-0.5	Core	0.016	38.01	0	0.031	36.03	0	21.93	0.646	2.43	3.76	0	0	0	102.852	Pink almandine	Almandine	868	8.4	79.9	0.0	0.0	0.0	0.0	1.9	9.6
RE06-GB-006	GB2	16	0.25-0.5	Core	0	38.26	0	0.043	35.67	0.034	22.13	0.874	4.72	0.749	0.051	0	0.01	102.541	Pink almandine	Almandine	895	1.6	77.4	0.0	0.0	0.1	0.0	2.5	18.3
RE06-GB-006	GB2	16	0.25-0.5	Rim	0.019	38.37	0	0.054	35.78	0.046	21.95	0.868	4.68	0.77	0.07	0	0.013	102.619	Pink almandine	Almandine	893	1.7	77.6	0.0	0.1	0.1	0.0	2.5	18.1
RE06-GB-006	GB2	17	0.25-0.5	Core	0	38.93	0.006	0.009	33.89	0.027	22.36	1.331	6.17	0.177	0.046	0	0.01	102.957	Pink almandine	Almandine	920	0.4	72.4	0.0	0.0	0.1	0.0	3.6	23.5
RE06-GB-006	GB2	17	0.25-0.5	Rim	0	38.95	0.01	0.029	34.15	0.008	22.23	1.311	5.88	0.166	0.059	0	0.014	102.807	Pink almandine	Almandine	917	0.4	73.4	0.0	0.0	0.0	0.0	3.7	22.5
RE06-GB-006	GB2	18	0.25-0.5	Core	0	38.43	0	0.03	34.65	0.03	22.11	1.188	5.18	1.011	0.034	0	0.01	102.673	Pink almandine	Almandine	913	2.2	74.5	0.0	0.0	0.1	0.0	3.3	19.9
RE06-GB-006	GB2	18	0.25-0.5	Rim	0	38.5	0	0.018	35.03	0.015	22.07	1.09	4.92	1.149	0.014	0	0.01	102.816	Pink almandine	Almandine	907	2.5	75.5	0.0	0.0	0.0	0.0	3.1	18.9
RE06-GB-006	GB2	19	0.25-0.5	Core	0.015	39.16	0	0.017	29.18	0	22.61	1.194	9.7	0.281	0.036	0	0	102.192	Pink almandine	Almandine	939	0.6	60.4	0.0	0.0	0.0	0.0	3.2	35.8
RE06-GB-006	GB2	19	0.25-0.5	Rim	0.027	38.99	0	0.019	29.23	0.039	22.64	1.226	9.75	0.287	0.06	0.01	0.014	102.292	Pink almandine	Almandine	938	0.6	60.3	0.0	0.1	0.1	0.0	3.1	35.8
RE06-GB-006	GB2	20	0.25-0.5	Core	0.038	38.99	0	0.036	30.41	0.023	22.54	1.74	8.28	0.519	0.031	0	0.019	102.625	Pink almandine	Almandine	951	1.1	63.3	0.0	0.1	0.1	0.0	4.6	30.7
RE06-GB-006	GB2	20	0.25-0.5	Rim	0.016	39.62	0	0.081	30.16	0.025	22.73	1.81	8.25	0.536	0.03	0	0.016	103.274	Pink almandine	Almandine	952	1.1	62.9	0.0	0.0	0.1	0.0	5.1	30.7
RE06-GB-006	GB2	21	0.25-0.5	Core	0.009	39.1	0	0	33.74	0.009	22.52	0.945	6.53	0.557	0.01	0.012	0.008	103.44	Pink almandine	Almandine	918	1.2	71.6	0.0	0.0	0.0	0.0	2.5	24.7
RE06-GB-006	GB2	21	0.25-0.5	Rim	0.01	38.75	0	0.023	34.15	0.018	22.34	0.92	6.33	0.559	0.037	0	0	103.137	Pink almandine	Almandine	915	1.2	72.3	0.0	0.0	0.1	0.0	2.5	23.9
RE06-GB-006	GB2	22	0.25-0.5	Core	0.03	39.85	0	0.022	30.49	0.043	22.93	1.49	8.46	0.419	0.042	0	0.018	103.794	Pink almandine	Almandine	942	0.9	63.6	0.0	0.1	0.1	0.0	3.9	31.4
RE06-GB-006	GB2	22	0.25-0.5	Rim	0.026	39.89	0	0.034	30.89	0.037	22.75	1.43	8.4	0.433	0.024	0	0.011	103.925	Pink almandine	Almandine	941	0.9	64.1	0.0	0.1	0.1	0.0	3.8	31.1
RE06-GB-006	GB2	23	0.25-0.5	Core	0.013	39.96	0	0.011	29.9	0.029	22.93	1.227	9.24	0.279	0	0	0.025	103.613	Pink almandine	Almandine	936	0.6	62.0	0.0	0.0	0.1	0.0	3.2	34.1
RE06-GB-006	GB2	23	0.25-0.5	Rim	0.04	39.54	0	0.017	29.8	0.015	22.7	1.121	9.42	0.28	0.029	0	0	102.963	Pink almandine	Almandine	937	0.6	61.6	0.0	0.1	0.0	0.0	2.9	34.7
RE06-GB-006	GB2	24	0.25-0.5	Core	0	38.43	0.006	0.016	34.81	0.016	22.1	0.812	4.12	2.76	0.021	0	0	103.091	Pink almandine	Almandine	904	6.1	75.6	0.0	0.0	0.0	0.0	2.3	16.0
RE06-GB-006	GB2	24	0.25-0.5	Rim	0.021	38.32	0	0.028	34.95	0.014	22.04	0.8	4.13	2.84	0.048	0	0.018	103.21	Pink almandine	Almandine	902	6.2	75.5	0.0	0.1	0.0	0.0	2.3	15.9
RE06-GB-006	GB2	25	0.25-0.5	Core	0.133	40.14	0	0.023	18.16	0.033	22.65	10.35	9.73	0.372	0.013	0	0.028	101.632	Low Cr-pyrope	Aluminferrotschermakite	907	0.8	36.7	0.5	0.4	0.1	0.0	26.2	35.4
RE06-GB-006	GB2	25	0.25-0.5	Rim	0.137	39.84	0	0.018	18.16	0.018	22.53	10.49	9.71	0.35	0.023	0	0.015	101.292	Low Cr-pyrope	Aluminferrotschermakite	908	0.7	36.6	0.6	0.4	0.1	0.0	26.4	35.2
RE06-GB-006	GB2	26	0.25-0.5	Core	0.01	41.15	0	0.024	15.11	0	23.46	7.36	14.21	0.236	0.036	0	0	101.596	Low Cr-pyrope	Almandine-Pyrope-series	954	0.5	30.1	0.0	0.0	0.0	0.0	18.9	50.5
RE06-GB-006	GB2	26	0.25-0.5	Rim	0.066	41.85	0	0.026	15.35	0	23.78	7.31	13.86	0.272	0.039	0	0.018	102.571	Low Cr-pyrope	Almandine-Pyrope-series	950	0.6	30.9	0.0	0.2	0.0	0.0	18.8	49.6
RE06-GB-006	GB2	27	0.25-0.5	Core	0.172	37.35	0	0.056	19.33	0	21.09	0.532	0.798	22.35	0	0	0	101.678	Spessartine	Almandine-Spessartine-series	930	51.2	43.7	0.0	0.5	0.0	0.0	1.3	3.2
RE06-GB-006	GB2	27	0.25-0.5	Rim	0.021	37.3	0	0.032	19.34	0	21.5	0.477	0.706	22.9	0	0	0.01	102.285	Spessartine	Almandine-Spessartine-series	924	52.1	43.5	0.0	0.1	0.0	0.0	1.5	2.8
RE06-GB-006	GB2	28	0.25-0.5	Core	0.256	37.35	0	0.054	16.17	0	20.29	1.71	1.442	23.99	0	0	0.009	101.272	Spessartine	Almandine-Spessartine-series	953	54.6	34.4	2.8	0.8	0.0	0.0	1.6	5.8
RE06-GB-006	GB2	28	0.25-0.5	Rim	0.252	37.11	0	0.058	15.95	0	20.17	2.23	1.346	23.87	0	0	0	100.987	Spessartine	Almandine-Spessartine-series	957	54.2	33.7	3.0	0.8	0.0	0.0	2.9	5.4
RE06-GB-006	GB2	29	0.25-0.5	Core	0.017	37.78	0	0.031	12.24	0	21.49	0.174	2.01	28.78	0.096	0.01	0.011	102.638	Spessartine	Spessartine	946	64.4	27.0	0.0	0.1	0.0	0.0	0.6	7.9
RE06-GB-006	GB2	29	0.25-0.5	Rim	0.01	38.5	0	0.009	13.1	0	21.81	0.401	2.34	27.14	0.046	0	0	103.355	Spessartine	Spessartine	928	60.7	28.9	0.0	0.0	0.0	0.0	1.2	9.2
RE06-GB-006	GB2	30	0.25-0.5	Core	0.023	38.68	0	0.009	30.14	0	21.73	5.36	3.46	3.44	0.022	0.01	0.019	102.892	Spessartine	Almandine	959	7.5	64.4	0.7	0.1	0.0	0.0	14.1	13.3
RE06-GB-006	GB2	30	0.25-0.5	Rim	0.026	38.66	0	0.012	30.67	0	21.79	5.27	3.12	3.52	0.01	0	0.017	103.095	Spessartine	Almandine	950	7.7	65.8	0.4	0.1	0.0	0.0	14.1	12.0
RE06-GB-006	GB2	31	0.25-0.5	Core	0.229	37.81	0	0.065	13.8	0.019	20.21	2.58	0.754	26.89	0	0	0	102.357	Spessartine	Spessartine	956	61.0	28.3	4.0	0.7	0.1	0.0	3.0	3.0
RE06-GB-006	GB2	31	0.25-0.5	Rim	0.255	37.73	0	0.077	14.21	0	20.2	2.84	0.802	26.28	0	0	0.012	102.406	Spessartine	Spessartine	950	59.3	29.0	4.0	0.8	0.0	0.0	3.7	3.2
RE06-GB-006	GB2	32	0.25-0.5	Core	0	38.09	0	0.008	35.87	0	21.76	5.01	1.474	0.943	0.01	0	0.011	103.176	Spessartine	Almandine	865	2.1	78.2	0.0	0.0	0.0	0.0	14.0	5.7
RE06-GB-006	GB2	32	0.25-0.5	Rim	0	38.82	0.01	0	35.9	0	22.14	4.93	1.367	1.072	0	0	0.01	104.249	Spessartine	Almandine	860	2.4	78.5	0.0	0.0	0.0	0.0	13.8	5.3
RE06-GB-006	GB2	33	0.25-0.5	Core	0.012	38.5	0	0.014	35.94	0	21.91	1.184	4.17	1.5	0.053	0.008	0.023	103.314	Spessartine	Almandine	892	3.3	77.4	0.0	0.0	0.0	0.0	3.3	16.0
RE06-GB-006	GB2	33	0.25-0.5	Rim	0.022	38.93	0	0.011	35.44	0	22.24	1.351	4.32	1.46	0.031	0	0.009	103.813	Spessartine	Almandine	900	3.2	76.4	0.0	0.1	0.0	0.0	3.7	16.6
RE06-GB-006	GB2	34	0.25-0.5	Core	0.019	39.05	0	0.023	29.69	0.026	22	5.02	4.91	2.2	0	0	0.008	102.945	Spessartine	Almandine	975	4.7	62.9	0.4	0.1	0.1	0.0	13.2	18.6
RE06-GB-006	GB2	34	0.25-0.5	Rim	0.022	39.53	0	0.017	29.75	0.05	22.28	5.06	4.82	2.26	0.033	0	0.009	103.83	Spessartine	Almandine	972	4.9	63.1	0.0	0.1	0.2	0.0	13.6	18.2
RE06-GB-006	GB2	35	0.25-0.5	Core	0.086	39.44	0	0.02	30	0.01	22.27	2.58	7.66	0.99	0.01	0	0.016	103.082	Spessartine	Almandine	967	2.1	62.4	0.4	0.2	0.0	0.0	6.3	28.5
RE06-GB-006	GB2	35	0.25-0.5	Rim	0.074	39.26	0.006	0.02	29.91	0	22.35	2.53	7.8	0.973	0.045	0.01	0.01	102.988	Spessartine	Almandine	966	2.0	62.2	0.0	0.2	0.0	0.0	6.6	28.9
RE06-GB-006	GB2	36	0.25-0.5	Core	0.01	38.21	0	0.012	35.23	0	21.61	5.63	1.184	1.34	0	0	0.013	103.239	Spessartine	Almandine	866	3.0	76.7	0.1	0.0	0.0	0.0	15.6	4.6
RE06-GB-006	GB2	36	0.25-0.5	Rim	0	38.16	0	0.026	35.09	0	21.53	5.62	1.171	1.33	0	0.016	0	102.943	Spessartine	Almandine	868	2.9	76.6	0.3	0.0	0.0	0.0	15.6	4.6
RE06-GB-006	GB2	37	0.25-0.5	Core	0.296	39.97	0	0.029	5.44	0	20.3	34.84	0.068	0.25	0	0	0.036	101.23	Grossular	Grossular	974	0.5	5.7	8.6	0.8	0.0	0.0	84.1	0.3
RE06-GB-006	GB2	37	0.25-0.5	Core	0.26	39.65	0	0.009	5.44	0	20.37	34.61	0.08	0.236	0.023	0.011	0.041	100.729	Grossular	Grossular	975	0.5	6.2	7.9	0.7	0.0	0.0	84.4	0.3
RE06-GB-006	GB2	38	0.25-0.5	Core	0.065	39.42	0	0.027	7.02	0.015	18.77	34.39	0.135	0.423	0	0.007	0.047	100.32	Grossular	Grossular	981	0.9	5.4	14.4	0.2	0.0	0.0	78.6	0.5
RE06-GB-006	GB2	38	0.25-0.5	Rim	0.07	39.04	0	0	6.88	0	18.56	34.43	0.135	0.416	0.017	0.01	0.037	99.596	Grossular	Grossular	980	0.9	5.0	14.7	0.2	0.0	0.0	78.7	0.5
RE06-GB-006	GB2	39	0.25-0.5	Core	0.312	39.44	0	0.044	4.15	0.012	21.06	34.41	0.112	0.648	0	0	0	100.189	Grossular	Grossular	970	1.4	5.6	4.6	0.9	0.0	0.0	87.0	0.4
RE06-GB-006	GB2	39	0.25-0.5	Rim	0.339	39.07	0	0.01	4.1	0.008	20.83	34.12	0.096	0.647	0	0	0.018	99.238	Grossular	Grossular	972	1.4	5.6	4.7	1.0	0.0	0.0	87.0	0.4
RE06-GB-006	GB2	40	0.25-0.5	Core	0.156	39.57	0	0.011	5.87	0	20.72	33.52	0.105	0.209	0	0	0.018	100.178	Grossular	Grossular	982	0.4	8.2	6.3	0.4	0.0	0.0	84.2	0.4
RE06-GB-006	GB2	40	0.25-0.5	Rim	0.153	39.56	0	0.015	5.81	0	20.6	33.52	0.09	0.214	0	0.011	0.043	100.016	Grossular	Grossular	982	0.5	7.9	6.7	0.4	0.0	0.0	84.2	0.3
RE06-GB-006	GB2	41	0.25-0.5	Core	0.515	39.23	0	0.033	6.5	0	18.01	35.32	0.23	0.134	0.019	0	0.031	100.021	Grossular	Grossular	975	0.3	3.1	16.3	1.5	0.0	0.0	78.0	0.9
RE06-GB-006	GB2	41	0.25-0.5	Rim	0.549	38.72	0	0.01	6.3	0	17.92	35.29	0.219	0.136	0.032	0	0.037	99.213	Grossular	Grossular	975	0.3	3.1	15.8	1.6	0.0	0.0	78.4	0.8
RE06-GB-006	GB2	42	0.25-0.5	Core	0.121	39.85	0	0.01	7.1	0	21.13	31.97	0.148	0.525	0.01	0	0.015	100.879	Grossular	Grossular	986	1.1	11.6	5.1	0.3	0.0	0.0	81.2	0.6
