Mineral chemistry, hyperspectral analysis and applications for regional exploration at the Hemlo Gold deposit, Ontario, Canada

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ABSTRACT

The Barrick Gold owned Hemlo Au deposit is a world class Archean Au deposit situated in Northern Ontario, Canada with historic production of >21 Moz of Au over 32 years of continuous operation. The deposit has a strike length of ~3 km with a well-documented alteration footprint surrounding mineralization. Laser ablation inductively coupled plasma mass spectrometry (LA-ICP-MS) analyses of epidote, chlorite and pyrite from within and surrounding the Hemlo gold deposit have identified major and trace element variations in mineral chemistry that allow for the discrimination of deposit-proximal and deposit-distal signatures. Short wave infrared (SWIR) analysis of epidote and chlorite from around the Hemlo deposit can discriminate between end-member compositions of epidote and chlorite and is a useful tool for interpreting mineral paragenesis.

Epidote varies in chemistry surrounding the deposit with the highest concentrations of As and Sb proximal to the mineralized zones and can be detected at anomalous values up to 1.5 km further than the documented deposit footprint. Using LA-ICP-MS, As and Sb can be detected at significantly higher concentrations (more than an order of magnitude) within epidote than in traditional whole rock geochemistry, allowing for better targeting of the deposit footprint. Chlorite also displayed variation in trace elements with deposit-proximal chlorite displaying exponentially higher Ti/Sr and V/Co values than deposit-distal and intrusion-related chlorite. The Ti/Sr ratio for chlorite expanded the geochemical footprint of the Hemlo deposit by up to 1 km. Pyrite displayed anomalous enrichments in a number of elements, including Au, Ag, As, Sb, Bi, Te, Mo and W, that could be detected at elevated concentrations proximal to the deposit. Gold, Te and As proved to be the most effective pathfinder elements in pyrite as they were detected at

anomalous concentrations up to 2.5 km from the deposit and were detectable in pyrite at much greater concentrations relative to whole rock geochemistry.

Several syn-to post-tectonic intrusions that surround the deposit were evaluated using epidote and chlorite chemistry for their potential to create false positive anomalies for mineralization. The distal intrusions of interest displayed no distinctive variation in epidote or chlorite chemistry and did not display false positive anomalies. Intrusion related epidote contain consistently low As and Sb levels relative to deposit epidote was also displays elevated Fe/Al values. Intrusion related chlorite displayed low Ti/Sr and V/Co values relative to the deposit chlorite and was also found to be more enriched in Fe relative to deposit-proximal chlorite.

Variations in chlorite Fe-Mg content can be tracked spectrally using the position of the diagnostic 2250 nm absorption feature. Chlorite displays a range of wavelengths from 2240 – 2256 nm throughout the Hemlo district. Chlorite with lower wavelengths (< 2248 nm) display lower average Fe/Mg (<1) values whereas chlorite with longer wavelengths (> 2252 nm) display higher Fe/Mg (>1) values. Spectral variations 1550 nm absorption feature of epidote can be used to track compositional variations between the Fe-(epidote) and Al-(clinozoisite) epidote group endmembers. Epidote throughout the Hemlo area displayed a range of wavelengths from 1540 – 1564 nm. These variations in spectral features of epidote could be correlated to epidote major element variations with wavelengths > 1550 nm having on average lower Fe/Al values (< 0.8), whereas wavelengths < 1448 nm displayed average Fe/Al values of ~1.

Trace element mineral chemistry in epidote, chlorite and pyrite expanded and enhanced the Hemlo deposit footprint. The results of this study demonstrate the application of mineral chemistry as a tool for vectoring towards Au mineralization at the Hemlo deposit.

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Table of Contents

List of Figures

List of Tables

Chapter 1: Introduction

1.1 **Objectives**

This study was undertaken as part of the AMIRA International P1153 project, funded by twelve mining and exploration companies. Project sponsors include: Barrick Gold, BHP, Boliden, Codelco, First Quantum Minerals, Freeport-McMoRan, MMG Limited, Mount Isa Mines, Newcrest, Quantum Pacific Exploration, Rio Tinto and Teck Resources. The P1153 project expanded on and applied techniques developed in previous research programs (P765, P765A and P1060). Previous research projects focused on, and were successful in developing, mineral chemistry vectors within porphyry copper and epithermal systems, expanding the recognizable alteration footprint.

The purpose of this study was to take the methods and tools developed in previous AMIRA projects and apply them to an Archean gold deposit to determine if these techniques could be used as an exploration tool. The Barrick owned Hemlo Au (Mo) deposit was selected for this study, as it is a world class Archean gold deposit, containing over 21 Moz, that has been well documented and studied. One objective of this study was to evaluate the potential for epidote, chlorite and pyrite chemistry to be used as vectors for mineralization. Hemlo has a well documented alteration footprint and the second objective was to determine if the deposit footprint could be extended using mineral chemistry. The Hemlo deposit is surrounded by several syn- to post-mineralization intrusions, using epidote and chlorite mineral chemistry these intrusions were evaluated for their potential to create false positive anomalies or create interferences for any signature that may be present at the deposit.

This study focused on epidote, chlorite and pyrite as they are abundant around the Hemlo gold deposit and have proved effective in previous AMIRA studies (Cooke et al., 2014;

Wilkinson et al., 2015). This was combined with a Corescan study of the samples. Corescan is a hyperspectral technique that examines the spectral characteristics of minerals. Which provided information regarding mineral paragenesis and composition.

1.2 **Study Location and Physiography**

The Barrick owned Hemlo gold deposit is situated on the north-eastern shore of Lake Superior, approximately 335km east of Thunder Bay, Ontario (Fig. 1.1).

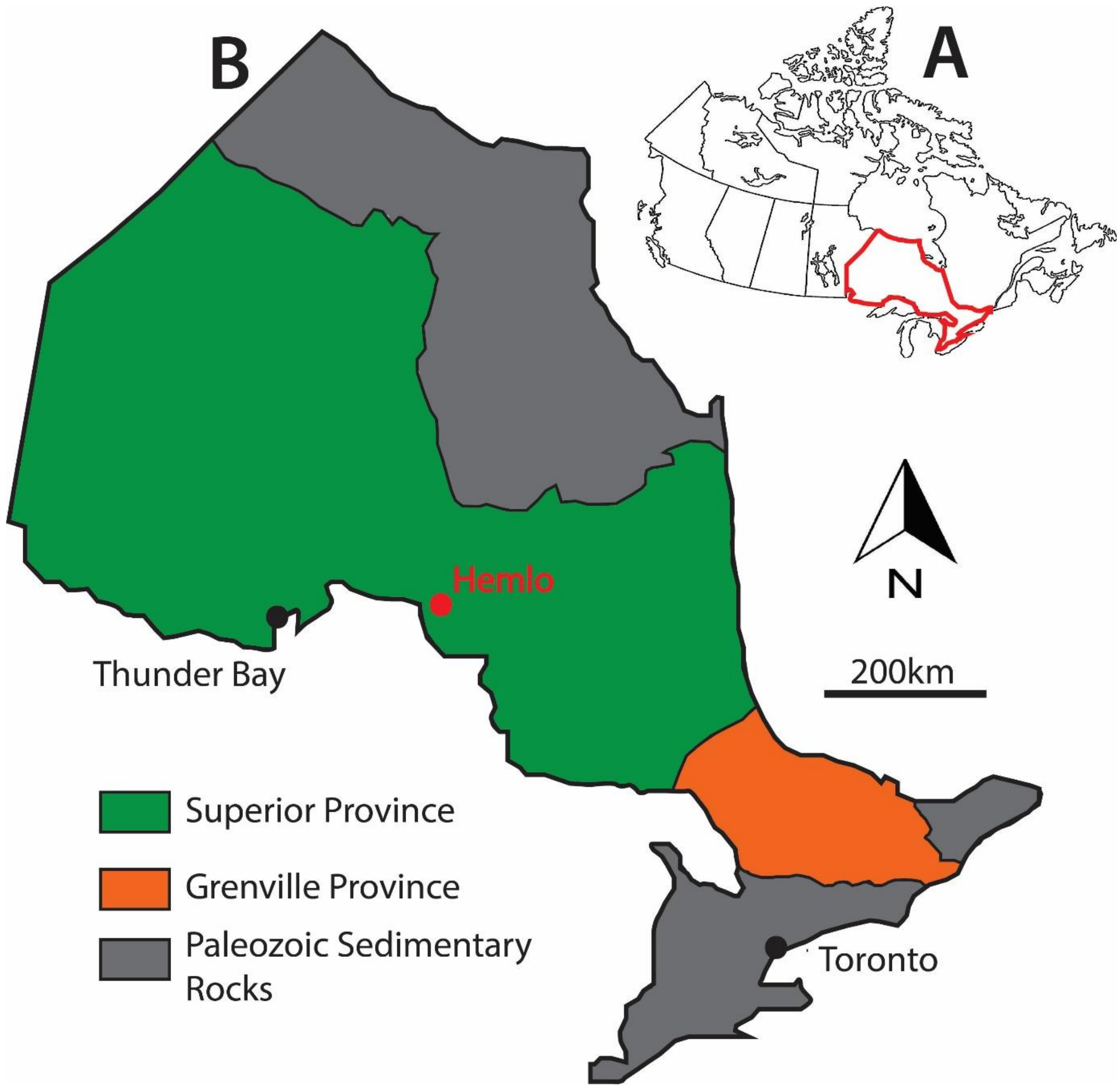

Figure 1.1: (A) Map of Canada outlining the province of Ontario. (B) Simplified geological provinces of Ontario showing location of the Hemlo Au deposit.

The deposit area consisted of three mine sites (Williams Mine, Golden Giant Mine and David Bell Mine). Only the Williams Mine is currently operational (Fig. 1.2). Access to the deposit area is good as the deposit lies just off Hwy. 17, which is part of the Trans Canada Highway (Fig. 1.2). The deposit is situated ~1km north of the Canadian Pacific Railway, which runs parallel to the highway (Fig. 1.2). Access to the area surrounding the deposit was achieved using mine-related roads, old drill roads and power lines.

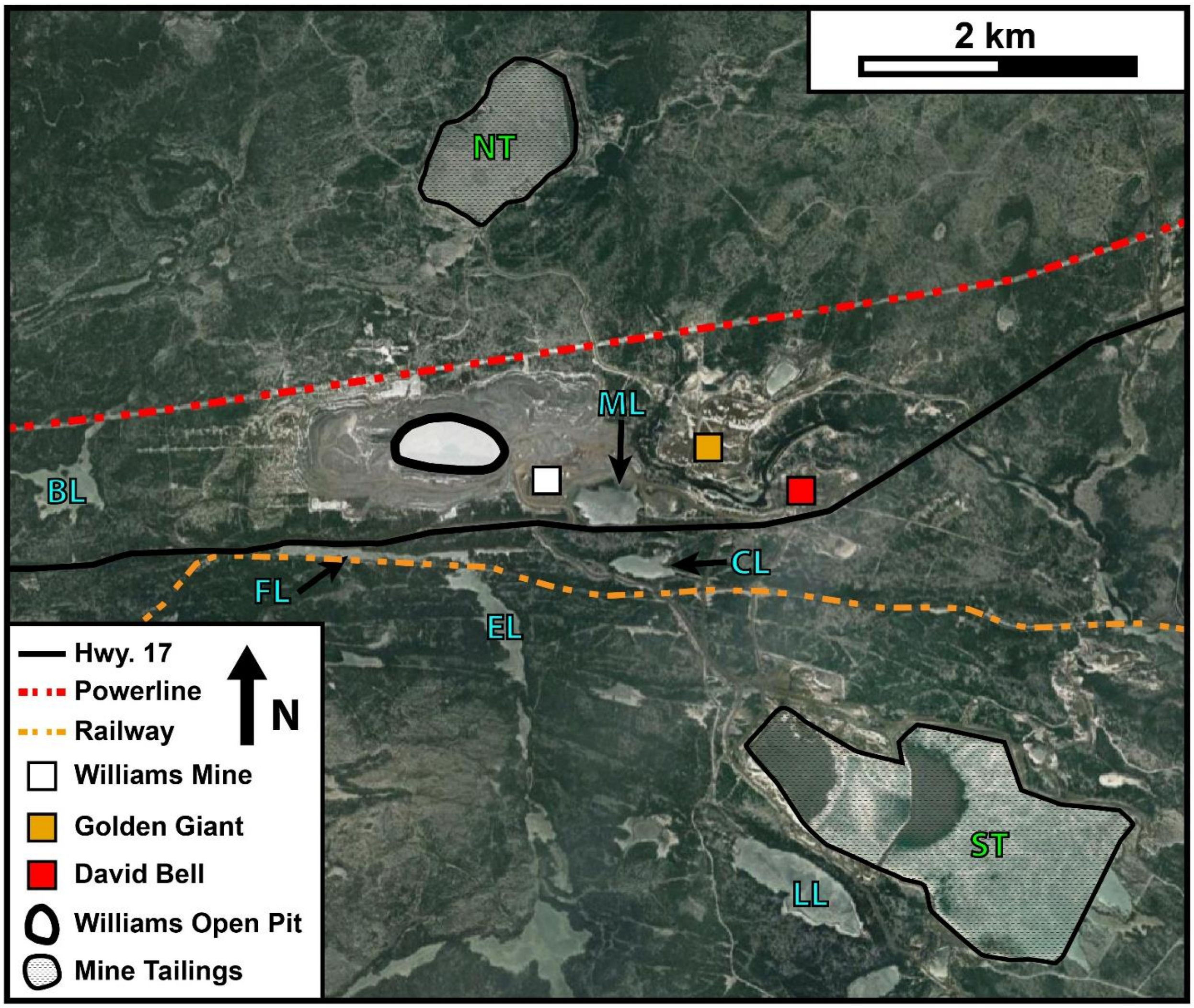

Figure 1.2: Satellite image of the Hemlo Au deposit area. Image obtained from Google Earth (Image© DigitalGlobe 2018). Abbreviations: NT – north tailings, ST – south tailings, BL - Botham Lake, FL – Fault Lake, EL – Emma Lake, ML – Moose Lake, CL – Camp Lake, LL – Lim Lake

The region containing the Hemlo gold deposit displays physiography typical of the Superior Province, with previously glaciated terrane now covered by Boreal forest. This has given the area a rolling ridge topography with higher relief ridges (~10-15 m) of bedrock surrounded by lower lying forest and swamps. The average elevation throughout the Hemlo region is ~340 m above mean sea level. Bedrock exposure varies around the mine site, ranging from 1-5% in abundance. Most outcrops surrounding the deposit have undergone moderate to intense weathering and are typically covered by a thin layer of moss, lichen and/or overburden. Best exposures of outcrop were found along the main highway and rail line, where blasting had occurred or in areas that have undergone exploration where outcrops have been manually stripped.

1.3 **Orogenic Gold Deposit Overview**

Orogenic gold deposits have formed over a long period of time in Earth's history, occurring mainly during phases of major crustal building (Kerrich et al., 2000; Goldfarb et al., 2001, 2005; Groves et al., 2003). These deposits have been referred to by many names including; lode, orogenic, quartz-carbonate hosted, shear-zone related, metamorphic and mesothermal gold deposits (Robert et al., 1997; Poulsen et al., 2000; Dube and Gosselin, 2007). Although there is a lack of consistency with the nomenclature for these deposits, with their given names mainly reflecting the inferred genesis of the ore, they display similar characteristics, and there have been attempts to consolidate their classification (Poulsen et al., 2000; Groves et al., 2003; Goldfarb et al., 2005; Dube and Gosselin, 2007).

Common features of orogenic gold deposits include that they are found in metamorphosed terranes, are associated with hydrothermal alteration and have a strong structural control (Groves et al., 1998). It is thought that these deposits are formed in collisional terranes as their host rock displays characteristics of tectonic environments such as arcs, back arcs and accretionary prisms (Fig. 1.3; Groves et al., 2005). The deposits are commonly found adjacent to first order deep crustal fault zones that extend across terrane boundaries and display complex structural histories, with Au mineralization typically concentrated in second and third order faults and shears occurring along jogs and bends in the crustal fault zones (Goldfarb et al., 2005; Dube and Gosselin, 2007).

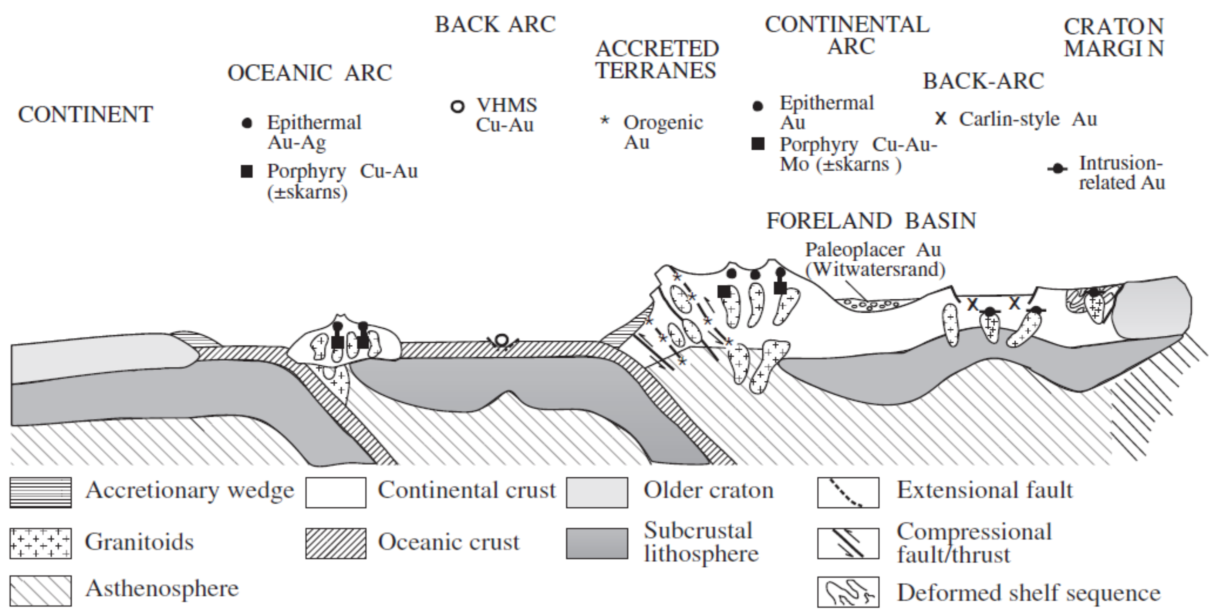

Figure 1.3: Schematic diagram of tectonic setting of gold-rich mineral deposits. Vertical scale has been exaggerated to allow for the depths of formation for different deposit types to be shown. From Groves et al. (2003).

The depth of formation for orogenic gold deposits can range from 2 - 20 km, dominantly in the brittle-ductile deformation regime (Fig. 1.4; McCuaig and Kerrich, 1998; Goldfarb et al., 2005). Many orogenic gold deposits are hosted in rocks that have undergone greenschist facies metamorphism, although there are significantly endowed deposits that are hosted in amphibolite facies terranes such as Hemlo (Goldfarb et al., 2005). The deposits can form at any time during orogenic processes, which can lead to complications of juxtaposition or overprinting of deposit features.

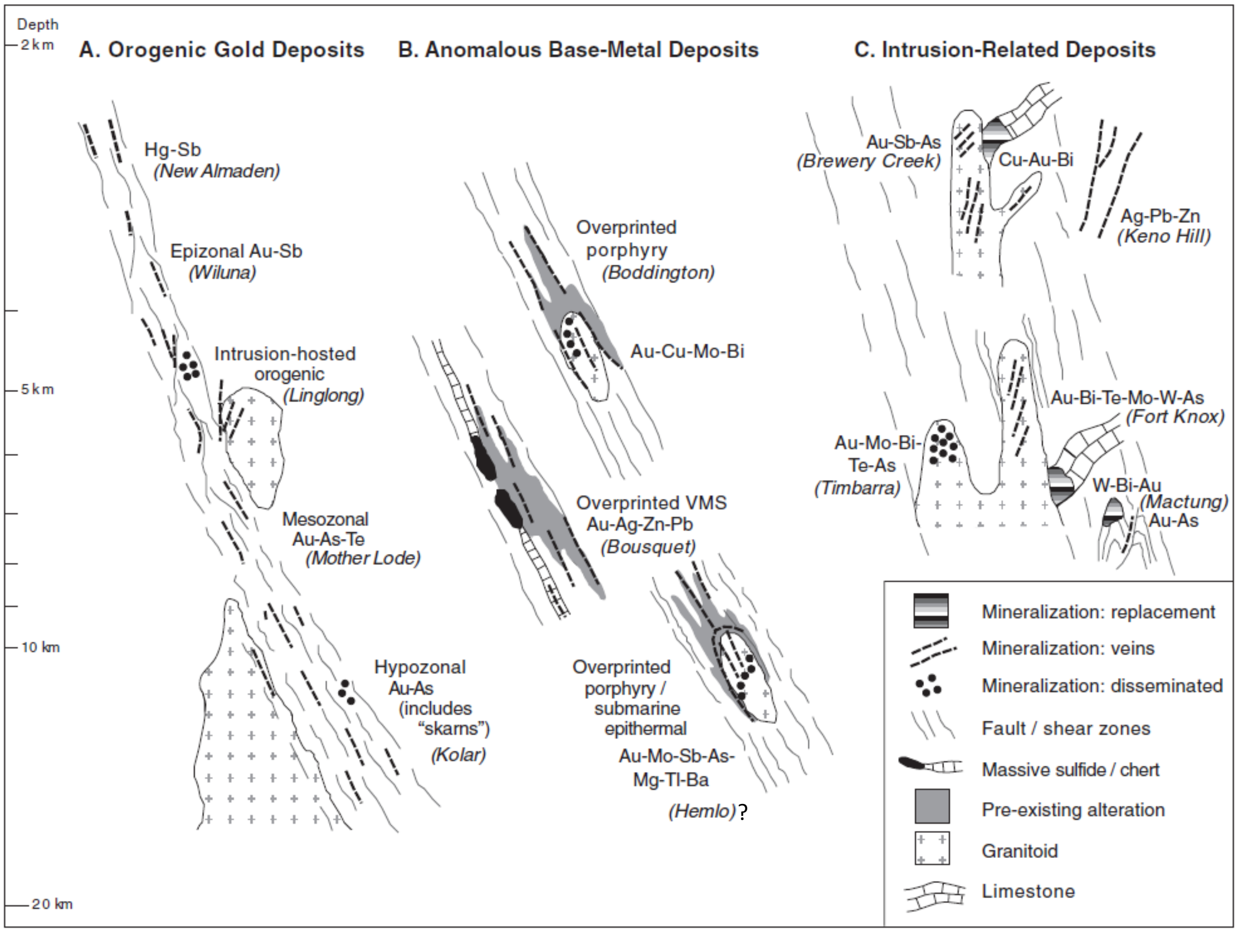

Figure 1.4: Schematic diagram from Goldfarb et al. (2005) depicting epigenetic gold deposits in metamorphic terranes and their depth of formation.

A general consensus for orogenic gold deposits is that they form during orogenic processes. At the transition between greenschist and amphibolite facies devolatilization of hydrated mineral phases (i.e., chlorite and epidote) occurs, extracting H_2O, CO_2, S and by association Au into solution producing a 'metamorphic fluid' (Goldfarb et al., 2005; Phillips and Powell, 2010). Within this fluid, Au is transported as a gold-thiosulphide complex, $Au(HS)_2^-$. The fluid is S-rich and Cl-poor and keeps base metal concentrations low in the auriferous metamorphic fluids (McCuaig and Kerrich, 1998; Phillips and Powell, 2010). Gold bearing metamorphic fluids are focused and concentrated along faults and shear zones. Precipitation of gold can be controlled by several factors, but gold deposition occurs when there are favourable conditions such as wall rock reactions, fluid immiscibility due to decreases in fluid pressure, changes in redox and fluid mixing (McCuaig and Kerrich, 1998). Other factors such as pH, pressure, temperature, fluid:rock ratio, gold solubility and sulfur content can influence the precipitation of gold on a more local scale (Groves et al., 2003). Most economic orogenic gold deposits are hosted in rocks that act as favourable structural and chemical traps (Robert et al., 2005; Dube and Gosselin, 2007). Favourable host rocks for gold mineralization include iron-rich lithologies such as: black slate; banded iron formation (BIF); magnetite-bearing diorite; and tholeiitic basalt (Robert et al., 2005; Phillips and Powell, 2010). Favourable structural traps include, but are not limited to, dilational jogs, fault zones, shear zones, fold hinges and zones of competency contrast (Dube and Gosselin, 2007).

Styles of mineralization can vary greatly between deposits and probably reflect the formational depth for that system, with deposits dominated by stockwork veining and breccias forming at shallower depths in a brittle-dominated regime and more disseminated/replacement deposits forming in deeper, ductile-dominated regimes (Goldfarb et al., 2005). Poulsen et al. (2000) outlined six major styles of mineralization for gold deposits: (1) quartz-carbonate vein; (2) sulfide-replacement in banded iron formation (BIF); (3) sulfide replacement and crustiform veins; (4) disseminated-stockwork zones; (5) sulfide-rich veins and veinlet zones; and (6) semi-massive to massive sulfide lenses. The majority of orogenic gold deposits can be constrained to a single type of mineralization, but many larger deposits are more diverse and will display multiple styles (Poulsen et al., 2005). The metal inventory of most gold deposits remains relatively consistent with high concentrations of Au and Ag ($Au > Ag \cong 5$), variable enrichment of rare and semi-metals (As, Sb, Te, Bi, W, Mo and B) and low enrichment of base and transition metals (Cu, Pb, Zn, Ni, Co, V and Cr; McCuaig and Kerrich, 1998; Kerrich et al., 2000).

The alteration assemblages and size of the alteration system associated with mineralization can vary greatly with the style of mineralization, the metamorphic grade and the overall composition of the host rocks. McCuaig and Kerrich (1998) outlined seven controls on alteration systems: (1) tectonic regime and resultant stress fields in which the deposits are formed; (2) fluid / rock ratios; (3) host lithology composition; (4) hydrothermal fluid composition; (5) temperature; (6) pressure; and (7) disequilibrium or equilibrium conditions. In greenschist facies common alteration minerals associated with orogenic gold deposits are quartz, iron-carbonate, white mica, albite, chlorite and pyrite, whereas in amphibolite facies the common alteration phases are biotite, amphibole, pyrite, pyrrhotite, arsenopyrite, diopside and garnet (Groves et al., 2003).

The mineralogy and zonation of alteration associated with orogenic gold deposits occurs at several scales throughout the deposit: (1) between different host lithologies; (2) with increasing distance away from the fluid conduit; (3) regionally with changes in pressure and temperature of formation (McCuaig and Kerrich, 1998). Alteration parallel to fluid conduits displays little variation in mineralogy, given a consistent lithology (McCuaig and Kerrich, 1998). A more marked change in alteration minerology is observed perpendicular to fluid conduits. Alteration proximal to the fluid conduit / wall-rock boundary represents areas of greatest fluid flux, resulting in fluid-dominated metasomatic reactions creating characteristic mineral assemblages (McCuaig and Kerrich, 1998). The alteration zones more distal to fluid conduits reflect a decreasing gradient of fluid / rock ratio due to equilibration reactions between hydrothermal fluids and country rock (McCuaig and Kerrich, 1998). This can result in elements such as K, Rb, CO_2, S, and other elements that are mobile in the hydrothermal system, to display a chemical dispersion gradient away from the main body of the deposit (Goldfarb et al., 2005).

The distal alteration system typically displays diffuse boundaries and will grade into regional metamorphic assemblages (McCuaig and Kerrich, 1998). Alteration style and mineralogy will also vary with temperature and pressure and will typically reflect metamorphic grade (McCuaig and Kerrich, 1998).

Although the metamorphic model for the origin of orogenic gold deposits is widely accepted, there are six other models that have been proposed, and will be briefly summarized here. Full model descriptions are outlined in Kerrich and Cassidy (1994). The main alternate models for gold deposit formation include: (1) Granulitization model, large fluid flux of CO_2 from mantle into the lower crust causing granulitization of the mid- to lower-crust. Cameron (1988) proposed this model in order to explain gold occurrences within the Kapuskasing structural zone of the Superior Province; (2) Gold-shoshonite association, Kerrich and Wyman (1990) proposed gold bearing shoshonites (lamprophyres) signified a common geodynamic setting of origin; (3) Tonalite-trondhjemite-granodiorite (TTG) model, Burrows and Spooner (1987) proposed a magmatic origin for gold mineralizing fluids due to the close association of TTG plutons to gold deposits throughout the Superior Province; (4) Delayed dehydration, Hodgson et al. (1989) proposed that gold mineralization and dehydration of thickened greenstones occurred 100 m.y after initial crustal collision during thermal rebound; (5) Late-stage deep metamorphic activity during orogenesis, late-stage mineralization due to deep fluid and metamorphic activity (Jemielita et al., 1990); (6) Crustal continuum, Groves (1993) proposed that gold deposits forming in greenschist, amphibolite and granulite facies are all part of the same continuum and that mineralization occurred during peak metamorphism. Although a lot of work has been done globally on gold deposits, there are still many controversial areas that need further research to better understand the mechanisms for gold deposit formation. These areas include, more precise dating of mineralization and a better understanding of the tectonic setting they form in, the depositional mechanisms for gold especially in higher grade deposits, the framework of the hydrothermal systems that lead to the formation of these deposits, and the source of the ore fluids and metals (Groves et al., 2003).

Chapter 2: Regional Geology

2.1 Superior Province

The Superior Province of North America is the largest Archean craton in the world covering an area of 1,750,000 km^2 (Percival et al., 2006). The Superior Province encompasses most of central Ontario and northwestern Quebec with smaller sections extending into eastern Manitoba and northern Minnesota, USA (Fig. 2.1). The craton is bounded by Paleoproterozoic provinces to the north and west with the Mesoproterozoic Grenville province to the east and south. It is one of the oldest cratons in the world and records a ~1 billion-year (3.6 Ga – 2.6 Ga) history of volcanism, sedimentation and plutonism (Percival and Easton, 2007). There have been many attempts to subdivide and distinguish distinct geological units within the Superior Province with multiple interpretations regarding its formation being proposed (Wilson, 1939, 1949; Gill, 1949; Stockwell, 1964; Douglas, 1973). Card and Cizieski (1986) proposed a comprehensive subdivision, dividing the Superior Province into distinct subprovinces. These subprovinces represent distinct geological units bounded by large scale lithotectonic faulting. These subdivisions have been revised by Stott (2011) who divided the current subprovinces into different superterranes, terranes and domains. The terranes and domains have been distinguished based on regional bedrock mapping, geophysical surveys, high precision age determination and geochemical and isotope work throughout the Superior Province (Stott, 2011).

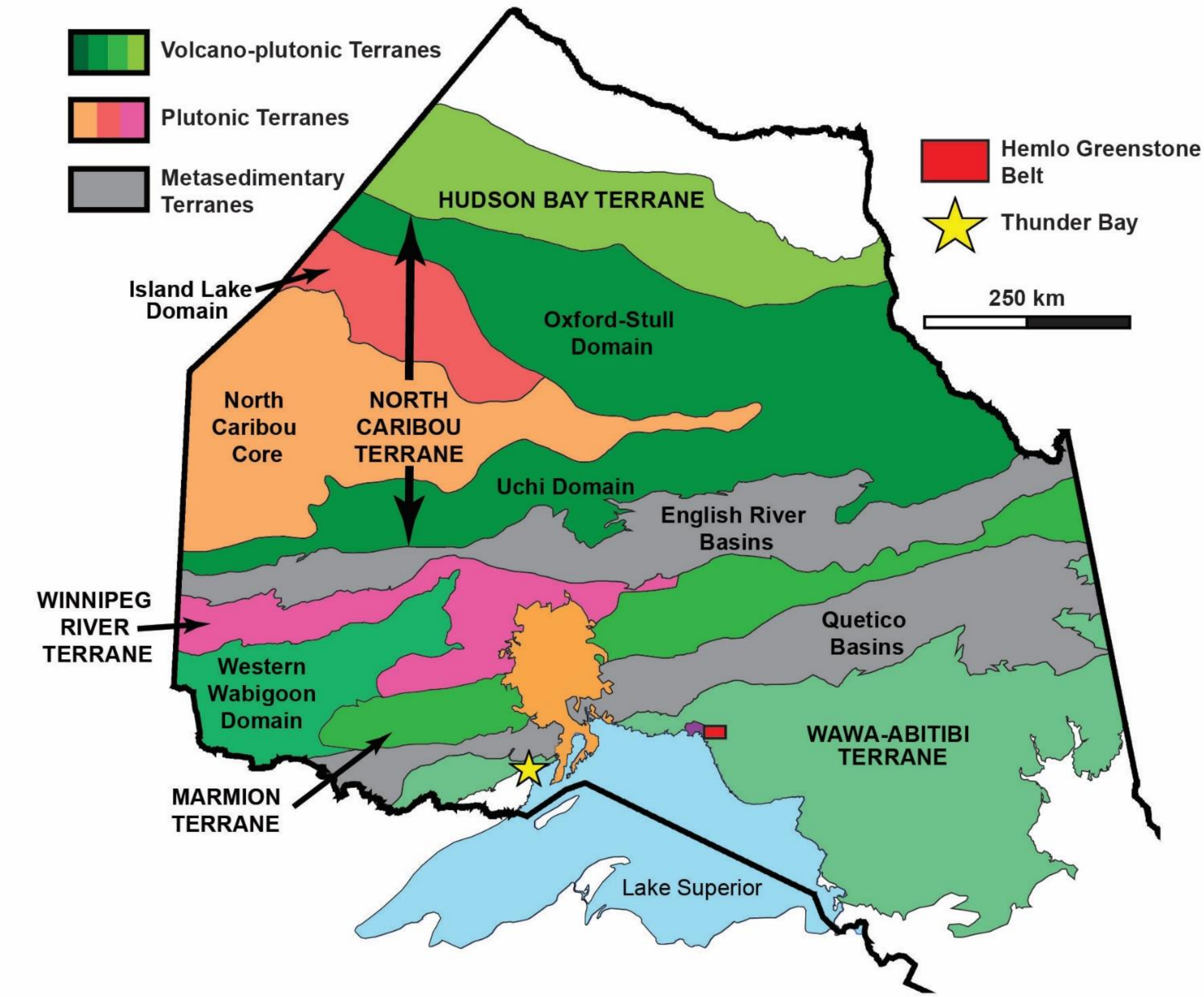

Figure 2.1: Terranes of the Superior Province (modified from Stott, 2011).

Three distinct terrane types have been identified within the Superior Province: volcano-plutonic, plutonic and metasedimentary terranes (Fig. 2.1). The volcano-plutonic terranes are mainly comprised of metamorphosed supracrustal rocks that form east-trending linear belts that extend across the terrane. Throughout the volcano-plutonic terranes a southward younging trend is observed that is supported by geochronological work, supporting amalgamation of these terranes by accretion (Thurston and Chivers, 1990). Plutonic terranes are dominated by granitoid batholiths that are mainly tonalite-trondjhemite-granodiorite (TTG) in composition. The metasedimentary terranes (basins) also form linear east trending belts and consist of mainly metamorphosed greywacke and peraluminous batholiths.

The Superior Province is composed of alternating sequences of terranes that have been amalgamated together through what is thought to be orogenic processes. The main period of accretion occurred from 2.72-2.68 Ga during the Kenoran Orogeny, with the craton becoming tectonically stable by 2.5 Ga (Card, 1990; Williams et al., 1992; Stott, 1996; Percival et al., 2004, 2006). The Kenoran Orogeny can be divided into five separate orogenic events that all took place over a 40 Ma period and with each accounting for the assembly of different parts of the Superior Province (Percival et al., 2006). An alternative hypothesis suggests the formation of the Superior Province through non-conventional tectonic processes, proposing a ‘sag-duction’ (vertical tectonic) model for its formation (Thurston, 2002; Lin, 2005; Hamilton, 2011).

2.2 Wawa - Abitibi Terrane

The Wawa – Abitibi terrane, the southernmost terrane within the Superior Province, is one of the largest and most well-endowed terranes in terms of economic mineralization. The terrane consists of east trending packages of metamorphosed supracrustal rocks surrounded by intrusions of various ages. All the rocks have been metamorphosed to at least greenschist facies with some areas undergoing higher degrees of metamorphism up to amphibolite facies (Polat, 2000). The terrane is bounded by the Quetico Basin to the north and by the Huronian Supergroup and Pontiac Basin to the south (Fig. 2.2). The Wawa terrane comprises the western half of the terrane and is separated from the eastern Abitibi terrane by the Kapuskasing structural zone, a northeast trending, 500km long structure that is fault bounded and has been interpreted to represent an uplifted block of mid-lower crustal material below the Wawa-Abitibi terrane and the Quetico basin (Percival and West, 1994).

2.2.1 Wawa Terrane

The Wawa terrane extends westwards from the Kapuskasing structural zone into the Vermillion district of Minnesota (Fig. 2.2). Most of the greenstone belts within the terrane are dominated by Neoarchean rocks with only minor exposures of Mesoarchean tonalite gneiss and volcanic rocks being found in the northern portion of the terrane (Moser, 1994). The rest of the Wawa terrane is Neoarchean in age and can be segregated into northern and southern portions. The northern portion houses the Vermillion, Shebandowan, Winston Lake, Schrieber-Hemlo, Manitowadge, Hornepayne, White River and Kabinakgami greenstone belts (Polat, 2000). The southern portion contains the Mishibishu, Michipicoten and Gamitagama greenstone belts (Polat, 2000).

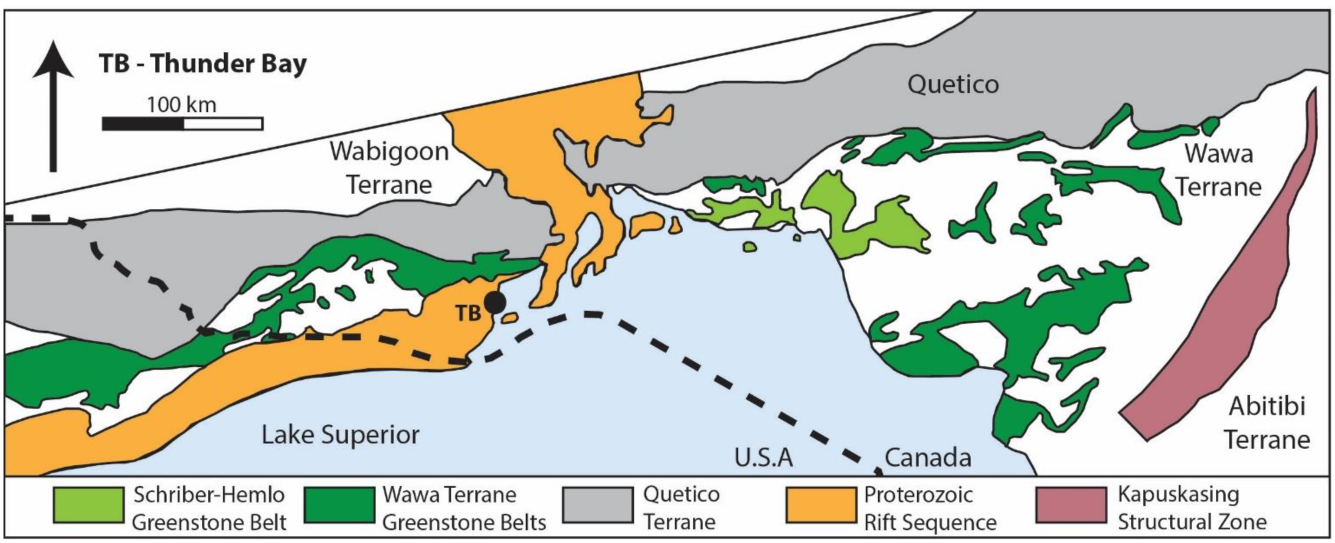

Figure 2.2: Greenstone belts of the Wawa Terrane (Modified from Lodge, 2011).

The Wawa greenstone belts contain ultramafic to felsic volcanic rocks and volcaniclastic equivalents that have been deposited subaqueously with deep water sediments (Polat, 2000). The amalgamation of the Wawa terrane took place during the Shebandowanian orogeny which saw the collision of the Wawa terrane with the composite Superior superterrane at ~2695 Ma (Percival et al., 2006). This was followed by two main stages of deformation that formed the major regional structures observed within the terrane. The first major event occurred syn initiation of the orogeny at ~2695 Ma, being interpreted as being intra-arc deformation and is associated with calc-alkaline magmatism during this time (Corfu et al., 1998). The second major deformation event occurred between 2685-2680 Ma with the docking between the Wawa terrane and the Quetico basin and consisted of north-south transpressive deformation (Corfu et al., 1998).

In the northern portion of the terrane the Manitowadge and Winston greenstone belts host economic volcanogenic massive sulphide (VMS) deposits and have geochemistry that suggests they likely formed in a plume driven rifted arc to back arc environment (Lodge, 2011). The Vermillion and Shebandowan greenstone belts also host minor, sub-economic VMS mineralization with geochemistry that indicates emplacement in a plume driven rifted arc to back arc environment (Lodge, 2011). The Shebandowan greenstone belt has historic gold production hosting some minor orogenic gold mineralization with no current producing operations (Polat, 2009). The Hemlo-Schreiber greenstone belt, the focus of this study, hosts the most significant gold resource within, the terrane the Hemlo gold deposit. Although most of the greenstone belts of the Wawa terrane contain gold showings, the Hemlo gold deposit is the only one that is currently operational.

2.3 Hemlo-Schreiber Greenstone Belt

Located on the north-eastern shore of Lake Superior the Schreiber-Hemlo greenstone belt (SHGB) is 170 km long and is separated into two halves by the Proterozoic Coldwell alkalic complex, forming the western Schreiber section and the eastern Hemlo section (Fig. 2.3). For the lithologies discussed here the prefix meta- is implied. Volcanism in the SHGB took place from ca. 2750 – 2688 Ma coeval with the emplacement of several intrusions from 2720 – 2677 Ma

(Polat, 2000). Sedimentation within the belts has been constrained to 2705 – 2685 Ma as siliciclastic units were deposited during this time (Polat, 2000). Williams et al. (1991) identified three lithotectonic assemblages within the SHGB, the Schreiber, Heron Bay and Hemlo-Black River assemblages. The Schreiber assemblage encompasses the western Schreiber portion of the SHGB (Williams et al., 1991b; Fig. 2.2). The Hemlo-Black River and Heron Bay assemblages are found within the eastern Hemlo area of the SHGB and are separated by the Lake Superior Shear Zone (LSSZ) with the Hemlo-Black River and Heron Bay assemblages being located north and south of the LSSZ respectively (Williams et al., 1991).

Two geochemically distinct groups of volcanic rocks have been identified within the Hemlo-Schreiber belt. A 2.75-2.70 Ga sequence dominated by intra-oceanic sequences of basalts and komatiites, and a 2.72-2.65 Ga arc related volcanic sequence of tholieiitic to calc-alkaline basalts, andesites and rhyolites (Polat, 1999). The volcanic rocks within these belts are intercalated with siliciclastic sedimentary rocks dominated by turbiditic wackes and shales with less common conglomerates and carbonate units (Muir, 1997; Polat, 2000). These supracrustal sequences are surrounded by pre-tectonic TTG plutonic rocks, with more K-rich plutonic rocks being emplaced within the belt during a syn-tectonic period (Polat, 2009). Metamorphism of the SHGB ranges from lower greenschist facies to amphibolite facies locally around the margins of the plutonic rocks and in the Hemlo gold deposit area (Muir, 1997; Polat, 2000).

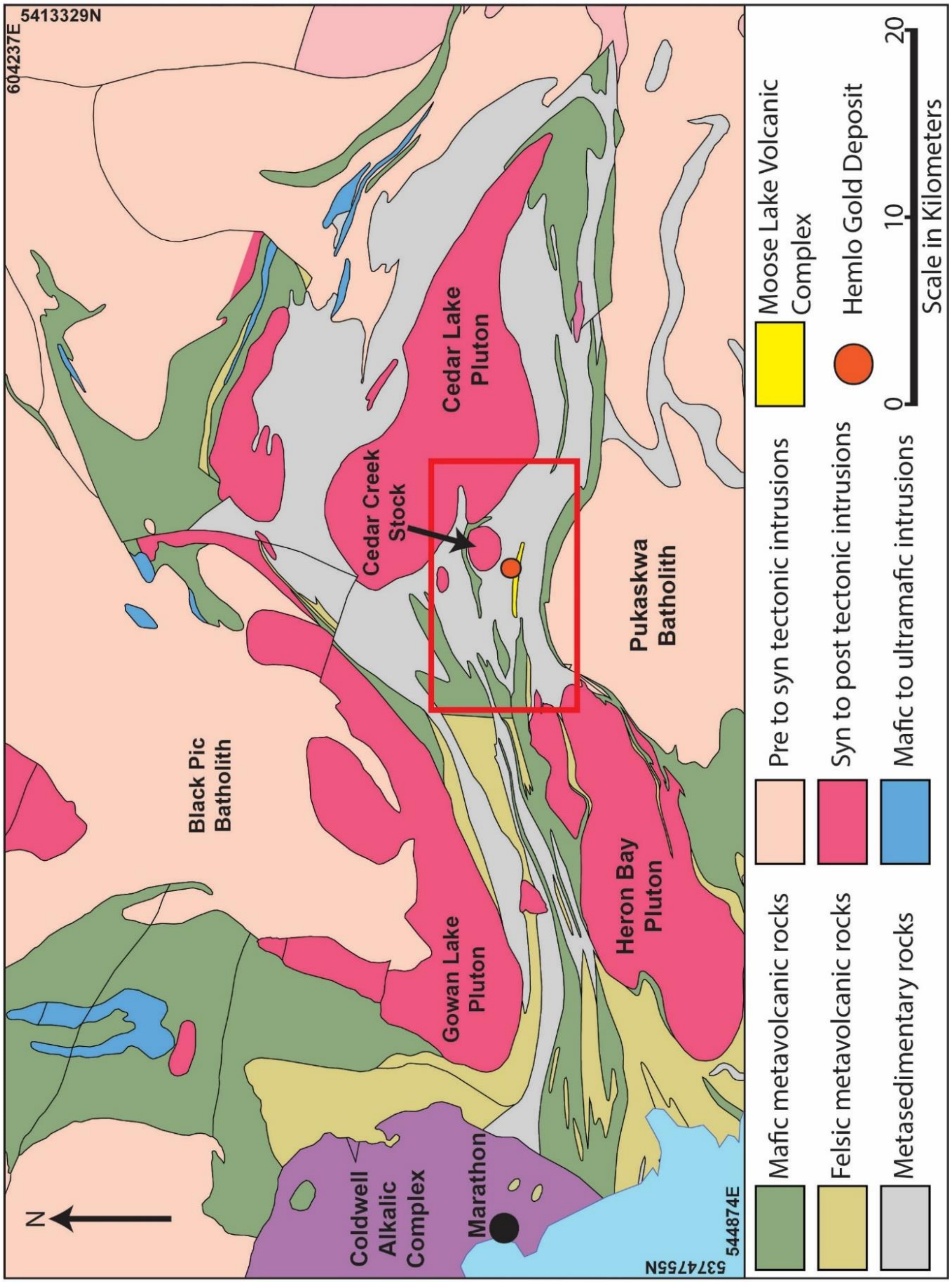

Figure 2.3: Geology of the Hemlo greenstone belt (Modified from Stott, 2011)

Field evidence suggests that the SHGB has undergone at least three major phases of deformation with two phases occurring prior to the Wawa subprovinces amalgamation to the rest of the Superior Province (Polat, 1999; Muir, 2003; Beakhouse and Davis, 2005). The first two stages of deformation, D_1 and D_2, occur between 2695 – 2688 Ma and 2690 – 2680 Ma respectively (Beakhouse and Davis, 2005). D_1 is characterized by reverse thrust faulting, isoclinal folding, and steeply dipping foliations and lineations (Beakhouse and Davis, 2005). The D_2 deformation is associated with dextral, east-trending strike slip faults and near vertical reverse faults (Beakhouse and Davis, 2005). The D_3 deformation phase is not as well constrained but is thought to be synchronous with regional metamorphism which took place from 2690 – 2670 Ma (Davis and Lin, 2003; Beakhouse and Davis, 2005). Regardless of deformation and greenschist to amphibolite facies metamorphism occurring throughout the SHMB, primary volcanic and sedimentary textures (i.e., pillowed flows, spinifex and cross-bedding) are preserved in areas of lower metamorphic grade and away from major structures (Muir, 1986, 1997; Polat, 2008).

The SHGB hosts the world class Hemlo gold deposit which lies in the eastern section of the Hemlo region of the belt (Fig. 2.3; Muir, 1982). Other gold showings have been identified throughout the SHGB with prospective targets in the Heron Bay area and within and surrounding the Terrace Bay batholith (Muir, 1982; Magnus and Arnold, 2016). Some minor base metal VMS occurrences and sea floor hydrothermal alteration have also been recognized within the Schreiber area of the SHGB (Polat, 2008).

2.4 Hemlo Gold District

The Hemlo gold district is located in the eastern portion of the Hemlo greenstone belt and hosts the Hemlo gold deposit. The Hemlo gold deposit is one of Canada's largest gold deposit containing ~25 Moz of gold classifying it as world class in terms of metal endowment. Mineralization was first identified in the area in 1946 on the Ollmann-Williams property (now the location of the Williams mine) but it was not until 1981 that the extent of the metal endowment was realized. Within four years there were three mines that were operational and producing gold, the David Bell, Golden Giant and Williams mines all becoming operational by 1985. The Golden Giant mine ended operations in 2005 with the David Bell mine following in May, 2014. Currently only the Williams mine, owned by Barrick Gold Corporation, is still operational. At the end of 2017 Barrick reported historic gold production for Hemlo at 21,667,271 oz Au (Barrick Annual Report, 2017). Proven and probable reserves and resources at the mine were reported to be 24,928,000 tonnes grading 2.21 g/t Au for a total of 1,774,000 oz Au and a measured and indicated resource of 41,339,000 tonnes grading 1.36 g/t Au for a total of 1,858,000 oz Au (Barrick Annual Report, 2017).

2.4.1 Local Setting

The area around the Hemlo gold deposit records a complex history of volcanism, sedimentation, plutonism, deformation, metamorphism, metasomatism and mineralization (Figs. 2.4 and 2.5). The Hemlo gold deposit is situated at the contact between felsic metavolcanic rocks of the Moose Lake Volcanic Complex (MLVC) and surrounding metasedimentary rocks along the LSSZ. The deposit sits at an inflection in stratigraphy, where the dominant trend in regional fabric transitions from east to south-east (Muir, 1991, 2002). The deposit area itself has undergone higher degrees of metamorphism than other areas of the greenstone belt, with the deposit itself having a large (up to 1 km) alteration halo associated with it (Powell, 1999; Heiligmann, 2008). Mineralization at the Hemlo gold deposit is quite complex with numerous theories on its formation and no one model being fully accepted for the deposit (Muir, 1997).

2.4.2 Geology

The MLVC hosts most of the deposit and is composed of massive and fragmental calk-alkalic plagioclase-quartz phyric felsic to intermediate volcanic rocks (Muir, 1997). A quartz-plagioclase phyric felsic fragmental unit from the MLVC is yielded an U-Pb zircon age of 2694±2 Ma (Corfu and Muir, 1989a). This age represents the main period of volcanism in the Hemlo district. Reworked volcaniclastic and epiclastic rocks form the footwall and hanging wall of the deposit surrounding the MLVC. The volcaniclastic units are composed mainly of tuffaceous conglomerates and sandstones that are spatially associated with and are interpreted to be derived from the MLVC (Muir, 2003). U-Pb dating of detrital zircons from a tuffaceous sandstone yielded an age of 2693±2 Ma, which is the interpreted age for volcaniclastic sedimentation (Davis, 1998).

Epiclastic sedimentary units are dominant in the area surrounding the Hemlo gold deposit and consist of wackes, mudstones and conglomerates (Muir, 2002). Wackes and mudstones locally display characteristic bedding of turbidite sequences (Muir, 1993). U-Pb ages from detrital zircons from several sandstone units surrounding the Hemlo gold deposit yielded an inferred age of ~2690 Ma for the main period of sedimentation (Davis and Lin, 2003). The epiclastic units are geochemically distinct from the volcaniclastic units containing higher Co, Cr, and Ni contents which have been interpreted to be due to a more mafic source for the epiclastic rocks (Pan et al., 1991). The MLVC, volcaniclastic and epiclastic units arelocally intercalated, and have overlapping age ranges, suggesting that volcanism, reworking of volcanic material and sedimentation was occurring simultaneously (Muir, 2002).

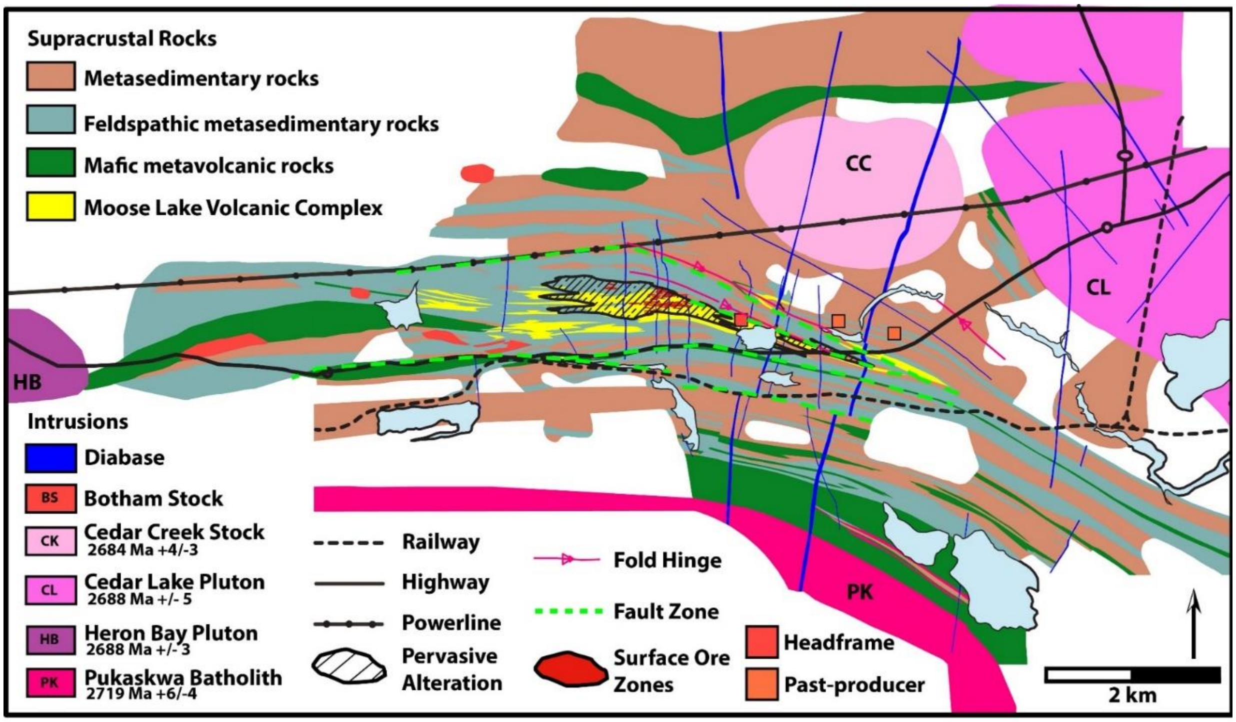

Figure 2.4: Geology of the Hemlo gold deposit area (after Muir, 1997).

Two main stages of plutonism are recorded in the Hemlo area, an early pre-tectonic stage ~2720 Ma and a secondary syn-tectonic stage of calk-alkalic plutonism around 2690 Ma (Corfu and Muir, 1989a). There are five main intrusions that surround the Hemlo gold deposit, the Pukaskwa batholith, the Heron Bay pluton, the Cedar Lake pluton, the Cedar Creek stock and the Botham stock (Fig. 2.4). The Pukaskwa batholith forms the southern boundary to the supracrustal rocks in the area. The batholith varies in composition from massive (internal) to foliated (margins) tonalite-granodiorite. U-Pb zircon dating of samples from the margins and interior of the batholith yielded ages of 2719 +6/-4 Ma and 2688±3 Ma, respectively (Corfu and Muir, 1989a).

The Heron Bay pluton extends into the Hemlo area from the west and is composed mainly of massive calk-alkaline granodiorite. A zircon U-Pb analysis of a granodiorite sample from the eastern margin of the pluton yielded an age of 2688±5 Ma (Corfu and Muir 1989a). A zircon U-Pb analysis of a granodiorite sample yielded a similar age of 2687±3 Ma for the Cedar Lake Pluton east of the Hemlo deposit (Corfu and Muir, 1989a). The Cedar Creek stock located to the northeast of the deposit, is a smaller granodiorite intrusion that is thought to be genetically related to the Cedar Lake pluton (Corfu and Muir, 1989a). A zircon U-Pb analysis of a granodiorite sample yielded an age of 2684 +4/-3 Ma for this intrusion and is interpreted to be a later pulse of the Cedar Lake pluton (Corfu and Muir, 1989a). The Botham stock is a series of small, irregular porphyritic granodiorite to monzogranodiorite intrusions directly to the west of the deposit (Fig. 2.4). The presence of this intrusion is though to be controlled by faulting in the region, but its relationship with the supracrustal rocks is not well understood (Muir, 1997). No geochronological data for this intrusion are available, but it has an interpreted age of ca. ~2690 Ma, coinciding with the timing of emplacement of the other calk-alkaline intrusions in the area (Corfu and Muir, 1989a). A number of dykes related to this secondary stage of plutonism are found throughout the Hemlo gold deposit area. The timing of these dykes has been constrained through zircon U-Pb analysis to ~2690-2675 Ma (Corfu and Muir, 1989b).

A cooling history for the intrusions in the area is recorded from U-Pb isotope work on minerals from these intrusions with lower blocking temperatures than zircon (Corfu and Muir, 1989b). Titanite U-Pb isotope work indicated a cooling period of ~2685 – 2678 Ma for the intrusions and some of the felsic rocks related to the Hemlo gold deposit (Corfu and Muir, 1989b). This age of cooling increased with distance from the Hemlo gold deposit (Muir, 2003).

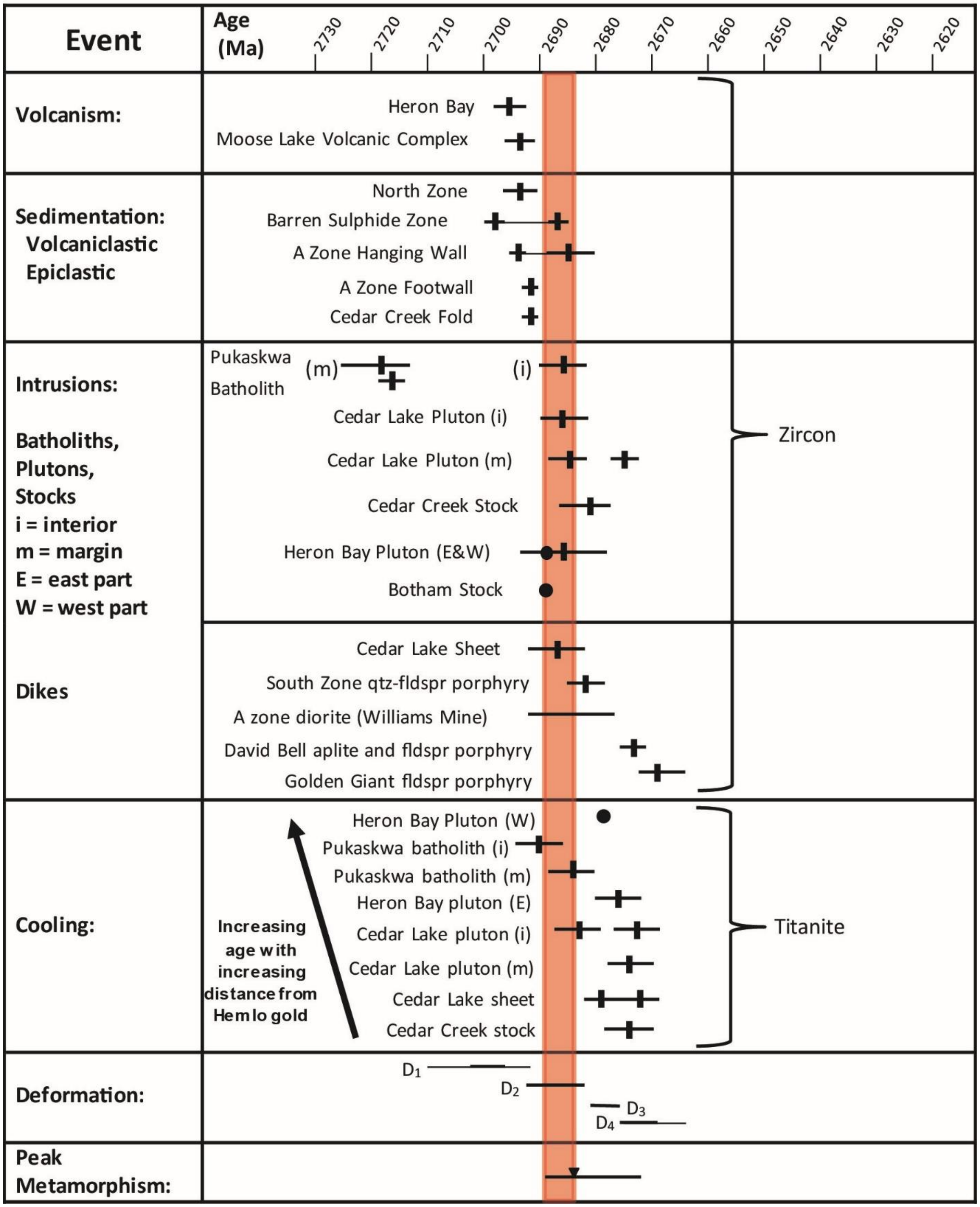

Figure 2.5: Summary of geological events from the Hemlo gold deposit area. Red bar indicates timing constraints on gold mineralization. Black horizontal bars represent error associated with ages to 95% confidence. Black dots represent interpreted ages. Selected ages are from Corfu and Muir, 1989a, 1989b; Davis, 1998. Constraints on deformation, mineralization and peak metamorphism are based on interpretations made by Muir (2003). Modified from Muir (2003).

2.4.3 Deformation

There have been multiple studies on the deformation of the rocks within the Hemlo gold deposit with differing interpretations of how and when deformation occurred (Hugon, 1986; Muir and Elliot, 1987; Kuhns, 1988; Muir 1991, 1997, 2003; Kuhns et al., 1994; Lin, 2001). Although hypotheses differ, they all agree that the area has undergone a complex history of high-level strain. With the exception of Hugon (1986), who proposed a single deformational event of progressive dextral shear, the models for the deformation are all polyphase, with up to six phases of deformation being recorded (Muir and Elliot, 1987; Kuhns, 1988; Muir, 1991, 1997, 2003; Kuhns et al., 1994; Lin, 2001). The structural history summarized herein is based mainly on the work of Muir and Elliot (1987) and Muir (1997) who proposed five main (possibly six) deformational events for the Hemlo deposit.

The first generation of deformation (D_1) is not well constrained or defined due to overprinting by subsequent stages of more intense deformation. The main elements of D_1 deformation are disruption of primary layering (i.e., relict bedding), small-scale isoclinal folding and possibly minor thrust faults (Muir, 2003). No penetrative fabrics within the rocks have been attributed to D_1 deformation, and timing of this event is thought to have occurred from ca. 2719 – 2691 Ma (Muir, 2003).

The second deformational event (D_2) is dominant within the area, forming the most prominent structures throughout the belt (Muir, 1997). The main elements of D_2 deformation include the development of the dominant rock fabric, the largest folds in the region and high strain zones (Muir, 2003). Timing of the D_2 deformation event has been constrained to ca. 2691 – 2683 Ma and has been separated into three phases; early middle and late (Muir, 1997, 2003). In early D_2 deformation the dominant fabric within the rocks resulted from north-northeast to northeast compression. This fabric is observed within the rocks as preferred orientations of micaceous or amphibole minerals and the flattening/elongation of clasts. Mid-D_2 deformation coincides with the emplacement of calk-alkaline intrusions around the Hemlo deposit, which further developed and deflected the main D_2 fabric around the margins of the plutons (Muir, 2003). It has been suggested that the inflection in stratigraphy in the Hemlo area would also have coincided with this deformation period, because of focusing of ductile deformation of the supracrustal rocks due to the emplacement of the more rigid granitoid bodies (Muir, 1997). During this time the major folds in the area such as the Williams-Teck fold pair and the Cedar Creek fold would have developed. Late D_2 documents northeast compression that resulted in the formation of sinstral sense high strain zones like the Hemlo Fault Zone (HFZ) and the Lake Superior Shear Zone (LSSZ; Muir, 2003).

The third deformation event (D_3) is constrained to ca. 2682 – 2679 Ma with the onset of north-west directed compression that overprinted D_2 (Muir, 2003). D_3 deformation involved reactivation of D_2 high strain zones in a dextral sense and the formation of Z-shaped folds (Muir, 1997). The later stages of D_3 deformation saw a progressive shift from ductile dominated structures to structures in a more brittle-ductile regime. This transition is marked by the presence of fault breccias, zones of cataclasis and more brittle dominant structures (Muir, 1997).

The fourth stage of deformation (D_4) has been constrained to ~2679-2673 Ma and is associated with northward extension due to relaxation of the D_3 northwest compression (Muir, 1997, 2003). D_4 deformation resulted in the formation of kink folds, conjugate folds and minor fracture and fault sets throughout the Hemlo area (Muir, 1997). Deformation stages five and six (D_5 and D_6) include brittle-ductile faulting. D_5 deformation has been constrained to <2214 Ma and coincides with the intrusion of Proterozoic diabase dikes that cut all the units within the

Hemlo deposit area (Muir, 1997). Structures related to D_5 deformation also include brittle-ductile faults and associated slickensides within the Cedar Lake Pluton. The D_6 deformation phase is expressed as brittle-ductile faults and fractures within Mesoproterozoic lamprophyre dykes (Muir, 2003). The strain observed within these dykes is minor but is thought to be associated with the Midcontinent Rift system at ~1109 Ma (Muir, 2003).

2.4.4 Metamorphism

There is much debate as to the pressure-temperature conditions, timing of metamorphism in regard to gold mineralization, and the possibility of multiple prograde metamorphic events in the Hemlo district (Burk et al., 1986; Pan and Fleet, 1993; Kuhns et al., 1994; Powell et al., 1999; Heiligmann, 2004, 2008). There is consensus that peak metamorphic conditions reached amphibolite facies in the direct vicinity of the Hemlo gold deposit. This is evident from the presence of plagioclase and hornblende in metabasites and biotite-garnet-staurolite ± kyanite ± sillimanite in metapelites (Heligmann, 2008). Pressure and temperature for peak metamorphic conditions have been estimated to be ~630 ºC and 5-6 kbars using various geothermobarometers (Heiligmann, 2004). Timing of metamorphism with respect to deformation is also the subject of debate. Sillimanite growth has been interpreted to be coeval with D_2 stage deformation and the formation of the dominant foliation fabric (Burk et al., 1986; Pan and Fleet, 1993). Other studies have suggested that kyanite bearing assemblages were contemporaneous with $D_{2,}$ and sillimanite post dated ductile deformation (Kuhns et al., 1994).

2.4.5 Alteration and Mineralization

The dominant style of alteration that is spatially associated and potentially genetically related with the Hemlo gold deposit is feldspathic alteration. This alteration was described in most detail by Muir (1997) and consists of both sodic and potassic alteration. Sodic alteration is observed to a lesser extent and is mainly concentrated in the western 20% of the deposit, where it is found to be pervasive as well as vein controlled. Potassic alteration makes up 80% of the feldspathic alteration and dominates the eastern end of the deposit. The potassic alteration zone is pervasive, centered around the main ore body. Its characterized by rocks containing granoblastic microcline-quartz with variable amounts of muscovite, barite, biotite and pyrite (Heiligmann, 2008). Sericitic alteration is closely associated with potassic alteration, occurring as quartz-sericite-pyrite schists host the bulk of the mineralization (Heiligmann, 2008).

In more mafic to intermediate units the alteration is characterized by increasing in chlorite and biotite. Other minor types of alteration include silicification, pyritization and carbonatization, which occur to varying degrees throughout the Hemlo gold deposit. Hematitization also occurs within and surrounding the Hemlo gold deposit and is accompanied by epidote. Not all types of alteration are thought to be genetically related to the Hemlo gold deposit. The timing of alteration is not well constrained; however, it has been proposed that the pervasive potassic alteration preceded other types of alteration and was produced in a dynamic and evolving hydrothermal system (Muir, 1997). Gold mineralization is predominantly associated with potassic alteration which has led to the suggestion that the main stage of gold mineralization and potassic alteration were coeval (Muir, 1997).

The ore mineralogy of the deposit is complex with over 50 minerals having been identified, these include native metals, sulphides, sulfosalts, oxides, and tellurides (Harris, 1989). The main minerals associated with gold mineralization are molybdenite, stibnite, sphalerite and realgar (Heligmann, 2008). Gold mineralization in the deposit mainly occurs as free Au associated with pyrite, molybdenite, V-Cr rich muscovite, and potassic alteration, which characterizes the main phase of mineralization (Muir, 1997). Other minerals associated with gold include cinnabar, stibnite, realgar, chalcopyrite, barite, scapolite, orpiment and fluorite (Muir, 1997). The free Au found at the Hemlo deposit can have variable amounts of Hg and Ag (up to 26.9% and 29.1%, respectively) associated with it (Bodycomb at al., 2000; Tomkins, 2004). Other elements associated with gold mineralization include Sb, As, Pb, Zn, V, W and Tl bearing minerals (Heiligmann, 2008).

There are four main types of host rocks found within the Hemlo deposit, these include lithologies that are feldspathic, muscovitic, baritic and biotitic (Heiligmann, 2008). The Hemlo gold deposit can be divided into three main zones of mineralization A Zone (eastern section), B zone (central section) and the C zone (western section; Muir, 1997). A and B zone display similar characteristics with disseminated Au and Mo occurring in thin fabric parallel zones that pinch out to the east section of the deposit. C zone displays different characteristics than A and B zones with Au-Mo being fracture controlled in a stockwork like system.

2.4.6 Deposit Models

Models have been proposed for pre-, syn- and post- peak metamorphism with regards to the timing of mineralization at Hemlo (Muir, 1997). The timing of mineralization with respect to metamorphism can be difficult to constrain as there is a consensus that one or more metal remobilization events take place (Burk et al., 1986; Kuhns et al., 1987; Muir, 2002; Tomkins, 2004). Corfu and Muir (1989b) recognized that the Hemlo gold deposit represents an area that had undergone a complex geological history of metamorphism, deformation and hydrothermal activity and as a result a number of models for the genesis of the deposit have been proposed.

An epithermal/syngentic model for the formation of the deposit was proposed by Goldie (1985), Valliant and Bradbrook (1986) and Panteleyev (1991). These authors argued that features such as vein-controlled mineralization, dilational jogs, crustified veins, comb textures and crystal lined vugs are evidence of boiling and characteristic of epithermal or syngenetic deposits (Goldie, 1985; Panteleyev, 1991). However, Muir (1997) noted that not all the features described above have been documented by all authors. Valliant and Bradbrook (1986) proposed that the major structures associated with the Hemlo gold deposit are syn-volcanic faults that acted as conduits for metal carrying hydrothermal fluids. Gold mineralization was subsequently precipitated within permeable volcanic rocks (Valliant and Bradbrook, 1986). Other features such as the presence of barite and specific mineral and metal associations have also been deemed characteristic of epithermal/syngenetic deposits (Hattori, 1985; Panteleyev, 1991). Muir (1997) identified some discrepancies with these models including the tectonic/structural setting and the low Au to Ag ratio and stated that the characteristics of the deposit suggest more of a mesothermal system.

A porphyry model has also been proposed as the Hemlo gold deposit does appear to be genetically, associated with a porphyritic intrusion (Stephens et al., 1986; Kuhns, 1988; Johnston and Smyk, 1992). Deposit features such as a large zone of pervasive alteration, mineralization in both the porphyry body and country rocks, fracture controlled and stockwork mineralization, dike swarms and breccia pipes and characteristic metal associations have all been argued as evidence for a porphyry system (Stephens et al., 1986; Kuhns, 1988). Timing constraints on the emplacement of the porphyry system are still debated with some models proposing pre-metamorphism (Kuhns, 1988) and others proposing post-metamorphism (Stephens et al., 1986). Although the deposit has features that are similar to those of porphyry systems, there are some characteristics that make a definitive classification difficult. For example, the genetic relationship between the quartz-feldspar porphyry and mineralization is still tentative, and gold mineralisation is primarily constrained to high strain zones, which has resulted in the overprinting of any primary features within the deposit (Muir, 1997).

The Hemlo gold deposit is structurally complex, with ductile structures being the host for gold mineralization. This has lead to the proposal of a shear zone hosted model (Colvine et al., 1988; Sibson et al., 1988). Some of the features of Hemlo that support this model include; mineralization occurring within deformation zones, mineralization hosted within veins, breccias and stockworks in the ore zones following the geometry of large-scale structures and mineralization within units with strong competency contrasts (Burk, 1987; Colvine et al., 1988). This model accounts for a lot of the problems with the porphyry model. The major problems with this model are due to the challenges linking the timing of gold mineralization with a specific geologic event. The LSSZ that hosts much of the mineralization is a ductile, high strain fault which has lead to the suggestion that the mineralization occurred syn-D3, which was dominated by dextral deformation (Hugon, 1986). Muir (1997) noted that although characteristics of the deposit display features of a shear zone hosted deposit, mineralization and alteration may have pre-dated periods of high strain.

Skarn models have been proposed by Meinert (1989) and Pan and Fleet (1991). Evidence from the Hemlo gold deposit supporting this model include calc-silicate alteration, skarn typical mineral assemblages, ore minerals characteristic of skarn and the tentative relationship of gold with a skarn event. Pan and Fleet (1991) suggested that the gold bearing skarn metasomatism formed during a prolonged period from 2671 to 2637 Ma. This timing is later in the geological history of the deposit, forming after the major metamorphic and deformation events (Muir, 1997). The skarn alteration is by not restricted to the Hemlo gold deposit itself and is found to be prevalent in the metasedimentary units surrounding the deposit (Pan and Fleet, 1991). The amount of gold associated with the calc-silicate metasomatism is deemed to be minor and is thought probably just to represent Au remobilization, rather than the main mineralization event (Muir, 1997).

The highly varied and complex characteristics of the entire Hemlo Au deposit is best summarized by Muir (2002), who resultantly classified the deposit as an, "atypical, mesozonal-orogenic Au deposit". This type of classification and model is agreed upon by this study.

Chapter 3: Methodology

3.1 Field Sampling

Sampling in the Hemlo gold district took place over a two-month period from mid-June to mid-August 2016. Sampling was centered around the Barrick owned William's mine, extending up to 7 km to the east and west of the Hemlo gold deposit and up to 5 km to the north and south (Fig. 3.1). A total of 208 samples were collected from the Hemlo gold district, these included 190 rock samples from 180 outcrops and 18 drill core samples from a 950 m drill hole at the west end of the Hemlo gold deposit. When sampling in the Hemlo district a spacing of ~250 m was used for samples closer to the Hemlo gold deposit, extending up to ~500 m moving farther away from the deposit. The drill hole was sampled at intervals of ~50 m throughout its length. These intervals were used as guides when sampling; however, actual sample distribution was ultimately controlled by outcrop availability and presence of suitable material containing

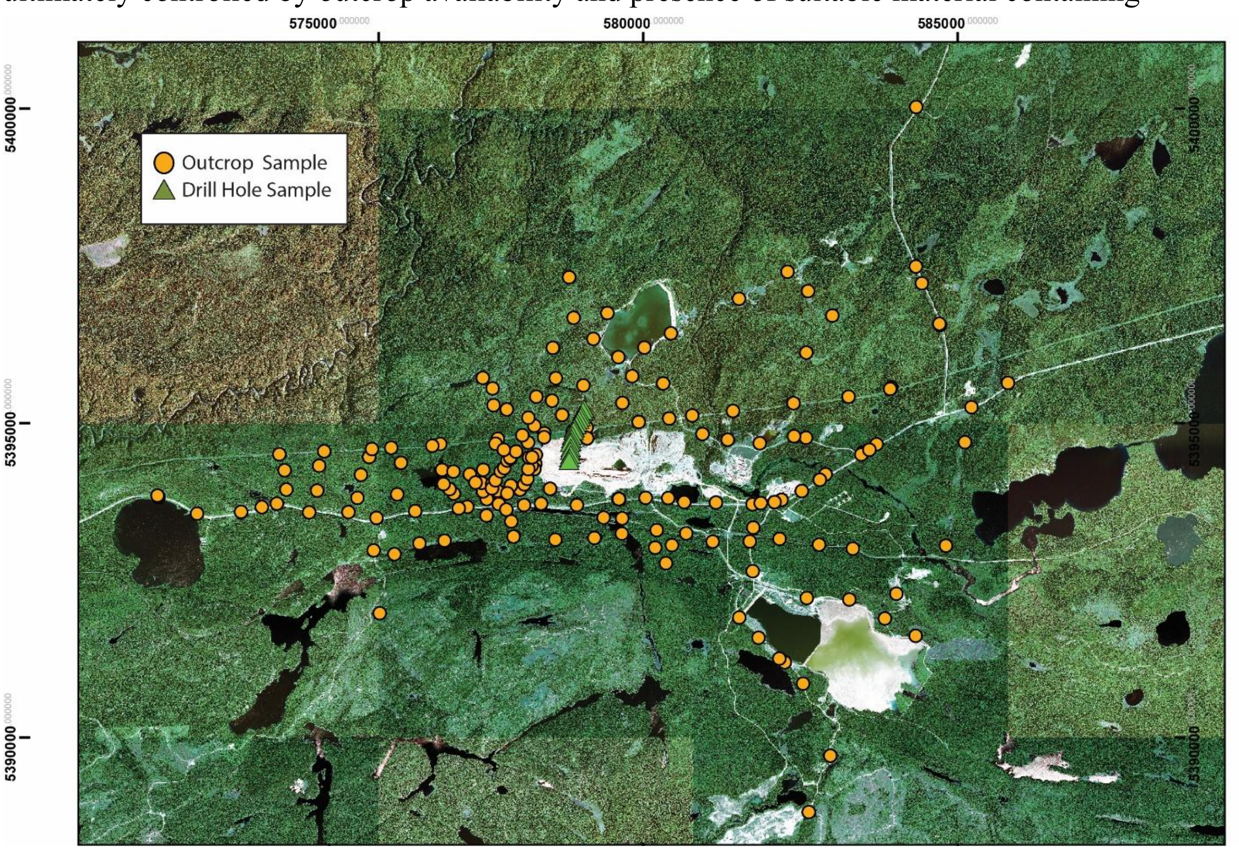

Figure 3.1: Sampling locations around the Hemlo Au district.

minerals of interest (i.e., epidote, chlorite and pyrite). Additional samples were collected from representative least altered lithologies for comparison to their altered counterparts. Dense bush conditions and lack of continuous outcrop made it difficult to do straight line traverses, so an overall well distributed sample coverage around the mine site was the main goal.

3.2 Whole rock Geochemistry

A total of 83 rock samples (78 from outcrop, 5 from drill core) collected from the Hemlo district were submitted to ALS Minerals Laboratory in Thunder Bay, Ontario for whole rock geochemical analysis to determine major, minor and trace element concentrations (Fig. 3.2). Samples were prepared for analysis by being weighed, dried and crushed until more than 70% of the sample could pass through a 2 mm mesh (ALS standard No. 10). A 250 g portion of the sample was riffle split and pulverized further until more than 85% of the sample passed through a 75 µm mesh (ALS standard No. 200). Samples were further prepared for major element analysis by taking 0.20 g of each sample, mixing it with 0.90 g of a lithium metaborate/lithium tetraborate flux and then fusing it at 1000 ^{o}C in a furnace. The melt was then dissolved in a 100 mL aqueous solution of 2% hydrochloric acid and 4% nitric acid. This solution was subsequently analyzed using inductively coupled plasma atomic emission spectroscopy (ICP-AES) to determine major element oxide concentrations. Trace and rare earth elements (REEs) were determined using inductively coupled plasma mass spectrometry (ICP-MS). During both major and trace element analysis reagent blanks, calibration standards and verification standards were included in the sample sequence.

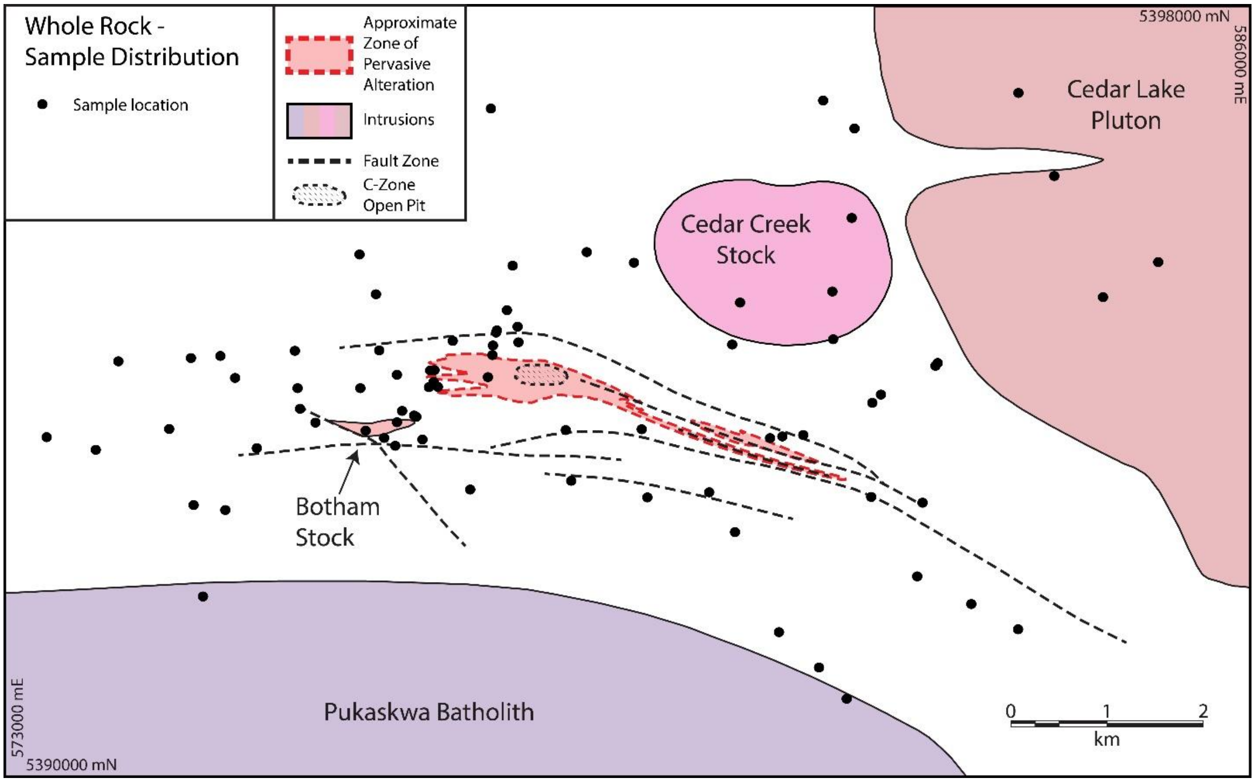

Figure 3.2: Distribution of samples submitted for whole rock geochemistry. Approximate zone of pervasive alteration from Muir (1997). Geological boundaries from Muir (2002).

Gold concentrations in each sample were determined by ICP-AES. Samples were prepared for analysis by taking a portion of each pulverized sample and fusing it with a combination of lead oxide, sodium carbonate, borax, and silica. The combination was alloyed with 6 mg of silver and then melted to form a metal bead. The metal bead was dissolved in a microwave oven first using a 0.5 mL dilute solution of nitric acid and then further by a 0.5 mL solution of hydrochloric acid at a lower power setting. The sample was cooled and diluted to 4 mL using distilled water before analysis.

Total sulphur concentration was obtained by taking a 0.01 - 0.1 g portion of each sample and heating it to approximately 1350 ºC in an induction furnace while oxygen was being passed through the sample. Using a Leco sulphur analyzer the amount of sulphur dioxide being released from each sample was analysed and from that the total sulphur could be determined.

3.3 Mineral Compositions

The mineral chemistry analyses and any associated imaging for epidote, chlorite and pyrite were performed on polished circular epoxy mounts (diameter = ~2.5 cm). The mounts were cut, prepared and polished at the Lakehead University lapidary labs. Figures 3.3 and 3.4 below outline the location of the samples taken from around the Hemlo area from which the mounts were prepared.

3.3.1 Epidote and Chlorite

Epidote and chlorite trace element compositions were determined by LA-ICP-MS at the CODES facility at the University of Tasmania. Samples were observed under reflected light and spot maps were drawn on each of the sample mounts to act as a guide during LA-ICP-MS analysis. A total of 43 elements were analyzed at each spot. The ablation spot size was set to 30 μm, frequency 10 Hz, energy 85 mJ and fluence 14 J/cm^2. The analysis time for each sample was set to 90 s, the initial 30 s measured the gas background with the laser turned off and the remaining 60 s of signal analysis with the laser switched on. The primary calibration standard used was NIST-612 and was accompanied by standards GSD-1G and BCR-2G which were used to correct for plasma-loading effects, if present and used Ca as the internal standard element. These standards were run at the beginning and end of each LA-ICP-MS session as well as at hourly intervals during analysis. Typically, 25 spots were analysed on each mineral (epidote and chlorite) per sample. Data was reduced on site at CODES using in house software. The time intervals for data reduction were selected by visually inspecting each spectrum. Parts of the spectrum that displayed spikes in trace element data or displayed large variations in chemistry were not included in the integration (Figs. 3.5 and 3.6).