RE06-GB-006	GB2	42	0.25-0.5	Rim	0.163	39.19	0	0.026	6.97	0.009	20.74	31.99	0.148	0.506	0.01	0	0.011	99.762	Grossular	Grossular	988	1.1	11.1	5.5	0.5	0.0	0.0	81.2	0.6
RE06-GB-006	GB2	43	0.25-0.5	Core	0.203	39.1	0.009	0.01	6.32	0	18.84	34.89	0.209	0.233	0.01	0	0.094	99.92	Grossular	Grossular	978	0.5	4.6	13.5	0.6	0.0	0.0	80.1	0.8
RE06-GB-006	GB2	43	0.25-0.5	Rim	0.205	39.03	0	0.008	6.24	0.009	18.73	34.86	0.212	0.257	0.01	0	0.059	99.619	Grossular	Grossular	978	0.5	4.3	13.7	0.6	0.0	0.0	80.1	0.8
RE06-GB-006	GB2	44	0.25-0.5	Core	0.367	39.35	0	0.016	6.35	0	20.03	32.45	0.058	1.36	0.013	0	0	99.994	Grossular	Grossular	988	2.9	8.1	8.1	1.1	0.0	0.0	79.5	0.2
RE06-GB-006	GB2	44	0.25-0.5	Rim	0.393	39.33	0	0	6.34	0.011	19.8	32.76	0.067	1.33	0	0	0.01	100.041	Grossular	Grossular	988	2.9	7.5	9.0	1.1	0.0	0.0	79.2	0.3
RE06-GB-006	GB2	45	0.25-0.5	Core	0.146	39.5	0	0.017	6.49	0.011	19.93	33.26	0.128	0.748	0	0	0.046	100.275	Grossular	Grossular	987	1.6	7.5	9.4	0.4	0.0	0.0	80.5	0.5
RE06-GB-006	GB2	45	0.25-0.5	Rim	0.138	39.35	0	0.01	5.26	0.011	20.45	33.95	0.108	0.591	0	0	0.038	99.906	Grossular	Grossular	979	1.3	6.4	7.2	0.4	0.0	0.0	84.3	0.4
RE06-GB-006	GB2	46	0.25-0.5	Core	0.32	39.24	0	0	6.03	0.066	19.11	34.7	0.123	0.341	0.027	0	0.067	100.024	Grossular	Grossular	978	0.7	4.9	12.0	0.9	0.2	0.0	80.8	0.5
RE06-GB-006	GB2	46	0.25-0.5	Rim	0.338	39.71	0	0.025	5.92	0.069	19.41	34.65	0.115	0.327	0.015	0	0.054	100.633	Grossular	Grossular	979	0.7	5.0	11.3	1.0	0.2	0.0	81.3	0.4
RE06-GB-006	GB2	47	0.25-0.5	Core	0.715	38.35	0	0.027	6.69	4.58	14.12	35.1	0.159	0.285	0.01	0	0.041	100.077	Cr-grossular	Grossular-Uvarovite-series	946	0.6	2.8	17.8	2.1	14.3	0.0	61.8	0.6
RE06-GB-006	GB2	47	0.25-0.5	Rim	0.878	39.29	0	0.034	7.17	0.507	17.19	34.95	0.229	0.319	0.01	0.007	0.035	100.62	Cr-grossular	Grossular	978	0.7	3.8	17.5	2.6	1.6	0.0	73.1	0.9
RE06-GB-006	GB2	48	0.25-0.5	Core	0.386	38.18	0	0.019	3.4	11.44	11.28	33.91	0.123	0.432	0.01	0	1.056	100.236	Cr-grossular	Grossular-Uvarovite-series	974	1.0	1.2	9.6	1.2	36.1	0.0	50.5	0.5
RE06-GB-006	GB2	48	0.25-0.5	Rim	0.067	32.88	0	0.009	2.36	0.012	20.44	33.79	0.046	0.587	0.018	0	0.016	90.224	Cr-grossular	Hydrogrossular	984	1.3	5.1	0.0	0.2	0.0	0.0	93.2	0.2
RE06-GB-006	GB2	49	0.25-0.5	Core	0.401	37.92	0.01	0.027	6.58	8.08	11.59	32.66	0.156	1.69	0	0	0.429	99.543	Cr-grossular	Grossular-Uvarovite-series	979	3.8	2.8	17.9	1.2	25.8	0.0	47.9	0.6
RE06-GB-006	GB2	49	0.25-0.5	Core	0.269	37.69	0	0.011	6.32	11.63	9.02	33.5	0.163	0.86	0	0	0.547	100.01	Cr-grossular	Grossular-Uvarovite-series	964	1.9	1.9	18.6	0.8	37.4	0.0	38.7	0.6
RE06-GB-007	GB2	1	0.25-0.5	Core	0.646	42.2	0	0.076	7.04	5.84	18.68	5.35	21.45	0.307	0.021	0.007	0.058	101.675	Pyrope	Knorringite-Pyrope-series	981	0.6	11.2	3.9	1.7	8.1	8.2	0.0	66.3
RE06-GB-007	GB2	1	0.25-0.5	Rim	0.678	42.58	0.01	0.057	6.92	5.9	18.82	5.32	20.7	0.298	0.023	0.014	0.052	101.372	Pyrope	Pyrope	982	0.6	11.8	2.9	1.8	9.1	7.4	0.0	66.3
RE06-GB-007	GB2	2	0.25-0.5	Core	0.18	40.83	0	0.032	6.66	12.53	14.09	6.57	19.83	0.357	0.02	0	0.053	101.151	Pyrope	Knorringite	995	0.7	11.6	2.6	0.5	13.9	22.3	0.0	48.4
RE06-GB-007	GB2	2	0.25-0.5	Rim	0.186	40.34	0	0.04	6.65	12.6	13.87	6.6	20.02	0.351	0.029	0.014	0.061	100.761	Pyrope	Knorringite	995	0.7	11.4	2.8	0.5	13.7	22.9	0.0	48.0
RE06-GB-007	GB2	3	0.25-0.5	Core	0.043	41.54	0	0.039	7.55	4.63	20.68	5.19	20.69	0.399	0	0	0.023	100.784	Pyrope	Pyrope	992	0.8	14.6	0.0	0.1	13.0	0.1	0.0	71.4
RE06-GB-007	GB2	3	0.25-0.5	Rim	0.036	41.41	0	0.036	7.55	4.55	20.63	5.15	20.79	0.422	0	0	0.018	100.593	Pyrope	Pyrope	992	0.8	14.5	0.2	0.1	12.7	0.2	0.0	71.5
RE06-GB-007	GB2	4	0.25-0.5	Core	0.052	41.38	0	0.026	7.78	7.02	18.84	6.47	19.23	0.456	0.019	0	0.076	101.349	Pyrope	Knorringite-Pyrope-series	990	0.9	15.2	0.1	0.1	16.2	3.8	0.0	63.7
RE06-GB-007	GB2	4	0.25-0.5	Rim	0.059	40.96	0	0.023	7.76	6.95	18.66	6.44	19.28	0.433	0	0.007	0.054	100.626	Pyrope	Knorringite-Pyrope-series	991	0.9	15.1	0.3	0.2	15.9	4.0	0.0	63.7
RE06-GB-007	GB2	5	0.25-0.5	Core	0.55	41.96	0	0.05	6.69	4.72	19.69	5.06	21.69	0.288	0.014	0.015	0.051	100.778	Pyrope	Pyrope	984	0.6	11.2	2.8	1.5	8.6	4.6	0.0	70.7
RE06-GB-007	GB2	5	0.25-0.5	Rim	0.539	41.83	0	0.056	6.66	4.9	19.39	5.08	21.39	0.285	0.019	0.016	0.049	100.214	Pyrope	Pyrope	984	0.6	11.2	3.0	1.4	8.7	5.2	0.0	70.0
RE06-GB-007	GB2	6	0.25-0.5	Core	0.229	42.21	0	0.057	8.17	2.56	22	4.46	21.03	0.376	0.036	0	0.036	101.165	Pyrope	Pyrope	991	0.7	15.3	0.7	0.6	7.1	0.0	2.8	72.6
RE06-GB-007	GB2	6	0.25-0.5	Rim	0.224	42.38	0	0.062	8.05	2.59	22.07	4.42	21.34	0.372	0.021	0.013	0.029	101.571	Pyrope	Pyrope	990	0.7	14.9	0.9	0.6	7.2	0.0	2.5	73.2
RE06-GB-007	GB2	7	0.25-0.5	Core	0.277	41.72	0	0.056	7.48	5.43	19.73	5.08	20.8	0.415	0.022	0.007	0.041	101.057	Pyrope	Pyrope	990	0.8	13.9	1.0	0.7	11.2	4.1	0.0	68.2
RE06-GB-007	GB2	7	0.25-0.5	Rim	0.268	41.56	0	0.054	7.42	5.37	19.56	5.08	20.62	0.393	0.018	0	0.047	100.39	Pyrope	Pyrope	991	0.8	13.7	1.3	0.7	11.0	4.2	0.0	68.2
RE06-GB-007	GB2	8	0.25-0.5	Core	0.129	41.49	0	0.046	7.18	8.71	17.3	6.11	19.75	0.403	0.049	0.008	0.036	101.21	Pyrope	Knorringite-Pyrope-series	998	0.8	13.4	1.3	0.3	14.1	10.7	0.0	59.3
RE06-GB-007	GB2	8	0.25-0.5	Rim	0.105	41.21	0	0.046	7.22	8.71	17.21	6.12	20.09	0.397	0.055	0	0.061	101.225	Pyrope	Knorringite-Pyrope-series	998	0.8	13.1	1.7	0.3	13.7	11.2	0.0	59.3
RE06-GB-007	GB2	9	0.25-0.5	Core	0.078	42.29	0	0.055	7.93	3.17	21.9	4.64	20.81	0.416	0.01	0	0.022	101.321	Pyrope	Pyrope	992	0.8	15.4	0.0	0.2	8.8	0.0	2.7	72.0
RE06-GB-007	GB2	9	0.25-0.5	Rim	0.085	41.72	0	0.045	7.95	3.19	21.66	4.61	20.89	0.425	0.022	0.01	0.021	100.628	Pyrope	Pyrope	993	0.8	15.4	0.1	0.2	9.0	0.0	2.4	72.1
RE06-GB-007	GB2	10	0.25-0.5	Core	0.041	42.35	0	0.042	7.16	4.34	21.01	4.69	21.14	0.427	0.033	0	0.018	101.251	Pyrope	Pyrope	990	0.8	13.7	0.4	0.1	11.4	0.7	0.0	72.8
RE06-GB-007	GB2	10	0.25-0.5	Rim	0.052	41.74	0	0.042	7.12	4.42	20.69	4.74	21.29	0.453	0.023	0	0.024	100.593	Pyrope	Pyrope	989	0.9	13.4	0.6	0.1	11.2	1.2	0.0	72.5
RE06-GB-007	GB2	11	0.25-0.5	Core	0.011	41.89	0	0.023	7.9	3.94	21.34	5.16	20.3	0.473	0	0	0.022	101.059	Pyrope	Pyrope	993	0.9	15.4	0.0	0.0	11.1	0.0	1.9	70.6
RE06-GB-007	GB2	11	0.25-0.5	Rim	0.009	42.03	0.006	0.031	7.93	3.44	21.58	5.07	20.74	0.461	0.036	0	0.014	101.346	Pyrope	Pyrope	992	0.9	15.0	0.4	0.0	9.6	0.0	2.6	71.4
RE06-GB-007	GB2	12	0.25-0.5	Core	0.294	42.3	0	0.068	7.96	2.89	21.79	4.47	21.18	0.384	0	0.01	0.029	101.375	Pyrope	Pyrope	992	0.8	14.9	0.7	0.8	8.0	0.0	1.8	73.0
RE06-GB-007	GB2	12	0.25-0.5	Rim	0.283	42.39	0.007	0.069	7.97	2.88	21.75	4.49	21.64	0.398	0.027	0.011	0.015	101.93	Pyrope	Pyrope	990	0.8	14.3	1.4	0.7	8.0	0.0	1.1	73.7
RE06-GB-007	GB2	13	0.5-1.0	Core	0.014	39.21	0	0.022	30.44	0	22.27	4.29	4.69	2.54	0	0	0.021	103.497	Almandine	Almandine	968	5.5	64.9	0.0	0.0	0.0	0.0	11.8	17.8
RE06-GB-007	GB2	14	0.5-1.0	Core	0.05	37.86	0	0.021	32.91	0.025	22.11	1.79	2.48	5.83	0	0	0.125	103.2	Almandine	Almandine	908	13.0	72.2	0.0	0.1	0.1	0.0	4.9	9.7
RE06-GB-007	GB2	14	0.25-0.5	Rim	0.01	38.94	0	0.025	34.37	0	22.72	1.76	2.52	4.27	0	0	0.115	104.73	Almandine	Almandine	890	9.5	75.5	0.0	0.0	0.0	0.0	5.1	9.9
RE06-GB-007	GB2	15	0.25-0.5	Core	0.137	40.92	0	0.029	16.12	0.012	23.08	8.69	12.53	0.308	0.019	0	0.016	101.861	Almandine	Almandine-Pyrope-series	940	0.6	32.1	0.4	0.4	0.0	0.0	21.6	44.8
RE06-GB-007	GB2	15	0.25-0.5	Rim	0.114	41.33	0	0.036	16.33	0.024	23.15	8.61	12.71	0.319	0.031	0.007	0	102.661	Almandine	Almandine-Pyrope-series	941	0.6	32.0	1.0	0.3	0.1	0.0	20.9	45.2
RE06-GB-007	GB2	16	0.25-0.5	Core	0.143	39.76	0	0.019	24.39	0.078	22.32	6.22	8.98	0.605	0.031	0	0.029	102.574	Almandine	Almandine	975	1.3	49.5	0.9	0.4	0.2	0.0	14.9	32.8
RE06-GB-007	GB2	16	0.25-0.5	Rim	0.14	40.38	0	0.01	24.15	0.083	22.53	6.36	9.02	0.594	0.019	0	0.023	103.309	Almandine	Almandine	970	1.2	49.0	0.9	0.4	0.2	0.0	15.2	33.0
RE06-GB-007	GB2	17	0.25-0.5	Core	0.01	38.61	0	0.016	30.79	0	21.81	6	3.17	2.55	0	0	0.016	102.971	Almandine	Almandine	947	5.5	65.8	0.4	0.0	0.0	0.0	16.2	12.1
RE06-GB-007	GB2	17	0.25-0.5	Rim	0.018	38.41	0.007	0.01	30.58	0	21.97	5.94	2.92	3.02	0.01	0	0	102.886	Almandine	Almandine	945	6.6	65.8	0.0	0.1	0.0	0.0	16.4	11.2
RE06-GB-007	GB2	18	0.25-0.5	Core	0.009	38.07	0	0.023	30.84	0.018	21.42	4.89	1.74	5.82	0.01	0	0.013	102.853	Almandine	Almandine	920	12.8	66.7	0.7	0.0	0.1	0.0	13.0	6.7
RE06-GB-007	GB2	18	0.25-0.5	Rim	0.014	37.62	0	0.012	29.89	0.015	21.51	4.71	1.624	6.77	0.01	0	0	102.176	Almandine	Almandine	922	15.0	65.4	0.0	0.0	0.0	0.0	13.2	6.3
RE06-GB-007	GB2	19	0.25-0.5	Core	0.068	38.33	0	0.02	32.09	0	21.6	6.87	2.86	0.827	0.018	0	0.02	102.703	Almandine	Almandine	922	1.8	68.3	0.7	0.2	0.0	0.0	18.1	10.9
RE06-GB-007	GB2	19	0.25-0.5	Rim	0.085	37.75	0	0.028	32.55	0.008	21.14	6.77	2.78	0.842	0.018	0.019	0.014	102.004	Almandine	Almandine	918	1.8	68.8	1.6	0.3	0.0	0.0	16.9	10.6
RE06-GB-007	GB2	20	0.25-0.5	Core	0.061	38.06	0	0.013	31.67	0	21.19	9.86	0.633	0.919	0	0.024	0	102.43	Almandine	Almandine	853	2.0	67.9	1.5	0.2	0.0	0.0	25.9	2.5
RE06-GB-007	GB2	21	0.25-0.5	Core	0.114	39.56	0	0.008	23.57	0.01	22.38	6.01	9.71	0.732	0.022	0.01	0.031	102.157	Almandine	Almandine	970	1.5	47.5	0.8	0.3	0.0	0.0	14.6	35.3

Table 6 (continued)

Sample ID	Probe mount	Grain ID	Grain size (mm)	Probe spot	TiO_2	SiO_2	K_2O	Na_2O	FeO	Cr_2O_3	Al_2O_3	CaO	MgO	MnO	P_2O_5	NiO	V_2O_3	Total	Grain type (physical ID)[1]	Grain type (geochemical ID)[2]		Stoichiometric garnet end member calculations (%)[3]							
																					Score	Spess	Almand	Andr	Ti-Andr	Uvar	Knorr	Gross	Pyrope
RE06-GB-007	GB2	22	0.25-0.5	Core	0	38.08	0	0.053	27.24	0.034	21.49	4.22	2.52	9.01	0.01	0	0.04	102.697	Almandine	Almandine	939	19.7	58.6	0.5	0.0	0.1	0.0	11.3	9.7
RE06-GB-007	GB2	22	0.25-0.5	Rim	0.009	37.32	0	0.021	26.94	0	21.17	4.13	2.42	9.47	0	0	0.013	101.493	Almandine	Almandine	936	20.9	58.2	0.6	0.0	0.0	0.0	11.0	9.4
RE06-GB-007	GB2	23	0.25-0.5	Core	0.013	38.66	0.007	0.027	33.71	0.027	22.51	1.279	6.07	0.658	0.038	0	0.015	103.015	Pink almandine	Almandine	923	1.4	71.9	0.0	0.0	0.1	0.0	3.5	23.1
RE06-GB-007	GB2	23	0.25-0.5	Core	0.022	39.77	0	0.012	32.47	0.053	22.99	1.5	6.56	0.612	0	0	0.01	103.999	Pink almandine	Almandine	932	1.3	69.5	0.0	0.1	0.2	0.0	4.0	25.0
RE06-GB-007	GB2	24	0.25-0.5	Core	0	38.91	0	0.029	32.56	0.016	22.51	0.817	7.32	0.646	0.135	0	0.025	102.967	Pink almandine	Almandine	928	1.4	68.7	0.0	0.0	0.0	0.0	2.3	27.5
RE06-GB-007	GB2	24	0.25-0.5	Rim	0.013	39.63	0	0.027	32.28	0	23.11	0.85	7.16	0.642	0.098	0	0.018	103.828	Pink almandine	Almandine	926	1.4	68.9	0.0	0.0	0.0	0.0	2.4	27.2
RE06-GB-007	GB2	25	0.25-0.5	Core	0	39.17	0.01	0.01	31.9	0.012	22.63	1.122	7.61	0.671	0.04	0	0.021	103.196	Pink almandine	Almandine	936	1.4	67.0	0.0	0.0	0.0	0.0	3.0	28.5
RE06-GB-007	GB2	25	0.25-0.5	Rim	0.01	38.87	0	0.017	32.1	0	22.48	1.095	7.7	0.694	0.038	0.01	0.018	103.032	Pink almandine	Almandine	935	1.5	66.9	0.0	0.0	0.0	0.0	3.0	28.6
RE06-GB-007	GB2	26	0.25-0.5	Core	0	39.03	0	0.017	32.66	0.014	22.64	1.338	6.98	0.592	0.037	0	0.021	103.33	Pink almandine	Almandine	932	1.3	68.8	0.0	0.0	0.0	0.0	3.7	26.2
RE06-GB-007	GB2	26	0.25-0.5	Rim	0.011	39.32	0	0.019	32.64	0.037	22.7	1.26	7.11	0.616	0.039	0	0.02	103.772	Pink almandine	Almandine	931	1.3	68.6	0.0	0.0	0.1	0.0	3.3	26.6
RE06-GB-007	GB2	27	0.25-0.5	Core	0	39.14	0	0.017	33.02	0.036	22.52	1.378	6.44	0.754	0.05	0	0.01	103.364	Pink almandine	Almandine	931	1.6	70.2	0.0	0.0	0.1	0.0	3.7	24.4
RE06-GB-007	GB2	27	0.25-0.5	Rim	0.012	39.49	0	0.017	32.48	0	22.79	1.42	6.57	0.72	0.029	0.014	0.01	103.553	Pink almandine	Almandine	934	1.6	69.4	0.0	0.0	0.0	0.0	3.9	25.0
RE06-GB-007	GB2	28	0.25-0.5	Core	0.01	39.4	0	0.023	32.13	0.011	22.75	0.865	7.71	0.465	0.079	0	0.01	103.453	Pink almandine	Almandine	929	1.0	67.6	0.0	0.0	0.0	0.0	2.4	28.9
RE06-GB-007	GB2	28	0.25-0.5	Rim	0.025	38.71	0	0.014	32.21	0.042	22.42	0.854	7.68	0.44	0.106	0	0.013	102.515	Pink almandine	Almandine	930	0.9	67.9	0.0	0.1	0.1	0.0	2.2	28.8
RE06-GB-007	GB2	29	0.25-0.5	Core	0.028	39.38	0	0.019	31.48	0.012	22.66	1.396	7.77	0.359	0.01	0	0.017	103.131	Pink almandine	Almandine	940	0.8	66.2	0.0	0.1	0.0	0.0	3.7	29.1
RE06-GB-007	GB2	29	0.25-0.5	Rim	0.01	39.74	0	0.01	32.28	0.031	23.07	1.21	7.36	0.376	0.037	0.01	0	104.133	Pink almandine	Almandine	928	0.8	68.2	0.0	0.0	0.1	0.0	3.2	27.7
RE06-GB-007	GB2	30	0.25-0.5	Core	0.01	38.37	0	0.044	34.17	0.015	22.1	0.914	3.7	4	0.051	0	0.013	103.387	Pink almandine	Almandine	907	8.8	74.1	0.0	0.0	0.0	0.0	2.7	14.3
RE06-GB-007	GB2	30	0.25-0.5	Rim	0.01	39.25	0	0.021	34.04	0.011	22.79	0.897	3.66	3.85	0	0	0	104.529	Pink almandine	Almandine	902	8.5	74.6	0.0	0.0	0.0	0.0	2.6	14.3
RE06-GB-007	GB2	31	0.25-0.5	Core	0.011	37.86	0	0.067	28.87	0	21.47	1.8	0.339	12.68	0	0	0	103.096	Mn-almandine	Almandine-Spessartine-series	870	28.7	64.5	0.0	0.0	0.0	0.0	5.5	1.3
RE06-GB-007	GB2	31	0.25-0.5	Rim	0.014	37.89	0	0.068	28.75	0	21.56	1.88	0.376	12.63	0	0	0	103.167	Mn-almandine	Almandine-Spessartine-series	873	28.6	64.2	0.0	0.0	0.0	0.0	5.7	1.5
RE06-GB-007	GB2	32	0.25-0.5	Core	0.012	37.91	0	0.032	29.52	0.007	21.59	0.342	0.995	13.39	0.104	0	0	103.901	Mn-almandine	Almandine-Spessartine-series	857	29.9	65.1	0.0	0.0	0.0	0.0	1.1	3.9
RE06-GB-007	GB2	33	0.25-0.5	Core	1.298	41.85	0	0.101	10.84	0.73	21.09	5.48	19.36	0.364	0	0	0.084	101.198	Low Cr-pyrope	Low Cr-pyrope	973	0.7	17.5	5.7	3.5	2.1	0.0	3.0	67.6
RE06-GB-007	GB2	33	0.25-0.5	Rim	1.298	41.12	0	0.124	10.94	0.717	20.72	5.51	19.34	0.373	0.028	0.009	0.072	100.251	Low Cr-pyrope	Low Cr-pyrope	972	0.7	17.4	6.2	3.5	2.0	0.0	2.7	67.5
RE06-GB-007	GB2	34	0.25-0.5	Core	0.826	42.53	0	0.085	8.99	1.96	21.03	4.74	21.03	0.305	0	0.02	0.054	101.57	Low Cr-pyrope	Low Cr-pyrope	989	0.6	14.3	4.9	2.2	5.1	0.4	0.0	72.6
RE06-GB-007	GB2	34	0.25-0.5	Rim	0.81	43.12	0	0.073	8.91	1.94	21.31	4.79	21.06	0.288	0.047	0.007	0.048	102.404	Low Cr-pyrope	Low Cr-pyrope	987	0.6	14.2	4.8	2.1	5.4	0.0	0.0	73.0
RE06-GB-007	GB2	35	0.25-0.5	Core	0.213	42.26	0	0.068	10.47	0.055	23.96	5.47	18.95	0.252	0	0.019	0.013	101.73	Low Cr-pyrope	Low Cr-pyrope	961	0.5	20.3	0.0	0.6	0.2	0.0	13.2	65.4
RE06-GB-007	GB2	35	0.25-0.5	Rim	0.226	41.94	0	0.087	10.58	0.061	23.6	5.42	19.01	0.245	0.03	0	0.022	101.221	Low Cr-pyrope	Low Cr-pyrope	965	0.5	20.1	0.6	0.6	0.2	0.0	12.4	65.6
RE06-GB-007	GB2	36	0.25-0.5	Core	0.403	37.49	0	0.084	11.28	0	19.44	2.12	0.456	30.36	0	0.01	0.01	101.654	Spessartine	Spessartine	983	69.9	21.6	5.4	1.2	0.0	0.0	0.0	1.8
RE06-GB-007	GB2	36	0.25-0.5	Rim	0.312	38.31	0	0.05	11.83	0	20.21	2.94	0.511	28.69	0.01	0	0.01	102.873	Spessartine	Spessartine	978	65.5	23.7	4.4	0.9	0.0	0.0	3.4	2.1
RE06-GB-007	GB2	37	0.25-0.5	Core	0.41	37.17	0	0.096	13.66	0	19.34	3.11	1.006	26.37	0	0	0.009	101.171	Spessartine	Spessartine	956	60.0	26.5	6.2	1.2	0.0	0.0	2.0	4.0
RE06-GB-007	GB2	37	0.25-0.5	Core	0.364	37.71	0	0.05	13.7	0	19.54	3.59	0.869	26.54	0	0	0	102.362	Spessartine	Spessartine	958	59.9	26.2	6.6	1.1	0.0	0.0	2.8	3.4
RE06-GB-007	GB2	38	0.25-0.5	Core	0.356	39.48	0	0	5.99	0.009	18.83	35.27	0.072	0.163	0	0	0.038	100.208	Grossular	Grossular	973	0.3	3.8	13.5	1.0	0.0	0.0	81.0	0.3
RE06-GB-007	GB2	38	0.25-0.5	Rim	0.542	38.35	0	0.007	5.88	0	19.02	34.7	0.099	0.364	0.01	0	0.036	99.009	Grossular	Grossular	978	0.8	5.3	10.9	1.6	0.0	0.0	81.0	0.4
RE06-GB-007	GB2	39	0.25-0.5	Core	0.244	39.44	0	0.012	6.9	0.01	19.99	31.19	0.1	2.23	0	0	0.038	100.154	Grossular	Grossular	990	4.8	9.1	8.6	0.7	0.0	0.0	76.4	0.4
RE06-GB-007	GB2	39	0.25-0.5	Core	0.221	39.56	0	0.011	6.89	0	20.07	31.4	0.119	2.37	0	0	0.03	100.671	Grossular	Grossular	989	5.1	8.9	8.7	0.6	0.0	0.0	76.2	0.5
RE06-GB-007	GB2	40	0.25-0.5	Core	0.263	39.37	0	0	6.08	0.027	19.79	33.71	0.075	0.541	0.01	0	0.053	99.919	Grossular	Grossular	984	1.2	6.7	9.4	0.8	0.1	0.0	81.6	0.3
RE06-GB-007	GB2	40	0.25-0.5	Rim	0.249	39.6	0	0.02	5.98	0.02	20.07	33.88	0.082	0.531	0	0.007	0.034	100.473	Grossular	Grossular	982	1.1	6.8	8.8	0.7	0.1	0.0	82.2	0.3
RE06-GB-007	GB2	41	0.25-0.5	Core	0.182	39.93	0	0.007	4.5	0	21.28	33.95	0.15	0.32	0	0	0.016	100.336	Grossular	Grossular	973	0.7	6.5	4.5	0.5	0.0	0.0	87.2	0.6
RE06-GB-007	GB2	41	0.25-0.5	Rim	0.182	40.07	0	0.019	4.63	0	21.31	34.17	0.152	0.217	0.01	0	0	100.76	Grossular	Grossular	972	0.5	6.6	4.7	0.5	0.0	0.0	87.1	0.6
RE06-GB-007	GB2	43	0.25-0.5	Core	0.241	39.53	0	0.013	6.46	0	20.51	33.13	0.125	0.566	0.019	0	0.067	100.661	Grossular	Grossular	986	1.2	8.9	7.1	0.7	0.0	0.0	81.6	0.5
RE06-GB-007	GB2	43	0.25-0.5	Rim	0.304	39.41	0	0.019	6.64	0	20.39	32.78	0.112	0.593	0.017	0	0.07	100.336	Grossular	Grossular	987	1.3	9.4	7.1	0.9	0.0	0.0	81.0	0.4
RE06-GB-007	GB2	44	0.25-0.5	Core	0.202	39.93	0	0.023	4.17	0	21.32	34.54	0.147	0.333	0	0	0.028	100.693	Grossular	Grossular	968	0.7	5.7	4.5	0.6	0.0	0.0	87.9	0.5
RE06-GB-007	GB2	44	0.25-0.5	Rim	0.226	39.58	0.007	0.01	4.26	0	21.15	34.26	0.135	0.322	0.021	0.011	0.038	100.02	Grossular	Grossular	971	0.7	6.0	4.5	0.6	0.0	0.0	87.6	0.5
RE06-GB-007	GB2	45	0.25-0.5	Core	0.212	39.22	0	0.018	7.97	0	17.41	34.76	0.077	0.415	0.012	0	0.04	100.134	Grossular	Grossular	977	0.9	4.3	19.4	0.6	0.0	0.0	74.5	0.3
RE06-GB-007	GB2	45	0.25-0.5	Rim	0.221	38.93	0	0.018	7.93	0	17.29	34.81	0.089	0.395	0	0.01	0.037	99.731	Grossular	Grossular	977	0.8	4.2	19.5	0.7	0.0	0.0	74.5	0.3
RE06-GB-007	GB2	46	0.25-0.5	Core	0.317	39.49	0.01	0.011	4.31	0	20.94	34.4	0.115	0.282	0.031	0.01	0.015	99.931	Grossular	Grossular	971	0.6	5.8	5.0	0.9	0.0	0.0	87.3	0.4
RE06-GB-007	GB2	46	0.25-0.5	Rim	0.278	39.53	0	0.017	4.3	0	20.86	34.69	0.111	0.27	0	0	0	100.055	Grossular	Grossular	971	0.6	5.4	5.6	0.8	0.0	0.0	87.3	0.4
RE06-GB-007	GB2	47	0.25-0.5	Core	0.228	39.26	0	0.015	5.1	0	21.15	33.58	0.129	0.289	0.013	0	0	99.764	Grossular	Grossular	978	0.6	8.1	4.1	0.7	0.0	0.0	86.1	0.5
RE06-GB-007	GB2	47	0.25-0.5	Rim	0.271	39.31	0	0.009	5.04	0	21.04	34.02	0.145	0.267	0.026	0	0.024	100.151	Grossular	Grossular	976	0.6	7.5	4.7	0.8	0.0	0.0	86.0	0.5
RE06-GB-007	GB2	48	0.25-0.5	Core	0.229	37.53	0	0.012	8.36	12.34	10.49	29.35	0.282	0.899	0.01	0.014	0.635	100.152	Cr-grossular	Grossular-Uvarovite-series	969	2.0	12.3	9.8	0.7	39.5	0.0	34.6	1.1
RE06-GB-007	GB2	48	0.25-0.5	Core	0.39	38.64	0	0.031	6.27	9.86	12.36	32.12	0.174	0.652	0.018	0	0.768	101.282	Cr-grossular	Grossular-Uvarovite-series	986	1.5	6.8	10.5	1.2	30.8	0.0	48.6	0.7
RE06-GB-008	GB2	1	0.25-0.5	Core	0	42.7	0	0.029	7.54	1.92	22.94	4.02	21.65	0.353	0.026	0	0.014	101.191	Pyrope	Pyrope	977	0.7	14.5	0.1	0.0	5.3	0.0	4.7	74.7
RE06-GB-008	GB2	1	0.25-0.5	Rim	0	43.83	0	0.021	7.43	1.86	23.94	4.08	21.23	0.37	0.027	0	0.009	102.797	Pyrope	Pyrope	963	0.7	14.6	0.0	0.0	5.0	0.0	5.3	74.3
RE06-GB-008	GB2	2	0.25-0.5	Core	0.108	40.55	0	0.013	19.46	0.011	22.81	6.31	12.24	0.435	0.01	0.009	0.027	101.983	Almandine	Almandine-Pyrope-series	974	0.9	38.7	0.9	0.3	0.0	0.0	15.2	44.0
RE06-GB-008	GB2	2	0.25-0.5	Rim	0.077	40.21	0	0.048	20.1	0	22.47	6.03	12.04	0.448	0.031	0	0.029	101.483	Almandine	Almandine-Pyrope-series	976	0.9	39.7	1.6	0.2	0.0	0.0	14.0	43.5
RE06-GB-008	GB2	3	0.25-0.5	Core	0.122	40.57	0	0.009	19.9	0.076	22.82	8.25	9.99	0.437	0	0	0.023	102.197	Almandine	Almandine-Pyrope-series	939	0.9	40.8	0.1	0.3	0.2	0.0	21.1	36.6
RE06-GB-008	GB2	3	0.25-0.5	Rim	0.117	40.29	0	0.027	19.79	0.118	22.75	8.19	10.38	0.435	0.035	0	0.01	102.142	Almandine	Almandine-Pyrope-series	944	0.9	40.1	0.2	0.3	0.3	0.0	20.6	37.6
RE06-GB-008	GB2	4	0.25-0.5	Core	0.022	38.77	0	0.01	35.46	0.035	22.26	1.133	4.65	1.232	0.035	0.008	0.023	103.639	Pink almandine	Almandine	899	2.7	76.3	0.0	0.1	0.1	0.0	3.0	17.8