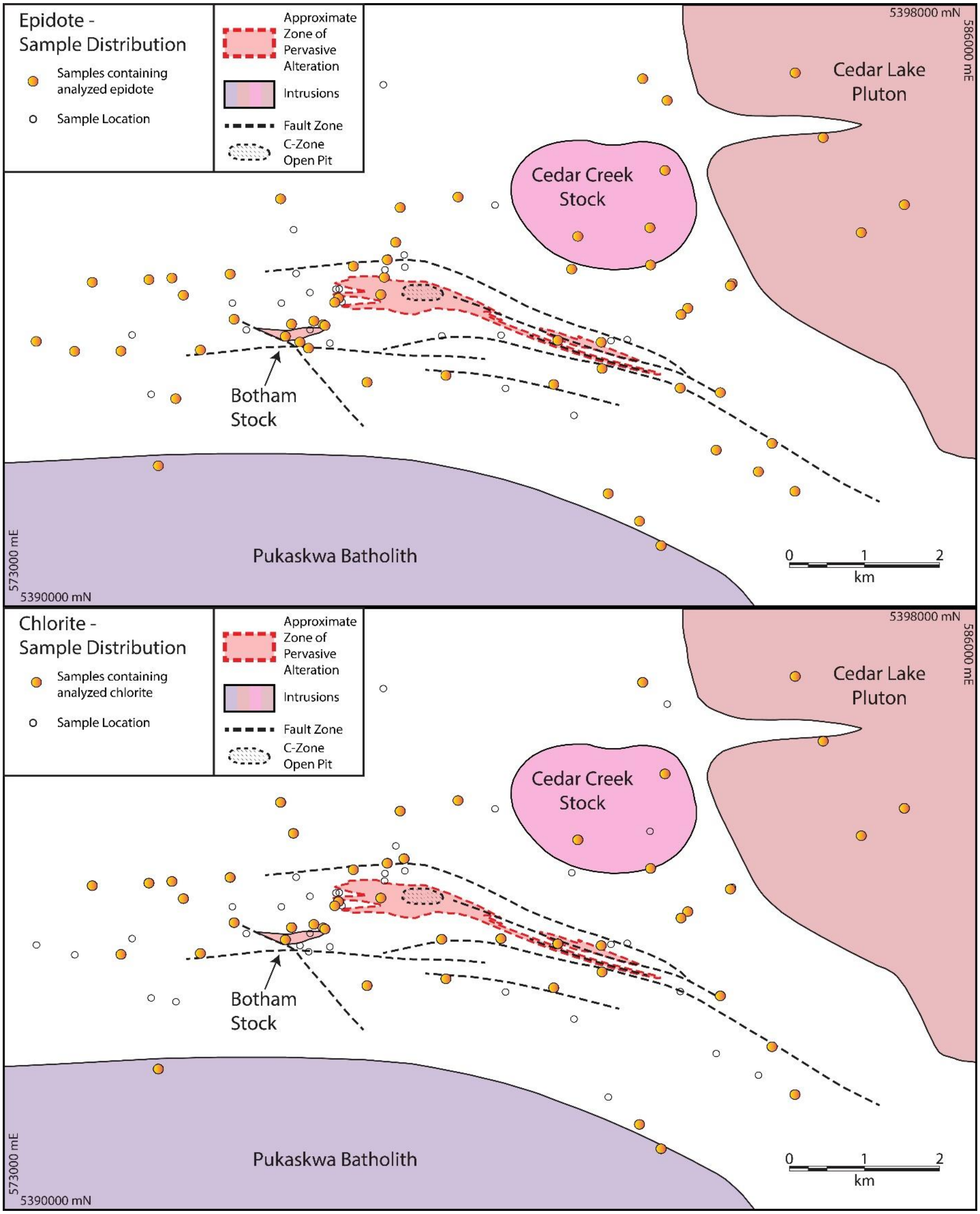

Figure 3.3: (Top) Distribution of samples containing epidote that underwent LA-ICP-MS analysis. (Bottom) Distribution of samples containing chlorite that underwent LA-ICP-MS analysis. Approximate zone of pervasive alteration from Muir (1997). Geological boundaries from Muir (2002).

3.3.2 Pyrite

Pyrite trace element chemistry was collected using in-situ LA-ICP-MS analysis at the CODES facility at the University of Tasmania. Prior to analysis sample mounts were etched with sodium hypochlorite to determine if there was any zonation within pyrite grains. The selected spots for laser ablation analysis were determined using reflected light microscopy with at least twenty-five spots selected for analysis per sample. A total of 40 isotopes were measured for each analysis.

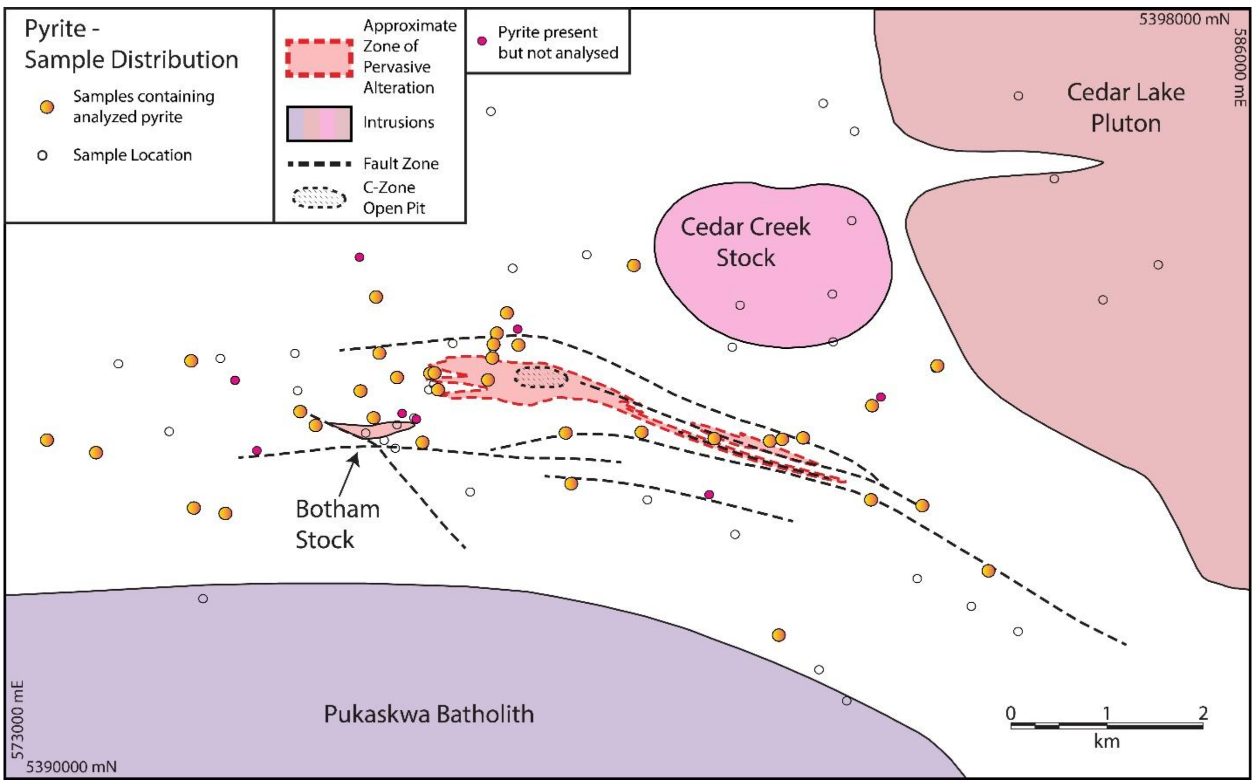

Figure 3.4: Distribution of samples containing pyrite that underwent LA-ICP-MS analysis, small pink dots denote location of samples that were found to contain pyrite but did not undergo analysis. Approximate zone of pervasive alteration from Muir (1997). Geological boundaries from Muir (2002).

Where pyrite grains were large enough, analysis spots were selected on the core and the rim of the grain. The ablation spot size used was set to 30 µm with a laser repetition of 5 Hz, an energy of 54 mJ and beam fluence of ~ 4 J/cm^2. The analysis time for each spot was 90 s with the first 30 s of analysis measuring gas background (laser off), and the latter 60 s of signal analysis with the laser on. Three standards were used to ensure quality of the data. Standards GSD-1G and STDGL3 were used for the pyrite analyses as the control with Fe as the internal standard element. The Peru Pyrite standard was also used as a baseline for Fe values. These standards were run at the start and end of each analytical session and were also run throughout the analysis after every 15 spot analyses. The collected data was processed on site at CODES using in house software for data reduction. The time intervals for data reduction were selected by visually inspecting each spectrum. Parts of the spectrum that displayed spikes in trace element data or displayed large variations in chemistry were not included in the integration (Fig. 3.5 and 3.6).

3.3.3 Quality Ranking

In addition to the reduction of mineral chemistry data each spot analysis was a given a quality ranking of 1 to 4 (Figs. 3.5 and 3.6). The data collection period for each spot analysis was 60 seconds. After the data was reduced a run where a 10 to 19 second interval was kept was given a quality ranking of 1. A run where 20 to 29 seconds of data was kept was given a ranking of 2. A run containing 30 to 39 seconds of data collection was designated a 3 and a run with >40 seconds of data collection was designated the highest ranking of 4.

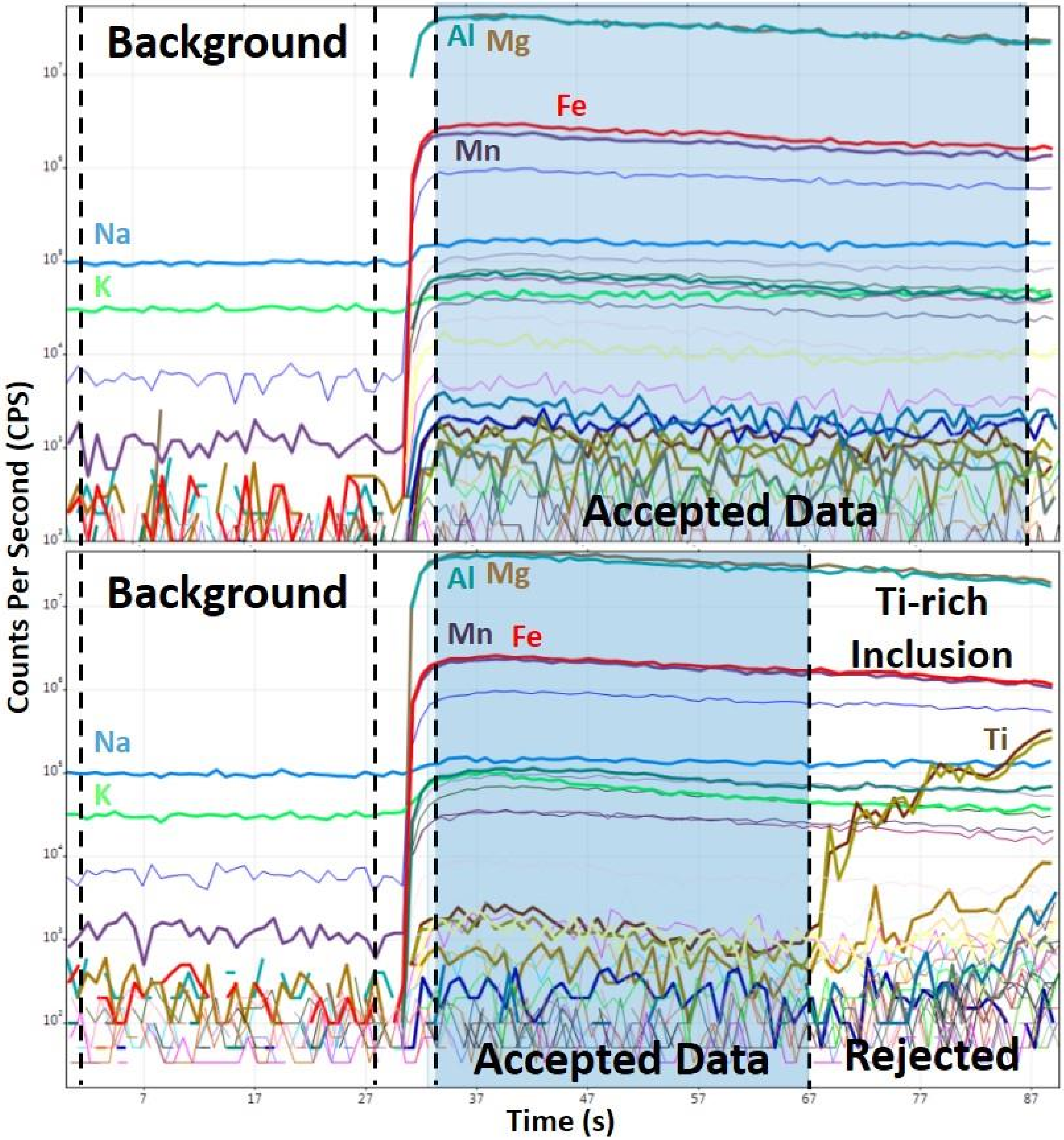

Figure 3.5: Two spot analyses from the collected chlorite data. (Top) A clean inclusion-free run from HM16JV004 – Circle 2, Spot 3 which has a quality ranking of 4; and (Bottom) a run from HM16JV038 – Circle 4, Spot 5 in which the data integration area has been reduced in order to remove the Ti-rich inclusion from the data set. This run has a quality ranking of 3.

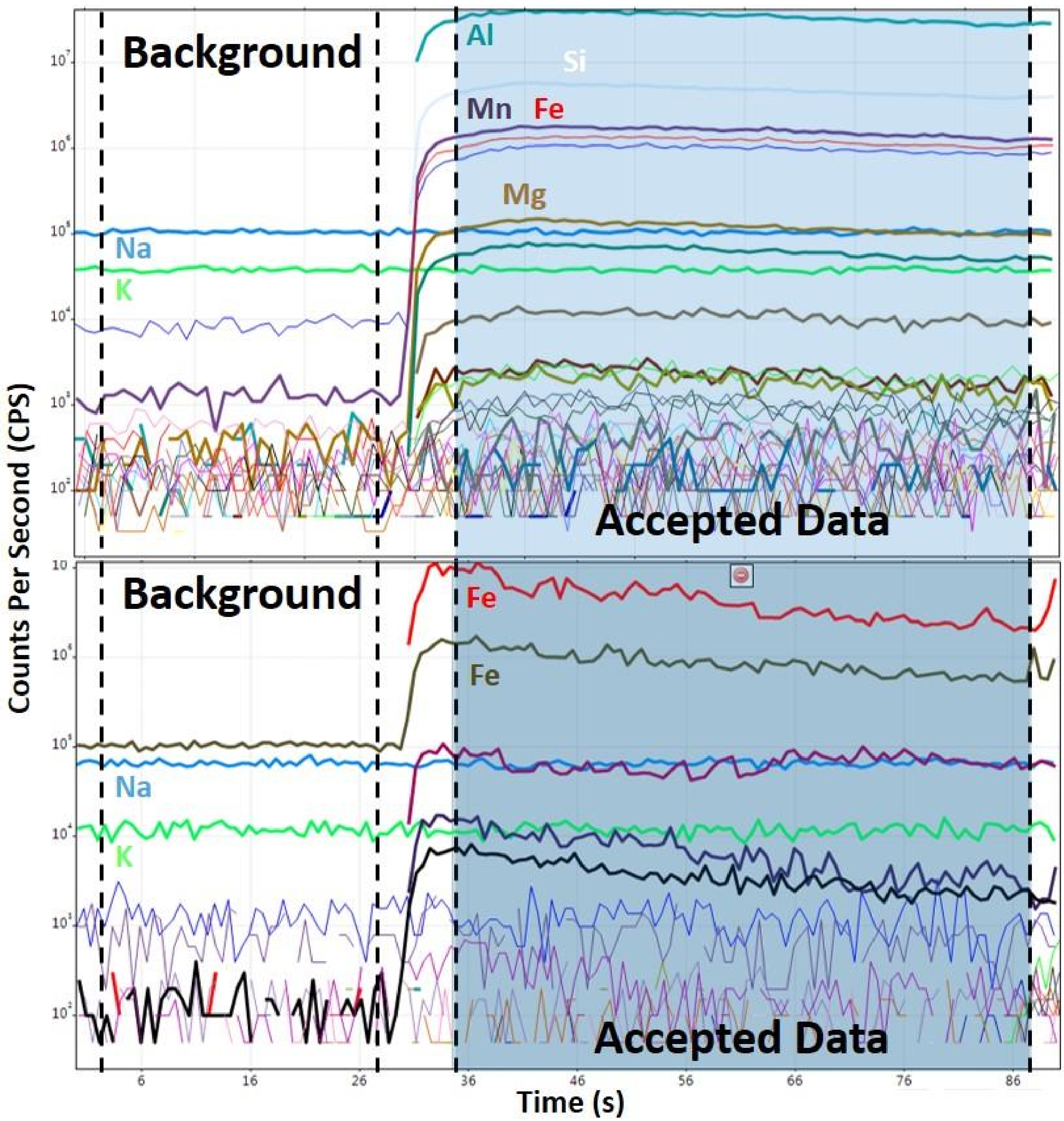

Figure 3.6: (Top) a clean contaminant-free spot analysis of epidote from HM16JV159 – Circle 4, Spot 4 which has a quality ranking of 4; and (Bottom) a clean contaminant-free spot analysis of pyrite from HM16JV155 – Circle 2, Spot 1 which has a quality ranking of 4.

3.4 Shortwave InfraRed Spectroscopy (SWIR)

Spectroscopic data were collected from the prepared mounts using a TerraSpec 4 Standard-Res mining analyzer. Sample spectra were obtained by holding the samples to the reading window of the instrument for 15 – 30 s. Light coloured samples were measured for 15 s while darker samples were measured for 30 s to obtain more accurate spectra. The light source was calibrated using a spectralon standard (white plate) after every sample. Multiple spectra were obtained for each sample, the reading window of the instrument was moved to different locations on the sample in-between analyses to target different areas of the sample. Raw spectra data was imported into Indico® Pro acquisition software for the extraction of the peak parameters such as wavelength, width and depth of absorption features. Spectra were self-interpreted by comparing the measured unknown spectra to known spectra from the USGS spectral library and The Spectral Geologist™ viewer software.

3.5 Corescan

3.5.1 Sample Preparation

Sample preparation for Corescan hyperspectral analysis was done at Lakehead University lapidiary labs. Samples were prepared by being slabbed on both sides of the sample in order to have flat surfaces on both, with slab thickness roughly ~2-3 cm. Samples were rinsed, scrubbed and air blown dry to remove any residue material picked up during the slabbing process. Samples were subsequently sent to Corescan analytical facility in Denver, Colorado, to undergo hyperspectral analysis.

3.5.2 Hyperspectral Sample Imaging

Hyperspectral imaging of samples took place at Corescan facilities in Denver, Colorado, with seventy-eight samples from the area surrounding the Hemlo gold deposit analysed. Spectral analysis of samples was conducted using the Corescan© Hyperspectral Core Imager, Mark III system (HCI-III), that operates in the Visible Near InfraRed (VNIR) and Shortwave InfraRed (SWIR) bands from 450 nm – 2500 nm. Prior to imaging spectral calibration was completed using NIST traceable rare earth element reflectance standards for tracking and calibrating spectral band positions. The system was also radiometrically calibrated using Spectralon® reflectance standards (30% and 70%) and dark current measurements to account for the dynamic range and for conversion of measured radiance to reflectance. These calibrations are performed prior to the imaging of each sample tray. Sample photography, spectral data and laser profile data are all collected simultaneously. Samples are photographed using spectrally and spatially co-registered digital RGB photography with 50 µm resolution. Samples undergo hyperspectral imaging at a resolution of 500 µm, 510 spectral bands, across the VNIR and SWIR spectrum (450 nm – 2500 nm). Average spectral resolution is ~4 nm, with VNIR bands measured at 2.8 nm and SWIR bands measured at 4.5 nm.

Spectral data for each sample was processed using proprietary Corescan spectral analysis software, Chameleon™, by Corescan spectral geologists. This software utilizes project specific algorithms to identify and spatially map out sample mineralogy. This was done by running spectral matching algorithms for each analysed pixel that compare sample spectra to known validated spectral libraries (i.e., USGS Speclib07; Kokaly et al., 2017) as well as internal Corescan libraries. For each mineral identified in a sample a spectral match image is created and displays pixel purity representing how well the pixel spectra matches the library spectra. The threshold match for each mineral can vary but was no lower than 92%. From here composite mineral classification maps were created that display the occurrence of all detected minerals within a single image. Additional compositional information (chemical composition and crystallinity) was also extracted and mapped for each sample. Interpretation of hyperspectral data obtained from the samples is an iterative and project specific process conducted by Corescan spectral geologists. Upon completion of raw data processing, all spectral data for each sample were visualized using Coreshed®, an online virtual coreshed. All the above information, as well as more in-depth information on the Corescan hyperspectral imaging procedure can be obtained from Martini et al. (2017).

Chapter 4: Field Observations and Petrography

4.1 Hemlo Au District Lithologies

4.1.1 Supracrustal Rocks

The Hemlo region hosts a diverse group of metavolcanic and metasedimentary rocks that have undergone a complex history of multistage deformation, metamorphism and locally have undergone varying degrees of alteration (Muir, 1997). The multitude of overprinting geological events can make interpreting and distinguishing units quite challenging. To help investigate the complex geology, the unit nomenclature used herein has been adopted from Muir (1997) as his regional work for the Ontario Geological Survey within and surrounding the Hemlo deposit is the most comprehensive to date. All supracrustal units have been observed to be dipping steeply (~70º) northwards and are striking mainly to the east (~90º) with a slight inflection of the strike to ~120º in the eastern part of the deposit. In this study and previous studies (Burk et al., 1986; Pan and Fleet, 1993; Kuhns et al., 1994; Powell et al., 1999; Muir, 2003; Heiligmann, 2004, 2008), the metamorphic grade has been observed to increase within the vicinity of the Hemlo gold deposit, with distal greenschist facies rocks increasing to amphibolite facies in rocks more proximal to the deposit. The protolith and degree of metamorphism have been assessed where enough geological evidence has been provided for an interpretation. See Figures 1.2 and 2.4 for geological and geographic locations surrounding the Hemlo gold deposit referred to henceforth.

4.1.1.1 Metavolcanic Rocks

4.1.1.1.1 Mafic Metavolcanic Rocks

The mafic metavolcanic rocks observed within the Hemlo district consist of metamorphosed flows, amphibolites and gneissic amphibolites (Figs. 4.1 and 4.2). The mafic metavolcanic rocks are the least common unit within the Hemlo district and have been variably recrystallized and only locally display primary volcanic features (i.e., vesicles, amygdules, flow features; Fig. 4.1). Mafic metavolcanic rocks occur distal to the Hemlo gold deposit, occurring in 100-300 m thick lenses interbedded with both metasedimentary and felsic-intermediate metavolcanic rocks. Mafic metavolcanic rocks were mainly composed of fine- to medium-grained amphibole (~75%), fine-grained plagioclase (~25%) and trace (<1%) sulphides (Fig. 4.3). The mafic metavolcanic rocks are mainly confined to the west of Botham Lake, south of the deposit near the margins of the Pukaskwa batholith and north of the deposit in the north tailings area. Mafic metavolcanic rocks are also found as a thin strip along the southern contact of the Hemlo fault zone that transects across the region.

Mafic metavolcanic rocks were identified as mafic flows based on the identification of primary volcanic features and consisted of non-descript, pillowed and amygdoidal flows. Pillowed flows were identified in two locations in the region with the best exposure seen on the southeast shore of Botham Lake, where a north facing direction was interpreted (Fig. 4.1). These pillows were 30-50 cm in size and had 3-5 cm thick selvages. The other exposure of pillowed mafic metavolcanic rocks was along the highway south of Botham Lake where deformed pillow selvages were identified (Fig. 4.1). The deformation of the pillows prevented a confident interpretation of facing direction. Amygdoidal flows were identified only locally in the area south-east of Botham Lake along the highway. The amygdules are mainly quartz with minor carbonate and are ~0.5-1 cm in diameter and comprised up to 20% of the rock.

Mafic metavolcanic rocks dispalying no primary features are interpreted to be part of flows due to extrapolation of units along strike, were described as amphibolites. Mafic metavolcanic rocks found along the Hemlo fault zone as well as north of Molson Lake displayed a gneissic fabric with medium-grained bands of hornblende and fine-grained bands of plagioclase ± quartz ± carbonate (Fig. 4.2). These mafic metavolcanic rocks did not preserve primary flow features and are described as gneissic amphibolites. This gneissic texture ranges from weak to well developed, with the most well-developed gneisses occurring within ~100 m of the contact with the Pukaskwa batholith and along the Hemlo fault zone. Near this contact the Pukaskwa batholith is observed to intrude into the gneissic amphibolite as a swarm of dykes that trend parallel to the main fabric (~110°; Fig. 4.4). Gneissic amphibolite north of the southern tailings area has undergone epidote alteration with the plagioclase bands within the gneiss being almost completely replaced by epidote (Fig. 4.4).

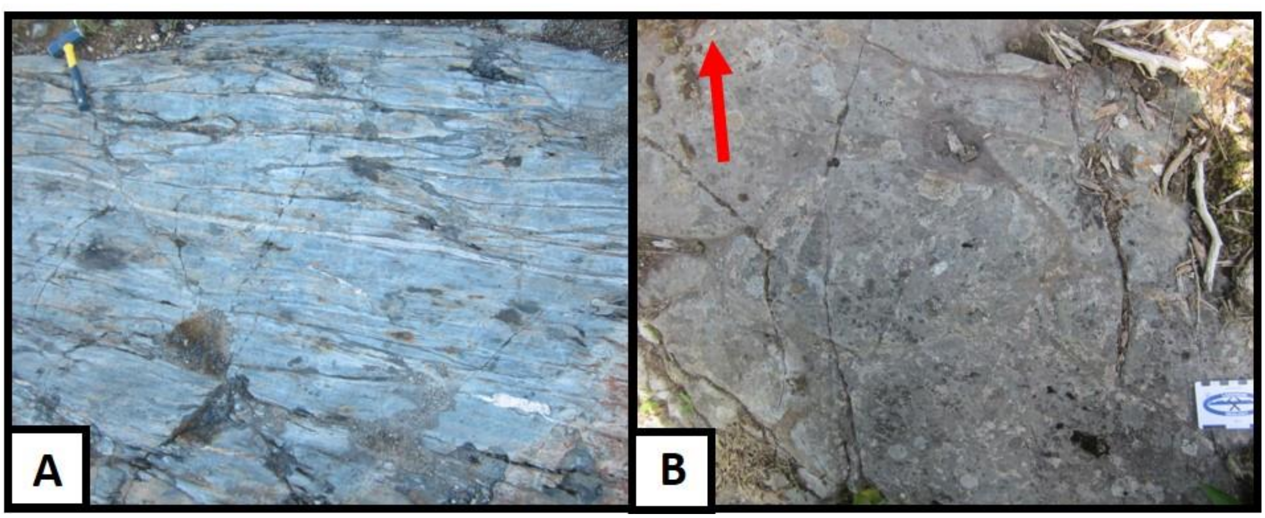

Figure 4.1: Outcrop photos of mafic metavolcanic rocks from the Hemlo district: (A) Deformed pillow basalts. (B) Pillowed mafic metavolcanic rocks, red arrow indicates interpreted facing direction. Scale card in centimeters.

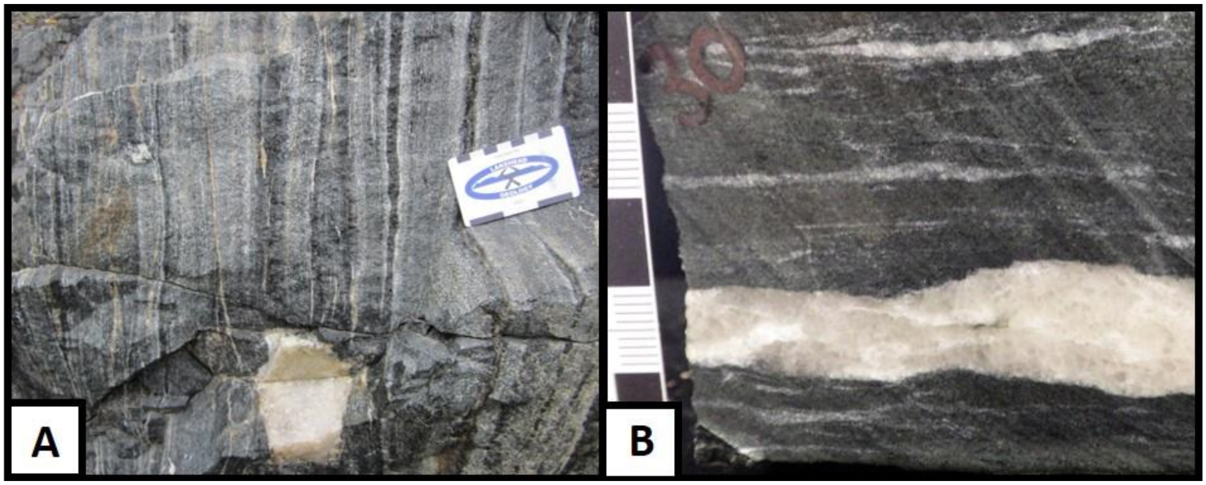

Figure 4.2: Photos of mafic metavolcanic rocks from the Hemlo district: (A) Outcrop of gneissic amphibolite. (B) Slab photo of non-descript amphibolite cut by barren quartz-carbonate veining. Scale card in centimeters.

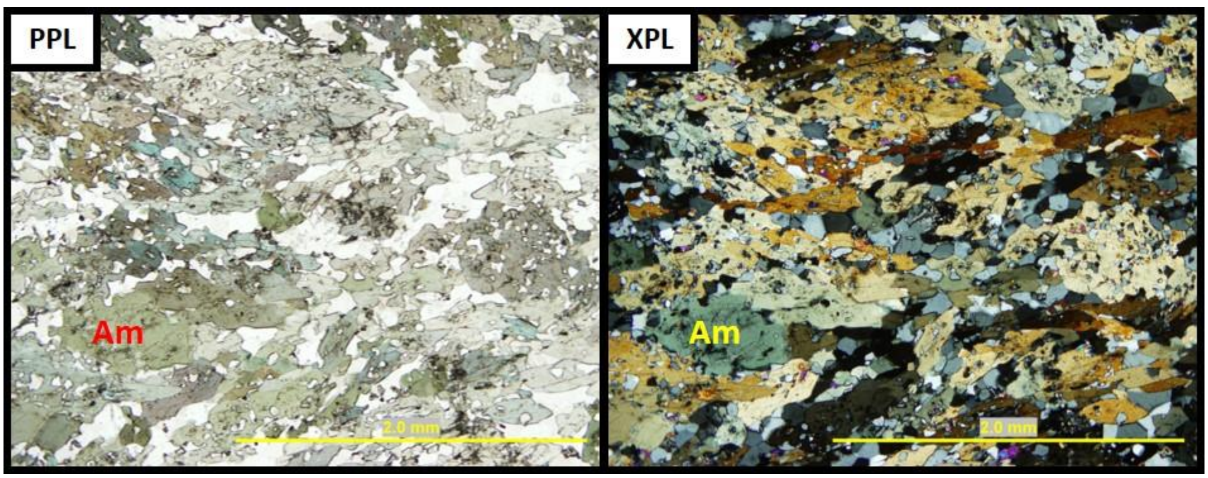

Figure 4.3: Transmitted light image of medium-grained poikioblastic amphibole (Am) with a very fine-grained groundmass of plagioclase (Pl) (HM16JV150: Gneissic amphibolite). (Left) plane-polarized light (Right) cross-polarized light.

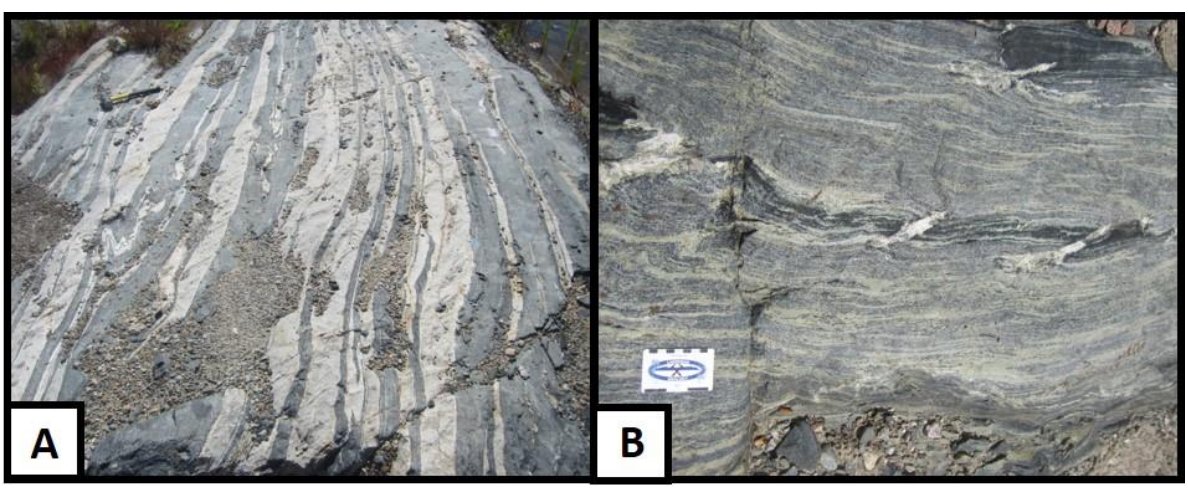

Figure 4.4: Outcrop photos of mafic metavolcanic rocks from the Hemlo district: (A) Gneissic amphibolite intruded by felsic dyke swarm near the contact with the Pukaskwa batholith. (B) Amphibolite gneiss with replacement of plagioclase bands with epidote. Scale card in centimeters.

4.1.1.1.2 Felsic to Intermediate Metavolcanic Rocks

Felsic to intermediate metavolcanic rocks were mainly observed directly west of the C-zone open pit. These units were only observed proximal to the deposit and were not identified in any other location throughout the study area. They mainly consist of volcaniclastic rocks of felsic to intermediate composition including tuffs, lapilli-tuffs, lapilli-stones and tuff breccias (Figs. 4.5, 4.6, 4.7). The felsic to intermediate metavolcanic rocks occur in east-trending packages that could be between 100-300 m thick and were over and underlain by metasedimentary units. Because of the high strain and alteration in some of these units it could be difficult to distinguish the more tuffaceous volcaniclastic units from the metasedimentary units without observing any primary volcaniclastic features. Directly west of the deposit the volcaniclastic units displayed both sharp well-defined and graded contacts.

Within these packages the volcaniclastic units were inter-layered and could vary from hetero- to monolithic. The most common clast were fragments of plagioclase ± quartz porphyritic volcanic rock, these clasts ranged in size from small lapilli to large blocks (Fig. 4.5). Less common are aphyric felsic to intermediate volcanic clasts and rare mafic clasts all typically occurring as small lapilli-sized (Fig. 4.7). The groundmass mainly consists of very-fine grained quartz and feldspar with relict fine- to medium-grained quartz and plagioclase phenocrysts (Fig. 4.8). The groundmass also consisted of fine-grained micas that consists of up to ~35 vol. %. Biotite is the dominant mica mineral in the intermediate units, whereas muscovite dominated the more felsic units. Pyrite was usually present within these units and could range in abundance from trace (< 1%) up to ~10 vol. %.

The felsic to intermediate volcaniclastic units are highly deformed and display a strong foliation fabric, with alignment of clasts parallel to the dominant D_2 fabric (~90°; Fig. 4.6). The volcaniclastic fragments are highly deformed and have an average stretching ratio of 5:1 (Figs. 4.6 and 4.7). The source of these volcaniclastic units is interpreted to be the subvolcanic quartz-plagioclase phyric porphyry (Moose Lake Porphyry; Muir, 1997). However, the contact between the cohesive porphyritic unit and the volcaniclastic units was not observed in this study.

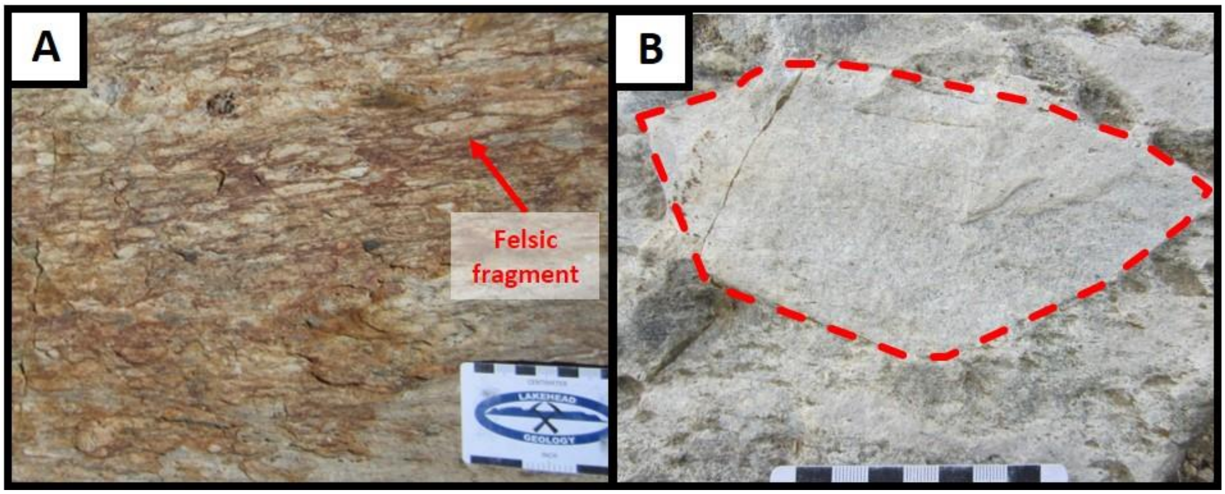

Figure 4.5: *O*utcrop photos of felsic to intermediate metavolcanic rocks from the Hemlo district: (A) Monolithic lapilli-stone with lapilli sized fragments supported in a pyrite rich matrix. (B) Large bomb sized clast of felsic quartz-feldspar porphyry in a tuff breccia. Scale card in centimeters.

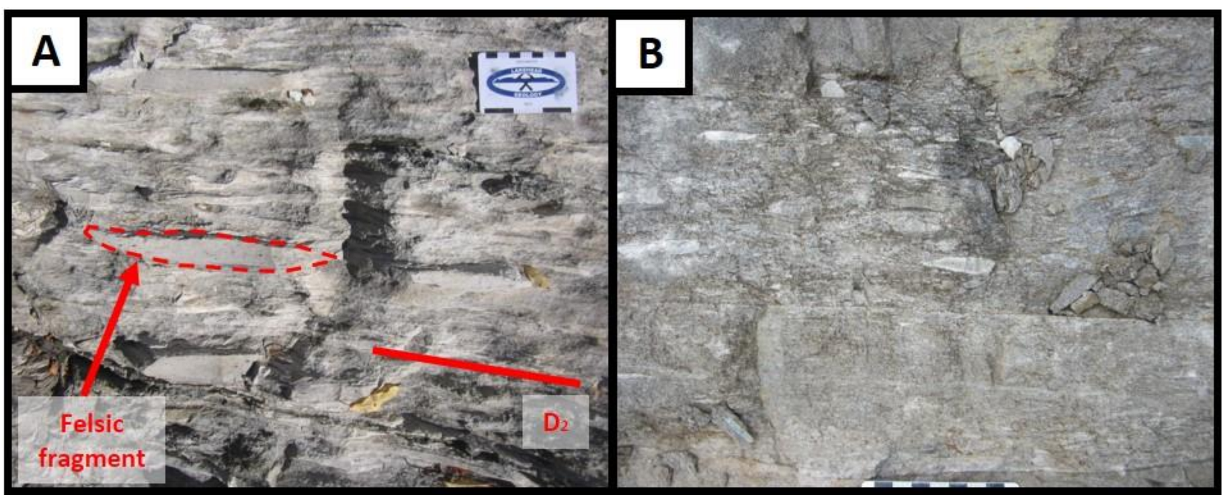

Figure 4.6: Outcrop photos of felsic to intermediate metavolcanic rocks from the Hemlo district: (A) Felsic heterolithic lapilli-tuff containing deformed quartz-feldspar porphyry and felsic clasts, illustrating the elongation of clasts parallel to the D_2 fabric. (B) Intermediate heterolithic lapilli-tuff. Scale card in centimeters.

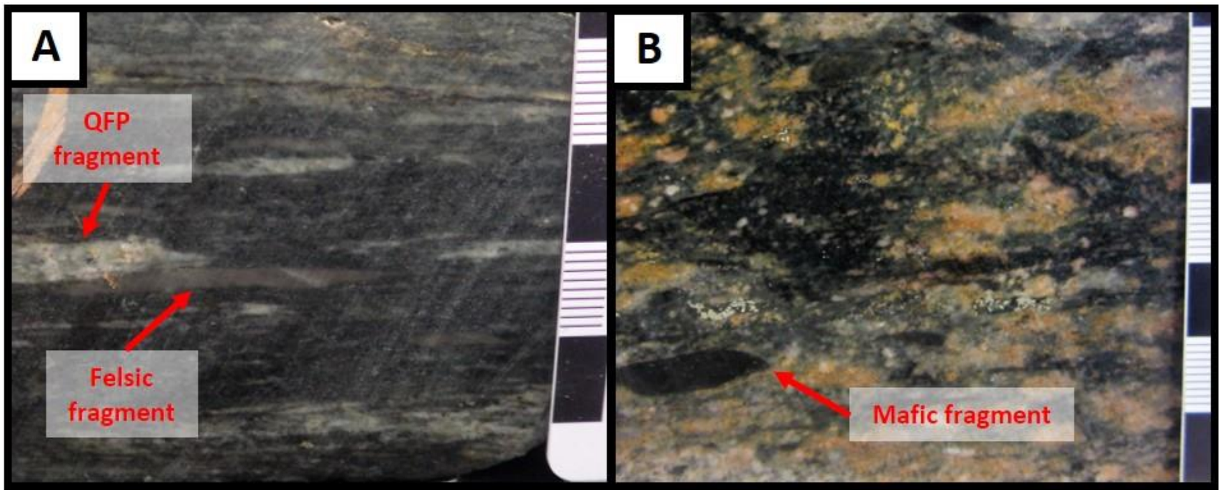

Figure 4.7: Slab photos of felsic to intermediate metavolcanic rocks from the Hemlo district: (A) Heterolithic lapilli-tuff containing deformed quartz-feldspar porphyry (QFP) and felsic clasts (HM16JV026). (B) Intermediate tuff containing a mafic fragment (HM16JV023). Scale card in centimeters.

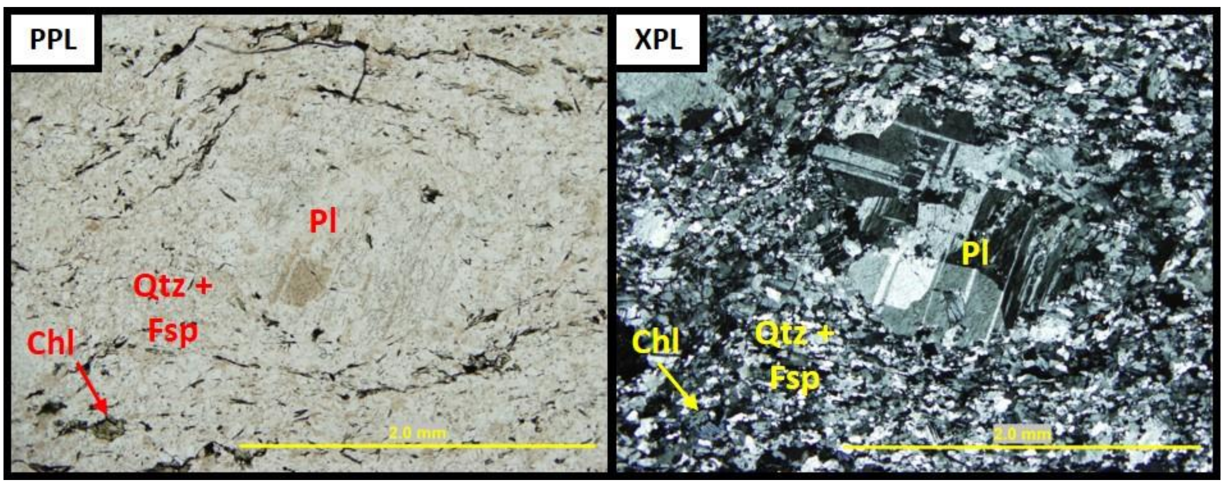

Figure 4.8: Transmitted light image of relict plagioclase (Pl) phenocryst in a very fine-grained quartz (Qtz), feldspar (Fsp) and chlorite (Chl) groundmass (HM16JV023: Felsic tuff). (Left) plane-polarized light (Right) cross-polarized light.

4.1.1.2 Metasedimentary Rocks

4.1.1.2.1 Biotite-amphibole-rich metasedimentary rocks

The biotite-amphibole-rich metasedimentary rocks of the Hemlo area are distal to the Hemlo deposit and are mainly composed of fine-grained quartz, minor feldspar, fine-grained biotite and/or amphibole (Figs. 4.8 and 4.9). This unit is distinguished from the more feldspathic metasedimentary rocks by the presence of >20 vol. % biotite and/or amphibole (Fig. 4.9). The protoliths of these metasedimentary rocks were interpreted to be conglomerate, siltstone and wacke. The most common and widespread of these units is a biotite-amphibole rich wacke. Based on the field evidence the protoliths for the immature metasedimentary rocks are most probably sub-aqueously deposited pelites and wackes. Locally the immature metasedimentary rocks contain porphyroblasts of garnet and staurolite (Figs. 4.9 and 4.10). Other than rare occurrences of relict bedding, grain size gradation and compositional layering, primary features of the immature metasedimentary units were not observed (Fig. 4.9). Where observable these primary features have usually been distorted to some degree due to regional deformation. All of the immature metasedimentary units displayed at least a schistose fabric with the intensity increasing to gneissic in some areas (i.e., Hemlo fault zone, margins of intrusions).

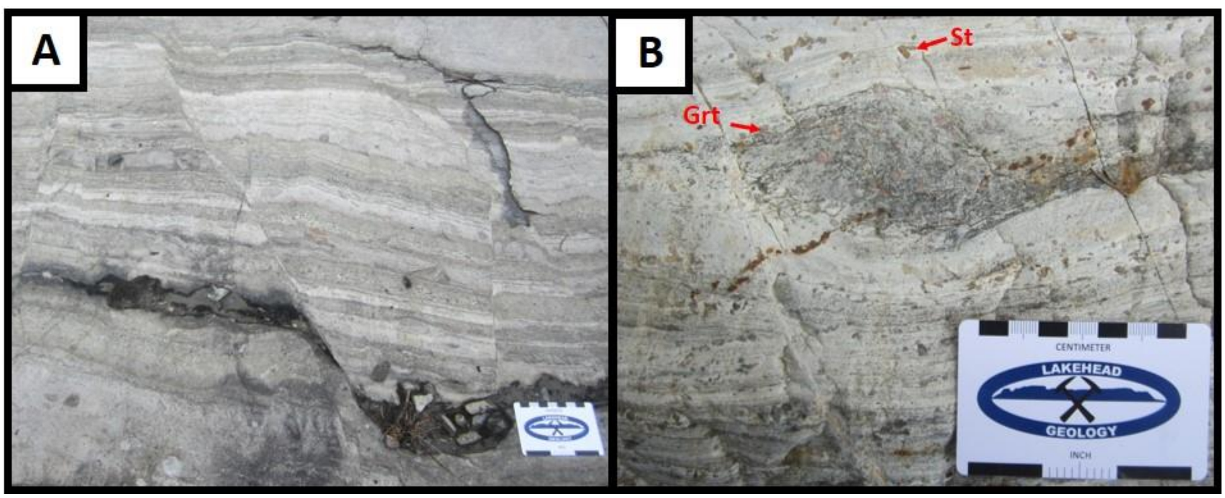

Figure 4.9: Select outcrop photos of biotite-amphibole rich metasedimentary rocks from the Hemlo district: (A) Offset graded bedding in biotite-amphibole wacke. (B) Garnet and staurolite pophyroblasts in a bioite wacke. Scale card in centimeteres.

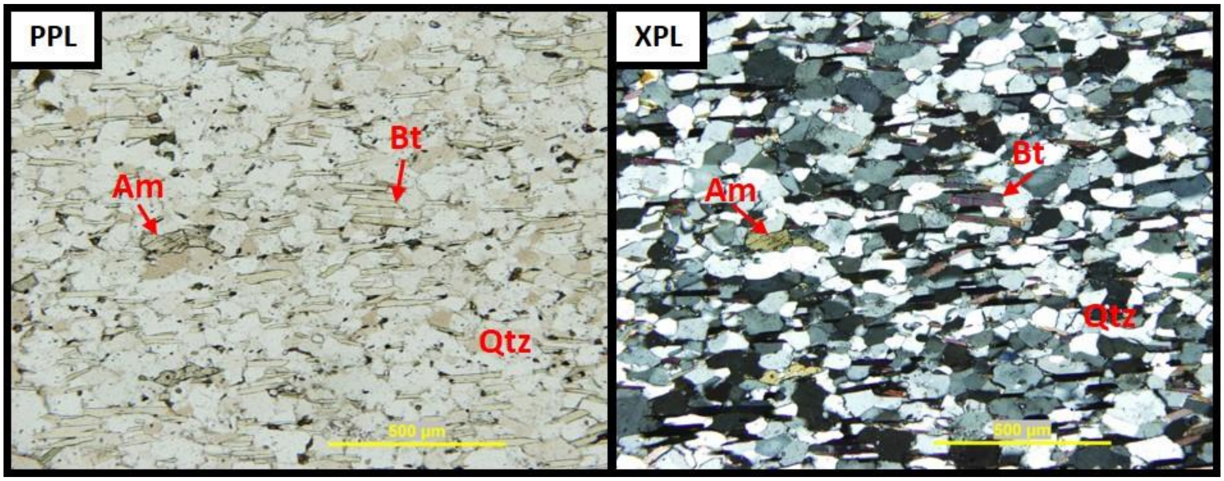

Figure 4.10: Transmitted light image of fine-grained biotite (Bt)-amphibole (Am) schist (HM16JV095). (Left) plane-polarized light (Right) cross-polarized light.

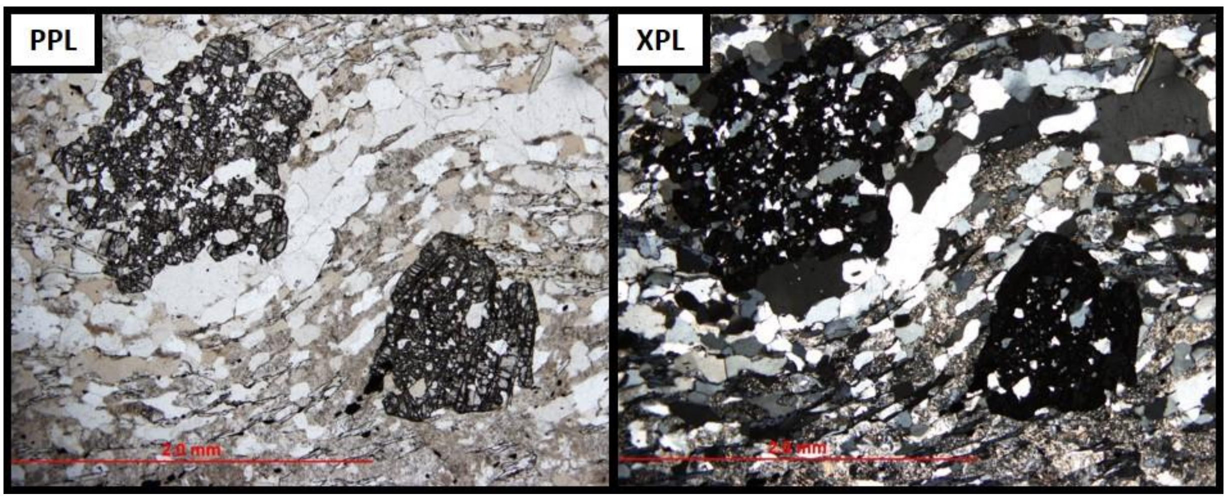

Figure 4.11: Transmitted light image of fine-grained garnet (Grt)-biotite (Bt) schist (HM16JV095). (Left) plane-polarized light (Right) cross-polarized light.

4.1.1.2.2 Quartz-feldspar rich metasedimentary rocks

The feldspathic metasedimentary rocks are spatially associated with the Hemlo deposit and are mainly composed of fine-grained quartz and feldspar (Fig. 4.12). These metasedimentary rocks are distinguished from their immature counterparts by containing < 20 vol. % biotite (Fig. 4.12). Muscovite is also a common mineral in this unit, it is usually fine-grained varying in abundance from 10-30 vol. %. In common with the immature metasedimentary rocks, three types of feldspathic protoliths were identified, a siltstone, an arenite and a conglomerate. The most common is the arenite which can locally contain quartz crystals. The arenite can be difficult to differentiate from the felsic volcaniclastic tuffaceous units. Porphyroblasts were not observed in this unit. The arenite mainly exhibits a schistose fabric that increased to gneissose adjacent to areas undergoing a higher degree of deformation. Feldspathic metasedimentary rocks usually contained trace pyrite (< 1 vol. %), but proximal to the deposit pyrite content was observed to increase up to ~8 vol. %.

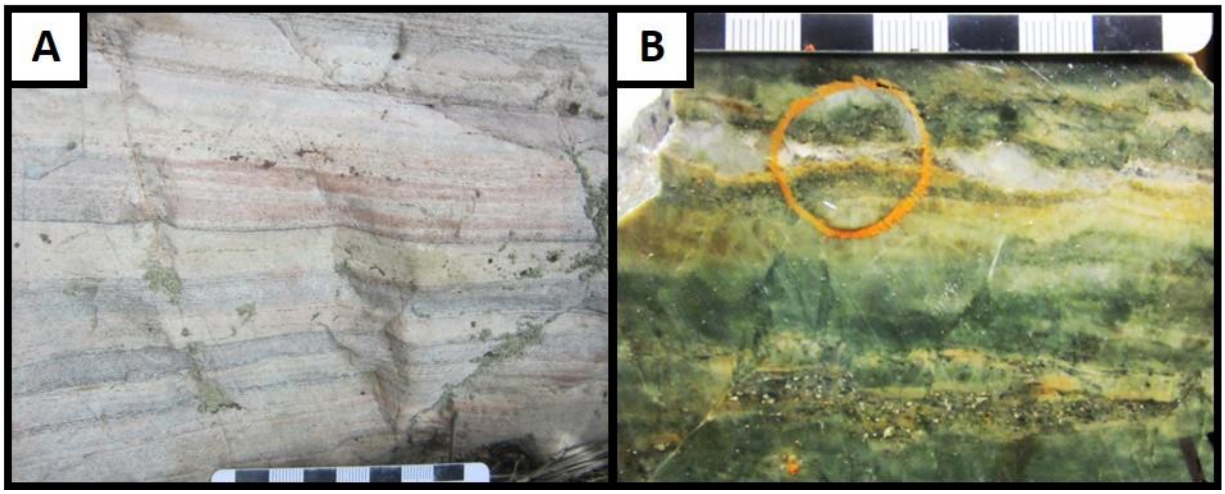

Figure 4.12: Select outcrop and slab photos of quartz-feldspar rich metasedimentary rocks from the Hemlo district: (A) Feldspathic arenite. (B) Chlorite + white mica altered feldspathic metasedimentary rock with disseminated pyrite surrounding a boudinaged quartz vein (HM16JV111). Scale card in centimetres.

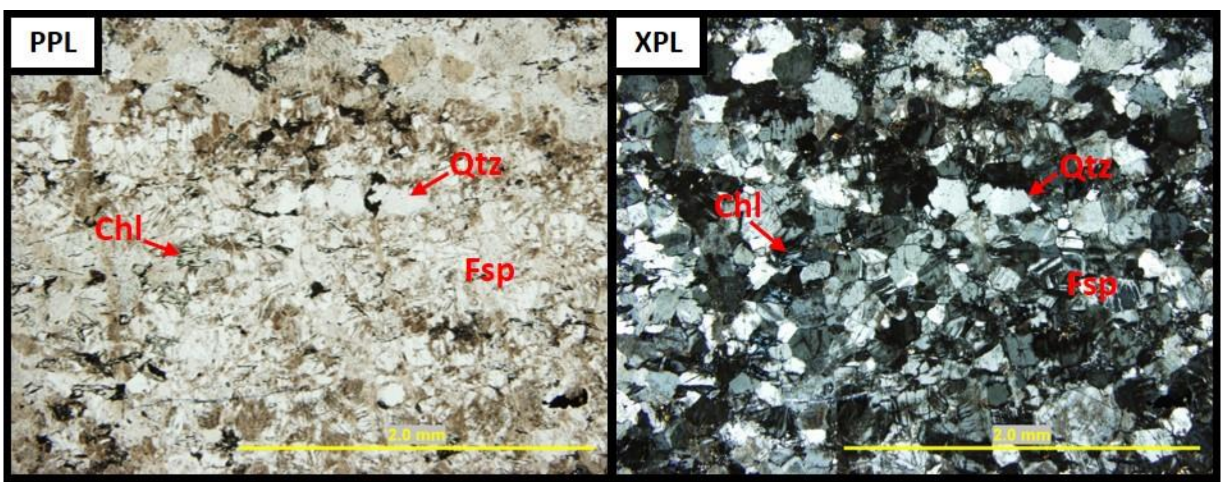

Figure 4.13: Transmitted light image of fine-grained quartz-feldspar-chlorite schist that has been hematite altered (HM16JV111). (Left) plane-polarized light (Right) cross-polarized light.

4.1.2 Intrusions

4.1.2.1 Pukaskwa batholith

The Pukaskwa batholith, also referred to as the Pukaskwa gneissic complex, is the largest and oldest intrusion in the Hemlo gold deposit area and is situated ~1.5 km south of the deposit. This intrusion was best observed to the south of Molson Lake and the main tailings pond area where it was well exposed in the walls of an old quarry. Two different phases of the Pukaskwa batholith were identified in this study; a plagioclase-phyric hornblende-biotite tonalite and a hornblende-biotite granodiorite (Fig. 4.14). A third phase of the Pukaskwa batholith, a plagioclase-phyric hornblende-biotite granodiorite, was documented by Muir (1997), but was not observed in this study. Biotite and amphibole was present in all samples. Compositionally this unit consists of; 18-26 vol. % quartz, 5-15 vol. % K-feldspar and plagioclase 44-62 vol. % (Fig. 4. 15). Two outcrops of granodiorite dykes were observed intruding into the mafic metavolcanic rocks as a swarm of dykes, cutting parallel to the regional fabric (Fig. 4.4). The dykes in this swarm were granodiorite in composition, range in width from 15-30 cm and displayed evidence of D_3 shearing. Internally, the Pukaskwa batholith was observed to be cut by a number of late stage pegmatite dykes, aplite dykes and epidote veins that cut the main body in a number of orientations (Fig. 4.16). The Pukaskwa batholith displayed a massive to weak gneissic fabric, with the fabric becoming more well developed towards the margins of the batholith (Fig. 4.16). Hematite staining of feldspars was observed locally in association with epidote veining. Within the zones of hematite staining biotite and amphibole were replaced by epidote and chlorite.

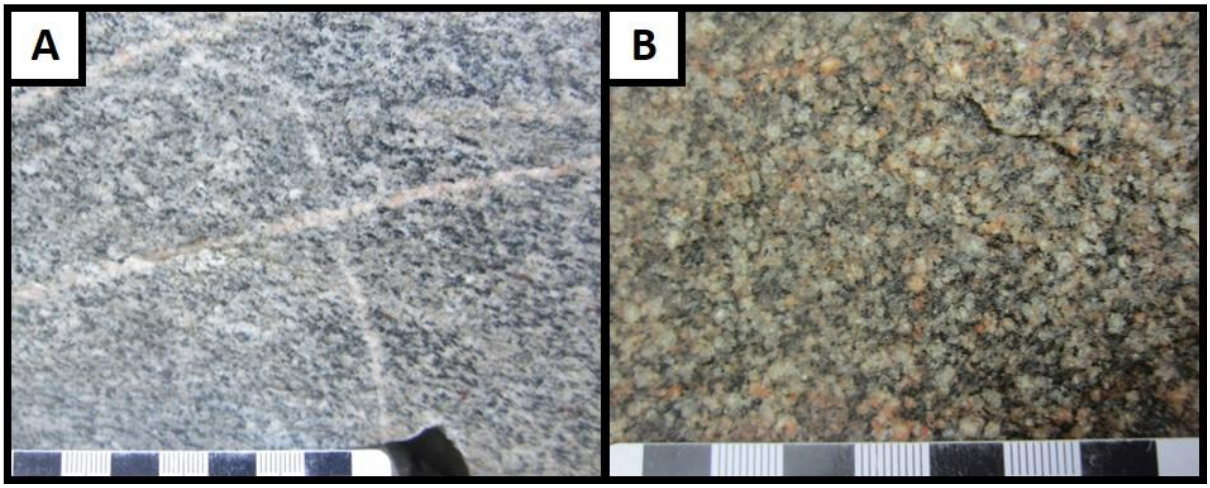

Figure 4.14: Outcrop photos of the Pukaskwa batholith: (A) Hornblende-biotite granodiorite (B) Weak to moderately hematite altered plagioclase-phyric hornblende-biotite tonalite. Scale card in centimetres.

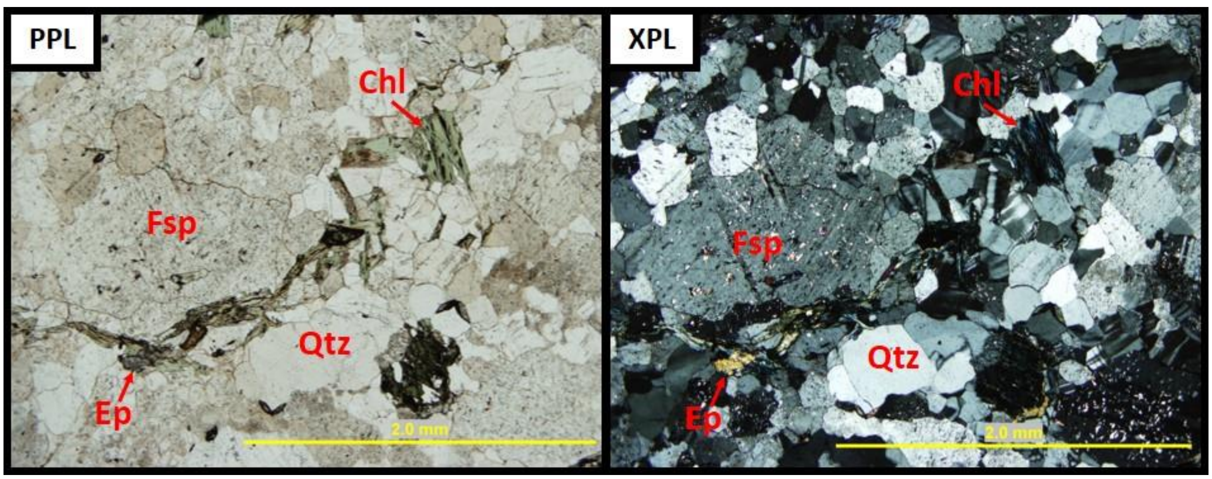

Figure 4.15: Transmitted light image of fine-grained quartz-feldspar-chlorite schist that has been hematite altered (HM16JV014). (Left) plane-polarized light (Right) cross-polarized light. Abbreviations: Ep – epidote, Fsp – feldspar, Chl – chlorite, Qtz – quartz

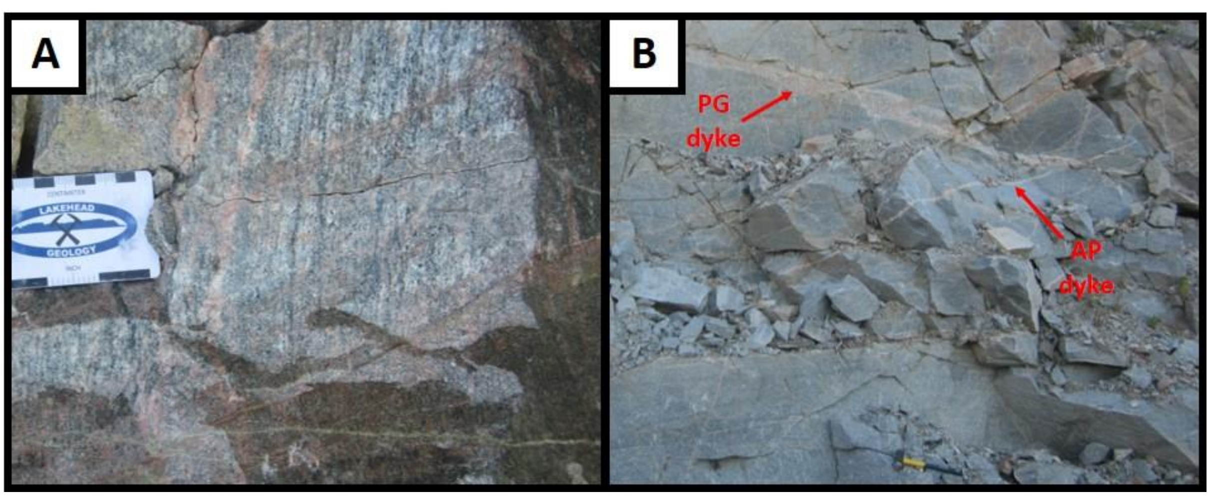

Figure 4.16: Outcrop photos of the Pukaskwa batholith: (A) Tonalite displaying a gneissose fabric being cut by epidote veins with hematite alteration halos. (B) Main tonalite body being internally cut by late stage feldspar-rich pegmatite (PG) and aplite dykes (AP). Scale card in centimetres.

4.1.2.2 Cedar Lake pluton

The Cedar Lake pluton is a large inter-belt pluton occurring to the east of the Hemlo deposit (Fig. 2.4). The Cedar Lake pluton was sampled from the northern and eastern margins of the study area up to its contact with the local supracrustal rocks. Good exposure of this unit along highway outcrops allowed for extensive sampling of the intrusion. A plagioclase-phyric hornblende-biotite granodiorite and a biotite-hornblende granodiorite were observed (Fig. 4.17). Mafic minerals present include hornblende and biotite (30 vol. %). The pluton was characterized by quartz contents from 22-33 vol. %, plagioclase feldspar from 44-68 vol. % and K-feldspar comprising 15-22 vol. % (Fig. 4.18). Locally biotite and amphibole were altered to epidote and chlorite in the presence of hematite that was usually associated with fracture-controlled epidote veining. In zones undergoing variable degrees of hematite alteration, replacement of feldspars by white mica was also observed. The contact between the Cedar lake pluton and surrounding metasedimentary rocks was observed to be sharp and irregular, displaying a gneissic fabric near the intrusion margins (Fig. 4.19).

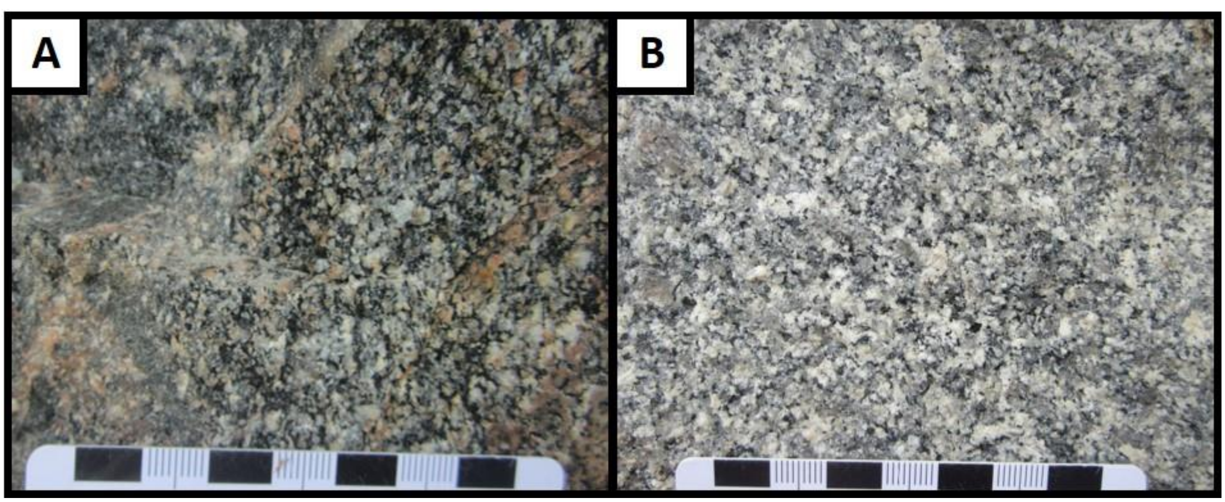

Figure 4.17: Outcrop photos of the Cedar Lake pluton: (A) Massive weakly hematite altered plagioclase-phyric hornblende-biotite granodiorite. (B) Massive textured unaltered hornblende-biotite granodiorite. Scale card in centimeteres.

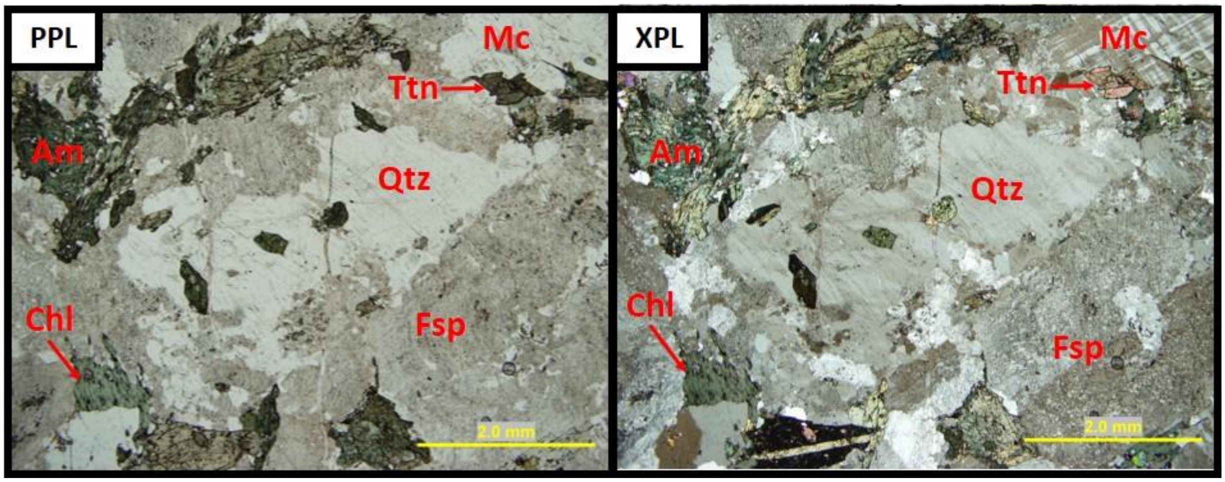

Figure 4.18: Transmitted light image of a granodiorite sample from the Cedar Lake pluton (HM16JV038). Abv: amphibole (Am), chlorite (Chl), feldspar (Fsp), microcline (Mc), quartz (Qtz), titanite (Ttn). (Left) plane-polarized light (Right) cross-polarized light.

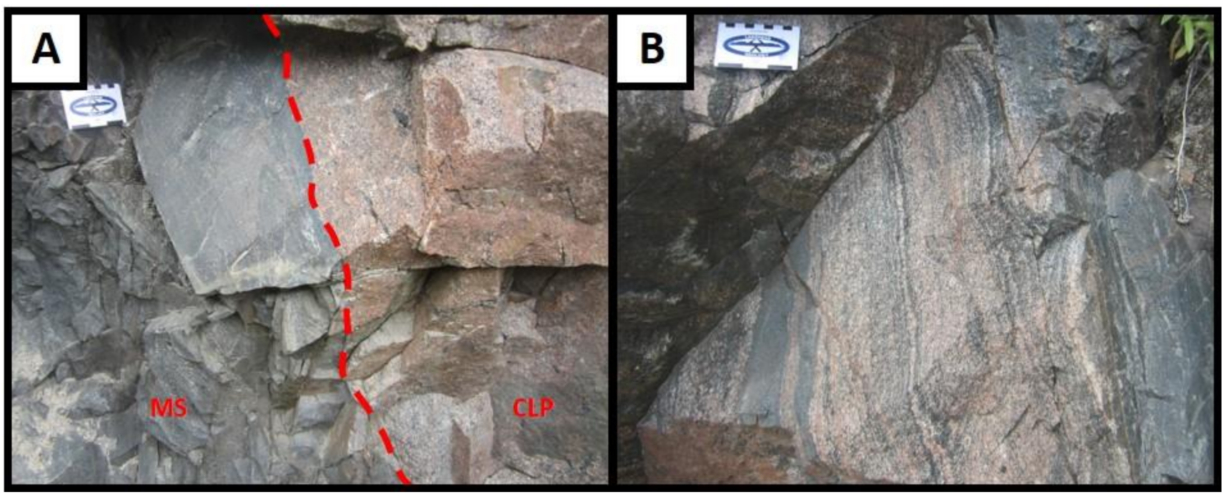

Figure 4.19: Outcrop photos of the Cedar Lake pluton (CLP): (A) Hematite altered granodiorite displaying a sharp irregular contact with a biotite-amphibole wacke (MS). (B) Granodiorite displaying a gneissic fabric near western margin of the pluton. Scale card in centimetres.

4.1.2.3 Cedar Creek stock

The Cedar Creek stock is an approximately 500 x 400 m oval shaped intrusion to the north-east of the Hemlo deposit (Fig. 2.4). The best exposure of this intrusion was along the powerline running north of the deposit. The Cedar Creek stock is thought to be a later phase of the Cedar Lake pluton and the two intrusions display similar mineralogy (Muir, 1997). The main differences are in the content of mafic minerals and quartz. The stock consists of a biotite-hornblende granodiorite (Fig. 4.20). The quartz content ranges from 28-40 vol. %, plagioclase from 45-61 vol. % and K-feldspar from 13-26 vol. % (Fig. 4.21). The quartz content of the Cedar Creek stock is slightly higher than that of the Cedar Lake pluton and the mafic mineral content is lowe,r consistent with it being a more evolved, later stage intrusion. One other major difference between the two is that the Cedar Creek stock has a significant aeromagnetic anomaly due to it containing disseminated magnetite. Alteration of mafic minerals to epidote and biotite is observed locally around epidote veins. Hematite alteration can happen on a variety of scales, occurring around epidote veins or pervasively throughout an entire outcrop. A weak fabric was observed in this unit at the margins of the stock.

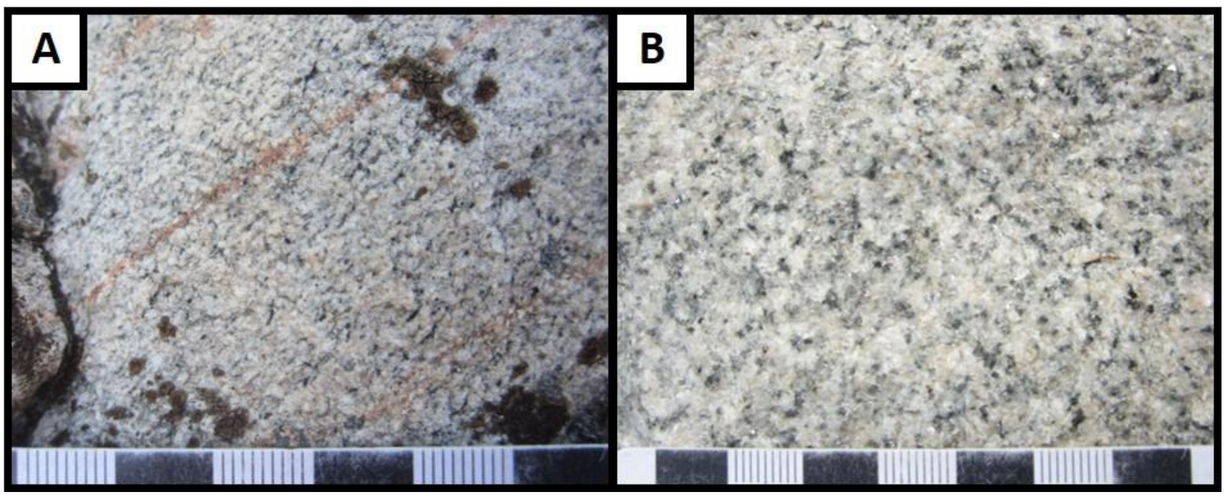

Figure 4.20: Outcrop photos of the Cedar Creek stock: (A) Weathered surface of plagioclase-phyric biotite granodiorite. (B) Massive unaltered biotite granodiorite. Scale card in centimeteres.

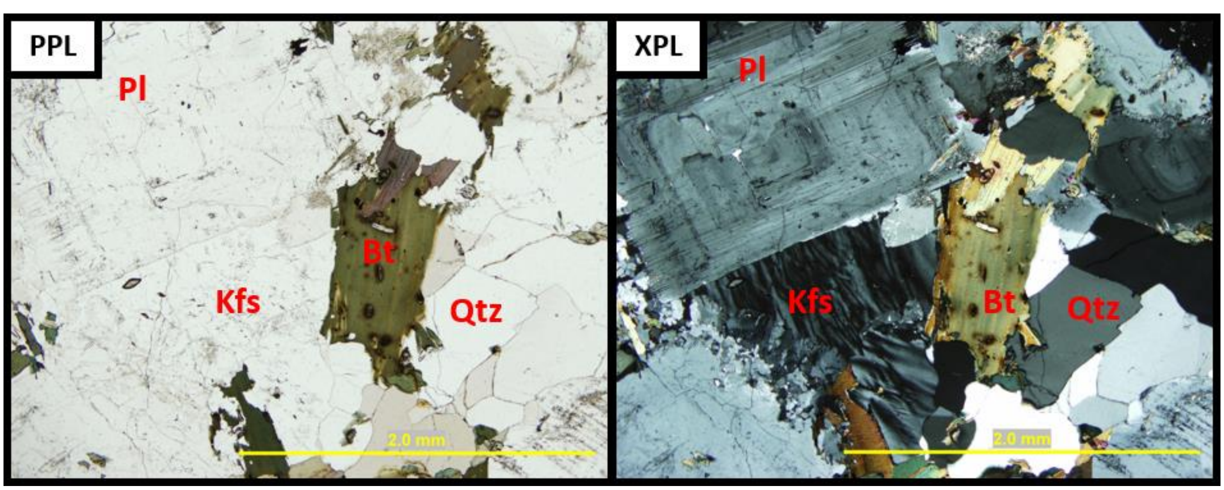

Figure 4.21: Transmitted light image of medium-grained unaltered biotite-granodiorite containing zoned plagioclase crystals (HM16JV081). (Left) plane-polarized light (Right) cross-polarized light.

4.1.2.4 Botham stock

The Botham stock is a small disaggregated intrusion or intrusions that occur directly to the west of the Hemlo deposit close to Botham Lake. This unit cropped out in several areas, but no contact relationships were observed with the surrounding supracrustal units. The Botham stock is the most porphyritic of all the intrusions containing coarse- to medium-grained plagioclase phenocrysts (Fig. 4.22). In numerous areas the stock has undergone intense hematite alteration associated with quartz + epidote or just epidote veins (Fig. 4.22). The only mafic mineral observed was biotite. The quartz content ranged from 15-25 vol. %, plagioclase from 40-58 vol. % and K-feldspar content from 7-14 vol. % (Fig. 4.22). The Botham stock displayed moderate to intense hemitization with alteration of the biotite in the groundmass to chlorite, and replacement of plagioclase phenocrysts by epidote (Fig. 4.23).

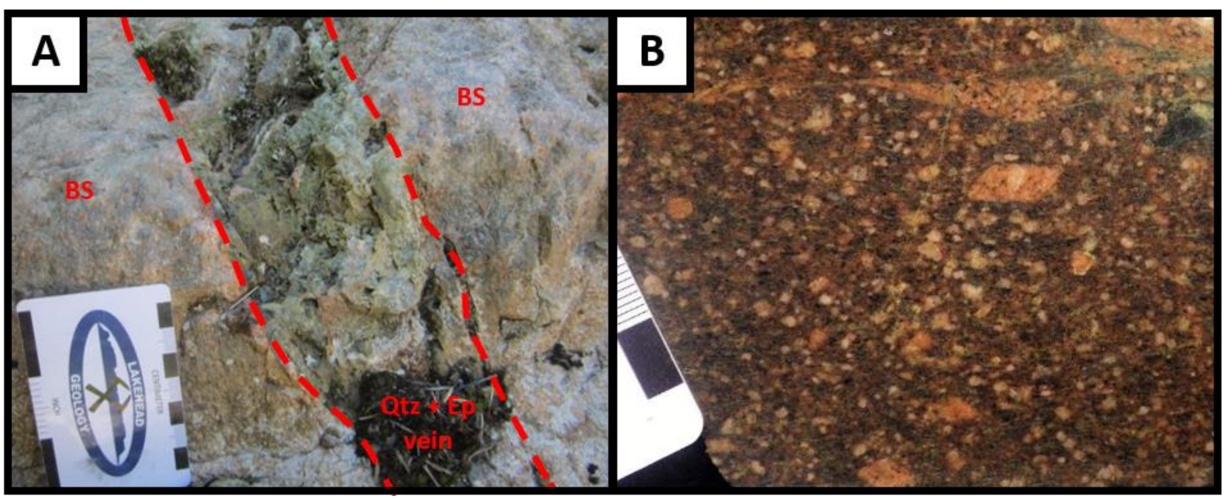

Figure 4.22: Select outcrop photos of the Botham stock (BS): (A) Hematite altered plagioclase-porphyritic granodiorite cut by a quartz (Qtz)-carbonate (Cb)-epidote (Ep) vein. (B) Weakly foliated hematite altered plagioclase-porphyritic granodiorite. Scale card in centimeteres.

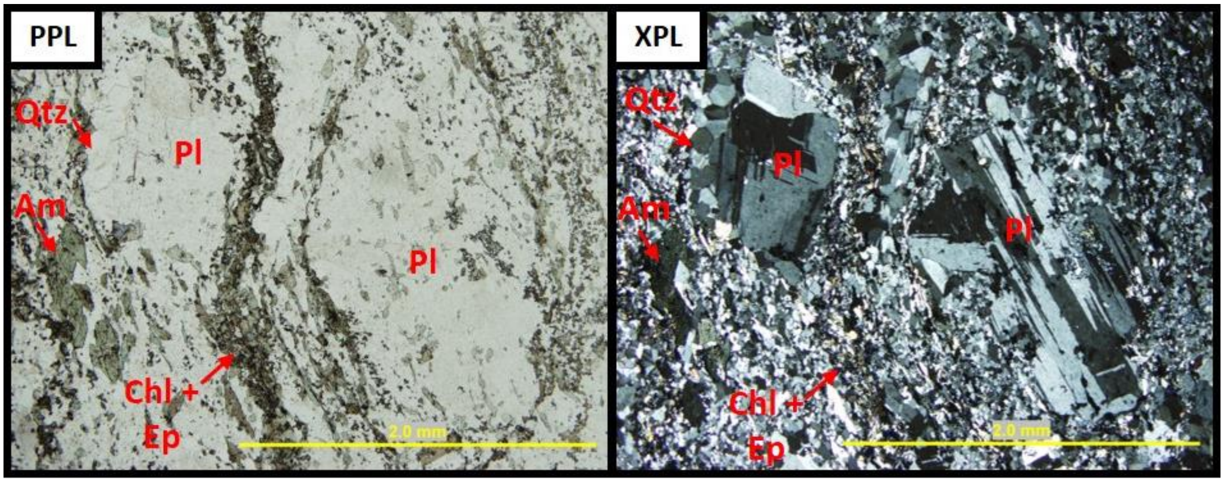

Figure 4.23: Transmitted light image of hematite altered plagioclase (Pl) porphyritic granodiorite, most mafic minerals have been altered to chlorite (Chl) and epidote (Ep), however some relict amphibole (Am) remains, zoned plagioclase crystals present (HM16JV081). (Left) plane-polarized light (Right) cross-polarized light.

4.1.2.5 Classification of intrusions in the Hemlo district

Using the modal abundances of quartz, alkali-feldspar and plagioclase, the intrusions were classified using the IUGS classification system (Fig. 4.24). The majority of the intrusive phases around Hemlo are classified as granodiorites. Only the Pukaskwa batholith displays any composition variation from the rest of the intrusions, with one of its phases being a tonalite.

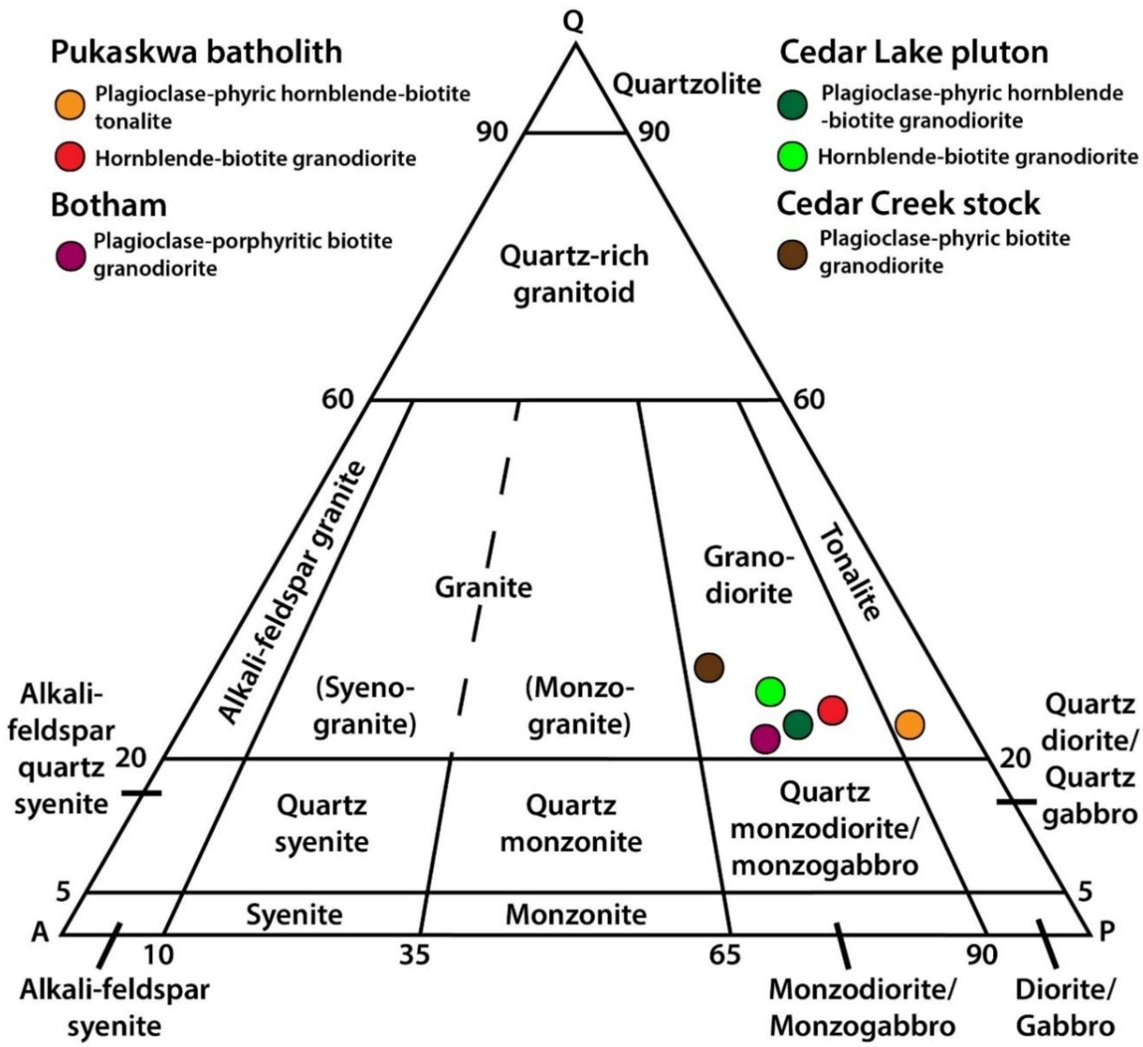

Figure 4.24: IUGS – QAP classification diagram of intrusions from the Hemlo district based on modal abundances of quartz (Q), alkali-feldspar (A), and plagioclase (P), from Le Bas and Streckeisen (1991).