RE06-GB-008	GB2	4	0.25-0.5	Rim	0	38.71	0.01	0.025	35.75	0.017	22.27	1.093	4.64	1.262	0.044	0	0	103.82	Pink almandine	Almandine	895	2.7	76.5	0.0	0.0	0.1	0.0	3.1	17.7
RE06-GB-008	GB2	5	0.25-0.5	Core	0	38.81	0	0.007	34.75	0.027	22.42	1.104	5.25	1.131	0	0	0.01	103.509	Pink almandine	Almandine	910	2.5	74.4	0.0	0.0	0.1	0.0	3.0	20.0
RE06-GB-008	GB2	5	0.25-0.5	Rim	0	38.42	0.009	0	34.69	0	22.05	1.104	5.2	1.128	0.039	0	0.01	102.65	Pink almandine	Almandine	912	2.5	74.6	0.0	0.0	0.0	0.0	3.0	19.9
RE06-GB-008	GB2	6	0.25-0.5	Core	0.019	38.87	0	0.011	31.65	0.009	22.41	1.61	4.6	4.44	0.026	0	0.01	103.655	Pink almandine	Almandine	945	9.7	68.2	0.0	0.1	0.0	0.0	4.4	17.7
RE06-GB-008	GB2	6	0.25-0.5	Rim	0.021	37.8	0	0.032	31.73	0.024	21.77	1.68	4.54	4.41	0.01	0	0.01	102.027	Pink almandine	Almandine	948	9.6	68.2	0.0	0.1	0.1	0.0	4.7	17.4
RE06-GB-008	GB2	7	0.25-0.5	Core	0.024	39.36	0	0.008	32.52	0.049	22.52	0.945	7.46	0.453	0.045	0.008	0.008	103.401	Pink almandine	Almandine	929	1.0	68.5	0.0	0.1	0.1	0.0	2.4	28.0
RE06-GB-008	GB2	7	0.25-0.5	Rim	0.025	38.95	0	0.011	32.92	0.023	22.36	0.952	7.33	0.475	0.048	0	0.019	103.113	Pink almandine	Almandine	926	1.0	69.0	0.0	0.1	0.1	0.0	2.5	27.4
RE06-GB-008	GB2	8	0.25-0.5	Core	0.015	39.31	0	0.036	30.63	0.076	22.53	2.15	7.23	1.148	0.01	0	0.024	103.159	Pink almandine	Almandine	960	2.4	64.5	0.0	0.0	0.2	0.0	5.7	27.1
RE06-GB-008	GB2	8	0.25-0.5	Rim	0.027	40.06	0	0.018	30.48	0.117	23.12	2.13	7.03	1.121	0.034	0	0.014	104.151	Pink almandine	Almandine	953	2.4	65.0	0.0	0.1	0.3	0.0	5.5	26.7
RE06-GB-008	GB2	9	0.25-0.5	Core	0.019	39.81	0	0	29.29	0.081	22.94	1.178	9.64	0.388	0.03	0	0.027	103.402	Pink almandine	Almandine	936	0.8	60.6	0.0	0.1	0.2	0.0	2.8	35.5
RE06-GB-008	GB2	9	0.25-0.5	Rim	0.036	38.77	0.008	0.028	31	0.109	22.31	1.137	8.39	0.411	0.051	0	0.04	102.29	Pink almandine	Almandine	940	0.9	64.7	0.0	0.1	0.3	0.0	2.7	31.2
RE06-GB-008	GB2	10	0.25-0.5	Core	0.018	38.8	0	0.031	34.18	0.02	22.49	1.046	5.9	0.769	0.045	0	0.015	103.314	Pink almandine	Almandine	916	1.7	72.9	0.0	0.1	0.1	0.0	2.9	22.4
RE06-GB-008	GB2	10	0.25-0.5	Rim	0	38.7	0	0.045	34.36	0.015	22.23	1.036	5.8	0.795	0.072	0	0.021	103.074	Pink almandine	Almandine	915	1.7	73.2	0.0	0.0	0.0	0.0	3.0	22.0
RE06-GB-008	GB2	11	0.25-0.5	Core	0.012	39	0	0.029	32.35	0.023	22.54	0.863	7.68	0.394	0.049	0.01	0.017	102.966	Pink almandine	Almandine	928	0.8	68.0	0.0	0.0	0.1	0.0	2.4	28.7
RE06-GB-008	GB2	11	0.25-0.5	Rim	0.01	38.64	0	0.014	32.49	0.029	22.28	0.828	7.74	0.37	0.044	0.008	0.018	102.472	Pink almandine	Almandine	928	0.8	68.0	0.0	0.0	0.1	0.0	2.2	28.9
RE06-GB-008	GB2	12	0.25-0.5	Core	0.018	39.42	0	0.019	31.7	0.054	22.62	0.881	8.03	0.406	0.096	0.01	0.024	103.278	Almandine	Almandine	932	0.9	66.6	0.0	0.1	0.2	0.0	2.3	30.1
RE06-GB-008	GB2	12	0.25-0.5	Rim	0.024	39.2	0	0.023	31.66	0.068	22.59	0.898	8.26	0.404	0.091	0	0.015	103.234	Almandine	Almandine	932	0.9	66.0	0.0	0.1	0.2	0.0	2.2	30.7
RE06-GB-008	GB2	13	0.25-0.5	Core	0.01	39.41	0	0.028	31.24	0.017	22.78	0.837	8.48	0.487	0.09	0	0.017	103.395	Almandine	Almandine	932	1.0	65.1	0.0	0.0	0.1	0.0	2.3	31.5
RE06-GB-008	GB2	13	0.25-0.5	Rim	0.018	39.81	0	0.02	31.32	0.011	23.27	0.819	8.44	0.481	0.07	0.006	0.007	104.273	Almandine	Almandine	926	1.0	65.3	0.0	0.1	0.0	0.0	2.2	31.4
RE06-GB-008	GB2	14	0.25-0.5	Core	0.062	39.58	0	0.028	26.48	0.018	22.19	7.05	6.57	0.686	0.02	0	0.041	102.726	Almandine	Almandine	978	1.5	54.9	0.8	0.2	0.1	0.0	18.0	24.5
RE06-GB-008	GB2	14	0.25-0.5	Rim	0.058	39.27	0	0.025	27.33	0.009	21.97	7.06	6.09	0.746	0.015	0	0.031	102.603	Almandine	Almandine	977	1.6	56.5	1.2	0.2	0.0	0.0	17.7	22.8
RE06-GB-008	GB2	15	0.25-0.5	Core	0.045	38.11	0	0.023	32.78	0	21.41	7.2	1.97	0.846	0.01	0	0.027	102.421	Almandine	Almandine	899	1.9	70.4	0.9	0.1	0.0	0.0	19.1	7.6
RE06-GB-008	GB2	15	0.25-0.5	Rim	0.056	38.6	0	0.014	32.84	0.008	21.58	7.12	1.96	0.865	0.023	0	0.025	103.09	Almandine	Almandine	898	1.9	70.7	0.9	0.2	0.0	0.0	18.8	7.6
RE06-GB-008	GB2	16	0.5-1.0	Core	0.184	39.73	0	0.029	25.54	0.064	22.6	5.91	8.06	0.612	0.016	0.01	0.037	102.792	Spessartine	Almandine	981	1.3	53.0	0.0	0.5	0.2	0.0	15.2	29.8
RE06-GB-008	GB2	16	0.5-1.0	Rim	0.203	39.82	0	0.03	25.79	0.072	22.33	5.91	8.04	0.622	0.024	0	0.03	102.871	Spessartine	Almandine	981	1.3	53.1	0.5	0.6	0.2	0.0	14.6	29.7
RE06-GB-008	GB2	17	0.5-1.0	Core	0.15	38.83	0	0.019	23.85	0.018	22.02	5.55	3.97	8.83	0	0	0.018	103.254	Spessartine	Almandine	966	19.0	50.7	0.0	0.4	0.1	0.0	14.7	15.0
RE06-GB-008	GB2	17	0.5-1.0	Rim	0.156	39.13	0	0.021	23.75	0	21.97	5.56	3.98	8.82	0.013	0.007	0.01	103.417	Spessartine	Almandine	966	19.1	50.5	0.3	0.4	0.0	0.0	14.5	15.1
RE06-GB-008	GB2	18	0.5-1.0	Core	0.019	38.04	0	0	18.72	0	21.58	0.825	2.32	21.54	0.03	0	0	103.074	Spessartine	Almandine-Spessartine-series	958	47.7	40.9	0.0	0.1	0.0	0.0	2.3	9.0
RE06-GB-008	GB2	18	0.5-1.0	Rim	0.034	37.87	0.008	0.033	18.64	0.01	21.3	0.748	2.07	21.88	0	0	0	102.593	Spessartine	Almandine-Spessartine-series	955	48.8	40.8	0.4	0.1	0.0	0.0	1.7	8.1
RE06-GB-008	GB2	19	0.25-0.5	Core	0.117	37.79	0.008	0.039	19.47	0	21.29	1.059	0.876	22.47	0	0	0	103.12	Spessartine	Almandine-Spessartine-series	936	50.3	43.0	0.1	0.3	0.0	0.0	2.8	3.5
RE06-GB-008	GB2	19	0.25-0.5	Rim	0.027	37.81	0	0.017	19.61	0	21.47	1.68	0.883	21.79	0.046	0	0.01	103.343	Spessartine	Almandine-Spessartine-series	945	48.6	43.2	0.0	0.1	0.0	0.0	4.7	3.5
RE06-GB-008	GB2	20	0.25-0.5	Core	0.01	37.55	0	0.04	16.91	0.014	21.48	0.726	0.485	25.55	0.013	0	0	102.778	Spessartine	Almandine-Spessartine-series	911	57.9	37.9	0.0	0.0	0.0	0.0	2.2	1.9
RE06-GB-008	GB2	20	0.25-0.5	Rim	0.035	36.67	0	0.039	16.97	0	20.77	0.836	0.546	25.81	0	0	0.024	101.701	Spessartine	Almandine-Spessartine-series	914	58.0	37.3	0.6	0.1	0.0	0.0	1.9	2.2
RE06-GB-008	GB2	21	0.25-0.5	Core	0.152	37.86	0	0.041	18.18	0	20.92	0.972	1.494	23.11	0.01	0	0	102.739	Spessartine	Almandine-Spessartine-series	946	51.9	39.2	1.6	0.5	0.0	0.0	0.9	5.9
RE06-GB-008	GB2	21	0.25-0.5	Core	0.131	37.31	0.01	0.054	18.15	0.008	20.63	0.944	1.522	23.22	0.02	0	0	101.999	Spessartine	Almandine-Spessartine-series	947	52.1	38.9	2.0	0.4	0.0	0.0	0.6	6.0
RE06-GB-008	GB2	22	0.25-0.5	Core	0.077	37.88	0	0.032	8.76	0	21.65	0.451	2.53	31.29	0.105	0	0	102.774	Spessartine	Spessartine	959	69.5	19.2	0.0	0.2	0.0	0.0	1.2	9.9
RE06-GB-008	GB2	22	0.25-0.5	Rim	0.046	38.66	0	0.007	8.47	0	21.9	0.479	2.56	31.51	0.068	0	0	103.7	Spessartine	Spessartine	953	70.0	18.6	0.0	0.1	0.0	0.0	1.2	10.0
RE06-GB-008	GB2	23	0.25-0.5	Core	0.185	38.2	0	0.019	15.49	0	21.19	4.82	2.32	20.18	0	0	0.036	102.44	Spessartine	Almandine-Spessartine-series	992	44.6	32.8	1.4	0.5	0.0	0.0	11.6	9.0
RE06-GB-008	GB2	23	0.25-0.5	Rim	0.111	37.99	0	0.01	15.19	0.018	21.23	5.1	2.11	20.55	0	0	0.042	102.35	Spessartine	Almandine-Spessartine-series	988	45.3	32.3	1.1	0.3	0.1	0.0	12.8	8.2
RE06-GB-008	GB2	24	0.25-0.5	Core	0.071	37.52	0	0.03	20.89	0.012	21.13	0.844	0.919	21.26	0.01	0	0	102.686	Spessartine	Almandine-Spessartine-series	934	47.7	46.1	0.3	0.2	0.0	0.0	2.0	3.6
RE06-GB-008	GB2	24	0.25-0.5	Rim	0	37.85	0.009	0.042	19.86	0	21.5	0.969	0.658	22.01	0	0	0	102.899	Spessartine	Almandine-Spessartine-series	932	49.9	44.5	0.0	0.0	0.0	0.0	3.0	2.6
RE06-GB-008	GB2	25	0.25-0.5	Core	0.04	39.17	0	0.013	16.53	0.143	21.55	6.66	3.98	14.78	0	0	0.016	102.882	Spessartine	Almandine-Spessartine-series	983	32.1	34.3	1.8	0.1	0.4	0.0	16.0	15.2
RE06-GB-008	GB2	25	0.25-0.5	Rim	0.038	38.99	0	0.019	14.36	0.013	21.93	6.22	2.46	19.08	0.01	0.01	0.016	103.146	Spessartine	Almandine-Spessartine-series	985	41.9	31.2	0.0	0.1	0.0	0.0	17.2	9.5
RE06-GB-008	GB2	26	0.25-0.5	Core	0.219	38.66	0	0.016	12.89	0.013	21.14	9.64	2.1	17.45	0.01	0	0.025	102.164	Grossular	Almandine-Spessartine-series	935	38.4	26.5	2.3	0.6	0.0	0.0	24.0	8.1
RE06-GB-008	GB2	26	0.25-0.5	Rim	0.197	39.58	0	0.013	12.87	0.038	21.62	9.8	2.03	17.31	0.01	0	0.021	103.489	Grossular	Almandine-Spessartine-series	927	38.1	26.8	1.7	0.6	0.1	0.0	24.9	7.9
RE06-GB-008	GB2	27	0.25-0.5	Core	0.082	38.33	0	0.026	28.49	0	21.58	8.37	0.796	4.99	0	0.009	0.014	102.688	Grossular	Almandine	895	11.1	62.2	0.1	0.2	0.0	0.0	23.2	3.1
RE06-GB-008	GB2	27	0.25-0.5	Rim	0.098	38.94	0.01	0.018	28.71	0.034	21.88	8.01	0.789	5.11	0	0	0	103.6	Grossular	Almandine	896	11.4	63.0	0.0	0.3	0.1	0.0	22.2	3.1
RE06-GB-008	GB2	28	0.25-0.5	Core	0.321	39.81	0	0.012	4.89	0	20.58	33.81	0.088	0.66	0	0	0.018	100.19	Grossular	Grossular	978	1.4	5.9	6.7	0.9	0.0	0.0	84.7	0.3
RE06-GB-008	GB2	28	0.25-0.5	Rim	0.32	40.41	0	0.016	4.72	0	21.08	33.97	0.099	0.629	0.01	0	0.032	101.286	Grossular	Grossular	973	1.3	6.1	5.7	0.9	0.0	0.0	85.5	0.4
RE06-GB-008	GB2	29	0.25-0.5	Core	0.479	39.77	0	0	3.79	0.01	20.08	35.49	0.172	0.237	0.01	0.016	0.026	100.081	Grossular	Grossular	970	0.5	2.4	8.4	1.4	0.0	0.0	86.6	0.6
RE06-GB-008	GB2	29	0.25-0.5	Rim	0.585	39.44	0	0	4.22	0	19.49	35.17	0.211	0.263	0.01	0.015	0.036	99.44	Grossular	Grossular	970	0.6	2.4	9.9	1.7	0.0	0.0	84.6	0.8
RE06-GB-008	GB2	30	0.25-0.5	Core	0.557	39.29	0	0.008	5.98	0.008	19.16	33.64	0.28	0.311	0	0	0.044	99.278	Grossular	Grossular	986	0.7	5.6	11.0	1.6	0.0	0.0	80.1	1.1
RE06-GB-008	GB2	30	0.25-0.5	Core	0.459	39.41	0	0.018	5.89	0.011	18.92	34.48	0.148	0.26	0	0	0.038	99.635	Grossular	Grossular	979	0.6	4.3	12.5	1.3	0.0	0.0	80.7	0.6
RE06-GB-008	GB2	31	0.25-0.5	Core	0.403	39.04	0	0.013	6.93	0.01	18.73	34.06	0.06	0.194	0	0	0.022	99.461	Grossular	Grossular	982	0.4	6.3	13.0	1.2	0.0	0.0	78.9	0.2
RE06-GB-008	GB2	31	0.25-0.5	Core	0.375	39.07	0	0	7.01	0	19	33.71	0.034	0.218	0	0.008	0.049	99.475	Grossular	Grossular	984	0.5	7.1	11.9	1.1	0.0	0.0	79.2	0.1
RE06-GB-008	GB2	32	0.25-0.5	Core	0.291	39.16	0	0.02	7.74	0.01	19.14	32.16	0.144	0.777	0	0.01	0.018	99.471	Grossular	Grossular	991	1.7	9.0	11.5	0.8	0.0	0.0	76.4	0.6
RE06-GB-008	GB2	32	0.25-0.5	Rim	0.314	38.42	0	0	7.83	0	18.76	32.36	0.15	0.76	0	0	0.03	98.625	Grossular	Grossular	990	1.7	8.9	12.1	0.9	0.0	0.0	75.8	0.6
RE06-GB-008	GB2	33	0.5-1.0	Core	0.26	39.68	0	0.008	3.13	0	21.82	34.63	0.212	0.245	0.01	0	0	99.995	Grossular	Grossular	967	0.5	5.3	2.0	0.7	0.0	0.0	90.7	0.8
RE06-GB-008	GB2	33	0.5-1.0	Rim	0.245	39.24	0	0.013	2.99	0	21.49	34.58	0.213	0.222	0.013	0	0	99.006	Grossular	Grossular	973	0.5	4.7	2.4	0.7	0.0	0.0	90.9	0.8
RE06-GB-008	GB2	34	0.5-1.0	Core	0.306	39.4	0	0.01	4.86	0.1	19.79	35.26	0.099	0.179	0.024	0	0.03	100.058	Grossular	Grossular	976	0.4	4.1	9.4	0.9	0.3	0.0	84.6	0.4
RE06-GB-008	GB2	34	0.5-1.0	Rim	0.274	39.53	0	0.01	4.53	0.03	19.99	35.14	0.085	0.238	0.021	0	0.073	99.921	Grossular	Grossular	975	0.5	3.7	8.9	0.8	0.1	0.0	85.7	0.3
RE06-GB-009	GB2	1	0.25-0.5	Core	0.093	41.93	0	0.034	7.53	6.27	19.21	5.68	19.99	0.431	0.01	0.008	0.031	101.218	Pyrope	Knorringite-Pyrope-series	988	0.9	14.1	1.2	0.2	13.1	4.6	0.0	65.9
RE06-GB-009	GB2	1	0.25-0.5	Rim	0.089	41.32	0	0.045	7.5	6.27	18.98	5.69	20.02	0.427	0.019	0.012	0.034	100.407	Pyrope	Knorringite-Pyrope-series	989	0.9	14.0	1.2	0.2	13.2	4.7	0.0	65.8
RE06-GB-009	GB2	2	0.25-0.5	Core	0.205	42.22	0	0.044	7.01	5.98	19.43	5.14	20.81	0.386	0.03	0	0.041	101.296	Pyrope	Pyrope	986	0.8	12.9	1.3	0.5	11.3	5.5	0.0	67.6
RE06-GB-009	GB2	2	0.25-0.5	Rim	0.219	41.65	0	0.053	7.15	6.12	19.09	5.12	21.12	0.375	0.075	0.011	0.052	101.035	Pyrope	Pyrope	985	0.7	12.8	1.7	0.6	10.7	6.6	0.0	66.8
RE06-GB-009	GB2	3	0.25-0.5	Core	0.106	42.56	0	0.057	7.63	2.94	22.22	4.8	20.65	0.426	0.016	0	0.01	101.415	Pyrope	Pyrope	989	0.8	14.9	0.0	0.3	8.2	0.0	3.8	72.0
RE06-GB-009	GB2	3	0.25-0.5	Core	0.112	42.71	0.01	0.044	7.65	2.91	22.23	4.8	20.63	0.408	0.01	0.016	0.02	101.549	Pyrope	Pyrope	989	0.8	15.0	0.0	0.3	8.1	0.0	3.9	72.0
RE06-GB-009	GB2	4	0.5-1.0	Core	0.11	39.12	0	0.016	29.19	0.034	22.02	5.44	4.71	2.34	0	0.01	0.015	103.004	Almandine	Almandine	977	5.1	62.1	0.2	0.3	0.1	0.0	14.4	17.9
RE06-GB-009	GB2	4	0.5-1.0	Rim	0.073	39.26	0	0.007	29.34	0.015	22.39	5.33	4.38	2.47	0.01	0	0.025	103.3	Almandine	Almandine	972	5.4	63.1	0.0	0.2	0.0	0.0	14.5	16.8
RE06-GB-009	GB2	5	0.25-0.5	Core	0.149	40.45	0	0.025	20.07	0.021	22.85	7.29	10.86	0.335	0.042	0.013	0.03	102.135	Almandine	Almandine-Pyrope-series	957	0.7	40.8	0.2	0.4	0.1	0.0	18.5	39.4
RE06-GB-009	GB2	5	0.25-0.5	Core	0.122	40.55	0	0.011	20.03	0	22.81	7.25	10.95	0.315	0.039	0	0.031	102.108	Almandine	Almandine-Pyrope-series	958	0.7	40.5	0.5	0.3	0.0	0.0	18.1	39.8
RE06-GB-009	GB2	6	0.25-0.5	Core	0.026	38.26	0	0.014	38.59	0	21.46	2.58	2.19	0.26	0.028	0	0	103.408	Almandine	Almandine	839	0.6	83.6	0.8	0.1	0.0	0.0	6.4	8.5
RE06-GB-009	GB2	6	0.25-0.5	Rim	0.02	38.66	0	0.015	38.73	0	21.71	2.61	2.17	0.235	0.016	0	0.015	104.181	Almandine	Almandine	835	0.5	83.8	0.5	0.1	0.0	0.0	6.8	8.4
RE06-GB-009	GB2	7	0.25-0.5	Core	0.028	38.1	0	0	36.78	0	21.59	3.13	1.92	1.279	0	0.01	0.009	102.846	Almandine	Almandine	864	2.8	80.8	0.0	0.1	0.0	0.0	8.7	7.5
RE06-GB-009	GB2	7	0.25-0.5	Rim	0.068	38.79	0	0.014	31.97	0	21.67	7.14	2.63	0.555	0.014	0.007	0	102.858	Almandine	Almandine	915	1.2	68.7	0.8	0.2	0.0	0.0	18.9	10.2
RE06-GB-009	GB2	8	0.25-0.5	Core	0.084	38.66	0	0.028	31.98	0	21.72	7	2.64	0.554	0.03	0	0.013	102.709	Pink almandine	Almandine	917	1.2	69.0	0.4	0.2	0.0	0.0	19.0	10.2
RE06-GB-009	GB2	8	0.25-0.5	Rim	0.092	38.81	0	0.023	32.2	0.008	21.75	6.94	2.64	0.549	0	0	0.02	103.031	Pink almandine	Almandine	915	1.2	69.3	0.5	0.3	0.0	0.0	18.6	10.2
RE06-GB-009	GB2	9	0.25-0.5	Core	0.071	41.04	0	0.022	19.02	0.122	23.15	5.08	13.54	0.438	0.023	0.007	0.015	102.526	Almandine	Almandine-Pyrope-series	979	0.9	37.8	0.3	0.2	0.4	0.0	12.2	48.2
RE06-GB-009	GB2	9	0.25-0.5	Rim	0.106	40.86	0.008	0.009	19.2	0.065	22.98	4.89	13.72	0.465	0.012	0	0.015	102.33	Almandine	Almandine-Pyrope-series	980	0.9	37.7	0.9	0.3	0.2	0.0	11.2	48.8
RE06-GB-009	GB2	9	0.25-0.5	Core	0	39.17	0.01	0.01	26.13	0	22.19	6.16	5.42	3.86	0	0	0	102.95	Almandine	Almandine	992	8.2	54.8	0.3	0.0	0.0	0.0	16.4	20.3
RE06-GB-009	GB2	9	0.25-0.5	Rim	0.02	39.22	0	0.011	26.25	0	22.14	6.03	5.22	3.93	0.015	0	0	102.836	Almandine	Almandine	992	8.4	55.4	0.3	0.1	0.0	0.0	16.1	19.7
RE06-GB-009	GB2	11	0.25-0.5	Core	0	38.6	0.01	0.009	34.05	0.019	21.53	5.78	2.35	0.738	0	0	0.015	103.101	Almandine	Almandine	899	1.6	73.2	1.1	0.0	0.1	0.0	14.9	9.1
RE06-GB-009	GB2	11	0.25-0.5	Rim	0.013	38.44	0	0.02	32.1	0	21.69	7.18	2.08	0.71	0.01	0.009	0	102.251	Almandine	Almandine	906	1.6	70.1	0.0	0.0	0.0	0.0	20.1	8.1
RE06-GB-009	GB2	12	0.25-0.5	Core	0.018	38.39	0.01	0.01	31.51	0	21.68	5.44	2.36	3.47	0	0.01	0	102.898	Almandine	Almandine	930	7.6	68.1	0.3	0.1	0.0	0.0	14.8	9.1
RE06-GB-009	GB2	12	0.25-0.5	Rim	0	38.28	0	0.017	31.4	0	21.6	5.4	2.25	3.64	0	0	0.012	102.599	Almandine	Almandine	929	8.0	68.1	0.3	0.0	0.0	0.0	14.8	8.7
RE06-GB-009	GB2	13	0.25-0.5	Core	0.168	39.61	0	0.019	27.82	0	22.07	5.59	7.06	0.524	0.021	0	0.034	102.916	Almandine	Almandine	980	1.1	57.5	1.2	0.5	0.0	0.0	13.4	26.3
RE06-GB-009	GB2	13	0.25-0.5	Rim	0.168	39.23	0	0.028	27.86	0.024	22.03	5.65	7.15	0.533	0.025	0	0.037	102.736	Almandine	Almandine	981	1.1	57.2	1.0	0.5	0.1	0.0	13.7	26.5
RE06-GB-009	GB2	14	0.25-0.5	Core	0.011	38.74	0	0.019	22.34	0.01	21.45	6.35	3.26	10.4	0	0	0.012	102.592	Almandine	Almandine-Spessartine-series	949	22.8	47.0	1.8	0.0	0.0	0.0	15.8	12.5
RE06-GB-009	GB2	14	0.25-0.5	Rim	0.027	39.6	0.008	0.025	23.48	0.021	22.13	6.6	3.75	8.29	0	0	0.012	103.943	Almandine	Almandine	962	17.9	49.7	0.6	0.1	0.1	0.0	17.4	14.3
RE06-GB-009	GB2	15	0.25-0.5	Core	0.01	39.31	0	0.022	32.5	0	22.73	0.854	7.44	0.67	0.015	0.01	0	103.561	Pink almandine	Almandine	928	1.4	68.3	0.0	0.0	0.0	0.0	2.4	27.9
RE06-GB-009	GB2	15	0.25-0.5	Rim	0.014	38.75	0	0	32.27	0	22.23	0.873	7.53	0.702	0.017	0	0	102.386	Pink almandine	Almandine	932	1.5	67.9	0.0	0.0	0.0	0.0	2.3	28.2
RE06-GB-009	GB2	16	0.25-0.5	Core	0	38.96	0	0.03	33.54	0	22.43	1.189	6.1	1.082	0.01	0	0	103.341	Pink almandine	Almandine	926	2.3	71.2	0.0	0.0	0.0	0.0	3.4	23.1
RE06-GB-009	GB2	16	0.25-0.5	Rim	0	39.47	0	0.021	33.59	0	22.7	1.159	5.86	1.049	0	0	0	103.848	Pink almandine	Almandine	922	2.3	72.0	0.0	0.0	0.0	0.0	3.3	22.4
RE06-GB-009	GB2	17	0.25-0.5	Core	0	38.73	0	0.011	36.88	0.022	22.22	0.857	4.37	0.635	0.031	0	0	103.756	Pink almandine	Almandine	875	1.4	79.4	0.0	0.0	0.1	0.0	2.4	16.8
RE06-GB-009	GB2	17	0.25-0.5	Rim	0.009	39.28	0	0.028	36.76	0.023	22.45	0.855	4.54	0.598	0.021	0	0	104.565	Pink almandine	Almandine	875	1.3	78.9	0.0	0.0	0.1	0.0	2.4	17.4
RE06-GB-009	GB2	18	0.25-0.5	Core	0.009	38.79	0	0	35.14	0.01	22.3	0.983	5.17	0.952	0	0.011	0.01	103.376	Pink almandine	Almandine	904	2.1	75.4	0.0	0.0	0.0	0.0	2.6	19.8
RE06-GB-009	GB2	18	0.25-0.5	Rim	0	39.42	0	0.018	35.31	0.01	22.9	1.025	4.65	1.047	0.019	0	0.01	104.408	Pink almandine	Almandine	895	2.3	76.7	0.0	0.0	0.0	0.0	2.9	18.0
RE06-GB-009	GB2	19	0.25-0.5	Core	0.022	39.08	0.009	0.013	33	0.064	22.46	0.857	7.29	0.343	0.032	0	0.027	103.196	Pink almandine	Almandine	923	0.7	69.5	0.0	0.1	0.2	0.0	2.1	27.4
RE06-GB-009	GB2	19	0.25-0.5	Rim	0.016	40.01	0	0.01	33.35	0.088	23.29	0.851	6.44	0.337	0.066	0	0.024	104.482	Pink almandine	Almandine	911	0.7	72.1	0.0	0.0	0.3	0.0	2.1	24.8
RE06-GB-009	GB2	20	0.25-0.5	Core	0.027	39.4	0	0	30.37	0.02	22.72	1.345	8.73	0.278	0.026	0	0	102.915	Pink almandine	Almandine	941	0.6	63.4	0.0	0.1	0.1	0.0	3.5	32.5
RE06-GB-009	GB2	20	0.25-0.5	Rim	0	39.76	0	0.024	31.49	0.021	23.08	1.267	7.77	0.268	0.026	0	0	103.705	Pink almandine	Almandine	934	0.6	66.6	0.0	0.0	0.1	0.0	3.5	29.3
RE06-GB-009	GB2	21	0.25-0.5	Core	0.012	38.92	0	0	33.17	0.008	22.26	0.499	5.41	3.08	0.047	0	0.012	103.417	Pink almandine	Almandine	925	6.7	71.2	0.0	0.0	0.0	0.0	1.3	20.7
RE06-GB-009	GB2	21	0.25-0.5	Rim	0.012	39.3	0	0	33.2	0.01	22.76	0.506	5.35	3.12	0.038	0	0	104.296	Pink almandine	Almandine	921	6.8	71.3	0.0	0.0	0.0	0.0	1.3	20.5
RE06-GB-009	GB2	22	0.25-0.5	Core	0	38.47	0	0.031	34.93	0.011	22.18	0.89	4.97	1.62	0.117	0.008	0	103.227	Pink almandine	Almandine	907	3.5	74.9	0.0	0.0	0.0	0.0	2.6	19.0
RE06-GB-009	GB2	22	0.25-0.5	Rim	0	39.35	0.012	0.025	34.86	0.028	22.77	0.872	5	1.64	0.064	0	0.019	104.641	Pink almandine	Almandine	903	3.6	74.8	0.0	0.0	0.1	0.0	2.4	19.1
RE06-GB-009	GB2	23	0.25-0.5	Core	0.011	38.95	0	0.019	34.77	0.042	22.39	1.171	5.38	0.7	0.031	0	0	103.464	Pink almandine	Almandine	909	1.5	74.6	0.0	0.0	0.1	0.0	3.2	20.6
RE06-GB-009	GB2	23	0.25-0.5	Rim	0.017	39.33	0	0.031	34.77	0.027	22.87	1.186	5.27	0.698	0.025	0	0	104.224	Pink almandine	Almandine	905	1.5	74.8	0.0	0.0	0.1	0.0	3.3	20.2
RE06-GB-009	GB2	24	0.25-0.5	Core	0	39.38	0	0.016	32.4	0.021	22.57	0.825	7.68	0.38	0.072	0.01	0.01	103.364	Pink almandine	Almandine	927	0.8	68.1	0.0	0.0	0.1	0.0	2.2	28.8
RE06-GB-009	GB2	24	0.25-0.5	Rim	0.018	39.1	0.007	0.027	32.51	0.019	22.61	0.843	7.71	0.395	0.104	0	0.019	103.361	Pink almandine	Almandine	926	0.8	68.0	0.0	0.1	0.1	0.0	2.3	28.7
RE06-GB-009	GB2	25	0.5-1.0	Core	0.012	37.78	0	0.023	27.27	0	21.91	0.424	1.439	14.7	0.063	0	0	103.622	Mn almandine	Almandine-Spessartine-series	892	32.9	60.2	0.0	0.0	0.0	0.0	1.3	5.7
RE06-GB-009	GB2	25	0.5-1.0	Rim	0.017	37.49	0	0.04	26.53	0.013	21.57	0.367	1.394	15.52	0.047	0	0	102.989	Mn almandine	Almandine-Spessartine-series	900	34.7	58.6	0.0	0.1	0.0	0.0	1.2	5.5
RE06-GB-009	GB2	26	0.25-0.5	Core	0	37.73	0	0.018	33.88	0	21.74	1.99	0.957	6.76	0.025	0	0	103.1	Mn almandine	Almandine	866	15.2	75.2	0.0	0.0	0.0	0.0	5.8	3.8
RE06-GB-009	GB2	26	0.25-0.5	Rim	0	38.31	0	0.038	34.02	0	21.39	2.03	0.928	6.83	0	0	0	103.546	Mn almandine	Almandine	862	15.3	75.0	0.7	0.0	0.0	0.0	5.3	3.7
RE06-GB-009	GB2	27	0.25-0.5	Core	0.013	37.1	0.007	0.112	31.35	0.014	21.55	0.71	0.591	10.14	0	0	0.015	101.602	Mn almandine	Almandine	849	23.4	71.5	0.0	0.0	0.0	0.0	2.6	2.4
RE06-GB-009	GB2	27	0.25-0.5	Rim	0.012	36.91	0	0.023	32.43	0	20.99	0.947	0.55	10.34	0.026	0	0	102.228	Mn almandine	Almandine	839	23.2	71.8	0.1	0.0	0.0	0.0	2.6	2.2
RE06-GB-009	GB2	28	0.5-1.0	Core	0.022	37.55	0	0.038	14.66	0	21.31	1.049	1.3	26.58	0	0	0.01	102.519	Spessartine	Spessartine	933	59.4	32.3	0.0	0.1	0.0	0.0	3.1	5.1
RE06-GB-009	GB2	28	0.5-1.0	Rim	0.046	37.89	0	0.041	14.33	0	21.7	0.842	1.25	26.93	0.01	0	0	103.04	Spessartine	Spessartine	934	60.6	31.8	0.0	0.1	0.0	0.0	2.5	4.9
RE06-GB-009	GB2	29	0.25-0.5	Core	0.188	37.63	0.007	0.07	14.73	0	20.7	0.597	0.613	27.34	0	0	0	101.875	Spessartine	Spessartine	932	62.9	32.5	1.3	0.6	0.0	0.0	0.2	2.5
RE06-GB-009	GB2	29	0.25-0.5	Rim	0.16	37.4	0	0.06	14.93	0	20.51	0.608	0.639	27.71	0	0	0	102.017	Spessartine	Spessartine	931	63.2	32.2	1.6	0.5	0.0	0.0	0.0	2.6