4.2 Hydrothermal alteration in the Hemlo district

A combination of field and petrographic observations combined with Corescan mineral class maps, were used to describe the alteration observed throughout the Hemlo district. Alteration will be further discussed in upcoming chapters but will be briefly mentioned here from an observational standpoint.

4.2.1 Feldspathic alteration

Feldspathic alteration was only observed proximal to the deposit and occurred pervasively, in lenses or in veins. Feldspathic alteration was not easily identified in the field but was usually associated with a “bleaching” of the rock (Fig. 4.25). Thin veins were observed with bleached alteration halos that were resistant to erosion and this was interpreted to be feldspathic alteration (Fig. 4.26). This was confirmed using petrography where samples displayed an abundance of microcline or albite. Microcline and albite were present in variable amounts and were usually fresh in thin section (Fig. 4.27). The identification of fresh albite and microcline was based on the lack of breakdown to white micas, lack of grain size reduction as well as preservation of primary twinning (Fig. 4.27). Units with feldspathic alteration commonly contained above trace amounts (> 1%) of pyrite (Fig. 4.27). This type of alteration resulted in the destruction of plagioclase however quartz crystals appeared to be resistant (Fig. 4.25B). Feldspathic alteration in samples was further confirmed by whole rock geochemistry data.

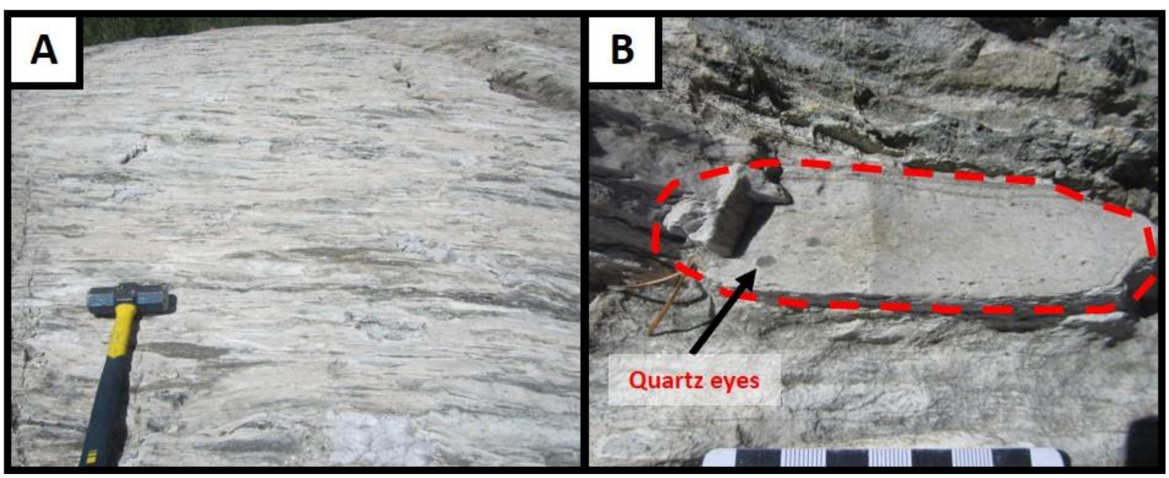

Figure 4.25: Outcrop photos of feldspathic alteration: (A) Heterolithic lapilli-stone displaying characteristic bleaching of feldspathic alteration. (B) Bomb sized clast in tuff-breccia undergoing feldspathic alteration, with preserved quartz phenocrysts. Scale card in centimetres.

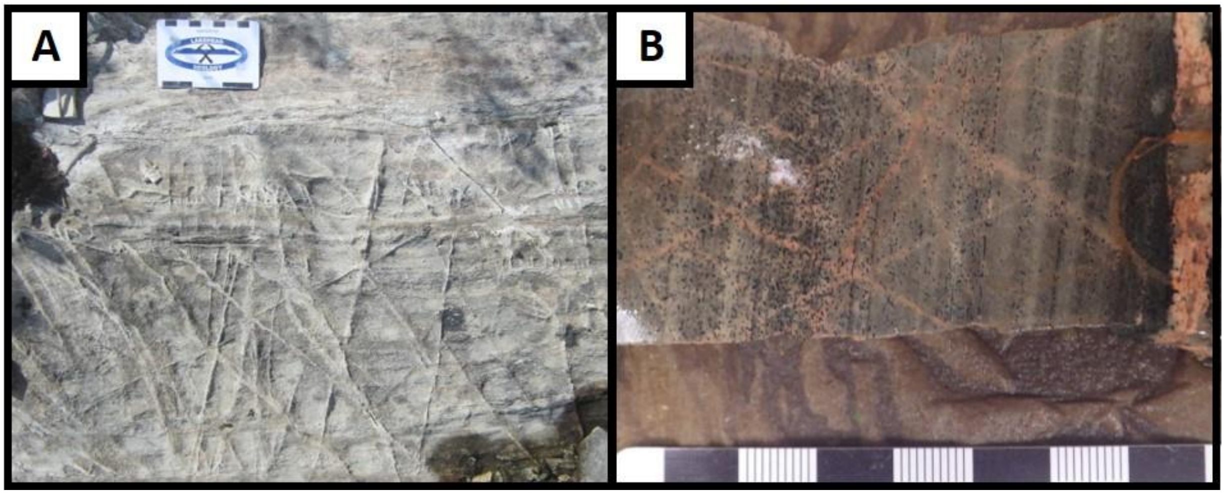

Figure 4.26: Photos of stock-work veining of feldspathic alteration: (A) Weathered surface of erosion resistant feldspar stockwork veins cutting a felsic tuff. (B) Slab photo of metasedimentary rock cut by stock-work K-feldspar veins (HM16JV196).

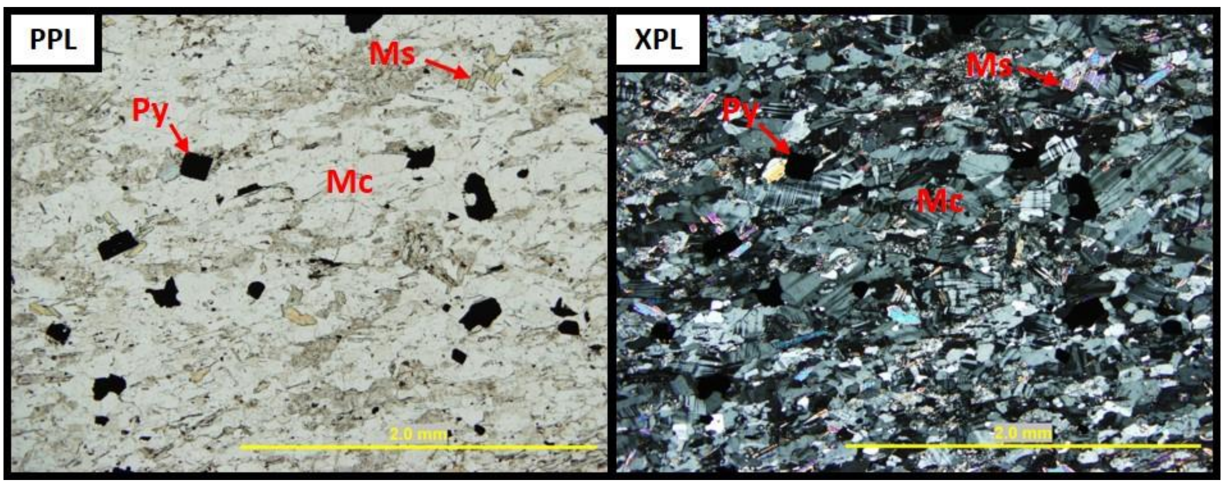

Figure 4.27: Transmitted light image of potassic alteration in a quartz-feldspar-muscovite (Ms) schist containing disseminated pyrite (Py), potassic alteration indicated by abundance of microcline (Mc) (HM16JV031). (Left) plane-polarized light, (Right) cross-polarized light.

4.2.2 Hematite

Hematite alteration is prevalent throughout the Hemlo district and observed within all the intrusions and within most of the supracrustal rocks, with the exception of the mafic metavolcanic rocks. This alteration was identified based on the characteristic brick red colouring associated with the dusting of feldspars with fine-grained hematite (Figs. 4.28 and 4.29). The degree of intensity of hematite alteration was estimated based on the intensity of the brick-red colouring (Fig. 4.28). This could vary from not present (no brick red staining) to intense (dark brick red staining; Fig. 4.28). Commonly, hematite staining was proximal to epidote veins occurring along fractures and joints (Fig. 4.30). Hematite alteration was commonly observed within and along the margins of intrusions and proximal (within ~100 m) to fault zones. Hematite alteration could occur locally surrounding the epidote veins or could be present on an outcrop scale.

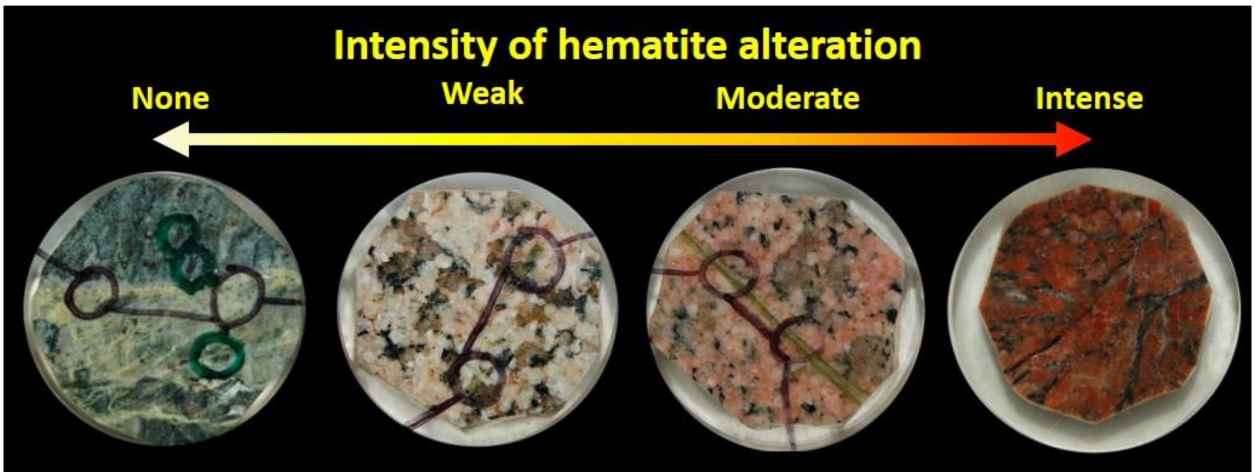

Figure 4.28: Scale demonstrating how intensity of hematite alteration was assessed. Samples from left to right: HM16JV102, HM16JV132, HM16JV193, HM16JV085. Puck diameter is ~2.5cm.

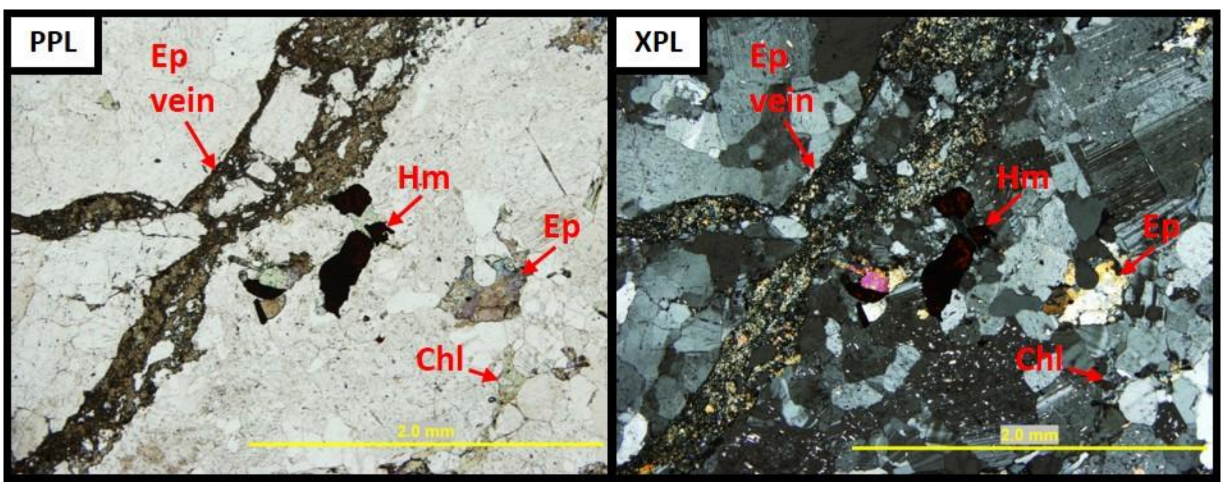

Figure 4.29: Transmitted light image of medium-grained granodiorite cut by an epidote-(Ep) vein with associated hematite-(Hm) adjacent to vein a dusting on the feldspars, chlorite-(Chl) and epidote replace biotite and amphibole (HM16JV133). (Left) plane-polarized light (Right) cross-polarized light.

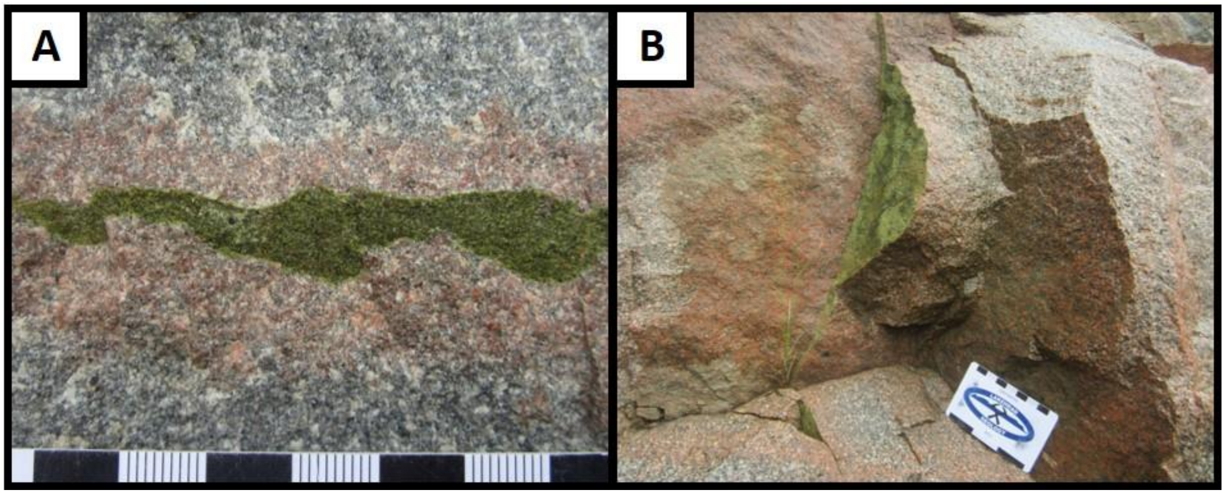

Figure 4.30: Outcrop photos of the hematite staining associated with epidote veining, (A) Diffuse moderate hematite staining surrounding an epidote vein, (B) Fracture controlled epidote veining with intense hematite stained granodiorite outcrop.

4.2.3 Epidote alteration

Hydrothermal epidote, as discussed here, refers to the occurrence of epidote above average amount (> 5 vol. %) and that is recognizable to the eye, not merely petrographically. This does not include epidote present regionally due to metamorphic processes. Epidote occurring as a vein or replacement product was observed throughout the Hemlo district (Figs. 4.31, 4.32, 4.33, 4.34 and 4.35). Epidote does display a spatial association with hematite but is not restricted to occurring with it. When occurring with hematite, epidote is usually present as a late-stage vein along a brittle fracture or joint (Figs. 4.31 and 4.33). Within the zone of hematite alteration surrounding the epidote vein mafic minerals such as amphibole and biotite undergo replacement to epidote and chlorite (Figs. 4.31, 4.33 and 4.34). Epidote also occurs as layers within gneissic amphibolite to the south-east of the deposit, where it replaces the plagioclase bands (Fig. 4.31). The other main occurrences of epidote as an alteration product include within and surrounding quartz ± carbonate veins, as stockwork veins and as breccia fill (Fig 4.33). Epidote is also commonly associated with chlorite and carbonate (Fig. 4.33 and 4.34).

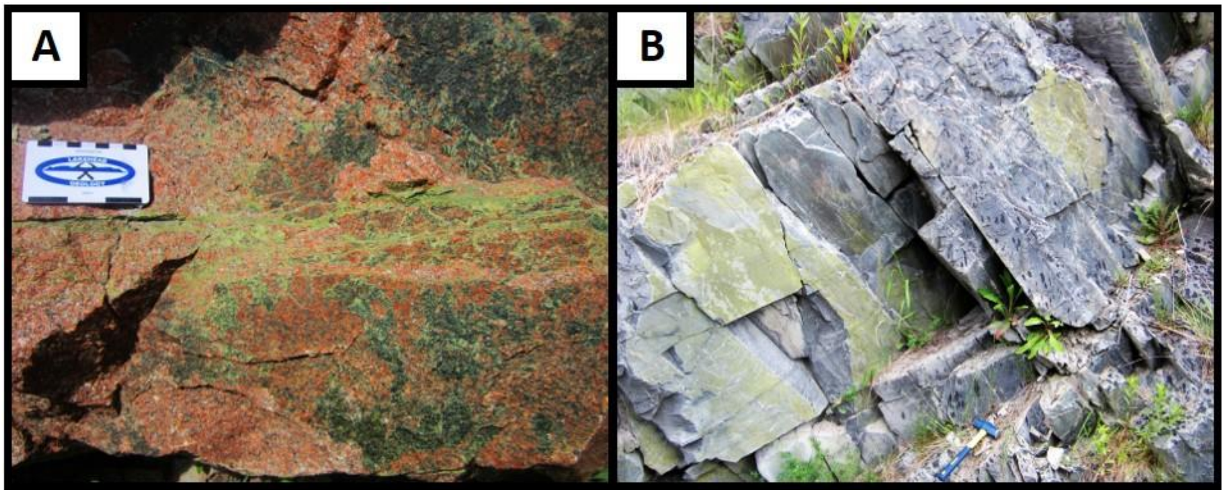

Figure 4.31: (A) Brittle epidote veining cutting the Cedar Lake pluton with pervasive and intense hematite alteration. (B) Epidote occurring along fracture faces in biotite-amphibole rich metasedimentary rocks.

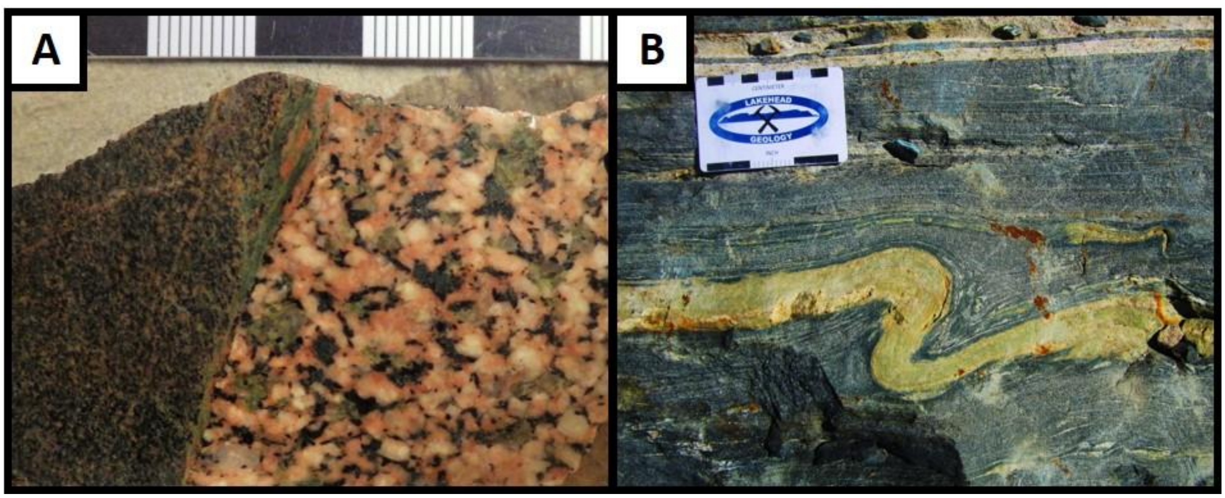

Figure 4.32: (A) Epidote occurring along the contact between the Cedar Lake pluton and metasedimentary rocks, epidote can be seen replacing mafic minerals within the intrusion. (B) Pytimatic fold in epidote banded gneissic mafic metavolcanics rocks. Scale card in centimeters.

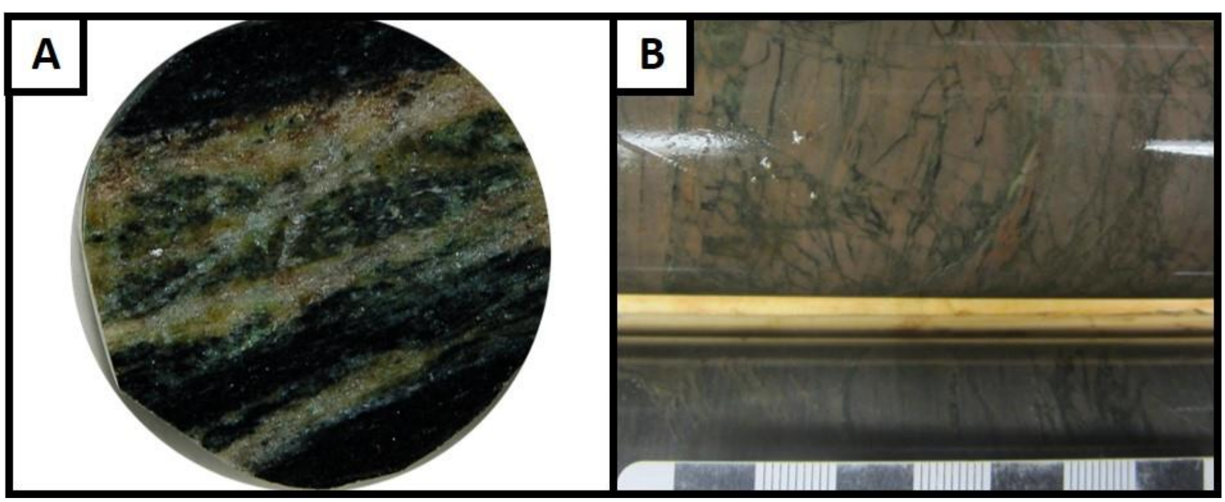

Figure 4.33: (A) Epidote + chlorite + carbonate vein cutting a mafic metavolcanic rock (FOV = 2.2 cm). (B) Epidote cemented breccia in felsic metavolcanic rocks that have undergone feldspathic alteration.

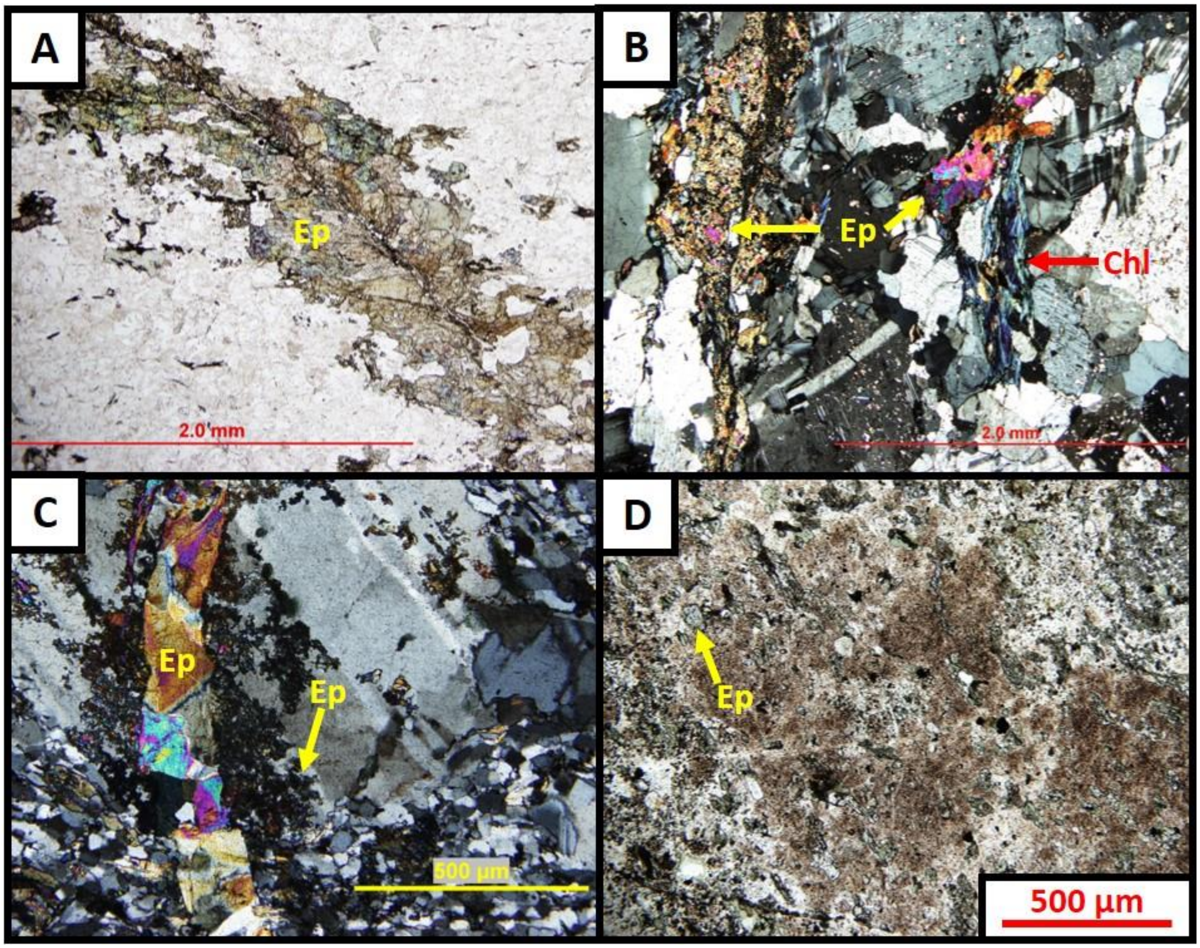

Figure 4.34: Transmitted light images of different occurrences of epidote from the Hemlo district. (A) Epidote vein cutting hematite altered metasedimentary rock (HM16JV023). (B) Epidote vein and adjacent epidote and chlorite replacing amphibole (HM16JV038). (C) Epidote vein cutting relict plagioclase phenocryst with epidote replacement of the phenocryst (HM16JV023). (D) Intensely hematite altered metasedimentary rock with very fine-grained epidote (HM16JV143). Ep – epidote, Chl – chlorite.

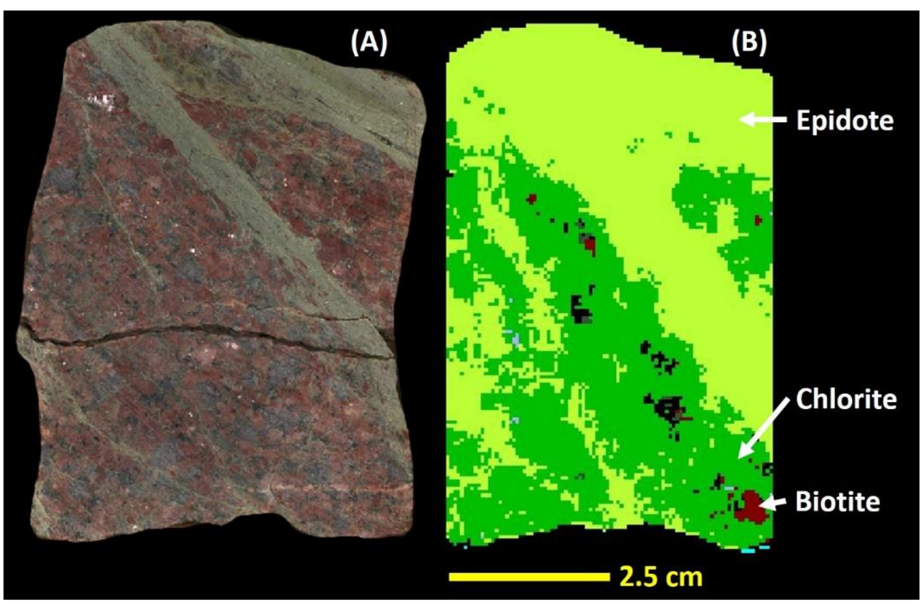

Figure 4.35: (A) RGB image at 50 µm resolution of intensely altered hematite granodiorite cut by epidote veining (HM16JV038). (B) Corescan mineral class map of sample highlighting epidote veining as well as replacement of mafic minerals surrounding veins undergoing replacement by epidote and chlorite.

4.2.4 Chlorite

Chlorite was abundant at the west end of the deposit mainly occurring within the felsic and intermediate metavolcanic rocks. Chlorite proved difficult to identify in hand samples and was mainly identified in thin section or with the aid of hyperspectral techniques. In the field, chlorite was identified only within the chlorite-talc-pyrite schist that marks the Hemlo Fault zone (Fig. 4.36). Chlorite was also identified to form whisp-like bands within some of the feldspathic metasedimentary units (Fig. 4.36). Chlorite was also found to be present surrounding quartz veins, occurring as a proximal alteration product with pyrite (Fig. 4.37).

Chlorite was also intimately associated with epidote forming on the margins of epidote veins and as a replacement product of biotite or amphibole within zones of hematite alteration (Fig. 4.38). Chlorite associated with hematitization commonly displayed a deep indigo blue birefringence and contained abundant Ti-rich inclusions (Fig. 4.38). This contrasts with chlorite associated with quartz veining, which was characterized by having a dark-yellow birefringence and lacked inclusions (Fig. 4.38). Chlorite also commonly occurred with white mica in the groundmass of metasedimentary units, either forming alternating layers or mineral mixtures (Fig. 4.39).

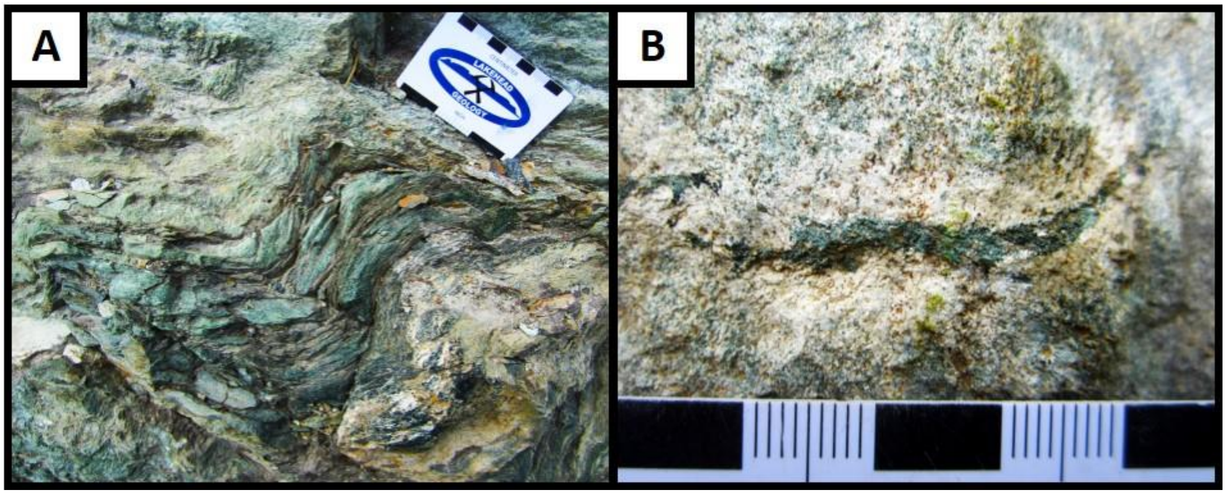

Figure 4.36: (A) Chlorite-talc schist that marks the Hemlo Fault Zone. (B) Chlorite 'whisp' in feldspathic metasedimentary rock.

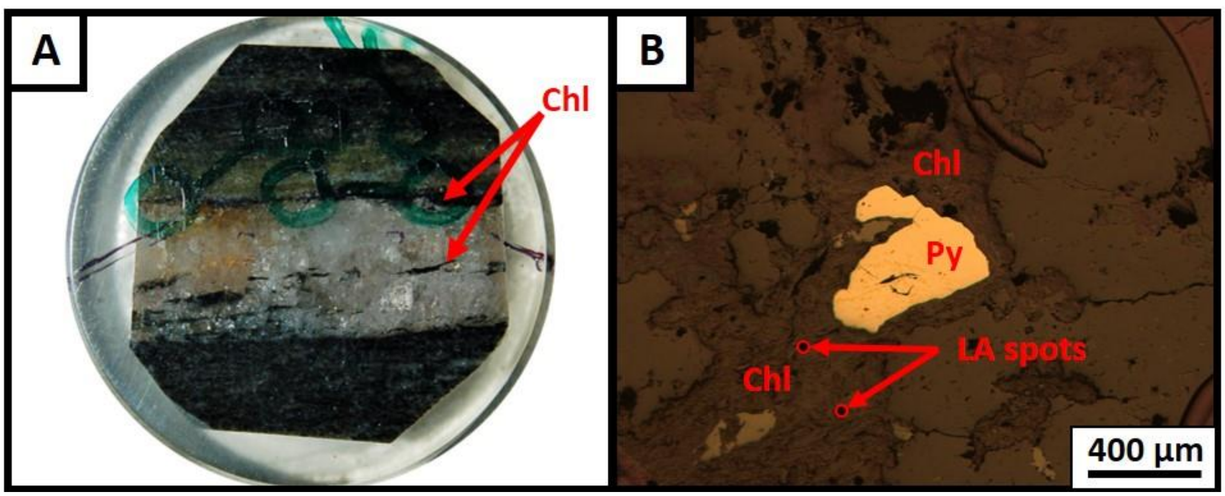

Figure 4.37: (A) Polished sample mount of biotite-amphibole rich metasedimentary rock cut by a quartz + carbonate vein, chlorite (Chl) occurring as the dark-green mineral occurring within and on the margins of the quartz vein. Sample mount is 2.5 cm in diameter (HM16JV006). (B) Reflected light image of pyrite grain intimately associated with chlorite (HM16JV045).

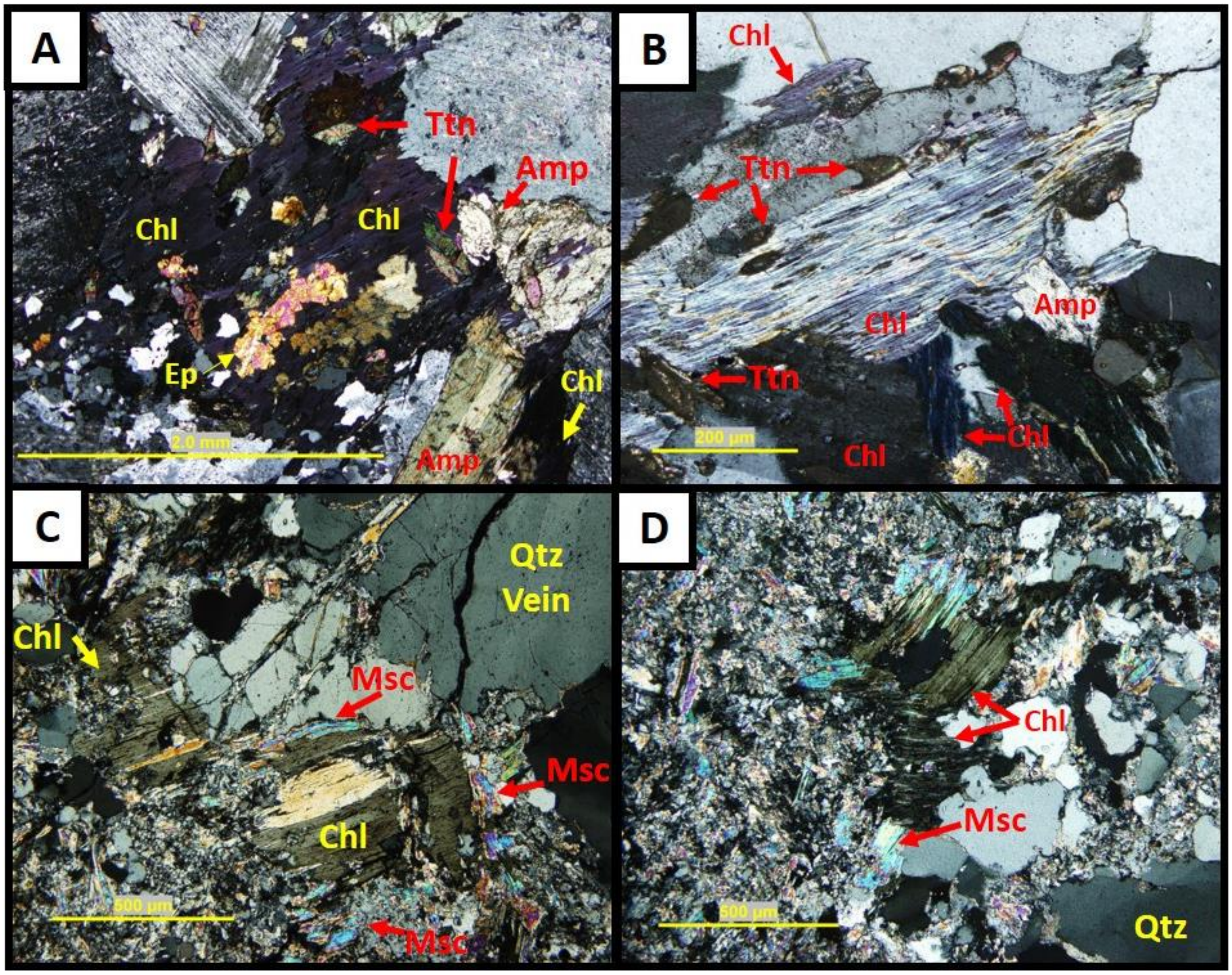

Figure 4.38: Transmitted cross-polarized light images of various occurrences of chlorite sampled from the Hemlo district. (A) Chlorite and epidote replacing amphibole (HM16JV038). (B) Chlorite replacing amphibole with titanite inclusions (HM16JV133). (C) Hydrothermal chlorite occurring along the edge of a quartz vein with muscovite (HM16JV034). (D) Chlorite proximal to a quartz vein occurring with muscovite (HM16JV006). Chl – chlorite, R.Chl – retrograde chlorite, Ep – epidote, Amp – Amphibole, Msc – Muscovite, Ttn – titanite, Qtz – quartz.

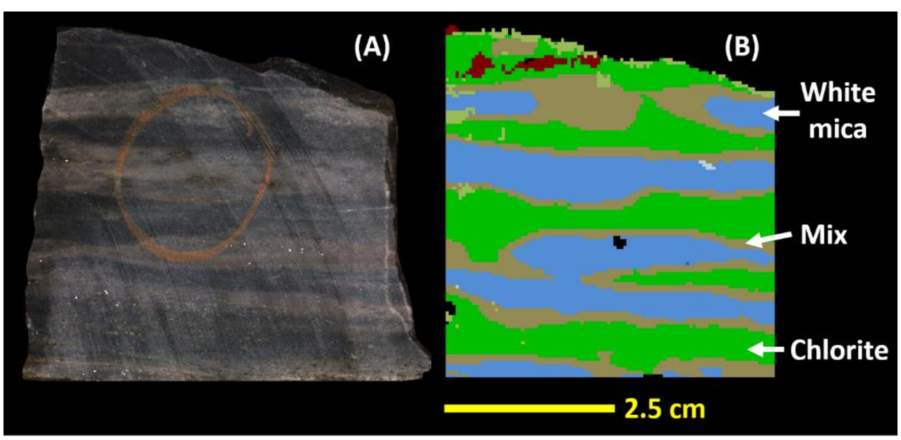

Figure 4.39: (A) RGB image at 50 µm resolution of metasedimentary rock containing altering layers of chlorite and white mica (HM16JV062). (B) Corescan mineral class map of sample highlighting mineral mixtures of chlorite and white mica occurring along the contact between the alternating layers.

4.2.5 White Mica

White mica – a general term that refers to both muscovite and illite – occurred in two alteration assemblages as a product of hydrothermal alteration associated with pyrite and/or quartz ± carbonate veining or as the weathering product of feldspar (Figs. 4.40, 4.41, 4.42 and 4.43). Feldspar grains, especially plagioclase are prone to weathering and break down into very white mica (Figs. 4.40 and 4.41). The occurrence of this type of white mica is very common and is observed to occur in most samples containing feldspar. Replacement intensity can vary but is generally observed to be between 5 – 35 of feldspar grains (Figs. 4.40 and 4.41). White mica produced through hydrothermal alteration was characterized petrographically as muscovite in composition (Figs. 4.42 and 4.43). Hydrothermal muscovite was present proximal to the deposit and observed in the area directly west of the C-zone open-pit. Hydrothermal muscovite could be medium – fine-grained and was commonly found in felsic metavolcanics rocks and metasedimentary rocks associated pyrite, quartz ± carbonate veining and chlorite (Figs. 4.41, 4.42 and 4.43).

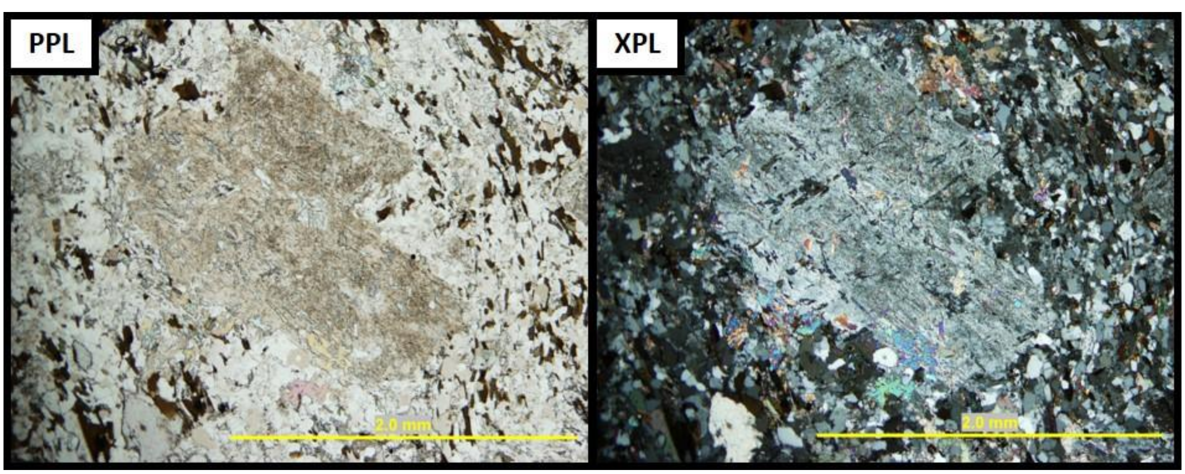

Figure 4.40: Transmitted light image of the breakdown of a plagioclase phenocryst to very-fine grained white mica. (HM16JV083). (Left) plane-polarized light (Right) cross-polarized light.

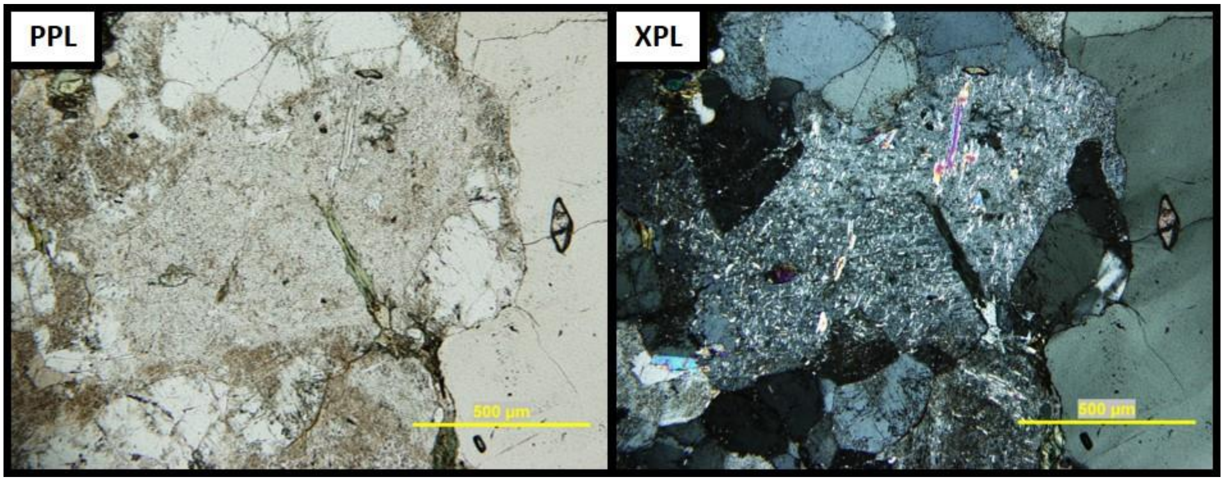

Figure 4.41: Transmitted light image of a feldspar grain being replaced by very fine-grained white mica (HM16JV133). (Left) plane-polarized light, (Right) cross-polarized light.

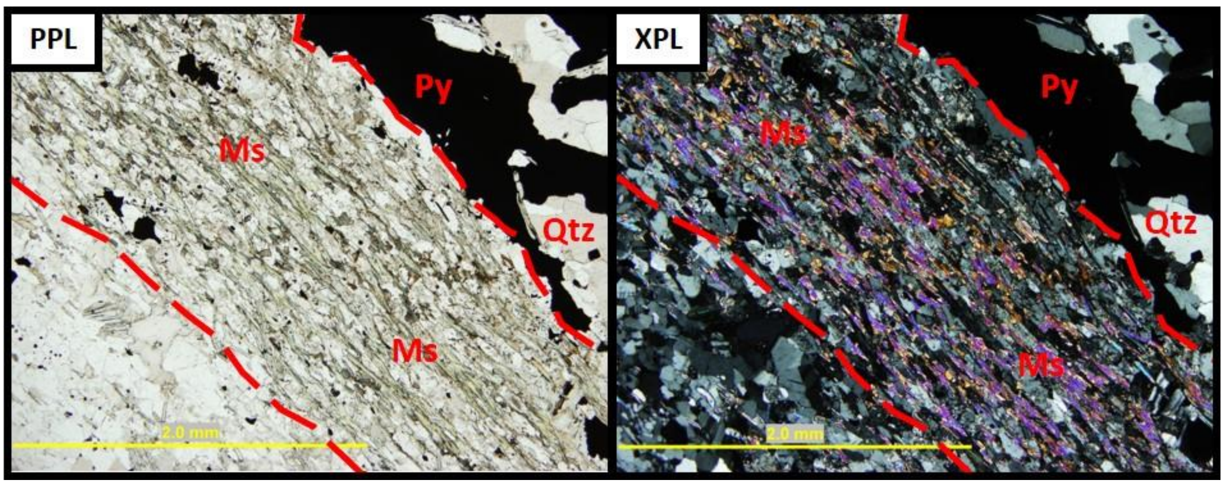

Figure 4.42: Transmitted light image of muscovite (Ms) alteration proximal to a quartz (Qtz) and pyrite (Py) vein (HM16JV031). (Left) plane-polarized light, (Right) cross-polarized light.

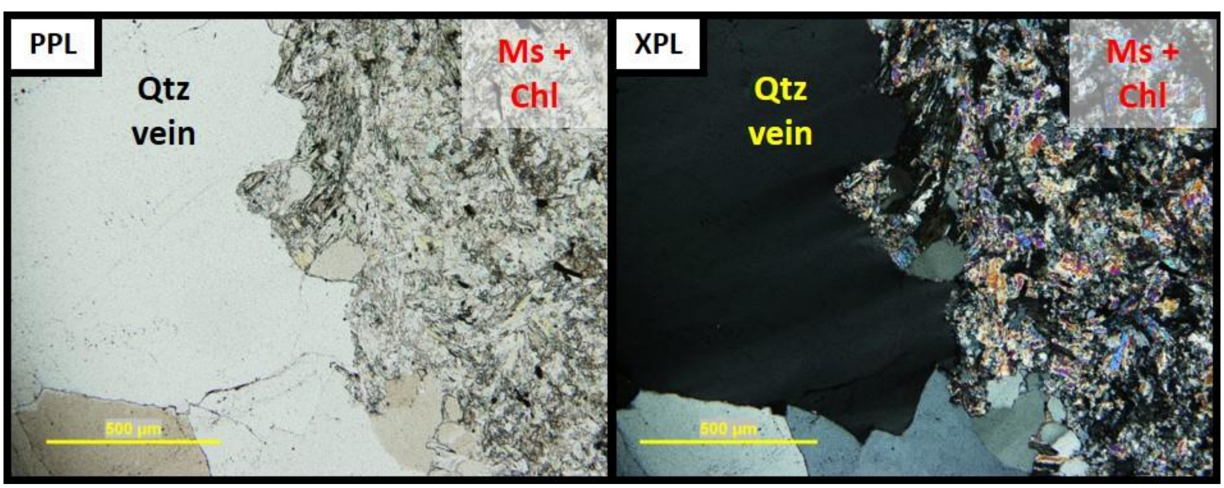

Figure 4.43: Transmitted light image of muscovite (Ms) + chlorite (Chl) alteration proximal to a quartz- (Qtz) vein (HM16JV034). (Left) plane-polarized light (Right), cross-polarized light.

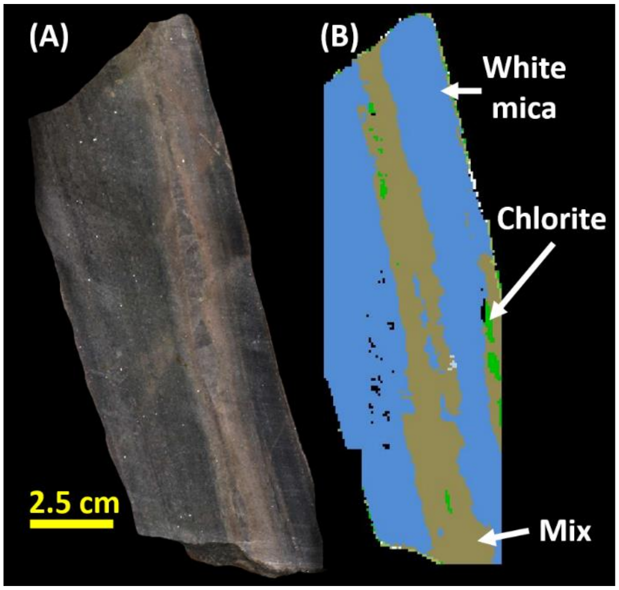

Figure 4.44: (A) RGB image at 50 μm resolution of feldspathic metasedimentary rock (HM16JV068). (B) Corescan mineral class map of sample highlighting white mica alteration surrounding the quartz vein, as well as mineral mixing between chlorite and white mica.

4.2.6 Pyrite

Pyrite was mainly identified proximal to the deposit where it occurs in abundances > 1%. Pyrite was identified by observing a rusty weathering to samples or outcrops (Fig 4.45). Pyrite occurs as a disseminated phase throughout most of the supracrustal rocks in the Hemlo district where it is usually very fine-grained, sub-euhedral to anhedral and only occurs in trace amounts (typically < 1%). When associated with alteration and Au mineralization pyrite is more abundant (~5-15%) and occurs as fine- to medium-grained, sub- to euhedral crystals (Figs. 4.45 and 4.46). Pyrite grains will typically form annealed aggregates with grain boundaries forming triple junctions at 120° (Fig. 4.47). When displaying an annealed texture, pyrite can be disseminated but will also form lenses or stringers parallel to the dominant rock fabric (Fig. 4.47). When occurring with hematite alteration pyrite typically displays an oxidised rim of hematite surrounding the pyrite grain (Fig. 4.47).

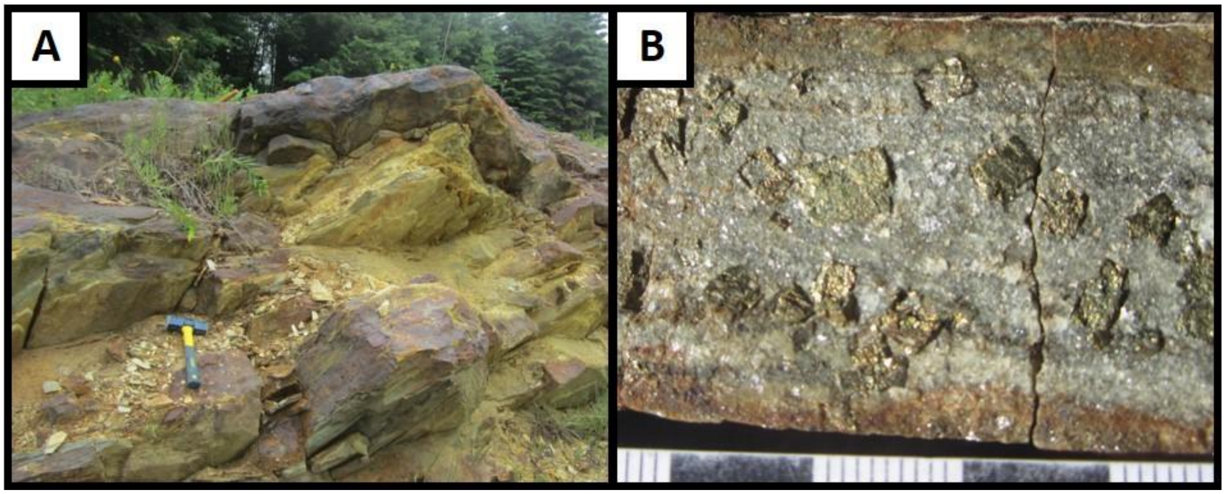

Figure 4.45: (A)Rusty weathering on sulphide rich outcrop known as the Barren sulphide zone (BSZ). (B) Quartz crystal arenite containing medium to fine-grained euhedral pyrite crystals (HM16JV149).

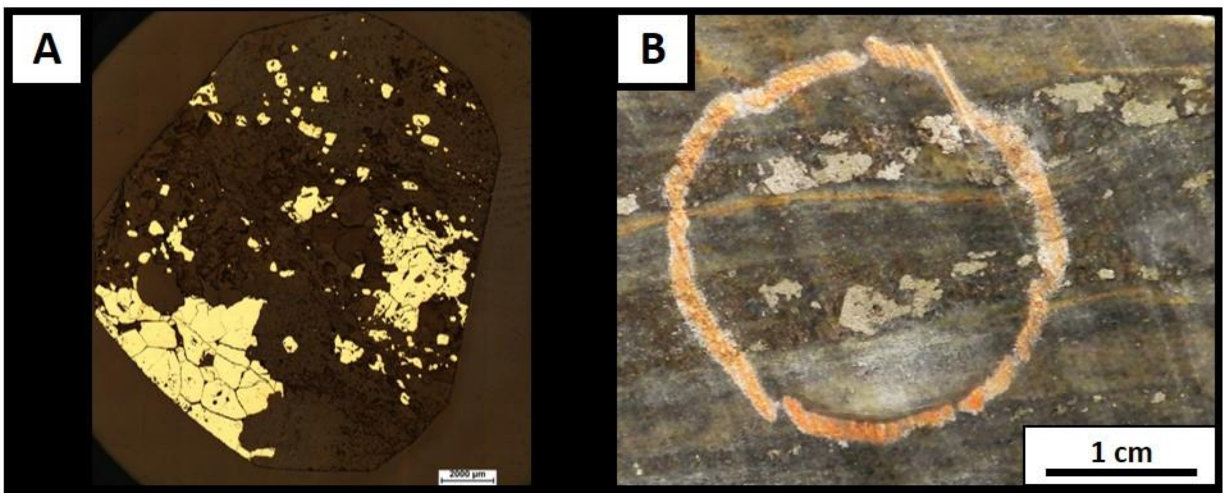

Figure 4.46: (A) Reflected light scan of pyrite rich sample (>20 %), where pyrite is medium- to fine-grained and sub- to euhedral with annealed grain boundaries (HM16JV199). (B) Slab photo of pyrite occurring in selective layers within a metasedimentary rock (HM16JV031).

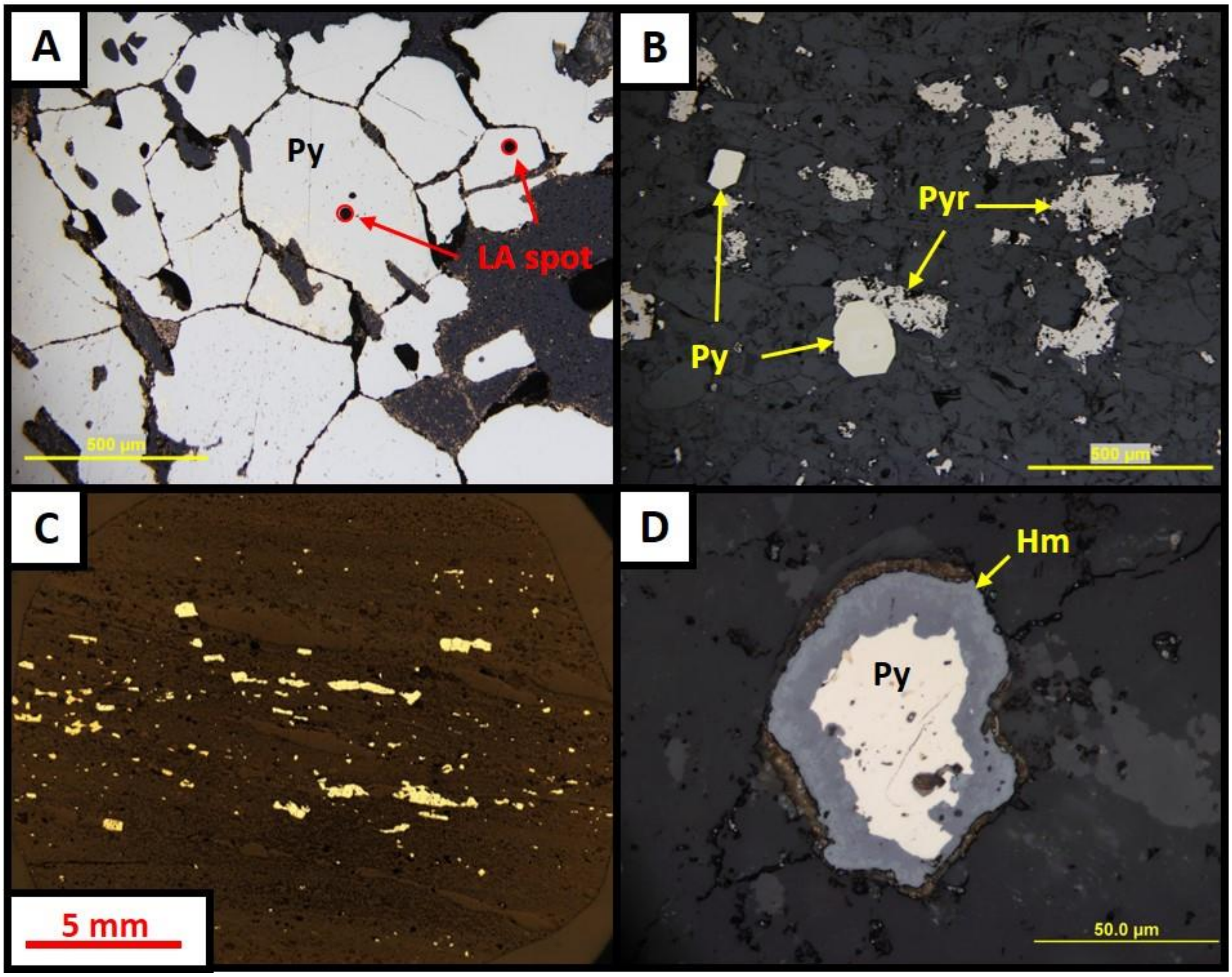

Figure 4.47: Reflected light images of various occurrences of pyrite sampled from the Hemlo district. (A) Annealed fine-grained sub- to euhedral pyrite, laser ablation spots outlined in red (HM16JV203). (B) Sub-euhedral disseminated pyrite displaying overgrowth of detrital pyrrhotite (HM16JV012). (C) Disseminated fine-grained sub- to euhedral pyrite hosted in a metasedimentary rock, pyrite grains aligned with foliation (HM16JV146). (D) Very fine-grained pyrite displaying oxidized rim (HM16JV050). Py – pyrite, Pyr – pyrhottie, Hm – Hematite, LA – Laser ablation.

4.3 SWIR Mineral Identification

Corescan and Terraspec were utilized in order to analyse absorption features in the SWIR (short-wave infrared) spectrum. Absorption features are a function of mineral structure and composition allowing for the spectral characterisation of minerals present. Samples selected for LA-ICP-MS were analysed using both Terraspec and Corescan. The Terraspec analyses were conducted on smaller sample mounts and had an analytical spot size of ~53.2 mm, where the spectral resolution is ~6 nm at 700 nm. The Corescan analysis was completed on slabs that could be up to 5 cm. The spectral resolution is ~4 nm at 500 nm. Both techniques identified chlorite as the most abundant mineral throughout the Hemlo district, being observed in the majority of. The second most abundant mineral identified was epidote, followed by biotite and amphibole. The main minerals detected using Corescan and Terraspec and their distribution around the Hemlo deposit are displayed in Figures 4.47 and 4.48 respectively. For Figures 4.48 and 4.49 mineral 1 refers to the most abundant mineral that was identified in each sample while mineral 2 refers to the second most prominent. As it produces mineral class maps, Corescan mineral 1 and mineral 2 refer to the minerals with the highest and second highest pixel counts in each sample. Conversely, as only a single spectrum is produced per Terraspec analysis, mineral 1 refers to the mineral that is the best match to the sample spectra, while mineral 2 refers to the mineral whose spectra could account for abnormalities in the sample spectra that could not be explained solely by mineral 1.

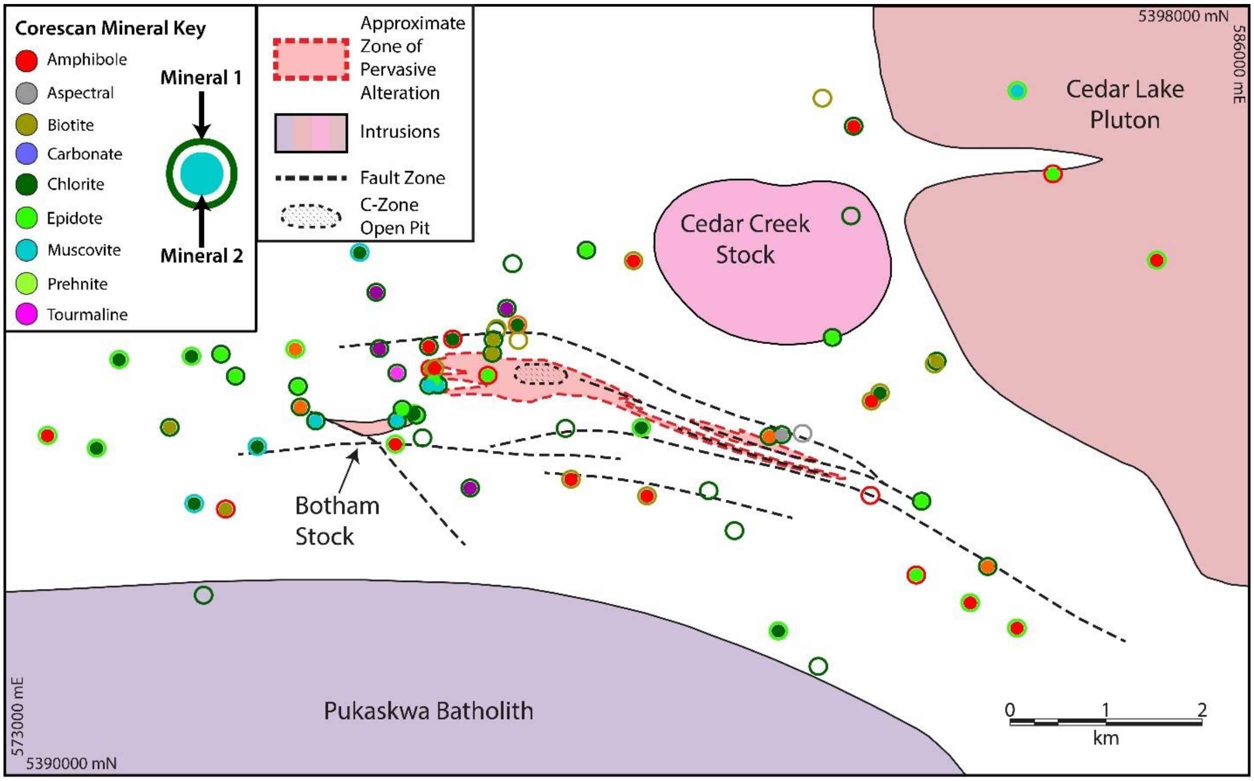

Figure 4.48: Corescan SWIR results surrounding the Hemlo gold deposit in relation to the zone of pervasive alteration (boundary of the alteration zone from Muir, 2003).

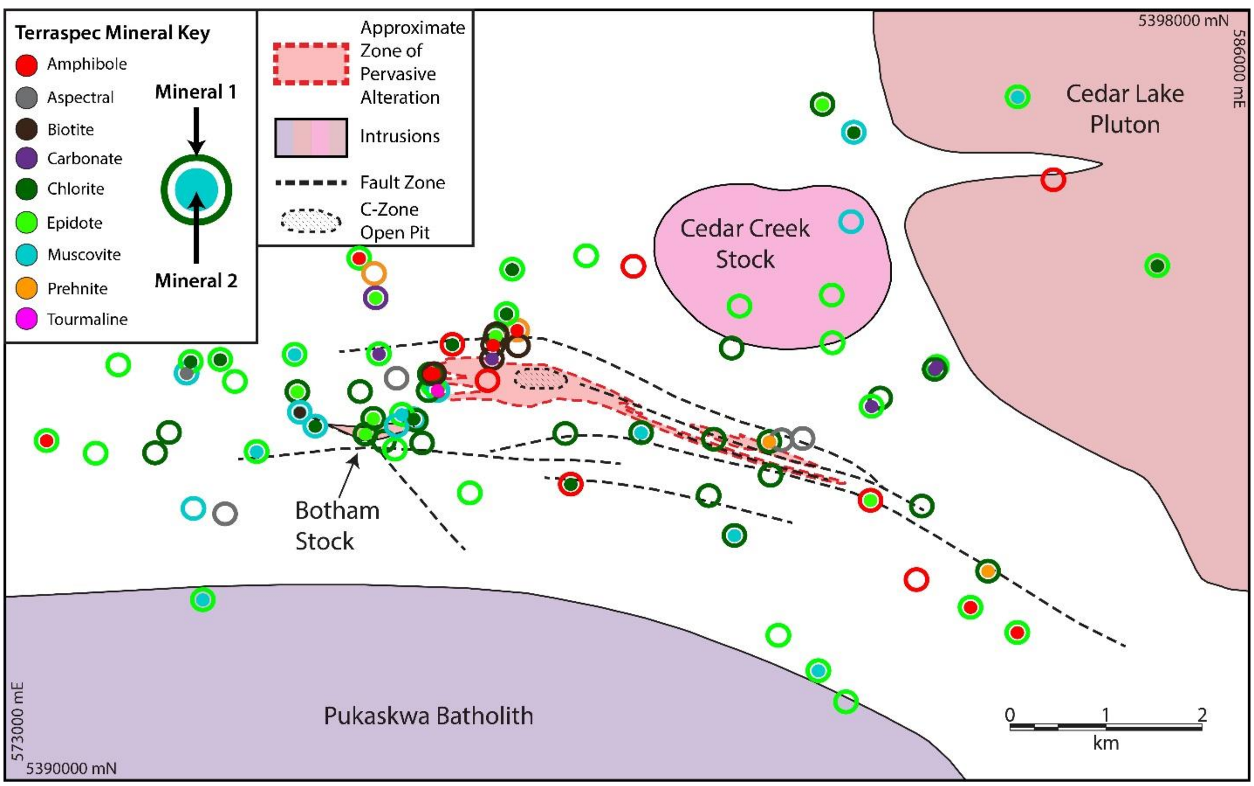

Figure 4.49: Terraspec SWIR results surrounding the Hemlo gold deposit in relation to the zone of pervasive alteration (boundary of the alteration zone from Muir, 2003)

Chapter 5: Trace Element Mineral Chemistry

Epidote, chlorite and pyrite occurring around the Hemlo gold deposit were formed through a combination of metamorphic and hydrothermal processes. These minerals were sampled and analysed to determine whether they could be used as vectors for Au mineralisation at the Hemlo deposit (Figs. 5.1 and 5.2). The secondary objective was to assess the potential of epidote and chlorite in the intrusions surrounding the deposit to create false positive anomalies for mineralisation.

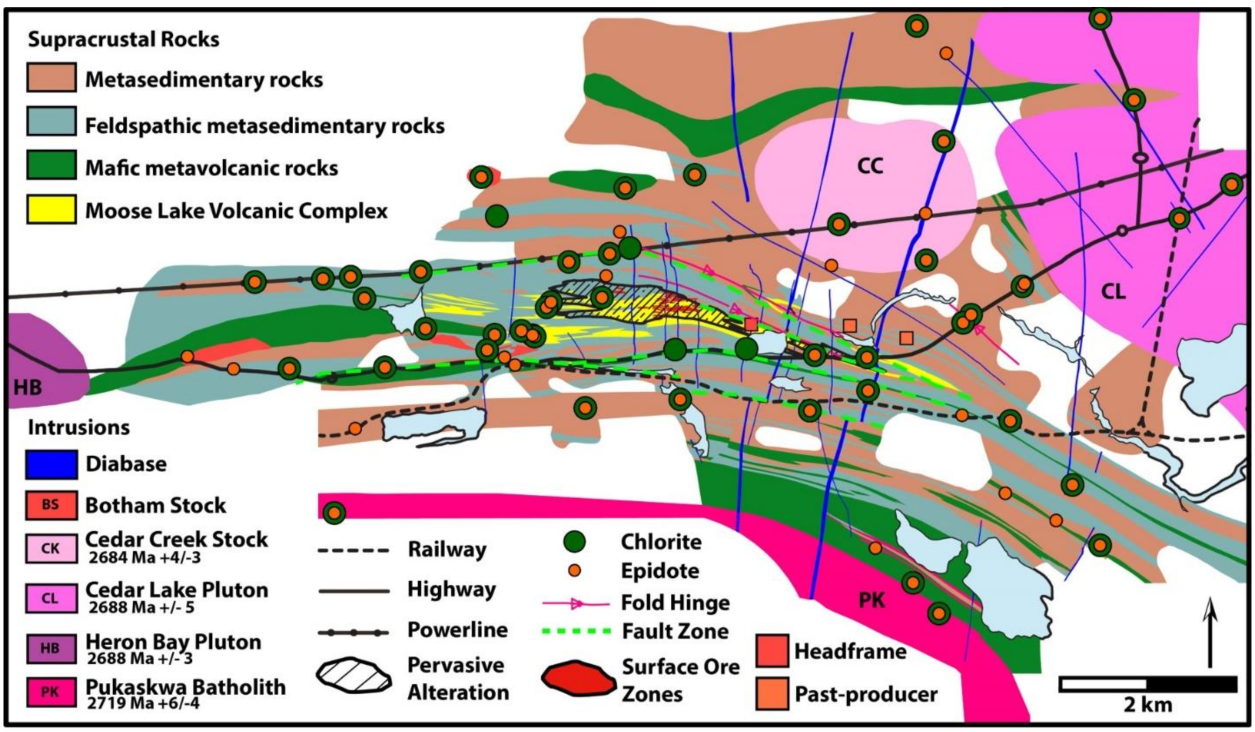

Figure 5.1: Distribution of samples containing chlorite and epidote analysed by LA-ICP-MS. Regional geology of the Hemlo gold deposit area, after Muir (1997).

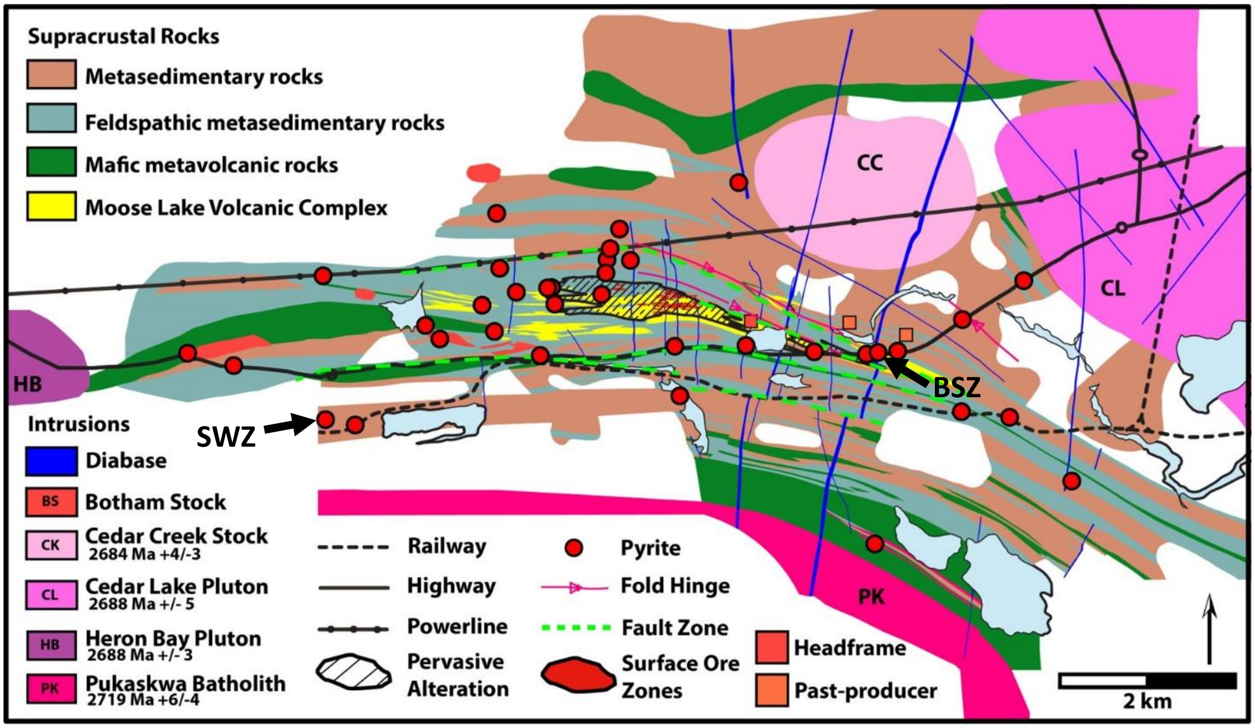

Figure 5.2: Distribution of samples containing pyrite analysed by LA-ICP-MS. Regional geology of the Hemlo gold deposit area, after Muir (1997). BSZ: Barren sulphide zone, SWZ: South-west zone.

5.1 Epidote mineral chemistry

Epidote was found in many areas throughout the Hemlo district which allowed for a good distribution of samples surrounding the deposit (Fig. 5.1). Sixty-three samples containing epidote were selected for LA-ICP-MS analysis from around the Hemlo district (Fig. 5.1). This resulted in 1,644 spot analyses, of which 259 (16%) spot analyses were discarded during the data reduction process, resulting in a total of 1,385 valid epidote analyses. Vein epidote was the main target of LA-ICP-MS analysis as this provided a larger epidote target than the very fine-grained epidote that usually occurred in the groundmass of samples. The concentrations of Ag, Al, As, Au, B, Ba, Bi , Ca, Ce, Co, Cr, Cu, Eu, Fe, Gd, Hf, K, La, Li, Lu, Mg, Mn, Na, Nb, Ni, Pb, Sb, Si, Sn, Sr, Ta, Th, Ti, Tl, U, V, Y, Yb, Zn, and Zr were obtained for all analyses (Table 5.1).

Epidote typically contained Ca, Fe, Al and Si in concentrations > 1 wt. %. Minor elements Mg, V, Ti, Mn and Sr were found at concentrations > 100 ppm and could be detected in epidote up to the wt. % level. Trace elements in epidote varied in abundance but were typically detected in concentrations ranging from 10 – 100 ppm. These elemeents were the main target of the study and require LA-ICP-MS analysis to detect due to the low sensitivity of the instrument. The most abundant trace elements detected in epidote from the Hemlo district were As, Zn, Y, Zr, Na, K, La, Ce, Cr and B which had average concentrations between 10 – 100 ppm (Table 5.1). The least abundant trace elements detected in epidote include Co, Cu, Ag, Sn, Ba, Eu, Gd, Yb, Lu, Ta, Au, Tl, Bi, Th, U, Hf, Nb and Ni which typically had average concentrations < 10 ppm (Table 5.1).

Table 5.1: Summary of select epidote major, minor and trace element chemistry from the Hemlo district.

(n = 1385)	n.N	n.BDL	Min.	Max.	Mean	Median	σ
Major Elements							
Ca (wt%)	1,385		14.4	18.6	16.5	16.4	0.7
Fe (wt%)	1,385		3.8	15.3	10.7	10.7	1.5
Al (wt%)	1,385		9.0	14.9	11.6	11.6	1.0
Si (wt%)	1,385		15.5	21.4	17.7	17.8	0.8
Minor Elements							
Sr (ppm)	1,385		9.84	37,818	8,253	6,745	6,673
Mg (ppm)	1,385		3.54	21,537	408.3	156.8	1,240
Ti (ppm)	1,385		1.1	15,760	467.2	292.4	897.7
V (ppm)	1,385		5.79	2,712	428.5	351.4	314.6
Mn (ppm)	1,385		95.84	8,333	1,207	1,005	869.3

n.N = number of analyses above detection limit; n.BDL = number of analyses below detection limit; Min. = minimum value acquired; Max. = maximum value acquired; Mean = mean value; Median = median value. Mean and median values do not include analyses that are below detection limits.

Table 5.1: *Continued...*

(n = 1385)	n.N	n.BDL	Min.	Max.	Mean	Median	σ
Trace Elements							
Na (ppm)	1,087	298	2.46	7566	67.42	16.17	335.4
K (ppm)	696	689	1.77	14,709	156.7	10.01	962.4
Co (ppm)	1,277	108	0.01	132.8	0.762	0.3	4.504
Cu (ppm)	716	669	0.15	232.5	5.940	1.02	18.61
Zn (ppm)	1,369	16	0.20	802.8	8.209	3.19	42.33
As (ppm)	1,037	348	0.11	1239	10.72	1.35	52.87
Y (ppm)	1,385		0.02	2326	21.98	4.3	89.10
Zr (ppm)	1,378	7	0.01	386.3	17.97	10.345	27.74
Ag (ppm)	36	1,349	0.03	0.490	0.097	0.055	0.101
Sn (ppm)	1,366	19	0.05	35.03	2.002	1.17	2.66
Sb (ppm)	742	643	0.08	446.8	3.736	0.495	21.28
Ba (ppm)	1,373	12	0.05	554.6	7.402	3.01	22.19
La (ppm)	1,374	11	0.01	3498	77.09	20.645	209.1
Ce (ppm)	1,377	8	0.01	7446	152.3	33.55	454.8
Eu (ppm)	1,377	8	0.01	124.0	3.39	1.15	8.68
Gd (ppm)	1,335	50	0.01	265.5	5.78	1.64	17.24
Yb(ppm)	1,285	100	0.01	211.6	1.89	0.31	7.57
Lu (ppm)	1,257	128	0.01	35.45	0.306	0.05	1.25
Ta (ppm)	399	986	0.01	1.35	0.025	0.01	0.099
Au (ppm)	66	1,319	0.01	0.08	0.017	0.01	0.011
Tl (ppm)	38	1,347	0.01	0.57	0.082	0.05	0.107
Pb (ppm)	1,385		0.26	414.9	21.3	12.59	26.18
Bi (ppm)	1,076	309	0.01	273.7	4.89	0.31	15.26
Th (ppm)	1,208	177	0.01	262.9	2.72	0.235	14.36
U (ppm)	1,379	6	0.01	64.4	2.30	0.56	5.13
B (ppm)	1,345	40	0.56	514.5	22.5	12.8	30.0
Hf (ppm)	1,328	57	0.01	15.3	0.659	0.400	0.940
Nb (ppm)	985	400	0.01	35.4	0.220	0.030	1.42
Ni (ppm)	1,263	122	0.03	62.8	1.48	0.640	4.06
Cr (ppm)	1,191	194	0.43	2,384	94.5	19.1	244.1

n.N = number of analyses above detection limit; n.BDL = number of analyses below detection limit; Min. = minimum value acquired; Max. = maximum value acquired; Mean = mean value; Median = median value. Mean and median values do not consider analyses that are below detection limits.

5.2 Chlorite mineral chemistry

Chlorite occurred throughout the Hemlo district allowing for a good distribution of samples around the deposit (Fig. 5.1). A close spatial association was observed between chlorite and epidote, with the two minerals often occurring in the same samples. Forty-six samples containing chlorite were selected for LA-ICP-MS analysis from around the Hemlo district (Fig. 5.1). This resulted in 1,095 spot analyses of chlorite grains of which 678 (62%) were rejected during the data reduction and filtering stage. Chlorite spot analyses had a high rejection rate relative to epidote due to it being very fine-grained, occurring as in-complete replacement of minerals such as biotite, and abundant Ti-rich inclusions within the chlorite grains. The concentrations of Ag, Al, As, Au, B, Ba, Bi , Ca, Ce, Co, Cr, Cu, Eu, Fe, Gd, Hf, K, La, Li, Lu, Mg, Mn, Na, Nb, Ni, Pb, Sb, Si, Sn, Sr, Ta, Th, Ti, Tl, U, V, Y, Yb, Zn, and Zr were obtained for all analyses (Table 5.2).

Chlorite from the Hemlo district contained elements Si, Mg, Fe and Al in abundances > 1 wt. %. Calcium and Mn were found to be minor elements having average concentrations > 1,000 ppm but generally < 1 wt. %. Trace elements Li, Na, Ti, V, Cr, Ni and Zn were detected in almost every sample (> 80%) and had average concentrations between 100 – 1,000 ppm (Table 5.2). Other trace elements that were detected in the majority (> 80%) of samples but at concentrations ranging from 1-100 ppm include B, K, Co, Cu, Sr, Y, Zr, Sn, Ba, La, Ce, Pb and Gd (Table 5.2). Trace elements consistently occurred in chlorite at concentrations > 1 ppm suggesting that they readily partition into the chlorite structure. This makes them elements of interest for chlorite vectoring. The following trace elements were detected in concentrations < 1 ppm and were detected in < 80% of the spot analyses of chlorite: As, Sb, Au, Ag, Bi, U, Hf, Nb, Ta and Yb (Table 5.2). The low concentrations and inconsistent appearance of these elements in chlorite suggests they do not readily partition into the chlorite structure.

Table 5.2: Summary of chlorite LA-ICP-MS results for select major, minor and trace elements, Hemlo gold district

(n = 417)	n.N	n.BDL	Min.	Max.	Mean	Median	σ
Major Elements							
Si (wt%)	417		10.7	21.6	13.1	12.7	1.5
Mg (wt%)	417		7.5	20.2	11.5	11.3	1.9
Fe (wt%)	417		13.8	23.2	17.0	17.5	3.5
Al (wt%)	417		3.7	12.3	9.7	9.5	1.1
Minor Elements							
Ca (ppm)	387	30	113.7	23,484	1,111	430.6	2,373
Mn (ppm)	417		747.0	6,022	2,548	2524	814.5

n.N = number of analyses above detection limit; n.BDL = number of analyses below detection limit; Min. = minimum value acquired; Max. = maximum value acquired; Mean = mean value; Median = median value. Mean and median values do not consider analyses that are below detection limits.

Table 5.2: *Continued…*

(n = 417)	n.N	n.DDL	Min.	Max.	Mean	Median	σ
Trace Elements							
Li (ppm)	417		37.0	605.9	199.8	162.9	101.3
B (ppm)	415	2	1.47	253.9	16.3	9.81	22.7
Na (ppm)	392	25	2.79	26,799	293.3	26.2	1,838
K (ppm)	416	1	8.99	804.0	89.6	60.0	110.0
Ti (ppm)	417		4.09	1304	136.8	69.4	183.1
V (ppm)	417		15.9	1376	201.0	180.6	111.1
Cr (ppm)	415	2	1.34	2772	308.1	95.6	529.9
Co (ppm)	417		0.76	176.3	78.5	78.8	32.9
Ni (ppm)	416	1	0.17	1231	275.5	241.0	232.4
Cu (ppm)	402	15	0.18	847.4	42.9	15.08	96.6
Zn (ppm)	417		60.2	1887	677.3	663.2	337.6
As (ppm)	169	248	0.15	6.38	0.67	0.38	0.85
Sr (ppm)	417		0.20	1,612	19.3	2.46	105.8
Y (ppm)	417		0.01	31.1	1.14	0.46	2.36
Zr (ppm)	403	14	0.01	9.59	1.97	1.21	2.13
Ag (ppm)	49	368	0.04	0.15	0.08	0.08	0.03
Sn (ppm)	338	79	0.05	5.61	0.23	0.17	0.36
Sb (ppm)	51	366	0.09	1.07	0.30	0.19	0.30
Ba (ppm)	414	3	0.11	123.0	10.1	7.65	11.6
La (ppm)	410	7	0.01	87.4	4.39	1.24	8.81
Ce (ppm)	410	7	0.01	429.3	5.35	0.84	23.7
Pb (ppm)	414	3	0.09	1.07	0.30	0.19	0.30
Bi (ppm)	124	293	0.01	0.96	0.14	0.04	0.20
U (ppm)	346	71	0.01	1.26	0.06	0.02	0.15
Au (ppm)	62	355	0.01	0.08	0.02	0.01	0.02
Gd (ppm)	387	30	0.01	6.60	0.44	0.19	0.69
Hf (ppm)	306	111	0.01	0.54	0.10	0.06	0.10
Nb (ppm)	297	120	0.01	1.84	0.07	0.03	0.19
Ta (ppm)	147	270	0.01	0.32	0.01	0.01	0.03
Yb(ppm)	279	138	0.01	2.00	0.07	0.04	0.16

n.N = number of analyses above detection limit; n.BDL = number of analyses below detection limit; Min. = minimum value acquired; Max. = maximum value acquired; Mean = mean value; Median = median value. Mean and median values do not consider analyses that are below detection limits.

5.3 Pyrite mineral chemistry

Pyrite from the Hemlo gold district was found to occur in greater abundance proximal to the deposit, mainly occurring in felsic to intermediate metavolcanic units directly west of the documented zone of pervasive alteration (Fig. 5.2). Chemical etching was performed on all the pyrite samples that underwent LA-ICP-MS analysis to observe potential compositional zoning; however, none was observed. In total, 36 samples containing pyrite from the Hemlo district (Fig. 5.2) were analysed by LA-ICP-MS resulting in 843 valid analyses (15% rejected).

Precious metal concentrations in pyrite varied around the deposit, with mean concentrations of 0.07 ppm Au and 5.54 ppm Ag. Anomalous values for Au and Ag were at 99.3 ppm and 757.8 ppm, respectively (Table 5.3; Fig. 5.3). Of the metalloids, Sb concentrations remained relatively homogeneous (mean of 0.242 ppm), while As displayed more variation with a mean of 195.1 ppm and maximum value of 4,822 ppm. Anomalous values were observed for Te (mean 1.09 ppm) and Bi (mean 0.333 ppm) with peak values of 1,827 ppm and 226.5 ppm, respectively. The metals Cu (max 10,730 ppm; mean 1.75 ppm), W (max 47.8 ppm; mean 0.03 ppm), and Zn (max 1,237 ppm; mean 1.34 ppm) displayed anomalous concentrations within the pyrite. The pyrite from the Hemlo district displayed elevated levels of Co and Ni with means of 284.2 ppm and 220.8 ppm. Concentrations of Pb remained relatively homogenous in the pyrite having a mean of 0.522 ppm.

Table 5.3: Summary of pyrite LA-ICP-MS results for select trace elements, Hemlo gold district

	n.N	n.DDL	Min.	Max.	Mean	Median	σ
Au (ppm)	326	517	0.01	99.3	0.72	0.02	6.16
Ag (ppm)	444	399	0.01	757.8	5.54	0.18	39.9
Mo(ppm)	219	624	0.01	21.9	0.41	0.01	2.01
Sb (ppm)	126	717	0.03	10.3	0.60	0.21	1.44
As (ppm)	782	61	0.43	4,822	195.1	29.9	517.8
Te (ppm)	484	359	0.06	1827	8.41	0.89	84.2
Bi (ppm)	594	249	0.01	226.5	4.16	0.22	16.0
Cu (ppm)	635	208	0.05	40,454	321.7	0.52	2,376
W (ppm)	227	616	0.01	47.8	0.52	0.26	4.06
Zn (ppm)	242	601	0.31	1237	18.5	0.75	112.0
Pb (ppm)	587	256	0.01	1132	15.9	0.39	72.0

n.N = number of analyses above detection limit; n.BDL = number of analyses below detection limit; Min. = minimum value acquired; Max. = maximum value acquired; Mean = mean value; Median = median value. Mean and median values do not consider analyses that are below detection limits.

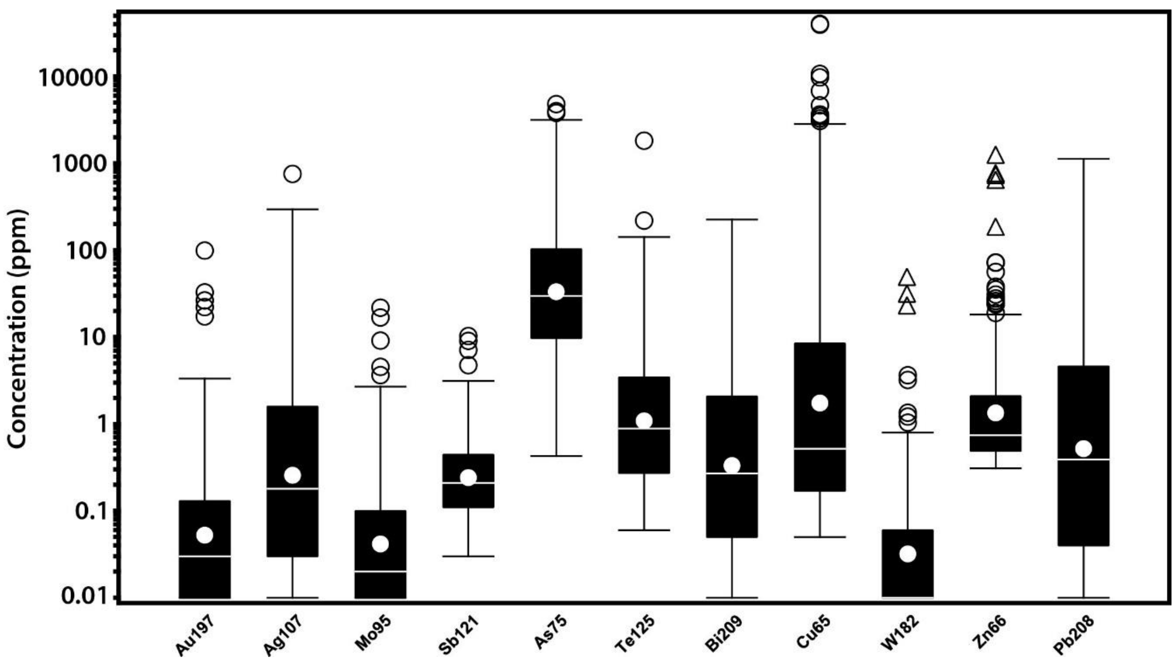

Figure 5.3: Turkey box and whisker plot of select precious and base metal and metalloid concentrations in pyrite from the Hemlo district. White circle represents mean value, white line represents median. The central box is the middle 50% of the data from Q1 to Q3. An outlier (circle) is further than 1.5*(Q1-Q3) from the box. A far outlier (triangle) is further than 3.0*(Q3-Q1) from the box. The whiskers are extreme values that are not outliers.

Pyrite elemental maps were made using LA-ICP-MS analysis in order to observe any compositional variations within pyrite grains. Sample HM16JV014 displayed an As-poor core with elements Ni and Co also displaying compositional zonation with enrichment on the boundary of the As-poor core as well as enrichments along the rim of the pyrite grain (Fig. 5.4). This As-poor core could represent a relict grain. Sample HM16JV050 is a pyrite grain displaying an oxidised rim (Fig. 5.5). Compositional zonation was observed in Co, Ni and As. The oxidised rim of the pyrite was depleted in Fe and S but enriched in Ag, Cu and Zn. Sample HM16JV203 also displays compositional zonation in As, Co and Ni (Fig. 5.6). The pyrite grain exhibits an Fe-poor rim as well as Fe-poor fractures throughout. The rim and fractures are enriched in Pb, Bi and Sb.

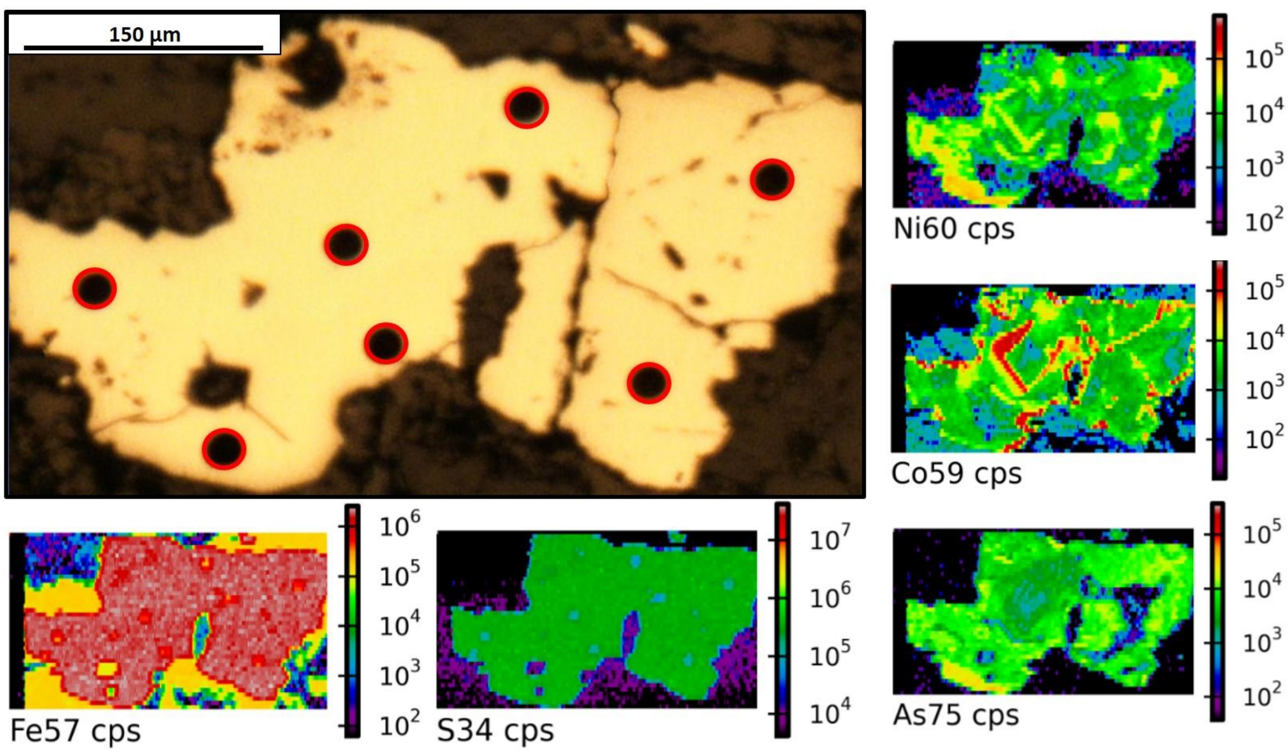

Figure 5.4: Elemental maps of Fe, S, Co, Ni, and As created by LA-ICP-MS analysis of pyrite from a felsic metavolcanic rock (HM16JV014). The element map displays the As-poor core of the pyrite as well as compositional zoning of Co and Ni within the grain. Laser ablation spots outlined in red. Elemental abundances expressed as counts per second (cps).

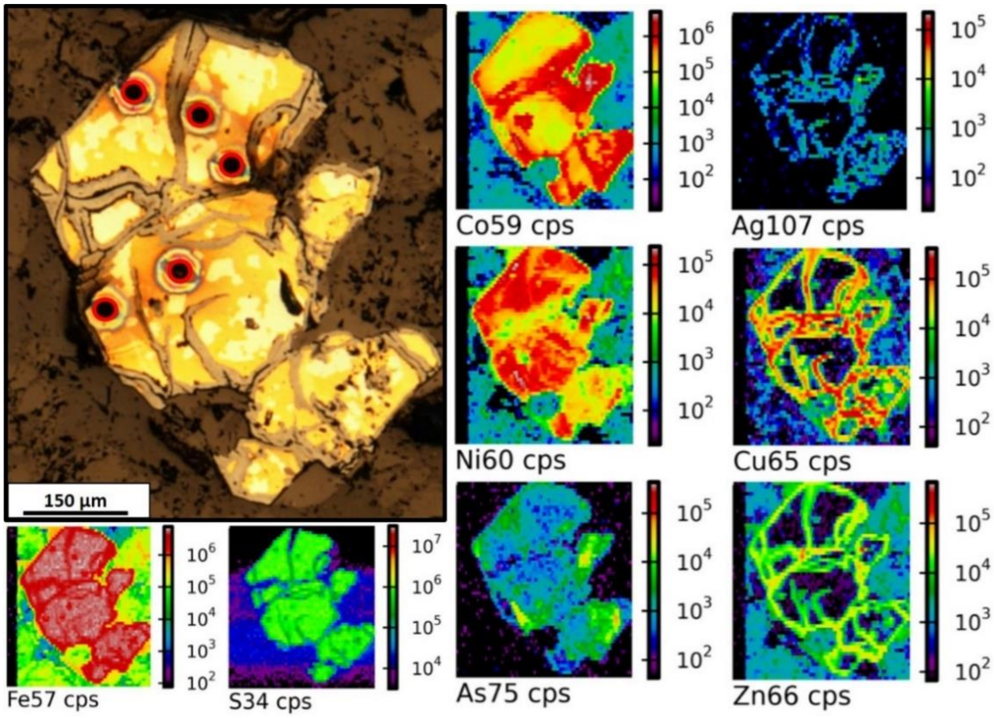

Figure 5.5: Elemental maps created by LA-ICP-MS of a pyrite grain) collected from a hematite altered feldspathic metasedimentary rock (HM16JV050. The oxidised rim of the pyrite displays enrichments of Ag, Cu, and Zn. Compositional zonation is displayed by Co, Ni and As within the grain. Laser ablation spots outlined in red. Elemental abundances expressed as counts per second (cps).

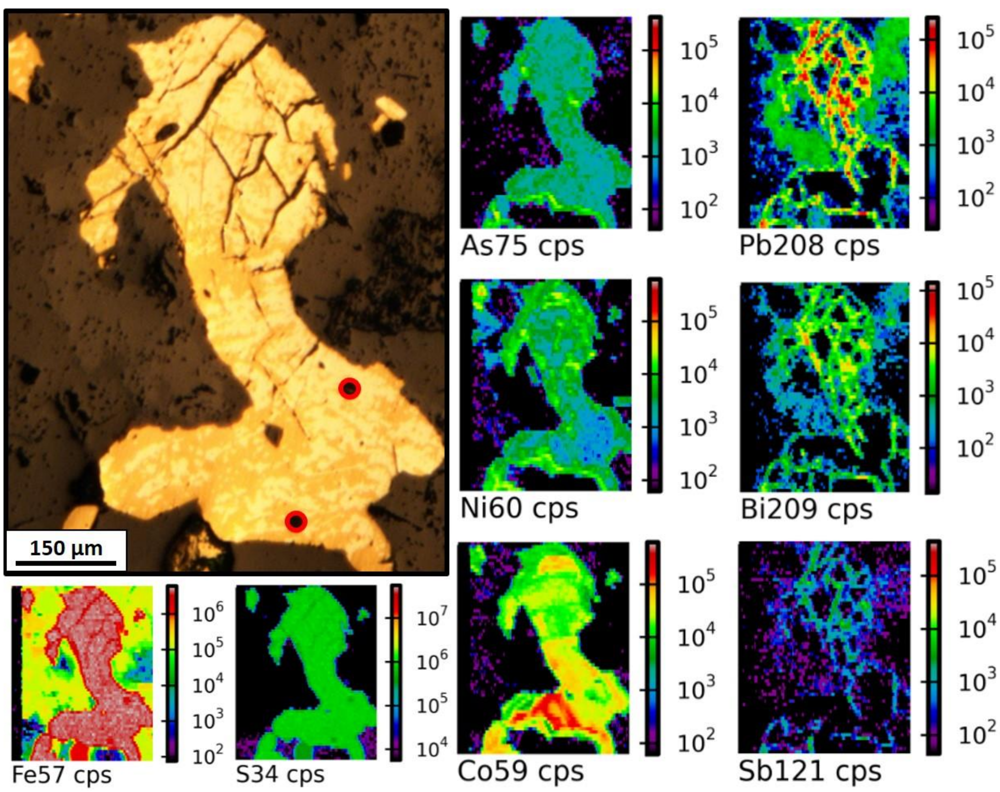

Figure 5.6: Elemental maps created by LA-ICP-MS of pyrite grain from a calc-silicate altered metasedimentary rock (HM16JV203). The pyrite grain exhibits compositional zoning of As, Ni and Co. Elements Pb, Bi and Sb are enriched along Fe-poor fractures and rim of the pyrite grain. Laser ablation spots outlined in red. Elemental abundances expressed as counts per second (cps).

Chapter 6: Discussion

6.1 Introduction

Studies by Cooke et al. (2014) and Wilkinson et al. (2015) detailed the use of epidote and chlorite chemistry as tools for exploration around porphyry deposits in the propylitic alteration zone (“green-rock environment”). This study aimed to build on their findings and test the application of mineral chemistry as a tool for exploring for Archean Au deposits. However, the architecture of alteration systems in porphyry deposits quite different from Archean Au deposits. Alteration associated with porphyry deposits is well documented and commonly displays characteristic hydrothermal alteration surrounding the mineralizing intrusive complex, with potassic alteration forming early around the mineralizing intrusion, subsequently surrounded by a propylitic alteration halo (Cooke et al., 2014).

In Archean Au deposits, the bulk of alteration is controlled by fluid / rock ratios (McCuaig and Kerrich, 1998). This causes hydrothermal alteration proximal to fluid conduits to be the most intense, as this represents the zones of greatest fluid flux (McCuaig and Kerrich, 1998). In terms of architecture of the system, alteration intensity will be more continuous parallel to fluid conduits with a more marked change observed perpendicular to fluid conduits, due to a decrease in fluid / rock ratio. This can result in elements that are mobile in the hydrothermal system displaying chemical dispersion gradients moving away from the main body of the deposit. In Archean Au deposits these alteration systems are usually diffuse and will grade into regional metamorphic assemblages (McCuaig and Kerrich, 1998; Goldfarb et al., 2005).

Although they differ in characteristic shape of the hydrothermal system, with porphyry systems exhibiting a zonation halo and Archean Au systems being better developed parallel to fluid conduits, both do display dispersion gradients moving outwards from the main body of mineralization. It is possible Archean Au deposits may also display zonation patterns in mineral chemistry similar to porphyry deposits, as these alteration minerals are the direct result of fluid / rock interactions. The elements that display chemical zonation may vary on a deposit basis and would be influenced by the overall hydrothermal fluid composition, host lithology and which elements are mobile within a given system. Some characteristic elements that are known to be mobile / enriched in Archean Au systems include K, Rb, CO_2, S, As, Sb, Te, Bi, W, Mo, V, Ti and Co (McCuaig and Kerrich, 1998; Goldfarb et al., 2005). These elements will be assessed for their ability to act as pathfinder elements surrounding the Hemlo deposit.

The suitability of an element to be a pathfinder for mineralization at Hemlo was evaluated by observing anomalism within and around the zone of pervasive alteration as defined by Muir (1997; Fig. 6.1). This zone of alteration is used as a proxy for mineralization as it represents proximal alteration and envelopes the mineralization at Hemlo (Muir, 1997). Elements elevated relative to background within the zone of pervasive alteration will be referred to as proximal pathfinder elements, whereas elements elevated outside of the zone will be referred to as distal pathfinder elements. Key intrusions are outlined in Figure 6.1 to evaluate their potential to create false positive anomalies for mineralization. False positives could arise from the intrusions if epidote and chlorite sampled from them display similar chemical characteristics to those of epidote and chlorite from the deposit. Major structures throughout the region have also been displayed for added context and to observe their influence on spatial geochemical patterns surrounding the deposit.

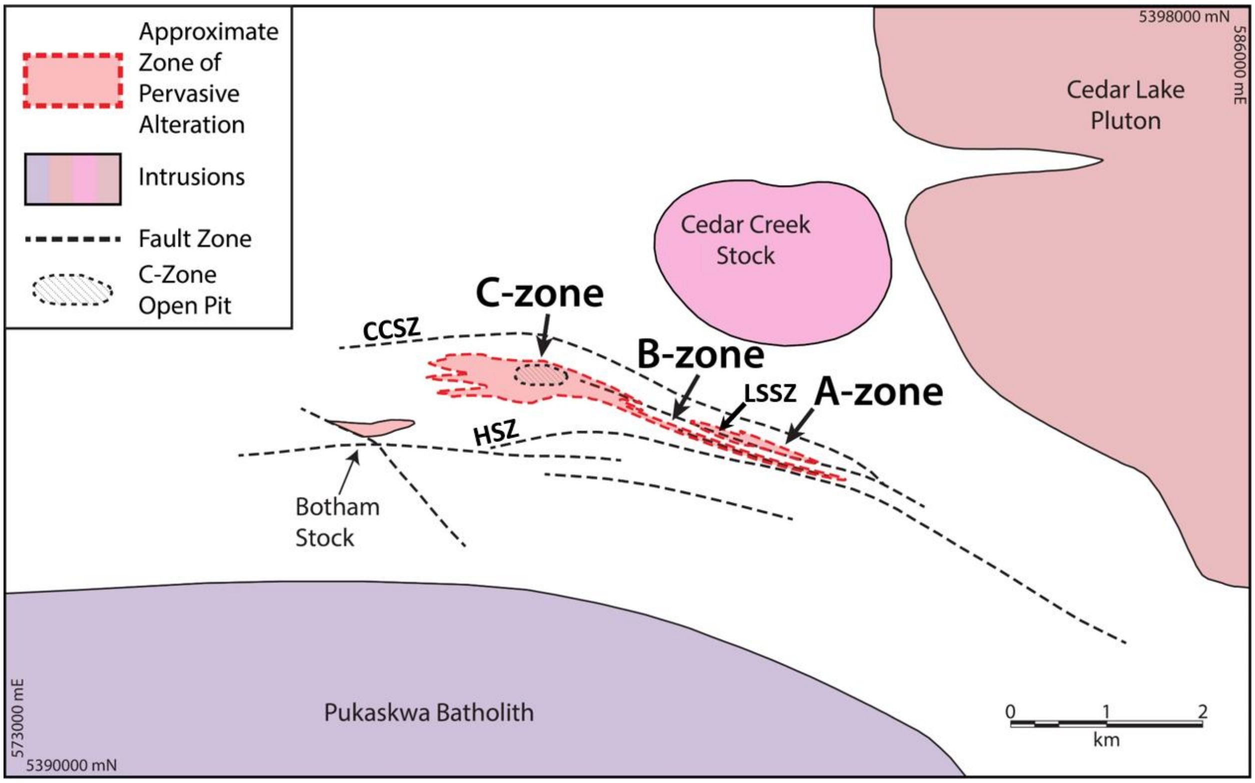

Figure 6.1: Simplified regional map of the Hemlo district showing location of relevant intrusions, structures, and deposit features (Modified from Muir, 2003). CCSZ – Cedar Creek shear zone; LSSZ - Lake Superior shear zone; HSZ - Hemlo shear zone.

All the whole rock and mineral geochemistry data was binned using the geochemical plotting program ioGAS built-in Progressive binning range (Fig., 6.2). With Progressive binning the data are statistically split into seven groups based on percentiles of data with the following cut-offs; 30%, 60%, 80%, 90%, 95% and 98% (Fig. 6.2). Unique colours and sizes were assigned to each bin to represent how anomalous a value is with larger, warmer coloured circles representing more strongly anomalous values (Fig. 6.2). After binning, data can be plotted spatially to observe how an elements abundance varied throughout the Hemlo district.

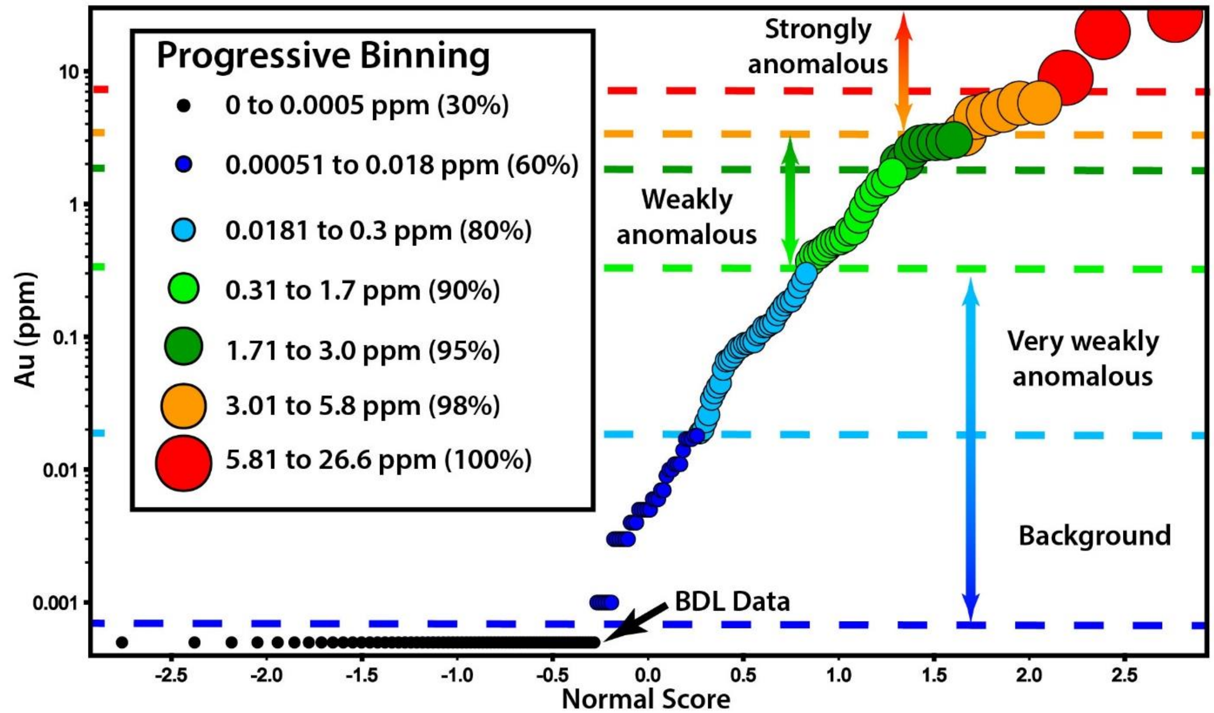

Figure 6.2. Normal score probability plot of whole rock Au from the Hemlo district and deposit (deposit data from Gorner, in prep), displaying bin break up for the ioGAS progressive binning range.

6.2 Whole rock geochemistry

Whole rock geochemical analysis was completed for all samples containing minerals that underwent analysis by LA-ICP-MS. This was done in order to compare mineral geochemistry data to whole rock geochemistry data. Interrogation of the whole rock geochemical data, outside of discerning the geochemical footprint of the Hemlo deposit or comparisons to mineral chemistry, will not be discussed herein, as the whole rock geochemistry for this study is broadly consistent with previous work by Muir (1997) and Fage (2011). Deposit scale data from Gorner (in prep) and an accompanying mineral chemistry from the Hemlo deposit will be used throughout this section to provide context for the district sample suite from this study. The samples from Gorner (in prep) were primarily sampled from the C-zone of the deposit and were mainly taken from drill-core with a few samples from underground workings (Fig. 6.3).

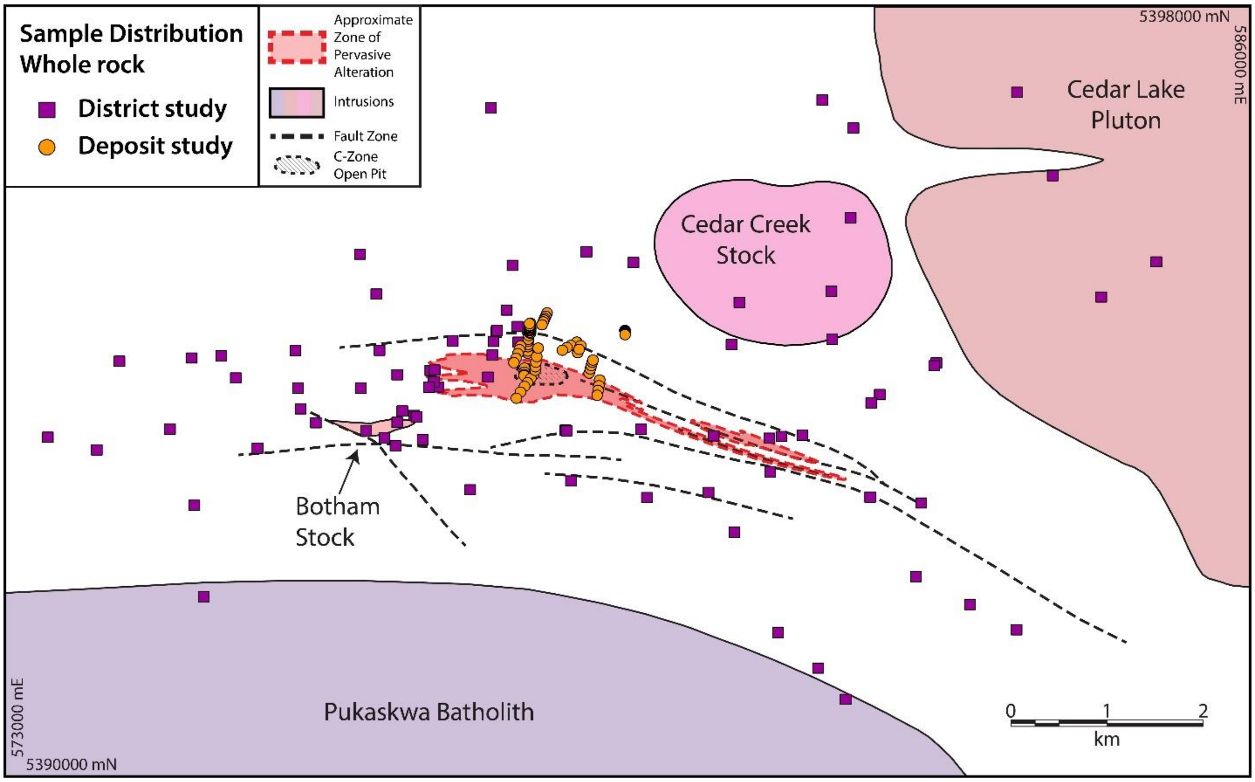

Figure 6.3: Spatial distribution of whole rock geochemistry samples from the Hemlo district and deposit (deposit data from Gorner, in prep). Background modified from Muir (2003).

6.2.1 Whole rock geochemical footprint of the Hemlo Au deposit

At Hemlo, whole rock geochemistry can be utilized to characterize the alteration and metals associated with Au mineralization. Gold is the principal commodity of the Hemlo deposit and has been known to be the best indicator of mineralization in Au deposits (McCuaig and Kerrich, 1998). Gold anomalism was assessed by calculating the background, then statistically binning the data and plotting it spatially on a simplified geology maps (Fig. 6.4). Gold values displayed anomalous (> 0.3 ppm) concentrations mainly in deposit samples, occurring within the zone of pervasive alteration (Fig. 6.4). These anomalous values immediately dropped to background and below detection limit values outside of the zone of alteration (Fig. 6.4).

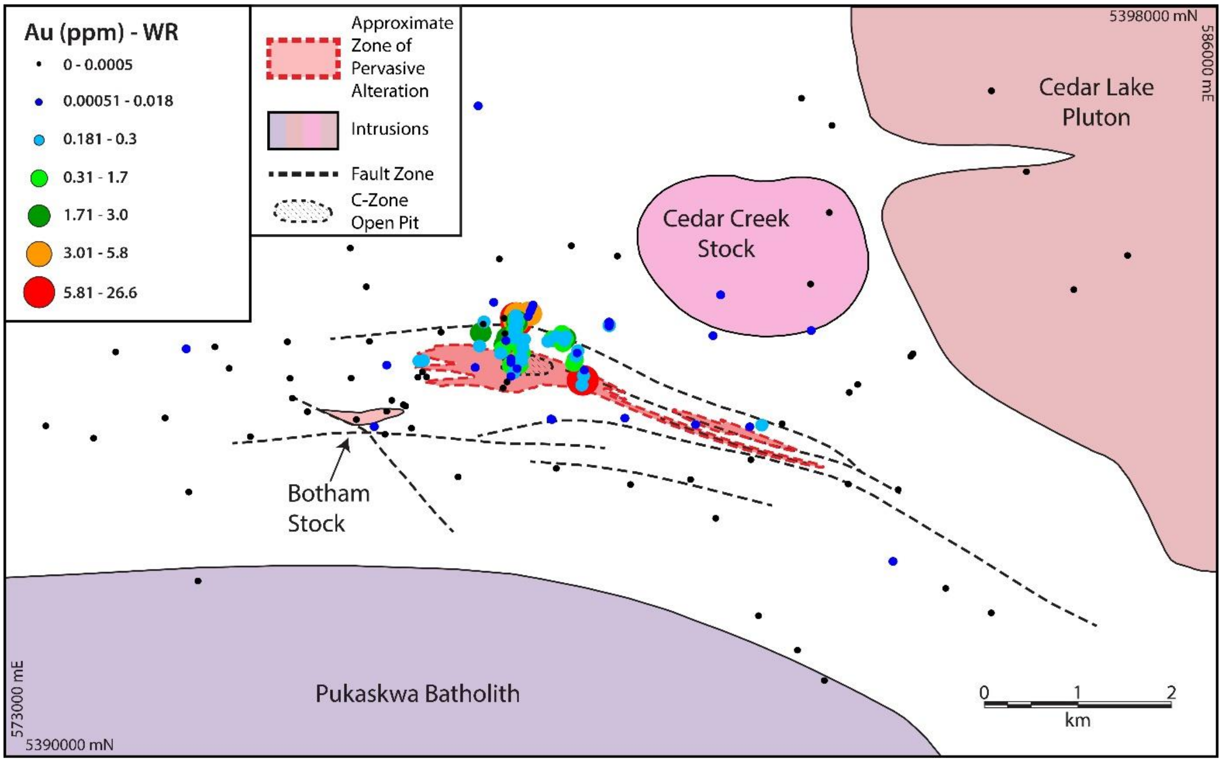

Figure 6.4: Spatial distribution of whole rock (WR) Au concentrations throughout the Hemlo district (deposit data from Gorner, in prep). Background modified from Muir (2003).

Muir (1997) defined a 3 km long zone of pervasive alteration surrounding the Hemlo Au deposit. This zone could vary in width along strike up to 50 m in the A and B zone and up to 300 m in the C-zone (Fig. 6.2). The shape of this alteration zone is consistent with the architecture of Archean Au deposits discussed above, where the deposit is laterally continuous in one direction (3 km W-E) and less extensive in the perpendicular direction (max 300 m N-S). Muir (1997) described this alteration as dominantly feldspathic, with the bulk of mineralization (>80%) being associated with a potassic alteration and with the area west of C-zone being associated with more a more sodic alteration. Whole rock concentrations of K_2O and Na_2O were plotted spatially in order to assess their association with mineralization (Figs. 6.5 and 6.6). Potassium was observed to have an intimate association with Au mineralization displaying highly anomalous values (up to 10.4 wt.%; Fig. 6.5). This geochemical association of Au with K agrees with observations by Muir (1997), who identified potassic alteration being associated with higher grade mineralization. Sodium displays anomalous depletion (< 2.8 wt. %) within the main mineralized zone of the deposit but displayed anomalous enrichment (up to 9.2 wt. %) to the west of and proximal to the margins of the zone of pervasive alteration (Fig. 6.6). This enrichment in Na towards the western margins of the deposit could represent a zonation in alteration style surrounding the deposit. The sodic alteration may be genetically related to the potassic alteration but does not appear to be intimately associated with any anomalous Au values.

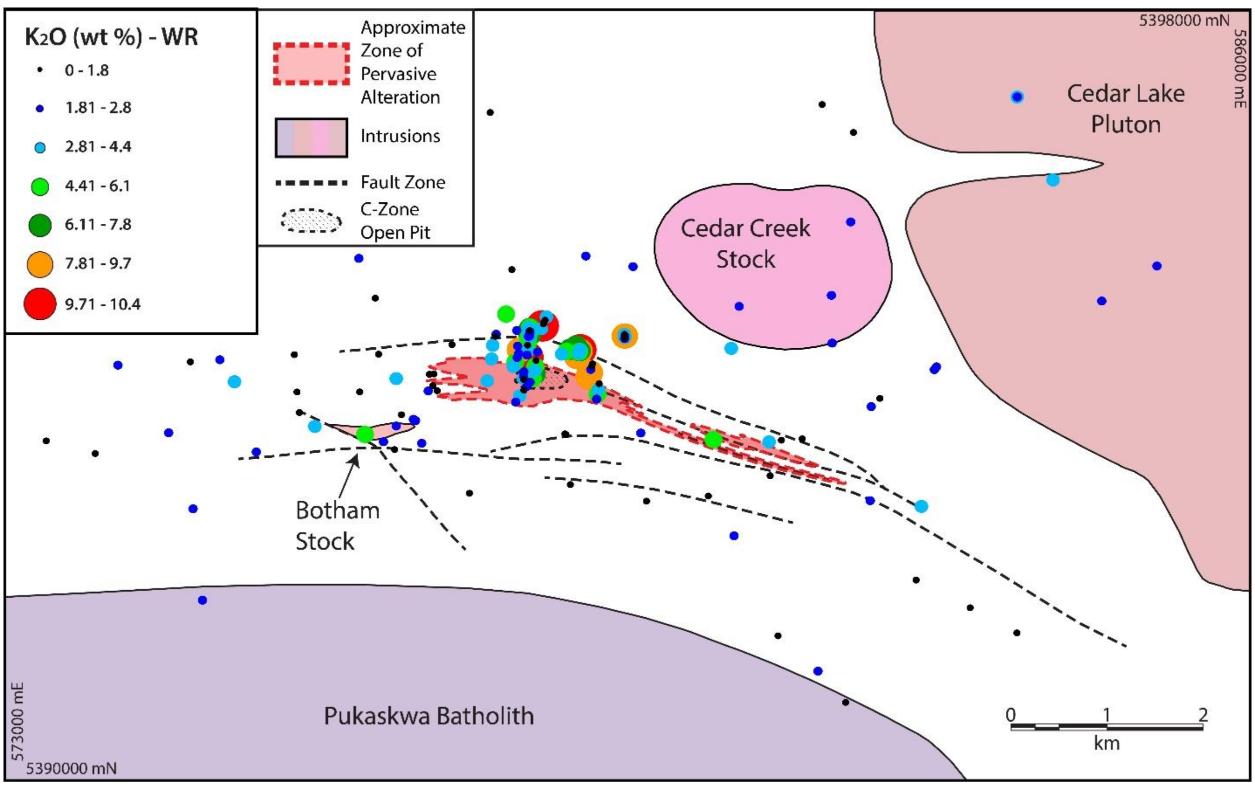

Figure 6.5: Spatial distribution of whole rock (WR) K_2O concentrations throughout the Hemlo district and deposit (deposit data from Gorner, in prep). Background modified from Muir (2003).

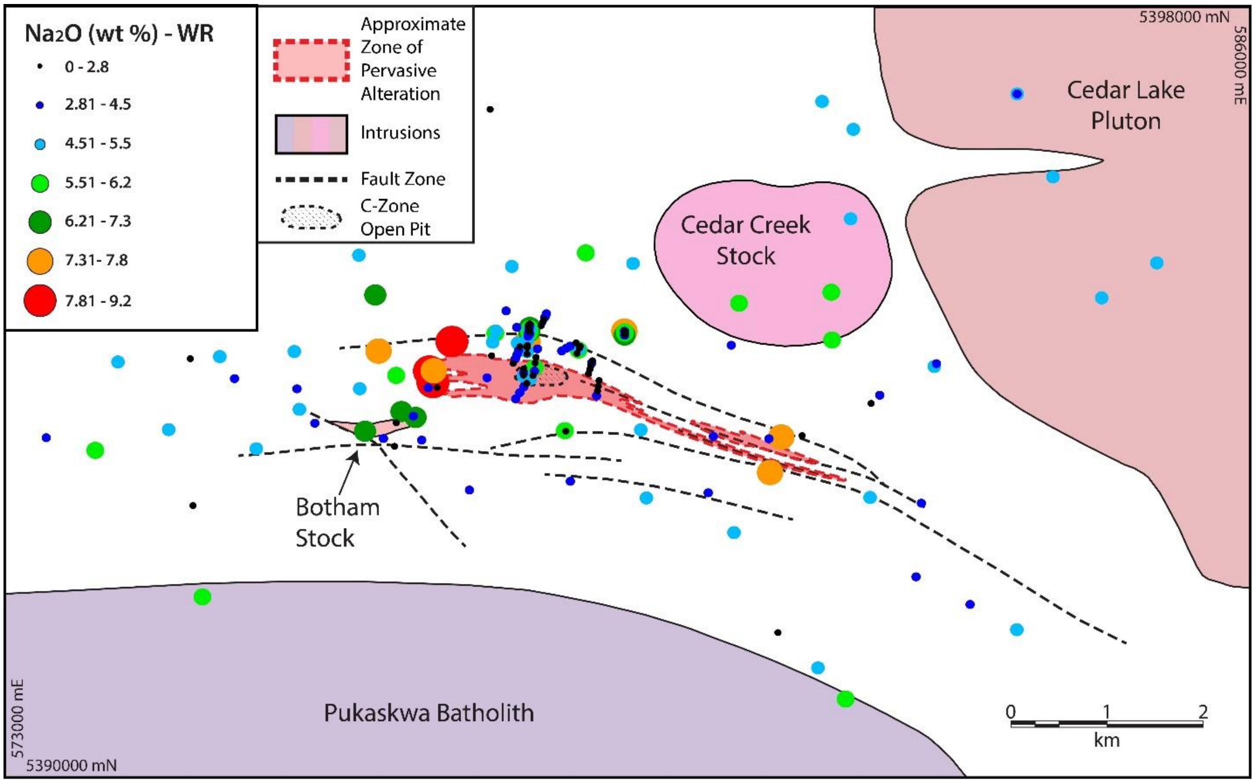

Figure 6.6: Spatial distribution of whole rock (WR) Na_2O concentrations throughout the Hemlo district and deposit (deposit data from Gorner, in prep). Background modified from Muir (2003).

All elements analysed through whole rock analysis were plotted spatially using the same methodology as for whole rock Au in order to assess their suitability as geochemical indicators for mineralization (Figs. 6.1 and 6.2). Only elements that proved useful in defining the Hemlo deposit will be discussed herein. Arsenic, Sb and Hg were plotted spatially as these are elements known to be associated with Au mineralization (McCuaig and Kerrich, 1998; Kerrich et al., 2000). All three elements display elevated concentrations relative to background within the outlined zone of pervasive alteration, with concentrations of As > Sb > Hg being observed to be intimately associated with Au mineralization (Figs. 6.7, 6.8 and 6.9). Enrichment in these elements within the zone of pervasive alteration is not surprising as minerals that host these elements such as orpiment (As_2S_3), realgar (AsS), stibnite (Sb_2S_3) and cinnabar (HgS) have been reported to be present within ore zones (Muir, 1997). None of these minerals were observed in this study as it focused primarily on the area around the deposit, however they were identified in the deposit scale study by Gorner (in prep). Concentrations of Sb and especially Hg are typically found to be elevated in mineralized systems that form at shallower levels in the crust (Goldfarb, 2005). Concentrations of As, Sb and Hg drop to background levels away from the zone of pervasive alteration (Figs. 6.7, 6.8, 6.9).

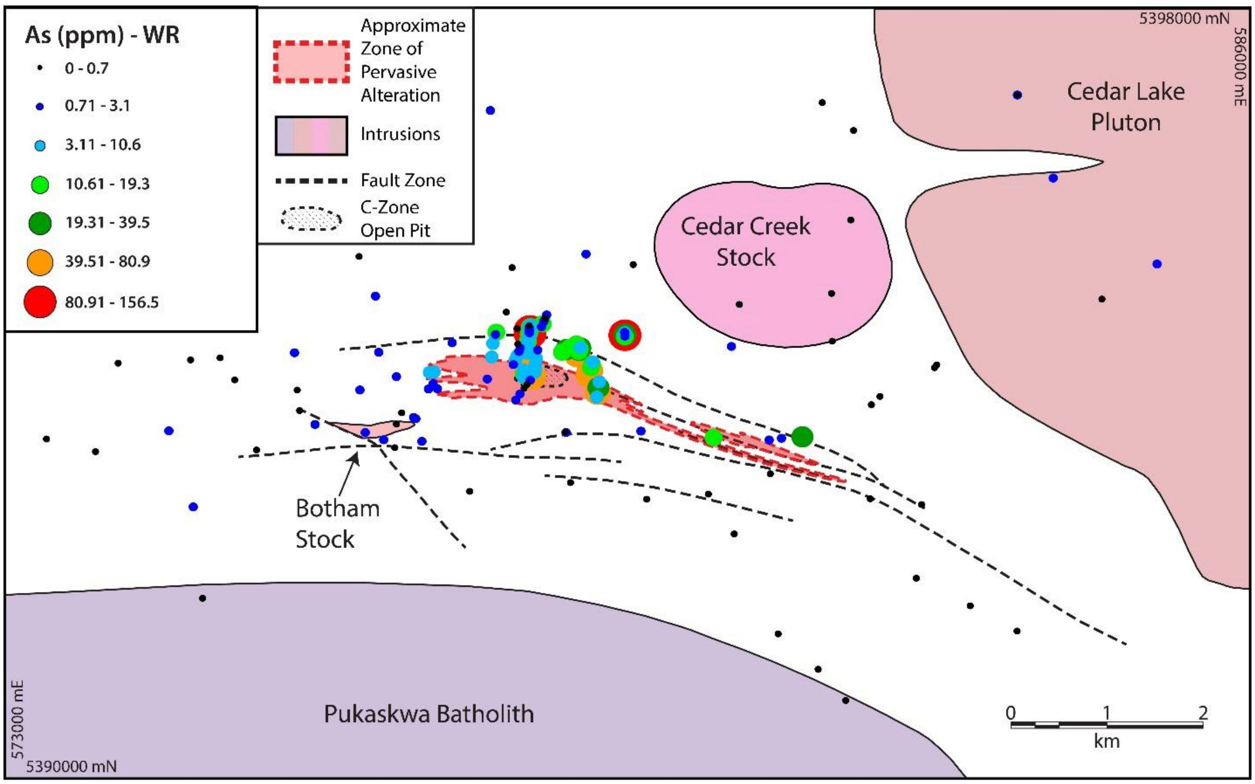

Figure 6.7: Spatial distribution of whole rock (WR) As concentrations throughout the Hemlo district and deposit (deposit data from Gorner, in prep). Background modified from Muir (2003).

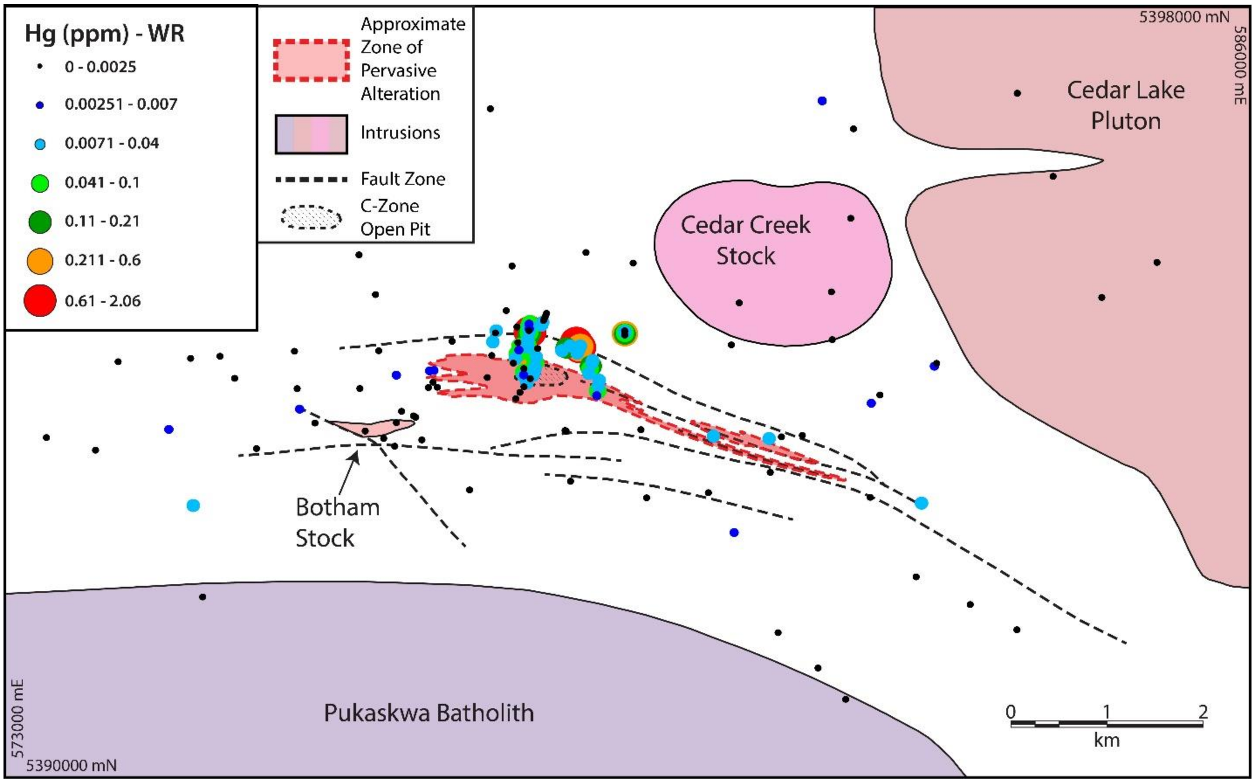

Figure 6.8: Spatial distribution of whole rock (WR) Hg concentrations throughout the Hemlo district and deposit (deposit data from Gorner, in prep). Background modified from Muir (2003).

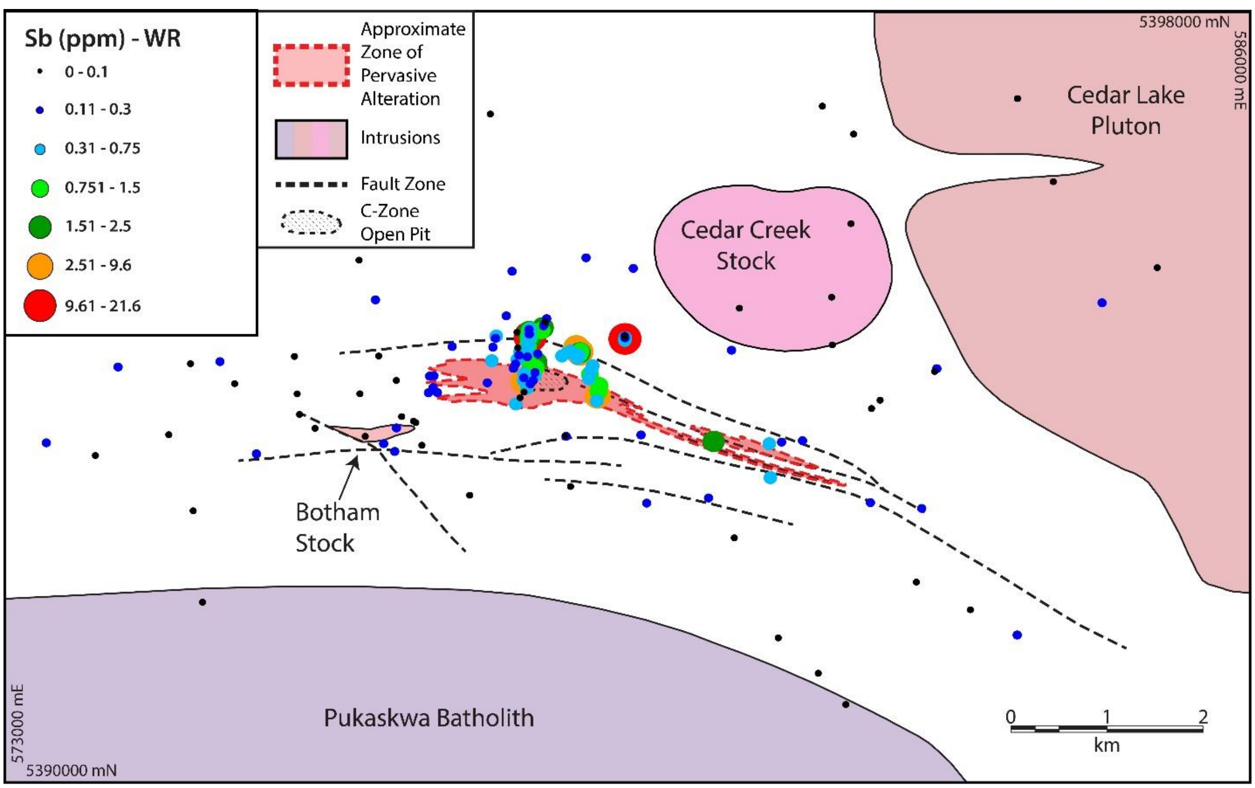

Figure 6.9: Spatial distribution of whole rock (WR) Sb concentrations throughout the Hemlo district and deposit (deposit data from Gorner, in prep). Background modified from Muir (2003).

Tellurium, Ag and W are all elements known to be enriched in Au systems and were plotted spatially to evaluate their association with mineralization (McCuaig and Kerrich, 1998; Kerrich et al., 2000). All three elements display a close spatial association with Au, with elevated concentrations relative to background within the zone of pervasive alteration (Figs. 6.10, 6.11, 6.12). Tellurium, Ag and W display weak anomalies proximal to the zone of pervasive alteration but drop off to background concentrations moving outwards from this zone (Figs. 6.10, 6.11, 6.12). At Hemlo molybdenite and barite have been recorded as minerals associated with Au mineralization, so concentrations of Mo and Ba were plotted spatially (Muir, 1997; 2003). Both Mo and Ba display elevated concentrations relative to background inside of the Au shell, with Ba up to 10,500 ppm and Mo up to 1,240 ppm (Figs. 6.13, 6.14). Only background levels of Mo and Ba are observed throughout the district.

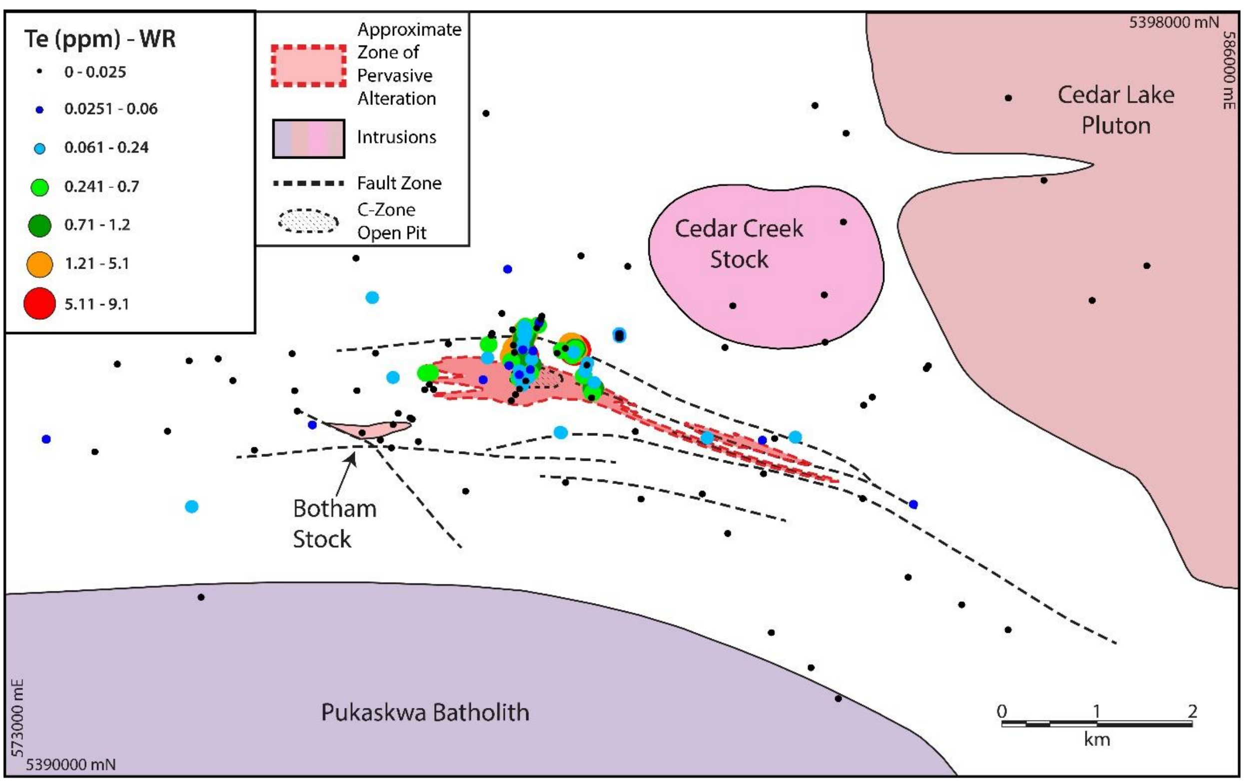

Figure 6.10: Spatial distribution of whole rock (WR) Te concentrations throughout the Hemlo district and deposit (deposit data from Gorner, in prep). Background modified from Muir (2003).

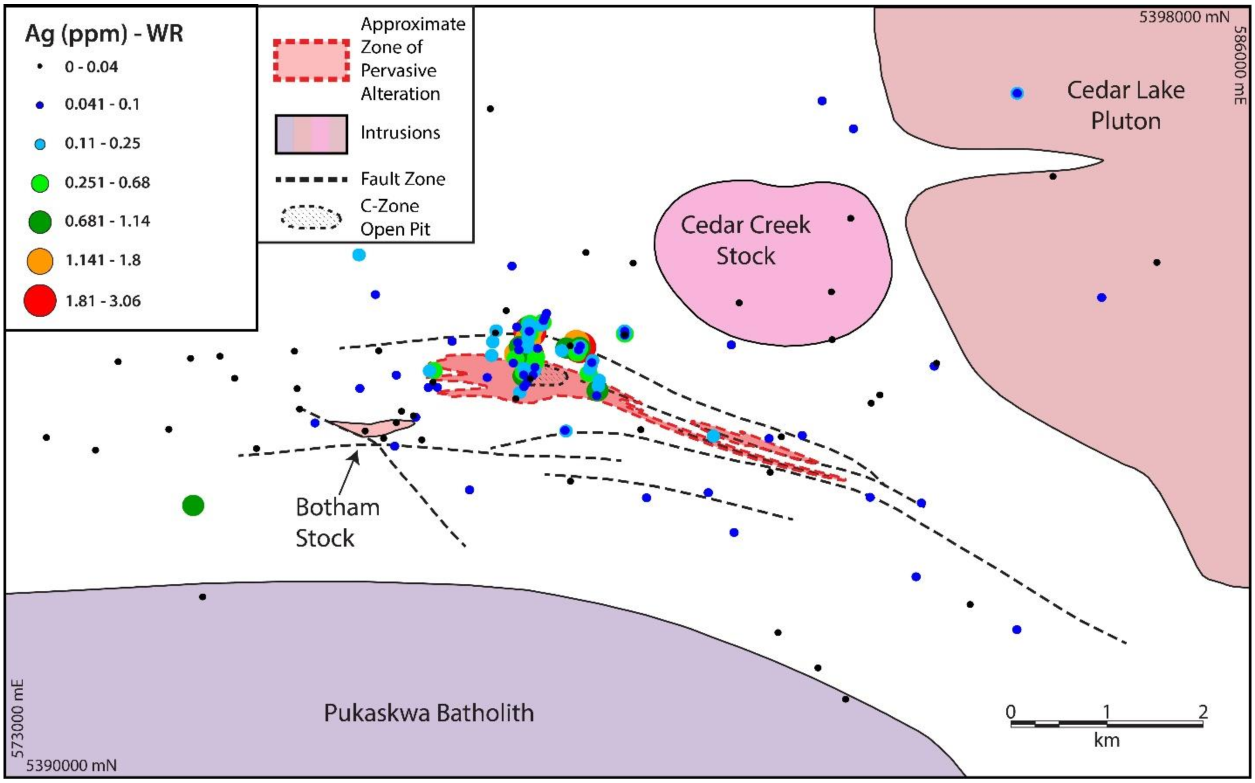

Figure 6.11: Spatial distribution of whole rock (WR) Ag concentrations throughout the Hemlo district and deposit (deposit data from Gorner, in prep). Background modified from Muir (2003).

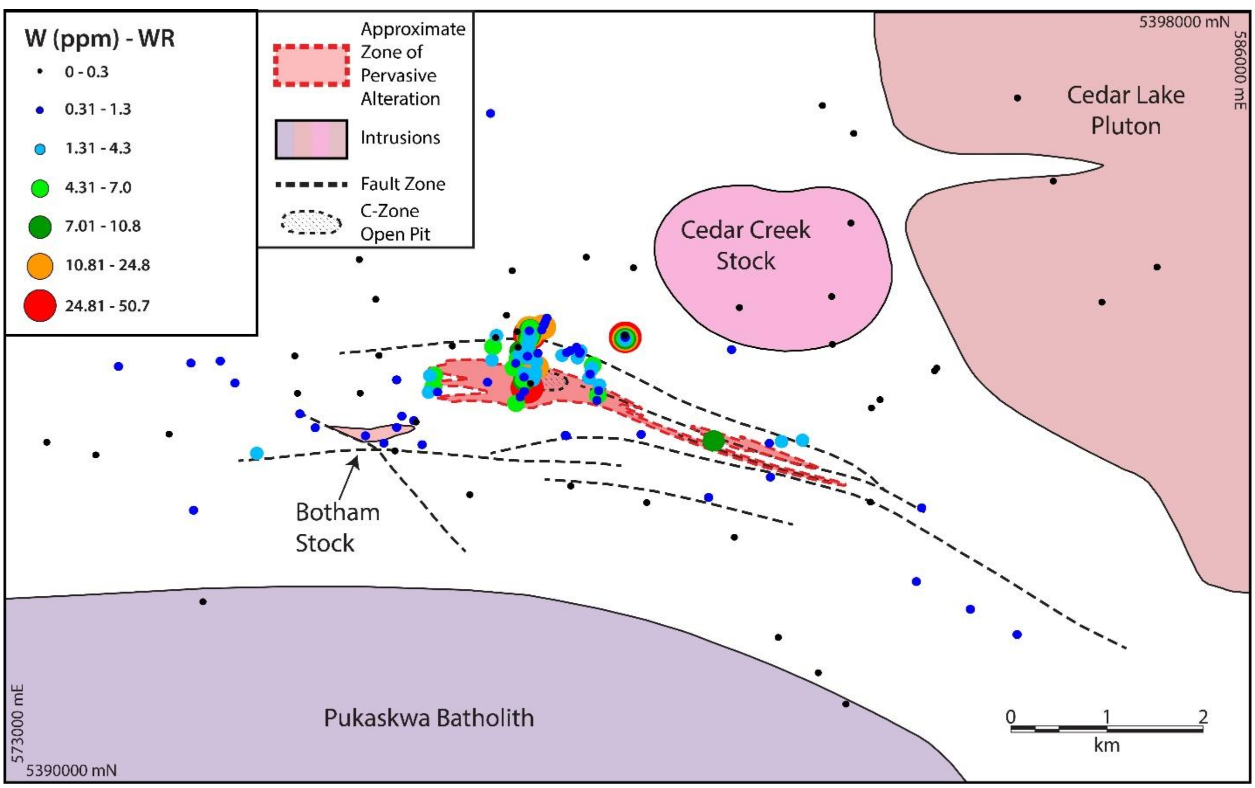

Figure 6.12: Spatial distribution of whole rock (WR) W concentrations throughout the Hemlo district and deposit (deposit data from Gorner, in prep). Background modified from Muir (2003).

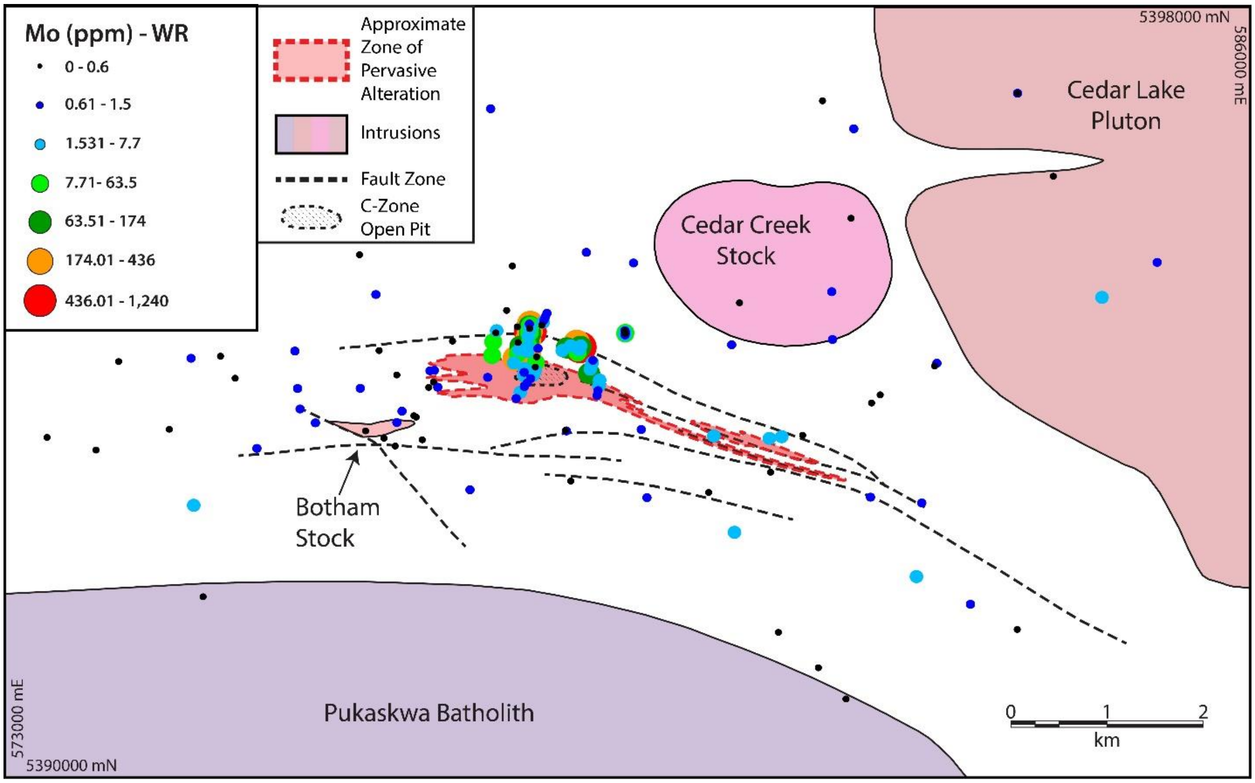

Figure 6.13: Spatial distribution of whole rock (WR) Mo concentrations throughout the Hemlo district and deposit (deposit data from Gorner, in prep). Background modified from Muir (2003).

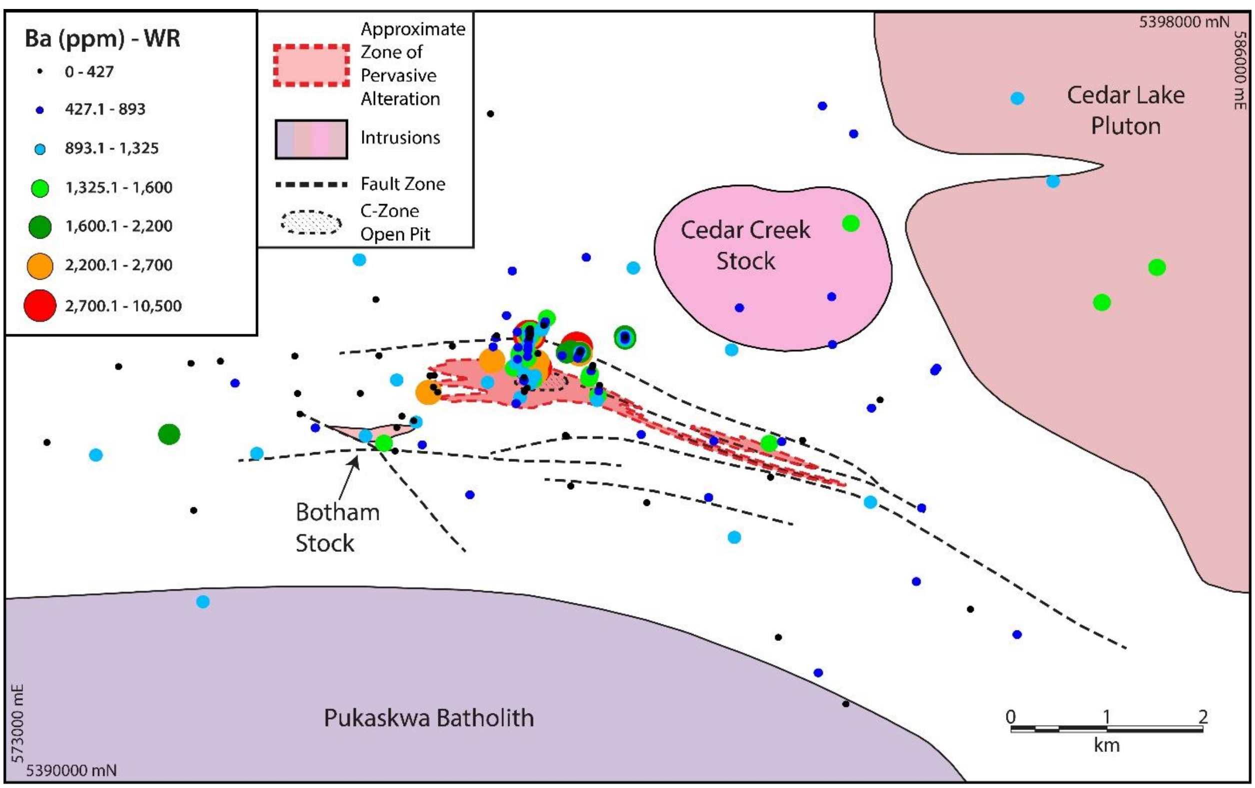

Figure 6.14: Spatial distribution of whole rock (WR) Ba concentrations throughout the Hemlo district and deposit (deposit data from Gorner, in prep). Background modified from Muir (2003).

6.3 Mineral chemistry

The trace element geochemistry of epidote, chlorite and pyrite was investigated to evaluate potential geochemical vectors towards mineralization. The effectiveness of mineral chemistry over whole rock geochemistry was evaluated by comparing the two datasets. The ability of a mineral to expand the footprint of the Hemlo deposit was assessed. Epidote and chlorite mineral dara were also utilized to evaluate the potential of intrusions surrounding the deposit to create false positive anomalies. A false positive anomaly, if one were to occur, would result in minerals from the sampled intrusions producing a similar chemical signature to minerals from the deposit, such that they could not be distinguished from each other chemically. This was evaluated by comparing mineral chemistry between the deposit, district and regional intrusions.

6.3.1 Epidote

6.3.1.1 Epidote group minerals and crystal structure

Epidote is a common secondary mineral that can be produced through a number of processes (hydrothermal, magmatic and metamorphic; Cooke et al., 2014). Epidote occurrences can be quite variable, occurring in a range of colours from black to pink, however the most common and characteristic occurrence is a pistachio-green colour (Fig. 6.15). Petrographically epidote is also very distinct as it characteristically has high relief, is strongly plechroic and has high birefringence (Fig. 6.15). Epidote itself is the main mineral in the epidote supergroup of minerals which contains 10 individual mineral phases that have been summarized in Table 6.1. Other epidote supergroups as defined by Armbruster et al. (2006) and Mills et al. (2009) include allanite (rare earth element rich variety) and dollaseite (a high-Mg variety).

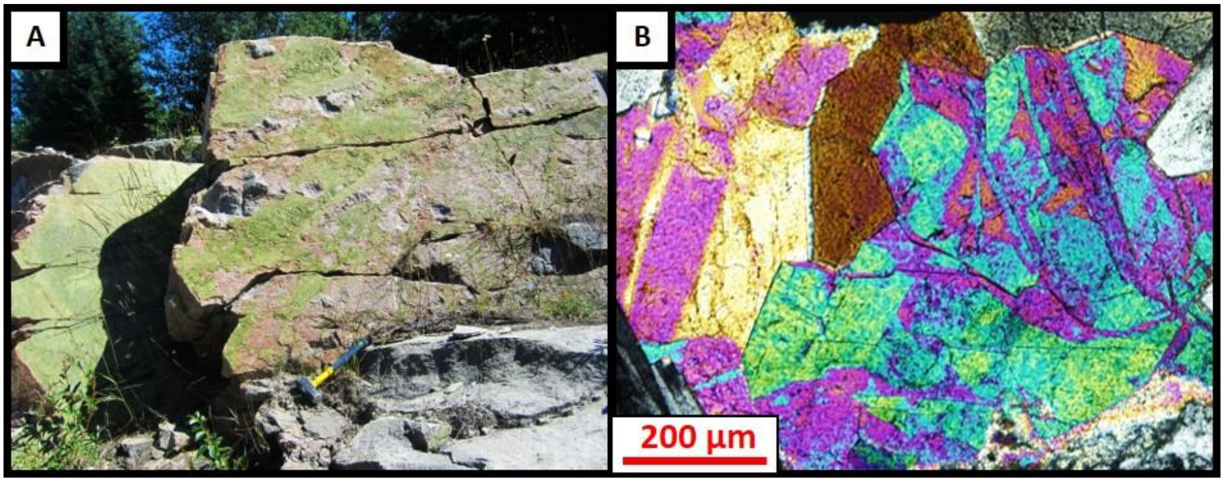

Figure 6.15: (A) Outcrop photo of epidote occurring along a fracture plane displaying characteristic pistachio-green colour of common epidote. (B) Cross-polarized transmitted light image of euhedral epidote displaying high relief and high birefringence (HM16JV143).

Table 6.1: Chemical formulae of epidote supergroup minerals (from Cooke, 2015)[1]. Elemental substitutions that distinguish each species are highlighted in red.

Name	Formula
Epidote Group	
Epidote	$Ca_2Al_2Fe^{3+}[Si_2O_7][SiO_4]O(OH)$
Epidote-(Sr)	$Ca\mathbf{Sr}Al_2Fe^{3+}[Si_2O_7][SiO_4]O(OH)$
Epidote-(Pb)	$Ca\mathbf{Pb}Al_2Fe^{3+}[Si_2O_7][SiO_4]O(OH)$
Clinozoisite	$Ca_2Al_3[Si_2O_7][SiO_4]O(OH)$
Clinozoisite-(Sr)	$Ca\mathbf{Sr}Al_3[Si_2O_7][SiO_4]O(OH)$
Mukhinite	$Ca_2Al_2\mathbf{V^{3+}}[Si_2O_7][SiO_4]O(OH)$
Piemontite	$Ca_2Al_2\mathbf{Mn^{3+}}[Si_2O_7][SiO_4]O(OH)$
Piemontite-(Sr)	$Ca\mathbf{Sr}Al_2\mathbf{Mn^{3+}}[Si_2O_7][SiO_4]O(OH)$
Piemontite-(Pb)	$Ca\mathbf{Pb}Al_2\mathbf{Mn^{3+}}[Si_2O_7][SiO_4]O(OH)$
Manganipiemontite-(Sr)	$Ca\mathbf{SrMn^{3+}}Al\mathbf{Mn^{3+}}[Si_2O_7][SiO_4]O(OH)$
Allanite Group	
Allanite-(Ce), -(La), -(Y), -(Nd)	$Ca\mathbf{(REE)^{3+}}Al_2Fe^{2+}[Si_2O_7][SiO_4]O(OH)$
Vanadoallanite-(La)	$Ca\mathbf{La^{3+}V^{3+}}AlFe^{2+}[Si_2O_7][SiO_4]O(OH)$
Dissakisite-(Ce), -(La)	$Ca\mathbf{(REE)^{3+}}Al_2Mg[Si_2O_7][SiO_4]O(OH)$
Ferriallanite-(Ce), -(La)	$Ca\mathbf{(REE)^{3+}Fe^{3+}}AlFe^{2+}[Si_2O_7][SiO_4]O(OH)$
Manganiandrosite-(Ce), -(La)	$\mathbf{Mn^{2+}(REE)Mn^{3+}}Al\mathbf{Mn^{2+}}[Si_2O_7][SiO_4]O(OH)$
Vanadoandrosite-(Ce)	$\mathbf{Mn^{2+}Ce^{3+}V^{3+}}Al\mathbf{Mn^{2+}}[Si_2O_7][SiO_4]O(OH)$
Dollaseite Group	
Dollaseite-(Ce)	$Ca\mathbf{Ce^{3+}Mg}Al\mathbf{Mg}[Si_2O_7][SiO_4]O(OH)$

Abbreviation: REE = Rare earth element

[1]After Franz and Liebscher (2004), Gieré and Sorensen (2004), Armbruster et al. (2006), Minakawa et al., (2008), Mills et al. (2009), Chukanov et al. (2012), Skoda et al. (2012), Nagashima et al. (2013).

Epidote supergroup minerals have the following general formula $A_2M_3[T_2O_7][TO_4](O,F)(OH,O)$. The T site is predominantly filled by Si, the A site by divalent cations including Ca, Mn^{2+}, Sr, Pb and REE, and the M site by Al, Fe^{3+}, Mn^{3+}, V^{3+} and Cr^{3+} and other trivalent cations (Fig. 6.16; Cooke at al., 2014). This study and the work by Cooke et al. (2014) identified a number of trace elements (Table 5.1) that can consistently be detected in epidote suggesting that when available these elements will be incorporated directly into the epidote structure.

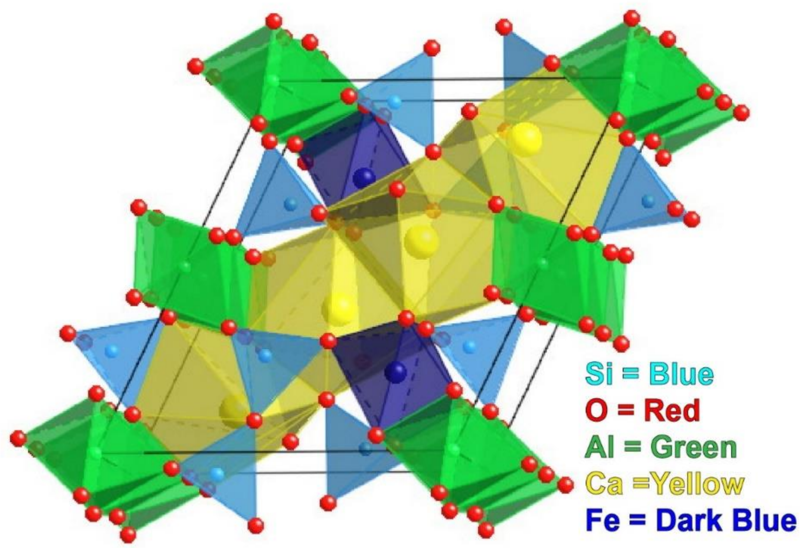

Figure 6.16: Epidote crystal structure. Abbreviations: Si = silica, O = oxygen, Al = aluminum, Ca = calcium, Fe = iron. Modified from image source: http://som.web.cmu.edu/structures/S091-epidote.html

Within the epidote group, epidote (the Fe^{3+} end-member) exists in a solid solution with clinozoisite (the Al end-member; Table 6.1). Armbruster et al. (2006) quantified the solid solution between the two using the formula $X_{Fe} = Fe^{3+} / (Fe^{3+} + Al)$. Substitution of Fe^{3+} and Al^{3+} into the epidote structure can be controlled by redox variations, bulk-rock and fluid composition, temperature, CO_2 fugacity and pressure (Arnason et al., 1993). Backscattered electron images of epidote collected by Cooke et al. (2014) displayed complex inter grain variability of Al and Fe contents on the micron scale. This complex inter grain variability limits the vectoring application of Al, Fe and highlights challenges with using major elements in epidote as vectoring tools

(Cooke et al., 2014). The study of trace element variation in epidote by Cooke et al. (2014) noted a number of pathfinder elements that were able to either vector away from or towards the centre of a porphyry deposit. Proximal pathfinder elements included Cu, Mo Au and Sn, distal pathfinder elements included As, Sb , Pb, Zn and Mn (Cooke et al., 2014).

6.3.1.2 Element partitioning in epidote and whole rock geochemistry

Cooke et al. (2014) compared epidote and whole rock geochemistry by plotting up LA-ICP-MS analyses of epidote against corresponding whole rock analyse. Similar plots were created to compare epidote and whole rock geochemistry from the Hemlo deposit (Fig. 6.17 and 6.18). Figure 6.17 displays elements that are enriched in the host rock relative to epidote, indicating they preferentially partition into other mineral phases. These elements include Na, Mg, K, Ti, Ba, Zr, Zn and Cu (Fig. 6.17). Figure 6.18 displays elements that are enriched in epidote relative to host rock indicating that these elements preferentially partition into epidote. These elements include Al, Fe, Mn, Sr, V, As, Pb, Sb, Sn, Eu and Bi (Fig. 6.18). Arsenic and Sb are key elements of interest as they are known to be associated with Au mineralization in gold deposits (McCuaig and Kerrich, 1998; Kerrich et al., 2000) and they display enrichment of up to two orders of magnitude in epidote relative to host rock composition (Fig. 6.18). Strontium is also an element of interest as it displays marked enrichment in epidote relative to host rock (Fig. 6.18).

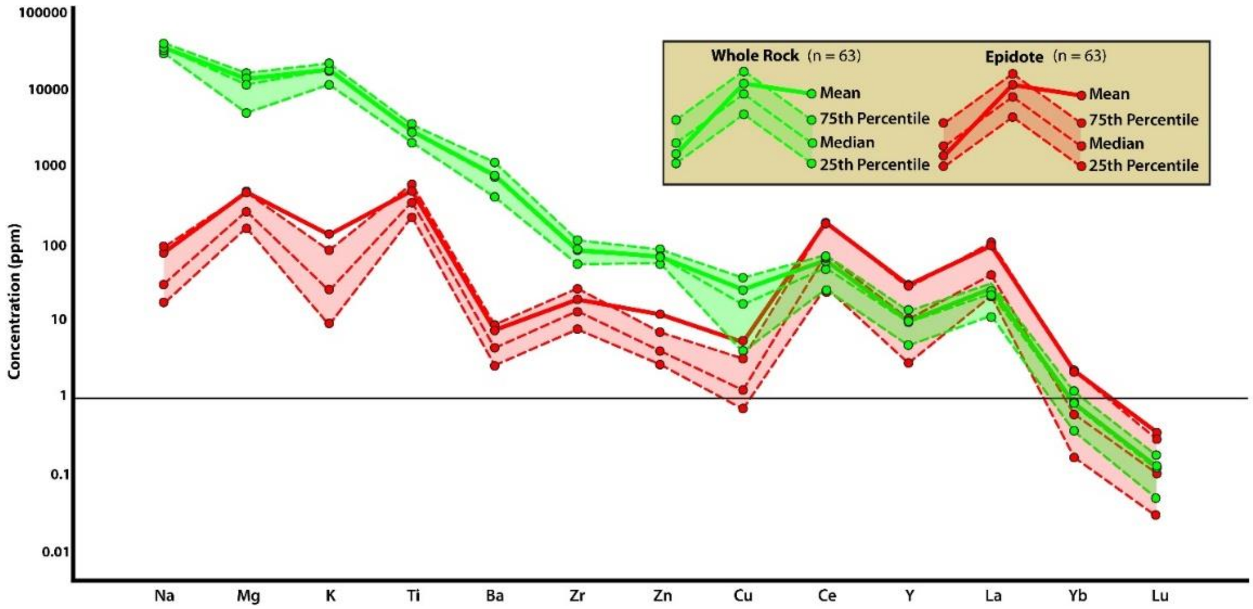

Figure 6.17: Comparison of epidote LA-ICP-MS and whole rock geochemical data, displaying median, mean, 25th and 75th percentile. This plot displays elements enriched in whole rock relative to epidote.

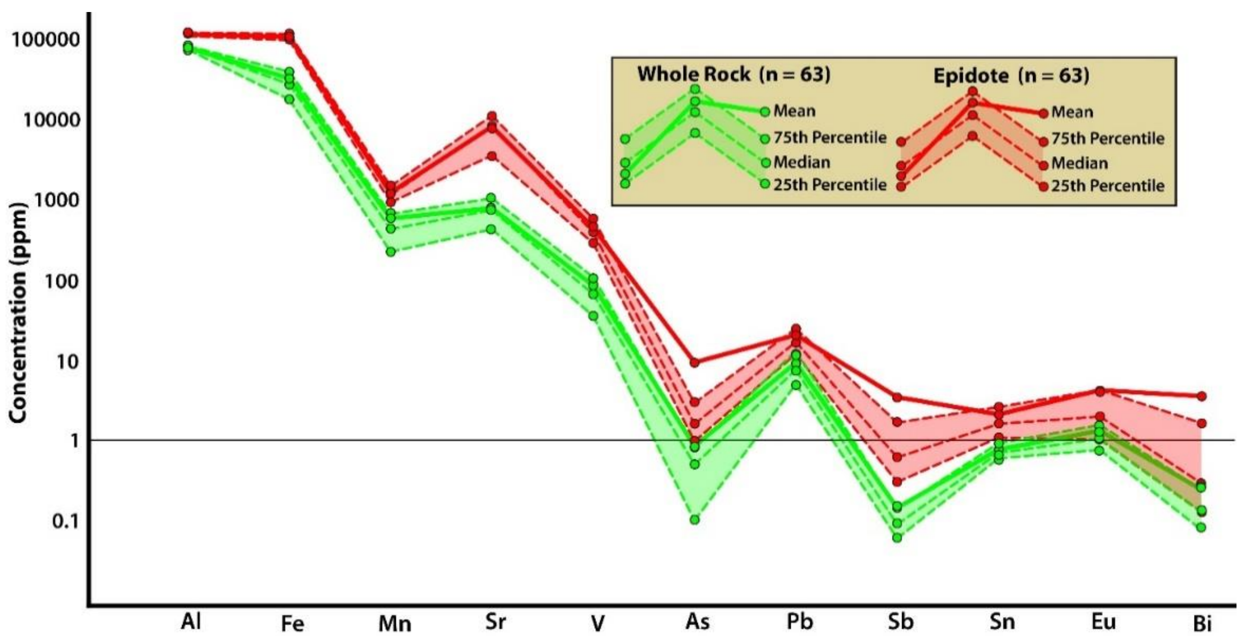

Figure 6.18: Comparison of epidote LA-ICP-MS and whole rock geochemical data, displaying median, mean, 25th and 75th percentile. This plot displays elements enriched in epidote relative to whole rock.