Table 6 (continued)

Sample ID	Probe mount	Grain ID	Grain size (mm)	Probe spot	TiO_2	SiO_2	K_2O	Na_2O	FeO	Cr_2O_3	Al_2O_3	CaO	MgO	MnO	P_2O_5	NiO	V_2O_3	Total	Grain type (physical ID)[1]	Grain type (geochemical ID)[2]		Stoichiometric garnet end member calculations (%)[3]							
																					Score	Spess	Almand	Andr	Ti-Andr	Uvar	Knorr	Gross	Pyrope
RE06-GB-009	GB2	30	0.25-0.5	Core	0.043	38.72	0	0.024	20.35	0.035	21.44	6.07	3.91	12.19	0.043	0	0.009	102.833	Spessartine	Almandine-Spessartine-series	972	26.3	42.1	2.0	0.1	0.1	0.0	14.4	14.9
RE06-GB-009	GB2	30	0.25-0.5	Rim	0.033	39.46	0	0.022	20.19	0.008	21.65	6.04	3.73	12.63	0.021	0.01	0	103.795	Spessartine	Almandine-Spessartine-series	971	27.4	41.7	2.3	0.1	0.0	0.0	14.3	14.2
RE06-GB-009	GB2	31	0.25-0.5	Core	0.089	37.79	0.006	0.007	20.44	0	21.3	0.21	0.85	22.46	0.017	0.008	0	103.177	Spessartine	Almandine-Spessartine-series	918	50.6	45.4	0.0	0.3	0.0	0.0	0.4	3.4
RE06-GB-009	GB2	31	0.25-0.5	Rim	0.043	37.85	0	0.017	19.93	0	22.2	0.325	0.724	22.54	0	0.01	0	103.639	Spessartine	Almandine-Spessartine-series	917	51.3	44.8	0.0	0.1	0.0	0.0	0.9	2.9
RE06-GB-009	GB2	32	0.25-0.5	Core	0	37.97	0	0.063	23.45	0	21.44	1.126	2.72	16.14	0.032	0	0	102.941	Spessartine	Almandine-Spessartine-series	951	35.5	50.5	0.5	0.0	0.0	0.0	2.9	10.5
RE06-GB-009	GB2	32	0.25-0.5	Rim	0	38.24	0	0.051	23	0	22.03	1.038	2.68	16.33	0	0	0	103.369	Spessartine	Almandine-Spessartine-series	950	36.1	50.3	0.0	0.0	0.0	0.0	3.2	10.4
RE06-GB-009	GB2	33	0.25-0.5	Core	0.066	37.49	0	0.033	20.09	0.036	21.08	1.007	0.794	22.17	0.108	0	0.008	102.882	Spessartine	Almandine-Spessartine-series	933	49.7	44.1	0.5	0.2	0.1	0.0	2.2	3.1
RE06-GB-009	GB2	33	0.25-0.5	Rim	0.057	38.09	0	0.028	20.41	0	21.58	0.84	0.729	22.26	0.101	0.016	0	104.11	Spessartine	Almandine-Spessartine-series	924	49.7	45.0	0.0	0.2	0.0	0.0	2.3	2.9
RE06-GB-009	GB2	34	0.25-0.5	Core	0.016	37.94	0	0.012	36.45	0.131	21.4	1.61	1.123	4.73	0.031	0	0.01	103.453	Spessartine	Almandine	845	10.6	80.4	0.0	0.0	0.4	0.0	4.2	4.4
RE06-GB-009	GB2	34	0.25-0.5	Rim	0.024	37.69	0	0.014	36.51	0.141	21.44	1.66	1.17	4.75	0.027	0	0	103.426	Spessartine	Almandine	846	10.6	80.1	0.0	0.1	0.4	0.0	4.2	4.6
RE06-GB-009	GB2	35	0.25-0.5	Core	0.101	37.6	0	0.038	19.42	0	20.76	1.56	1.047	21.6	0.01	0.007	0	102.143	Spessartine	Almandine-Spessartine-series	951	48.9	42.3	1.7	0.3	0.0	0.0	2.6	4.2
RE06-GB-009	GB2	35	0.25-0.5	Rim	0.01	38.19	0.006	0.046	19	0.008	21.72	2.07	1.023	21.37	0.01	0	0	103.453	Spessartine	Almandine-Spessartine-series	955	47.9	42.0	0.0	0.0	0.0	0.0	6.0	4.0
RE06-GB-009	GB2	36	0.25-0.5	Core	0.354	39.44	0	0	5.19	0	20.49	33.3	0.048	0.487	0.01	0	0.01	99.33	Grossular	Grossular	981	1.1	7.0	6.2	1.0	0.0	0.0	84.5	0.2
RE06-GB-009	GB2	37	0.25-0.5	Core	0.207	39.64	0	0.011	6.07	0.012	20.34	32.8	0.101	0.361	0	0	0.034	99.576	Grossular	Grossular	986	0.8	8.2	7.3	0.6	0.0	0.0	82.7	0.4
RE06-GB-009	GB2	38	0.25-0.5	Core	0.321	39.27	0	0.032	7.21	0.101	19.2	32.98	0.082	0.143	0.02	0.006	0.192	99.558	Grossular	Grossular	988	0.3	8.2	11.0	0.9	0.3	0.0	78.9	0.3
RE06-GB-009	GB2	38	0.25-0.5	Rim	0.337	38.24	0	0.016	7.03	0.075	18.84	32.54	0.069	0.141	0.013	0.01	0.161	97.472	Grossular	Grossular	989	0.3	8.3	10.7	1.0	0.2	0.0	79.2	0.3
RE06-GB-009	GB2	39	0.25-0.5	Core	0.508	39.53	0	0.016	6.83	0.023	19.61	32.42	0.103	0.467	0	0	0.016	99.523	Grossular	Grossular	990	1.0	8.5	9.3	1.5	0.1	0.0	79.2	0.4
RE06-GB-009	GB2	39	0.25-0.5	Rim	0.505	40.02	0	0.018	6.78	0.041	20.07	32.24	0.087	0.437	0	0	0.01	100.207	Grossular	Grossular	989	1.0	9.2	8.1	1.4	0.1	0.0	79.9	0.3
RE06-GB-009	GB2	40	0.25-0.5	Core	0.177	39.69	0	0.008	6.09	0	20.78	32.32	0.217	0.642	0.01	0.01	0.025	99.97	Grossular	Grossular	988	1.4	9.1	5.9	0.5	0.0	0.0	82.3	0.8
RE06-GB-009	GB2	40	0.25-0.5	Rim	0.222	40.27	0	0.013	6.16	0.011	21.31	32.46	0.196	0.564	0.029	0	0.03	101.265	Grossular	Grossular	983	1.2	9.9	4.7	0.6	0.0	0.0	82.8	0.7
RE06-GB-009	GB2	41	0.25-0.5	Core	0.303	39.18	0	0	8.23	0	17.15	32.37	0.07	2.32	0	0	0	99.624	Grossular	Grossular	987	5.1	4.8	19.7	0.9	0.0	0.0	69.2	0.3
RE06-GB-009	GB2	41	0.25-0.5	Rim	0.306	39.33	0	0.013	8.31	0	17.03	32.5	0.084	2.33	0	0	0.016	99.919	Grossular	Grossular	986	5.1	4.5	20.4	0.9	0.0	0.0	68.7	0.3
RE06-GB-009	GB2	42	0.25-0.5	Core	0.338	39.36	0	0.024	4.54	0	21.06	33.34	0.07	0.743	0	0	0.026	99.502	Grossular	Grossular	977	1.6	7.0	4.0	1.0	0.0	0.0	86.1	0.3
RE06-GB-009	GB2	42	0.25-0.5	Rim	0.215	39.66	0	0.017	4.99	0	20.99	32.98	0.084	0.853	0	0	0.016	99.805	Grossular	Grossular	981	1.8	7.4	4.9	0.6	0.0	0.0	84.9	0.3
RE06-GB-009	GB2	43	0.25-0.5	Core	0.27	39.64	0.007	0.017	5.01	0	20.84	33.16	0.116	0.363	0	0.011	0.025	99.459	Grossular	Grossular	981	0.8	7.3	5.2	0.8	0.0	0.0	85.5	0.4
RE06-GB-009	GB2	43	0.25-0.5	Rim	0.255	39.31	0	0.013	5.09	0	20.77	33.11	0.106	0.312	0	0	0.02	98.986	Grossular	Grossular	981	0.7	7.6	5.0	0.7	0.0	0.0	85.6	0.4
RE06-GB-009	GB2	44	0.25-0.5	Core	0.264	39.73	0	0.032	5.24	0.024	20.97	32.45	0.118	0.481	0	0	0.065	99.374	Grossular	Grossular	983	1.1	8.3	4.6	0.8	0.1	0.0	84.8	0.5
RE06-GB-009	GB2	44	0.25-0.5	Rim	0.25	40.6	0	0.019	5.22	0	21.71	32.47	0.107	0.479	0.018	0	0.058	100.93	Grossular	Grossular	976	1.0	9.1	3.2	0.7	0.0	0.0	85.6	0.4
RE06-GB-009	GB2	45	0.25-0.5	Core	0.58	39.4	0	0.028	5.78	0.028	19.61	33.38	0.113	0.421	0.01	0	0.031	99.381	Grossular	Grossular	985	0.9	6.4	9.1	1.7	0.1	0.0	81.4	0.4
RE06-GB-009	GB2	45	0.25-0.5	Rim	0.407	39.31	0	0.02	6.15	0.048	19.04	33.46	0.097	0.394	0.012	0.014	0.058	99.011	Grossular	Grossular	985	0.9	5.7	11.5	1.2	0.1	0.0	80.3	0.4
RE06-GB-009	GB2	46	0.25-0.5	Core	0.389	39.33	0	0.013	6.82	0.008	18.77	33.74	0.131	0.24	0.01	0.01	0.065	99.526	Grossular	Grossular	985	0.5	6.0	13.0	1.1	0.0	0.0	78.8	0.5
RE06-GB-009	GB2	46	0.25-0.5	Rim	0.407	39.73	0	0.015	7.12	0.044	18.74	33.51	0.113	0.252	0	0.007	0.118	100.055	Grossular	Grossular	986	0.6	6.4	13.5	1.2	0.1	0.0	77.9	0.4
RE06-GB-009	GB2	47	0.25-0.5	Core	0.654	38.95	0	0.024	4.58	3.18	17.04	34.16	0.367	0.333	0	0.012	0.023	99.323	Cr-grossular	Grossular	976	0.7	3.2	10.1	1.9	9.8	0.0	72.9	1.4
RE06-GB-009	GB2	47	0.25-0.5	Rim	0.671	39.46	0.01	0.053	4.72	3.83	16.74	33.98	0.432	0.333	0.01	0.008	0.079	100.325	Cr-grossular	Grossular	974	0.7	3.4	10.2	1.9	11.7	0.0	70.4	1.7
RE06-GB-010	GB3	1	0.25-0.5	Core	0.683	41.85	0	0.07	6.74	9.89	15.7	6.48	20.16	0.339	0.02	0.008	0.035	101.976	Pyrope	Knorringite-Pyrope-series	994	0.7	11.0	3.7	1.8	11.3	16.7	0.0	54.8
RE06-GB-010	GB3	1	0.25-0.5	Rim	0.652	41.69	0	0.067	6.66	10	15.65	6.36	20.49	0.312	0.045	0.023	0.036	101.985	Pyrope	Knorringite-Pyrope-series	993	0.6	10.8	3.6	1.8	11.0	17.4	0.0	54.8
RE06-GB-010	GB3	2	0.25-0.5	Core	0.011	40.12	0	0.01	29.7	0.032	22.96	0.865	9.58	0.371	0.078	0	0.024	103.75	Pink almandine	Almandine	930	0.8	61.5	0.0	0.0	0.1	0.0	2.2	35.4
RE06-GB-010	GB3	2	0.25-0.5	Rim	0.01	40.28	0	0.033	29.69	0.047	23.57	0.828	9.47	0.36	0.1	0	0.025	104.413	Pink almandine	Almandine	923	0.8	61.8	0.0	0.0	0.1	0.0	2.2	35.1
RE06-GB-010	GB3	3	0.25-0.5	Core	0.03	39.61	0	0.018	30.55	0.025	22.95	1.054	8.78	0.455	0.054	0.009	0.021	103.555	Pink almandine	Almandine	936	1.0	63.6	0.0	0.1	0.1	0.0	2.7	32.6
RE06-GB-010	GB3	3	0.25-0.5	Rim	0.022	39.59	0	0.013	30.57	0.04	22.55	1.09	8.91	0.469	0.019	0	0.01	103.282	Pink almandine	Almandine	938	1.0	63.2	0.0	0.1	0.1	0.0	2.8	32.8
RE06-GB-010	GB3	4	0.25-0.5	Core	0.009	40.19	0	0	28.74	0.02	23.03	0.996	10.25	0.335	0.024	0	0.017	103.612	Pink almandine	Almandine	927	0.7	59.1	0.0	0.0	0.1	0.0	2.5	37.6
RE06-GB-010	GB3	4	0.25-0.5	Rim	0.018	40.95	0	0.02	28.92	0.031	23.67	1.049	10.01	0.338	0.018	0	0.018	105.043	Pink almandine	Almandine	918	0.7	59.6	0.0	0.0	0.1	0.0	2.7	36.8
RE06-GB-010	GB3	5	0.25-0.5	Core	0.018	40.51	0	0.015	27.92	0.087	23.1	1.68	10.03	0.484	0.04	0	0.021	103.906	Pink almandine	Almandine	939	1.0	57.6	0.0	0.0	0.3	0.0	4.2	36.9
RE06-GB-010	GB3	5	0.25-0.5	Rim	0.026	40.01	0	0	27.96	0.09	22.96	1.68	10.21	0.482	0.041	0	0.03	103.489	Pink almandine	Almandine	941	1.0	57.3	0.0	0.1	0.3	0.0	4.1	37.3
RE06-GB-010	GB3	6	0.25-0.5	Core	0	39.81	0	0.025	30.79	0.049	22.99	0.938	8.74	0.171	0.058	0	0.008	103.58	Pink almandine	Almandine	931	0.4	64.4	0.0	0.0	0.1	0.0	2.5	32.6
RE06-GB-010	GB3	6	0.25-0.5	Rim	0	40.37	0	0.028	30.99	0.05	23.65	0.947	8.23	0.162	0.065	0.01	0.008	104.509	Pink almandine	Almandine	922	0.3	65.8	0.0	0.0	0.1	0.0	2.6	31.1
RE06-GB-010	GB3	7	0.25-0.5	Core	0	39.91	0	0.013	29.95	0.063	22.97	1.7	8.44	0.522	0	0	0.022	103.59	Pink almandine	Almandine	948	1.1	62.8	0.0	0.0	0.2	0.0	4.4	31.5
RE06-GB-010	GB3	8	0.25-0.5	Core	0.024	39.2	0	0.018	34.63	0	22.42	1.173	5.79	0.323	0.068	0	0	103.644	Pink almandine	Almandine	910	0.7	74.0	0.0	0.1	0.0	0.0	3.2	22.0
RE06-GB-010	GB3	9	0.25-0.5	Core	0.034	38.98	0.012	0.02	29.5	0	22.22	6.57	2.9	3.14	0.024	0	0.01	103.409	Pink almandine	Almandine	948	6.9	63.7	0.0	0.1	0.0	0.0	18.2	11.2
RE06-GB-010	GB3	10	0.25-0.5	Core	0.013	39.51	0	0.019	32.38	0.015	22.8	0.96	7.51	0.36	0.091	0	0.007	103.666	Pink almandine	Almandine	927	0.8	68.3	0.0	0.0	0.0	0.0	2.6	28.2
RE06-GB-010	GB3	10	0.25-0.5	Rim	0.016	39.67	0	0.02	32.09	0.013	22.96	0.96	7.37	0.352	0.108	0	0.013	103.573	Pink almandine	Almandine	928	0.8	68.5	0.0	0.0	0.0	0.0	2.6	28.0
RE06-GB-010	GB3	11	0.25-0.5	Core	0.011	40.16	0	0	30.19	0.014	23.38	1.65	8.22	0.488	0.049	0	0.009	104.171	Pink almandine	Almandine	941	1.0	63.6	0.0	0.0	0.0	0.0	4.4	30.9
RE06-GB-010	GB3	12	0.25-0.5	Core	0.147	39.04	0	0.014	13.75	0.083	21.81	6.52	4.98	16.29	0	0	0.037	102.672	Spessartine	Almandine-Spessartine-series	983	34.9	28.5	0.9	0.4	0.3	0.0	16.2	18.8
RE06-GB-010	GB3	12	0.25-0.5	Rim	0.143	39.38	0	0.031	14.07	0.071	21.99	6.33	4.87	16.42	0.045	0	0.031	103.382	Spessartine	Almandine-Spessartine-series	983	35.1	29.2	0.8	0.4	0.2	0.0	15.9	18.3
RE06-GB-010	GB3	13	0.25-0.5	Core	0.361	38.74	0	0.018	11.46	0	21.3	13.33	1.342	15.17	0	0	0.075	101.796	Spessartine	Piemontite	849	33.5	24.0	1.4	1.1	0.0	0.0	34.8	5.2
RE06-GB-010	GB3	13	0.25-0.5	Rim	0.356	39.43	0	0.035	11.59	0	21.65	12.94	1.353	15.48	0	0	0.066	102.9	Spessartine	Almandine-Spessartine-series	845	34.1	24.5	1.1	1.0	0.0	0.0	34.1	5.2
RE06-GB-010	GB3	14	0.25-0.5	Core	0.065	38.67	0	0.015	19.61	0.01	21.73	8.19	2.53	11.62	0	0.009	0.009	102.458	Spessartine	Almandine-Spessartine-series	946	25.4	42.1	0.4	0.2	0.0	0.0	22.1	9.7
RE06-GB-010	GB3	14	0.25-0.5	Core	0.047	38.68	0	0.033	19.59	0.015	21.52	8.36	2.58	11.47	0	0	0	102.295	Spessartine	Almandine-Spessartine-series	943	25.1	41.6	1.3	0.1	0.0	0.0	21.9	10.0
RE06-GB-010	GB3	15	0.25-0.5	Core	0.086	38.26	0	0.026	19.32	0	20.85	15.53	0.362	6.48	0	0	0.016	100.93	Spessartine	Grossular	751	14.4	40.4	3.0	0.3	0.0	0.0	40.6	1.4
RE06-GB-010	GB3	15	0.25-0.5	Core	0.098	39.19	0	0.015	19.2	0	21.46	15.69	0.344	6.48	0	0	0.013	102.49	Spessartine	Grossular	741	14.3	40.5	2.0	0.3	0.0	0.0	41.6	1.3
RE06-GB-010	GB3	16	0.25-0.5	Core	0.128	39.57	0	0.034	23.65	0	22.12	9.41	6.21	0.787	0.029	0	0.023	101.961	Spessartine	Almandine	956	1.7	49.4	0.8	0.4	0.0	0.0	24.4	23.3
RE06-GB-010	GB3	16	0.25-0.5	Core	0.379	39.97	0	0.106	23.57	0	22.17	9.44	6.1	0.697	0.034	0	0.038	102.503	Spessartine	Almandine	953	1.5	49.5	0.5	1.1	0.0	0.0	24.5	23.0
RE06-GB-010	GB3	17	0.25-0.5	Core	0.564	28.28	0	0.017	13.42	0.075	54.74	0.009	2.1	0.206	0.01	0.024	0.036	99.481	Spessartine	Staurolite	996	1.2	77.0	-1.2	1.5	0.0	0.2	0.0	21.3
RE06-GB-010	GB3	17	0.25-0.5	Rim	0.597	29.25	0	0.011	12.76	0.099	56.25	0.01	1.99	0.197	0	0	0.034	101.198	Spessartine	Staurolite	987	1.2	77.1	-1.3	1.6	0.0	0.3	0.0	21.2
RE06-GB-010	GB3	18	0.25-0.5	Core	0.16	38.9	0	0.032	12.75	0.021	21.05	20.76	0.333	6.79	0	0	0.051	100.847	Spessartine	Piemontite	928	15.0	25.7	3.1	0.5	0.1	0.0	54.4	1.3
RE06-GB-010	GB3	18	0.25-0.5	Rim	0.147	39.99	0	0.019	12.81	0.029	21.4	20.67	0.365	6.67	0	0	0.045	102.145	Spessartine	Piemontite	911	14.8	25.8	3.2	0.4	0.1	0.0	54.3	1.4
RE06-GB-010	GB3	19	0.25-0.5	Core	0.242	38.48	0	0.037	18.44	0.032	20.49	8.68	1.552	14.4	0	0	0	102.353	Spessartine	Almandine-Spessartine-series	945	31.9	37.5	4.4	0.7	0.1	0.0	19.3	6.1
RE06-GB-010	GB3	19	0.25-0.5	Rim	0.068	38.67	0	0.038	18.86	0.079	20.88	8.18	1.72	14.44	0.019	0.01	0.017	102.98	Spessartine	Almandine-Spessartine-series	953	31.8	38.6	3.6	0.2	0.2	0.0	19.0	6.7
RE06-GB-010	GB3	20	0.25-0.5	Core	0.169	39.26	0	0.01	10.38	0.141	20.05	25.15	0.254	4.82	0	0.013	0.092	100.34	Spessartine	Grossular	947	10.7	17.8	7.3	0.5	0.4	0.0	62.3	1.0
RE06-GB-010	GB3	20	0.25-0.5	Rim	0.142	40.14	0	0.007	10.28	0.149	20.53	25.73	0.263	4.35	0	0	0.082	101.674	Spessartine	Grossular	954	9.6	17.7	6.8	0.4	0.4	0.0	64.0	1.0
RE06-GB-010	GB3	21	0.25-0.5	Core	0.08	37.61	0	0.009	16.93	0	21.24	0.517	0.174	26.21	0.037	0	0	102.806	Spessartine	Almandine-Spessartine-series	896	59.7	38.1	0.0	0.2	0.0	0.0	1.3	0.7
RE06-GB-010	GB3	21	0.25-0.5	Rim	0.066	37.92	0	0.011	16.98	0	21.47	0.517	0.152	26.36	0.032	0	0.017	103.525	Spessartine	Spessartine	893	59.8	38.0	0.0	0.2	0.0	0.0	1.3	0.6
RE06-GB-010	GB3	22	0.25-0.5	Core	0.082	39.99	0	0	4.02	0	21.19	33.2	0.098	0.505	0	0	0.011	99.098	Grossular	Grossular	974	1.1	5.8	4.4	0.2	0.0	0.0	88.1	0.4
RE06-GB-010	GB3	22	0.25-0.5	Rim	0.051	40.54	0.009	0.016	4.31	0	21.64	33.27	0.086	0.407	0.01	0	0	100.338	Grossular	Grossular	970	0.9	6.8	3.7	0.1	0.0	0.0	88.2	0.3
RE06-GB-010	GB3	23	0.25-0.5	Core	0.355	39.69	0	0.014	5.05	0	19.44	33.94	0.133	0.406	0	0.01	0.07	99.108	Grossular	Grossular	980	0.9	3.9	10.5	1.0	0.0	0.0	83.1	0.5
RE06-GB-010	GB3	23	0.25-0.5	Rim	0.268	40.27	0	0.01	4.71	0	19.8	34.47	0.108	0.4	0.02	0	0.059	100.115	Grossular	Grossular	974	0.9	3.2	10.2	0.8	0.0	0.0	84.5	0.4
RE06-GB-010	GB3	24	0.25-0.5	Core	0.166	39.77	0	0	6.5	0	20.93	31.34	0.082	1.056	0	0	0.017	99.861	Grossular	Grossular	987	2.3	10.6	5.1	0.5	0.0	0.0	81.2	0.3
RE06-GB-010	GB3	24	0.25-0.5	Rim	0.188	39.49	0	0.01	6.61	0.016	20.89	31.29	0.105	0.924	0.045	0.009	0.015	99.592	Grossular	Grossular	988	2.0	11.0	4.8	0.5	0.0	0.0	81.1	0.4
RE06-GB-010	GB3	25	0.25-0.5	Core	0.353	39.9	0	0.01	5.82	0	20.99	32.05	0.166	0.613	0.02	0	0.054	99.975	Grossular	Grossular	986	1.3	9.4	4.7	1.0	0.0	0.0	82.9	0.6
RE06-GB-010	GB3	25	0.25-0.5	Core	0.368	39.92	0	0.01	5.72	0	21.1	32.01	0.181	0.591	0	0	0.052	99.951	Grossular	Grossular	985	1.3	9.5	4.2	1.1	0.0	0.0	83.2	0.7
RE06-GB-010	GB3	26	0.25-0.5	Core	0.435	40.69	0	0.021	6.46	0	19.1	34.26	0.107	0.249	0.01	0	0.019	101.351	Grossular	Grossular	977	0.5	4.8	13.4	1.2	0.0	0.0	79.6	0.4
RE06-GB-011	GB3	1	0.25-0.5	Core	0.498	42.62	0	0.065	7.15	3.97	20.48	4.49	22.1	0.314	0.032	0.011	0.049	101.778	Pyrope	Pyrope	985	0.6	11.9	3.0	1.3	7.1	3.9	0.0	72.2
RE06-GB-011	GB3	1	0.25-0.5	Core	0.476	42.75	0	0.064	7.06	4.08	20.56	4.53	21.92	0.3	0.026	0.011	0.046	101.823	Pyrope	Pyrope	986	0.6	12.1	2.5	1.3	7.8	3.5	0.0	72.3