6.3.1.3 Trace element pathfinders in epidote at Hemlo

All elements measured in epidote (Table 5.1) were plotted spatially in order to assess their effectiveness as trace element pathfinders. Only As and Sb displayed elevated concentrations relative to background at the deposit and will be further assessed for vectoring potential. Both elements were plotted spatially to visualize anomalous concentrations. For mineral chemistry there can be between 10-25 epidote spot analyses per sample. When plotting data up spatially for a single sample all analyses are plotted on top of each other to highlight the anomalously high values and display inter-sample variation. Arsenic and Sb both displayed elevated concentrations relative to background proximal to the Hemlo gold deposit with maximum concentrations reaching up to 1,238.5 ppm As and 505.8 ppm Sb (Figs. 6.19 and 6.20). Elevated concentrations were observed proximal to the zone of alteration and drop to background levels moving outward from these zones (Fig. 6.19 and 6.20). Arsenic and Sb are elevated in epidote up to 2 km away from the deposit along strike, while concentrations drop off more rapidly (within 100s of meters) moving to the north or south of the deposit. The epidote in the intrusions surrounding the deposit display low As and Sb contents relative to the anomalous elevated concentrations observed to be associated with the main body of mineralization (Figs. 6.19 and 6.20).

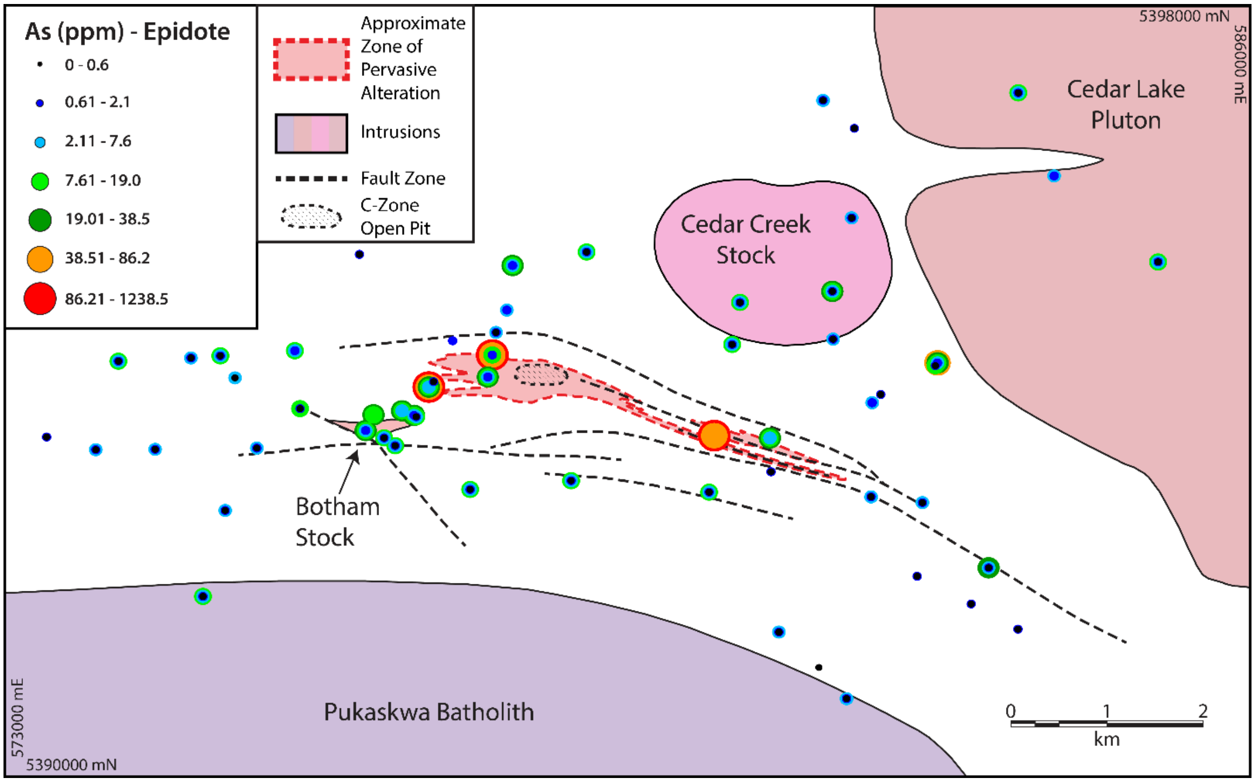

Figure 6.19: Spatial distribution of epidote As concentrations throughout the Hemlo district. Background geology and structures modified from Muir (2003).

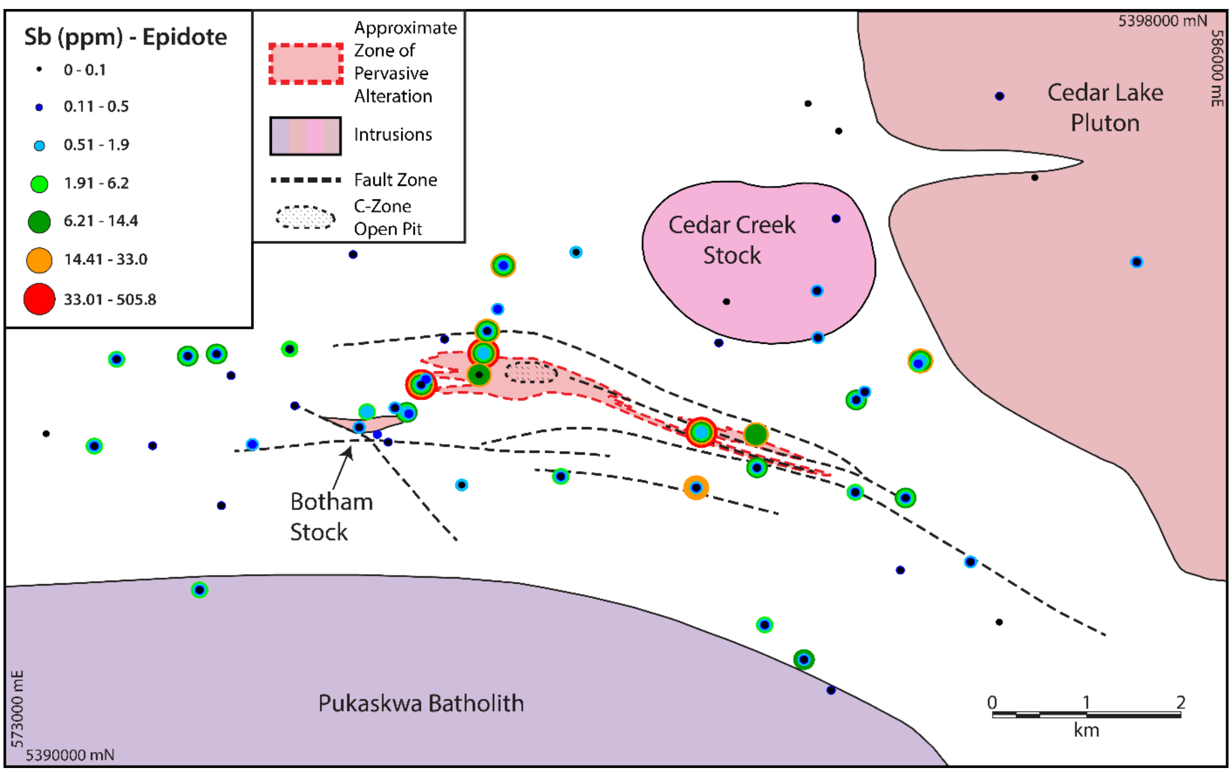

Figure 6.20: Spatial distribution of epidote Sb concentrations throughout the Hemlo district. Background geology and structures modified from Muir (2003).

6.3.1.4 Epidote as a tool for expanding the Hemlo deposit footprint

To better visualize spatial variations in mineral chemistry data two cross sections of the data were plotted. However, there are a number of complications with this approach; (1) the Hemlo ore body is irregular in shape and has no clear or obvious centre to the deposit, (2) differences in style of mineralization between A and B zone and C zone, (3) the deposit sits at an inflection in the greenstone belt where strike changes from E trending to SE trending, (4) linear sampling transects away from the deposit could not be completed due to lack of continuous outcrop. To work around these complications, two areas have been outlined where only samples within these zones will be included in the transect plot (Figs. 6.21 and 6.22). The E-W zone follows the deposit along strike including all samples that occur along and in between deposit bounding structures. The Hemlo Shear Zone (south bounding fault) and the Cedar Creek Shear Zone (north bounding fault; Figs. 6.2, 6.21; Muir, 1997). The point of inflection in the stratigraphy will be denoted on all easting transect plots for reference (Fig. 6.21). Figure 6.22 outlines the zone for the N-S transect. The eastern and western boundaries for this zone are the limits of the zone of pervasive alteration that surrounds the main body of mineralization (Muir, 1997; Fig. 6.22).

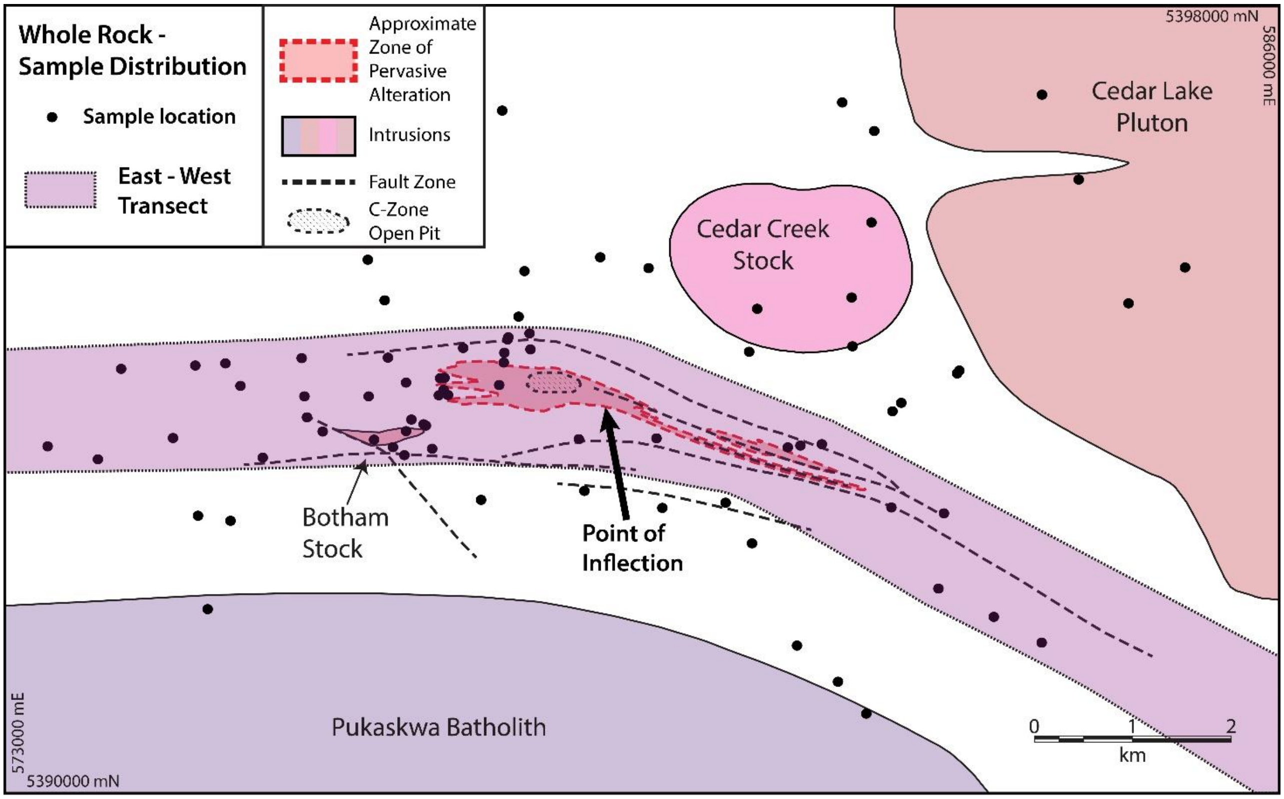

Figure 6.21: Spatial distribution of whole rock geochemistry samples from the Hemlo district, highlighting samples included in the E-W transect across the Hemlo district. Geology modified from Muir (2003).

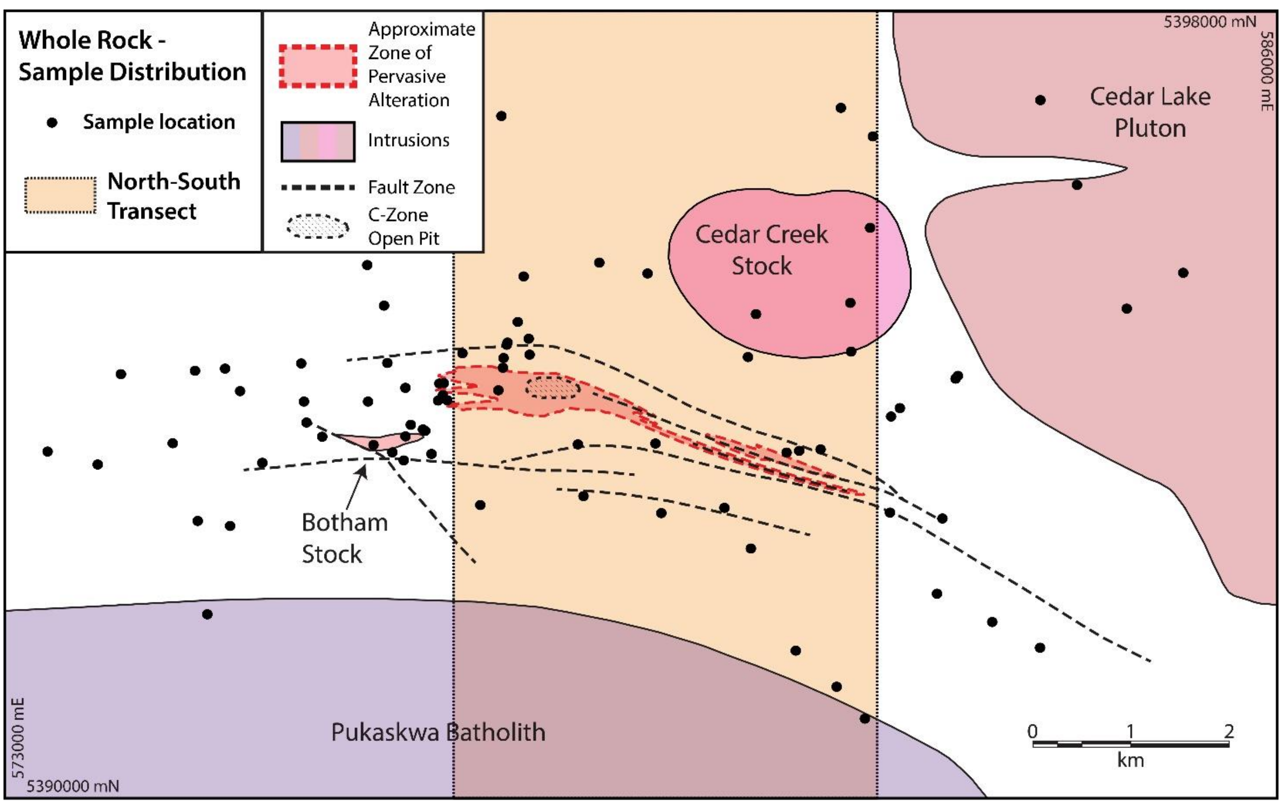

Figure 6.22: Spatial distribution of whole rock geochemistry samples from the Hemlo district, highlighting samples included in the N-S transect across the Hemlo district. Geology modified from Muir (2003).

Whole rock Au was used to constrain the gold shell of the main deposit (Fig. 6.23). Whole rock geochemistry defined an area of > 0.3 ppm Au that was roughly 1.2 km long (E-W) and 500 m wide (N-S). The Au shell marks an abrupt change in Au content of rocks as outside of this zone only weakly anomalous to background concentrations of Au are detected. Data from Gorner (in prep) was used to establish the shell of mineralization. The Au shell as outlined on Figure 6.23 will be used as reference for the main zone of mineralization on all other transect plots.

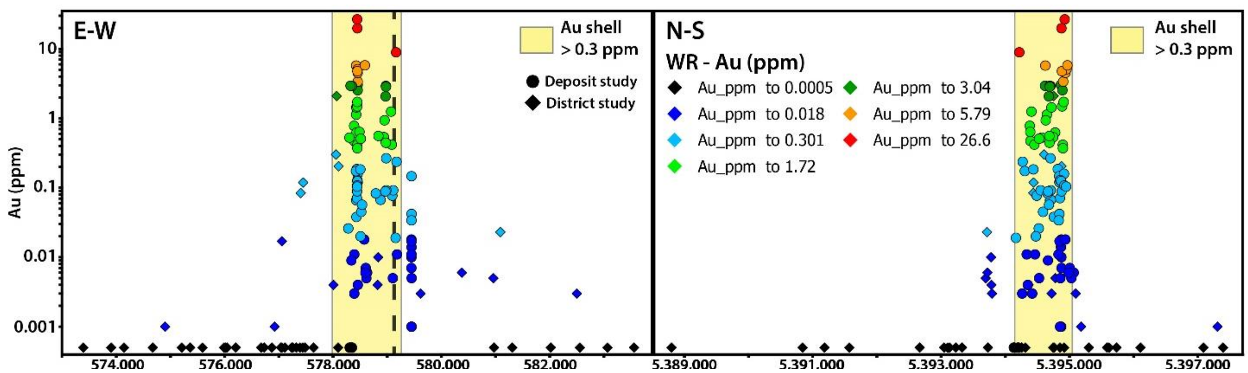

Figure 6.23: Plot of whole rock (WR) Au in select samples along easting and northing transects, the shell of the > 0.3 ppm Au as defined by the whole rock geochemistry is outlined here (including data from Gorner, in prep). Inflection point indicated by dashed line on E-W plot.

It is acknowledged that these plots are a simplistic solution to geological challenges (i.e., outcrop availability, shape of ore body) outside of the control of the study but they are useful for visualizing mineral chemistry and whole rock data and will be employed here to assess the potential of elements as pathfinders to minrealization. Samples belonging to easting, northing, both or neither of the transects are indicated for samples in Appendices II, III, IV and V. Other than to characterize the Au shell of the deposit only samples from the district study will be plotted on the transects to investigate an elements potential for expanding the Au footprint of the deposit.

Across both transects As and Sb both display elevated concentrations in epidote proximal to the Au shell of the deposit and decrease outwards towards the limits of the transect (Figs. 6.24 and 6.25). Arsenic in epidote has the most anomalous concentrations (86.2 – 1238.5 ppm As) proximal to and within the Au shell of the deposit (Fig. 6.24). This enrichment trend observed with As in epidote is also observed with As whole rock concentrations which display relatively weakly anomalous concentrations proximal to the Au shell (Fig. 6.24). However, anomalous concentrations of As in epidote can be detected up to 2.5 km away from the deposit along strike (E-W) and 1 km to the north and south of the deposit (N-S). Conversely, whole rock data defines a subtle anomaly around the Au shell extending out only a few hundred meters (Fig. 6.24B). Arsenic in epidote occurs at concentrations two orders of magnitude higher proximal to the deposit and up to an order magnitude higher at the fringes relative to whole rock. Antimony in epidote displays similar anomalous enrichment to As (Fig. 6.25). Epidote displays elevated Sb concentrations up to 2.5 km along strike of the deposit and up to 1 km to the north or south of the deposit. Antimony in epidote can also be enriched in some samples up three orders of magnitude more than whole rock proximal to the deposit and an order of magnitude on the fringes, greatly enlarging the deposit footprint (Fig. 6.30).

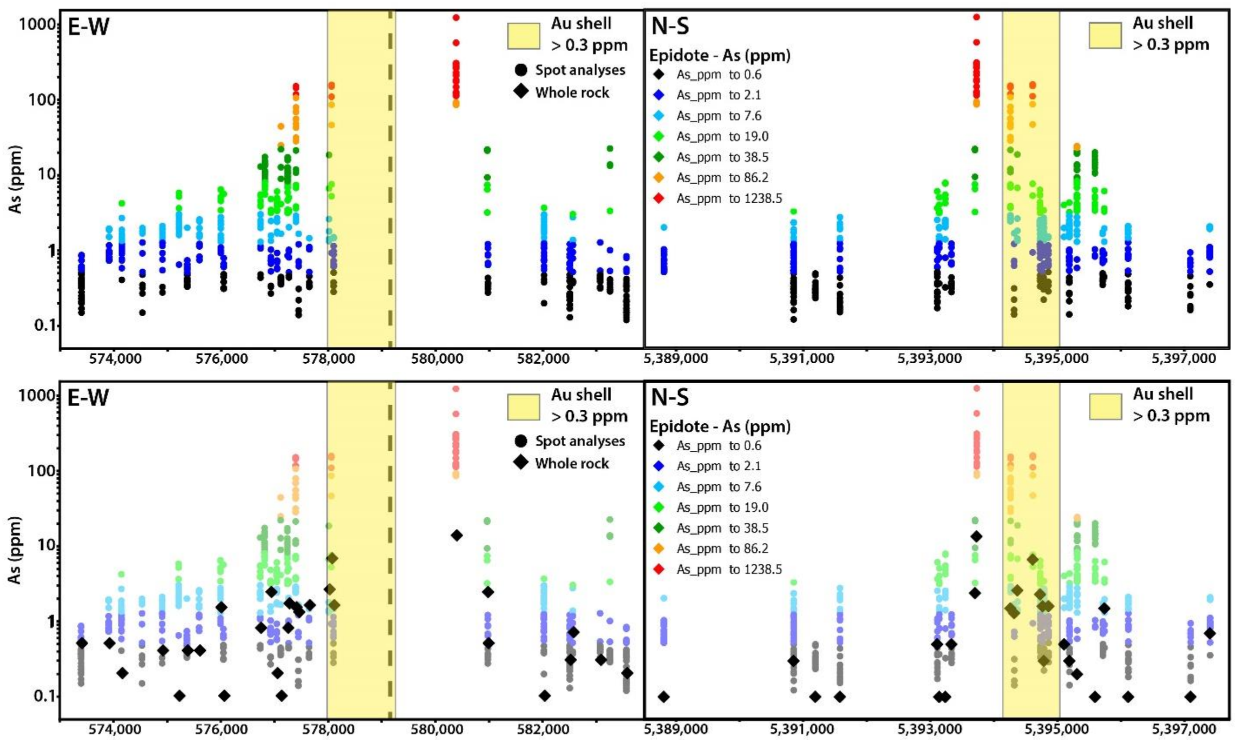

Figure 6.24: (Top) E-W and N-S transect displaying As contents in epidote; (Bottom) E-W and N-S transect of As contents in epidote (faded) with whole rock As concentrations (black diamond).

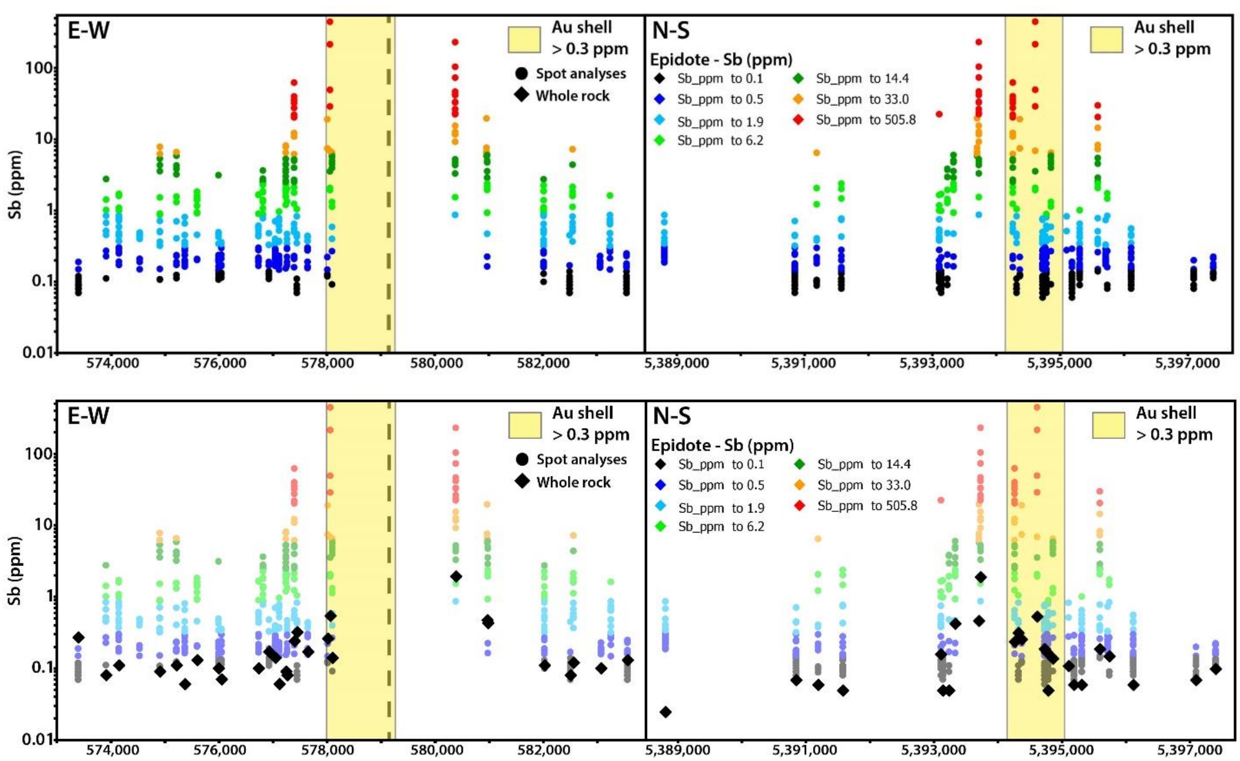

Figure 6.25: (Top) E-W and N-S transect displaying Sb contents in epidote; (Bottom) E-W and N-S transect of Sb contents in epidote (faded) with whole rock Sb concentrations (black diamond).

6.3.1.5 Assessing potential of regional intrusions to create false positive anomalies

A secondary objective of this study was to assess the ability of syn- to post-mineralization intrusions to create false positive anomalies for mineralization, as it is possible that the intrusions would have generated hydrothermal alteration in the surrounding rocks. Resultant ages from U-Pb zircon analysis for the Cedar Lake pluton (2687±3 Ma) and Cedar Creek stock (2684 +4/-3 Ma) overlap with timing constraints for mineralization and peak metamorphism by Muir (2003; 2690 – 2685 Ma; Corfu and Muir, 1989a), suggesting these intrusions were emplaced syn- to post-mineralization. The Pukaskwa batholith is thought to be pre-mineralization, as U-Pb isotope dating of zircons from the margin of the intrusion yielded an age of 2719 +6/-4 Ma, older than constraints on mineralization (Corfu and Muir, 1989a). The Botham stock has an interpreted emplacement age of ~2690 Ma based on field cross-cutting relationships and the timing of emplacement of other calk-alkaline intrusions within the region (Corfu and Muir, 1989a). This would make the emplacement of the Botham stock syn-mineralization; however, no geochronological data for this intrusion are available.

Arsenic and Sb in epidote demonstrate variability throughout the Hemlo district, with strongly anomalous enrichment within and proximal to the deposit. If the epidote in the intrusions were creating false positive anomalies for mineralization then it would be expected that the epidote would display high As and Sb contents similar to that of the deposit. In order to investigate false positives, epidote analyses were broken into three groupings; (A) deposit epidote, which is epidote occurring within the Au shell and zone of pervasive alteration from this study and Gorner (in prep), (B) district epidote, which is epidote occurring outside of the zone of pervasive alteration and the Au shell in the supracrustal rocks throughout the Hemlo district and (C) intrusion epidote, which is epidote occurring within the intrusions surrounding the Hemlo Au deposit. The intrusion epidote group consists of epidote from the Pukaskwa Batholith, Cedar Lake Pluton, Cedar Creek Stock and the Botham Stock. Epidote occurring in these intrusions is grouped together as no compositional variations were observed between the different intrusions.

Plotting As and Sb concentrations in epidote for the three groupings, it is apparent that epidote in the intrusions do not display elevated concentrations of As and Sb relative to the deposit epidote (Fig. 6.26). On average, both epidote As and Sb contents in the intrusions group (Mean As = 0.44 ppm; Mean Sb = 0.06 ppm) were low relative to the deposit group (Mean As = 3.76 ppm; Mean Sb = 1.25 ppm). Some overlap was observed between the district epidote group, which displayed intermediate epidote As and Sb contents (Fig. 6.26). Through interrogation of the epidote chemistry data intrusion epidote on average contained elevated concentrations of Sr (~1 wt. %), relative to the deposit and district epidote (Fig. 6.26). The reason for this variation in Sr content between the epidote in the supracrustal rocks and the intrusions is not clear.

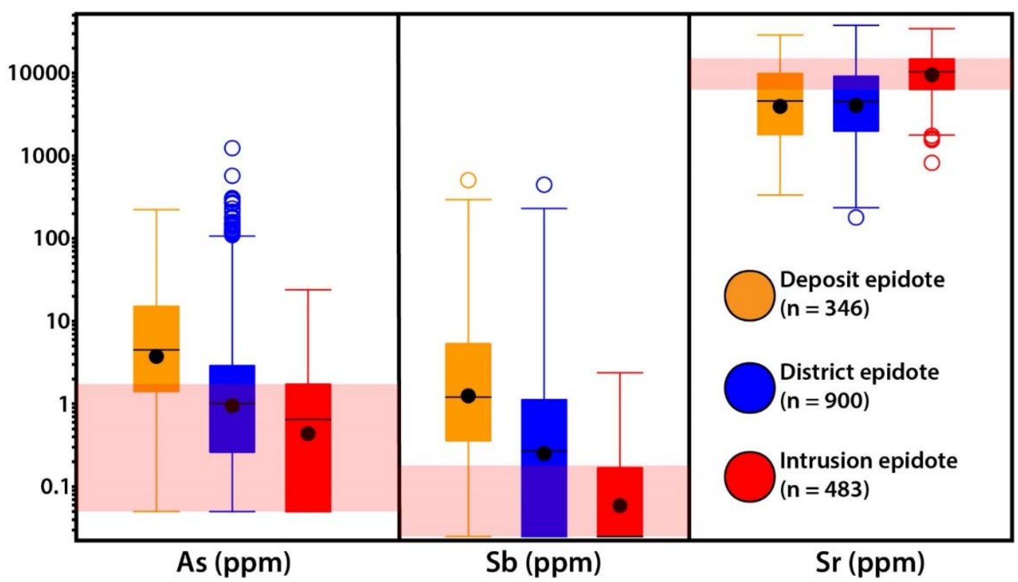

Figure 6.26: Log box and whisker plot of As, Sb and Sr in epidote from the Hemlo deposit, district and regional intrusions (deposit data from Gorner, in prep).

6.3.1.6 Epidote mineral chemistry comparison

Epidote LA-ICP-MS data from the Hemlo district, deposit and intrusions was compared to epidote data from three other locations; (1) Heron Bay, a gold prospective area on the west-end of the Hemlo greenstone belt (Fig. 2.3), (2) West Scotland, metamorphic epidote from greenschist facies mafic to ultramafic rocks, and (3) Batu Hijau, epidote related to propylitic alteration surrounding a Cu-Au prophyry (AMIRA P1060, unpublished data). Gold mineralization at Heron Bay is weak, sporadic, and dominantly hosted in quartz-carbonate veins (Fay, 2017). This makes it a good comparison for the Hemlo epidote in order to test if a large deposit can be differentiated on a regional scale. The West Scotland epidote provides comparison to epidote that has been produced through metamorphic processes. Epidote from the Batu Hijau porphyry allows for comparison of epidote between two different styles of mineralization, Archean Au and porphyry Cu-Au.

All analysed elements were compared between the different groupings however only select elements and element ratios are displayed in Figure 6.27. Metamorphic epidote displays the lowest Fe/Al ratio (Mean = 0.4), and trends to more of a clinozoisite composition with Al >> Fe (Fig. 6.27). The epidote in the Hemlo intrusions display the highest average Fe/Al ratio (Mean = 1.03), with the other groupings displaying similar Fe/Al ratio ranges (Fig. 6.27). Epidote occurring throughout the Hemlo district can be distinguished from the other three groupings-based on Mg/Sr content. The Hemlo district epidote exhibits low Mg/Sr ratios due to the elevated Sr content of the epidote, this is distinct compared to the Heron Bay, metamorphic and porphyry epidote which have higher Mg concentrations (Fig 6.27). Calcium contents remained uniform throughout the groupings ranging from 14.25 - 18.5 wt.%. Arsenic and Sb are anomalous surrounding the Hemlo deposit, and surrounding the Batu Hijau porphyry (AMIRA

P765A, unpublished data). The Hemlo deposit and the Batu Hijau porphyry epidote display the most elevated As and Sb concentrations, while the Hemlo intrusions and West Scotland metamorphic epidote display the lowest average concentrations of As and Sb (Fig. 6.27). The Hemlo district epidote displayed the largest range of As and Sb concentrations, whereas the Heron Bay epidote displayed slightly elevated concentrations (Fig. 6.27). This suggests that As and Sb in epidote is an indicator of fertility and will be elevated proximal to mineralization.

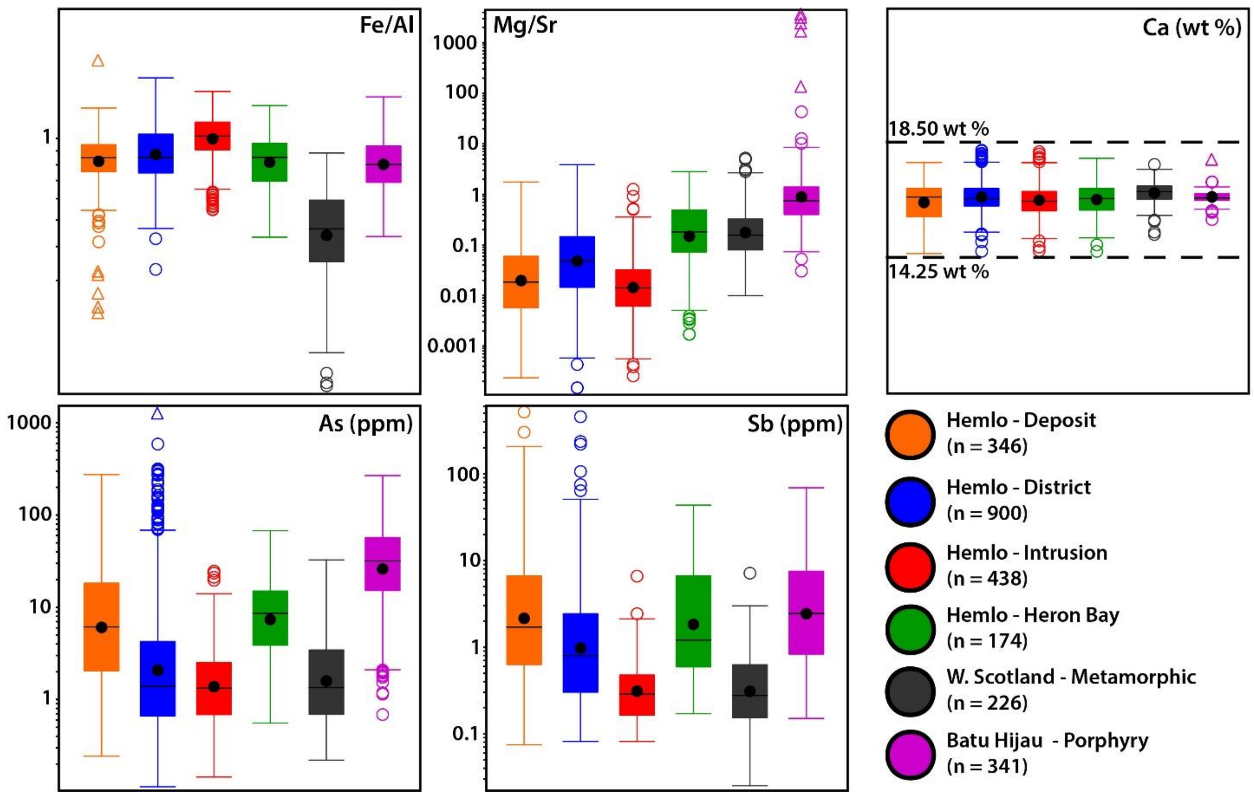

Figure 6.27: Log box and whisker plot of Fe/Al, Mg/Sr Ca, As and Sb concentrations in epidote from the Hemlo deposit, Hemlo district, surrounding intrusions compared to epidote compositions from Heron Bay, West Scotland metamorphic epidote and Batu Hijau porphyry epidote (deposit data from Gorner, in prep; Heron Bay data from Fay, 2017; Batu Hijau data collected and analysed by Chang, AMIRA P765 and P765A; West Scotland data from AMIRA P1060; unpublished data). n = number of LA-ICP-MS spot analyses.

6.3.1.7 Spectral characteristics and variations of epidote at Hemlo

Epidote is a spectrally active mineral in the short wave-infrared spectra (SWIR) which means that it can be spectrally identified based on characteristic absorption features, that are a result of the chemical and crystallographic nature of epidote. There are four main absorption features that are characteristic of and used to identify epidote: (1) ~1075 nm peak; related to the Fe bonds, (2) ~1550 nm feature; related to the OH bonds, (3) 2255 nm feature; (Al,Fe)-OH bonds, (4) 2335 nm feature; Fe-OH bonds (Fig. 6.28; Clark et al., 1990; Neal et al., 2018). Epidote, like other hydrous minerals, has a water feature in its spectra that occurs as a subtle to pronounced absorption feature just under 2000 nm, which will vary with the water content of the mineral. The sharpest absorption features on Figure 6.28, peak 2255 nm and 2335 nm, are diagnostic of epidote but can overlap with minerals such chlorite, amphibole and biotite (Clark et al., 1990). The 1075 nm and 1550 nm features of epidote are unique to epidote and can be used to separate it from other overlapping minerals. The 1550 nm feature can vary in wavelength in response to changes in Fe content of epidote, this can be utilized as epidote is part of a solid solution with clinozoisite that can be tracked by variations in Fe content (Armbruster et al., 2006; Roache et al., 2011; Table 6.1; Fig. 6.29). Wavelengths ≥1558 nm are more indicative of an Fe-poor epidote or more of an Al-bearing clinozoisite composition, conversely wavelengths ≤1548 nm indicate a more Fe-rich true epidote composition (Fig. 6.29; Roache at al., 2011; Neal et al., 2018).

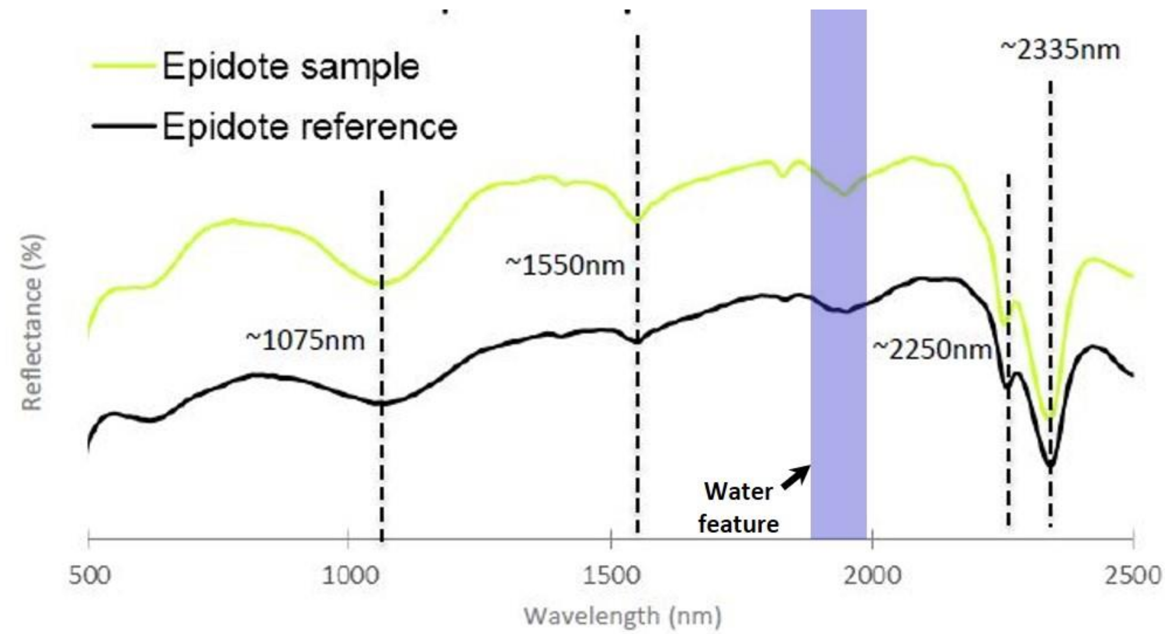

Figure 6.28: Characteristic SWIR spectra for epidote displaying diagnostic absorption features. (Modified from, Corescan data interpretation workflow; personal communication with Cari Deyell-Wurst, 2018)

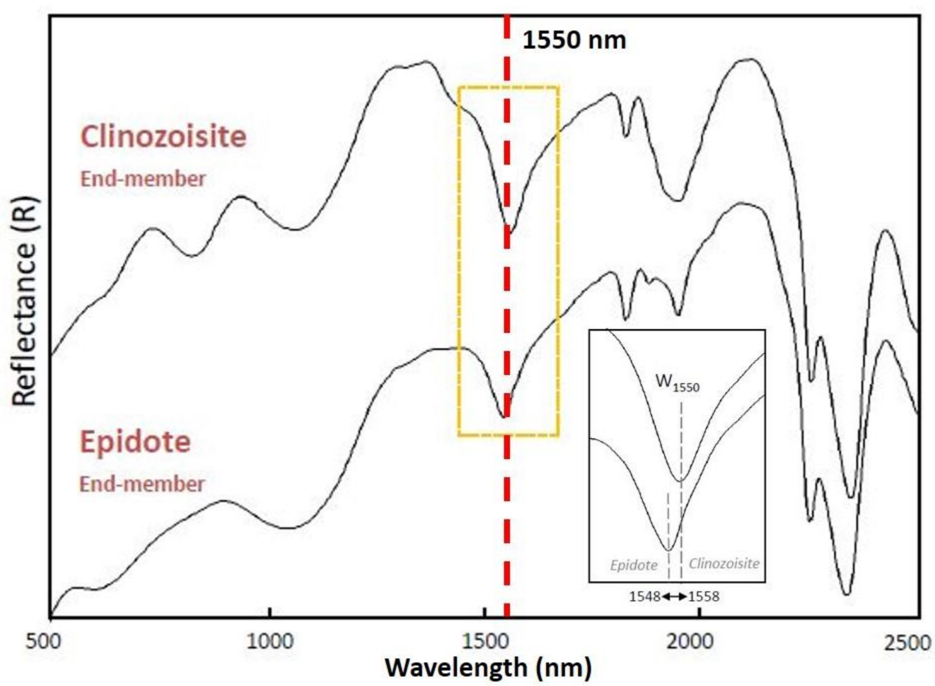

Figure 6.29: Characteristic SWIR spectra for epidote and clinozoisite highlighting the 1550 nm absorption feature which varies with Fe content of epidote and can be diagnostic of compositional variations of epidote. (Modified from, Corescan data interpretation workflow; personal communication with Cari Deyell-Wurst, 2018)

SWIR mineral data was obtained through two methods in this study, Corescan and Terraspec spectral analysis. Corescan analysis produced mineral class maps with a 500 µm spectral resolution, with each pixel representing an individual spectrum. In contrast Terraspec analysis uses a spot size of 53.2 mm and produced a single spectrum. Corescan spectral data (i.e., peak positions, peak depths) is exported using their in-house data processing software. For Terraspec, data is exported using the *Spectral Assistant* software. Corescan data, even though it uses an average of the sample, can be filtered for mineral mixtures (eg., chlorite and white mica) which could cause slight variations in spectral characteristics at overlapping peak positions. In order to validate the sample averages that Corescan was outputting, intersample variability was assessed by plotting averages from 2.5 cm bands across each sample. Averages from each of these bands was then taken and plotted onto a box and whisker plot to assess the variability throughout a single sample (Fig. 6.30). The measured 1550 nm epidote peak position varied < 4 nm within each sample containing epidote. As the spectral error for Corescan analysis is 4 nm, the full sample averages from Corescan were deemed valid and are used in assessing compositional variations in epidote. Terraspec data represents only a single spot analysis and is not filtered for mineral mixtures but is however easier and less costly to obtain. The results of these two methods will be compared in order to determine reproducibility of spectral data between differing methods.

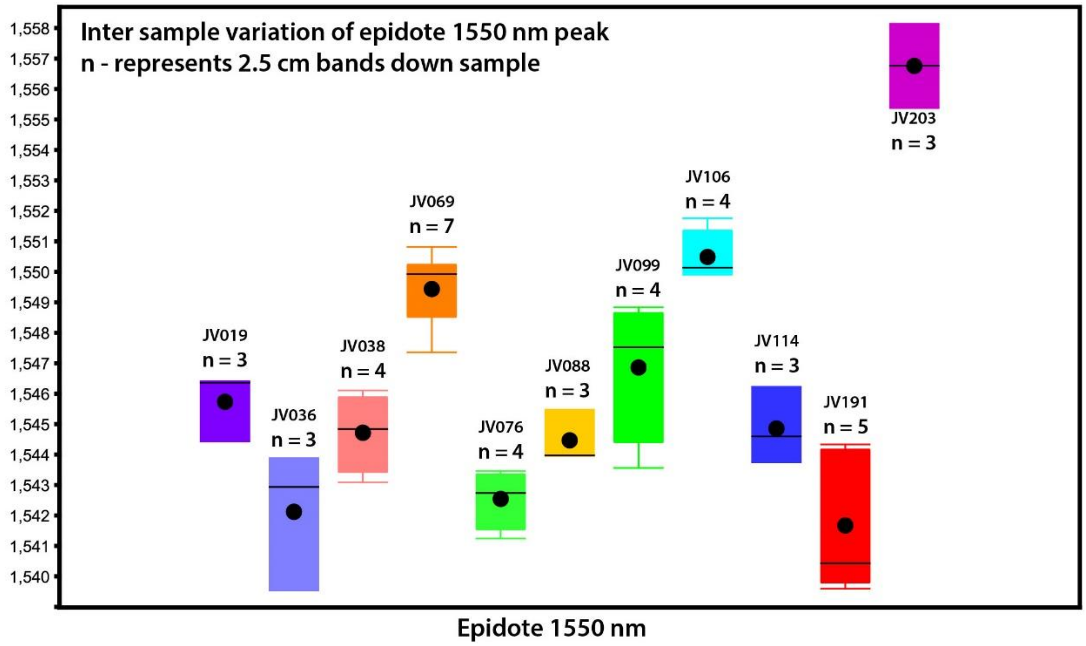

Figure 6.30: Box and whisker plot of inter sample spectral variation of the epidote 1550 nm absorption feature, select samples are displayed in order to illustrate the low variation in peak position throughout individual samples compared to the variation between samples.

The 1550 nm absorption feature position tracks the changes in Fe content of the epidote, and as epidote is in a solid solution with clinozoisite, this peak defines variations in Fe/Al content. It would then be expected that epidote with peak positions >1550 nm would have a lower Fe/Al ratio due to an increase in Al content. The opposite would be true for epidote peak positions <1550 nm which would have higher Fe/Al ratio due to higher Fe contents. Average Hemlo district epidote varies in 1550 nm peak position from 1543 – 1557 nm with Terraspec and from 1540 – 1560 nm with Corescan (Figs. 6.31 and 6.32). Both methodologies display a similar trend of decreasing Fe/Al ratio with increasing peak position (Figs. 6.31 and 6.32). Suggesting that the 1550 nm peak position is tracking chemical variations in epidote. Epidote surrounding Hemlo is typically of a true epidote with only a few samples trending towards the more Al-rich clinozoisite end-member; however, no samples were classified as clinozoisite.

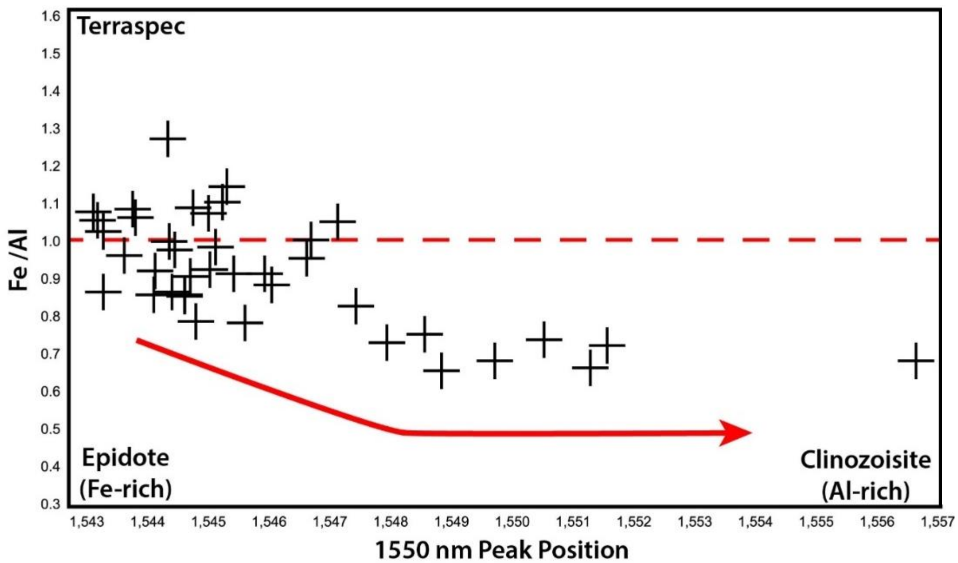

Figure 6.31: Epidote sample average Fe / Al ratio plotted against Terraspec 1550 nm absorption feature, general trend of decreasing Fe content with increasing 1550 nm feature position.

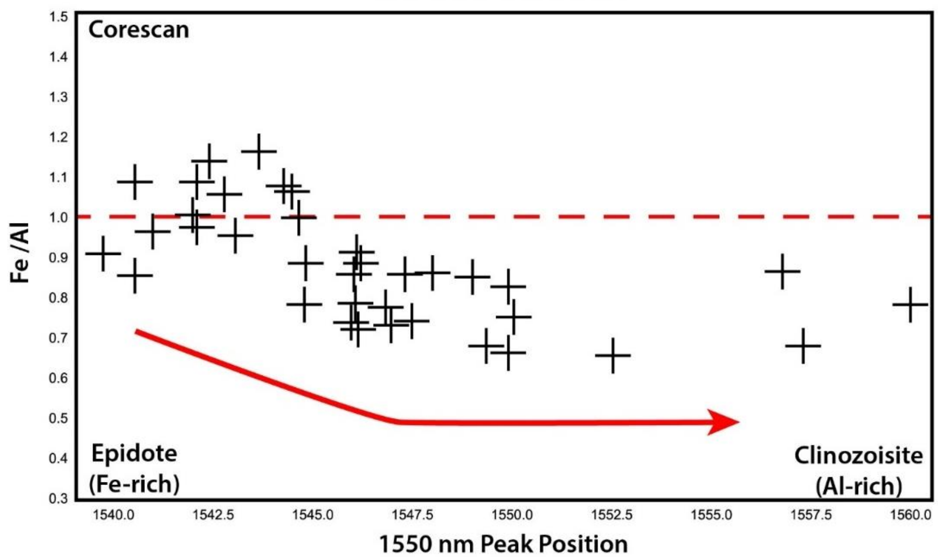

Figure 6.32: Epidote sample average Fe / Al ratio plotted against Corescan 1550 nm absorption feature, general trend of decreasing Fe content with increasing 1550 nm feature position.

Comparing results of Terraspec and Corescan for epidote 1550 nm absorption feature position, the data displays a weak correlation with an $r^2 = 0.19$ (Fig. 6.33). Most samples plot around the 1:1 line, with variable skew to either the Terraspec or Corescan side but usually within ± 2 nm of each other. Only two samples disagree between the two methodologies displaying high Corescan peak positions (~1559 nm) but low Terraspec peak positions (~ 1544 nm). Excluding these two data points, the rest of the data displays a moderate correlation with an $r^2 = 0.47$ (Fig. 6.33) The large degree of skew between these data points could be due to a mineral mixture issue with the Terraspec data. However, as the 1550 nm peak position is diagnostic of epidote and does not occur in other spectrally active minerals. Terraspec analysis only represents only a point on the sample and therefore be more susceptible to intra-sample variation. However, this was not investigated in this study and the ultimate source of the discrepancy is unclear.

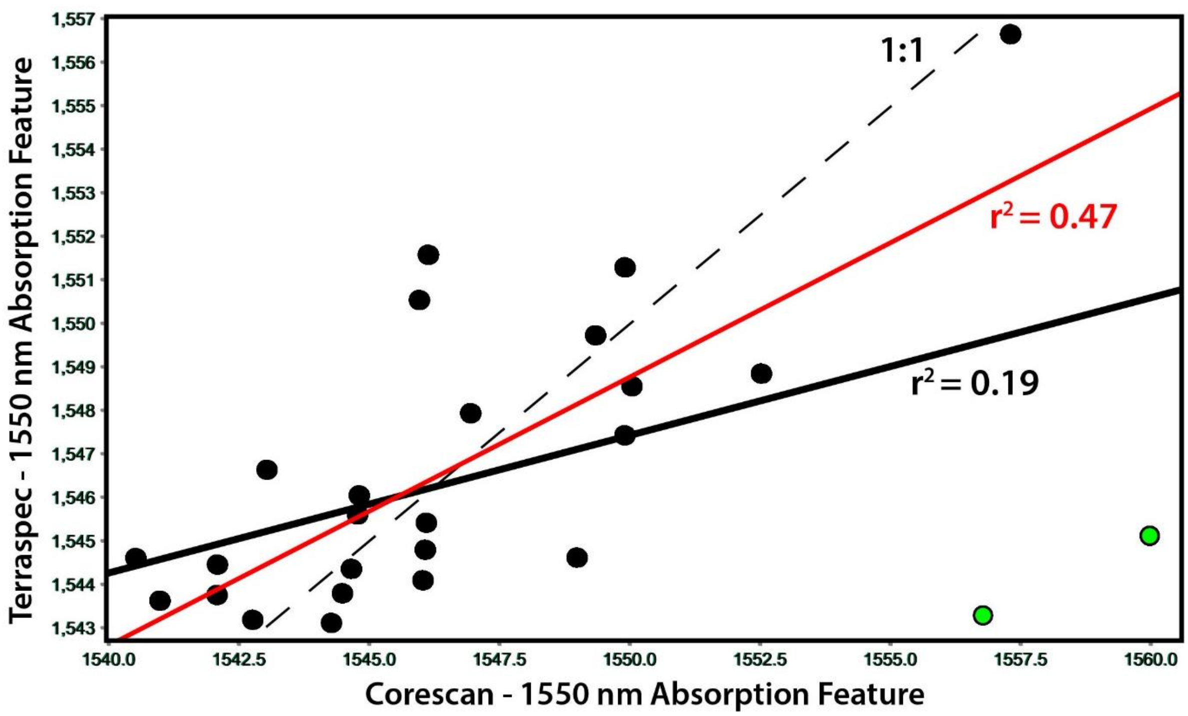

Figure 6.33: Terraspec 1550 nm epidote absorption feature position compared to Corescan 1550 nm epidote peak position. Solid black line represents r^2 line for all data, red line represents r^2 for all black data points.

To investigate chemical and spectral variations further, Corescan average absorption feature position and Fe/Al content of epidote was grouped into deposit, district and intrusion groups (Fig. 6.34). Epidote in the intrusions was fount to have higher Fe/Al values and lower average peak positions suggesting its more of a true epidote composition whereas epidote from the district and deposit display more variability in Fe/Al ratios and 1550 nm peak positions (Fig. 6.34). District epidote displays the largest range of Fe/Al values and also displays intermediate 1550 nm peak positions (Fig.6.34).

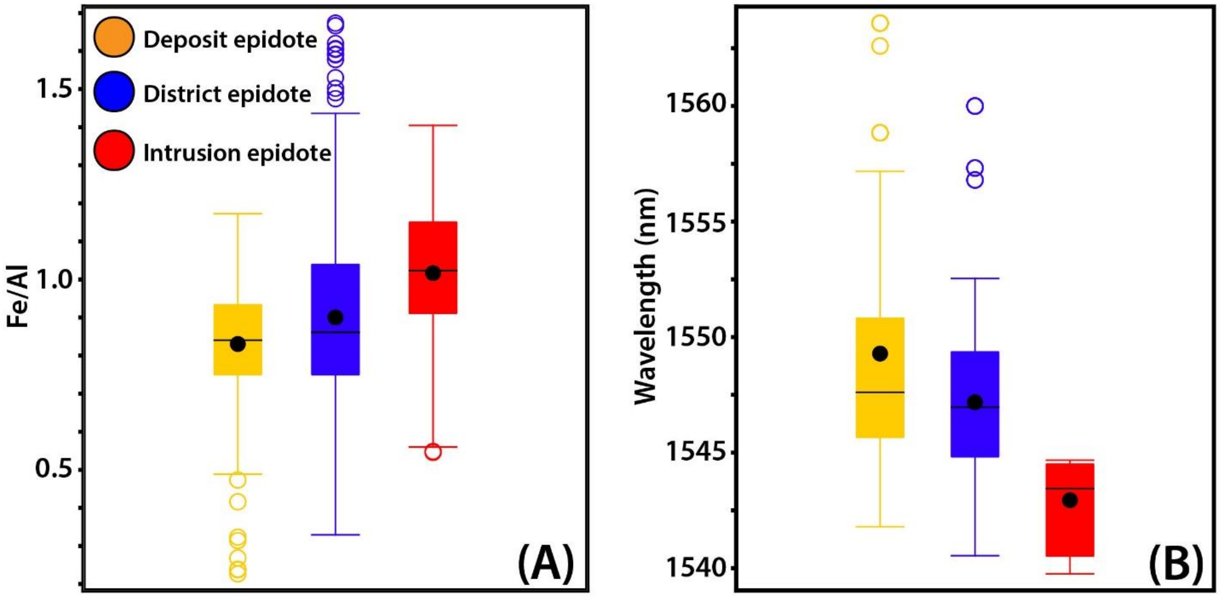

Figure 6.34: (A) Box and whisker plot of Fe/Al content of epidote from the deposit, district and intrusion epidote groups; (B) Box and whisker plot of Corescan sample average 1550 nm peak position of epidote from the deposit, district and intrusion epidote groups deposit data from (Gorner, in prep).

There could be a number of reasons for the chemical variations observed, as the substitution of Fe and Al can be controlled by numerous processes (i.e., redox variations, temperature, CO_2 fugacity; Arnason et al., 1993). Theoretically, epidote produced from an oxidized fluid should be enriched in Fe^{3+} (Cooke et al., 2014). As Fe^{3+} in an oxidizing fluid is stable this leads to the deposition of Fe^{3+} mineral phases (Cooke and Simmons, 2000; Frikken et al., 2005). Hematite alteration although present throughout the district and deposit was mostly observed in the epidote bearing intrusions. Epidote in the intrusions is intimately associated with hematite alteration, with epidote veins of the displaying proximal hematite halos (Fig. 4.29). The intrusion group displays higher Fe/Al ratios, consistently lower 1550 nm peak positions and intense and pervasive hematite alteration indicative of an oxidizing fluid. Consequently, it is likely that oxidizing formation conditions did play a role in the major element composition of the intrusion group epidote. Results are less conclusive for the district group epidote as they display a wider range of Fe/Al contents and 1550 nm peak positions. The variation in Fe/Al content of epidote could also be impacted by substitutions of minor elements or even abundant trace elements into the epidote structure. Complex growth zoning of Fe and Al in epidote, as demonstrated by Cooke et al. (2014) could also play a role.

6.3.2 Chlorite

6.3.2.1 Chlorite group minerals and crystal structure

Chlorite is a common secondary mineral that can form in a number of environments including hydrothermal, magmatic and metamorphic settings (Wilkinson et al., 2015). Chlorite group minerals are phyllosilicate minerals that are in the monoclinic crystal system. Chlorite has an alternating structure that is composed of two main layers, a main talc-like unit ($(Mg,Fe)_3(Si,Al)_4O_{10}(OH)_2$) and a interlayer brucite-like unit ($(Mg,Fe)_3(OH)_6$) (Fig. 6.35). The talc-like unit has a tetrahedral-orthorhombic-tetrahedral (T-O-T) layering (Fig. 6.35). Substitutions mainly occur within the octahedral unit where medium-sized cations, such as Mg, Al and Fe (major); Cr, Mn, Ni, V, Cu, Zn, Li and Ti (minor/trace) can substitute directly into the chlorite structure. These elemental substitutions in chlorite can be impacted by temperature and host rock composition (Wilkinson et al., 2015).

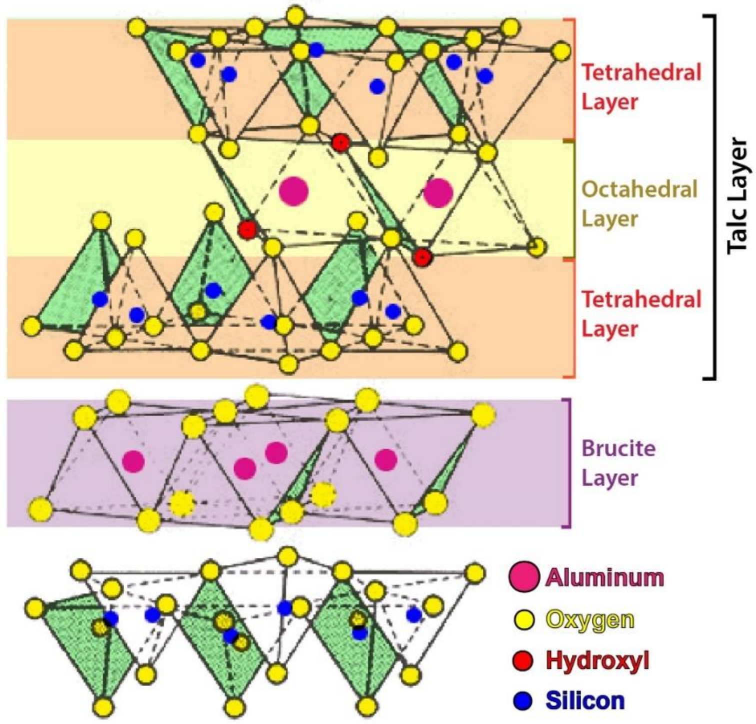

Figure 6.35: Chlorite crystal structure. Modified from source: https://www.ihrdc.com/els/ipims-demo/t26/offline_IPIMS_s23560/resources/data/G4105.htm

Within the chlorite group there are 14 different minerals with the general formula $(Mg,Fe)_3(Si,Al)_4O_{10}(OH)_2 \cdot (Mg,Fe)_3(OH)_6$ (Table 6.2). There are many compositional variations of chlorite due to the number of elements that can substitute into the structure. The general formula for chlorite can be simplified to $A_{5\text{-}6}T_4Z_{18}$, where; A = Al, Fe^{2+}, Fe^{3+}, Li, Mg or Mn, T = Al, Fe^{3+} or Si and Z = O or OH. The most common species of chlorite are clinochlore (Mg-rich) and chamosite (Fe-rich), the two end-members of a chlorite Fe-Mg solid solution series (Bailey, 1988). Tschermak exchange is the other major control on compositional variances in chlorite as it is one of the most common types of substitution observed, it can be represented by the following exchange:

$$^{VI}Mg^{2+} + {}^{IV}Si^{4+} \leftrightarrow {}^{VI}Al^{3+} + {}^{VI}Al^{3+}$$ (Caritat et al., 1993; Bailey, 1998)

Table 6.2: Chemical formulae of chlorite group minerals**,** diagnostic elements highlighted in red

Name	Formula
Chlorite Group	
Chamosite	$(Fe, Mg)_5Al(Si_3Al)O_{10}(OH)_8$
Clinochlore	$(Mg, Fe^{2+})_5Al(Si_3Al)O_{10}(OH)_8$
Baileychlore	$(Zn, Fe^{2+}, Al, Mg)_6(Al, Si)_4O_{10}(O,OH)_8$
Kämmererite	$(Mg, Fe^{2+})_5(Al, Cr)_2Si_3O_{10}(OH)_8$
Cookeite	$LiAl_4(Si_3Al)O_{10}(OH)_8$
Borocookeite	$LiAl_4(Si_3B)O_{10}(OH)_8$
Donbassite	$Al_2(Al_{2.33})(Si_3Al)O_{10}(OH)_8$
Gonyerite	$(Mn, Mg)_5(Fe^{+3})_2Si_3O_{10}(OH)_8$
Nimite	$(Ni, Mg, Al)_6(Si, Al)_4O_{10}(OH)_8$
Odinite	$(Fe, Mg, Al, Ti, Mn)_{2.4}(Al, Si)_2O_5(OH)_4$
Orthochamosite	$(Fe^{2+}, Mg, Fe^{3+})_5Al(Si_3Al)O_{10}(O,OH)_8$
Pennantite	$(Mn_5Al)(Si_3Al)O_{10}(OH)_8$
Ripidolite	$(Mg, Fe, Al)_6(Al, Si)_4O_{10}(OH)_8$
Sudoite	$Mg_2(Al, Fe)_3Si_3AlO_{10}(OH)_8$

Imaging and chemical mapping of chlorite grains from Batu Hijau Cu-Au porphyry utilizing BSE and LA-ICP-MS by Wilkinson et al. (2015) demonstrated that these chlorite grains were internally homogeneous. Due to the internal homogeneity displayed by Batu Hiaju chlorite, Wilkinson et al. (2015) concluded it is very likely that the presence of trace elements in chlorite are a function of direct substitution as opposed to micro-inclusions. Chlorite can be an inclusion-rich mineral, with inclusions forming between layers within the chlorite structure. During laser ablation analysis in this study the most common types of inclusions encountered within chlorite were titanite, zircon, epidote, quartz and calcite. The inclusion-rich nature of chlorite made it more difficult to obtain clean analyses and led to more analyses being rejected. The fine-grained nature of the majority of chlorite analysed in this study also provided challenges, as with smaller grains, ablation through the grain into other mineral phases is more likely.

Wilkinson et al. (2015) study of trace element variation of chlorite surrounding the Batu Hijau Cu-Au porphyry deposit demonstrated spatial variations in a number of major and trace elements surrounding the porphyry center. Titanium, V and Mg were all observed to display systematic exponential enrichment proximal to the porphyry centre, whereas K, Li, Ca, Sr, Ba, Mn, Co, Ni, Zn and Pb were found to increase with distance. Wilkinson et al. (2015) created a vectoring tool for the porphyry centre by developing ratios of enriched deposit proximal elements over depleted proximal elements. A similar process was undertaken in this study in order to evaluate the ability of trace elements in chlorite to act as a vectoring tool at Hemlo.

6.3.2.2 Chlorite chemistry vs. whole rock

Chlorite chemistry was compared to whole rock geochemistry in order to determine the partitioning of particular major and trace elements. Figures 6.38 and 6.39 compare whole rock compositions to respective chlorite samples for a number of key elements. Aluminium, Fe, Mn, V, Mg and Zn are all enriched in chlorite relative to whole rock (Figs. 6.36 and 6.37). This indicates that these elements preferentially partition into chlorite. Arsenic, Sb, Pb and Cu all display overlapping concentrations with whole rock suggesting there is some substitution into chlorite as well as other minerals that are present (Figs. 6.36 and 6.37). Sodium, K, Ti, Sr, Ba, Zr and REE are all depleted relative to whole rock, as they are most likely being incorporated into other mineral phases (Figs. 6.36 and 6.37).

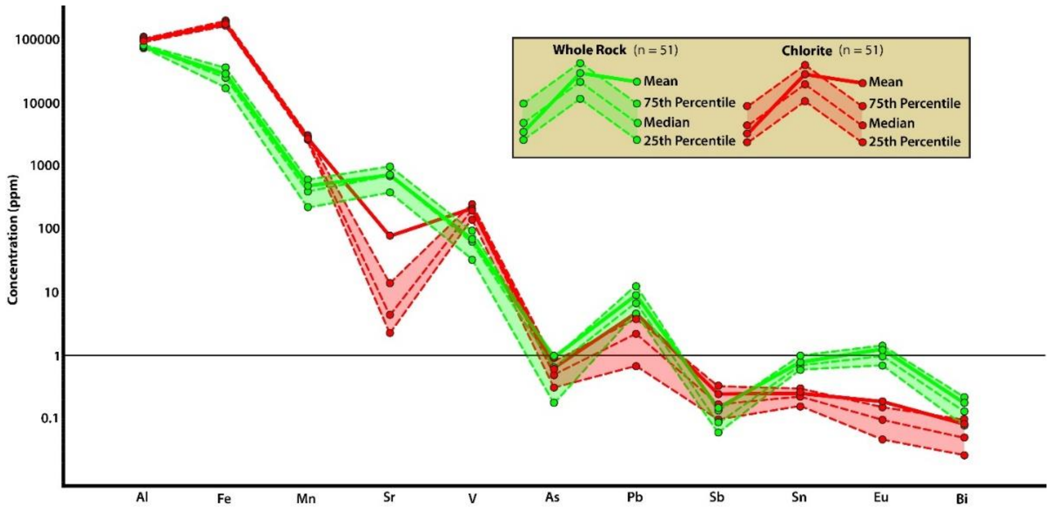

Figure 6.36: Comparison of chlorite LA-ICP-MS and whole rock geochemical data, displaying median, mean, 25th and 75th percentile (n = number of samples).

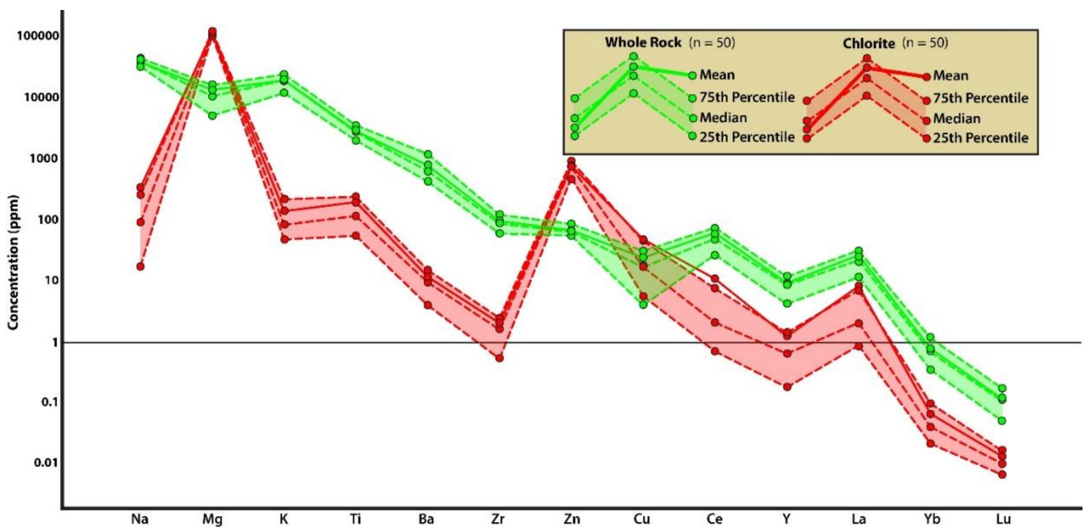

Figure 6.37: Comparison of chlorite LA-ICP-MS and whole rock geochemical data, displaying median, mean, 25th and 75th percentile (n = number of samples).

6.3.2.3 Major and trace element variations in chlorite at Hemlo

To investigate major and trace element variations at Hemlo chlorite data was grouped into three groups (district, deposit and intrusions). As with epidote, the intrusion group chlorite did not display any distinct compositional variations between different intrusions, so they were all grouped together. Compositional variances in Fe-Mg chlorite were observed between the district and deposit data, with the deposit chlorite displaying an enrichment in Mg (Fig. 6.38). The district and intrusion chlorite, which overlapped in Mg-Fe content, displayed more Fe-rich chlorite relative to the deposit group (Fig. 6.38). A sample from the Hemlo Shear Zone (chlorite-talc-pyrite schist) was split from the rest of the district group as it displayed much higher Mg-concentrations relative to the rest of the district (Fig. 6.38). There is some overlap between the deposit chlorite and the district however, but only chlorite occurring in the deposit group and the Hemlo Shear Zone (HSZ) group had Mg-concentrations > 14 wt. % Mg. A similar trend of increasing Mg content towards the centre of the deposit was observed in chlorite analysed by LA-ICP-MS around Batu Hijau (Wilkinson et al., 2015).

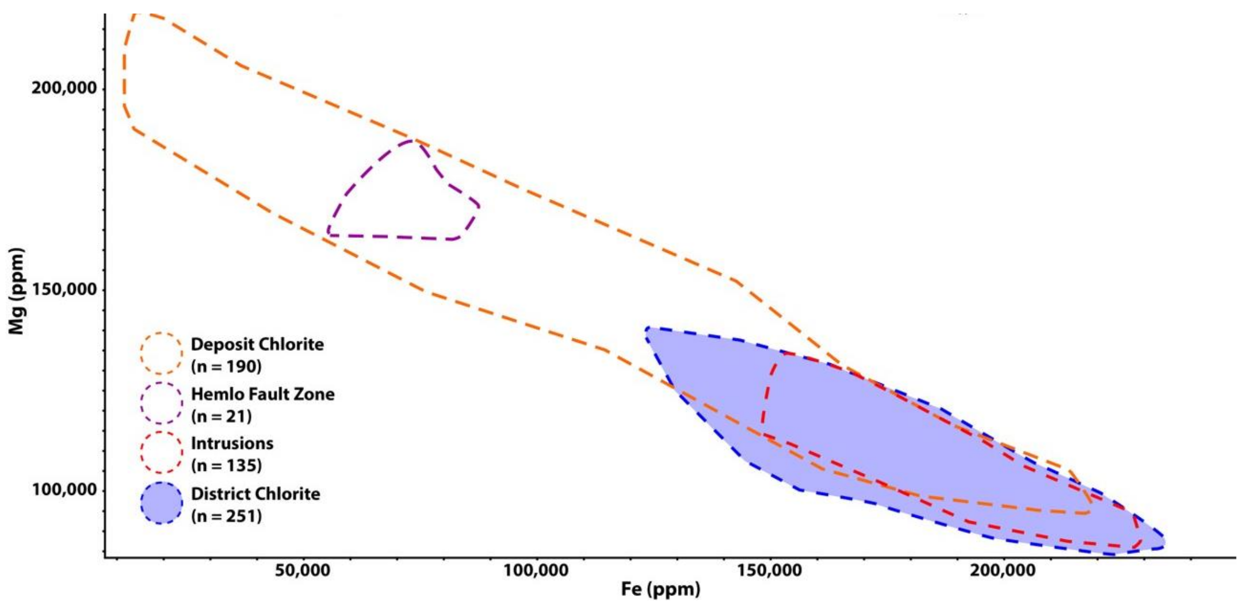

Figure 6.38: Binary plot of Mg-Fe contents of chlorite from the Hemlo deposit and district, the regional intrusions and the Hemlo Fault Zone (deposit data from Gorner, in prep).

Major elements in chlorite occurring in the regional intrusions displayed elevated values of Fe/Mg, Fe/Al and low values of Mg/Si relative to chlorite from the Hemlo deposit and district (Fig. 6.39). District chlorite displayed intermediate values of Fe/Mg, Fe/Al and Mg/Si, and displayed more overlap with intrusion chlorite rather than the deposit chlorite (Fig. 6.39) Chlorite in the regional intrusions and district displayed similar Ti and Sr contents of chlorite from the deposit but were observed to be elevated in Sr as well as chlorite (Fig. 6.40).

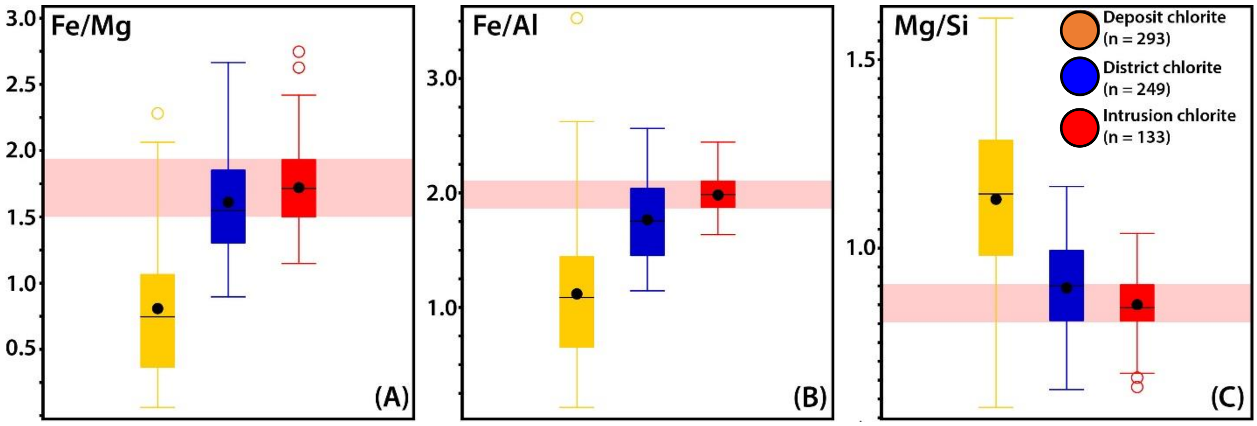

Figure 6.39: Box and whisker plots of major element ratios in chlorite from the deposit, district and regional intrusions at Hemlo, (A) Fe/Mg, (B) Fe/Al, (C) Mg/Si (deposit data from Gorner, in prep).

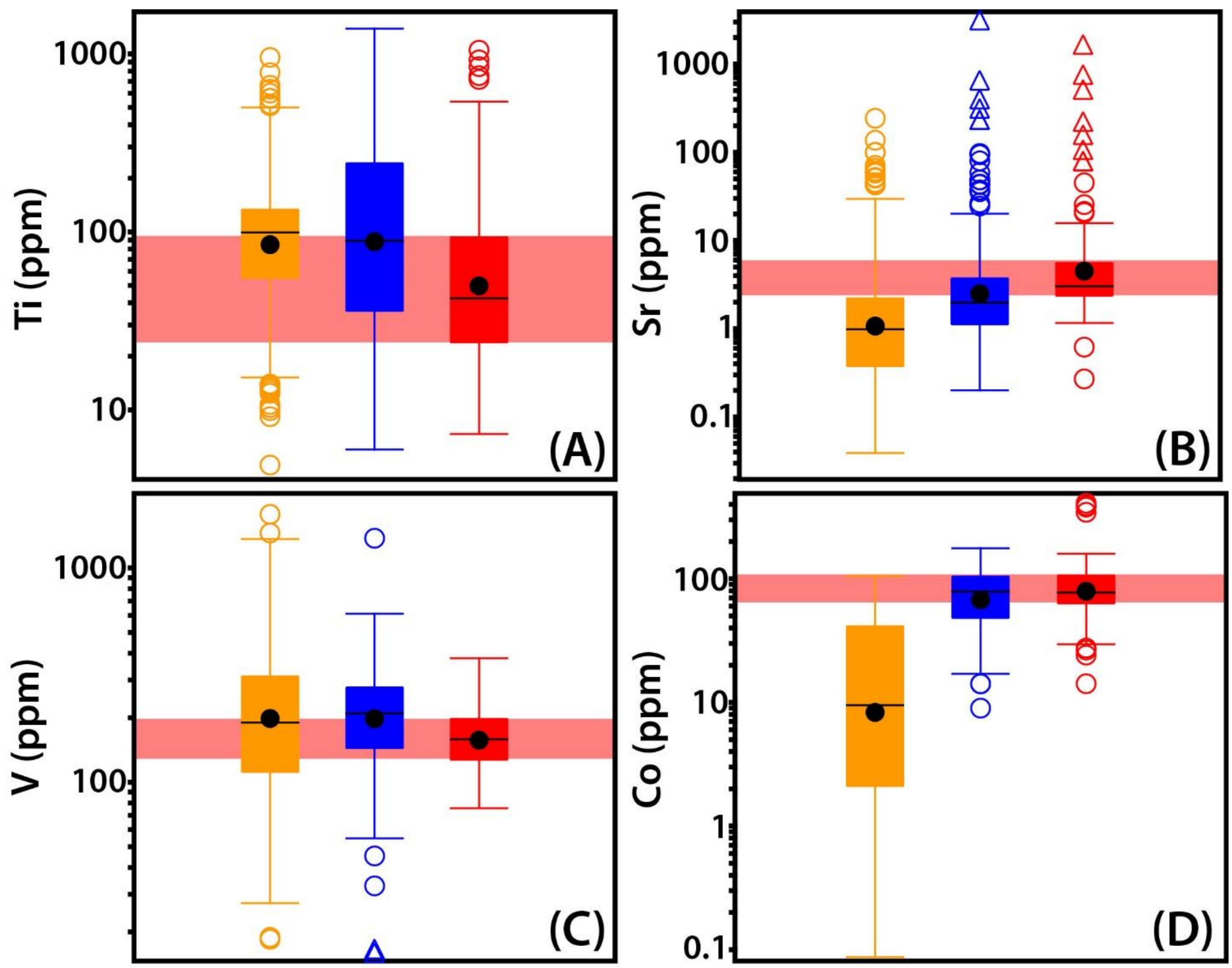

Figure 6.40: Log box and whisker plots of trace elements in chlorite from the deposit, district and regional intrusions at Hemlo, (A) Ti, (B) Sr, (C) V, (D) Co (deposit data from Gorner, in prep). Same legend as Figure 6.39.

Wilkinson et al. (2015) demonstrated that compositional variations in chlorite could be enhanced if elements that were elevated proximal to the deposit were ratioed by elements elements distally to the deposit. By ratioing Ti/Sr and V/Co spatial variation trends were enhanced with both ratios varying by up to four orders of magnitude (Fig. 6.41). The intrusion chlorite displayed the lowest Ti/Sr and V/Co ratios relative to district and deposit groups (Fig. 6.41). District chlorite displayed Ti/Sr values intermediate to intrusion and deposit chlorite (Fig. 6.41). District chlorite also displayed low V/Co values relative to the deposit chlorite being on average a degree of magnitude lower (Fig. 6.41). Both Ti/Sr and V/Co will be further assessed for their potential as geochemical vectors for mineralization.

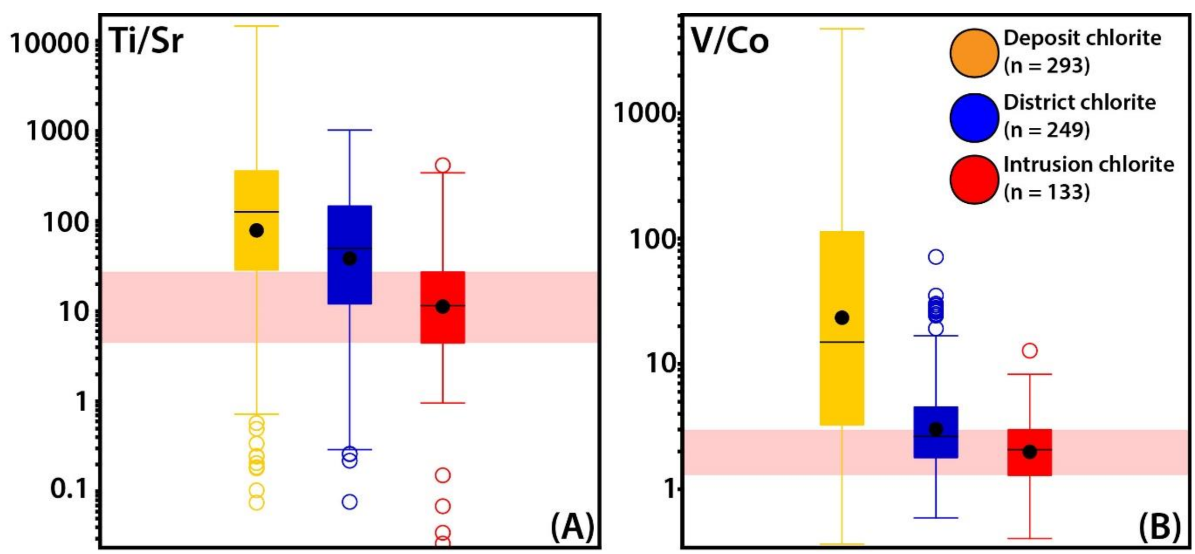

Figure 6.41: Log box and whisker plot of chlorite ratios from the deposit, district and regional intrusions at Hemlo, (A) Ti/Sr, (B) V/Co (deposit data from Gorner, in prep).

6.3.2.4 Pathfinder elements in chlorite at Hemlo

Chlorite vectoring ratios Ti/Sr and V/Co display highly anomalous values at the Hemlo deposit, indicating that they are proximal indicators of mineralization. Only the district data was plotted spatially to see how it varied surrounding the deposit and to better assess the ability of the ratios to expand the footprint of the deposit. Chlorite data was binned using ioGAS Progressive binning range and all spot analyses were plotted on top of each other in order to display inter-sample variance.

Chlorite Ti/Sr values peaked at 1,024 throughout the Hemlo district with strongly anomalous values occurring proximal to the deposit (Fig. 6.42). Lower Ti/Sr were observed moving away from the deposit, although some more moderate anomalous values are observed in samples from and proximal to major regional structures (Fig. 6.42). Samples proximal to the zone of pervasive alteration also display weakly to moderately anomalous V/Co, however, anomalism is not as pronounced on the fringes of the deposit (Fig. 6.43). The intrusions surrounding the deposit do not display false positive anomalies as chlorite occurring within them exhibit low to background Ti/Sr and V/Co values (Figs. 6.42, 6.43).

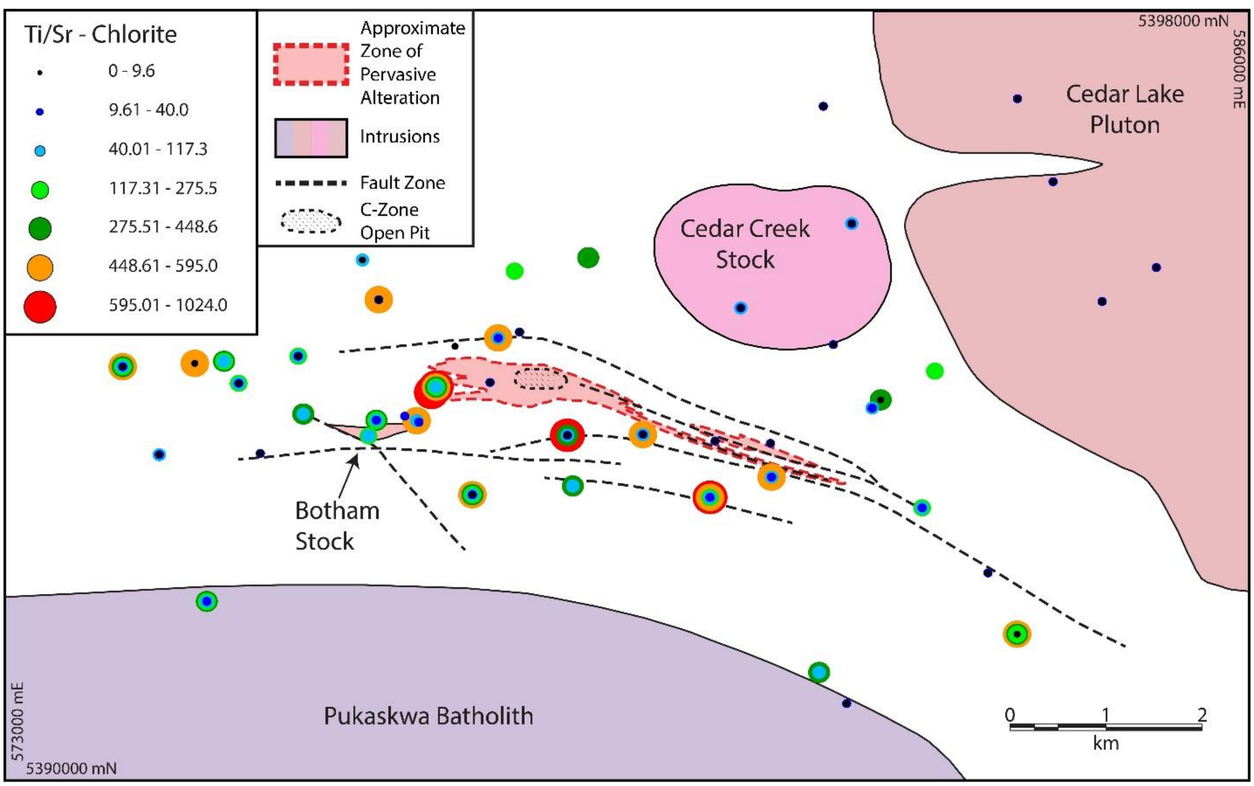

Figure 6.42: Spatial distribution of chlorite Ti/Sr throughout the Hemlo district. Background geology and structures modified from Muir (2003).

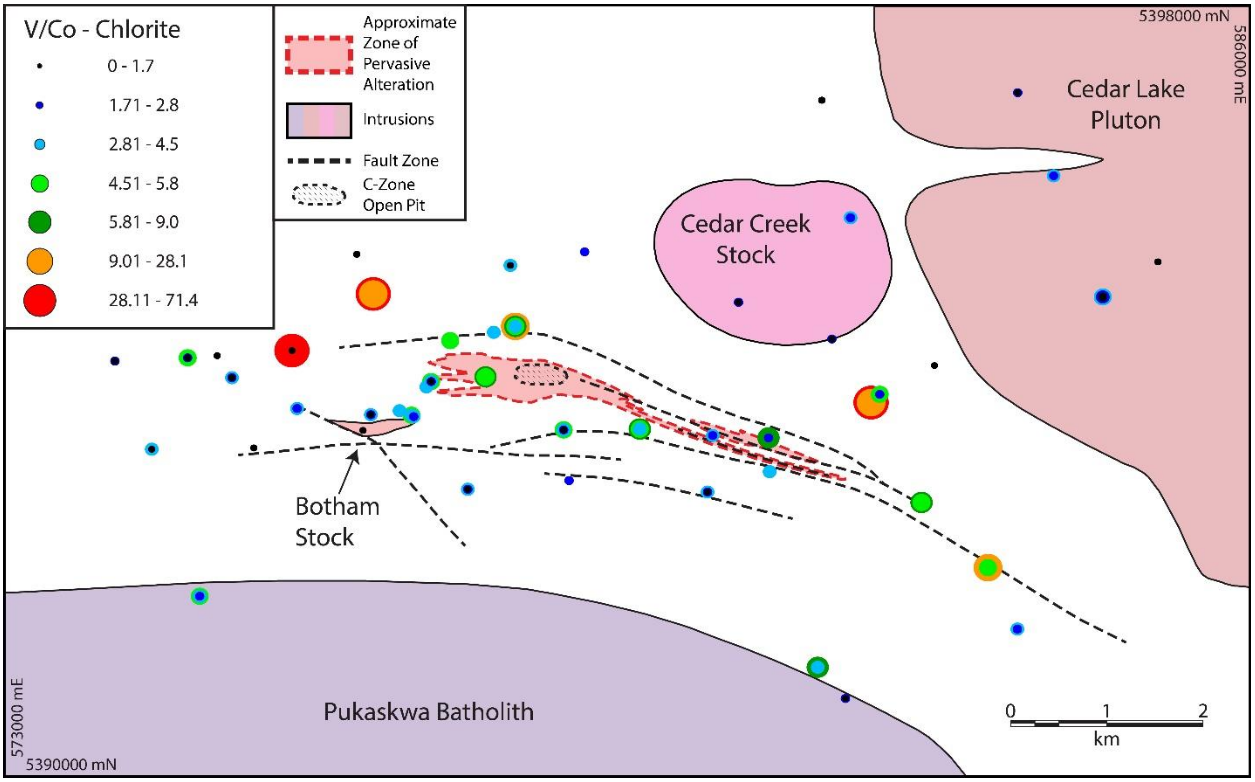

Figure 6.43: Spatial distribution of chlorite V/Co throughout the Hemlo district. Background geology and structures modified from Muir (2003).

East-W and N-S transects were also used to asses the potential for Ti/Sr and V/Co to expand the deposit footprint, these were determined in the same way as for epidote. On both transects Ti/Sr display strongly anomalous contents proximal to the Au shell (Fig. 6.44). Whole rock Ti/Sr were also observed to be much lower than chlorite Ti/Sr values (Fig. 6.44). For V/Co no anomalous concentrations were observed proximal to mineralization and it did not display a clear anomaly associated with the Au shell (Fig. 4.45). Whole rock V/Co also displayed similar if not higher ratios compared to chlorite (Fig. 4.45).

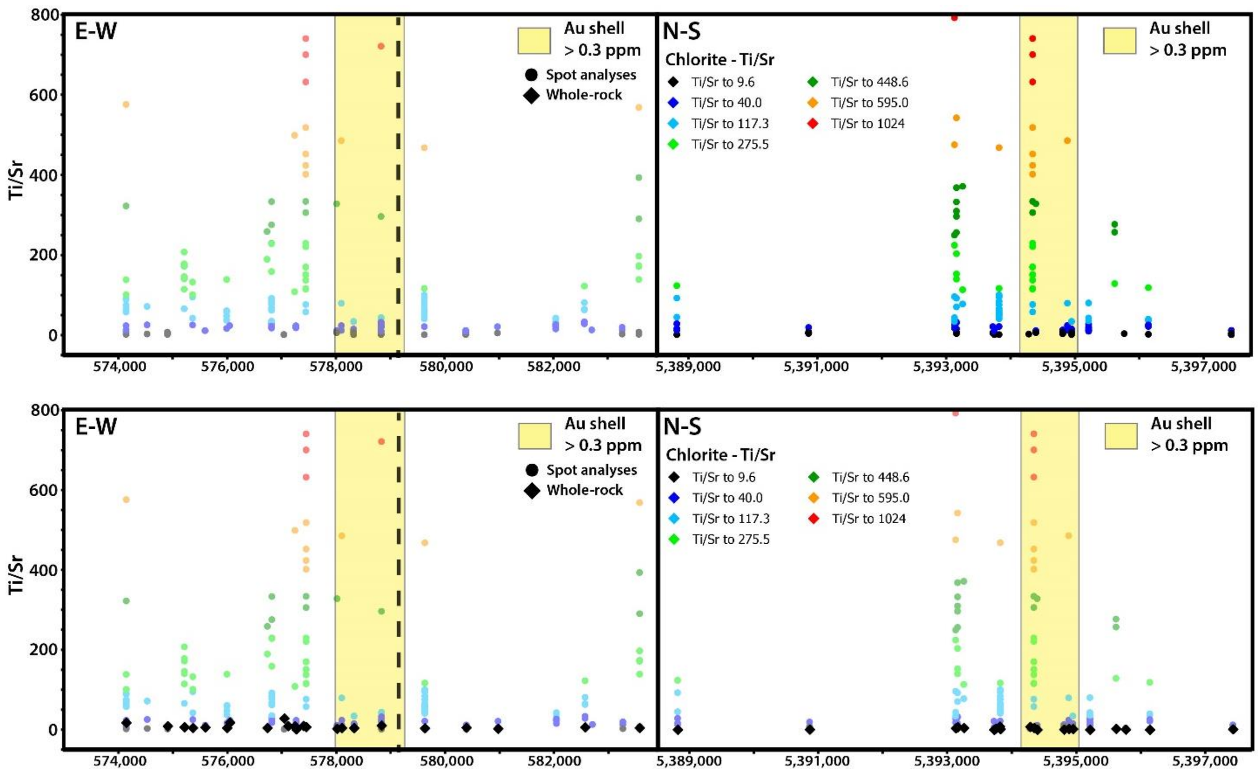

Figure 6.44: (Top) E-W and N-S transect displaying Ti/Sr contents in chlorite; (Bottom) Easting and northing transect of Ti/Sr contents in chlorite (faded) with overlain whole rock Ti/Sr concentrations.

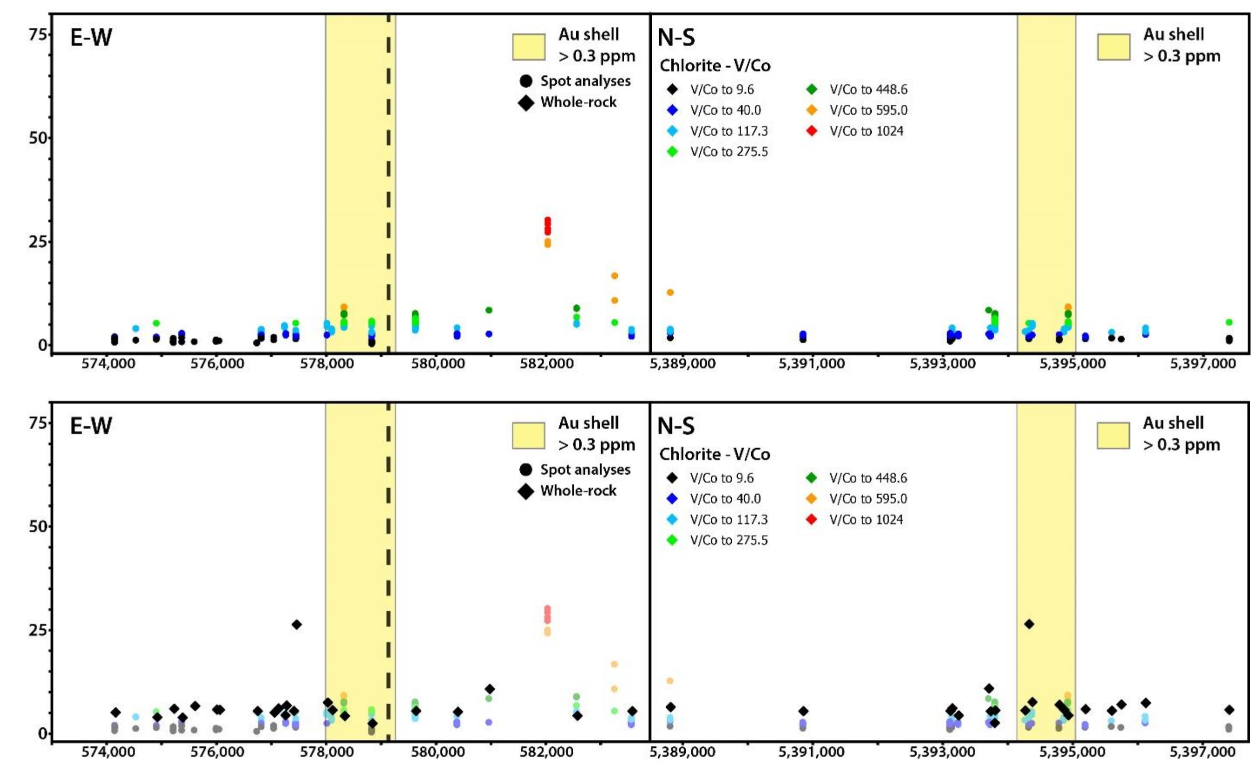

Figure 6.45: (Top) Easting and northing transect displaying V/Co contents in chlorite; (Bottom) Easting and northing transect of V/Co contents in chlorite (faded) with overlain whole rock V/Co concentrations.

6.3.2.5 Chlorite mineral chemistry comparison

Chlorite chemistry from the Hemlo district was compared to chlorite from other locations. Metamorphic chlorite from the Shebandowan greenstone belt in northwestern Ontario was also used. The Shabandowan chlorite is a good comparative dataset to Hemlo chlorite as both greenstone belts reside in the Wawa subprovince. The chlorite analysed from the Hemlo shear zone (HSZ) was kept as its own group as it is not a deposit sample, yet it displays a markedly different Fe-Mg content then the rest of the district chlorite samples (Fig. 6.38). All analysed elements were compared between the groupings, with only select elements displayed in Figure 6.46.

All groupings, except for chlorite from the HSZ and Hemlo deposit displayed Fe/Mg ratios of ~1. The HSZ and deposit chlorite have an average Fe/Mg < 1, indicating a more Mg-rich chlorite composition. High Ti/Sr ratios are observed throughout the Hemlo deposit, Heron Bay and both metamorphic suites. As previously observed, the Ti/Sr ratio decreases outwards from the Hemlo deposit into the regional intrusions, and the HSZ sample displays moderate to low Ti/Sr values. Porphyry related chlorite displays higher Mn contents than the rest of the groups. While deposit chlorite displays lower Mn contents than district and intrusion chlorite. Heron Bay chlorite was most similar to Hemlo deposit chlorite in having lower Mn contents. All Hemlo chlorite could be distinguished from the rest of the groups based on Sn content. Heron Bay, metamorphic chlorite and porphyry-related chlorite all display elevated Sn concentrations relative to the Hemlo district. Vanadium contents were relatively uniform between all groupings, with the Hemlo deposit chlorite displaying the most elevated V concentrations of any of the chlorite types.

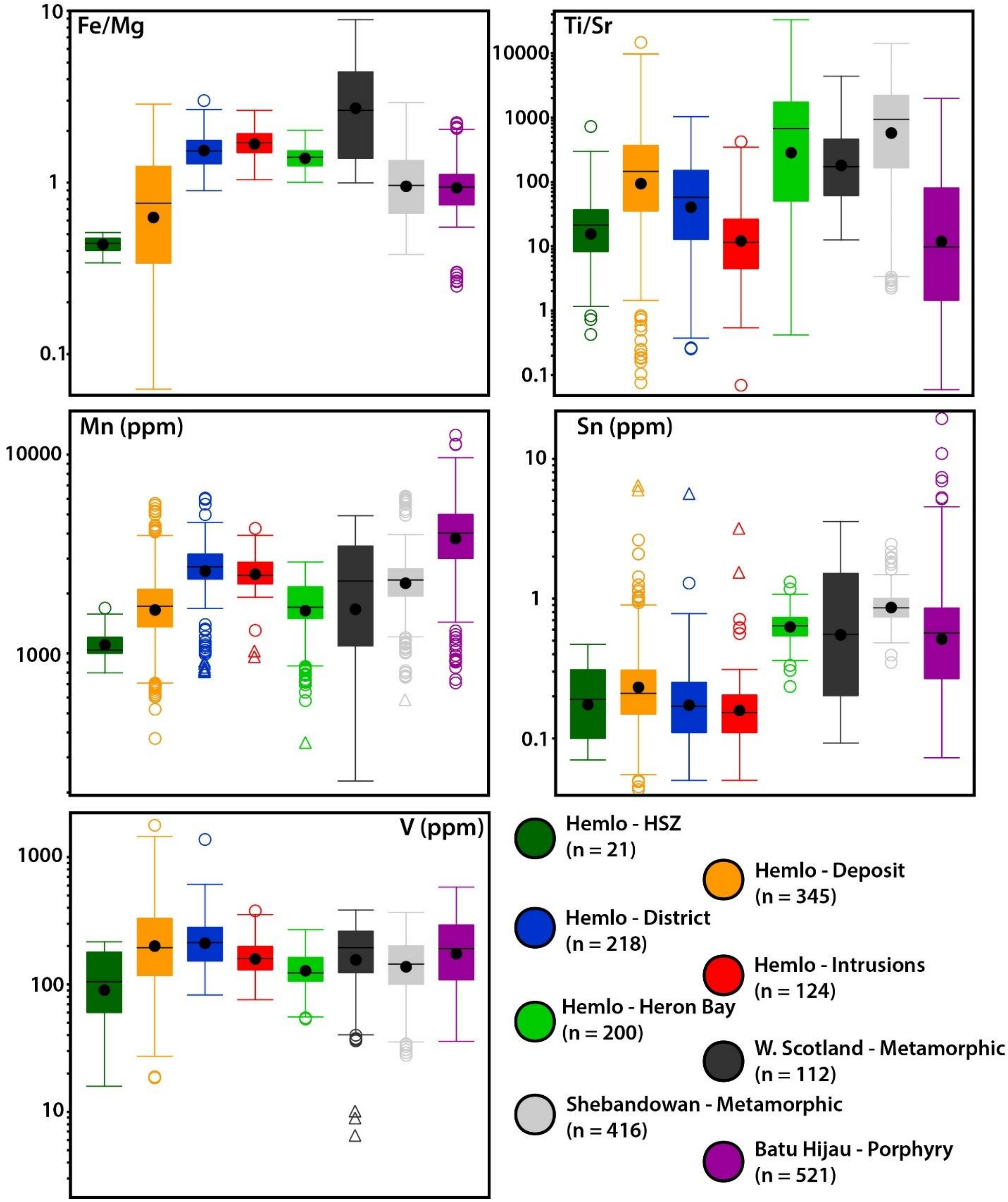

Figure 6.46: Log box and whisker plot of Fe/Mg, Ti/Sr, Mn, Sn and V concentrations in chlorite from the Hemlo deposit, Hemlo district, and surrounding intrusions compared to chlorite compositions from Heron Bay, West Scotland metamorphic chlorite, Shebandowan greenstone belt metamorphic chlorite and Batu Hijau porphyry chlorite. Deposit data from Gorner (in prep); Heron Bay data from Fay (2017); Batu Hijau data from Wilkinson et al. (2015); West Scotland data from. n = number of LA-ICP-MS spot analyses, groupings in plots from left to right are listed in descending order in the legend.

6.3.2.6 Spectral characteristics of chlorite at Hemlo

Chlorite is a spectrally active mineral allowing it to be identified and characterized using SWIR analysis. There are three main absorption features that are characteristic of chlorite. The first feature is at ~1400 nm, this small absorption feature is due to OH bonds and disappears with the addition of Fe into the chlorite structure (Fig. 6.47; Clark et al., 1990). The two main absorption features of chlorite occur at ~2250 nm and ~2340 nm; these features are due to Al, Fe, Mg-OH bonds and can shift positions based on the Fe-Mg content of the chlorite (Fig. 6.47; Herrmann et al., 2001). As chlorite is a hydrous mineral it also has a water feature that occurs around 1900 nm (Fig. 6.47). As the 2250 nm feature responds to changes in the Fe-Mg content of chlorite, this feature can be utilized to approximate chlorite compositions (Fig. 6.48). Wavelengths closer to ~2260 nm indicate an Fe-rich end-member chlorite (chamosite), whereas wavelengths < 2250 nm indicate a Mg-rich end-member (clinochlore; Fig. 6.48). The 2350 nm feature also responds to changes in Fe-Mg content of chlorite; however, it overlaps significantly with other mineral phases with similar spectral features (e.g., biotite, amphibole, etc.) and consequently in it is influenced by mineral mixtures.

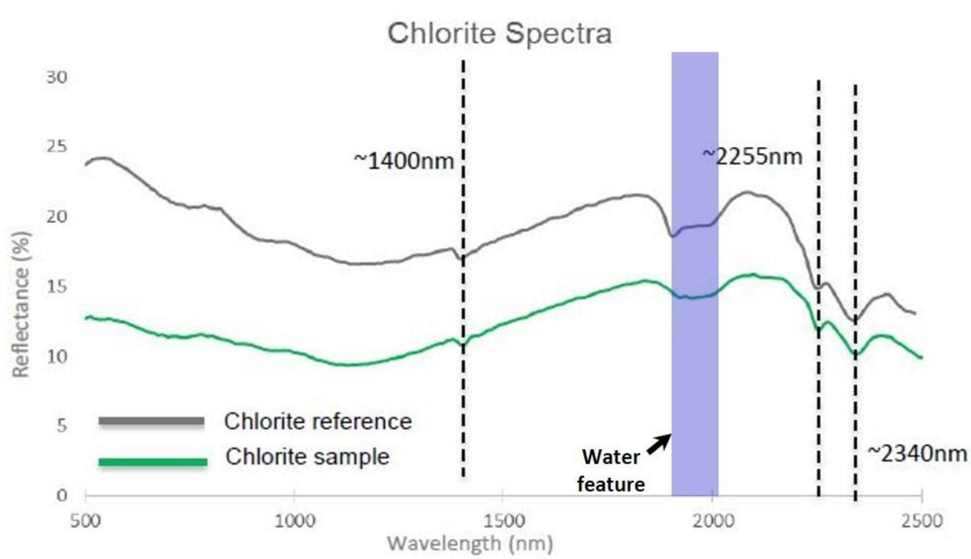

Figure 6.47: Chlorite reference spectra highlighting the position of characteristic absorption features (Modified from, Corescan data interpretation workflow; personal communication with Cari Deyell-Wurst, 2018).

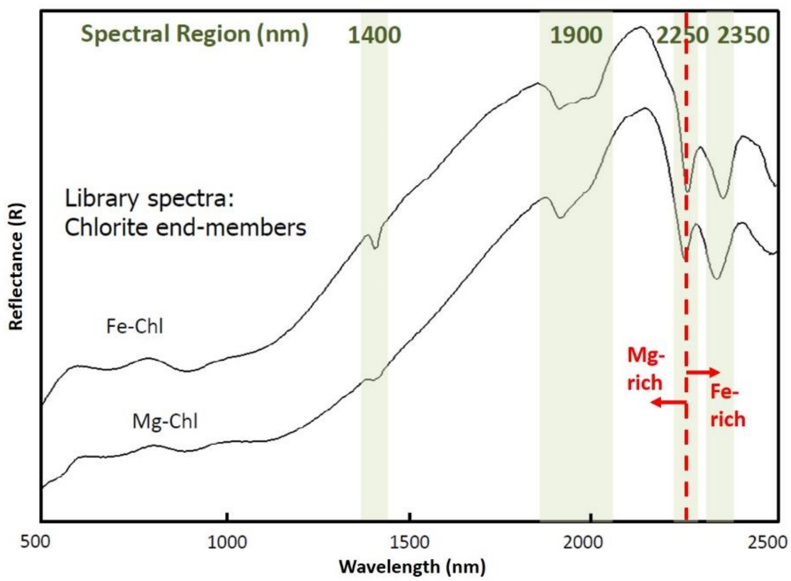

Figure 6.48: Chlorite reference spectra highlighting the 2250 nm feature, demonstrating lateral movement in peak position with response to changes in Fe-Mg content of the chlorite (Modified from, Corescan data interpretation workflow; personal communication with Cari Deyell-Wurst, 2018).

Chlorite spectral data was obtained in the same way as for epidote, using both Terraspec and Corescan. Corescan sample averages were also examined to see how much variation was present in a single sample, this was done in the same way as for epidote (Fig. 6.49). Spectral variance was lower for chlorite than it was for epidote, with typical variances ranging from 2-3 nm in a single sample. As the Corescan wavelength variance is ~ 4 nm, the Corescan sample averages were deemed valid in order to assess compositional variances in chlorite. The ability of spectral data to reflect the chemical composition of chlorite was investigated by plotting Fe/Mg against the 2250 nm absorption feature. For Terraspec, only samples where chlorite was identified as the main or secondary mineral were included. Terraspec chlorite 2250 nm peak positions varied from 2247 – 2258 nm, with the majority of samples having and Fe/Mg ratio of between 1 and 2 (Fig. 6.50). On Figure 6.50, no obvious trends are observed; however, all samples with Fe/Mg ratios >2 have absorption features positions > 2250 nm. Corescan chlorite 2250 nm feature positions range from 2247 – 2254 nm (Fig. 6.51). A trend of increasing Fe/Mg ratio with increasing Corescan chlorite 2250 nm wavelength is subtle but more pronounced than with the

Terraspec data (Figs. 6.50, 6.51). For Corescan chlorite 2250 nm feature, wavelengths < 2249 nm display Fe/Mg < 1.5, indicating a shift to a more Mg-rich chlorite composition. Chlorite samples with > 2250 nm wavelength positions tend to have Fe/Mg > 1, indicating more Fe-rich chlorite. Chlorite throughout the Hemlo district does not display a large range in 2250 nm wavelengths which can make it challenging to assess compositional controls on spectral characteristics.

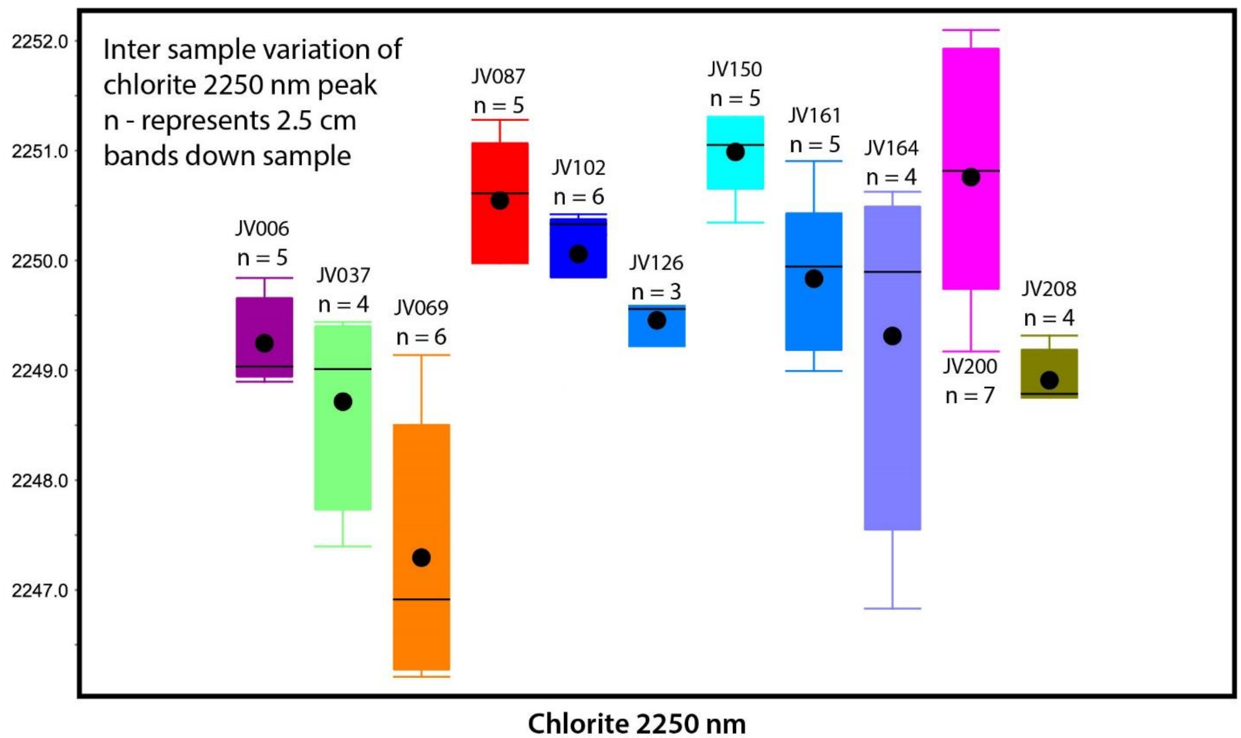

Figure 6.49: Box and whisker plot of inter sample spectral variation of the chlorite 2250 nm feature, select samples are displayed in order to illustrate the low variation in peak position throughout individual samples.

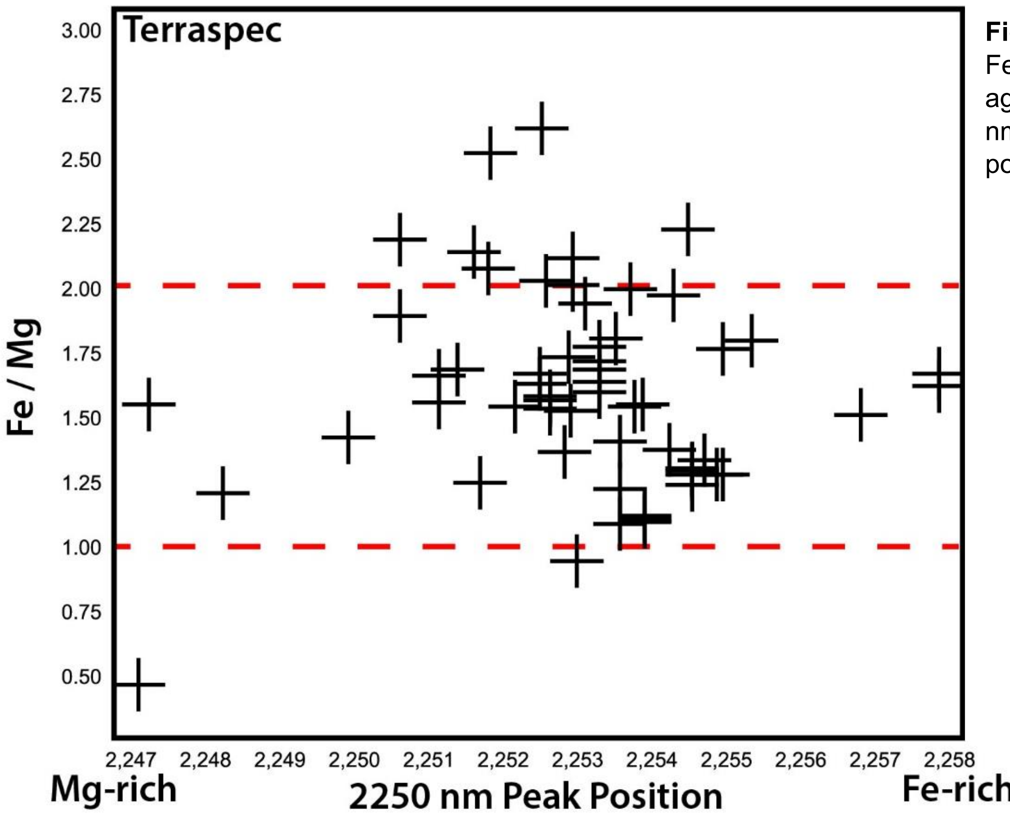

Figure 6.50: Chlorite Fe/Mg ratio plotted against Terraspec 2250 nm absorption feature position.

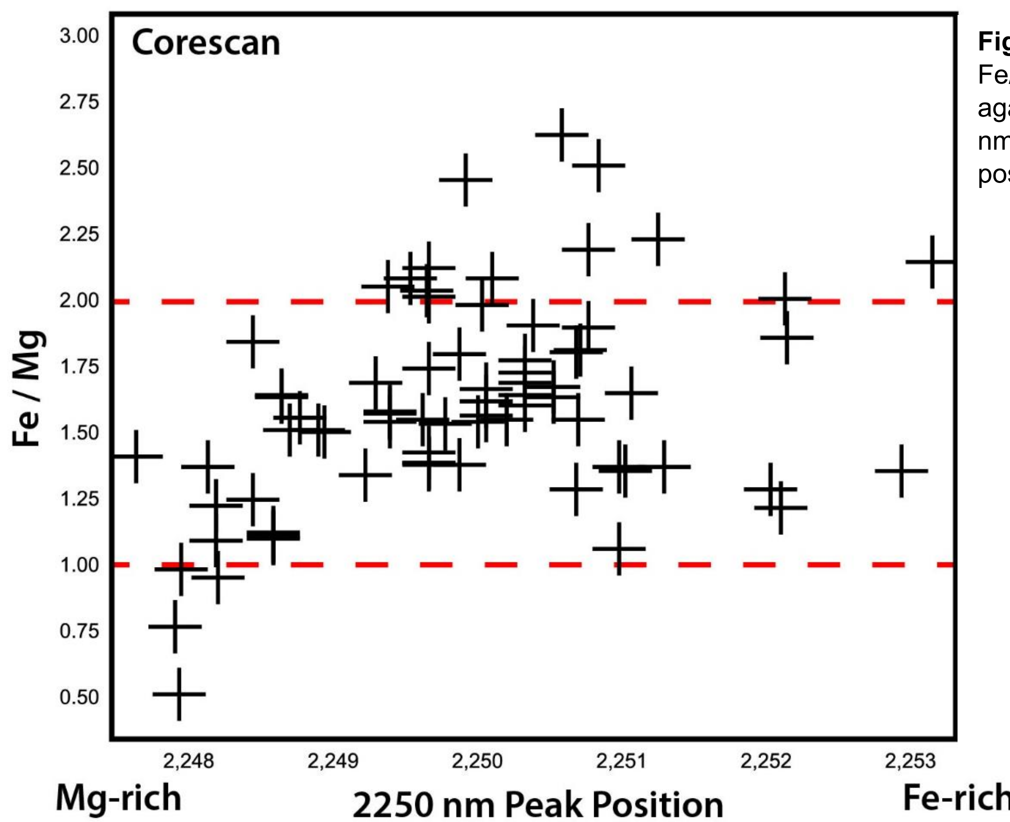

Figure 6.51: Chlorite Fe/Mg ratio plotted against Corescan 2250 nm absorption feature position.

Terraspec 2250 nm feature position values were plotted against Corescan 2250 nm feature position values in order to assess any difference in measurements between the two techniques (Fig. 6.52). This data displays no correlation with an $r^2 = 0.01$. The majority of the data skews above the 1:1 line indicating that Terraspec 2250 nm measurements are higher for chlorite than for Corescan. This could be due to the inherent issue of dealing with mixed mineral assemblages in the SWIR spectra. Mineral mixtures (i.e., chlorite + white mica or epidote + chlorite) can cause distorting effects on spectra especially when the minerals have overlapping spectral features. Epidote was identified spectrally and petrographically as the common secondary mineral in the majority of the chlorite dominated samples and can cause interferences in peak positions at 2250 nm and 2340 nm. Consequently, the skew towards higher wavelength positions could be due to the presence of epidote. With Corescan there is the ability of selecting pixels of a specific mineral in order to avoid mineral mixtures which could allow for a better approximation of chlorite spectral characteristics. This may also account for why there is more of an apparent trend observed with the Corescan data compared to the Terraspec data.

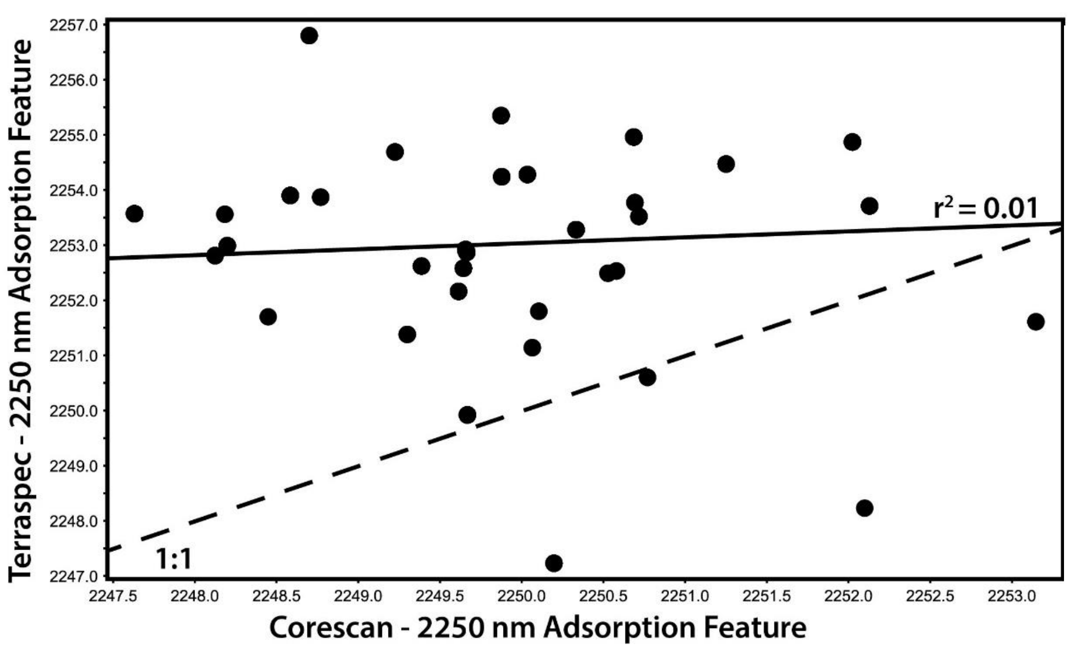

Figure 6.52: Terraspec 2250 nm chlorite absorption feature position compared to Corescan 2250 nm chlorite feature position. Solid black line represents $r^2 = 0.01$.

Chemical variations in chlorite at Hemlo could be due to a variety of reasons. Wilkinson et al. (2015) suggested that chemical variations observed in chlorite surrounding the Batu Hijau porphyry were the result of either outward dispersion of hydrothermal fluids and/or a geothermal gradient around the intrusion. Wilkinson et al. (2015) also demonstrated a thermal control on the substitution of Ti into chlorite and suggested that substitution of Mg and V into chlorite could also be impacted by temperature. Temperature controlled substitution of Ti into chlorite had only been previously documented in biotite (Henry and Guidotti, 2002). The biotite → chlorite replacement reaction can also produce secondary Ti-bearing oxides (i.e., titanite or rutile) as biotite typically contains higher concentrations of Ti than chlorite (Wilkinson et al., 2015). Abundant Ti-bearing oxide inclusions were observed to be present in Hemlo chlorite replacing biotite in the intrusions, while no inclusions were observed to be present in hydrothermally produced chlorite proximal to quartz veins (Fig. 4.16).

The core of the Hemlo deposit is characterized by high temperature potassic alteration expressed mineralogically by abundant orthoclase and biotite (Muir, 1997). Chlorite is present throughout the Hemlo deposit and in some areas overprints potassic alteration, this could be an overprinting hydrothermal or retrograde event. Chlorite replacing biotite in the potassic core may result in higher Ti concentrations of deposit chlorite and explain geochemical dispersion patterns observed around Hemlo. The Hemlo Au deposit displays an anomalous V signature as green V-bearing white mica (roscolite) is observed to be associated with Au mineralization (Muir, 1997). As there is abundant V present at Hemlo, the anomalous V/Co signature of chlorite at the deposit may be more the result of V availability rather than thermally controlled substitution.

High concentrations of Mg in chlorite at the deposit relative to the district and intrusion chlorite could also suggest a higher temperature of formation (Wilkinson et al., 2015). However, Mg content of chlorite could also be a result of major element availability. Within the deposit pyrite can be variably abundant but is spatially associated with Au mineralization. Grossman et al. (1979) noted the relationship of more Mg-rich chlorite in pyrite-rich marine shales and suggested that chlorite could be a source of iron during pyritization. If pyrite and chlorite are occurring together in equilibrium then it is more likely that Fe will partition into pyrite rather than chlorite, resulting in more of a Mg-rich chlorite (Grossmann et al., 1979). The reason for elemental variability in chlorite around the Hemlo gold deposit is unclear; however, the elemental variations observed in chlorite surrounding the Hemlo deposit do display vectoring potential.

6.3.3 Pyrite

6.3.3.1 Pyrite crystal structure, substitutions and inclusions

Pyrite is the most abundant sulfide mineral on earth and can form in a multitude of ore systems (Reich at al., 2013). As well as forming within ore deposits, pyrite can form through other processes such as barren hydrothermal activity, metamorphism and diagenesis (Reich at al., 2013). Pyrite has a general formula of FeS_2 and and is of cubic habit (Fig. 6.53). Pyrite precipitation can be a dominant control on metal distribution within ore systems as it can incorporate a wide range of trace elements such as precious metals (e.g., Au and Ag), metalloids (e.g., As and Sb) and heavy metals (e.g., Cu and Zn; Large et al., 2007, 2009; Deditius et al., 2011; Reich et al., 2013; Gao et al., 2015; Belousov et al., 2016). Elements known to be related to gold mineralization (Cu, Zn, As, Sb, Sg, Te, W, Hg, Pb and Bi) can partition into pyrite potentially making it a strong tool for geochemical vectoring (McCuaig and Kerrich, 1998; Large et al., 2007, 2009). Pyrite can form from fluids at a variety of temperatures ranging from 30 – 600 ºC (Deditius et al., 2014). However, it has been suggested that most of the trace element substitution will occur at lower temperatures during cooling or retrograde processes (Reich et al., 2013; Deditius et al., 2014).

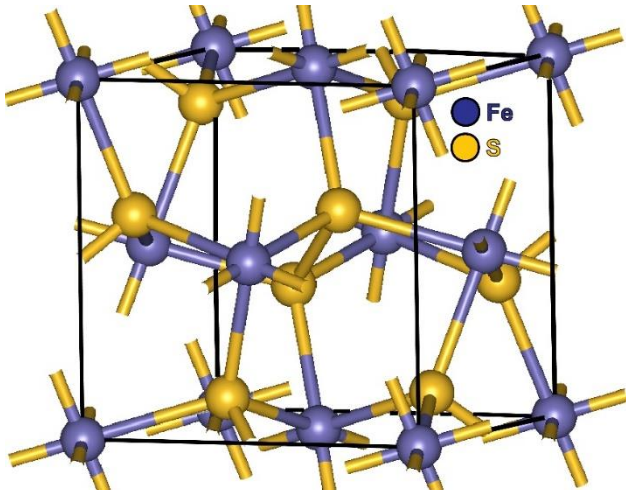

Figure 6.53: Pyrite crystal structure. Modified from Willeke et al., (1992).

In many Au deposits pyrite or arsenian pyrite is the most common sulphide mineral in the Au ore assemblages, with gold commonly occurring lattice-bound within the sulphide or as a nanoparticle inclusion (Groves et al., 2003; Deditius et al., 2011; Hough et al., 2011; Cook et al., 2013; Gao et al., 2015). Within Archean Au deposits, Au is observed to be mainly transported by Au-thiosulphide complex ($Au(HS)_2$-), and will be precipitated during fluid:rock reactions (McCuaig and Kerrich, 1998). Mineralogically, gold occurs as free particles of Au-tellurides and/or native Au or as structurally bound Au^+ ions (Gao et al., 2015). In Au deposits pyrite will primarily occur as a product of sulphidation in the wall rock due to fluid/rock interactions during hydrothermal alteration (McCuaig and Kerrich, 1998). Gold typically partitions into pyrite during precipitation but can become mobile during subsequent recrystallization, metamorphic or deformation events (Large et al., 2007, 2009). In pyrite Au displays similar behaviour to other trace elements including Ag, As, Cu, Se and Te (Gao et al., 2015). Pyrite abundance in Au deposits can be a common indicator of Au grade (Gao et al., 2015).

A number of trace elements have been demonstrated to be detectable by LA-ICP-MS in pyrite including As, Ni, Mn Pb, Co, Ti, Ba, Cu, Zn, Sb, Cr,V, Mo, Se, Sn, W, Ag, Bi, Au, Te and Tl (Large et al., 2007, 2009; Gao et al., 2015; Smyk, 2015; Belousov et al., 2016). Beluosov et al. (2014) identified four probable ways these trace elements are occurring in pyrite: (1) as solid solution within the pyrite structure; (2) as lattice bound invisible nano-inclusions; (3) micron-sized visible sulphide inclusions; (4) micron-sized visible silicate or carbonate mineral inclusions. Cobalt and Ni substitute for Fe in pyrite, whereas As, Se, and Te can substitute directly for S in pyrite (Gao et al., 2015). Elements in solid solution with pyrite are reliant on the availability of the element for substitution and are therefore a function of the pyrite precipitating fluid composition (Deditius et al., 2011). Arsenic, Se, Te and Ag display a similar behaviour to Au in pyrite which suggests they should also be enriched in pyrite associated with high-grade Au mineralization (Gao et al., 2015). Substitution of elements in solid solution with pyrite (e.g., As, Te, Co) could lead to distortion of the pyrite lattice, due to differences in ionic radii, which could promote further precipitation of other inclusions/substitutions into the pyrite structure (Reich et al., 2013).

Reich et al. (2005) defined the empirical solubility of Au into the pyrite lattice as a function of the As content in pyrite. Arsenic partitioning can be impacted by redox conditions, with As substituting for S as anionic As within reducing environments, and as As^{3+} in more oxidizing environments (Reich et al., 2013). As arsenic content of the pyrite increases so does the ability of the pyrite to allow Au into its crystal lattice (Reich at al., 2005). Gold detected at concentrations of 100-1,000 ppm are likely the result of nano-sized particles and/or metal clusters; whereas lower concentrations (<10 ppm) indicate Au is more likely to be structurally bound within the pyrite (Reich et al., 2013).

6.3.3.2 Pyrite chemistry vs. whole rock

Pyrite mineral chemistry was compared to whole rock chemistry in order to determine the partitioning of 14 key trace elements into pyrite. Gold, Ag, As, Bi, Co, Ni, Se and Te were all observed to partition into pyrite and were detected at least an order of magnitude higher in pyrite than the whole rock (Fig. 6.54). These are all elements that have been documented as readily partitioning into pyrite (Large et al., 2007, 2009; Belousov et al., 2016). The ability to detect these elements at higher concentrations within pyrite makes them key elements to be investigated for pathfinder ability. It also suggests that in whole rock data these elements are controlled by the abundance of pyrite and are most likely diluted by other mineral phases in whole rock.

The trace elements Pb, Sb and Cu were all observed to have similar concentrations in pyrite similar to whole rock suggesting that they are substituting into pyrite as well all other mineral phases (Fig. 6.55). Molybdenum, W and Zn were all detected at lower concentrations within pyrite relative to whole rock (Fig. 6.55). This could suggest that these elements will preferentially substitute into other mineral phases instead of pyrite and makes them less ideal for pathfinder elements. Low Mo contents of pyrite at Hemlo could be due to the abundant molybdenite (MoS_2) associated with Au mineralization which would preferentially incorporate Mo (Muir, 1997). Similarly with W, scheelite ($CaWO_4$) has been reported to be an abundant accessory phase to Au mineralization at Hemlo (Muir, 1997). It has been demonstrated in Figure 6.38 and by Wilkinson et al. (2015) that chlorite will preferentially take Zn into its structure. If chlorite and pyrite are occurring in equilibrium, then it could result in Zn preferentially substituting into chlorite over pyrite.

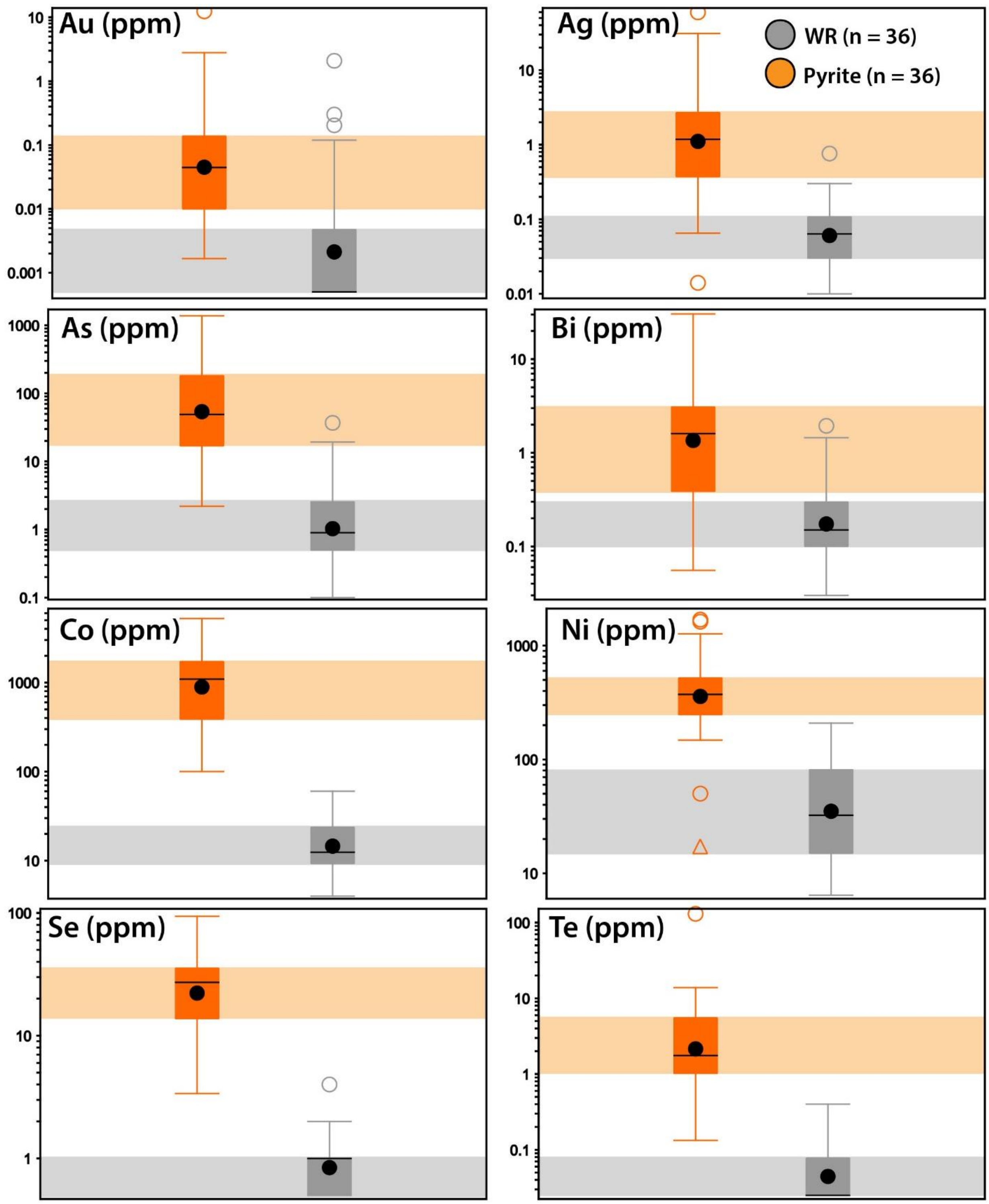

Figure 6.54: Box and whisker plots of trace elements that are enriched in pyrite relative to whole rock (WR) concentrations.

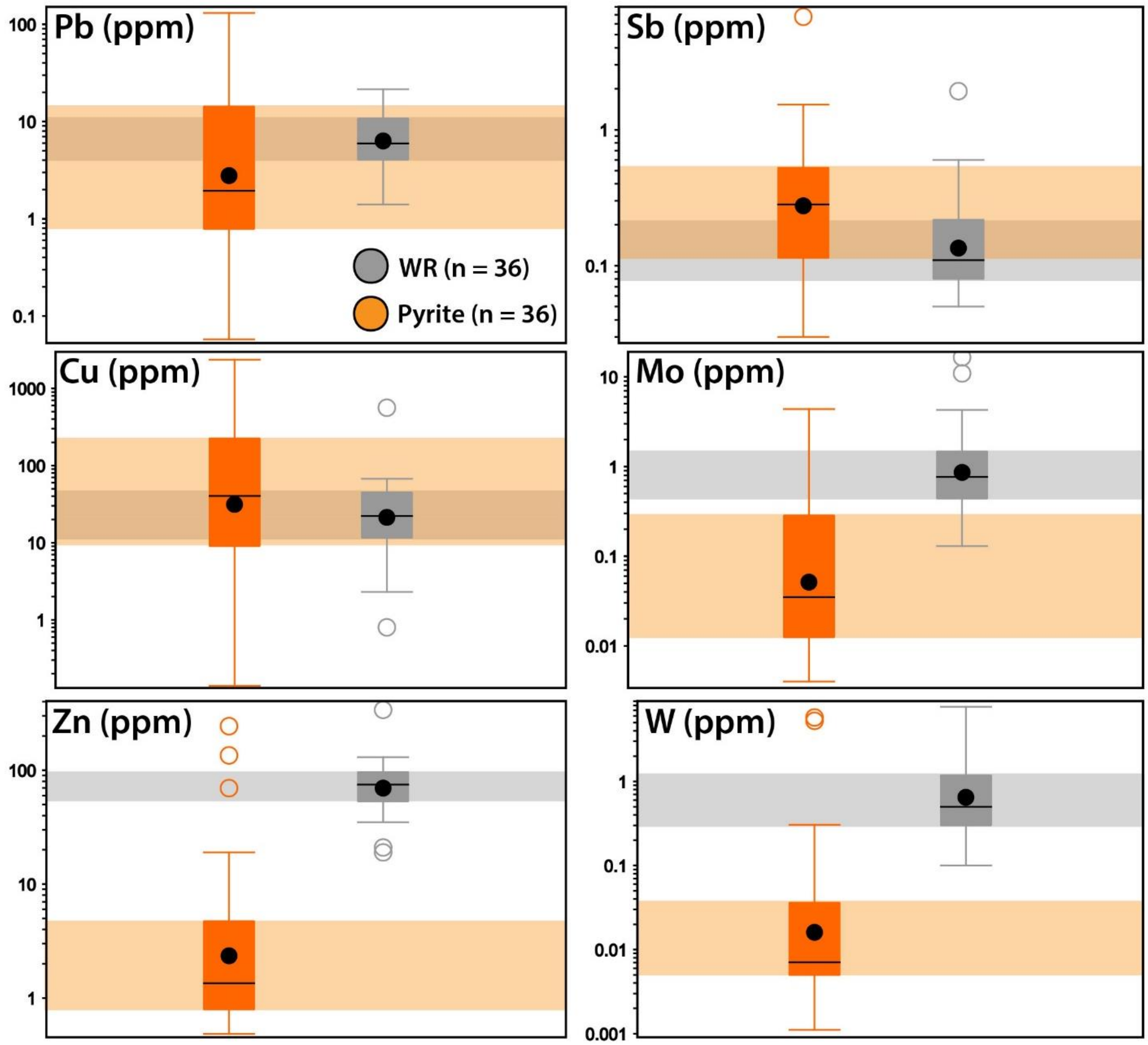

Figure 6.55: Box and whisker plot of elements in pyrite that are depleted or overlap with whole rock (WR) concentrations.

6.3.3.3 Trace element vectors in pyrite at Hemlo

Pyrite trace element data was treated similarly to chlorite and epidote with data binned and then plotted spatially in order to observe geochemical variations. All spots from a single analysis were plotted on top of each other in order to display inter-sample variation. Multiple elements (Au, Ag, As, Sb, Bi, Te, Mo and W) all displayed strongly anomalous signatures proximal to the deposit, with the highest concentrations observed along the shoulder of the zone of pervasive alteration (Figs. 6.56 to 6.63). All eight of these elements are known to display variable enrichment surrounding Au deposits (McCuaig and Kerrich, 1998; Kerrich et al., 2000). Gold, Te and As proved to be the strongest pathfinder elements in pyrite displaying moderately anomalous values up to 2.5 km away from the deposit along strike (Figs. 6.56, 6.58 and 6.60). Silver and Bi also display strong anomalism associated with the zone of pervasive alteration, but also displayed some strong anomalism in samples further away from the deposit (Fig., 6.57 and 6.59). Antimony, Mo and W display strongly anomalous highs proximal to the main body of the deposit and quickly drop off to background cocnetraqtions moving outwards from the shoulder of the zone of pervasive alteration (Figs. 6.61, 6.62 and 6.63).

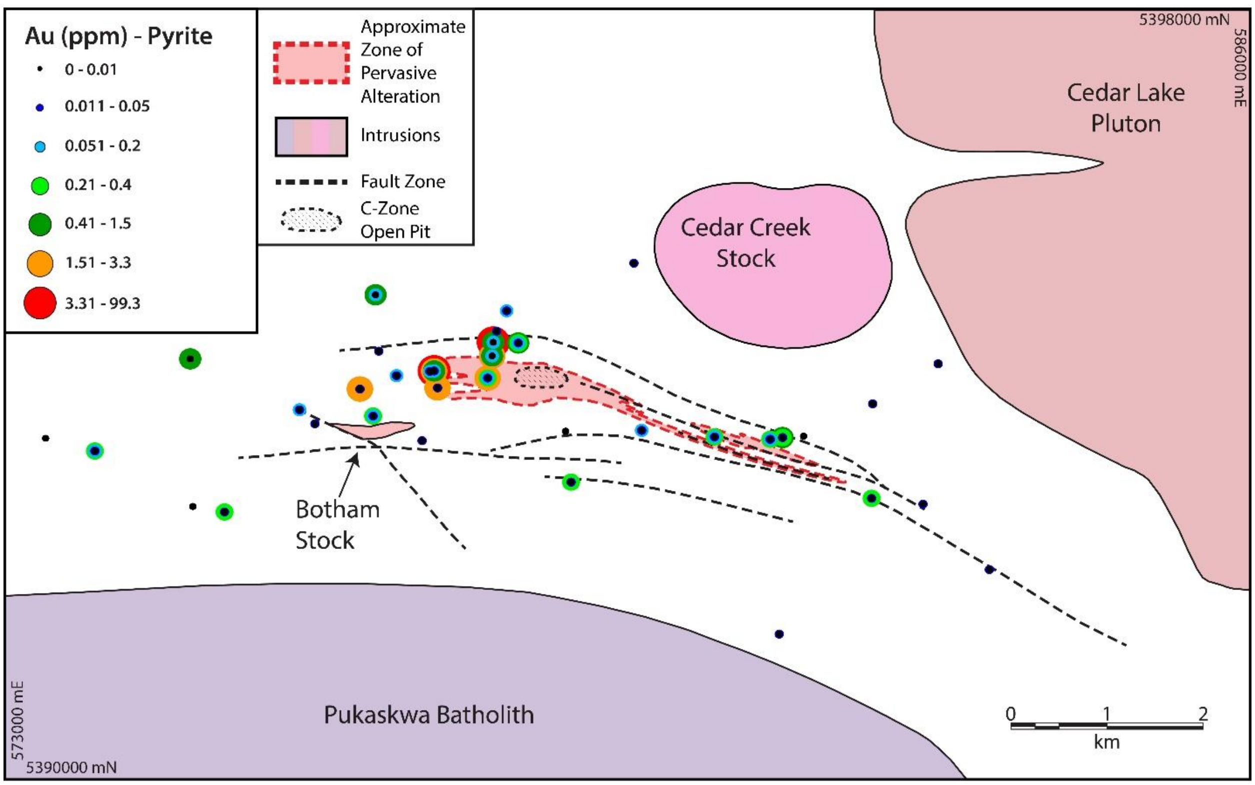

Figure 6.56: Spatial distribution of pyrite Au contents throughout the Hemlo district. Background geology and structures modified from, Muir (2003).

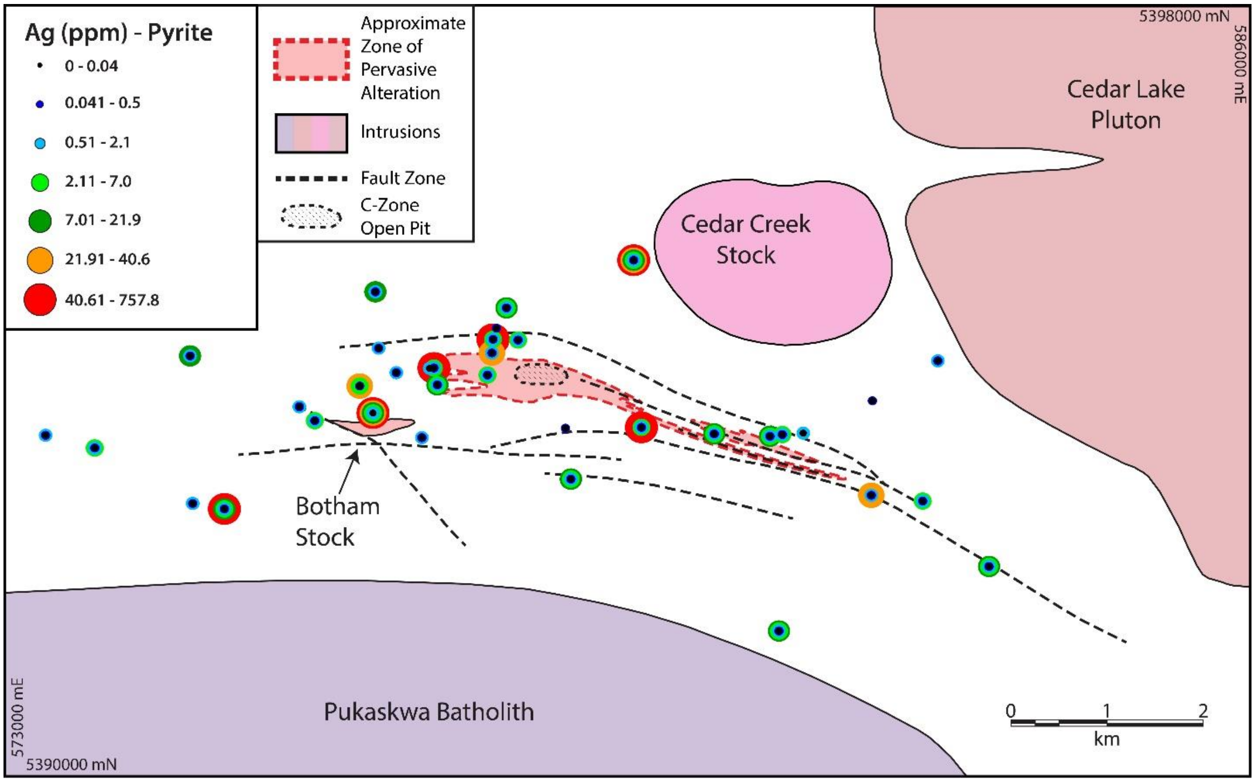

Figure 6.57: Spatial distribution of pyrite Ag contents throughout the Hemlo district. Background geology and structures modified from, Muir (2003).

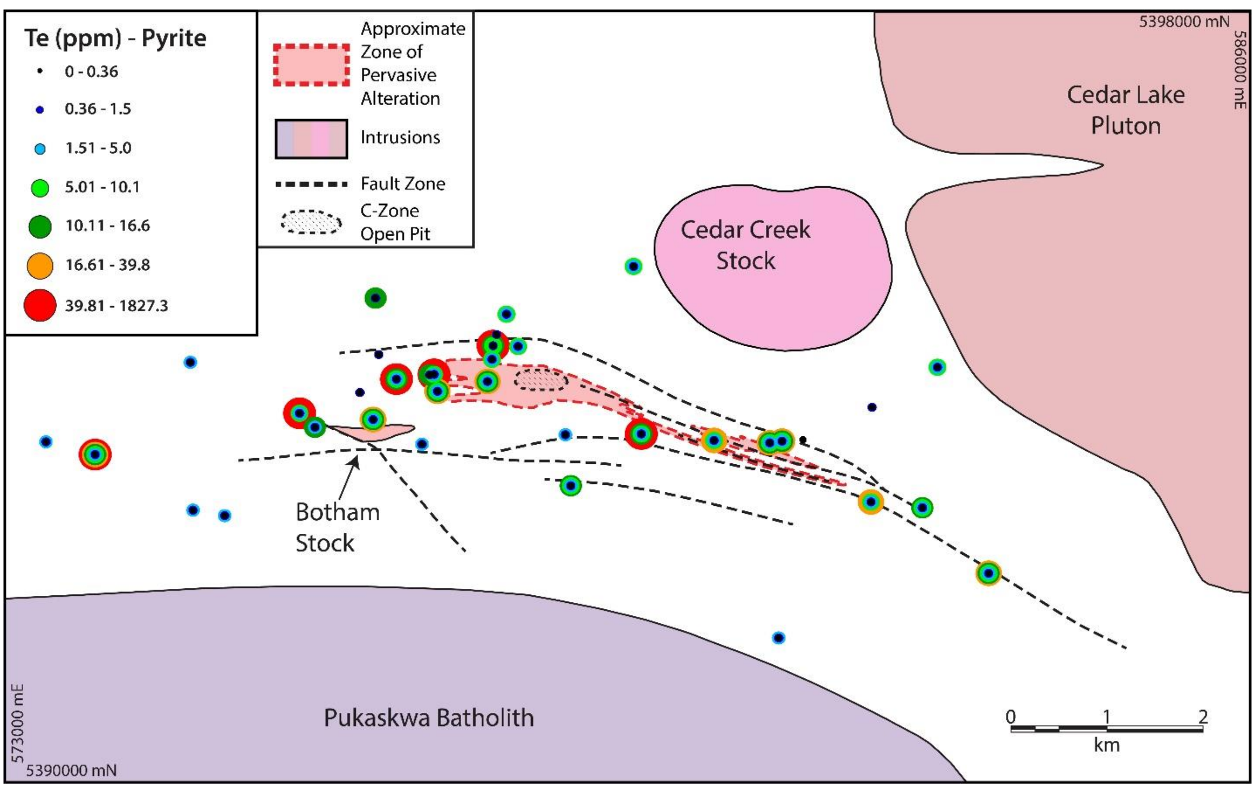

Figure 6.58: Spatial distribution of pyrite Te contents throughout the Hemlo district. Background geology and structures modified from, Muir (2003).

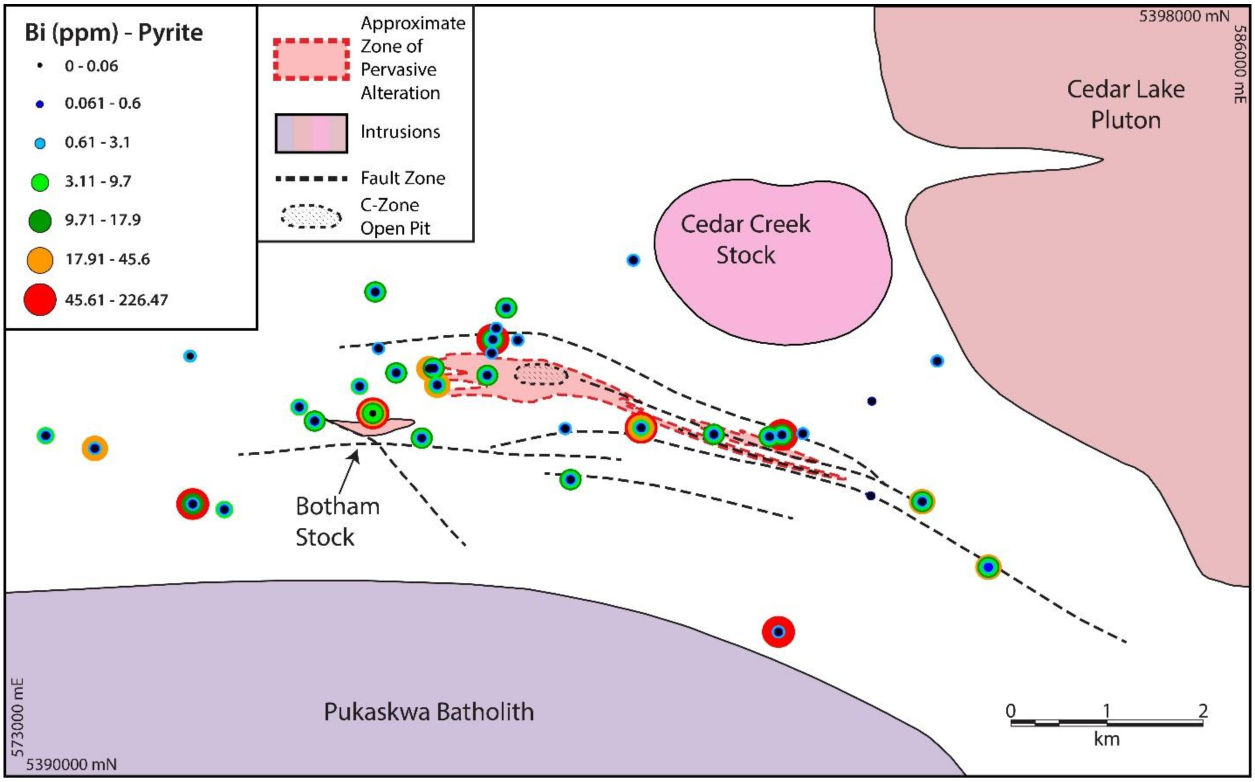

Figure 6.59: Spatial distribution of pyrite Bi contents throughout the Hemlo district. Background geology and structures modified from, Muir (2003).

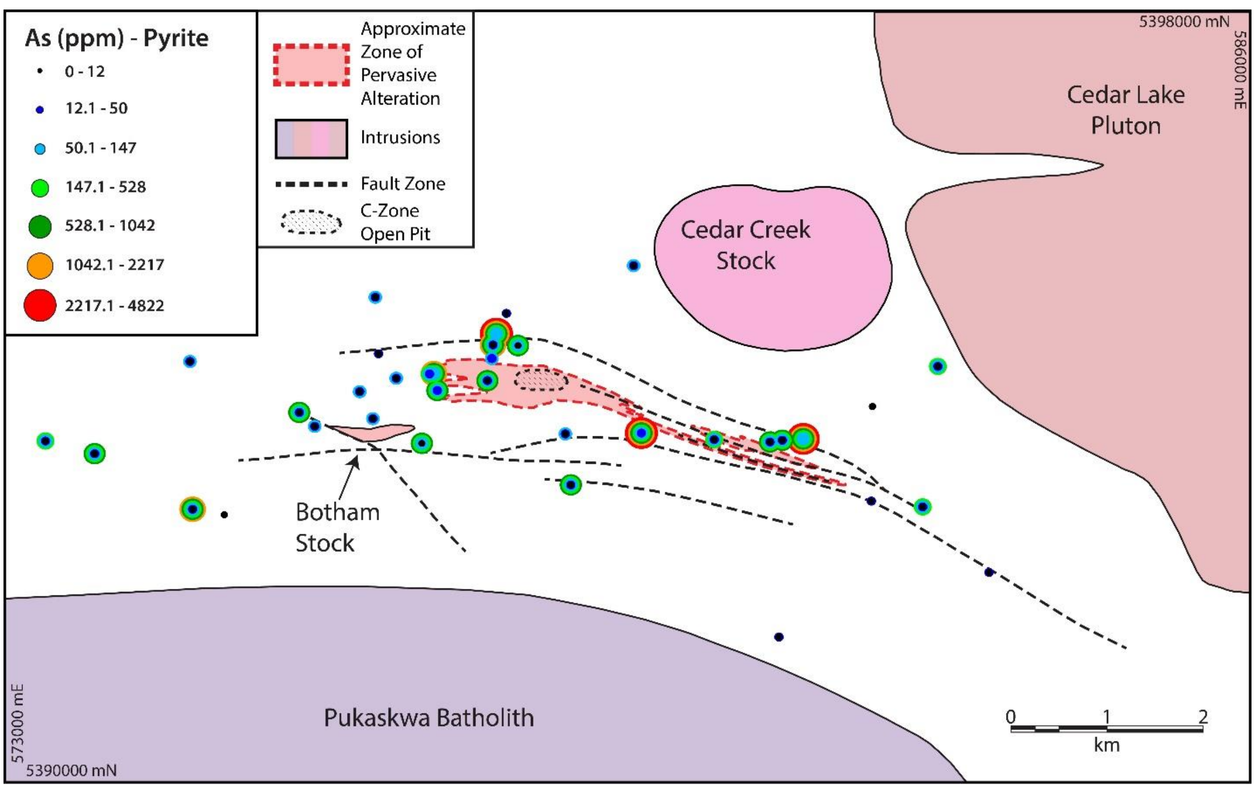

Figure 6.60: Spatial distribution of pyrite As contents throughout the Hemlo district. Background geology and structures modified from, Muir (2003).

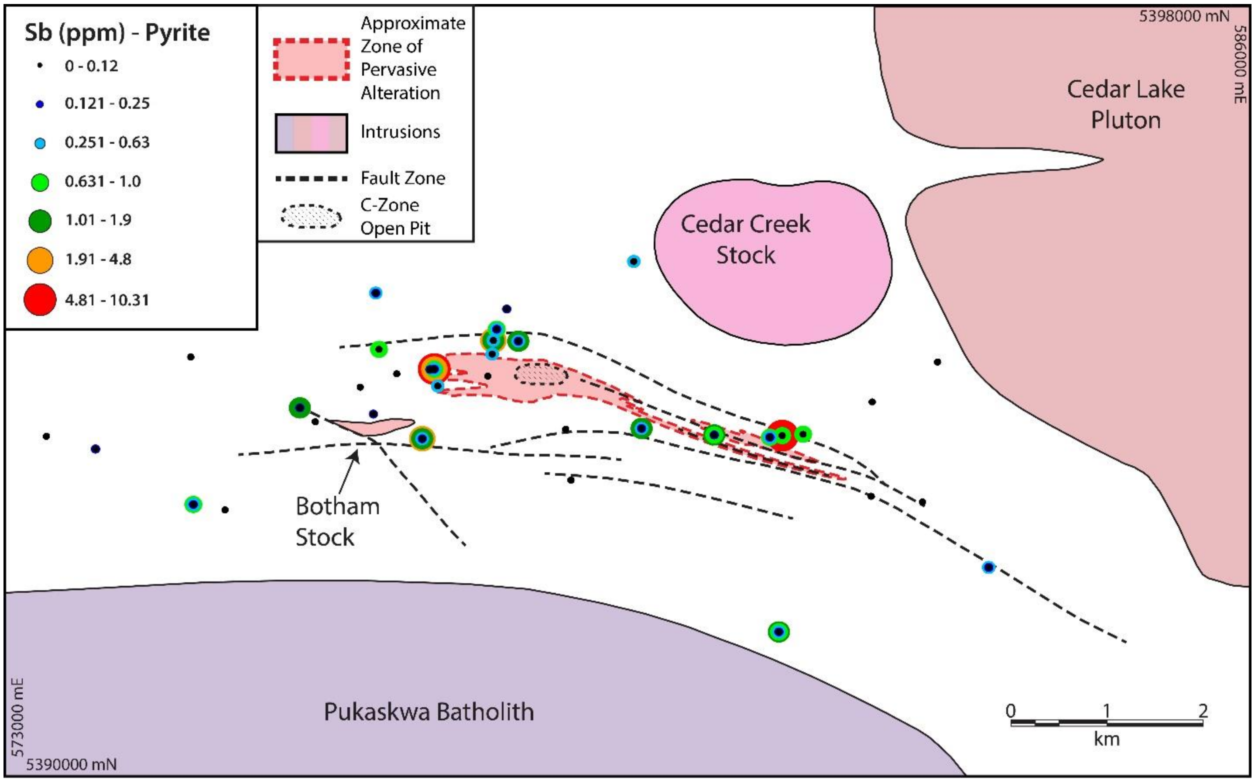

Figure 6.61: Spatial distribution of pyrite Sb contents throughout the Hemlo district. Background geology and structures modified from, Muir (2003).

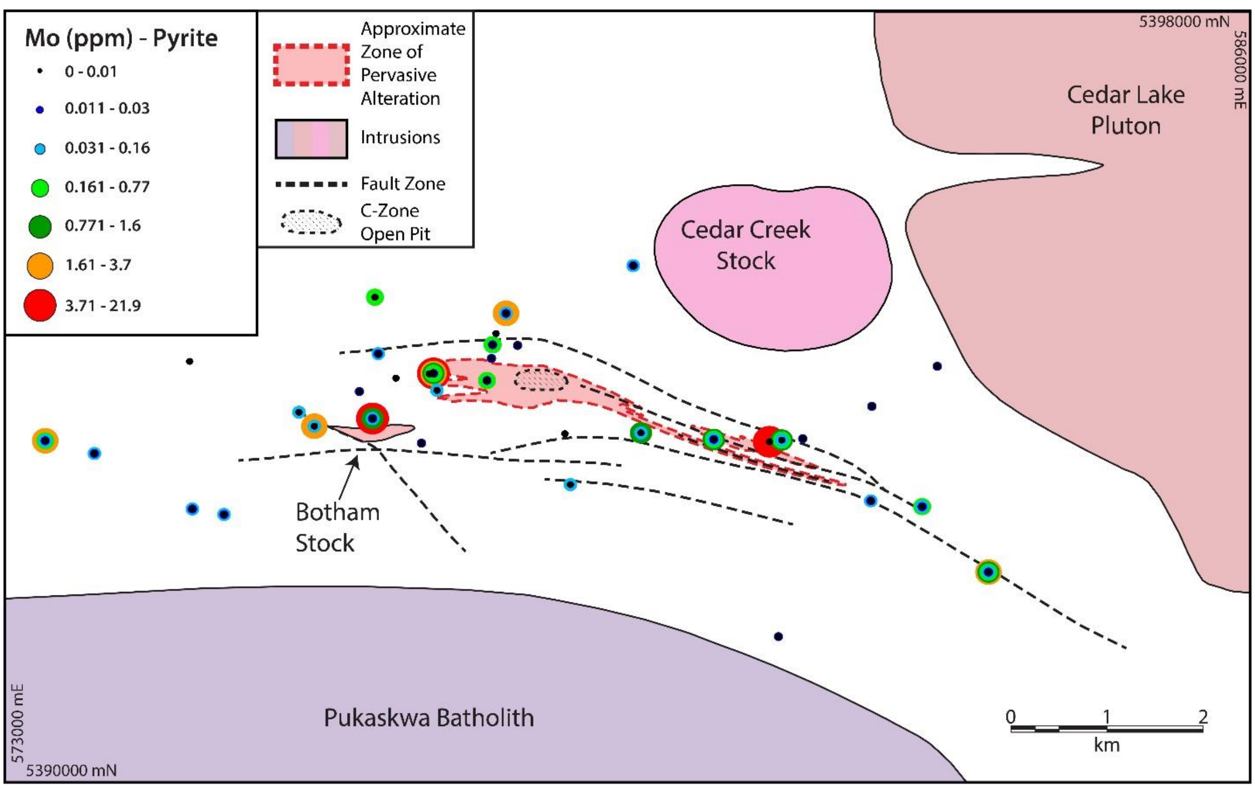

Figure 6.62: Spatial distribution of pyrite Mo contents throughout the Hemlo district. Background geology and structures modified from, Muir (2003).

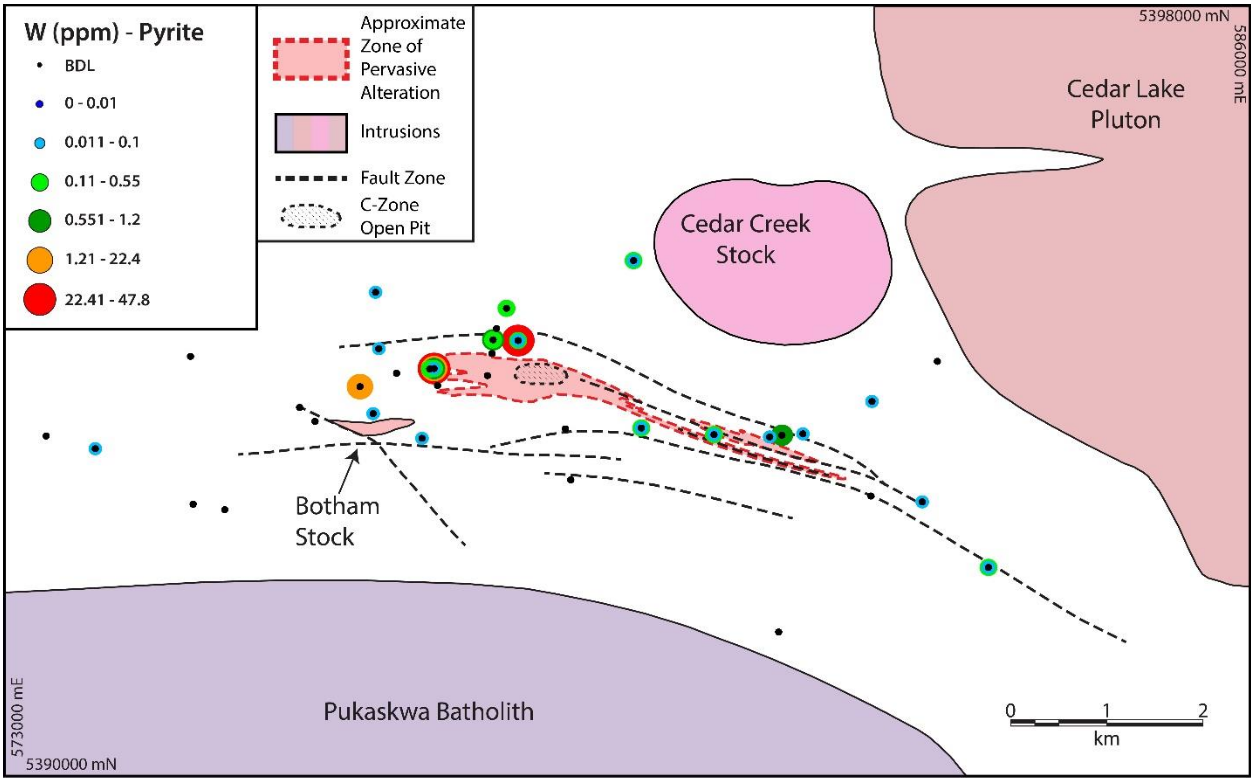

Figure 6.63: Spatial distribution of pyrite W contents throughout the Hemlo district. Background geology and structures modified from, Muir (2003).

Gold, Te and As proved to be the most effective pathfinder elements in pyrite throughout the Hemlo district and were also demonstrated to be enriched in pyrite relative to whole rock (Fig. 6.54), and display enrichment in whole rock within the zone of pervasive alteration surrounding the deposit (Figs. 6.4, 6.7, 6.10). This makes Au, Te and As ideal geochemical vectors for mineralization. Pyrite is not abundant in samples further away from the deposit, so it does not have as exstensive sample distribution as for epidote and chlorite. This makes mapping of pyrite occurrences (i.e., type of occurrence, grain size/shape, abundance etc.) a useful exercise during regional mapping / exploration programs, as it is an easily identifiable mineral and is a visual indicator of mineralization. However, a poorer sample distribution makes it more difficult to plot transects as for epidote and chlorite, especially along the N-S transect. Only Au in pyrite was plotted on E-W and N-S transects in order to illustrate this (Fig. 6.64). Gold in pyrite was observed to display anomalous concentrations proximal to the deposit with concentrations decreasing outwards from the deposit (Fig. 6.65). Gold in pyrite can also be detected at much higher concentrations relative to whole rock and exhibits broader anomalism expanding the Au footprint of the deposit by up to 2.5 km (Fig. 6.65). Arsenic and Te displayed similar spatial patterns to Au.

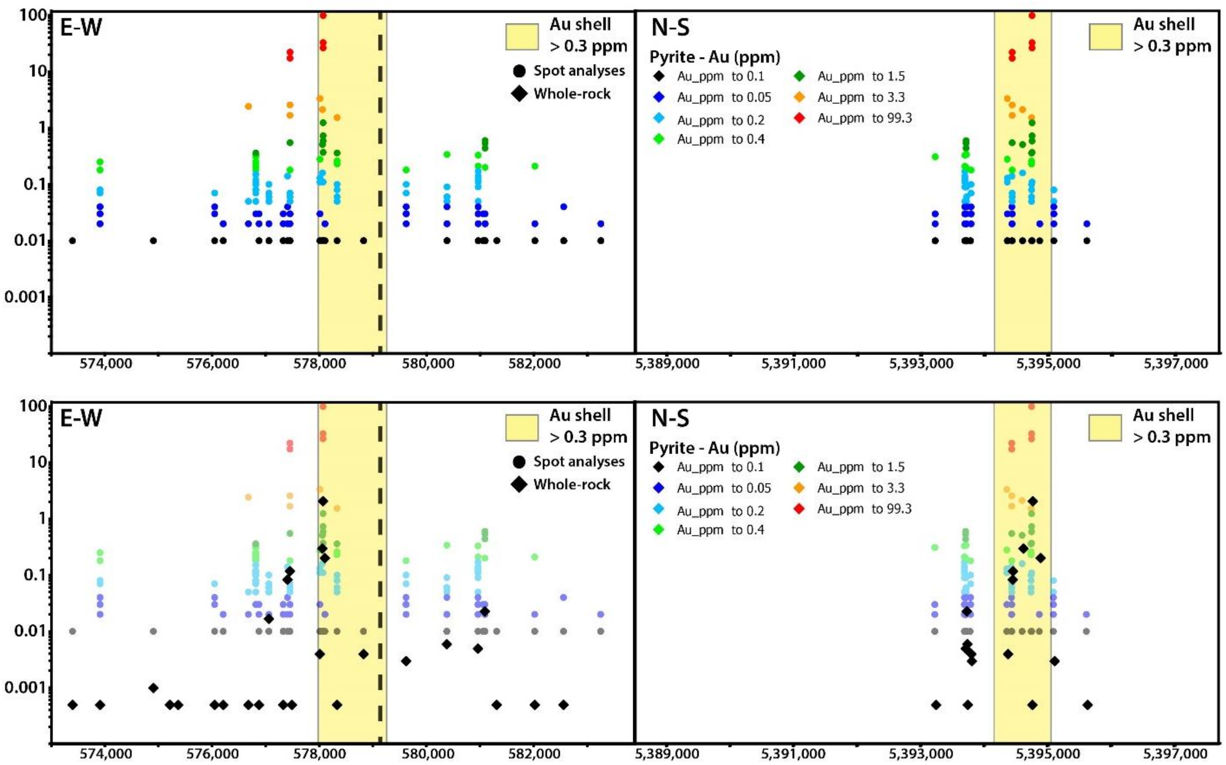

Figure 6.64: (Top) Easting and northing transect displaying Au contents in pyrite; (Bottom) Easting and northing transect of Au contents in pyrite (faded) with overlain whole rock Au concentrations.