RE06-GB-011	GB3	2	0.25-0.5	Core	0.269	41.8	0.007	0.06	7.23	7.72	18.06	5.49	20.3	0.422	0.012	0.01	0.045	101.426	Pyrope	Knorringite-Pyrope-series	995	0.8	13.5	1.3	0.7	12.2	9.7	0.0	61.9
RE06-GB-011	GB3	2	0.25-0.5	Rim	0.255	42.51	0	0.066	7.15	7.56	18.69	5.39	20.27	0.395	0.067	0	0.025	102.378	Pyrope	Knorringite-Pyrope-series	992	0.8	13.9	0.4	0.7	12.9	8.2	0.0	63.2
RE06-GB-011	GB3	3	0.25-0.5	Core	0.354	41.93	0	0.054	7.22	7.22	18.12	5.5	20.52	0.317	0.032	0.012	0.065	101.345	Pyrope	Knorringite-Pyrope-series	994	0.6	12.8	2.3	1.0	11.0	9.5	0.0	62.9
RE06-GB-011	GB3	3	0.25-0.5	Rim	0.483	42.1	0	0.067	7.2	7.18	18.11	5.44	20.17	0.281	0	0.008	0.046	101.086	Pyrope	Knorringite-Pyrope-series	993	0.6	13.1	2.0	1.3	11.0	9.3	0.0	62.7
RE06-GB-011	GB3	4	0.25-0.5	Core	0.203	42.34	0	0.049	7.33	4.89	20.52	4.76	21.02	0.389	0.023	0.008	0.04	101.572	Pyrope	Pyrope	991	0.8	14.0	0.5	0.5	11.1	2.5	0.0	70.6
RE06-GB-011	GB3	4	0.25-0.5	Rim	0.181	42.62	0	0.05	7.36	4.88	20.77	4.83	20.55	0.402	0.029	0	0.04	101.711	Pyrope	Pyrope	992	0.8	14.5	0.0	0.5	12.0	1.6	0.0	70.6
RE06-GB-011	GB3	5	0.25-0.5	Core	0.038	42.19	0	0.024	8.05	3.81	21.3	4.89	20.33	0.406	0	0	0.017	101.055	Pyrope	Pyrope	995	0.8	15.7	0.2	0.1	10.7	0.0	1.4	71.1
RE06-GB-011	GB3	5	0.25-0.5	Rim	0.027	42.87	0	0.032	8.09	3.7	21.66	4.89	19.93	0.411	0	0	0.024	101.635	Pyrope	Pyrope	993	0.8	16.1	0.0	0.1	10.3	0.0	2.2	70.5
RE06-GB-011	GB3	6	0.25-0.5	Core	0.218	42.73	0	0.054	8.15	2.5	22.02	4.28	21.06	0.371	0	0	0.024	101.408	Pyrope	Pyrope	990	0.7	15.0	1.3	0.6	6.9	0.0	2.1	73.3
RE06-GB-011	GB3	6	0.25-0.5	Rim	0.208	42.94	0.01	0.065	8.15	2.51	22.46	4.27	20.91	0.38	0.043	0	0.019	101.965	Pyrope	Pyrope	988	0.7	15.8	0.1	0.5	6.9	0.0	3.4	72.5
RE06-GB-011	GB3	7	0.25-0.5	Core	0.407	37.76	0	0.02	5.01	14.29	9.03	30.28	0.184	0.562	0	0	1.454	98.997	Cr-grossular	Grossular-Uvarovite-series	962	1.4	5.7	8.9	1.3	46.3	0.0	35.7	0.8
RE06-GB-011	GB3	7	0.25-0.5	Rim	0.341	38.12	0	0.027	5.32	14.94	8.71	30.02	0.169	0.667	0	0	1.48	99.794	Cr-grossular	Grossular-Uvarovite-series	955	1.6	6.3	9.0	1.0	48.1	0.0	33.2	0.7
RE06-GB-011	GB3	8	0.5-1.0	Core	0.054	40.15	0	0.012	23.55	0.084	22.6	6.1	8.64	1.52	0	0	0	102.71	Almandine	Almandine	980	3.2	48.6	0.2	0.2	0.2	0.0	15.6	31.9
RE06-GB-011	GB3	8	0.5-1.0	Rim	0.058	40.09	0	0	24.59	0.072	22.66	6.07	7.74	1.74	0.01	0.007	0.019	103.055	Almandine	Almandine	985	3.7	51.3	0.0	0.2	0.2	0.0	15.9	28.8
RE06-GB-011	GB3	9	0.5-1.0	Core	0.03	38.15	0	0.015	34.65	0	21.85	3.24	1.214	4.49	0	0	0.01	103.649	Almandine	Almandine	874	10.0	76.1	0.0	0.1	0.0	0.0	9.1	4.7
RE06-GB-011	GB3	9	0.5-1.0	Rim	0.024	38.94	0	0.016	34.55	0.028	22.28	3.25	1.218	4.49	0.01	0	0	104.806	Almandine	Almandine	871	10.0	76.0	0.0	0.1	0.1	0.0	9.1	4.8
RE06-GB-011	GB3	10	0.5-1.0	Core	0.021	38.49	0	0	24.29	0	19.89	17.36	0.096	1.104	0	0	0	101.251	Almandine	Almandine	840	2.5	48.3	7.5	0.1	0.0	0.0	41.3	0.4
RE06-GB-011	GB3	10	0.5-1.0	Rim	0.029	39.33	0	0.011	24.25	0	20.34	17.4	0.09	1.12	0	0	0.019	102.588	Almandine	Almandine	821	2.5	48.4	6.9	0.1	0.0	0.0	41.8	0.4
RE06-GB-011	GB3	11	0.5-1.0	Core	0.033	38.9	0	0.017	30.59	0	22.17	4.93	4.96	1.094	0	0	0.013	102.706	Almandine	Almandine	965	2.4	65.2	0.0	0.1	0.0	0.0	13.5	18.8
RE06-GB-011	GB3	11	0.5-1.0	Rim	0.052	39.85	0	0.023	29.71	0.016	22.36	6.13	4.8	1.25	0.016	0	0.018	104.226	Almandine	Almandine	964	2.7	62.5	0.3	0.1	0.0	0.0	16.2	18.1
RE06-GB-011	GB3	12	0.5-1.0	Core	0.018	38.57	0	0.052	32.54	0	21.75	4.44	2.71	2.97	0.014	0	0.013	103.076	Almandine	Almandine	928	6.5	70.4	0.2	0.1	0.0	0.0	12.3	10.5
RE06-GB-011	GB3	12	0.5-1.0	Core	0.026	38.43	0	0.124	32.54	0	21.59	4.47	2.77	2.97	0	0	0	102.92	Almandine	Almandine	929	6.5	69.8	0.7	0.1	0.0	0.0	12.2	10.7
RE06-GB-011	GB3	13	0.5-1.0	Core	0.2	39.66	0	0.029	26.68	0	22.35	6.81	6.37	0.556	0	0	0.049	102.704	Almandine	Almandine	978	1.2	56.3	0.0	0.6	0.0	0.0	18.0	24.0
RE06-GB-011	GB3	13	0.5-1.0	Rim	0.135	40.03	0	0.034	27.22	0.044	22.64	6.48	6.05	0.597	0.02	0	0.039	103.288	Almandine	Almandine	975	1.3	57.9	0.0	0.4	0.1	0.0	17.3	22.9
RE06-GB-011	GB3	14	0.5-1.0	Core	0	38.16	0	0.027	28.34	0	21.6	1.56	0.646	12.96	0	0	0	103.292	Almandine	Almandine-Spessartine-series	880	29.4	63.4	0.0	0.0	0.0	0.0	4.6	2.6
RE06-GB-011	GB3	14	0.5-1.0	Rim	0.017	38.58	0	0.065	27.83	0	22.19	1.69	0.565	13.33	0	0	0	104.267	Almandine	Almandine-Spessartine-series	882	30.2	62.3	0.0	0.0	0.0	0.0	5.1	2.3
RE06-GB-011	GB3	15	0.5-1.0	Core	0.077	38.82	0	0.009	30.82	0.04	22.2	7.13	2.19	2.02	0	0	0.014	103.32	Almandine	Almandine	922	4.5	67.1	0.0	0.2	0.1	0.0	19.6	8.5
RE06-GB-011	GB3	15	0.5-1.0	Core	0.046	39.05	0	0.022	30.83	0.031	22.12	7.16	2.22	2.04	0.01	0.013	0.012	103.554	Almandine	Almandine	922	4.5	66.9	0.0	0.1	0.1	0.0	19.8	8.6
RE06-GB-011	GB3	16	0.25-0.5	Core	0.039	38.36	0.01	0.028	33.79	0.01	21.38	7.44	0.917	0.848	0.021	0	0.008	102.851	Almandine	Almandine	865	1.9	73.5	1.0	0.1	0.0	0.0	19.9	3.6
RE06-GB-011	GB3	16	0.25-0.5	Core	0.024	38.57	0	0.01	33.81	0	21.67	7.49	0.937	0.846	0.01	0	0	103.368	Almandine	Almandine	864	1.9	73.5	0.4	0.1	0.0	0.0	20.5	3.6
RE06-GB-011	GB3	17	0.25-0.5	Core	0.066	38.89	0	0.007	31.37	0	21.69	7.75	2.36	0.743	0	0	0.01	102.887	Almandine	Almandine	912	1.6	67.6	0.8	0.2	0.0	0.0	20.6	9.1
RE06-GB-011	GB3	17	0.25-0.5	Rim	0.021	39.15	0	0.015	30.83	0.019	22.11	7.89	2.4	0.664	0.01	0.007	0.013	103.13	Almandine	Almandine	914	1.5	67.1	0.0	0.1	0.1	0.0	22.0	9.3
RE06-GB-011	GB3	18	0.25-0.5	Core	0.094	38.37	0	0.034	33.84	0.019	21.35	7.24	0.931	0.83	0.01	0	0.007	102.726	Almandine	Almandine	867	1.9	73.9	0.9	0.3	0.1	0.0	19.4	3.7
RE06-GB-011	GB3	18	0.25-0.5	Rim	0.088	38.74	0	0.02	33.77	0	21.74	7.35	0.87	0.809	0	0	0.01	103.397	Almandine	Almandine	864	1.8	74.0	0.0	0.3	0.0	0.0	20.5	3.4
RE06-GB-011	GB3	19	0.25-0.5	Core	0.041	38.94	0	0.132	31.16	0.018	21.9	6.48	3.59	0.735	0	0	0.01	103.006	Almandine	Almandine	941	1.6	66.3	0.4	0.1	0.1	0.0	17.8	13.7
RE06-GB-011	GB3	19	0.25-0.5	Rim	0.06	38.98	0	0.018	31.45	0	21.91	6.45	3.37	0.814	0.01	0.011	0.017	103.09	Almandine	Almandine	936	1.8	67.4	0.3	0.2	0.0	0.0	17.4	12.9
RE06-GB-011	GB3	20	0.25-0.5	Core	0.182	38.02	0	0.056	14.15	0	20.64	1.81	1.151	26.58	0	0.013	0.008	102.61	Almandine	Spessartine	945	60.1	29.8	2.7	0.5	0.0	0.0	2.2	4.6
RE06-GB-011	GB3	20	0.25-0.5	Rim	0.046	37.61	0	0.036	13.77	0	20.92	1.83	1.096	26.78	0.015	0	0.011	102.115	Almandine	Spessartine	952	60.4	29.8	1.3	0.1	0.0	0.0	4.0	4.4
RE06-GB-011	GB3	21	0.25-0.5	Core	0.107	39.5	0	0.014	27.71	0.081	21.92	6.44	5.64	1.6	0	0	0.02	103.032	Almandine	Almandine	983	3.4	57.8	1.3	0.3	0.2	0.0	15.7	21.3
RE06-GB-011	GB3	21	0.25-0.5	Rim	0.083	40.58	0	0.017	27.72	0.108	22.53	6.41	5.57	1.6	0.01	0	0.031	104.658	Almandine	Almandine	974	3.4	58.2	0.5	0.2	0.3	0.0	16.4	21.0
RE06-GB-011	GB3	22	0.25-0.5	Core	0.038	38.61	0	0.022	33.41	0	21.32	7.42	1.399	0.595	0.028	0	0.015	102.858	Almandine	Almandine	878	1.3	72.2	1.7	0.1	0.0	0.0	19.2	5.5
RE06-GB-011	GB3	22	0.25-0.5	Rim	0.012	39.37	0	0.026	33.17	0	22.02	7.32	1.304	0.622	0	0	0	103.844	Almandine	Almandine	877	1.4	72.8	0.0	0.0	0.0	0.0	20.7	5.1
RE06-GB-011	GB3	23	0.25-0.5	Core	0	38.22	0	0.051	21.71	0	21.63	2	2.27	16.88	0.016	0	0	102.777	Mn-almandine	Almandine-Spessartine-series	969	37.5	47.7	0.0	0.0	0.0	0.0	5.9	8.9
RE06-GB-011	GB3	24	0.25-0.5	Core	0.054	38.6	0	0.033	20.93	0.01	21.22	8.9	0.737	12.17	0	0	0	102.653	Mn-almandine	Almandine-Spessartine-series	912	27.1	44.7	1.9	0.2	0.0	0.0	23.1	2.9
RE06-GB-011	GB3	24	0.25-0.5	Rim	0.077	39.18	0	0.02	21.1	0	21.69	8.88	0.751	11.87	0	0	0	103.568	Mn-almandine	Almandine-Spessartine-series	908	26.4	45.6	0.9	0.2	0.0	0.0	23.9	2.9
RE06-GB-011	GB3	25	0.25-0.5	Core	0.051	37.84	0.01	0.025	23.13	0	21.39	0.432	1.121	19.12	0	0.007	0	103.126	Mn-almandine	Almandine-Spessartine-series	923	42.9	51.3	0.0	0.2	0.0	0.0	1.2	4.4
RE06-GB-011	GB3	25	0.25-0.5	Rim	0.028	38.39	0	0.015	22.69	0	22.1	1.58	1.035	18.19	0	0	0	104.028	Mn-almandine	Almandine-Spessartine-series	937	40.9	50.4	0.0	0.1	0.0	0.0	4.5	4.1
RE06-GB-011	GB3	26	0.25-0.5	Core	0.024	37.89	0	0.033	31.01	0.01	21.16	7.21	0.858	4.01	0.015	0.01	0	102.231	Spessartine	Almandine	894	8.9	67.3	1.2	0.1	0.0	0.0	19.1	3.4
RE06-GB-011	GB3	26	0.25-0.5	Rim	0.017	38.77	0	0.028	30.65	0.01	21.75	7.35	0.741	4.34	0	0.01	0	103.666	Spessartine	Almandine	889	9.6	66.8	0.3	0.0	0.0	0.0	20.4	2.9
RE06-GB-011	GB3	27	0.25-0.5	Core	0	37.72	0	0.039	31.13	0.02	21.97	0.993	1.77	9.1	0	0	0	102.742	Spessartine	Almandine	885	20.5	69.4	0.0	0.0	0.1	0.0	3.0	7.0
RE06-GB-011	GB3	27	0.25-0.5	Rim	0.013	38.24	0	0.037	31.04	0	22.4	0.998	1.76	9	0	0.011	0	103.498	Spessartine	Almandine	884	20.4	69.5	0.0	0.0	0.0	0.0	3.0	7.0
RE06-GB-011	GB3	28	0.25-0.5	Core	0.074	39.5	0	0.011	26.93	0.028	22.31	6.39	6.6	0.816	0.026	0	0.021	102.708	Spessartine	Almandine	982	1.7	56.4	0.2	0.2	0.1	0.0	16.8	24.7
RE06-GB-011	GB3	28	0.25-0.5	Rim	0.086	39.65	0	0.01	28.49	0.029	22.42	6.15	5.58	0.983	0.01	0	0.019	103.427	Spessartine	Almandine	975	2.1	60.2	0.0	0.2	0.1	0.0	16.4	21.0
RE06-GB-011	GB3	29	0.25-0.5	Core	0.026	37.46	0	0.041	26.6	0	21.61	1.273	0.561	15.07	0	0	0	102.641	Spessartine	Almandine-Spessartine-series	899	34.2	59.7	0.0	0.1	0.0	0.0	3.8	2.2
RE06-GB-011	GB3	29	0.25-0.5	Rim	0.013	37.57	0	0.019	26.54	0	21.72	1.129	0.536	15.33	0	0	0.017	102.874	Spessartine	Almandine-Spessartine-series	897	34.9	59.6	0.0	0.0	0.0	0.0	3.3	2.1
RE06-GB-011	GB3	30	0.25-0.5	Core	0.204	39.84	0	0.036	24.5	0.01	22.54	5.77	9.03	0.623	0.017	0	0.035	102.605	Spessartine	Almandine	975	1.3	50.3	0.1	0.6	0.0	0.0	14.6	33.1
RE06-GB-011	GB3	30	0.25-0.5	Rim	0.221	40.06	0	0.025	24.42	0	22.79	5.68	8.78	0.645	0.013	0	0.032	102.667	Spessartine	Almandine	975	1.4	50.8	0.0	0.6	0.0	0.0	14.6	32.6
RE06-GB-011	GB3	31	0.25-0.5	Core	0.034	38.98	0	0.019	16.76	0.043	21.83	4.23	4.35	16.77	0.025	0	0.009	103.05	Spessartine	Almandine-Spessartine-series	996	36.4	35.4	0.8	0.1	0.1	0.0	10.7	16.6
RE06-GB-011	GB3	31	0.25-0.5	Rim	0.05	39.27	0	0.022	16.82	0.059	21.95	4.25	4.07	16.77	0.01	0	0	103.271	Spessartine	Almandine-Spessartine-series	994	36.6	35.9	0.4	0.1	0.2	0.0	11.1	15.6
RE06-GB-011	GB3	32	0.25-0.5	Core	0.061	37.57	0	0.032	20.03	0	21.15	0.691	1.042	22.13	0.029	0	0	102.735	Spessartine	Almandine-Spessartine-series	934	49.7	44.1	0.4	0.2	0.0	0.0	1.5	4.1
RE06-GB-011	GB3	32	0.25-0.5	Rim	0.113	38.39	0	0.034	19.85	0	21.69	0.718	1.005	22.14	0.01	0.01	0	103.96	Spessartine	Almandine-Spessartine-series	931	49.8	44.0	0.0	0.3	0.0	0.0	1.9	4.0
RE06-GB-011	GB3	33	0.25-0.5	Core	0.05	38.86	0	0	32.33	0.019	21.75	5.78	3.27	1.04	0.021	0.014	0.025	103.16	Spessartine	Almandine	931	2.3	69.2	0.7	0.1	0.1	0.0	15.0	12.6
RE06-GB-011	GB3	33	0.25-0.5	Rim	0.046	38.96	0	0.014	32.27	0.027	21.78	5.73	3.08	1.059	0	0	0.024	102.99	Spessartine	Almandine	929	2.3	69.7	0.5	0.1	0.1	0.0	15.3	11.9
RE06-GB-011	GB3	34	0.5-1.0	Core	0.061	37.74	0	0.12	21.12	0	21.46	0.237	0.373	22.32	0.044	0.013	0	103.487	Spessartine	Almandine-Spessartine-series	905	50.3	47.0	0.0	0.2	0.0	0.0	1.1	1.5
RE06-GB-011	GB3	34	0.5-1.0	Rim	0.137	37.75	0	0.174	20.34	0	21.34	0.212	0.457	22.82	0.03	0	0	103.26	Spessartine	Almandine-Spessartine-series	908	51.4	45.3	0.0	0.4	0.0	0.0	1.1	1.8
RE06-GB-011	GB3	36	0.25-0.5	Core	0.135	40.06	0	0	2.84	0.013	21.71	34.02	0.127	0.242	0.01	0.009	0.01	99.177	Grossular	Grossular	960	0.5	4.5	2.4	0.4	0.0	0.0	91.6	0.5
RE06-GB-011	GB3	36	0.25-0.5	Rim	0.157	40.38	0	0	2.86	0	21.81	33.83	0.126	0.241	0	0	0.024	99.427	Grossular	Grossular	959	0.5	4.6	2.3	0.4	0.0	0.0	91.6	0.5
RE06-GB-011	GB3	37	0.25-0.5	Core	0.494	39.34	0	0.01	6.76	0	19.3	32.1	0.131	0.393	0.012	0	0.007	98.548	Grossular	Grossular	990	0.9	8.1	10.0	1.4	0.0	0.0	79.1	0.5
RE06-GB-011	GB3	37	0.25-0.5	Rim	0.498	39.66	0	0.011	6.76	0	19.35	32.36	0.12	0.382	0.01	0	0.011	99.162	Grossular	Grossular	990	0.8	7.8	10.3	1.4	0.0	0.0	79.1	0.5
RE06-GB-011	GB3	38	0.25-0.5	Core	0.256	39.45	0	0.032	6.76	0	19.92	31.86	0.137	0.578	0	0.022	0.013	99.027	Grossular	Grossular	990	1.3	9.1	8.4	0.7	0.0	0.0	80.0	0.5
RE06-GB-011	GB3	38	0.25-0.5	Rim	0.215	40.04	0	0.01	6.99	0	20.05	31.7	0.139	0.621	0	0	0.023	99.788	Grossular	Grossular	990	1.4	9.3	8.7	0.6	0.0	0.0	79.4	0.5
RE06-GB-011	GB3	39	0.25-0.5	Core	0.474	40.02	0	0.012	4.81	0	21.07	31.61	0.138	0.857	0.05	0	0.016	99.058	Grossular	Grossular	982	1.9	8.1	3.6	1.4	0.0	0.0	84.4	0.5
RE06-GB-011	GB3	39	0.25-0.5	Rim	0.445	40.37	0	0.024	4.84	0	21.37	32.26	0.129	0.901	0.041	0.011	0.02	100.412	Grossular	Grossular	979	2.0	8.0	3.6	1.3	0.0	0.0	84.7	0.5
RE06-GB-011	GB3	40	0.25-0.5	Core	0.326	39.7	0	0.01	6.42	0	20.19	32.27	0.107	0.195	0	0.008	0.038	99.264	Grossular	Grossular	988	0.4	8.9	7.5	0.9	0.0	0.0	81.8	0.4
RE06-GB-011	GB3	40	0.25-0.5	Rim	0.355	40.17	0	0.014	5.71	0.02	20.6	32.36	0.123	0.202	0	0	0.041	99.595	Grossular	Grossular	985	0.4	8.2	6.2	1.0	0.1	0.0	83.5	0.5
RE06-GB-011	GB3	41	0.25-0.5	Core	0.063	40.22	0	0.013	3.92	0	20.91	33.83	0.136	0.162	0	0	0.009	99.262	Grossular	Grossular	970	0.4	4.5	5.9	0.2	0.0	0.0	88.5	0.5
RE06-GB-011	GB3	41	0.25-0.5	Rim	0.12	40.51	0	0.01	4	0	20.97	33.8	0.126	0.209	0	0.013	0.024	99.783	Grossular	Grossular	969	0.5	4.6	5.9	0.3	0.0	0.0	88.1	0.5
RE06-GB-011	GB3	42	0.25-0.5	Core	0.95	39.6	0	0.02	2.91	0	21.01	34.39	0.149	0.117	0	0	0.041	99.187	Grossular	Grossular	961	0.3	4.3	2.9	2.7	0.0	0.0	89.3	0.6
RE06-GB-011	GB3	42	0.25-0.5	Rim	0.269	39.93	0	0.011	5.36	0	20.39	32.74	0.142	0.294	0	0.007	0.036	99.179	Grossular	Grossular	984	0.7	7.0	7.0	0.8	0.0	0.0	84.1	0.6
RE06-GB-011	GB3	43	0.25-0.5	Core	0.49	39.86	0	0.013	5.21	0.013	20.12	33.06	0.074	0.28	0	0	0.066	99.185	Grossular	Grossular	983	0.6	6.3	7.4	1.4	0.0	0.0	83.9	0.3
RE06-GB-011	GB3	43	0.25-0.5	Rim	0.521	40.14	0	0.019	5.12	0.016	20.56	32.7	0.084	0.272	0	0	0.089	99.52	Grossular	Grossular	982	0.6	7.2	5.9	1.5	0.0	0.0	84.4	0.3
RE06-GB-011	GB3	44	0.25-0.5	Core	0.389	39.02	0	0.025	8.7	0.105	17.22	31.76	0.322	0.355	0	0	0.108	98.005	Grossular	Grossular	991	0.8	7.3	18.0	1.2	0.3	0.0	71.1	1.3
RE06-GB-011	GB3	44	0.25-0.5	Core	0.336	39.21	0	0.023	8.04	0.016	17.89	32.01	0.336	0.377	0	0	0.063	98.302	Grossular	Grossular	992	0.8	7.1	16.0	1.0	0.0	0.0	73.8	1.3
RE06-GB-011	GB3	45	0.25-0.5	Core	0.162	39.78	0	0.016	8.01	0	20.36	30.06	0.094	0.839	0.023	0	0.084	99.429	Grossular	Grossular	989	1.9	12.9	7.0	0.5	0.0	0.0	77.4	0.4
RE06-GB-011	GB3	45	0.25-0.5	Rim	0.234	39.91	0	0.014	5.9	0	21.33	31.78	0.162	0.199	0.01	0.016	0.083	99.638	Grossular	Grossular	984	0.4	10.5	3.4	0.7	0.0	0.0	84.4	0.6
RE06-GB-011	GB3	35a	0.25-0.5	Core	0.145	37.6	0	0.04	14.98	0	21.17	0.478	0.912	26.9	0	0	0	102.225	Spessartine	Spessartine	925	61.1	33.6	0.0	0.4	0.0	0.0	1.1	3.6
RE06-GB-011	GB3	35b	0.25-0.5	Core	0.154	37.51	0	0.039	15.58	0	21.07	0.456	0.742	26.56	0	0	0.009	102.12	Spessartine	Spessartine	916	60.5	35.0	0.0	0.5	0.0	0.0	1.1	3.0
RE06-GB-011	GB3	35b	0.25-0.5	Core	0.166	37.77	0	0.027	15.39	0	21.47	0.468	0.72	26.5	0	0	0	102.512	Spessartine	Spessartine	917	60.8	34.8	0.0	0.5	0.0	0.0	1.0	2.9