Gold, As and Te in pyrite proved to be the strongest pathfinder elements in the Hemlo district displaying enrichment proximal to the deposit, with decreasing concentrations observed moving outwards from the deposit. All three elements can be used able to expand the Au footprint of the Hemlo deposit and were detected at much higher concentrations than in whole rock. Arsenic and Te are known to be in solid solution with pyrite and can directly substitute for S (Gao et al., 2015). Gold has similar characteristics to As and Te and will partition into pyrite the same way (Reich et al., 2005; Large et al., 2009). This could explain why similar spatial distribution trends are observed between these three elements. The positively correlated relationship observed between these elements in pyrite suggests that their availability plays a large role in trace element compositions of pyrite.

The metal inventory of gold deposits has been characterized as being enriched primarily in Au and Ag (Au > Ag ≅ 5) with variable enrichments of rare and semi-metals (As, Sb, Te, Bi, W and Mo) and low concentrations of transition and base metals (Cu, Pb, Zn, Ni and Co; McCuaig and Kerrich, 1998; Kerrich et al., 2000). Hemlo pyrite mainly displays enrichment and spatial variations in Au, Ag, As, Sb, Te, Bi, W and Mo. While base and transition metals are reported to be present in pyrite at Hemlo they do not display spatial variations throughout the district. This suggests that the composition of hydrothermal fluids and elemental availability play a key role in pyrite compositions at Hemlo. Decreasing dispersion halos of key trace elements in pyrite around Hemlo could suggest a lateral out-flow of fluids from the main body of the Hemlo deposit. Elements such as Au, Ag, Te, Bi, As, Sb, Te, W and Mo would be enriched proximal to zones of intense alteration (i.e., the potassic core of the Hemlo deposit), as this is where the greatest fluid flux would be occurring (McCuiag and Kerrich, 1998).

6.4 Regional scale application of mineral chemistry

Mineral chemistry from the Hemlo area was plotted spatially with data from the Heron Bay area to evaluate the effectiveness of mineral chemistry as an exploration tool on a regional scale. Heron Bay is located on the western edge of the Hemlo greenstone belt on the shore of Lake Superior, roughly 40 km from the Hemlo deposit (Fig. 2.3). The Heron Bay area has been explored for gold, but to date no significant economic discoveries have been made (Muir, 1997). The style of mineralization at Heron Bay is different from Hemlo in that it is hosted within quartz +/- carbonate veins and is more sporadic. Epidote, chlorite and pyrite mineral chemistry were reported by Fay (2017), who concluded that the mineral chemistry was not effective for targeting mineralization in the Heron Bay area. However this allows for a regional comparison between Hemlo and Heron Bay data, to observe if a large well-endowed deposit can be differentiated from a small, weakly mineralized area on the greenstone belt-scale.

Whole rock Au data highlights the Hemlo deposit on a regional scale as it is easily distinguished from the Heron Bay area (Fig. 6.65). As Heron Bay is similar to background Au concentrations in the Hemlo district. Only the C-zone of the deposit, where the majority of the deposit samples are from, contains Au grades of any significance (Fig. 6.65). Whole rock K_2O was plotted to highlight differences in alteration style between the two areas (Fig. 6.66). The main body of Au mineralization at the Hemlo deposit is intimately associated with potassic alteration, whereas the Heron Bay region displays low levels of K_2O similarl to what is observed in the Hemlo district (Fig. 6.66). Whole rock Au and K_2O geochemistry can clearly distinguish between the Hemlo deposit and Heron Bay on a regional scale.

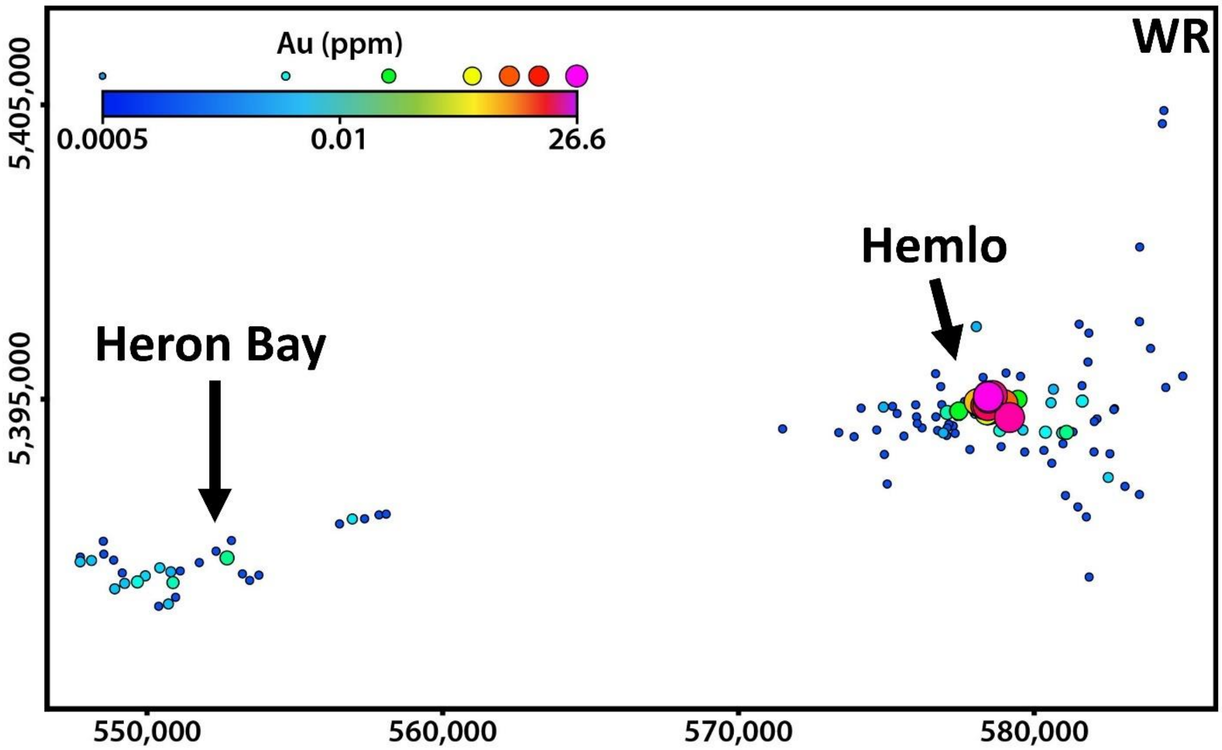

Figure 6.65: Ranked variable spatial distribution plot of whole rock (WR) Au from the Heron Bay and Hemlo area. Hemlo deposit data from Gorner (in prep), Heron Bay data from Fay (2017).

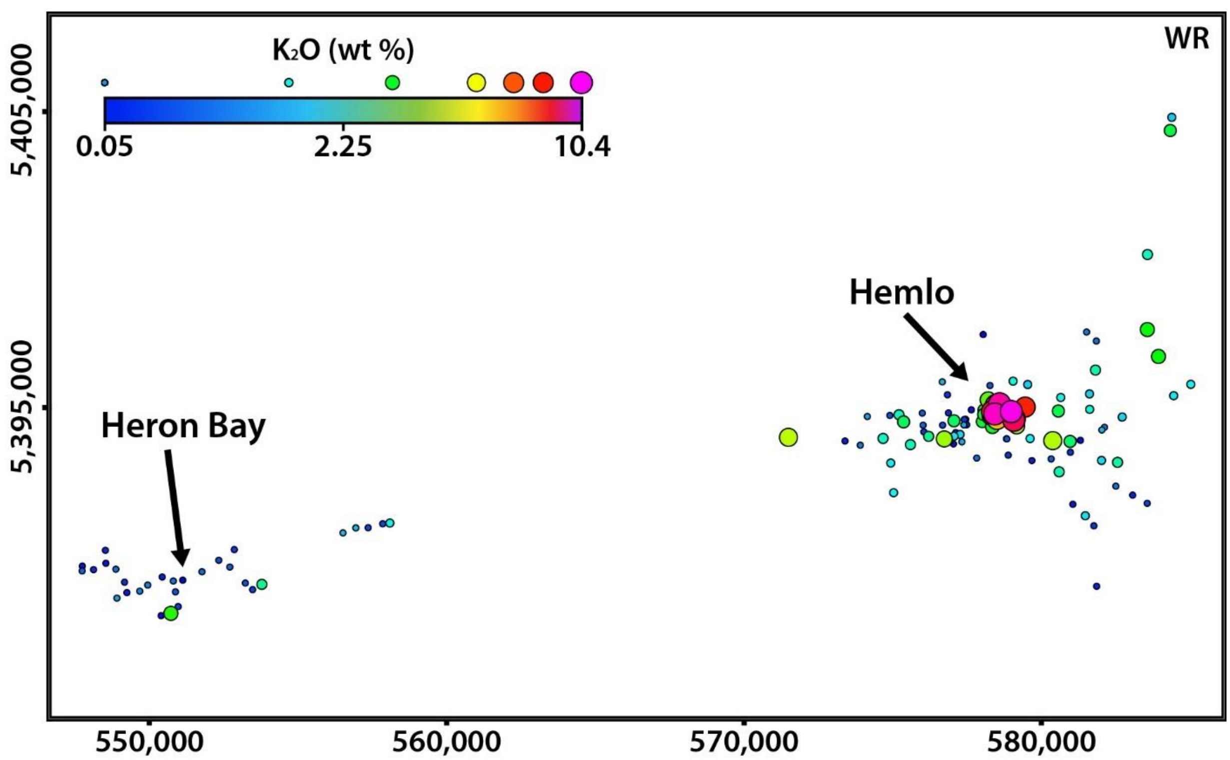

Figure 6.66: Ranked variable spatial distribution plot of whole rock (WR) K_2O from the Heron Bay and Hemlo area. Hemlo deposit data from Gorner (in prep), Heron Bay data from Fay (2017).

Key elements for epidote, pyrite and chlorite that were found to be effective in highlighting the Hemlo deposit were plotted with the Heron Bay data using the means for each sample (Figs. 6.67 to 6.72).

The Hemlo deposit consistently displays strongly anomalous levels of As and Sb in epidote, defining a broader anomaly surrounding the deposit than what is observed with Au in whole rock (Figs. 6.65, 6.67 and 6.68). The Heron Bay area only displays moderate to low As and Sb concentrations, with no clear anomaly (Figs. 6.67 and 6.68).

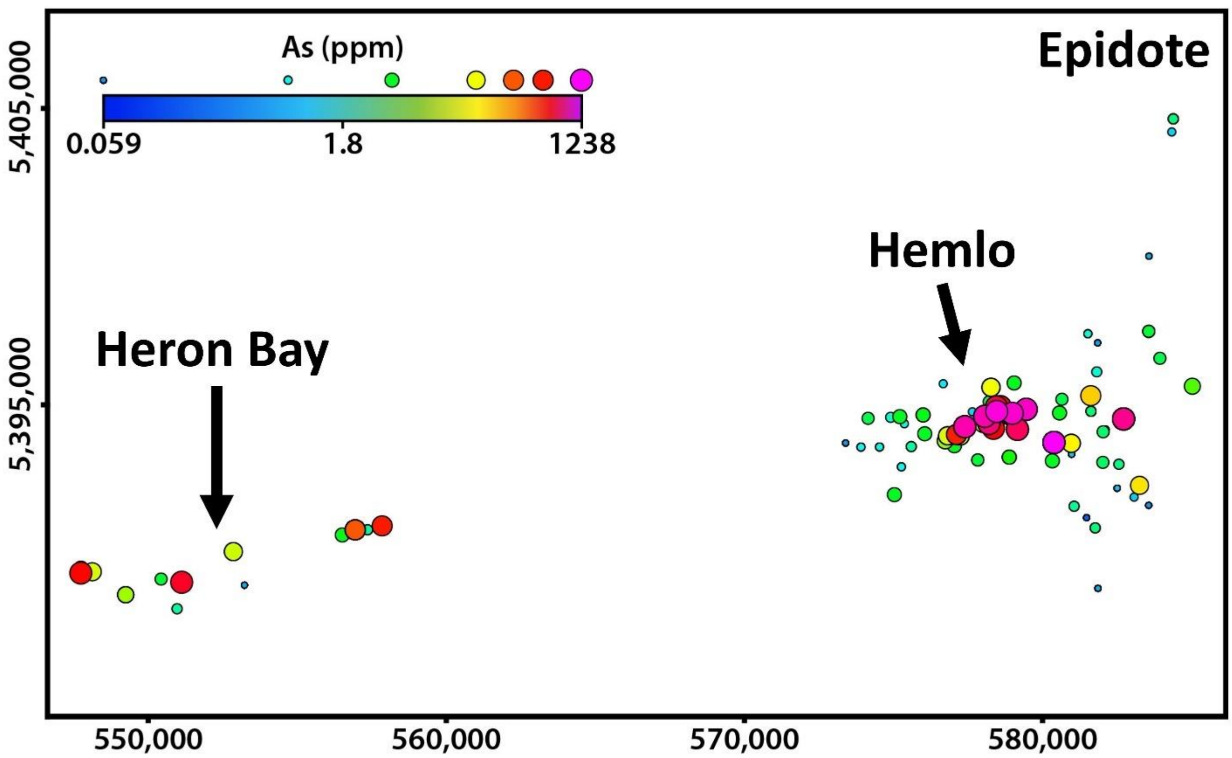

Figure 6.67: Ranked variable spatial distribution plot of mean epidote As content from the Heron Bay and Hemlo area. Hemlo deposit data from Gorner (in prep), Heron Bay data from Fay (2017).

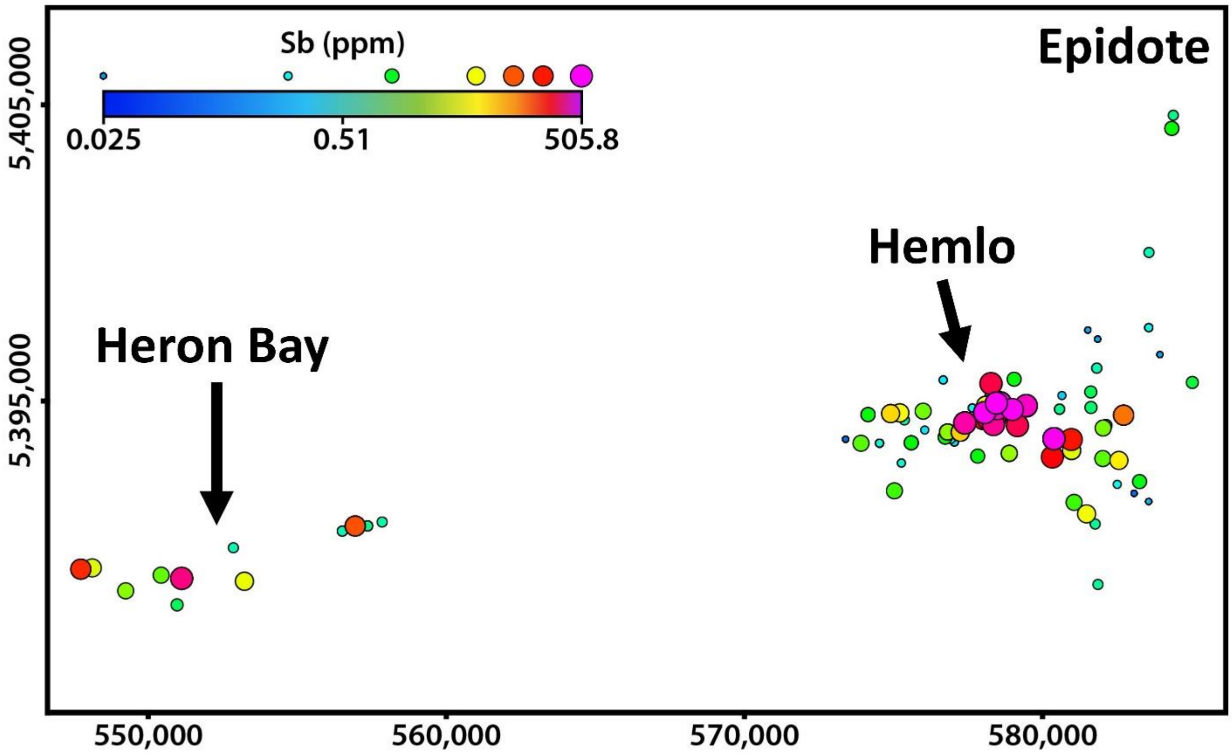

Figure 6.68: Ranked variable spatial distribution plot of mean epidote Sb content from the Heron Bay and Hemlo area. Hemlo deposit data from Gorner (in prep), Heron Bay data from Fay (2017).

The Hemlo deposit was distinguishable using Ti/Sr and V/Co ratios in chlorite, as they display elevated levels within the C-zone area (Figs. 6.69 and 6.70). However, even though Ti/Sr is useful within the Hemlo district, the Heron Bay area also displays elevated Ti/Sr (Fig. 6.69). Metamorphic chlorite from West Scotland and the Shebandowan greenstone belt also displayed high Ti/Sr similar to Heron Bay (Fig. 6.46). This could indicate that high Ti/Sr observed in the Heron Bay region could be attributed more to metamorphic processes rather than hydrothermal. The V/Co values can distinguish the Hemlo deposit on a regional scale, as V/Co in chlorite is highly elevated within the C-zone of the Hemlo deposit and is low throughout the Hemlo district and Heron Bay area (Fig. 6.70).

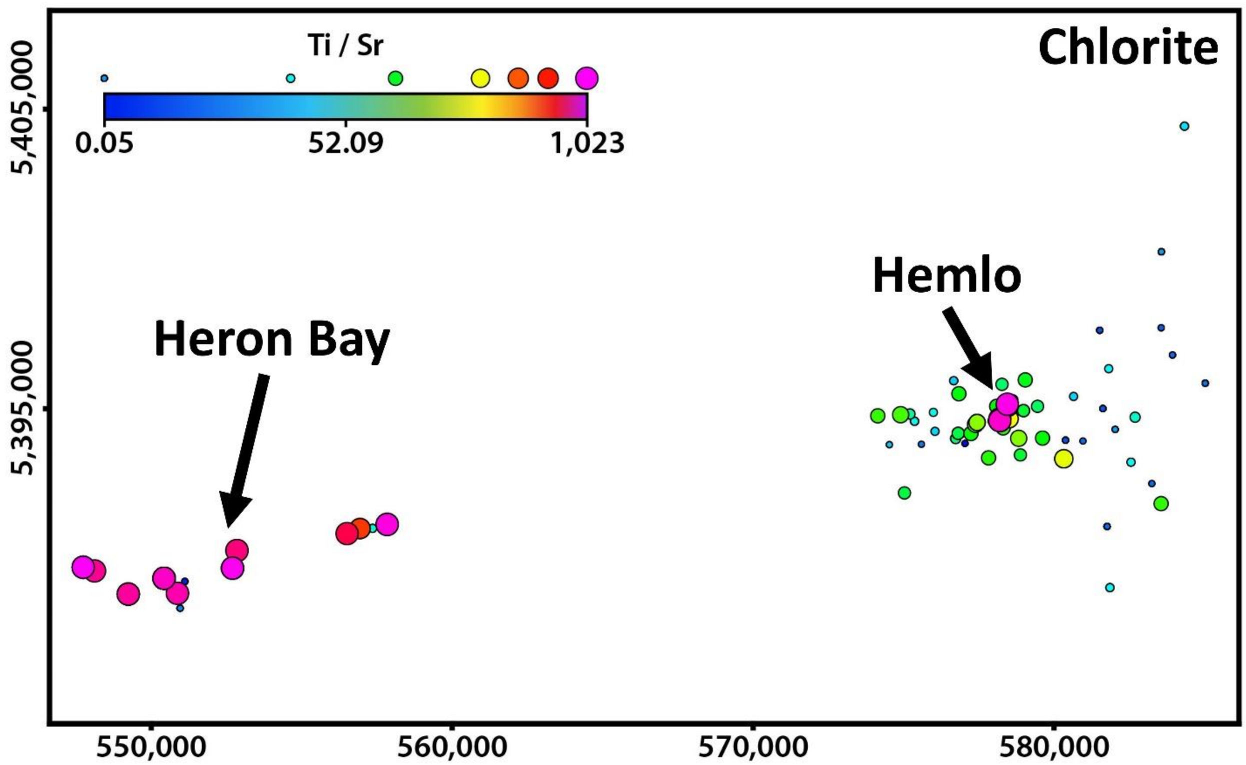

Figure 6.69: Ranked variable spatial distribution plot of mean chlorite Ti/Sr values from the Heron Bay and Hemlo area. Hemlo deposit data from Gorner (in prep), Heron Bay data from Fay (2017).

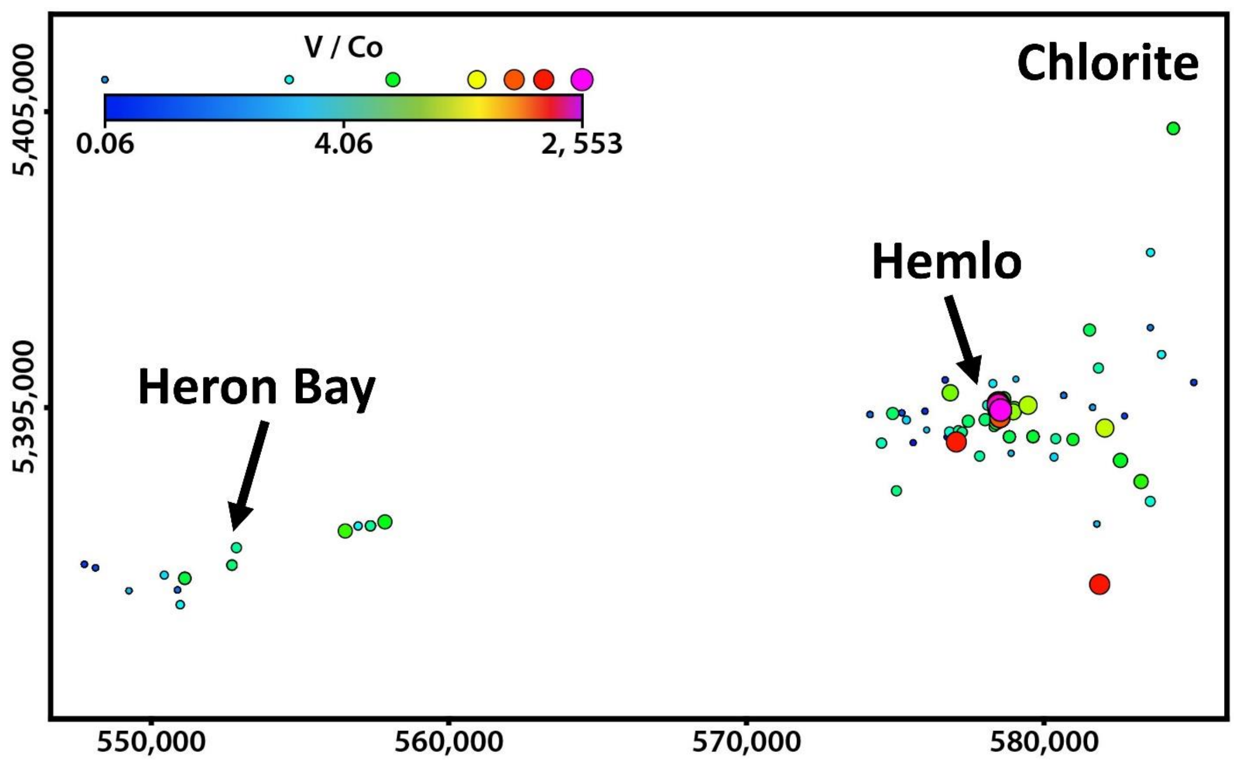

Figure 6.70: Ranked variable spatial distribution plot of mean chlorite V/Co values from the Heron Bay and Hemlo area. Hemlo deposit data from Gorner (in prep), Heron Bay data from Fay (2017).

Gold contents in pyrite worked well in the Hemlo district for highlighting the Hemlo deposit and expanding the footprint relative to the whole rock Au (Figs. 6.65 and 6.71). However, there are still low to moderately elevated Au values in pyrite throughout the Hemlo district. The Heron Bay area also displays some elevated levels of Au in pyrite (Fig. 6.71).

Low Au concentrations in pyrite were observed throughout the district, but deposit-proximal pyrite displayed elevated Au concentrations more frequently and consistently relative to distal pyrite analyses. Consequently deposit-proximal pyrite samples displayed a greater inter-sample variability than deposit distal samples. Deposit distal pyrite mainly displayed low Au-contents but could have the occasional 'high-flyer' value, which can distort the mean of the sample. In order to attempt to correct for this, the standard deviation between all spot analyses per pyrite sample was calculated for the Hemlo deposit, district and the Heron Bay area. The Hemlo deposit subsequentlybecomes much more well defined, and there is a clearer contrast between the regional background and the deposit (Fig. 6.72). In addition, the Heron Bay area now appears much less anomalous relative to Hemlo (Fig. 6.72). Using standard deviation allows for a better discrimination between the Hemlo deposit and the Heron Bay area and highlights the usefulness of looking at statistical parameters in data, especially with minerals such as pyrite where mineral inclusions are important.

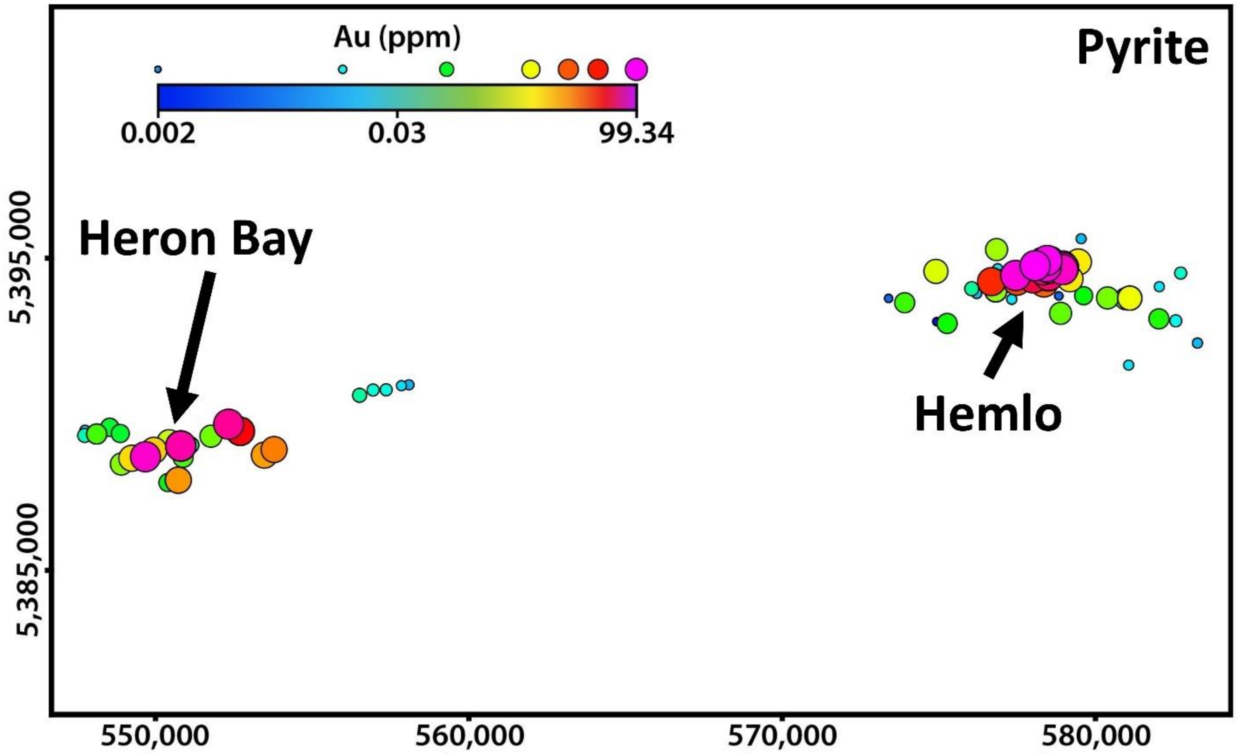

Figure 6.71: Ranked variable spatial distribution plot of mean pyrite Au concentrations from the Heron Bay and Hemlo area. Hemlo deposit data from Gorner (in prep), Heron Bay data from Fay (2017).

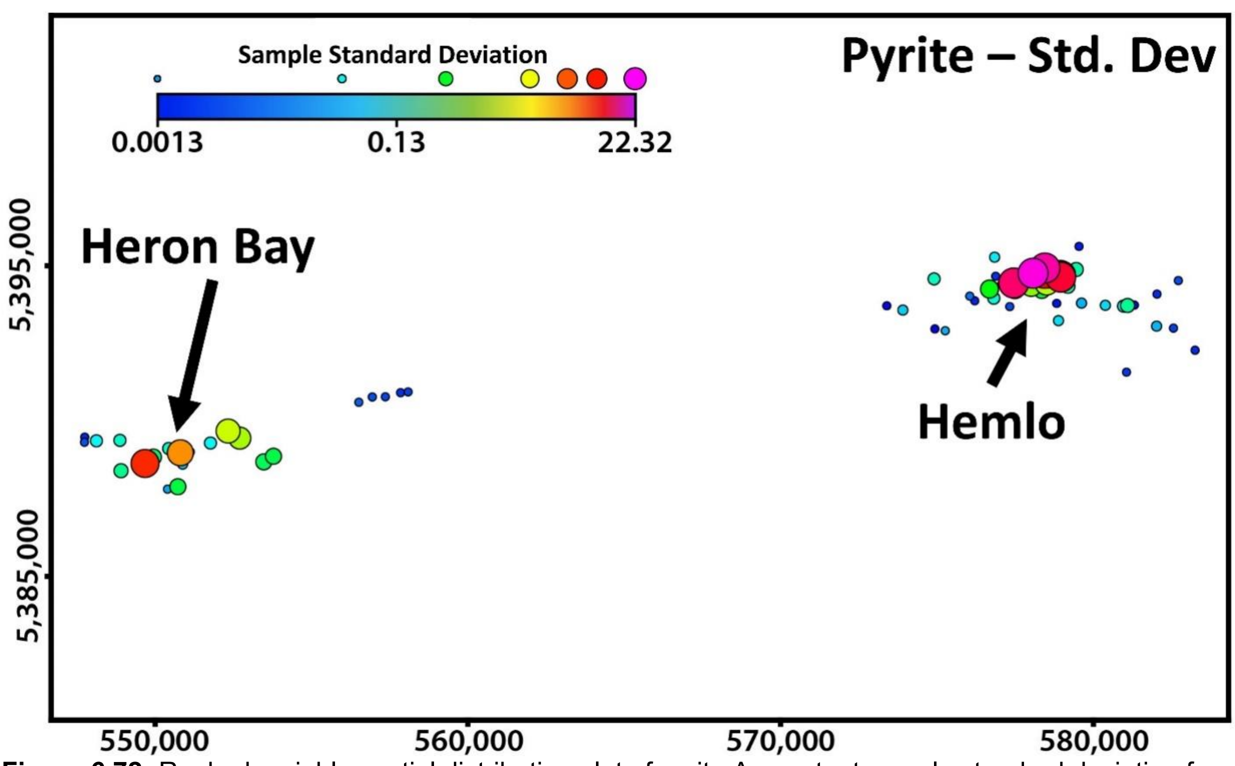

Figure 6.72: Ranked variable spatial distribution plot of pyrite Au content sample standard deviation from the Heron Bay and Hemlo area. Hemlo deposit data from Gorner (in prep), Heron Bay data from Fay (2017).

6.5 Summary of key findings

Whole rock geochemistry was used to define the footprint of the Hemlo Au deposit. Gold mineralization was found to be associated with potassic alteration, with a surrounding halo of sodic alteration that extends from the western edge of the deposit. The Hemlo district displayed background concentrations of As, Sb, Hg, Ag, Te, W, Mo and Ba relative to the elevated concentrations observed within the deposit.

Epidote mineral chemistry proved to be a useful tool in highlighting the Hemlo deposit as As and Sb both displayed elevated concentrations within and proximal to the deposit. Arsenic and Sb in epidote can be measured at much higher concentrations relative to whole rock and can expand the footprint of the deposit by up to 2.5 km along strike. The Hemlo deposit can also be differentiated from the Heron Bay area on a regional scale using As and Sb concentrations in epidote. The district intrusions do not create false positives for mineralization as they display low concentrations of As and Sb. Due to these factors As and Sb proved to be strong pathfinders for mineralization on a district and regional scale.

Chlorite mineral chemistry also demonstrated variability surrounding the Hemlo deposit. Within the Hemlo district, chlorite displayed elevated values of Ti/Sr outside the zone of pervasive alteration and was able to expand the footprint of the deposit by up to 1.5 km further than whole rock geochemistry. Titanium/Sr was not able to discriminate the Hemlo deposit on a regional scale, as similar Ti/Sr ratios were also observed in Heron Bay chlorite. The V/Co ratio was found to work well on a regional scale for discriminating the Hemlo deposit from Heron Bay but was not able to expand the footprint of the Hemlo deposit. Like epidote, chlorite from the intrusions was not found to create false positives for mineralization, as intrusion chlorite can be discriminated from deposit chlorite based on the Mg, Ti/Sr and V/Co values.

Pyrite mineral chemistry displayed elevated concentrations for multiple elements (Au, Ag, As, Sb, Te, Bi, W and Mo) proximal to the zone of alteration surrounding the deposit. Gold, As and Te were found to be the strongest pathfinder elements in pyrite in the Hemlo district and were detected at much higher concentrations in pyrite relative to traditional whole rock geochemistry. Gold proved to be the best pathfinder element in pyrite and was able to expand the footprint of the deposit up to 2.5 km away from the main body of mineralization. Gold in pyrite also successfully discriminated the Hemlo deposit from the Heron Bay area, especially through analysis of sample standard deviation, which highlighted the inter-sample variability displayed by deposit pyrite.

Chapter 7: Conclusion

This study evaluates the use of mineral chemistry and hyperspectral techniques as tools for vectoring to mineralization within the Hemlo district and builds upon previous research examining chemical and spectral variations of minerals surrounding porphyry deposits (Cooke et al., 2014; Wilkinson et al., 2015; Neal et al., 2018). The study addressed two key questions, (1) can mineral chemistry significantly extend the geochemical footprint of the Hemlo Au deposit and (2) are there indicators of deposit fertility? A secondary objective looked at assessing the potential of syn- to post-mineralization intrusions surrounding the deposit to create false positives for mineralization. Hyperspectral techniques utilising Corescan and Terraspec were employed in order to investigate variations in mineral compositions.

Trace element mineral chemistry proved to be a powerful tool for vectoring to and enhancing the footprint of the Hemlo deposit. Arsenic and Sb in epidote displayed elevated concentrations within and proximal to the Hemlo deposit. In epidote, As and Sb were also able to be detected at higher concentrations than with traditional whole rock geochemistry expanding the footprint of the deposit by up to 2 km along strike. The Hemlo deposit could also be discriminated on a regional scale from the Heron Bay area using As and Sb. Epidote occurring in the distal intrusions from the deposit was found to contain high Fe/Al ratios and high Sr contents and low As and Sb concentrations, allowing for discrimination between deposit and intrusion epidote. Epidote occurring with moderate to intense hematite alteration was found to have elevated Fe/Al ratios which could reflect precipitation under oxidizing conditions. Hyperspectral data from both Corescan and Terraspec revealed variations in Fe-Al content of epidote that could be tracked using the 1550 nm absorption feature. It was also observed using Corescan and mineral chemistry that deposit epidote displayed lower Fe/Al ratios and higher 1550 nm peak positions, indicating the deposit epidote is more Al-rich. Conversely intrusion epidote displayed high Fe/Al ratios with lower 1550 nm Corescan peak positions, indicating the epidote is more Fe-rich.

Chlorite occurring in the Hemlo district and regional intrusions displayed low concentrations of Mg and low ratios of V/Co and Ti/Sr relative to chlorite from the Hemlo deposit. The deposit footprint of the Hemlo deposit could be expanded using Ti/Sr but not with V/Co which was only found to be elevated within the deposit itself. On a regional scale, Ti/Sr is ineffective in discriminating between the Hemlo deposit and the Heron Bay area as chlorite from both areas display high Ti/Sr. This could reflect the more metamorphic nature of the Heron Bay area, as metamorphic chlorite also displayed elevated Ti/Sr. Regionally, V/Co could be used discriminate the Hemlo deposit chlorite that displayed elevated V/Co values relative to Heron Bay chlorite. The relatively high V/Co of deposit chlorite likely reflects more of a hydrothermal origin, as V is enriched proximal to ore zones at the Hemlo deposit. Chlorite from within the deposit displayed elevated (>14 wt.%) Mg contents relative to the district and intrusions. It is possible that the high-Mg chlorite formed at higher temperatures or alternatively co-precipitated or was in equilibrium with pyrite, such that Fe will favourably form pyrite with less available during precipitation of chlorite. Pyrite is commonly present in association with chlorite within the Hemlo deposit and is also present within the sample analyzed from the HSZ which was the only district chlorite sample to display elevated Mg-contents. The Fe-Mg content of chlorite could be tracked using the 2250 nm Corescan spectral feature. Terraspec spectral data for chlorite did not conclusively track changes in Fe-Mg content, which could reflect issues with mineral mixtures distorting peak positions near overlapping spectral features.

Pyrite mineral chemistry displayed the most anomalism surrounding the deposit of the three of the minerals analysed. Concentrations of Au, Te, As, Ag, Bi, Sb, Mo and W all displayed anomalous enrichment within and proximal to the Hemlo deposit. Gold, Te, As, Ag and Bi all displayed elevated concentrations in pyrite relative to whole rock. The best pathfinder elements were determined to be Au, Te and As, as they were able to expand the footprint of the deposit by up to 2.5 km along strike. Pyrite chemistry displayed increased variability proximal to the deposit, with metal and metalloid contents increasing and their detection becoming more consistent. Consequently, the Hemlo deposit could be discriminated on a regional scale by spatially plotting sample standard deviation, to highlight the higher degree of inter sample variability that is displayed by deposit proximal pyrite. Increases in trace element concentrations in pyrite proximal to the deposit could reflect increasing element availability due greater degrees of hydrothermal activity.

All three minerals analysed in this study displayed chemical variations on a district and regional scale. Through comparisons of mineral and whole rock chemistry it is apparent that subtle variations in trace elements can be missed. LA-ICP-MS analysis of minerals that do incorporate key trace elements allow subtle variations to become more apparent. Individual minerals have their own chemical characteristics that contribute to the overall bulk composition of the rock and reflect the conditions that they formed in. Through mineral analysis the footprint of the Hemlo deposit could be expanded significantly and extended further than what was observed through traditional whole rock geochemistry, displaying the usefulness of mineral chemistry in targeting mineralized systems on a regional scale.

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Appendix I: Sample list

Sample[1]	Lithology[2]	Easting[3]	Northing	Elevation (m)	Transect	Epidote[4]	Chlorite	Pyrite
HM16JV002	QFM	575993	5394655	340	Easting	X	X	
HM16JV004	CLP	585026	5395627	334	Neither	X	X	
HM16JV006	BAM	582718	5394522	320	Neither	X		X
HM16JV007	BAM	582695	5394491	314	Neither	X	X	
HM16JV008	BAM	582124	5394176	314	Neither	X	X	
HM16JV009	BAM	582034	5394086	314	Neither	X	X	X
HM16JV012	MBS	581312	5393733	332	Both			X
HM16JV013	BAM	580964	5393699	315	Both	X	X	X
HM16JV014	FV	581093	5393718	320	Both			X
HM16JV015	FV	580382	5393725	325	Both	X	X	X
HM16JV019	QFM	577240	5393947	337	Easting	X	X	
HM16JV020	QFM	577263	5393932	338	Easting	X	X	
HM16JV023	BS	576734	5393781	318	Easting	X	X	
HM16JV026	FV	576678	5394247	354	Easting			X
HM16JV028	BS	576927	5393701	303	Easting	X		
HM16JV031	MBS	574933	5392966	331	Neither			X
HM16JV032	QFM	576816	5393953	345	Easting	X	X	X
HM16JV034	FV	577489	5394260	349	Both			X
HM16JV036	CLP	583938	5396569	352	Neither	X	X	
HM16JV037	CLP	583563	5397479	330	Neither	X	X	
HM16JV038	CLP	583568	5400015	343	Neither	X	X	
HM16JV039	CLP	584334	5404207	333	Neither	X	X	
HM16JV045	HFZ	578827	5393787	319	Both		X	X
HM16JV050	QFM	577060	5394393	378	Easting			X
HM16JV053	BAM	584385	5404650	324	Neither	X	X	
HM16JV060	BAM	576875	5394660	356	Easting			X

[1]All samples listed underwent whole-rock and LA-ICP-MS analysis
[2]Lithology Key: QFM – Quart feldspar metasedimentary rock, BAM – Biotite amphibole metasedimentary rock, MBS – Muscovite biotite schist, FV – Felsic metavolcanic rock, IV – Intermediate metavolcanic rock, MFV – Mafic metavolcanics rock; Intrusions: PKB – Pukaskwa Batholith, CLP – Cedar Lake Pluton, CCS – Cedar Creek Stock, BS – Botham Stock.
[3]UTM Coordinates projected in NAD 27 Zone 16
[4]X – indicates mineral present within the sample that underwent LA-ICP-MS analysis

Appendix I: Sample list

Sample[1]	Lithology[2]	Easting[3]	Northing	Elevation (m)	Transect	Epidote[4]	Chlorite	Pyrite
HM16JV062	QFM	576208	5393869	326	Easting			X
HM16JV064	MFV	576047	5394021	331	Easting	X	X	X
HM16JV068	QFM	575595	5393589	344	Easting	X	X	
HM16JV069	BAM	573395	5393710	300	Easting			X
HM16JV073	QFM	574146	5394540	299	Easting	X	X	
HM16JV076	FV	573909	5393571	319	Easting	X		X
HM16JV077	BAM	581520	5397396	296	Northing	X	X	
HM16JV082	BS	571494	5393836	312	Neither	X	X	
HM16JV083	BS	574677	5393799	346	Easting			
HM16JV086	BAM	574905	5394576	358	Easting	X	X	X
HM16JV087	QFM	575213	5394599	364	Easting	X	X	
HM16JV088	QFM	575367	5394358	351	Easting	X	X	
HM16JV092	BAM	584448	5395243	289	Neither	X		X
HM16JV098	QFM	577327	5393684	309	Easting			X
HM16JV099	FV	577445	5394316	353	Both	X	X	
HM16JV102	QFM	577827	5393136	325	Northing	X	X	
HM16JV104	MFV	578884	5393232	305	Northing	X	X	X
HM16JV106	MFV	577043	5393615	297	Easting	X		
HM16JV107	QFM	578098	5394855	355	Both	X	X	
HM16JV111	QFM	576841	5395275	331	Neither		X	X
HM16JV112	QFM	576669	5395710	326	Neither	X	X	
HM16JV114	QFM	577115	5393997	327	Easting	X	X	
HM16JV115	FV	577061	5393873	339	Easting			X
HM16JV116	QFM	578323	5394920	353	Both		X	
HM16JV118	BAM	578271	5395588	342	Northing	X	X	
HM16JV123	FV	577395	5394257	348	Both	X	X	

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[4]X – indicates mineral present within the sample that underwent LA-ICP-MS analysis

Appendix I: Sample list

Sample[1]	Lithology[2]	Easting[3]	Northing	Elevation (m)	Transect	Epidote[4]	Chlorite	Pyrite
HM16JV126	BAM	579681	5393050	339	Northing			X
HM16JV130	BAM	581848	5397090	327	Northing	X		
HM16JV132	CCS	581819	5396110	374	Northing	X	X	
HM16JV133	PKB	575031	5391965	331	Neither	X	X	
HM16JV136	CCS	581617	5395305	345	Northing	X		
HM16JV138	BAM	582560	5392992	309	Easting	X	X	X
HM16JV139	BAM	582023	5393055	337	Easting	X		X
HM16JV141	QFM	580328	5393106	325	Northing	X	X	
HM16JV143	QFM	580976	5393329	332	Both	X	X	
HM16JV147	QFM	579621	5393796	309	Both		X	X
HM16JV150	MFV	583070	5391882	339	Easting	X		X
HM16JV151	MFV	583560	5391606	337	Easting	X	X	
HM16JV152	BAM	582504	5392185	344	Easting	X		
HM16JV153	QFM	578332	5394749	356	Both			X
HM16JV154	QFM	577644	5394764	371	Both	X	X	
HM16JV155	IV	577408	5394440	364	Both			X
HM16JV157	FV	577453	5394444	370	Both			X
HM16JV159	PKB	581859	5388803	316	Northing	X	X	
HM16JV161	PKB	581766	5390845	349	Northing	X	X	
HM16JV162	PKB	581477	5391187	345	Northing	X	X	
HM16JV164	MFV	581058	5391574	356	Northing	X		X
HM16JV171	FV	578211	5395100	-172	Northing	X		X
HM16JV180	MFV	578044	5397309	335	Northing			
HM16JV184	CCS	579046	5395736	337	Northing	X	X	
HM16JV185	BAM	579540	5395620	339	Northing			X
HM16JV191	CCS	581625	5394782	321	Northing	X	X	

[1]All samples listed underwent whole-rock and LA-ICP-MS analysis
[2]Lithology Key: QFM – Quart feldspar metasedimentary rock, BAM – Biotite amphibole metasedimentary rock, MBS – Muscovite biotite schist, FV – Felsic metavolcanic rock, IV – Intermediate metavolcanic rock, MFV – Mafic metavolcanics rock; Intrusions: PKB – Pukaskwa Batholith, CLP – Cedar Lake Pluton, CCS – Cedar Creek Stock, BS – Botham Stock.
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Appendix I: Sample list

Sample[1]	Lithology[2]	Easting[3]	Northing	Elevation (m)	Transect	Epidote[4]	Chlorite	Pyrite
HM16JV192	QFM	580569	5394724	315	Northing	X		
HM16JV193	CCS	580651	5395184	320	Northing	X	X	
HM16JV197	FV	578106	5394879	-515	Both			X
HM16JV199	FV	578071	5394757	-580	Both			X
HM16JV203	BAM	578059	5394608	-735	Both	X		X
HM16JV208	BAM	578012	5394367	-910	Both	X	X	X

[1]All samples listed underwent whole-rock and LA-ICP-MS analysis
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Appendix II: Hemlo district
whole rock geochemistry

Sample	SiO2	Al2O3	Fe2O3	CaO	MgO	Na2O	K2O	Cr2O3	TiO2	MnO	SrO	P2O5	BaO	LOI	Total	Ba	Ce	Cr	Cs	Dy	Er	Eu	Ga	Gd	Hf	Ho
HM16JV001	63.2	15.45	5.29	5.38	1.69	3.19	1.49	0.01	0.72	0.09	0.05	0.14	0.04	3.16	96.74	328	32.3	40	1.7	2.36	1.24	0.9	19.1	2.55	3.7	0.41
HM16JV002	71.2	15.45	2.3	3.49	0.86	4.57	1.5	0.005	0.28	0.04	0.05	0.07	0.03	0.93	99.845	255	19.2	30	0.82	0.7	0.39	0.51	18.5	1.08	2.6	0.13
HM16JV004	64.8	15.95	3.98	3.59	1.91	5.08	2.45	0.01	0.5	0.06	0.16	0.25	0.15	0.71	98.89	1350	96.4	50	1.37	2.44	0.88	1.89	22	4.53	4.6	0.38
HM16JV006	62	15.8	5.24	4.36	3.24	4.33	2.3	0.02	0.57	0.08	0.1	0.27	0.07	0.83	98.38	653	84.1	170	3.42	2.64	1.2	1.64	20.6	4.24	4.1	0.45
HM16JV007	65.4	15.35	3.53	4.1	2.1	4.58	1.98	0.01	0.36	0.05	0.13	0.18	0.09	1.32	97.86	751	56.8	90	3.06	1.53	0.71	1.17	18.6	2.6	3.1	0.27
HM16JV008	69.3	14.4	3.64	3.75	2.38	4.2	1.8	0.01	0.41	0.05	0.13	0.22	0.04	0.52	100.33	402	76.9	100	2.76	1.85	0.83	1.32	18.1	3.51	3.3	0.32
HM16JV009	47.6	11.15	12.3	9.43	13.65	1.35	2.26	0.11	0.84	0.22	0.04	0.18	0.07	1.33	99.2	615	19.2	810	2.42	2.92	1.72	1	13.2	3.02	1.4	0.6
HM16JV012	45.6	11.5	10.9	15.15	10.8	0.7	0.37	0.11	0.86	0.23	0.08	0.54	0.005	2.14	96.845	13.6	111.5	800	0.47	5.5	2.19	3.25	23.9	9.77	5.2	0.91
HM16JV013	57.3	16.9	6.18	6.65	2.09	3.04	3.17	0.005	0.62	0.09	0.2	0.39	0.16	3.02	96.795	1470	169	30	2.22	3.62	1.53	3.32	23.7	7.07	4.4	0.58
HM16JV014	70.4	15.4	1.69	2.15	0.87	7.64	1.55	0.005	0.29	0.06	0.04	0.11	0.07	0.92	100.275	636	67.6	20	0.44	1.55	0.53	1.27	20.5	2.93	3.4	0.21
HM16JV015	58	15.1	6.36	5.01	2.51	3.13	4.87	0.03	0.54	0.09	0.07	0.16	0.09	3.96	95.96	801	57.5	210	2.73	2.87	1.45	1.42	19.7	4.07	3.3	0.52
HM16JV019	68.8	15.35	3.66	2.43	1.39	4.34	2.19	0.01	0.5	0.05	0.04	0.11	0.04	2.26	98.91	332	26.1	40	1.54	1.39	0.78	0.66	17.3	1.73	2.9	0.28
HM16JV020	71.6	15.9	1.68	0.91	0.49	6.78	2.36	0.005	0.17	0.03	0.16	0.07	0.17	0.61	100.325	1315	38.3	10	0.92	1.04	0.4	0.83	18.5	2.05	2.6	0.17
HM16JV023	62.6	18.35	2.25	0.9	0.9	7.09	4.66	0.005	0.34	0.03	0.06	0.19	0.14	0.71	97.515	1230	104	30	0.35	2.22	0.94	1.74	19.2	4.4	4.7	0.37
HM16JV026	67.4	15.75	4.18	2.92	1.54	5.41	1.38	0.01	0.46	0.05	0.04	0.1	0.04	2.01	99.28	334	29.7	40	1.75	1.32	0.63	0.65	18.7	1.72	3	0.23
HM16JV028	66.2	14.1	3.8	4.88	2.3	4.49	2.23	0.01	0.35	0.06	0.25	0.33	0.17	2.56	99.17	1550	213	80	0.45	3.03	0.99	3.41	22.1	7.71	3.5	0.47
HM16JV031	44.8	13.35	23.5	1.84	1.89	2.54	2.21	0.01	0.43	0.07	0.03	0.15	0.02	7.46	90.84	218	27.8	40	5.93	1.36	0.63	1.2	16	1.98	2.8	0.25
HM16JV034	75.9	10.75	2.61	3.88	1.63	1.2	0.99	0.005	0.21	0.05	0.01	0.05	0.03	2.2	97.315	291	17.3	30	0.8	0.92	0.46	0.51	12.4	1.2	2.5	0.17
HM16JV036	61	14.7	5.6	4.18	3.49	4.64	3.95	0.01	0.67	0.09	0.09	0.44	0.14	0.96	99	1200	88.1	70	0.81	3.09	1.47	2.01	18.8	5.43	4.4	0.58
HM16JV037	72.5	13.6	1.78	1.56	0.28	4.44	3.94	0.005	0.16	0.02	0.12	0.05	0.14	0.44	98.595	1325	31.5	30	1.27	0.89	0.51	0.59	17.1	1.5	2.5	0.19
HM16JV037	64.7	15.8	3.73	2.66	1.75	5.23	2.81	0.01	0.5	0.05	0.13	0.22	0.15	1.16	97.74	1315	93	40	1.19	2.3	0.98	1.76	21.7	4.42	4.2	0.36
HM16JV038	67.4	15.55	2.63	2.05	1.7	6.2	2.77	0.005	0.46	0.04	0.07	0.21	0.15	1.56	99.235	1265	96	30	0.43	2.15	0.86	1.75	18	4.47	4.3	0.32
HM16JV039	73.5	15.1	1.78	1.06	0.42	5.21	3.64	0.005	0.23	0.03	0.05	0.07	0.13	0.62	101.225	1100	35.6	10	3.27	1.19	0.42	0.71	19	1.76	2.7	0.17
HM16JV045	49	16.6	6.38	1.14	12.75	5.57	0.1	0.01	0.49	0.08	0.03	0.23	0.01	5.9	92.39	89.7	102.5	30	1.77	2.76	1.27	2.18	22.8	5.23	4.7	0.5
HM16JV046	43	12.65	12.6	11.2	8.49	2.63	1.36	0.09	0.92	0.22	0.07	0.1	0.04	5.65	93.37	364	11.3	640	4.18	4.39	2.68	0.98	17.8	3.47	2.1	0.93
HM16JV050	56.1	21.6	4.71	2.73	2.38	5.61	3.35	0.005	0.45	0.06	0.05	0.16	0.14	2.51	97.345	1265	30.9	30	1.52	1.86	0.91	1.43	23.1	2.57	3	0.34
HM16JV053	70.5	15.65	2.45	2.23	0.91	5.38	2.32	0.005	0.29	0.03	0.08	0.08	0.06	0.33	99.985	550	46.3	20	1.78	0.75	0.27	0.78	19.7	1.44	2.7	0.11
HM16JV060	63.9	15.15	3.68	3.32	2.12	7.25	0.99	0.01	0.4	0.06	0.08	0.15	0.04	2.7	97.15	319	31.2	60	2.12	1.23	0.59	0.91	18	2.05	2.2	0.21
HM16JV062	73.3	13.55	2.56	1.36	1.17	2.89	3.02	0.005	0.34	0.03	0.03	0.08	0.06	1.73	98.395	555	28.2	30	1.25	1.42	0.84	0.63	15.8	1.65	3.6	0.28
HM16JV064	60.2	14.35	7.04	3.29	3.58	4.48	1.18	0.01	0.87	0.13	0.04	0.12	0.04	3.49	95.33	347	22.6	70	0.55	2.99	1.86	0.79	14.4	2.94	2.5	0.66
HM16JV068	69.3	15.55	1.96	3.21	0.58	4.76	2.77	0.005	0.33	0.03	0.04	0.06	0.13	2.37	98.725	1140	11.4	20	1.74	0.78	0.35	0.45	17.6	0.98	2.7	0.14
HM16JV069	50.1	15.55	9.7	11.25	6.59	3.47	0.88	0.01	0.64	0.26	0.04	0.06	0.04	2.03	98.59	342	9.3	90	1.12	3.75	2.7	0.74	15.4	2.93	1.2	0.83
HM16JV073	64.8	15.75	5.2	2.57	2.38	5.16	2.14	0.01	0.81	0.1	0.04	0.1	0.05	1.96	99.11	426	19.2	80	1.05	2.05	1.27	0.72	14.8	2.36	2.5	0.43
HM16JV076	66.5	15.5	3.32	2.99	1.53	5.43	1.76	0.005	0.48	0.05	0.12	0.19	0.1	1.46	97.975	926	62.7	10	1.56	1.3	0.53	1.26	24	2.85	3.9	0.2
HM16JV077	65.8	16	4.26	3.87	2.31	4.83	1.72	0.01	0.45	0.06	0.1	0.16	0.06	0.56	99.63	571	43.5	100	2.33	1.58	0.72	1.07	19.7	2.47	2.7	0.26
HM16JV082	65.4	15.6	3.47	2.22	1.34	4.42	5.01	0.005	0.49	0.05	0.11	0.2	0.12	1.06	98.435	1130	69.4	20	0.58	1.53	0.59	1.23	23.9	2.82	4.1	0.24
HM16JV083	60.3	16.05	6.23	3.85	2.21	5.28	2.62	0.005	0.68	0.1	0.2	0.41	0.2	1.91	98.135	1745	102.5	30	1.99	3.93	1.63	2.31	22.5	6.44	4.6	0.66
HM16JV086	60.8	15.85	7.07	6.03	2.93	2.48	1.37	0.01	0.67	0.09	0.06	0.14	0.03	2.01	97.53	262	36.9	40	1.1	2.23	1.23	0.97	19.2	2.83	3.7	0.46
HM16JV087	73.9	13.85	1.99	1.46	0.93	5.01	2.79	0.005	0.26	0.03	0.03	0.07	0.05	0.94	100.375	404	11.4	30	0.62	0.68	0.36	0.39	12.2	1.03	2.7	0.14
HM16JV088	65.8	13.55	5.08	4.45	2.15	3.1	3.41	0.01	0.59	0.06	0.1	0.13	0.07	2.78	98.5	571	29.3	50	0.35	1.95	1.24	0.78	16.1	2.33	3.6	0.4
HM16JV092	56.8	19.85	5.18	4.85	2.78	5.27	2.38	0.01	0.57	0.06	0.15	0.25	0.16	1.19	98.31	1400	111.5	60	3.17	2.65	1.19	1.85	31.6	4.47	6	0.44
HM16JV098	65.7	14.95	3.87	3.31	2.59	4.01	2.14	0.02	0.44	0.06	0.09	0.17	0.1	2.6	97.45	833	73.5	170	1.95	1.71	0.67	1.27	21.7	3.33	4.8	0.27
HM16JV099	59.8	18.4	3.23	4.74	0.93	8.97	0.06	0.005	0.77	0.03	0.08	0.84	0.005	1.58	97.86	16.9	352	30	0.09	6.14	1.94	6.53	29.1	15.6	6.3	0.91
HM16JV102	65.8	14.45	3.85	4.26	1.97	4.03	1.64	0.01	0.5	0.06	0.04	0.11	0.05	1.74	96.77	446	23.6	100	0.78	1.72	0.91	0.72	18.9	1.94	2.8	0.32
HM16JV104	55.1	15.1	8.96	8.57	4.38	3.77	1.11	0.04	0.6	0.28	0.06	0.18	0.04	2	98.19	324	44	290	1.54	2.67	1.51	1.19	17.6	3.18	2.4	0.51
HM16JV106	48.7	13.4	14.8	9.31	6.51	2.8	0.56	0.01	0.83	0.24	0.02	0.07	0.01	0.78	97.26	64.4	9.4	100	0.18	3.35	2.32	0.8	14.8	2.89	1.6	0.74
HM16JV107	64.4	16.1	4.43	3.31	2.76	6.13	1.88	0.01	0.47	0.07	0.08	0.18	0.07	1.28	99.89	576	58.5	90	0.56	1.99	0.98	1.41	21.9	3.22	3.6	0.37
HM16JV111	68.1	14.75	3.06	2.37	1.17	6.13	1.09	0.01	0.36	0.04	0.04	0.12	0.02	1.56	97.26	197	37.8	30	0.35	1.6	0.75	0.82	18.7	2.33	3.4	0.25
HM16JV112	69.1	15.9	3.12	2.7	1.55	5.46	2.29	0.01	0.33	0.04	0.12	0.11	0.14	0.64	100.87	1190	46.4	70	2.01	0.94	0.36	0.91	24.6	2.34	3.6	0.15
HM16JV114	70.8	14.8	2.09	3.01	0.82	6.77	0.89	0.005	0.26	0.03	0.02	0.06	0.02	2.3	99.575	149	12.7	20	0.31	0.7	0.37	0.35	15.8	0.78	2.2	0.14
HM16JV115	76.5	12	2.36	2.19	1.38	2.27	2.39	0.005	0.19	0.04	0.04	0.09	0.05	1.65	99.505	410	26.1	20	1.2	1.06	0.43	0.48	15.7	1.52	3	0.19
HM16JV116	65.2	16.45	4.4	3.2	2.38	4.4	2.41	0.02	0.45	0.08	0.08	0.2	0.07	1.41	99.34	591	82.9	140	1.99	2.52	1.26	1.54	21.1	4.2	3.8	0.45
HM16JV118	64.7	14.65	4.76	3.83	2.82	4.97	1.43	0.02	0.52	0.07	0.08	0.19	0.06	1.34	98.1	557	63.8	110	0.84	2.05	0.96	1.39	20.1	3.41	3.3	0.34
HM16JV123	66	15.85	3.18	3.64	2.16	3.28	2.11	0.005	0.37	0.05	0.03	0.09	0.28	2.84	97.045	2590	25.7	30	1.44	1.02	0.55	0.56	19.5	1.5	2.7	0.2
HM16JV126	67.4	14.9	4.99	4.17	3.04	5.31	0.93	0.01	0.45	0.11	0.04	0.12	0.04	0.45	101.51	351	21.8	100	1.16	1.79	1.01	0.8	20.4	2.23	2.9	0.35
HM16JV130	66.3	15.65	4.1	3.35	2.32	4.78	1.68	0.01	0.46	0.05	0.13	0.25	0.08	1.04	99.16	696	66.5	70	0.97	2.18	0.94	1.43	21.4	3.86	5.5	0.34
HM16JV132	71.3	15.5	2.2	2.04	0.59	5.48	2.92	0.005	0.32	0.03	0.11	0.11	0.15	0.53	100.755	1405	37.4	20	1.49	0.9	0.29	0.77	22.3	1.93	3.3	0.12

All major oxides, major elements, C and S are in wt. %
All other trace elements in ppm.

Appendix II: Hemlo district
whole rock geochemistry

Sample	SiO2	Al2O3	Fe2O3	CaO	MgO	Na2O	K2O	Cr2O3	TiO2	MnO	SrO	P2O5	BaO	LOI	Total	Ba	Ce	Cr	Cs	Dy	Er	Eu	Ga	Gd	Hf	Ho
HM16JV133	69.3	15.55	2.46	2.11	0.92	5.66	2.42	0.005	0.34	0.03	0.1	0.11	0.1	0.72	99.105	972	32	20	1.16	0.82	0.27	0.68	23.5	1.71	3.5	0.11
HM16JV136	70.2	15.45	2.31	2.15	0.73	6.07	2.33	0.005	0.34	0.02	0.09	0.12	0.09	0.76	99.905	810	52.7	20	0.48	0.92	0.35	0.98	22.8	2.29	3.7	0.13
HM16JV138	63	15.45	5.76	2.72	3	3.3	2.91	0.04	0.55	0.08	0.06	0.15	0.1	2.11	97.12	886	58.9	260	3.06	2.36	1.29	1.33	19.1	3.38	3.2	0.45
HM16JV139	62.9	14.75	4.42	5.33	2.74	4.59	2.34	0.01	0.41	0.07	0.15	0.22	0.11	0.56	98.04	994	106	110	1.28	2.56	1.08	2.08	20.7	4.95	3.5	0.44
HM16JV141	59.2	16.15	5.51	6.24	2.74	4.21	1.42	0.01	0.53	0.08	0.06	0.12	0.05	2.75	96.32	456	29.1	80	5.81	1.92	1.11	0.9	20.3	2.42	2.6	0.38
HM16JV143	61.9	15.9	4.6	4.38	3.01	7.79	1.14	0.01	0.53	0.09	0.02	0.39	0.02	0.95	99.78	173.5	142.5	50	0.12	3.92	1.6	3.01	17.8	7.45	4.6	0.7
HM16JV147	66.4	15.5	3.15	2.7	2.22	4.51	2.38	0.01	0.33	0.04	0.06	0.1	0.06	2.18	97.46	533	28.2	40	2.79	1.19	0.6	0.62	22.5	1.72	3.3	0.23
HM16JV150	51.8	14.3	8.76	13.8	5.97	3.05	0.93	0.05	0.56	0.2	0.05	0.14	0.03	0.56	99.64	293	32.8	370	3.05	2.11	1.33	0.99	16.4	2.78	2	0.46
HM16JV151	55.8	15.65	8.06	7.61	3.84	5.24	1.33	0.01	0.79	0.17	0.13	0.25	0.06	1.43	98.94	538	58.5	90	1.79	3.49	1.97	1.54	16.6	4.56	3.2	0.71
HM16JV152	56.6	15.2	7.22	9.94	4.1	3.07	1.68	0.03	0.65	0.18	0.1	0.28	0.08	0.81	99.13	716	74.8	230	2.21	2.89	1.5	1.72	18.7	4.45	2.7	0.55
HM16JV153	67.5	16.2	3.1	2.69	1.3	5.13	2.31	0.005	0.37	0.04	0.09	0.15	0.09	1.44	98.975	769	37	30	0.79	1.22	0.59	0.82	22.7	2.13	3.3	0.23
HM16JV154	58.6	16.85	4.63	4.57	1.83	8.01	0.67	0.005	0.55	0.08	0.17	0.32	0.04	1.77	96.325	349	139	20	2.03	3.02	1.31	3	22	6.55	3.6	0.53
HM16JV155	59.7	15.15	3.68	4.49	2.83	7.75	1.15	0.005	0.5	0.05	0.02	0.09	0.03	3.63	95.445	267	18.4	30	7.73	1.19	0.52	0.66	18.3	1.78	2.1	0.21
HM16JV157	62.4	13.8	2.71	4.83	2.88	7.15	0.76	0.005	0.42	0.04	0.01	0.07	0.02	3.35	95.095	176	17.6	20	0.57	0.95	0.55	0.54	18.7	1.41	2.3	0.19
HM16JV159	70.6	16	2.26	3.03	0.6	5.76	1	0.005	0.26	0.02	0.09	0.08	0.04	0.29	99.745	365	24.4	10	1.02	0.88	0.37	0.63	20.5	1.4	3	0.18
HM16JV161	69.4	15.75	3.13	3.22	1.12	5.85	1.19	0.005	0.35	0.05	0.09	0.12	0.05	0.5	100.325	427	51.1	20	22.3	1.4	0.63	1.03	22.8	2.46	3.2	0.25
HM16JV162	72.4	14.95	1.7	1.88	0.35	5.32	2.39	0.005	0.23	0.02	0.08	0.07	0.09	0.25	99.485	758	18.8	10	3.88	0.45	0.13	0.44	21.8	0.94	2.4	0.07
HM16JV164	45.6	15.9	13.5	12.75	6.29	2.18	0.78	0.04	0.87	0.26	0.03	0.06	0.02	1.11	98.28	147	10	320	2.97	3.15	1.93	0.84	19.6	2.82	1.6	0.69
HM16JV180	54.2	13.65	12.4	8.66	4.49	2.8	0.22	0.02	1.24	0.26	0.01	0.11	0.01	0.96	98.07	60.6	10.8	110	0.25	4.86	3.25	0.93	16.9	3.93	2.3	1.11
HM16JV184	68.2	16.05	2.67	2.56	0.74	5.67	2.53	0.005	0.42	0.02	0.12	0.15	0.1	0.6	99.235	892	73.2	20	1.57	0.86	0.22	1.19	26.7	2.71	4.7	0.1
HM16JV185	64.3	16.7	4.65	3.63	3.16	5.05	2.35	0.01	0.49	0.06	0.1	0.22	0.1	0.84	100.82	956	68.1	100	2.27	1.93	1.06	1.35	22.3	3.54	3.4	0.35
HM16JV191	69.2	16.35	2.65	2.51	0.83	5.75	2.68	0.005	0.41	0.02	0.12	0.15	0.1	0.53	100.775	887	68.3	20	1.49	0.86	0.22	1.2	25.6	2.6	4.6	0.12
HM16JV192	63.8	15.75	4.35	3.05	2.79	4.49	3.47	0.01	0.46	0.06	0.08	0.22	0.11	1.46	98.64	1065	69.8	110	0.69	2.18	1	1.31	21.1	3.65	3.7	0.39
HM16JV193	68.8	15.95	2.19	2.1	0.73	5.78	2.46	0.005	0.32	0.03	0.11	0.11	0.09	0.56	98.675	893	50.3	10	0.64	0.91	0.29	0.94	23.6	2.11	4	0.14
HM16JV196	69.4	14.65	2.71	2.51	1.51	4.61	2.79	0.01	0.34	0.04	0.09	0.19	0.13	0.95	98.98	1140	69.2	50	0.93	1.67	0.74	1.06	19.9	2.75	4.3	0.3
HM16JV199	68.1	14.4	1.92	2.76	1.78	4.45	3.42	0.005	0.24	0.04	0.05	0.09	0.09	2.17	97.345	820	57.2	20	3.47	1.4	0.65	1.11	20.9	2.67	3.3	0.25
HM16JV171	68.4	13.3	2.78	1.95	1.12	4.31	4.26	0.005	0.3	0.06	0.1	0.09	0.09	1.94	96.765	791	28.8	30	1.31	0.95	0.51	0.63	19.7	1.39	2.4	0.21
HM16JV197	62.4	18.05	1.7	4.58	3.87	4.96	2.33	0.01	0.56	0.03	0.02	0.25	0.04	2.06	98.8	351	33.7	40	3.27	2.72	1.48	1.08	25.6	3.32	3.6	0.54
HM16JV203	67.6	12.5	4.34	4.5	2.03	1.63	3.65	0.01	0.42	0.09	0.01	0.15	0.27	2.2	97.2	2410	22.1	80	3.13	1.45	0.76	0.54	18.8	1.68	2.6	0.31
HM16JV208	55.3	14.75	6.25	6.88	3.3	3.95	3.58	0.01	0.55	0.12	0.18	0.38	0.14	2.63	95.39	1310	172	40	4.3	3.74	1.37	3.33	23	8.03	4.1	0.63

All major oxides, major elements, C and S are in wt. %
All other trace elements in ppm.

Appendix II: Hemlo district
whole rock geochemistry

Sample	La	Lu	Nb	Nd	Pr	Rb	Sm	Sn	Sr	Ta	Tb	Th	Tl	Tm	U	V	W	Y	Yb	Zr	Ag_61	Al_61	As_61	Ba_61	Be_61	Bi_61	Ca_61
HM16JV001	16	0.17	7.3	14.9	3.88	50.2	2.98	1	481	0.6	0.39	2.32	0.25	0.17	0.59	81	0.5	11.9	1.08	137	0.03	8.01	0.1	330	0.75	0.23	4
HM16JV002	9.6	0.05	1.9	8.6	2.24	35.7	1.74	1	412	0.2	0.16	1.49	0.25	0.06	0.38	33	1	3.7	0.3	101	0.01	7.42	1.5	260	0.77	0.12	2.42
HM16JV004	44.6	0.12	4.4	44.8	11.5	49.5	7.41	1	1360	0.2	0.5	5.46	0.25	0.13	1	68	1	10.5	0.85	173	0.04	7.89	0.9	1370	1.76	0.18	2.51
HM16JV006	40.4	0.15	7.9	40.3	10.35	75.2	6.52	1	863	0.3	0.47	6.4	0.25	0.18	1.56	100	0.5	12.4	1.22	158	0.04	8	0.5	650	1.38	0.27	3.23
HM16JV007	26	0.1	2.7	26.7	6.77	57.4	4.4	1	1125	0.1	0.3	3.41	0.25	0.1	1.1	67	1	7.1	0.63	114	0.07	7.34	0.7	760	1.01	0.15	2.92
HM16JV008	37.4	0.11	4.3	35.9	9.32	47.7	5.51	1	1160	0.2	0.34	5.83	0.25	0.12	1.17	66	0.5	8.6	0.72	117	0.04	7.54	0.6	410	1.08	0.28	2.76
HM16JV009	8.6	0.23	1.7	13	2.82	37.4	3.11	1	345	0.1	0.48	0.93	0.25	0.27	0.27	271	1	15.2	1.52	47	0.03	5.7	0.1	650	0.87	0.1	6.52
HM16JV012	45.8	0.26	3.7	59.1	13.9	16.3	12.45	2	680	0.2	1.16	4.54	0.25	0.29	1.54	256	2	24.4	1.69	200	0.09	6.12	36.9	20	0.54	1.45	10.5
HM16JV013	80.8	0.2	5.2	78.9	20.3	73.3	12.5	1	1690	0.2	0.81	9.02	0.5	0.22	2.04	125	1	16.7	1.34	165	0.1	8.5	2.4	1440	1.89	0.51	4.98
HM16JV014	32.1	0.08	5.2	31.4	8.1	27.3	5.31	1	337	0.2	0.33	4.62	0.25	0.09	1.26	32	4	6.5	0.58	134	0.03	7.29	2.7	630	1.22	0.18	1.46
HM16JV015	28.4	0.22	4.8	28.6	7.14	132	5.24	1	648	0.3	0.54	4.8	0.9	0.21	1.14	113	8	14.7	1.34	118	0.14	8	13.6	830	2.65	0.33	3.83
HM16JV019	12.5	0.1	4.2	11.8	3.1	56.2	2.27	1	322	0.3	0.25	1.74	0.25	0.18	0.46	61	1	7.2	0.63	113	0.02	7.5	0.8	340	0.7	0.07	1.64
HM16JV020	23.1	0.04	4.1	19.1	4.96	37.1	3.18	1	1205	0.3	0.22	3.67	0.25	0.05	1.64	18	8	5	0.35	89	0.09	7.72	1.7	1500	3.24	0.28	0.62
HM16JV023	42.7	0.12	4.6	45.3	11.8	69.1	7.57	1	555	0.2	0.5	8.78	0.25	0.14	1.93	44	2	10.3	0.9	185	0.02	8.79	0.8	1260	0.91	0.2	0.62
HM16JV026	14.8	0.09	3.7	12.8	3.3	25.5	2.32	1	309	0.2	0.23	2.11	0.25	0.1	0.56	66	1	6.6	0.58	114	0.11	7.73	1.2	350	0.81	0.11	2.04
HM16JV028	101	0.11	4.7	98.6	25.6	41.1	14.7	1	2150	0.2	0.73	11.95	0.25	0.14	3.2	65	1	13.3	0.81	133	0.02	7.49	2.4	1540	1.04	0.96	3.58
HM16JV031	12.6	0.1	8.7	14	3.53	102	2.66	1	220	0.3	0.26	1.77	1	0.11	0.56	58	2	7.1	0.69	111	0.76	6.99	2.1	220	1.63	0.74	1.32
HM16JV034	9	0.05	2.7	7.4	1.96	23.9	1.28	1	97.6	0.2	0.19	1.29	0.25	0.07	0.35	27	1	4.7	0.35	91	0.08	5.55	1.5	310	0.61	0.15	2.91
HM16JV036	40.9	0.19	5.8	43.9	11.05	99.1	8.24	1	728	0.3	0.64	5.17	0.5	0.2	1.2	101	1	15.2	1.22	165	0.03	7.7	0.8	1250	1.97	0.05	3.04
HM16JV037	13.6	0.09	3.3	12.3	3.39	77.6	2.33	1	1065	0.3	0.18	6.1	0.25	0.07	0.93	23	0.5	5.1	0.55	82	0.12	7.2	0.1	1360	0.72	0.5	1.17
HM16JV037	40.8	0.12	4.5	43.3	11.2	66.4	7.46	1	1130	0.2	0.46	5.32	0.25	0.14	1.02	62	1	10	0.72	164	0.05	8.02	0.8	1340	1.41	0.22	1.88
HM16JV038	44.6	0.09	4.4	45.3	11.65	53	7.64	1	568	0.2	0.46	6.19	0.25	0.11	0.93	40	0.5	9.2	0.64	166	0.01	7.92	0.8	1320	1.26	0.08	1.49
HM16JV039	17	0.06	3.4	17	4.18	76.4	3.03	1	446	0.2	0.23	2.7	0.25	0.07	0.75	20	1	5	0.31	92	0.02	7.62	0.9	1160	1.38	0.11	0.75
HM16JV045	47.5	0.16	3.7	47.8	12.65	2.8	8.39	1	270	0.2	0.58	8.92	0.25	0.18	1.97	70	1	14	1.05	171	0.1	8.32	0.7	90	0.67	0.64	0.82
HM16JV046	4.8	0.43	3.8	8.4	1.73	36.1	2.69	1	574	0.2	0.65	0.45	0.25	0.4	0.51	252	1	24.3	2.71	71	0.21	6.92	0.9	370	1.43	1.23	8.22
HM16JV050	14.2	0.12	2.8	16	3.96	85.7	3.71	0.5	435	0.2	0.37	1.39	0.25	0.13	0.51	51	1	9.4	0.72	111	0.05	10.95	1.7	1330	0.94	0.13	1.95
HM16JV053	21.9	0.04	1.9	19.6	5.24	49.6	2.63	1	747	0.1	0.16	2.66	0.25	0.05	0.36	37	2	3	0.24	104	0.05	7.96	0.2	570	0.73	0.03	1.61
HM16JV060	14.3	0.08	2.1	16.3	3.89	30.7	3.03	0.5	653	0.1	0.23	1.55	0.25	0.08	0.41	65	1	6	0.49	80	0.04	7.61	1.3	330	0.89	0.09	2.4
HM16JV062	13.8	0.13	4.7	10.8	2.95	50.5	1.93	1	248	0.5	0.23	3.32	0.25	0.13	0.96	48	1	7.7	0.82	136	0.09	7.33	0.9	600	0.64	0.3	1.03
HM16JV064	9.8	0.29	5.2	12.3	2.96	32.8	3	1	281	0.3	0.51	1.04	0.25	0.28	0.19	146	2	16.9	1.79	92	0.04	6.96	0.1	350	0.76	0.03	2.39
HM16JV068	5.5	0.05	2.3	5.2	1.42	46.8	1.16	1	369	0.1	0.14	1.15	0.25	0.05	0.26	32	3	3.8	0.29	102	0.02	6.98	0.4	1090	1.2	0.09	2.17
HM16JV069	3.8	0.4	1.4	7.3	1.49	31.8	1.91	0.5	370	0.1	0.55	0.31	0.25	0.37	0.09	275	0.5	23.5	2.57	38	0.03	8.48	0.5	350	0.67	0.2	8.28
HM16JV073	8.2	0.18	3.9	10.3	2.48	48.1	2.67	1	273	0.3	0.34	1.07	0.25	0.18	0.29	120	1	11.1	1.16	86	0.02	7.44	0.2	430	0.67	0.05	1.7
HM16JV076	29.2	0.06	2.2	30.2	7.64	35	5.13	1	1030	0.1	0.32	4.1	0.25	0.08	1.02	54	2	6.1	0.4	139	0.01	7.04	0.5	890	1.33	0.1	1.98
HM16JV077	19.5	0.1	2.3	22.8	5.46	41.5	3.83	1	873	0.1	0.32	2.21	0.25	0.12	0.59	75	1	7.2	0.67	107	0.1	7.51	0.7	580	0.93	0.12	2.7
HM16JV082	29.9	0.07	2.4	28.5	7.41	114	4.65	1	987	0.1	0.33	4.25	0.7	0.09	1.05	66	0.5	6.9	0.45	144	0.01	8.54	0.8	1170	0.6	0.13	1.7
HM16JV083	48	0.2	6.2	50.4	12.6	60.6	9.59	1	1665	0.3	0.77	7.04	0.5	0.26	1.64	100	1	18.5	1.46	169	0.03	7.74	1.5	1800	1.93	0.09	2.82
HM16JV086	18.2	0.18	6.7	17.1	4.41	38.4	3.46	1	481	0.5	0.39	2.64	0.25	0.17	0.63	83	1	12.2	1.08	144	0.04	7.47	0.4	270	0.91	0.18	4.38
HM16JV087	5.1	0.04	2.3	4.6	1.28	57.9	0.93	1	264	0.1	0.12	1.28	0.25	0.05	0.41	36	1	4	0.33	107	0.02	7.07	0.1	440	0.64	0.05	1.03
HM16JV088	14.6	0.15	6.6	14.1	3.46	55.6	2.55	1	853	0.4	0.32	2.59	0.25	0.16	0.68	66	3	10.4	1.05	144	0.01	6.79	0.4	610	0.43	0.05	3.24
HM16JV092	56.5	0.17	5.9	49.2	13.2	57.4	7.39	1	1310	0.4	0.48	10.05	0.25	0.16	2.36	113	1	12.5	1.05	227	0.1	9.64	0.6	1440	2.02	0.3	3.63
HM16JV098	34.9	0.09	3.7	33.4	8.7	42.4	5.16	1	803	0.2	0.4	7.65	0.25	0.1	2.01	54	2	8	0.59	179	0.01	7.2	0.9	870	1.74	0.06	2.34
HM16JV099	166	0.18	6.1	168.5	43.2	1.3	26.8	1	703	0.3	1.58	21.1	0.25	0.22	4.53	109	5	25.2	1.31	232	0.005	9.1	1.3	20	0.5	0.1	3.45
HM16JV102	11.9	0.14	3.1	11.6	2.96	45.8	2.32	1	356	0.3	0.27	2.19	0.25	0.14	0.49	94	1	8.6	0.88	103	0.09	7.64	0.1	440	0.69	0.1	3.21
HM16JV104	21.1	0.23	3.1	23.4	5.67	24.1	4.37	1	549	0.2	0.47	2.71	0.25	0.2	0.64	162	0.5	13.6	1.42	90	0.03	7.73	0.1	320	0.74	0.15	6.13
HM16JV106	3.7	0.34	2.3	7.3	1.42	8.5	1.96	0.5	162	0.1	0.48	0.39	0.25	0.34	0.09	293	1	19.6	2.18	56	0.06	7.17	0.2	70	0.35	0.07	6.9
HM16JV107	27	0.12	3	29.9	7.54	48.4	4.89	1	721	0.2	0.38	3.51	0.25	0.12	0.9	83	1	9.4	0.89	142	0.04	7.91	1.6	620	1.08	0.09	2.39
HM16JV111	17.5	0.11	2.8	17.9	4.61	22.4	2.93	1	369	0.2	0.26	2.23	0.25	0.12	0.66	42	1	8	0.67	128	0.1	8.17	0.9	210	0.93	0.29	1.84
HM16JV112	21.9	0.05	2.9	21.1	5.39	51.5	3.8	1	1075	0.1	0.25	3.2	0.25	0.05	0.96	53	1	4.4	0.32	131	0.23	7.71	0.5	1250	1.4	0.58	1.9
HM16JV114	6	0.05	2.4	5.4	1.44	18.5	1.07	0.5	175	0.2	0.1	1.21	0.25	0.05	0.35	35	1	3.6	0.39	92	0.01	7.12	0.1	150	0.57	0.04	2.06
HM16JV115	14.1	0.07	3.3	11.5	3.19	45.3	1.86	1	298	0.3	0.22	2.22	0.25	0.07	0.55	22	1	5.2	0.43	114	0.02	6.21	0.3	450	0.94	0.09	1.59
HM16JV116	42.2	0.17	4.3	39.6	10.2	64.9	5.88	1	703	0.2	0.5	5.68	0.25	0.16	1.22	77	1	11.9	1.12	153	0.06	7.52	0.7	610	1.3	0.17	2.16
HM16JV118	30.4	0.12	3.1	32.3	8.18	31.4	5.61	1	688	0.2	0.39	3.7	0.25	0.13	0.94	86	0.5	9.5	0.82	118	0.05	7.95	0.1	580	0.9	0.13	2.89
HM16JV123	13.6	0.07	3.1	11.6	3.05	45.4	2.1	1	236	0.2	0.2	1.6	0.25	0.08	0.38	45	2	5.4	0.46	97	0.1	8.48	1.5	2580	0.73	0.09	2.72
HM16JV126	10	0.13	3.2	11.4	2.65	21.9	2.23	1	368	0.2	0.32	2.24	0.25	0.14	0.68	106	1	9.6	1	108	0.08	7.14	0.6	360	0.85	0.09	2.84
HM16JV130	31.1	0.12	3.7	33.1	8.3	41.3	5.69	1	1130	0.2	0.41	4.11	0.25	0.14	1.15	69	1	9.9	0.78	209	0.09	8.15	0.1	740	1.32	0.23	2.6
HM16JV132	15.1	0.03	2.4	18	4.36	57.1	3.43	1	976	0.2	0.19	2.3	0.25	0.04	0.49	26	0.5	3.3	0.24	122	0.04	7.89	0.1	1370	1.24	0.14	1.46

All major oxides, major elements, C and S are in wt. %
All other trace elements in ppm.