[1] Physical grain types identified during heavy-mineral indicator processing, some of which were identified by semi-quantive EDS analysis.
[2] Geochemical grain types identified by entering EMPA data from this study into the program MinIdent-Win (Smith and Higgins, 2001). The score is a "matching index" calculation of mineral identification probability where a score of 1000 represents a perfect match.
[3] Stoichiometric garnet end member calculations based on EMPA data from this study. Values are in per cent and total 100%.

Table 7. Electron microprobe analytical results for non-garnet kimberlite-indicator minerals.

Sample ID	Probe mount	Grain ID	Grain size (mm)	Probe spot	TiO_2	SiO_2	K_2O	Na_2O	FeO	Cr_2O_3	Al_2O_3	CaO	MgO	MnO	P_2O_5	NiO	V_2O_3	Total	Grain type (physical ID)[1]	Grain type (geochemical ID)[2]	
																					Score
RE06-GB-001	GB3	1	0.25-0.5	Core	0.398	0.042	0	0	33.08	59.03	5.92	0.014	3.49	0.521	0	0	0.179	102.673	Chromite	Chromite-hercynite-series	979
RE06-GB-001	GB3	1	0.25-0.5	Core	0.069	54.98	0	0.623	3.49	0.567	1.005	21.83	16.46	0.12	0	0.047	0.01	99.2	Clinopyroxene	Diopside	954
RE06-GB-003	GB3	1	0.25-0.5	Core	55	0.054	0	0.046	28.88	1.053	0.637	0.028	15.29	0.289	0.01	0.118	0.517	101.922	Ilmenite	Armalcolite	841
RE06-GB-003	GB3	1	0.25-0.5	Core	0.21	0.031	0	0	20.88	32.79	34.9	0.01	13.72	0.29	0	0.129	0.134	103.094	Chromite	MagnesioChromite-spinel-series	905
RE06-GB-003	GB3	2	0.25-0.5	Core	0.157	0.033	0	0	23.61	33.7	32.32	0.015	12.27	0.338	0.027	0.191	0.113	102.775	Chromite	MagnesioChromite-spinel-series	833
RE06-GB-004	GB3	1	0.25-0.5	Core	0.299	55.02	0.04	1.59	3.6	0.737	1.95	18.8	17.19	0.099	0.01	0	0.052	99.387	Clinopyroxene	Diopside	947
RE06-GB-004	GB3	2	0.25-0.5	Core	0.111	51.65	0	0.553	3.56	1.112	2.59	20.98	16.65	0.133	0.019	0.07	0.027	97.454	Clinopyroxene	Diopside	974
RE06-GB-004	GB3	1	0.25-0.5	Core	0.822	0.056	0.01	0.021	34.59	46.98	12.88	0.017	4.79	0.568	0.022	0.059	0.138	100.953	Chromite	Chromite-hercynite-series	965
RE06-GB-004	GB3	1	0.25-0.5	Core	52.48	0.062	0	0.034	33.47	0.355	0.656	0.04	12.61	0.278	0	0.057	0.526	100.568	Ilmenite	Pseudobrookite	898
RE06-GB-005	GB3	1	0.25-0.5	Core	0.017	53.46	0	0.459	4.13	0.425	1.095	22.19	16.47	0.142	0	0.031	0.013	98.431	Clinopyroxene	Diopside	961
RE06-GB-005	GB3	2	0.25-0.5	Core	0.074	52.73	0	0.46	3.14	1.115	1.489	21.69	16.57	0.174	0	0.145	0	97.587	Clinopyroxene	Diopside	965
RE06-GB-005	GB3	1	0.25-0.5	Core	7.9	31.26	0	0.148	22.64	0	1.98	30.61	0.688	0.262	0	0	0.137	95.625	Chromite	Andradite-schorlomite-series	968
RE06-GB-005	GB3	1	0.25-0.5	Core	49.39	0.022	0	0.01	47.32	0.019	0.017	0	0.269	2.43	0	0.01	0.262	99.749	Ilmenite	Ilmenite	983
RE06-GB-005	GB3	2	0.25-0.5	Core	51.58	0.062	0	0.009	35.44	0.235	0.64	0.025	11.92	0.245	0	0.057	0.518	100.73	Ilmenite	Pseudobrookite	910
RE06-GB-005	GB3	3	0.25-0.5	Core	47.92	0.028	0	0.044	39.84	0.219	0.419	0.014	10.32	0.268	0	0.027	0.558	99.656	Ilmenite	Pseudobrookite	910
RE06-GB-005	GB3	4	0.25-0.5	Core	54.43	0.052	0	0.042	29.55	1.143	0.486	0.02	14.76	0.306	0	0.097	0.483	101.369	Ilmenite	Pseudobrookite	842
RE06-GB-008	GB3	1	0.25-0.5	Core	0.025	53.72	0	0.466	3.07	0.982	1.268	22.55	16.42	0.129	0.012	0.06	0.018	98.719	Clinopyroxene	Diopside	961
RE06-GB-008	GB3	1	0.25-0.5	Core	0.031	0.035	0	0	17.77	15.09	49.82	0.01	17.11	0.186	0.026	0.279	0.046	100.404	Chromite	MagnesioChromite-spinel-series	910
RE06-GB-008	GB3	2	0.25-0.5	Core	0.278	0.045	0	0	29.55	34.56	27.79	0.01	9.06	0.372	0	0.175	0.16	102	Chromite	hercynite	811
RE06-GB-008	GB3	1	0.25-0.5	Core	51.15	0.023	0	0.01	36.58	0.419	0.196	0.021	11.02	0.309	0	0.032	0.518	100.278	Ilmenite	Pseudobrookite	917
RE06-GB-008	GB3	2	0.25-0.5	Core	52.26	0.042	0	0.032	30.77	2.14	0.301	0.025	13.88	0.305	0.01	0.15	0.524	100.44	Ilmenite	Pseudobrookite	849
RE06-GB-008	GB3	3	0.25-0.5	Core	52.55	0.015	0	0.033	45.62	0.055	0.011	0.012	1.236	0.524	0	0	0.587	100.643	Ilmenite	Ilmenite	986
RE06-GB-008	GB3	4	0.25-0.5	Core	53.01	0.05	0	0.043	31.35	1.22	0.749	0.029	13.75	0.257	0.01	0.098	0.521	101.087	Ilmenite	Pseudobrookite	869
RE06-GB-009	GB3	1	0.25-0.5	Core	0.233	50.87	0	1.044	2.49	1.216	5	20.66	15.74	0.084	0.01	0.041	0.037	97.424	Clinopyroxene	Diopside	985
RE06-GB-010	GB3	1	0.25-0.5	Core	0.235	51.61	0	1.67	2.48	1.16	5.81	20.23	15.12	0.079	0.012	0.029	0.047	98.483	Clinopyroxene	Diopside	986
RE06-GB-010	GB3	2	0.25-0.5	Core	0.198	53.62	0	2.06	5.05	0.905	1.847	19.86	14.89	0.139	0.019	0.041	0.009	98.638	Clinopyroxene	Diopside	971
RE06-GB-010	GB3	3	0.25-0.5	Core	0.053	53.13	0	0.571	4.46	0.706	1.021	22.5	15.68	0.2	0.029	0.089	0.014	98.452	Clinopyroxene	Diopside	968
RE06-GB-010	GB3	4	0.25-0.5	Core	0.086	52.88	0	0.695	3.17	0.704	1.612	22.51	16.07	0.142	0.017	0.088	0.013	97.987	Clinopyroxene	Diopside	970
RE06-GB-010	GB3	5	0.25-0.5	Core	0.083	51.68	0	1.238	2.38	1.167	4.71	21.09	15.52	0.081	0.01	0.023	0.034	98.016	Clinopyroxene	Diopside	985
RE06-GB-011	GB3	1	0.25-0.5	Core	0.218	52.36	0	1.261	4.09	1.208	2.54	21.23	14.82	0.111	0.038	0.047	0.027	97.951	Clinopyroxene	Diopside	985
RE06-GB-011	GB3	2	0.25-0.5	Core	0.257	51.25	0	0.684	4.08	0.821	4.11	21.66	14.84	0.146	0.014	0	0.02	97.882	Clinopyroxene	Diopside	993
RE06-GB-011	GB3	3	0.25-0.5	Core	0.178	52.23	0	0.929	3.12	0.841	1.808	21.88	16.19	0.11	0.018	0.052	0.044	97.4	Clinopyroxene	Diopside	972
RE06-GB-011	GB3	4	0.25-0.5	Core	0.094	55.03	0	0.646	8.64	0.377	0.673	7.99	25.43	0.217	0	0.062	0.01	99.169	Clinopyroxene	Magnocummingtonite	987
RE06-GB-011	GB3	5	0.25-0.5	Core	0.045	51.75	0	0.798	4.87	0.822	1.27	21.48	15.46	0.163	0	0.077	0.008	96.743	Clinopyroxene	Diopside	973
RE06-GB-011	GB3	6	0.25-0.5	Core	0.3	53.26	0	0.722	3.99	0.859	2.07	20.4	17.07	0.113	0.01	0.079	0.018	98.891	Clinopyroxene	Diopside	963
RE06-GB-011	GB3	1	0.25-0.5	Core	0.055	0.049	0	0	28.55	42.15	23.46	0	6.81	0.48	0.01	0.099	0.267	101.93	Chromite	Chromite-hercynite-series	833
RE06-GB-011	GB3	2	0.25-0.5	Core	0.212	0.052	0	0.024	25.67	52.51	13.77	0	8.7	0.626	0	0.082	0.102	101.747	Chromite	Chromite-MagnesioChromite-series	993
RE06-GB-011	GB3	1	0.25-0.5	Core	47.95	0.049	0	0.032	36.73	3.41	0.373	0.02	10.75	0.306	0	0.12	0.517	100.256	Ilmenite	Pseudobrookite	865
RE06-GB-006	GB2	1	0.25-0.5	Core	0.094	0.046	0	0.019	4.3	0.131	68.28	0.01	24.33	0.045	0.01	0.008	0.143	97.417	Uvarovite	Spinel	978
RE06-GB-006	GB2	1	0.25-0.5	Rim	0.098	0.024	0.007	0.011	4.24	0.115	67.03	0.014	24.57	0.039	0.01	0.01	0.137	96.305	Uvarovite	Spinel	983

[1] Physical grain types identified during heavy-mineral indicator processing, some of which were identified by semi-quantive EDS analysis.

[2] Geochemical grain types identified by entering EMPA data from this study into the program MinIdent-Win (Smith and Higgins, 2001). The score is a "matching index" calculation of mineral identification probability where a score of 1000 represents a perfect match.

Table 8. Electron microprobe analytical results for garnet from the garnetiferous pelitic gneiss erratic.

Sample ID	Probe mount	Grain ID	Grain size (mm)	Probe spot	TiO_2	SiO_2	K_2O	Na_2O	FeO	Cr_2O_3	Al_2O_3	CaO	MgO	MnO	P_2O_5	NiO	V_2O_3	Total	Grain type (physical ID)[1]	Grain type (geochemical ID)[2]		Stoichiometric garnet end member calculations (%)[3]							
																					Score	Spess	Almand	Andr	Ti-Andr	Uvar	Knorr	Gross	Pyrope
Pelitic gneiss	Rock slab	1	>5	Core to rim	0.023	38.765	0	0	33.49	0.015	21.672	1.539	6.051	0.522	0.037	0	0.009	102.123		Almandine	975	1.1	71.4	1.0	0.1	0.0	0.0	3.1	23.2
Pelitic gneiss	Rock slab	1	>5	Core to rim	0.009	38.337	0	0	33.456	0	21.585	1.533	6.008	0.535	0.028	0.006	0.002	101.499		Almandine	976	1.2	71.5	0.8	0.0	0.0	0.0	3.4	23.1
Pelitic gneiss	Rock slab	1	>5	Core to rim	0.024	38.39	0.002	0	33.457	0.005	21.768	1.545	6.045	0.527	0.047	0	0.001	101.811		Almandine	976	1.1	71.5	0.2	0.1	0.0	0.0	3.9	23.1
Pelitic gneiss	Rock slab	1	>5	Core to rim	0.024	38.544	0	0	33.488	0	21.61	1.537	6.151	0.544	0.05	0	0	101.948		Almandine	976	1.2	71.1	1.1	0.1	0.0	0.0	3.1	23.5
Pelitic gneiss	Rock slab	1	>5	Core to rim	0.016	38.46	0	0	33.656	0.021	21.778	1.509	6.035	0.555	0.061	0.003	0.015	102.109		Almandine	975	1.2	71.7	0.3	0.0	0.1	0.0	3.7	23.0
Pelitic gneiss	Rock slab	1	>5	Core to rim	0.008	38.688	0.001	0.019	33.641	0.006	21.747	1.447	6.004	0.527	0.07	0.007	0.007	102.172		Almandine	975	1.1	71.8	0.7	0.0	0.0	0.0	3.3	23.0
Pelitic gneiss	Rock slab	1	>5	Core to rim	0.024	38.469	0	0.026	33.815	0	21.738	1.386	6.03	0.569	0.092	0	0.014	102.163		Almandine	974	1.2	71.9	0.5	0.1	0.0	0.0	3.3	23.0
Pelitic gneiss	Rock slab	1	>5	Core to rim	0	38.578	0	0.11	33.912	0.008	21.766	1.323	5.98	0.545	0.045	0	0.015	102.282		Almandine	973	1.2	71.9	0.6	0.0	0.0	0.0	3.5	22.7
Pelitic gneiss	Rock slab	1	>5	Core to rim	0.02	38.44	0	0.016	34.273	0.005	21.586	1.2	5.926	0.546	0.021	0.013	0.003	102.049		Almandine	972	1.2	72.8	1.0	0.1	0.0	0.0	2.3	22.6
Pelitic gneiss	Rock slab	1	>5	Core to rim	0.031	38.509	0.004	0.05	34.316	0	21.732	1.087	5.709	0.554	0.063	0	0	102.055		Almandine	971	1.2	73.6	0.4	0.1	0.0	0.0	2.8	21.9
Pelitic gneiss	Rock slab	2	>5	Core to rim	0	38.648	0	0	32.435	0.007	21.804	2.832	5.668	0.687	0.007	0.004	0.019	102.111	These grains	Almandine	982	1.5	69.1	0.5	0.0	0.0	0.0	7.2	21.6
Pelitic gneiss	Rock slab	2	>5	Core to rim	0.033	38.678	0	0.011	32.49	0.02	21.726	2.712	5.652	0.673	0.022	0	0.012	102.029	were not picked	Almandine	982	1.5	69.4	0.7	0.1	0.1	0.0	6.7	21.6
Pelitic gneiss	Rock slab	2	>5	Core to rim	0.013	38.509	0	0	32.767	0.022	21.522	2.198	5.833	0.695	0	0	0.027	101.586	via heavy	Almandine	980	1.5	70.0	1.2	0.0	0.1	0.0	4.8	22.4
Pelitic gneiss	Rock slab	2	>5	Core to rim	0.002	38.107	0	0.006	33.139	0.006	22.585	1.81	5.982	0.688	0.004	0.007	0.025	102.361	mineral	Almandine	977	1.5	70.8	0.0	0.0	0.0	0.0	5.0	22.8
Pelitic gneiss	Rock slab	2	>5	Core to rim	0.017	38.063	0.007	0.001	33.34	0	22.632	1.724	6.074	0.665	0.056	0	0	102.579	processing, but	Almandine	976	1.4	70.9	0.0	0.0	0.0	0.0	4.7	23.0
Pelitic gneiss	Rock slab	2	>5	Core to rim	0.012	38.015	0	0.088	33.387	0	22.506	1.572	5.977	0.686	0.009	0.005	0.008	102.265	analyzed in situ	Almandine	976	1.5	71.1	0.0	0.0	0.0	0.0	4.7	22.7
Pelitic gneiss	Rock slab	2	>5	Core to rim	0.023	37.909	0	0.033	33.549	0.009	22.511	1.52	5.934	0.687	0	0.013	0.016	102.204	by EMPA on thin	Almandine	975	1.5	71.6	0.0	0.1	0.0	0.0	4.2	22.6
Pelitic gneiss	Rock slab	2	>5	Core to rim	0.023	38.161	0	0.028	33.674	0.028	22.518	1.427	5.959	0.652	0.043	0.01	0.013	102.536	sections. Thus,	Almandine	974	1.4	71.9	0.0	0.1	0.1	0.0	3.9	22.7
Pelitic gneiss	Rock slab	2	>5	Core to rim	0.019	37.722	0	0	34.152	0.01	22.365	1.128	5.769	0.678	0.055	0	0.015	101.913	this column is	Almandine	971	1.5	73.3	0.0	0.1	0.0	0.0	3.0	22.1
Pelitic gneiss	Rock slab	2	>5	Core to rim	0.023	37.957	0	0.002	34.511	0.035	22.3	1.093	5.633	0.693	0.032	0.022	0.012	102.313	blank.	Almandine	970	1.5	74.0	0.0	0.1	0.1	0.0	2.8	21.5
Pelitic gneiss	Rock slab	3	>5	Core to rim	0.007	38.147	0.004	0.032	32.632	0.023	22.46	1.944	5.646	1.387	0.004	0	0.015	102.301		Almandine	981	3.0	69.9	0.0	0.0	0.1	0.0	5.4	21.6
Pelitic gneiss	Rock slab	3	>5	Core to rim	0.018	38.268	0.001	0.177	32.938	0	22.583	1.773	5.624	1.319	0	0	0.026	102.727		Almandine	978	2.8	70.1	0.0	0.1	0.0	0.0	5.7	21.3
Pelitic gneiss	Rock slab	3	>5	Core to rim	0.03	38.023	0	0.054	33.028	0.02	22.538	1.765	5.599	1.189	0.036	0	0.007	102.289		Almandine	978	2.6	70.9	0.0	0.1	0.1	0.0	5.0	21.4
Pelitic gneiss	Rock slab	3	>5	Core to rim	0.028	37.993	0	0.029	33.366	0.003	22.473	1.596	5.757	1.134	0.029	0.008	0.008	102.424		Almandine	977	2.4	71.2	0.0	0.1	0.0	0.0	4.4	21.9
Pelitic gneiss	Rock slab	3	>5	Core to rim	0.035	38.201	0	0.01	33.447	0	22.531	1.558	5.806	1.063	0.034	0.001	0.007	102.693		Almandine	976	2.3	71.3	0.0	0.1	0.0	0.0	4.2	22.1
Pelitic gneiss	Rock slab	3	>5	Core to rim	0.009	38.252	0	0.023	33.593	0.004	22.445	1.509	5.721	0.98	0.036	0.006	0.017	102.595		Almandine	975	2.1	71.8	0.0	0.0	0.0	0.0	4.2	21.8
Pelitic gneiss	Rock slab	3	>5	Core to rim	0.015	37.946	0	0	33.737	0	22.524	1.43	5.664	0.907	0.03	0.015	0.023	102.291		Almandine	974	2.0	72.4	0.0	0.0	0.0	0.0	3.9	21.7
Pelitic gneiss	Rock slab	3	>5	Core to rim	0.01	38.07	0.003	0.052	33.848	0.002	22.407	1.366	5.568	0.845	0.043	0.003	0.031	102.248		Almandine	974	1.8	72.8	0.0	0.0	0.0	0.0	4.0	21.3
Pelitic gneiss	Rock slab	3	>5	Core to rim	0.003	37.899	0	0.039	34.258	0.019	22.609	1.183	5.643	0.812	0.021	0	0.014	102.5		Almandine	971	1.8	73.3	0.0	0.0	0.1	0.0	3.4	21.5
Pelitic gneiss	Rock slab	3	>5	Core to rim	0.015	37.943	0	0.015	34.526	0.03	22.37	1.08	5.494	0.814	0.041	0	0.022	102.35		Almandine	970	1.8	74.2	0.0	0.0	0.1	0.0	2.9	21.0

[1] Geochemical grain types identified by entering EMPA data from this study into the program MinIdent-Win (Smith and Higgins, 2001). The score is a "matching index" calculation of mineral identification probability where a score of 1000 represents a perfect match.

[2] Stoichiometric garnet end member calculations based on EMPA data from this study. Values are in per cent and total 100%.

Appendix 4 – Garnet Distribution in Saskatchewan

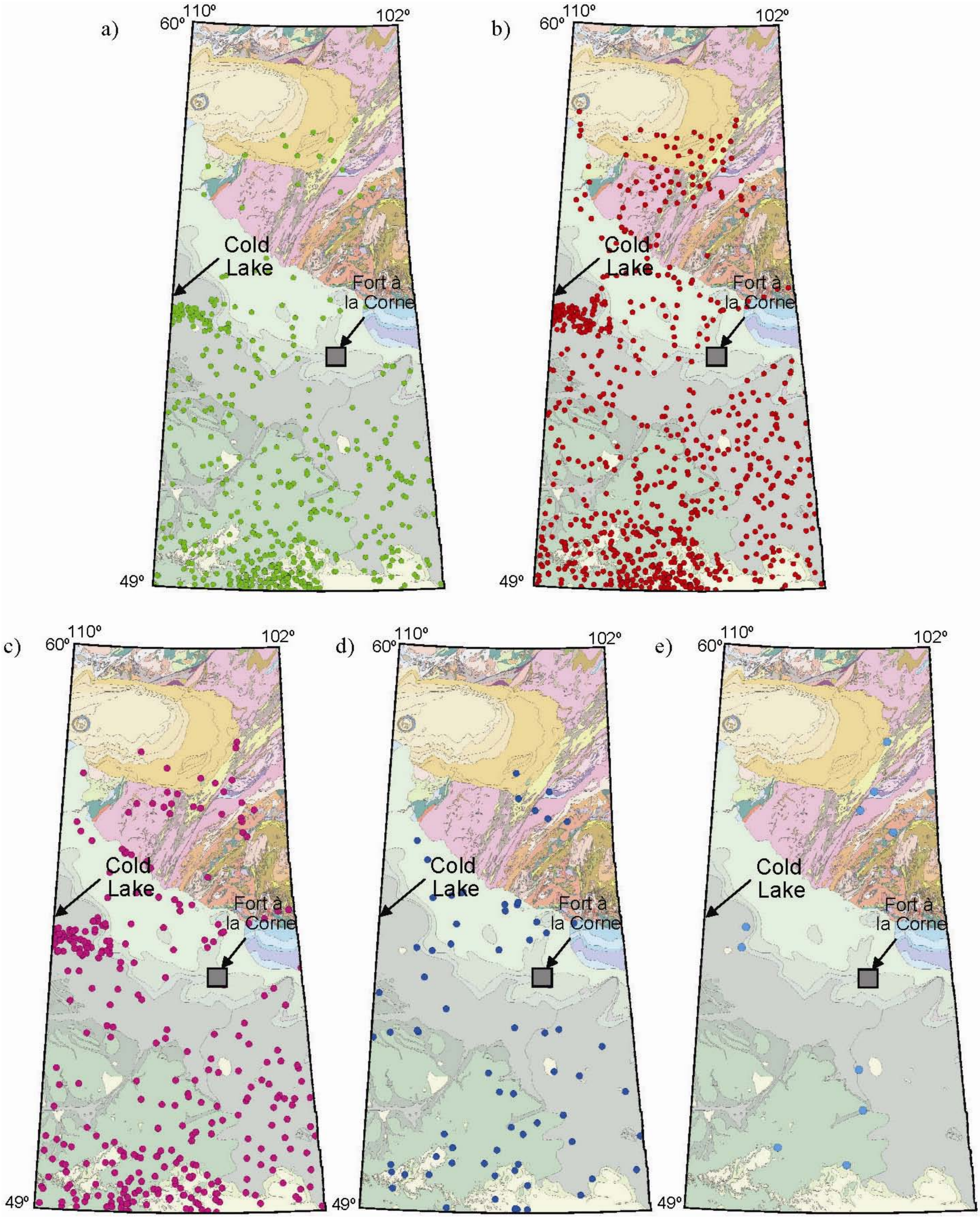

Figure 25. Distribution of garnet species in Saskatchewan: a) pyrope, b) almandine, c) grossular, d) spessartine and e) andradite. Compilation from the Web-based database of Saskatchewan kimberlite-indicator minerals (Swanson et al., 2007).