Sample	La	Lu	Nb	Nd	Pr	Rb	Sm	Sn	Sr	Ta	Tb	Th	Tl	Tm	U	V	W	Y	Yb	Zr	Ag_61	Al_61	As_61	Ba_61	Be_61	Bi_61	Ca_61
HM16JV133	15.1	0.04	1.9	16.2	4.04	45.1	2.97	1	859	0.1	0.18	2.1	0.25	0.04	0.74	35	0.5	3.5	0.29	114	0.02	8.3	0.1	980	1.3	0.2	1.58
HM16JV136	25.3	0.04	2.6	23.9	6.33	38.9	4.07	1	801	0.2	0.22	2.87	0.25	0.04	0.57	27	0.5	3.8	0.23	138	0.01	7.88	0.2	830	1.34	0.05	1.5
HM16JV138	28.9	0.17	4.4	29.2	7.13	94.1	5	1	592	0.3	0.47	4.59	0.5	0.18	1.21	107	1	11.7	1.23	124	0.11	7.39	0.7	940	1.19	0.22	1.84
HM16JV139	49	0.15	3.1	50.3	13	50.6	8.24	1	1285	0.2	0.56	7	0.25	0.15	1.62	89	0.5	11.7	0.97	140	0.08	8.08	0.1	1070	1.56	0.21	3.98
HM16JV141	13.9	0.16	2.8	14.9	3.56	43.1	2.89	1	589	0.2	0.34	1.87	0.25	0.18	0.5	127	1	10.4	1.02	101	0.07	8.44	0.5	480	0.75	0.09	4.56
HM16JV143	66.3	0.19	4.8	70.8	17.9	21.7	11.5	1	199	0.2	0.83	8.19	0.25	0.19	1.9	85	2	17.6	1.23	182	0.02	7.47	0.5	180	2.13	0.13	2.95
HM16JV147	13.3	0.1	2.2	12.7	3.38	54.7	2.25	1	590	0.2	0.24	1.95	0.25	0.08	0.56	64	1	6.1	0.67	115	0.04	8.23	2	570	1.1	0.13	2
HM16JV150	15.1	0.19	2.3	17.8	4.24	19.9	3.33	1	430	0.1	0.35	1.84	0.25	0.18	0.41	169	1	11.8	1.32	75	0.04	7.46	0.3	300	0.7	0.49	9.53
HM16JV151	27	0.29	4.3	30.3	7.32	29.4	5.54	1	1115	0.3	0.62	3.61	0.25	0.29	0.83	176	1	18.5	1.88	119	0.1	8.61	0.2	560	1.64	0.76	5.57
HM16JV152	34	0.22	3.2	38.1	9.47	33.6	6.73	1	866	0.2	0.54	3.66	0.25	0.24	0.81	167	0.5	14.7	1.42	105	0.07	8.39	0.3	760	1.47	1.85	7.39
HM16JV153	16.3	0.07	2	18.7	4.57	48.1	3.11	1	797	0.1	0.24	1.76	0.25	0.1	0.43	52	1	5.5	0.6	131	0.05	7.87	0.6	770	0.79	0.13	1.84
HM16JV154	67.5	0.15	4.1	66.6	16.65	17.7	10.35	1	1450	0.1	0.71	7.47	0.25	0.17	1.59	107	0.5	14.4	1.2	144	0.09	8.89	1.6	410	1.79	0.24	3.56
HM16JV155	7.9	0.08	3	9.8	2.32	49.3	1.78	1	132.5	0.1	0.21	0.93	0.25	0.11	0.29	75	6	6	0.51	85	0.12	7.76	4.8	300	0.54	0.27	3.45
HM16JV157	8	0.05	2.2	9.2	2.28	11.1	1.79	1	128.5	0.1	0.19	0.88	0.25	0.06	0.27	57	8	5	0.43	84	0.3	7.31	4.4	190	0.72	0.1	3.82
HM16JV159	11.8	0.05	1.9	11.5	2.95	24.2	2.09	1	785	0.1	0.18	1.28	0.25	0.06	0.32	28	1	4.2	0.38	117	0.04	8	0.1	410	0.84	0.04	2.22
HM16JV161	20.3	0.08	3.1	22.5	5.8	71.5	3.84	1	829	0.2	0.29	2.78	0.5	0.08	0.82	45	0.5	6.9	0.53	125	0.02	8.45	0.3	450	1.88	0.27	2.4
HM16JV162	6.7	0.01	1.6	6.8	1.72	59.3	1.25	1	689	0.1	0.1	2.17	0.25	0.02	0.47	22	1	2	0.19	90	0.03	7.94	0.1	870	1.18	0.05	1.41
HM16JV164	3.9	0.29	2.3	7	1.47	29	2.04	1	244	0.1	0.48	0.32	0.25	0.27	0.08	330	0.5	17.8	1.86	54	0.03	8.79	0.1	160	0.61	1.94	9.32
HM16JV180	3.9	0.48	2.9	8.9	1.64	7	2.86	1	133.5	0.2	0.71	0.34	0.25	0.5	0.08	358	1	28.4	3.3	77	0.02	7.66	0.9	70	0.46	0.08	6.45
HM16JV184	34.6	0.02	4.6	32.2	8.52	52.6	5.15	1	1095	0.3	0.26	4.37	0.25	0.03	0.8	38	0.5	3.2	0.15	170	0.01	8.24	1.5	900	1.74	0.09	1.84
HM16JV185	31.3	0.14	3.3	32.6	8.33	52.6	5.41	1	834	0.2	0.41	4.42	0.25	0.15	0.89	82	0.5	9.9	0.99	130	0.03	8.17	0.7	890	1.03	0.07	2.52
HM16JV191	32.9	0.02	4.2	31.1	8.12	66.4	5.24	1	1035	0.2	0.24	4.55	0.25	0.03	1.18	37	0.5	3.1	0.16	172	0.04	7.89	0.3	820	1.78	0.02	1.73
HM16JV192	32.3	0.15	3.6	32.1	8.45	72.7	5.77	1	740	0.2	0.39	4.53	0.25	0.15	1.05	83	1	10.4	0.98	139	0.05	7.94	2.3	970	1.02	0.14	2.15
HM16JV193	24.3	0.03	2.6	23.1	6.03	50.5	3.85	1	997	0.1	0.22	3.08	0.25	0.04	0.58	27	0.5	3.7	0.23	137	0.04	8.06	0.3	830	1.49	0.02	1.5
HM16JV196	33.5	0.11	3.8	30.1	7.98	60.9	4.56	1	817	0.2	0.33	6.65	0.25	0.11	1.26	51	1	8	0.82	157	0.05	7.35	0.4	1200	1.2	0.16	1.79
HM16JV199	27.7	0.07	4.5	26.3	6.84	65.2	4.4	1	427	0.2	0.3	4.05	0.5	0.09	1.54	52	6	6.8	0.56	124	0.25	7.39	8.2	780	2.12	0.07	2.04
HM16JV171	13.3	0.09	2.1	13.2	3.33	103.5	2.27	1	853	0.1	0.18	1.8	0.6	0.09	0.64	52	0.5	5.9	0.52	98	0.03	6.8	0.5	810	0.69	0.12	1.42
HM16JV197	12.7	0.14	3.8	19.1	4.64	53.3	4.43	1	216	0.2	0.48	1.85	0.25	0.2	0.69	72	6	15.5	1.11	141	0.16	7.68	19.2	340	1.13	0.07	3.09
HM16JV203	10.4	0.12	4.2	11.3	2.64	55.8	2.13	1	143.5	0.2	0.27	1.68	1.9	0.11	0.78	87	7	8.6	0.81	108	0.15	6.33	6.7	550	1.29	0.11	3.31
HM16JV208	77	0.24	4	90.1	22.4	61.8	15.15	2	1545	0.1	0.9	7.43	0.5	0.29	1.8	132	1	17.9	1.38	159	0.08	7.47	2.6	1240	1.87	0.32	4.8

All major oxides, major elements, C and S are in wt. %
All other trace elements in ppm.

Appendix II: Hemlo district
whole rock geochemistry

Sample	Cd_61	Ce_61	Co_61	Cr_61	Cs_61	Cu_61	Fe_61	Ga_61	Ge_61	Hf_61	In_61	K_61	La_61	Li_61	Mg_61	Mn_61	Mo_61	Na_61	Nb_61	Ni_61	P_61	Pb_61	Rb_61	Re_61
HM16JV001	0.07	30.5	21.7	37	1.69	30.9	3.74	20.4	0.09	1.3	0.041	1.25	12.2	44.9	0.98	711	1.04	2.34	7.1	45.4	620	4	45.1	0.001
HM16JV002	0.04	20.5	5.5	25	0.92	4	1.58	21.5	0.09	0.6	0.017	1.23	9.9	15.4	0.47	281	1.16	3.33	2.2	11.1	320	4.5	38.2	0.001
HM16JV004	0.06	106	10.7	34	1.52	4	2.8	25.2	0.21	2.7	0.038	2.06	48.3	19.8	1.05	435	0.66	3.72	5.1	21.1	1090	16.1	50.2	0.001
HM16JV006	0.07	71.6	20.7	128	3.42	12.4	3.76	21.3	0.14	1.8	0.036	1.95	28.2	46.4	1.88	574	1.11	3.18	4.8	80.1	1170	11.9	59.5	0.001
HM16JV007	0.06	53.5	13.5	72	3.42	27.1	2.48	21.6	0.16	1.7	0.027	1.6	23.1	36.6	1.14	401	0.59	3.27	3.1	46.4	800	9	51.4	0.001
HM16JV008	0.03	72.5	15.3	81	2.85	17.4	2.63	18.9	0.12	1.3	0.025	1.53	30.3	19.2	1.4	391	0.59	3.11	3.7	62.3	1030	10.1	42.9	0.001
HM16JV009	0.16	22.3	57.1	555	2.8	60.4	8.35	15.1	0.17	0.8	0.056	1.84	9.8	38.1	8.29	1610	0.21	0.99	1.9	165.5	870	6	42.4	0.002
HM16JV012	0.17	120.5	54.2	525	0.54	17.1	7.58	23.7	0.25	1.7	0.082	0.3	52.5	10.5	6.66	1580	0.28	0.53	4	209	2460	4.6	17.3	0.001
HM16JV013	0.07	141	11.6	20	2.22	58.2	4.46	25	0.21	1.1	0.035	2.67	56.5	19.5	1.19	667	1.6	2.31	5	13.6	1940	17.2	60.2	0.001
HM16JV014	0.01	66.7	4	17	0.39	4.9	1.13	22.2	0.16	3.3	0.019	1.24	31.6	3.9	0.47	426	3.63	5.45	4.6	6.4	470	5.8	27	0.001
HM16JV015	0.17	60	22.6	180	2.91	39.9	4.69	21.5	0.16	3	0.047	4.2	25.8	19.3	1.53	718	1.89	2.39	4.7	95.3	770	15.4	136	0.001
HM16JV019	0.01	26.3	12.6	31	1.57	9.9	2.48	19.3	0.11	2	0.024	1.76	11.9	35.1	0.75	336	0.47	3.07	4.2	26.9	480	1.3	57.1	0.001
HM16JV020	0.04	47.4	2.8	11	1.08	1.1	1.14	24.3	0.15	3.3	0.023	1.91	28.7	15.3	0.26	208	0.44	4.91	4.6	4.1	330	38.9	45.4	0.001
HM16JV023	0.01	114	7.7	20	0.44	25.4	1.55	22.1	0.19	4.5	0.016	3.92	46.8	4.7	0.5	208	0.32	5.06	5.6	20.8	880	16.8	73.7	0.001
HM16JV026	0.07	30.8	15.5	34	2.04	31.6	2.86	22.1	0.1	3	0.026	1.11	14.4	28.9	0.84	372	1.31	3.92	3.3	30.1	480	5.2	24.8	0.001
HM16JV028	0.04	210	12.3	57	0.45	12.8	2.75	22.9	0.29	3.4	0.029	1.88	89.7	15.2	1.34	423	0.64	3.29	4.7	61.1	1540	20	41.2	0.001
HM16JV031	0.5	30.3	9.3	30	6.75	562	16.95	19.4	0.14	2.1	0.065	1.84	13.6	22.1	1.02	540	3.69	1.88	1.8	120.5	620	18.2	110	0.001
HM16JV034	0.05	19.05	4.4	22	0.95	17	1.87	14.45	0.09	2.4	0.015	0.86	9.9	21	0.93	420	0.99	0.9	1.9	13.6	250	2.8	25.3	0.001
HM16JV036	0.06	97.6	17.7	57	0.96	24.9	4.08	21.8	0.21	4.2	0.048	3.33	44.9	8.7	2.04	647	0.29	3.46	6.5	28.2	1990	9.9	106.5	0.001
HM16JV037	0.03	33.5	2	17	1.39	8.9	1.29	18.05	0.1	2.2	0.012	3.5	12	3.4	0.16	140	0.71	3.37	3.4	4.7	240	15.4	84.7	0.001
HM16JV037	0.05	101	10.2	32	1.33	3.6	2.64	25.1	0.22	2.6	0.047	2.31	44.6	12.2	0.99	389	0.58	3.78	5.1	21.1	1060	12.9	72.1	0.001
HM16JV038	0.01	105	7.2	28	0.5	2.6	1.89	21.3	0.23	3.1	0.025	2.34	48.9	14	0.97	325	0.54	4.54	5.2	20.7	1030	7	57.3	0.001
HM16JV039	0.01	41	2.4	9	3.63	3	1.27	21.9	0.14	2.6	0.017	3.07	20	10.6	0.24	217	0.61	3.83	3.7	1.4	330	19.2	82.4	0.001
HM16JV045	0.01	96.5	28.7	23	1.35	9	4.55	23.4	0.15	4.6	0.035	0.08	39.1	82.9	7.85	593	0.21	4.08	3.4	36	1130	5.4	0.9	0.001
HM16JV046	0.08	12.3	65.2	452	4.56	209	9.09	18.35	0.07	1.4	0.072	1.17	4.5	32.7	5.52	1660	0.69	2.01	3.9	248	480	7.5	39.2	0.001
HM16JV050	0.2	31.2	24	25	1.7	42.8	3.41	26.3	0.13	2.2	0.028	2.88	13.4	34.5	1.33	436	0.24	4.22	2.4	29.9	800	6.2	87.6	0.001
HM16JV053	0.02	50.2	5.5	14	2.08	4.6	1.77	22.6	0.15	2.2	0.015	1.93	23.8	23.2	0.51	260	0.48	3.91	2	7.3	410	8.3	52.2	0.001
HM16JV060	0.01	32.9	11.8	49	2.36	26.5	2.61	20.1	0.15	2.4	0.021	0.81	14	13	1.19	432	0.37	5.26	2.4	29.3	690	4	30.4	0.001
HM16JV062	0.03	31.9	7.7	24	1.41	32.3	1.92	18.75	0.11	4.2	0.026	2.64	15.5	21.6	0.69	227	0.8	2.2	4	18.6	400	7.5	53.7	0.001
HM16JV064	0.02	19.85	25.4	61	0.52	67.4	5.02	14.95	0.07	1.2	0.047	0.97	7.4	46.2	2.11	972	0.85	3.28	5.3	34.6	590	1.4	24.8	0.001
HM16JV068	0.02	8.86	4.5	17	1.55	23.5	1.28	17.7	0.08	1.3	0.009	2.16	4.1	14	0.29	212	0.91	3.26	2.2	8.3	310	4.3	45.2	0.001
HM16JV069	0.1	9.6	59	61	1.14	64	6.88	15.9	0.07	0.3	0.058	0.77	3.4	26.6	4.16	1960	0.13	2.6	1.4	83.3	310	3.4	32.5	0.001
HM16JV073	0.02	19.55	22.2	67	1.06	20.7	3.55	15.2	0.09	1.6	0.03	1.71	7.4	31.1	1.29	753	0.58	3.62	4.2	36.9	430	2	47.6	0.001
HM16JV076	0.08	56.2	7.4	13	1.49	9.2	2.22	24.7	0.12	3.5	0.031	1.38	25.3	16.4	0.81	324	0.39	3.74	2.3	8.4	800	10.1	32.5	0.001
HM16JV077	0.05	38.4	12.8	78	2.21	28.8	2.96	20.8	0.11	1.4	0.023	1.39	16.5	22.3	1.26	456	0.58	3.45	2.5	40.3	680	6.9	35.7	0.001
HM16JV082	0.04	72.7	9.3	14	0.63	4.4	2.58	25.6	0.15	3.7	0.042	4.38	28	13.8	0.82	352	0.33	3.35	2.6	12	930	5.4	120.5	0.001
HM16JV083	0.08	85.8	14.1	24	2.02	10	4.46	24.3	0.16	4	0.049	2.16	36.9	103	1.21	784	0.22	3.88	6.7	14.2	1900	22.8	53.7	0.001
HM16JV086	0.08	29.8	21	34	1.05	20.6	5.01	20.1	0.08	1.3	0.036	1.11	13.5	31.8	1.67	726	0.69	1.83	7	47.6	580	3.8	20.2	0.001
HM16JV087	0.02	13.25	5.5	18	0.58	11.4	1.44	12.8	0.08	2.4	0.011	2.44	5.4	11.1	0.56	226	0.44	3.86	2.4	12.1	320	2.4	66.2	0.001
HM16JV088	0.02	28.9	15.7	37	0.33	2.3	3.6	16.3	0.09	3.3	0.03	2.85	13.5	19.9	1.22	483	0.48	2.3	6.6	43.7	560	2	55.3	0.001
HM16JV092	0.06	98.8	13.1	49	3.37	34.7	3.5	31.6	0.17	2.1	0.033	2.04	41	18.6	1.48	435	1.68	3.98	6.2	31.5	1210	14.2	50	0.001
HM16JV098	0.03	65.7	11.3	130	1.7	0.8	2.7	21.1	0.13	4.3	0.019	1.79	29.9	40.5	1.49	466	0.44	2.96	3.7	81.5	800	8.4	36.4	0.001
HM16JV099	0.02	318	4.1	20	0.11	2.1	2.3	30.9	0.39	6.4	0.107	0.05	124	8.5	0.53	245	0.15	6.8	5.6	17.9	3970	2.9	0.5	0.001
HM16JV102	0.06	23.5	15.4	81	0.81	45.8	2.8	19.65	0.08	1.5	0.027	1.42	9.3	15.1	1.18	497	0.88	3.04	3.1	43.3	530	5.7	43.6	0.001
HM16JV104	0.1	45.7	36	190	1.6	33.7	6.17	17.85	0.1	0.7	0.042	0.91	19.6	17.4	2.63	2140	0.54	2.77	3.1	172	840	7.7	21.5	0.001
HM16JV106	0.1	11.5	56.9	69	0.18	119	10.45	15.95	0.07	0.5	0.059	0.49	4.1	10.1	4.13	1880	0.51	2.13	2.4	74.1	320	1.8	8.9	0.001
HM16JV107	0.06	57.6	13.6	78	0.53	24.3	3.17	21.7	0.11	1.7	0.028	1.59	25.2	6.6	1.62	548	0.43	4.59	3	55	880	5.7	41	0.001
HM16JV111	0.06	40.2	9.7	28	0.36	21.1	2.28	20.8	0.08	3.6	0.026	0.96	16.1	8	0.72	297	0.8	4.71	2.8	24.6	590	6	23.6	0.001
HM16JV112	0.05	48.3	8	54	1.93	42.6	2.17	23.9	0.1	2.9	0.021	1.93	22.5	20.7	0.9	320	0.32	4.02	2.8	26.6	500	15	51.4	0.001
HM16JV114	0.01	12.65	5.1	19	0.31	4.2	1.42	14.8	0.08	1.3	0.005	0.72	5.3	15.3	0.45	212	0.68	4.92	2.3	14.1	290	0.7	16.4	0.001
HM16JV115	0.03	29.1	4	16	1.17	13.7	1.7	16.6	0.09	2.7	0.013	2.03	15.8	26.3	0.81	323	1.53	1.7	3.2	6.8	380	5.1	50.2	0.001
HM16JV116	0.04	76.7	16.6	111	1.85	38.1	2.97	20.5	0.14	2.5	0.026	1.94	36.2	22	1.31	558	0.46	3.14	4.2	74.6	890	9.7	56.2	0.001
HM16JV118	0.07	62.7	16.6	91	0.85	24.7	3.52	20.6	0.11	1.6	0.03	1.25	26	15.6	1.73	526	0.5	3.79	3.2	61.7	910	5.3	29.8	0.001
HM16JV123	0.05	26.8	8.4	21	1.47	15.6	2.32	20.6	0.08	2.4	0.021	1.81	11.5	41.9	1.29	429	0.38	2.51	3	17.5	440	5.9	43.6	0.001
HM16JV126	0.07	21.5	17	82	1.13	57.5	3.47	19.2	0.08	2.3	0.03	0.76	8.6	12	1.73	820	0.71	3.9	3.1	50.4	520	4.8	15	0.001
HM16JV130	0.06	68.6	13.5	63	0.98	12.9	3.08	22.5	0.12	2.6	0.031	1.49	27.4	19.1	1.44	443	1.52	3.78	3.8	43.7	1220	8.6	39.9	0.001
HM16JV132	0.04	38.1	3.7	12	1.59	4.3	1.53	23.4	0.1	2.2	0.02	2.46	12.7	15.3	0.34	192	0.48	4.01	2.5	4.1	510	11.4	60.7	0.001

All major oxides, major elements, C and S are in wt. %
All other trace elements in ppm.

Appendix II: Hemlo district
whole rock geochemistry

Sample	Cd_61	Ce_61	Co_61	Cr_61	Cs_61	Cu_61	Fe_61	Ga_61	Ge_61	Hf_61	In_61	K_61	La_61	Li_61	Mg_61	Mn_61	Mo_61	Na_61	Nb_61	Ni_61	P_61	Pb_61	Rb_61	Re_61
HM16JV133	0.03	34.1	5.3	15	1.27	3.1	1.79	25.3	0.1	2.5	0.024	2.11	13.6	9.4	0.55	220	0.5	4.27	2	6	510	11.9	47.9	0.001
HM16JV136	0.03	50.5	4.4	18	0.48	1.9	1.59	23.2	0.12	2.4	0.024	1.93	21.7	7.5	0.41	166	0.81	4.47	2.7	4.6	540	7	39.5	0.001
HM16JV138	0.15	58.2	24.1	214	2.86	49.1	4.07	19.5	0.11	2.6	0.034	2.45	27.2	22.6	1.74	649	1.29	2.45	4.5	99.1	780	11	81.2	0.001
HM16JV139	0.06	111	16.3	87	1.4	24.4	3.25	21.9	0.2	2.6	0.028	2.08	46.2	6.3	1.67	526	1.03	3.56	3.2	63.8	1100	16.6	53.3	0.001
HM16JV141	0.05	24.7	22.5	68	5.85	60.3	3.92	20.7	0.08	0.9	0.035	1.19	9.3	39.3	1.62	580	0.6	3.19	2.9	47.3	610	5.5	33	0.001
HM16JV143	0.05	146	13.2	40	0.13	3.2	3.15	18.25	0.19	3.9	0.041	0.92	64.8	10.8	1.68	667	0.27	5.61	4.8	29.9	1720	2	15.4	0.001
HM16JV147	0.04	26.7	11.5	27	2.86	23.4	2.25	23.7	0.08	2.7	0.03	2.06	10.4	39	1.33	320	0.8	3.48	2	17.4	520	4.7	54.8	0.001
HM16JV150	0.07	36.1	31.2	259	2.93	35.6	5.89	15.85	0.1	0.6	0.036	0.76	16.9	9.6	3.58	1490	0.71	2.23	2.2	104	630	3.9	20.3	0.001
HM16JV151	0.06	65.9	31.7	69	2.2	204	5.7	19.2	0.18	1.6	0.066	1.17	30.3	12.7	2.31	1320	0.47	3.87	4.9	45.5	1220	5.2	33.2	0.001
HM16JV152	0.07	75.2	35	174	2.47	43.6	5.22	19.9	0.17	0.6	0.049	1.47	34.1	6.1	2.51	1400	3.7	2.35	3.4	78.3	1340	7.5	28.1	0.001
HM16JV153	0.04	34.4	7.3	22	0.75	12.5	2.14	21.9	0.09	1.8	0.015	1.91	15.2	10.5	0.73	278	0.58	3.76	1.9	13.3	660	5.7	46.8	0.001
HM16JV154	0.07	143	12.7	14	1.91	49.3	3.54	23.3	0.19	3.4	0.031	0.58	65.2	9.1	1.1	671	0.42	6.33	4.5	10.7	1580	20.8	11.8	0.001
HM16JV155	0.05	16.6	11.3	25	7.18	9	2.75	17.85	0.09	1.6	0.014	0.99	6.3	10.3	1.71	445	1.53	5.95	1.9	24.2	460	3.6	40.3	0.001
HM16JV157	0.03	17.7	8.4	18	0.58	12.1	2.04	19.15	0.1	1.6	0.02	0.66	7	5.9	1.8	360	0.74	5.57	1.9	14.3	340	2.2	8.4	0.001
HM16JV159	0.02	25.7	4.3	14	0.98	1.1	1.67	20.6	0.08	1	0.009	0.89	12.3	15.8	0.35	201	0.62	4.51	1.9	3.8	340	5.8	23.7	0.001
HM16JV161	0.08	48.3	8.3	16	23.3	2.5	2.23	25.1	0.18	1.8	0.03	1.06	19.3	97.3	0.66	402	0.33	4.4	3.4	11.4	590	13.1	70.7	0.001
HM16JV162	0.02	21.7	2.8	6	3.93	5.8	1.28	23.1	0.08	1.9	0.008	2.19	6.8	26.9	0.22	193	0.46	4.26	1.8	1.6	350	12.6	69.2	0.001
HM16JV164	0.15	10.35	60.2	208	3.32	47.7	9.41	21.1	0.07	0.6	0.072	0.71	4.1	35.5	3.89	1980	0.28	1.66	2.5	144	290	6.7	23	0.001
HM16JV180	0.36	12.45	54.2	86	0.29	13	8.56	18.15	0.06	0.9	0.092	0.2	4.6	6	2.76	1960	0.89	2.13	3.1	83.4	490	1.8	8	0.001
HM16JV184	0.05	68.5	5.2	13	1.74	1.8	1.82	27.9	0.19	3.6	0.034	2.21	30.9	11	0.43	178	0.71	4.09	5	4.4	690	13	54.4	0.001
HM16JV185	0.05	59.5	15.7	78	2.35	9.6	3.16	21.7	0.18	1.5	0.03	1.9	26.1	27.9	1.71	438	0.66	3.57	3.3	54.6	970	8.9	44.2	0.001
HM16JV191	0.05	66	5.1	15	1.63	5.1	1.81	27.1	0.21	4	0.033	2.2	30.7	19.7	0.43	177	0.8	4	4.4	4.2	650	13.2	69.2	0.001
HM16JV192	0.06	68.2	16	84	0.75	21.3	3.07	21.6	0.21	1.8	0.033	2.89	30.9	17.9	1.56	458	0.72	3.23	3.7	54.8	980	6	72.3	0.001
HM16JV193	0.03	47.6	4.5	10	0.68	2	1.52	24.2	0.19	2.5	0.024	2.05	22.5	30.8	0.4	186	0.41	4.14	2.7	4.2	480	12.1	51.3	0.001
HM16JV196	0.04	71.6	8.5	35	0.88	30.1	1.97	19.6	0.14	1.6	0.02	2.41	34.3	11.3	0.9	296	2.05	3.5	3.9	19.7	920	8.8	63.4	0.001
HM16JV199	0.01	51.4	4.3	15	3.7	8.3	1.36	21.5	0.23	2.8	0.018	2.88	23.4	17.9	1	324	10.95	3.28	3.8	7.1	440	21.5	63.7	0.001
HM16JV171	0.04	29.2	9.3	23	1.28	16.1	1.9	17.7	0.09	1.9	0.021	3.56	13.1	5.9	0.64	423	0.61	3.09	2.1	13.5	410	5.9	107.5	0.001
HM16JV197	0.1	23.1	11.8	23	2.85	19.1	1.07	23.2	0.09	2.6	0.021	1.76	7.4	22.1	2.06	183	4.28	3.41	2.8	39.1	1070	4.2	33.3	0.001
HM16JV203	0.1	22.3	10.8	62	3.05	51.2	3.03	17.2	0.09	2.1	0.026	2.91	9.1	37.8	1.15	630	16.55	1.13	2.2	33.3	670	5.2	54.5	0.001
HM16JV208	0.1	165.5	17.2	26	3.87	45.7	4.34	22	0.22	3.5	0.055	2.84	68.3	14.9	1.83	859	0.74	2.74	3.8	18.5	1710	16.1	57.4	0.001

All major oxides, major elements, C and S are in wt. %
All other trace elements in ppm.

Appendix II: Hemlo district
whole rock geochemistry

Sample	S_61	Sb_61	Sc_61	Se_61	Sn_61	Sr_61	Ta_61	Te_61	Th_61	Ti_61	Tl_61	U_61	V_61	W_61	Y_61	Zn_61	Zr_61	Hg	TOT/C	TOT/S	Au
HM16JV001	0.02	0.08	9.6	0.5	1.2	495	0.52	0.025	2.16	0.423	0.25	0.5	82	0.3	11.6	92	52.7	0.0025	0.42	0.01	0.0005
HM16JV002	0.01	0.1	3.9	0.5	0.6	395	0.17	0.025	1.66	0.17	0.21	0.4	32	0.2	3.8	41	22.9	0.0025	0.02	0.01	0.0005
HM16JV004	0.01	0.05	6.7	1	1.1	1345	0.29	0.025	6.4	0.307	0.34	1	64	0.1	11.3	92	96.4	0.0025	0.02	0.005	0.0005
HM16JV006	0.04	0.15	12.2	0.5	0.8	886	0.3	0.025	5.29	0.347	0.47	1.3	102	0.3	11.4	82	71.5	0.0025	0.12	0.04	0.0005
HM16JV007	0.07	0.07	7.7	1	0.6	1100	0.18	0.025	3.38	0.218	0.36	1.1	63	0.3	7	60	63.4	0.005	0.31	0.07	0.0005
HM16JV008	0.02	0.08	8.9	0.5	0.8	1190	0.24	0.025	5.44	0.249	0.3	1.1	66	0.2	8.4	61	49.7	0.0025	0.03	0.02	0.0005
HM16JV009	0.06	0.1	42.6	1	0.6	381	0.11	0.025	1.08	0.5	0.32	0.3	259	0.2	16.4	99	24.7	0.005	0.02	0.06	0.0005
HM16JV012	0.73	0.23	32.3	2	2.4	734	0.19	0.08	5.17	0.523	0.27	1.5	231	1.8	26	130	58.5	0.0025	0.09	0.85	0.0005
HM16JV013	0.26	0.47	7.8	1	1.1	1770	0.21	0.06	7.54	0.387	0.57	1.9	125	1.3	16.2	96	45.6	0.017	0.36	0.23	0.005
HM16JV014	0.24	0.21	3.1	1	0.7	320	0.23	0.025	4.64	0.146	0.21	1.2	29	3.8	6.4	21	123.5	0.0025	0.11	0.24	0.023
HM16JV015	0.22	1.92	14.4	1	1	690	0.29	0.08	4.65	0.341	1.02	1.1	119	7.7	15.6	114	115	0.038	0.6	0.18	0.006
HM16JV019	0.01	0.09	6.5	0.5	0.8	324	0.29	0.025	1.84	0.274	0.3	0.4	56	0.5	7.3	59	76.1	0.0025	0.24	0.01	0.0005
HM16JV020	0.01	0.08	2.1	1	0.7	1305	0.31	0.025	4.65	0.095	0.44	2	19	0.2	5.9	56	107.5	0.0025	0.07	0.005	0.0005
HM16JV023	0.01	0.1	4.6	1	0.7	522	0.26	0.025	9.97	0.211	0.44	2	42	1.1	11.2	46	167.5	0.0025	0.02	0.01	0.0005
HM16JV026	0.27	0.08	7.3	1	0.7	319	0.23	0.025	2.24	0.221	0.18	0.5	62	0.3	5.7	71	110.5	0.0025	0.36	0.26	0.0005
HM16JV028	0.005	0.17	6.1	1	0.9	2240	0.21	0.025	11.8	0.211	0.34	3	64	0.6	13.2	60	137	0.0025	0.38	0.005	0.001
HM16JV031	8.09	0.05	8	4	1.2	236	0.13	0.22	1.92	0.162	1.31	0.6	51	0.9	7.6	339	78	0.015	0.26	9.55	0.0005
HM16JV034	0.04	0.17	3.1	0.5	0.6	107.5	0.16	0.025	1.5	0.12	0.13	0.3	26	0.8	4.5	56	93.7	0.0025	0.28	0.04	0.0005
HM16JV036	0.17	0.05	11.3	1	1.2	756	0.38	0.025	5.96	0.413	0.6	1.2	97	0.1	16.5	88	148	0.0025	0.02	0.16	0.0005
HM16JV037	0.005	0.05	1.1	0.5	0.7	1075	0.26	0.025	6.31	0.104	0.47	0.9	24	0.1	5.2	18	77.6	0.0025	0.02	0.005	0.0005
HM16JV037	0.005	0.08	6.5	1	1.1	1135	0.28	0.025	6.1	0.293	0.45	1.1	59	0.1	10.7	83	93.6	0.0025	0.03	0.005	0.0005
HM16JV038	0.02	0.05	5.3	1	1.1	567	0.27	0.025	6.76	0.275	0.36	0.9	39	0.1	10.3	53	116.5	0.0025	0.15	0.02	0.0005
HM16JV039	0.01	0.06	1.9	1	0.7	441	0.24	0.025	3.23	0.144	0.52	0.9	19	0.2	5.5	38	84	0.0025	0.02	0.01	0.0005
HM16JV045	1.03	0.08	7.6	1	1.4	271	0.18	0.09	7.86	0.276	0.02	1.9	71	0.7	13.2	42	172	0.0025	0.08	0.94	0.004
HM16JV046	0.81	0.13	39.7	1	0.9	628	0.23	0.07	0.46	0.579	0.29	0.5	235	0.6	26	91	44.1	0.0025	1.17	0.75	0.01
HM16JV050	0.39	0.1	7.9	1	0.5	436	0.18	0.07	1.57	0.22	0.41	0.5	48	0.7	9.5	116	79.4	0.007	0.05	0.36	0.017
HM16JV053	0.03	0.025	3.4	1	0.5	729	0.08	0.025	2.89	0.174	0.29	0.4	34	0.05	3.2	57	84.2	0.0025	0.02	0.02	0.0005
HM16JV060	0.23	0.07	7.6	1	0.5	640	0.13	0.025	1.66	0.243	0.22	0.4	62	0.2	6.2	59	84.3	0.0025	0.55	0.22	0.0005
HM16JV062	0.34	0.05	6	1	1.2	266	0.4	0.06	3.84	0.19	0.29	1	48	0.8	7.9	19	152	0.0025	0.06	0.32	0.0005
HM16JV064	0.02	0.07	25.8	1	0.7	295	0.35	0.025	0.74	0.525	0.18	0.2	146	0.5	15.6	87	52.5	0.005	0.38	0.02	0.0005
HM16JV068	0.05	0.13	4	1	0.4	343	0.17	0.025	0.89	0.184	0.25	0.2	30	1.9	3.1	20	56	0.0025	0.45	0.05	0.0005
HM16JV069	0.08	0.27	57.5	1	0.4	396	0.08	0.05	0.28	0.393	0.18	0.1	255	0.2	24.8	89	4.9	0.0025	0.27	0.07	0.0005
HM16JV073	0.04	0.11	15.9	1	0.6	273	0.26	0.025	0.96	0.473	0.31	0.2	114	0.5	10.5	62	69.6	0.0025	0.1	0.02	0.0005
HM16JV076	0.01	0.08	4.9	0.5	0.9	960	0.13	0.025	3.33	0.273	0.23	0.8	51	0.3	5.1	84	144.5	0.0025	0.19	0.01	0.0005
HM16JV077	0.1	0.1	8.6	1	0.6	835	0.15	0.025	1.75	0.266	0.23	0.4	72	0.2	6.5	71	66.2	0.005	0.05	0.09	0.0005
HM16JV082	0.01	0.13	6	0.5	1.1	1035	0.14	0.025	4.31	0.311	0.83	1	68	0.3	7.2	64	139.5	0.0025	0.05	0.005	0.0005
HM16JV083	0.02	0.09	10.3	1	1.3	1715	0.36	0.025	5.21	0.412	0.53	1.3	100	0.3	17.6	120	175.5	0.006	0.42	0.02	0.0005
HM16JV086	0.03	0.09	11.4	1	1	485	0.53	0.025	1.86	0.417	0.16	0.4	83	0.5	10.2	111	59	0.0025	0.12	0.03	0.001
HM16JV087	0.005	0.11	3.8	0.5	0.5	275	0.19	0.025	1.3	0.169	0.38	0.4	33	0.8	4	37	104.5	0.0025	0.05	0.005	0.0005
HM16JV088	0.04	0.06	9.4	1	0.9	871	0.51	0.025	2.29	0.363	0.32	0.6	61	0.4	9.9	56	143	0.0025	0.41	0.03	0.0005
HM16JV092	0.08	0.11	10.2	0.5	0.9	1355	0.43	0.025	8.91	0.352	0.35	2.1	103	0.2	11.8	71	80.9	0.0025	0.11	0.06	0.0005
HM16JV098	0.08	0.08	5.7	0.5	0.8	784	0.25	0.025	6.16	0.268	0.24	1.4	51	0.9	7.1	127	183	0.0025	0.27	0.07	0.0005
HM16JV099	0.01	0.32	11.1	1	1.2	705	0.27	0.025	19.8	0.462	0.01	4.1	108	5.1	24.8	27	249	0.0025	0.23	0.005	0.0005
HM16JV102	0.01	0.05	11	1	0.7	351	0.24	0.025	2.06	0.307	0.21	0.4	92	0.3	8.4	63	57.6	0.0025	0.1	0.005	0.0005
HM16JV104	0.04	0.05	23.6	1	0.6	569	0.19	0.025	2.74	0.369	0.12	0.6	154	0.1	14.6	85	20.6	0.0025	0.36	0.04	0.0005
HM16JV106	0.22	0.14	48.6	1	0.5	187.5	0.15	0.025	0.38	0.525	0.07	0.1	289	0.1	22.3	112	10.6	0.0025	0.04	0.18	0.0005
HM16JV107	0.04	0.14	9.1	0.5	0.6	724	0.18	0.025	2.96	0.292	0.24	0.7	77	0.2	8.7	73	74	0.0025	0.08	0.03	0.0005
HM16JV111	0.65	0.12	6.2	0.5	0.9	381	0.17	0.08	2.24	0.227	0.16	0.6	44	0.3	8.4	54	135	0.0025	0.19	0.58	0.0005
HM16JV112	0.01	0.07	5	0.5	0.8	1050	0.14	0.025	2.96	0.21	0.35	0.9	50	0.1	4.1	88	120.5	0.0025	0.01	0.005	0.0005
HM16JV114	0.03	0.06	4.5	0.5	0.4	177	0.18	0.025	1.11	0.157	0.08	0.3	31	0.5	3.2	32	58.3	0.0025	0.46	0.02	0.0005
HM16JV115	0.005	0.14	3.6	0.5	0.9	312	0.29	0.025	2.23	0.116	0.31	0.5	21	0.6	5.2	41	108.5	0.0025	0.12	0.005	0.0005
HM16JV116	0.13	0.07	9.1	1	0.7	659	0.29	0.025	4.52	0.261	0.34	0.9	71	0.2	11.2	64	104	0.0025	0.07	0.11	0.0005
HM16JV118	0.03	0.19	10	0.5	0.6	733	0.19	0.05	3.61	0.324	0.19	0.9	90	0.3	9.5	74	57.6	0.0025	0.02	0.02	0.0005
HM16JV123	0.06	0.24	5.8	0.5	0.6	240	0.22	0.025	1.61	0.223	0.23	0.4	46	1.4	5.3	52	87.7	0.0025	0.24	0.05	0.0005
HM16JV126	0.03	0.12	13	1	0.7	371	0.24	0.025	1.81	0.269	0.08	0.5	98	0.1	8.6	85	101.5	0.0025	0.01	0.02	0.0005
HM16JV130	0.01	0.07	9.2	0.5	0.8	1220	0.23	0.025	4.07	0.304	0.24	1	73	0.2	10	65	96.2	0.0025	0.02	0.005	0.0005
HM16JV132	0.01	0.06	2.1	0.5	0.8	972	0.14	0.025	2.22	0.192	0.34	0.5	27	0.1	3.4	63	83.9	0.0025	0.03	0.005	0.0005

All major oxides, major elements, C and S are in wt. %
All other trace elements in ppm.

Sample	S_61	Sb_61	Sc_61	Se_61	Sn_61	Sr_61	Ta_61	Te_61	Th_61	Ti_61	Tl_61	U_61	V_61	W_61	Y_61	Zn_61	Zr_61	Hg	TOT/C	TOT/S	Au
HM16JV133	0.005	0.025	3.2	0.5	0.7	882	0.13	0.025	2.07	0.213	0.31	0.7	37	0.1	3.6	60	79.2	0.0025	0.01	0.005	0.0005
HM16JV136	0.01	0.06	2.4	0.5	0.9	787	0.16	0.025	2.91	0.208	0.2	0.6	26	0.1	3.7	35	87.8	0.0025	0.05	0.005	0.0005
HM16JV138	0.3	0.12	12.4	1	0.7	578	0.29	0.05	3.88	0.342	0.51	1.1	104	0.5	11.9	93	112	0.008	0.02	0.21	0.0005
HM16JV139	0.005	0.11	12.3	1	0.6	1350	0.18	0.025	7.58	0.263	0.41	1.7	88	0.1	12.2	73	101.5	0.0025	0.08	0.005	0.0005
HM16JV141	0.01	0.16	13.2	0.5	0.6	597	0.2	0.025	1.6	0.331	0.17	0.4	120	0.4	9.3	80	32	0.0025	0.44	0.005	0.0005
HM16JV143	0.04	0.43	9.5	1	0.9	209	0.24	0.025	7.04	0.311	0.13	1.7	80	0.9	18.2	42	176.5	0.0025	0.06	0.03	0.0005
HM16JV147	0.14	0.19	8.1	1	0.7	595	0.14	0.025	1.95	0.205	0.4	0.6	63	0.8	5.9	58	89.4	0.0025	0.17	0.11	0.003
HM16JV150	0.005	0.1	24	1	0.6	461	0.13	0.025	1.65	0.334	0.08	0.4	158	0.6	12.5	83	17	0.0025	0.05	0.005	0.0005
HM16JV151	0.08	0.13	27.4	1	1	1135	0.31	0.025	4.53	0.48	0.2	1	172	0.5	22.1	57	52.7	0.0025	0.04	0.07	0.0005
HM16JV152	0.02	0.08	21.4	1	1	924	0.21	0.025	3.95	0.408	0.13	0.9	170	0.4	15.9	81	15.6	0.0025	0.06	0.01	0.003
HM16JV153	0.13	0.07	5.6	0.5	0.5	748	0.12	0.025	1.47	0.224	0.22	0.4	46	0.3	5	46	74.3	0.0025	0.1	0.11	0.0005
HM16JV154	0.07	0.17	7.9	1	0.8	1630	0.18	0.025	6.6	0.354	0.13	1.4	111	0.2	15.6	83	160	0.0025	0.41	0.05	0.0005
HM16JV155	1.21	0.18	7.2	1	0.5	141	0.13	0.28	0.73	0.273	0.35	0.2	72	2.8	5.2	35	65.3	0.005	0.85	1.01	0.084
HM16JV157	0.9	0.22	6.4	1	0.4	141.5	0.12	0.26	0.75	0.246	0.1	0.2	55	5.8	4.7	39	66	0.006	0.82	0.74	0.119
HM16JV159	0.01	0.025	2.6	0.5	0.4	801	0.15	0.025	1.22	0.169	0.14	0.2	27	0.05	3.7	60	45.1	0.0025	0.01	0.005	0.0005
HM16JV161	0.005	0.07	5.3	0.5	1	821	0.22	0.025	3.1	0.218	0.58	0.9	44	0.1	7.1	75	66	0.0025	0.02	0.005	0.0005
HM16JV162	0.005	0.06	1.6	0.5	0.5	712	0.11	0.025	2.15	0.161	0.35	0.4	20	0.1	2	57	82.7	0.0025	0.01	0.005	0.0005
HM16JV164	0.04	0.05	48.8	1	0.7	254	0.16	0.025	0.35	0.543	0.16	0.1	300	0.2	19.6	97	11.1	0.0025	0.01	0.03	0.0005
HM16JV180	0.005	0.08	49.8	1	1	145.5	0.2	0.025	0.4	0.751	0.07	0.1	334	0.4	31.8	155	26.9	0.0025	0.23	0.005	0.001
HM16JV184	0.02	0.15	2.1	0.5	1.1	1040	0.27	0.025	4.6	0.256	0.35	0.9	36	0.1	3.3	106	132.5	0.0025	0.01	0.01	0.0005
HM16JV185	0.02	0.11	9.4	0.5	0.6	787	0.21	0.025	4.02	0.283	0.29	0.8	77	0.2	9.5	77	54.4	0.0025	0.03	0.01	0.0005
HM16JV191	0.01	0.05	2	0.5	1.1	967	0.24	0.025	4.71	0.244	0.45	1.2	35	0.1	3.3	95	137.5	0.0025	0.02	0.005	0.005
HM16JV192	0.06	0.19	10.3	1	0.7	691	0.24	0.025	4.66	0.28	0.39	1.1	78	0.4	11.2	67	66.7	0.0025	0.06	0.05	0.003
HM16JV193	0.005	0.06	2.5	0.5	0.9	937	0.16	0.025	3.21	0.194	0.31	0.6	26	0.1	3.8	74	87.1	0.0025	0.06	0.005	0.001
HM16JV196	0.05	0.1	6.4	1	0.6	796	0.27	0.025	6.03	0.218	0.24	1.2	49	0.2	7.7	41	69.4	0.005	0.005	0.03	0.0005
HM16JV199	0.65	0.22	3	1	0.6	408	0.2	0.4	3.9	0.134	0.59	1.4	50	5.7	6.5	40	105.5	0.01	0.36	0.56	2.09
HM16JV171	0.56	0.11	6.1	0.5	0.6	804	0.15	0.025	1.88	0.184	0.71	0.6	50	0.3	5.5	53	72.1	0.0025	0.09	0.51	0.003
HM16JV197	0.65	0.6	2.7	0.5	0.7	199.5	0.23	0.025	1.18	0.282	0.49	0.4	65	3.9	10.5	96	105	0.016	0.21	0.61	0.204
HM16JV203	1.78	0.54	6	0.5	0.5	137.5	0.16	0.1	1.54	0.187	2.31	0.6	81	3.4	7.4	55	84.2	0.0025	0.23	1.7	0.301
HM16JV208	0.24	0.26	11.9	1	1.1	1515	0.16	0.05	7.18	0.317	0.37	1.7	129	0.5	18	100	139.5	0.0025	0.52	0.22	0.004

All major oxides, major elements, C and S are in wt. %
All other trace elements in ppm.

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Ag107	Ag109	Al27	As75	Au197	B11	Ba137	Bi209	Ca43	Ce140	Co59	Cr53	Cu65	Eu153	Fe57	Gd157
HM16JV002	E17JN15A237	0.01	<0.07	130,031.71	6.48	<0.01	14.1	0.3	0.04	174,666.98	10.7	1.16	2.1	0.52	0.73	87,108.68	1.08
HM16JV002	E17JN15A234	0.01	<0.05	128,201.11	3.43	<0.01	13.08	0.23	0.02	167,548.41	0.07	1.26	3.13	0.05	0.01	84,254.30	0.03
HM16JV002	E17JN15A236	0.01	<0.23	141,816.03	4.62	<0.05	6.58	2.57	0.15	182,526.47	37.07	1.1	35.88	0.05	1.59	77,739.87	2.51
HM16JV002	E17JN15A231	0.01	<0.26	140,364.70	4.99	<0.03	9.73	1.18	0.005	182,981.57	43.81	1.04	6.01	1.76	1.76	84,735.79	2.69
HM16JV002	E17JN15A229	0.01	<0.21	134,902.20	1.95	<0.03	0.3	1	1.21	180,399.39	87.68	0.45	38.11	0.05	2.78	87,593.80	6.7
HM16JV002	E17JN15A235	0.01	<0.07	126,924.57	1.98	<0.01	4.64	0.52	0.04	167,361.19	2.23	0.33	2.75	0.53	0.3	86,146.25	0.42
HM16JV002	E17JN15A233	0.01	<0.05	131,096.10	1.46	<0.01	2.3	0.15	0.005	165,835.34	0.08	0.51	1.51	0.28	0.04	78,804.24	0.005
HM16JV002	E17JN15A230	0.01	<0.12	124,012.25	1.36	<0.02	9.24	0.51	2.08	160,636.17	659.45	0.24	68.09	0.58	13.25	88,556.32	40.59
HM16JV002	E17JN15A225	0.01	<0.10	128,912.66	5.18	<0.02	8.48	1.24	1.03	169,771.63	101.27	0.83	12.17	0.62	4.35	86,365.16	8.33
HM16JV002	E17JN15A239	0.1	<0.06	126,820.47	1.35	<0.01	5.62	2.69	1.53	159,758.48	40.93	0.17	20.74	0.99	2.59	81,534.18	3.77
HM16JV002	E17JN15A227	0.01	<0.30	137,706.89	0.06	<0.05	13.14	1.27	0.91	176,619.47	141.18	0.1	53.66	0.05	7.85	84,730.64	16.75
HM16JV002	E17JN15A226	0.01	<0.21	135,870.71	2.24	<0.04	10.73	3.81	1.17	180,895.65	212.27	0.16	58.19	0.05	6.84	87,784.66	17.38
HM16JV002	E17JN15A241	0.01	<0.19	137,877.05	0.06	<0.04	7.2	1.91	1.51	182,314.47	211.14	0.005	46.84	0.05	7.02	85,003.27	11.21
HM16JV002	E17JN15A232	0.01	<0.11	135,153.68	2.77	<0.01	11.39	4.31	2.25	174,014.63	705.33	0.13	36.86	1.34	12.6	80,716.67	38.39
HM16JV002	E17JN15A245	0.01	<0.10	137,366.73	2.24	<0.01	6.25	0.95	2.49	174,491.25	428.64	0.32	22.19	0.6	5.81	74,442.94	23.47
HM16JV002	E17JN15A228	0.01	<0.06	128,630.50	2.47	<0.01	4.38	0.62	3.44	167,674.29	960.72	0.14	40.81	0.38	17	86,664.19	54.48
HM16JV002	E17JN15A238	0.01	<0.33	140,517.80	2.33	<0.04	0.3	1.26	3.98	173,110.20	239.52	0.005	61.86	1.76	6.16	88,029.75	16.43
HM16JV002	E17JN15A229	0.01	<0.08	120,586.58	1.31	<0.01	3.29	0.36	1.1	161,142.41	46.41	0.13	43.75	1.5	2.06	95,641.58	3.89
HM16JV002	E17JN15A243	0.01	<0.12	132,853.81	1.6	<0.03	4.98	1.2	1.2	177,582.81	130.8	0.22	34.57	0.85	3.5	81,849.88	6.83
HM16JV002	E17JN15A242	0.01	<0.10	115,613.28	6.38	<0.02	9.05	1.94	1.04	160,000.18	30.63	0.06	12.95	0.94	0.97	101,689.72	1.64
HM16JV002	E17JN15A240	0.12	<0.11	126,659.63	0.93	<0.02	6.22	1.18	0.06	170,785.53	52.82	0.45	46.86	2.14	1.79	90,256.68	2.31
HM16JV004	E17JN14A219	0.01	<0.09	106,332.54	0.06	<0.01	3.3	0.85	0.09	169,261.62	0.01	0.04	0.2	0.05	0.07	130,303.01	0.005
HM16JV004	E17JN14A219	0.01	<0.13	98,708.73	0.93	<0.02	6.05	2.06	0.005	157,174.70	6.71	0.06	0.2	0.05	0.06	131,828.10	0.005
HM16JV004	E17JN14A203	0.01	<0.15	99,369.36	0.81	<0.03	10.02	3.26	0.12	160,707.75	74.64	0.64	78.75	0.42	0.57	129,051.33	0.53
HM16JV004	E17JN14A215	0.01	<0.12	117,493.97	0.84	<0.02	23.4	6.97	0.58	174,101.19	62.48	0.27	34.94	0.05	2.06	110,143.47	3.06
HM16JV004	E17JN14A225	0.01	<0.06	93,927.18	0.39	<0.01	137.63	11.33	0.23	146,449.56	90.45	13	19.06	3.46	0.95	110,096.15	1.24
HM16JV004	E17JN14A203	0.01	<0.12	105,011.59	0.06	<0.02	3.52	2.19	0.31	169,444.11	186.28	0.29	238.68	0.05	2.74	125,780.40	3.82
HM16JV004	E17JN14A201	0.01	<0.07	107,788.28	0.43	<0.02	13.58	5.16	0.07	166,905.61	28.74	0.36	150.13	0.17	0.47	121,112.19	0.25
HM16JV004	E17JN14A200	0.01	<0.10	105,297.88	0.06	<0.02	20.83	2.92	0.11	163,055.63	6.26	0.47	115.9	0.05	0.59	126,707.55	0.15
HM16JV004	E17JN14A223	0.01	<0.09	115,639.91	0.8	<0.01	7.96	0.37	0.08	167,316.42	7.58	0.14	8.64	0.05	0.76	110,906.35	0.63
HM16JV004	E17JN14A217	0.01	<0.06	113,739.96	0.55	<0.01	28.16	554.58	0.4	148,046.73	18.59	0.44	5.09	0.31	1.06	99,057.76	0.95
HM16JV004	E17JN14A201	0.01	<0.11	102,325.77	0.06	<0.03	20.54	2.29	0.07	156,560.92	46.48	0.54	197.93	0.68	0.47	126,242.25	0.3
HM16JV004	E17JN14A212	0.01	<0.18	103,360.01	0.06	<0.03	30.73	3.63	0.35	156,582.78	87.15	0.42	94.69	0.05	1.28	121,979.42	1.59
HM16JV004	E17JN14A218	0.01	<0.08	108,383.93	0.73	<0.02	16.65	2.71	0.4	169,864.27	225.47	0.17	9.44	0.29	1.02	124,488.95	1.41
HM16JV004	E17JN14A218	0.01	<0.09	103,006.47	1.14	<0.02	33.9	3.5	0.76	159,423.27	553.43	0.14	12.2	0.29	1.98	128,489.52	3.65
HM16JV004	E17JN14A214	0.01	<0.12	107,831.59	11.33	<0.02	74.24	4.37	10.21	156,517.61	842.33	0.27	80.72	0.05	6.27	116,541.31	6.95
HM16JV004	E17JN14A214	0.01	<0.15	120,556.15	7.49	<0.03	49.37	6.76	3.68	173,665.22	685.62	0.18	134	0.68	4.47	110,311.82	6.28
HM16JV004	E17JN14A213	0.01	<0.15	109,523.12	11.11	<0.02	41.99	3.93	8.2	163,821.49	176.52	0.51	108.1	0.73	3.09	110,848.66	2.06
HM16JV004	E17JN14A216	0.01	<0.11	116,105.08	0.06	<0.02	4.13	4.61	0.52	169,515.80	15.05	0.28	132.34	0.05	2.42	115,418.75	3.81
HM16JV004	E17JN14A216	0.01	<0.12	108,803.91	0.06	<0.02	1.93	5.8	0.65	162,933.27	14.07	0.005	155.9	0.05	2.29	119,037.28	4.61
HM16JV004	E17JN14A202	0.01	<0.09	99,584.87	0.5	<0.01	1.37	1.85	0.05	163,326.71	9.11	0.1	122.72	0.05	0.71	135,964.48	1.13
HM16JV004	E17JN14A199	0.01	<0.12	106,304.27	0.74	<0.02	2.39	1.8	1.39	159,053.57	55.52	0.2	216.78	0.05	0.34	121,880.81	0.25
HM16JV004	E17JN14A211	0.01	<0.13	98,591.87	3.67	<0.02	9.36	2.45	4.44	159,674.28	22.33	0.74	160.06	0.05	1.24	136,133.32	0.85
HM16JV004	E17JN14A199	0.01	<0.10	111,367.10	0.96	<0.01	2.68	1.48	2.34	169,434.51	47.88	0.14	239.87	0.05	0.35	119,244.62	0.3
HM16JV004	E17JN14A211	0.01	<0.14	98,494.30	6.15	<0.02	13.13	2.65	4.66	157,127.31	22.71	1.81	158.9	0.55	1.69	132,502.08	1.25
HM16JV004	E17JN14A204	0.01	<0.18	108,103.46	1.85	<0.04	5.56	1.83	2.09	161,300.53	155.56	0.12	155.03	0.05	1.37	119,846.23	2.67

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Ag107	Ag109	Al27	As75	Au197	B11	Ba137	Bi209	Ca43	Ce140	Co59	Cr53	Cu65	Eu153	Fe57	Gd157
HM16JV004	E17JN14A220	0.01	<0.09	115,800.82	0.06	<0.02	12.52	7.79	0.37	168,398.83	117.08	0.005	9.68	0.05	0.92	112,652.92	1.36
HM16JV004	E17JN14A204	0.01	<0.08	109,937.97	1.2	<0.02	6.6	2.05	1.73	163,744.70	351.61	0.12	162.68	0.05	2.51	118,657.81	4.23
HM16JV004	E17JN14A221	0.01	<0.09	102,173.38	0.06	<0.02	32.81	3.58	0.46	157,577.83	107.75	0.04	1.63	0.05	0.58	127,037.60	0.76
HM16JV004	E17JN14A224	0.01	<0.12	120,198.36	3.05	<0.02	19.76	4.55	4.79	171,143.17	548.63	0.2	3.25	0.38	6.75	104,814.80	6.51
HM16JV004	E17JN14A222	0.01	<0.10	102,867.15	0.06	<0.02	6.36	1.26	0.29	161,286.99	135.37	0.09	0.96	0.05	0.52	129,397.07	4.25
HM16JV004	E17JN14A221	0.01	<0.10	108,011.85	0.06	<0.02	6.68	1.56	0.19	170,944.67	70.48	0.04	0.2	0.05	0.35	128,717.14	0.28
HM16JV006	C17MA20A0011	0.01	<0.07	125,570.68	67.57	<0.01	78	16.76	4.52	164,998.40	18.18	0.15	3.52	2.01	5.78	84,595.67	1.99
HM16JV006	C17MA20A0014	0.01	<0.08	120,477.67	105.93	<0.01	109.98	8.2	3.84	159,315.52	10.69	0.19	0.99	10.74	4.5	90,815.00	2.1
HM16JV006	C17MA20A0013	0.01	<0.08	124,155.51	138.37	<0.01	93.81	5.72	1.21	164,716.49	0.52	0.23	0.2	5.16	0.81	86,670.03	0.17
HM16JV006	C17MA20A0010	0.01	<0.08	124,540.27	58.51	<0.01	39.55	3.11	0.29	161,648.52	1.32	0.1	1.13	0.53	0.25	83,778.26	0.32
HM16JV006	C17MA20A0012	0.01	<0.19	115,085.75	131.16	<0.03	49.08	3.38	0.93	162,189.91	0.26	0.005	0.2	2.9	0.92	95,513.76	0.45
HM16JV006	C17MA20A0008	0.01	<0.13	119,489.34	60.9	<0.02	50.8	2.85	0.5	157,761.18	1.81	0.11	1.56	0.74	0.42	85,907.07	0.33
HM16JV006	C17MA20A0009	0.01	<0.08	124,470.53	48.67	<0.01	39.41	5.86	0.38	167,564.81	1.51	0.13	1.45	6.83	0.35	85,968.53	0.26
HM16JV006	C17MA20A0015	0.01	<0.08	116,079.56	61.07	<0.01	11.26	66.85	0.03	163,316.55	0.06	0.04	0.2	0.05	0.45	97,381.09	0.05
HM16JV006	C17MA20A0007	0.01	<0.09	127,688.92	66.58	<0.01	26.8	0.27	0.06	165,339.49	0.005	0.09	0.2	0.05	0.02	84,506.02	0.005
HM16JV006	C17MA20A0007	0.01	<0.12	119,919.22	116.05	<0.02	71.97	1.37	0.48	157,166.40	0.02	0.11	1.62	0.05	0.03	80,961.80	0.01
HM16JV006	C17MA20A0020	0.01	<0.08	114,583.70	30.56	<0.02	87.56	8.48	7.64	157,801.86	133.24	0.31	2.08	12.01	31.31	96,949.12	27.14
HM16JV006	C17MA20A0018	0.01	<0.09	123,842.62	77.7	<0.01	29.96	1.74	0.2	167,683.10	2.55	0.12	3.09	0.05	0.93	93,858.63	1.31
HM16JV006	C17MA20A0016	0.01	<0.08	115,509.47	16.78	<0.01	108.6	5.97	0.45	162,350.71	29.44	0.15	8.59	1.88	3.69	102,900.64	4.49
HM16JV006	C17MA20A0019	0.01	<0.10	95,006.96	1.77	<0.02	30.49	0.72	0.005	155,946.57	0.33	0.14	4.86	0.42	0.11	133,190.19	0.16
HM16JV006	C17MA20A0017	0.01	<0.09	122,010.50	65.29	0.01	50	3.24	0.38	155,774.48	0.2	0.09	0.2	1.52	0.16	85,811.04	0.09
HM16JV006	C17MA20A0016	0.01	<0.10	108,295.28	14.02	<0.01	138.24	4	0.31	154,005.97	25.03	0.14	20.92	1.04	1.56	108,094.25	1.67
HM16JV006	C17MA20A0021	0.01	<0.08	121,931.22	69.47	<0.01	60.92	13.84	2.1	170,554.19	38.9	0.17	13.44	7.76	3.4	97,527.46	2.41
HM16JV006	C17MA20A0023	0.01	<0.08	114,089.22	30.66	<0.01	53.98	4.77	4.06	157,746.33	30.65	0.11	7.88	2.42	5.15	99,536.38	2.92
HM16JV006	C17MA20A0022	0.01	<0.10	114,940.29	42.28	<0.01	49.31	5.85	1.74	157,326.59	56.12	0.12	5.05	5.68	9.22	102,479.60	6.86
HM16JV006	C17MA20A0025	0.01	<0.07	113,882.80	26.21	<0.01	30.11	3.59	4.23	167,977.94	107.18	0.1	3.37	1.79	12.7	107,737.55	11.45
HM16JV006	C17MA20A0025	0.01	<0.08	100,792.03	1.94	<0.01	30.78	1.91	0.11	156,547.74	8.36	0.14	0.2	1.59	0.78	123,549.35	1.19
HM16JV006	C17MA20A0024	0.01	<0.08	108,755.08	6.24	<0.01	71.19	4.79	0.12	168,420.51	1.87	0.21	0.2	0.54	0.41	107,949.93	0.42
HM16JV006	C17MA20A0027	0.01	<0.07	125,824.91	89.94	<0.01	60.01	1.49	0.55	163,087.90	0.65	0.09	0.2	0.05	0.25	82,088.15	0.24
HM16JV006	C17MA20A0026	0.01	<0.08	130,466.87	70.36	<0.01	49.99	4.8	0.2	167,140.11	0.01	0.09	0.2	0.35	0.02	78,203.87	0.005
HM16JV006	C17MA20A0031	0.01	<0.09	119,739.91	3.94	<0.01	10.06	4.13	3.94	163,851.82	593.83	1.12	1,839.90	0.59	22.74	93,630.16	48.13
HM16JV006	C17MA20A0029	0.01	<0.08	111,877.68	0.06	<0.01	26.43	3.45	0.005	163,223.25	35.24	0.08	109.03	0.46	1.13	107,383.88	1.68
HM16JV006	C17MA20A0028	0.01	<0.07	108,481.69	1.17	<0.01	26.92	5.63	0.005	161,789.01	16.45	0.11	97.18	0.63	0.49	115,678.15	0.67
HM16JV006	C17MA20A0030	0.01	<0.07	102,640.73	0.06	<0.01	4.17	0.35	0.005	159,046.16	0.14	0.08	30.5	0.05	0.17	118,793.96	0.24
HM16JV006	C17MA20A0030	0.01	<0.06	117,212.66	0.06	<0.01	29.28	0.49	0.005	172,958.13	0.25	0.15	52.41	0.05	0.38	106,609.15	0.69
HM16JV007	E17JN14A480	0.01	<0.11	103,965.24	0.67	<0.02	38.66	1	0.09	158,697.63	213.04	0.11	176.3	1.15	4.47	126,124.82	6.87
HM16JV007	E17JN14A474	0.01	<0.22	122,929.40	10.97	<0.03	23.09	21.83	1.7	175,892.71	356.18	0.28	2,169.66	3.19	16.35	102,633.06	24.78
HM16JV007	E17JN14A488	0.01	<0.09	105,298.07	0.06	<0.02	19.9	0.49	0.05	162,813.70	36.67	0.11	11.84	0.31	1.83	124,695.43	1.68
HM16JV007	E17JN14A482	0.01	<0.11	119,250.63	0.06	<0.02	38.33	4.37	0.05	171,281.59	160.69	0.4	180.25	0.47	6.88	102,616.20	5.89
HM16JV007	E17JN14A478	0.01	<0.19	110,603.96	0.06	<0.03	16.22	3.31	0.005	174,883.08	25.4	1.65	412.62	0.85	2.08	123,986.19	1.33
HM16JV007	E17JN14A478	0.01	<0.12	106,113.45	0.06	<0.02	18.64	1.56	0.005	161,290.95	28.58	4.59	376.96	4.49	2.45	125,245.21	1.13
HM16JV007	E17JN14A481	0.01	<0.09	114,659.56	0.06	<0.01	20.47	2.38	0.07	169,986.86	7.32	0.36	227.01	0.05	0.99	111,981.98	0.24
HM16JV007	E17JN14A480	0.01	<0.08	112,284.65	0.54	<0.01	21.76	0.54	0.005	169,019.61	128.48	0.18	336.58	0.67	3.72	114,268.03	5.31
HM16JV007	E17JN14A483	0.01	<0.08	117,477.24	1.31	<0.01	54.65	2.1	0.07	169,000.01	501.43	0.23	115.85	2.6	9.57	105,556.52	14.02
HM16JV007	E17JN14A488	0.01	<0.12	116,016.77	0.06	<0.02	10	1.41	0.005	174,691.40	27.81	0.17	15.76	0.53	1.87	112,622.31	1.25
HM16JV007	E17JN14A478	0.01	<0.26	104,245.83	0.06	<0.07	19.63	1.12	0.005	182,448.96	25.64	0.23	406.96	0.05	2.08	126,903.47	0.93
HM16JV007	E17JN14A490	0.01	<0.18	113,985.89	0.06	<0.04	15.72	0.75	0.005	166,109.30	25.84	0.16	22.78	0.52	1.99	103,888.17	1.26
HM16JV007	E17JN14A489	0.01	<0.09	116,164.18	0.06	<0.02	26.69	1.28	0.09	166,034.12	90.07	0.37	33.27	1	4.61	107,504.00	3.84
HM16JV007	E17JN14A473	0.01	<0.08	103,524.32	0.06	<0.01	6.02	5.54	0.005	167,151.97	0.16	0.46	1,409.05	0.37	0.23	128,933.10	0.09
HM16JV007	E17JN14A475	0.01	<0.10	104,897.24	0.06	<0.02	2.56	1.25	0.005	171,635.75	0.16	0.3	2,143.09	0.05	0.58	124,724.45	0.09
HM16JV007	E17JN14A491	0.01	<0.08	120,218.13	0.75	<0.02	33.2	2.12	0.08	163,411.73	23.07	0.17	55.9	0.57	4	98,670.61	1.18
HM16JV007	E17JN14A487	0.01	<0.09	108,719.12	0.06	<0.02	27.38	0.97	0.06	157,722.52	20.49	0.1	10.14	0.77	1.55	117,246.87	1.41

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Ag107	Ag109	Al27	As75	Au197	B11	Ba137	Bi209	Ca43	Ce140	Co59	Cr53	Cu65	Eu153	Fe57	Gd157
HM16JV007	E17JN14A481	0.01	<0.10	109,089.80	0.06	<0.01	13.67	4.62	0.07	159,714.53	11.89	0.26	336.83	0.05	1.09	113,084.93	0.38

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Ag107	Ag109	Al27	As75	Au197	B11	Ba137	Bi209	Ca43	Ce140	Co59	Cr53	Cu65	Eu153	Fe57	Gd157
HM16JV007	E17JN14A479	0.01	<0.08	106,499.95	0.06	<0.01	5.76	2.11	0.005	164,063.14	0.22	0.11	239.17	0.05	0.3	124,520.11	0.08
HM16JV007	E17JN14A486	0.01	<0.13	112,736.00	0.06	<0.02	16.5	0.41	0.005	163,009.12	1.62	0.23	22.13	0.05	1.14	107,840.33	0.32
HM16JV007	E17JN14A486	0.01	0.14	119,035.43	0.06	<0.01	15.94	0.38	0.005	169,396.21	13.07	0.17	22.08	0.05	1.34	104,684.72	0.83
HM16JV007	E17JN14A490	0.01	<0.11	120,033.49	0.06	<0.02	20.13	3.53	0.1	170,429.17	7.51	0.06	29.08	0.05	2.76	99,653.97	0.49
HM16JV007	E17JN14A487	0.01	<0.09	114,712.96	0.06	<0.02	15.59	1.01	0.005	169,061.37	2.44	0.07	17.5	0.05	1.2	112,992.52	0.18
HM16JV007	E17JN14A476	0.01	<0.08	107,191.39	0.06	<0.01	8.4	5.49	0.03	167,374.93	0.39	0.18	1,631.48	0.05	0.33	119,237.76	0.1
HM16JV008	C17MA21A0356	0.01	<0.03	110,000.24	0.51	<0.01	20.74	1.04	0.02	162,070.11	91.86	0.44	161.35	0.34	1.69	114,766.82	2.19
HM16JV008	C17MA21A0353	0.01	<0.04	108,076.32	0.64	<0.01	47.7	0.7	0.01	159,598.04	185.77	0.68	104.73	0.4	2.92	119,311.42	3.99
HM16JV008	C17MA21A0354	0.01	<0.05	109,579.52	0.28	<0.01	10.88	0.42	0.005	162,589.01	28.83	0.4	30.58	0.05	0.39	115,846.38	0.63
HM16JV008	C17MA21A0355	0.01	<0.04	120,046.01	0.06	<0.01	17.42	0.36	0.005	168,078.70	51.67	0.17	15.25	0.24	1.12	100,168.08	2.07
HM16JV008	C17MA21A0361	0.01	<0.06	106,435.45	0.06	<0.01	17.65	1.8	0.02	157,459.98	66.59	0.13	16.36	0.36	0.92	116,657.24	1.28
HM16JV008	C17MA21A0357	0.01	<0.04	115,018.18	0.11	<0.01	16.26	0.13	0.005	165,587.31	25.26	0.33	5.72	0.05	0.4	108,800.07	0.44
HM16JV008	C17MA21A0358	0.01	<0.05	114,881.05	0.24	0.02	3.57	1.01	0.005	172,758.82	28.79	0.23	36.25	0.05	0.4	112,080.76	0.68
HM16JV008	C17MA21A0358	0.01	<0.07	106,243.60	0.06	<0.01	3.26	0.91	0.005	158,467.73	27.09	0.22	43.49	0.05	0.45	114,303.73	0.93
HM16JV008	C17MA21A0359	0.01	<0.04	106,175.07	0.06	<0.01	6.87	0.98	0.01	161,124.17	31.03	0.005	30.11	0.05	0.71	121,788.34	0.83
HM16JV008	C17MA21A0361	0.01	<0.04	115,195.74	0.06	<0.01	4.58	2.16	0.03	168,133.19	7.36	0.005	21.15	0.05	0.17	109,930.78	0.24
HM16JV008	C17MA21A0360	0.01	<0.04	114,839.07	0.06	<0.01	2.13	0.26	0.01	163,961.20	12.48	0.08	22.86	0.05	0.25	107,443.05	0.4
HM16JV008	C17MA21A0368	0.06	<0.04	104,621.56	0.06	<0.01	7.71	1.66	0.03	165,576.52	50.92	0.13	0.2	0.05	0.45	129,601.72	0.78
HM16JV008	C17MA21A0367	0.01	<0.04	112,981.24	0.29	<0.01	8.33	0.57	0.01	163,333.42	19.51	0.05	0.72	0.05	0.44	110,628.42	0.9
HM16JV008	C17MA21A0364	0.01	<0.04	109,757.37	0.06	<0.01	7.4	2.68	0.005	159,761.35	39.67	0.005	0.81	0.23	0.51	112,135.69	1.24
HM16JV008	C17MA21A0365	0.01	<0.04	116,925.33	1.13	<0.01	13.93	2.39	0.06	163,197.67	11.02	0.005	0.73	0.05	0.41	99,924.47	0.43
HM16JV008	C17MA21A0371	0.01	<0.04	109,484.03	0.21	<0.01	20.09	0.78	0.03	163,432.45	57.39	0.88	122.05	0.33	0.85	114,389.03	1.47
HM16JV008	C17MA21A0372	0.01	<0.06	107,837.65	0.41	<0.01	4.53	0.31	0.005	166,440.67	8.83	0.005	0.2	0.05	0.12	123,132.75	0.12
HM16JV008	C17MA21A0370	0.01	<0.03	115,225.12	0.36	<0.01	2.35	3.06	0.08	166,217.72	1.01	0.005	31.04	0.27	0.11	109,215.84	0.13
HM16JV008	C17MA21A0369	0.01	<0.03	110,778.50	0.06	<0.01	2.49	3.16	0.03	164,213.28	0.02	0.005	0.2	0.05	0.01	113,883.41	0.01
HM16JV008	C17MA21A0376	0.01	<0.04	110,919.22	0.72	<0.01	28.33	1.31	0.06	164,548.48	125	0.32	93.96	0.38	1.7	114,157.63	3.34
HM16JV008	C17MA21A0373	0.01	<0.04	102,802.43	0.32	<0.01	10.75	1.22	0.005	163,170.32	95.81	0.36	32.47	1.19	1.22	131,370.64	1.91
HM16JV008	C17MA21A0377	0.01	<0.06	124,071.99	0.37	<0.01	2.44	0.59	0.02	178,591.97	38.99	0.005	111.54	0.05	0.51	102,280.00	1.45
HM16JV008	C17MA21A0377	0.01	<0.04	117,043.47	0.16	<0.01	3.56	0.14	0.01	163,540.18	14.66	0.23	125.89	0.05	0.2	103,247.25	0.27
HM16JV008	C17MA21A0378	0.01	<0.04	114,090.11	0.36	<0.01	4.57	0.81	0.05	162,342.65	16.12	0.06	16.59	0.05	0.18	114,119.09	0.47
HM16JV008	C17MA21A0375	0.01	<0.08	111,565.24	0.06	<0.01	3.11	0.26	0.005	161,581.27	22.84	0.005	143.22	0.05	0.36	107,779.51	0.86
HM16JV008	C17MA21A0379	0.01	<0.04	118,409.73	1.08	<0.01	16.85	2.03	0.09	164,556.95	22.23	0.36	4.9	0.05	0.89	98,343.68	1.7
HM16JV008	C17MA21A0375	0.01	<0.05	120,955.47	0.2	0.02	1.94	0.005	0.005	169,714.37	4.17	0.11	108.04	0.05	0.24	105,915.94	0.36
HM16JV009	E17JN15A034	0.01	<0.08	117,327.56	3.48	<0.01	8.95	2.18	0.76	162,668.61	4.13	0.07	81.01	0.05	1.09	104,127.97	2.61
HM16JV009	E17JN15A036	0.01	<0.11	127,096.66	1.49	<0.02	5.15	4.55	3.38	173,326.37	6.03	0.005	36.7	0.05	1.9	95,462.75	2.34
HM16JV009	E17JN15A030	0.01	<0.05	119,504.50	1.81	<0.01	6.13	3.23	6.24	162,586.50	9.25	0.06	52.07	1.05	1.15	100,838.46	1.42
HM16JV009	E17JN15A033	0.01	<0.06	118,839.86	1.59	<0.01	6.72	3.06	5.08	164,372.91	7.02	0.06	76.19	0.82	1.64	102,309.15	2.43
HM16JV009	E17JN15A031	0.01	<0.06	116,719.43	2.08	<0.01	4.6	3.74	2.11	163,918.61	1.37	0.06	13.51	0.05	0.4	104,129.78	0.62
HM16JV009	E17JN15A048	0.01	<0.05	118,184.30	3.28	<0.01	12.97	3.53	0.88	162,029.57	66.32	0.13	246.6	0.89	3.41	101,109.97	6.61
HM16JV009	E17JN15A038	0.01	<0.06	120,527.46	1.77	<0.01	4.62	1.46	0.59	165,894.57	0.74	0.08	54.23	0.05	0.53	100,803.54	1.26
HM16JV009	E17JN15A032	0.01	<0.05	117,077.79	1.46	<0.01	5.58	3.76	4.9	163,422.56	6.62	0.05	43.11	0.86	1.46	103,117.03	2.09
HM16JV009	E17JN15A047	0.01	<0.05	117,404.32	1.55	<0.01	11.11	4.05	2.91	161,045.63	1.33	0.05	26.54	0.05	0.67	101,398.67	1.1
HM16JV009	E17JN15A037	0.01	<0.06	119,890.45	1.78	<0.01	6.6	3.92	3.84	163,999.29	9.33	0.04	42.63	0.51	3.71	97,757.12	3.58
HM16JV009	E17JN15A046	0.01	<0.09	124,956.79	1.68	<0.01	1.72	1.91	0.83	173,141.16	0.04	0.11	0.89	0.05	0.05	99,074.93	0.005
HM16JV009	E17JN15A046	0.01	<0.10	118,540.57	1.61	<0.01	4.82	3.2	1.17	164,375.56	1.17	0.05	0.2	0.05	0.1	103,403.15	0.09
HM16JV009	E17JN15A045	0.01	<0.05	118,783.37	1.74	<0.01	4.47	4.15	2.05	163,547.37	0.1	0.05	1.46	0.05	0.29	101,025.94	0.24
HM16JV009	E17JN15A052	0.01	<0.09	114,600.47	2.26	<0.03	5.65	5.94	1.47	155,174.64	17.35	0.09	6.3	1.87	1.73	99,647.19	2.61
HM16JV009	E17JN15A052	0.01	<0.04	120,504.14	2.11	<0.01	9.52	5.7	1.66	163,274.59	21.55	0.05	11.72	2.15	2.39	96,366.08	3.72
HM16JV009	E17JN15A051	0.01	<0.42	118,506.43	1.5	<0.08	46.89	7.71	2.03	165,102.22	18.12	0.005	28.88	0.05	3.39	119,502.38	4.27
HM16JV009	E17JN15A050	0.01	<0.25	127,203.00	0.06	<0.05	73.83	1.66	0.27	180,709.20	8.51	0.08	4.34	0.05	0.27	104,236.51	0.22
HM16JV009	E17JN15A027	0.01	<0.07	107,755.57	2.29	<0.01	91.02	0.005	0.16	159,607.87	1.24	0.08	0.2	0.05	0.12	118,994.44	0.23
HM16JV009	E17JN15A028	0.01	<0.07	114,569.73	2.44	<0.01	90.64	0.58	0.19	169,773.54	23.75	0.1	0.2	0.93	0.38	111,729.91	0.51

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Ag107	Ag109	Al27	As75	Au197	B11	Ba137	Bi209	Ca43	Ce140	Co59	Cr53	Cu65	Eu153	Fe57	Gd157
HM16JV009	E17JN15A028	0.01	<0.07	110,632.32	3.18	<0.01	134.7	0.39	0.24	157,616.90	6.88	0.07	0.8	0.34	0.24	109,058.90	0.46
HM16JV009	E17JN15A029	0.01	<0.08	109,763.84	3.4	<0.01	124.96	0.38	0.32	160,188.06	12.28	0.11	0.2	0.4	0.39	115,216.91	0.57
HM16JV009	E17JN15A027	0.01	<0.06	114,426.51	2.55	<0.01	124.18	0.14	0.21	167,973.54	9.93	0.13	0.2	0.05	0.19	110,922.09	0.38
HM16JV009	E17JN15A029	0.01	<0.11	107,936.84	2.84	<0.01	120.95	0.1	0.34	156,038.00	8.3	0.08	0.2	0.05	0.23	115,514.21	0.51
HM16JV009	E17JN15A035	0.01	<0.06	107,902.75	2.19	<0.01	88.3	1.16	1.01	163,576.63	43.73	0.46	321.66	20.5	1.38	123,706.25	2.27
HM16JV009	E17JN15A049	0.01	<0.09	111,742.98	0.06	<0.01	33.7	0.16	0.08	164,127.94	12.36	0.06	2.85	1.81	0.32	116,976.26	0.47
HM16JV009	E17JN15A049	0.01	<0.09	109,142.53	0.06	<0.01	17.32	0.21	0.06	175,612.47	15.92	0.005	2.42	1.85	0.46	122,008.70	0.63
HM16JV013	C17MA20A0032	0.01	<0.15	127,831.20	3.2	<0.03	42.6	3.93	0.1	177,001.93	35.08	0.16	6.45	3.09	0.8	94,975.23	1.6
HM16JV013	C17MA20A0044	0.01	<0.07	115,701.54	6.47	<0.01	12.56	2.67	10.28	157,660.80	13.9	0.3	28.25	2.24	0.6	100,399.73	1.21
HM16JV013	C17MA20A0042	0.01	<0.08	122,269.36	21.24	<0.01	119.85	44.34	7.39	164,173.44	6,134.01	0.74	53.87	42.79	124.04	91,304.93	265.48
HM16JV013	C17MA20A0043	0.01	<0.05	106,104.50	9.37	<0.01	31.5	10.65	1.01	159,787.78	409.23	0.92	85.74	13.08	9.85	101,612.85	21.06
HM16JV013	C17MA20A0035	0.01	<0.05	113,904.86	21.96	<0.01	68.04	29.93	6.33	155,899.69	5,110.52	1.24	51.35	54.34	103.66	91,045.28	216.86
HM16JV013	C17MA20A0034	0.01	<0.13	104,962.57	7.45	<0.02	22.57	6.92	0.21	150,882.35	62.29	0.72	60.38	3.68	3.3	111,574.64	4.89
HM16JV015	C17MA20A0055	0.01	<0.12	91,245.34	230.36	<0.01	19.42	2.3	0.23	153,434.37	137.53	0.09	43.32	1.2	3.69	139,610.84	4.48
HM16JV015	C17MA20A0056	0.01	<0.06	95,903.55	211.49	<0.01	10.55	0.35	0.21	175,065.35	11.11	0.18	39.62	0.3	0.96	137,746.11	0.7
HM16JV015	C17MA20A0060	0.01	<0.05	103,789.37	572.73	<0.01	97.3	6.15	1.01	160,768.80	529.3	0.48	206.92	0.05	18.97	121,687.18	46.97
HM16JV015	C17MA20A0062	0.01	<0.05	101,594.50	262.85	<0.01	52.55	1.91	0.53	161,923.12	57.04	0.14	90.5	0.05	3.15	128,580.87	11.24
HM16JV015	C17MA20A0061	0.01	<0.05	101,440.43	126.4	<0.01	29.22	2.06	0.34	160,469.05	97.76	0.17	198.59	0.05	6.3	128,538.50	24.53
HM16JV015	C17MA20A0058	0.01	<0.07	110,260.35	174.85	<0.01	20.61	1.38	0.25	166,478.10	11.8	0.12	15.11	0.05	2.13	121,944.86	3.64
HM16JV015	C17MA20A0057	0.07	<0.07	98,289.58	125.71	<0.01	14.74	0.68	0.49	165,246.13	19.16	0.14	7.78	0.29	2.06	140,483.37	3.61
HM16JV015	C17MA20A0076	0.01	<0.07	101,093.21	148.2	<0.01	51.47	0.77	0.27	166,014.30	36.18	1.06	286.82	0.68	2.87	137,143.98	2.66
HM16JV015	C17MA20A0072	0.01	<0.07	105,104.84	296.42	<0.01	56.23	1.85	0.43	173,569.13	56.51	0.05	72.07	0.31	2.95	129,024.32	4.64
HM16JV015	C17MA20A0074	0.01	<0.05	106,328.07	175.73	<0.01	69.26	0.59	0.7	161,998.66	4.89	0.72	57.89	1.45	0.57	120,264.43	0.42
HM16JV015	C17MA20A0071	0.01	<0.06	98,423.92	1,238.51	<0.01	100.51	3.23	2.16	152,591.96	93.87	0.23	91.57	2.14	8.17	127,482.75	11.29
HM16JV015	C17MA20A0073	0.01	<0.06	101,032.68	92.89	<0.01	7.48	0.11	0.03	158,729.92	0.41	0.15	25.65	0.05	0.83	130,214.61	0.34
HM16JV015	C17MA20A0070	0.01	<0.06	106,849.25	265.03	<0.01	32.58	1.34	0.46	174,694.38	44.1	0.06	13.93	0.91	3.15	127,190.15	4.42
HM16JV015	C17MA20A0090	0.01	<0.06	105,204.34	273.09	<0.01	51.89	1.98	0.69	171,014.85	37.89	1.63	5.5	1.31	0.75	133,781.17	0.98
HM16JV015	C17MA20A0090	0.01	<0.07	99,553.13	305.97	<0.01	63.59	1.42	0.76	151,370.83	7.74	0.85	10.59	0.89	0.93	126,691.49	0.95
HM16JV015	C17MA20A0086	0.01	<0.10	104,554.73	183.9	<0.01	36.43	0.9	0.43	177,814.26	49.32	1.02	10.27	2	0.94	132,463.35	0.78
HM16JV015	C17MA20A0089	0.01	<0.07	99,574.99	290.17	<0.01	15.71	1.71	0.25	152,084.50	32.17	0.14	7.73	1.23	0.72	125,946.18	0.74
HM16JV015	C17MA20A0083	0.01	<0.07	89,996.39	85.89	<0.01	23.93	0.22	0.29	153,380.09	0.98	0.06	5.27	0.05	0.55	141,993.51	0.45
HM16JV015	C17MA20A0085	0.01	<0.07	102,896.09	121.35	<0.01	14.21	1.05	0.03	156,138.14	74.72	10.03	1.43	4.31	0.43	124,254.74	0.6
HM16JV015	C17MA20A0087	0.01	<0.07	109,380.47	89.41	<0.01	29.04	1.09	1.02	171,713.55	11.88	0.14	2.55	0.9	1.48	123,061.66	2.68
HM16JV015	C17MA20A0084	0.01	<0.05	106,343.88	113.19	<0.01	31.41	0.93	0.63	163,533.11	19.86	0.76	3.03	1.93	0.35	123,672.50	0.67
HM16JV015	C17MA20A0088	0.01	<0.05	107,431.38	308.49	<0.01	30.75	0.59	0.31	157,499.03	10.97	0.11	4.06	0.8	0.54	119,668.87	0.53
HM16JV019	E17JN14A422	0.01	<0.09	117,914.83	12.34	<0.02	50.36	2.16	2.97	168,730.02	79.62	0.28	3.68	0.53	7.38	103,896.85	4.09
HM16JV019	E17JN14A423	0.01	<0.08	118,400.31	9.51	<0.01	66.72	1.69	4.09	165,439.45	196.42	0.25	3.29	0.32	4.4	103,263.34	5.59
HM16JV019	E17JN14A398	0.01	<0.10	129,658.39	4.66	<0.02	50.85	4.17	1.56	170,478.83	195.52	0.86	8.37	1.67	3.93	83,532.20	6.3
HM16JV019	E17JN14A402	0.01	<0.06	124,170.06	3.15	<0.01	33.78	4.06	1.46	166,733.15	216.35	0.33	13.48	0.4	3.73	88,905.24	8.09
HM16JV019	E17JN14A409	0.01	<0.07	121,622.77	16.22	<0.01	54.01	0.98	2.99	164,625.64	96.12	0.2	3.26	0.05	3.59	97,396.77	3.09
HM16JV019	E17JN14A417	0.01	<0.10	127,827.53	7.59	<0.02	40.59	2.3	1.11	160,429.69	94.99	0.43	6.35	0.4	2.04	83,514.14	4.19
HM16JV019	E17JN14A410	0.01	<0.07	129,208.53	10.79	<0.01	51.75	3.14	0.29	164,089.48	73.24	0.18	2	0.05	6.92	82,539.41	4.05
HM16JV019	E17JN14A412	0.01	<0.08	111,534.43	11.36	<0.01	47.36	38.34	5.31	165,790.20	48.67	0.86	2.2	1.66	1.27	112,653.63	2.14
HM16JV019	E17JN14A418	0.01	<0.11	122,617.81	12.1	<0.02	60.43	2.85	1.38	160,167.70	145.31	0.3	2.61	0.35	2.08	88,058.98	4.83
HM16JV019	E17JN14A400	0.01	<0.36	140,750.91	5.99	<0.04	34.91	11.96	1.08	174,004.11	135.84	0.45	30.78	0.05	5.36	78,316.27	6.76
HM16JV019	E17JN14A421	0.01	<0.08	136,498.46	15.88	<0.01	63.84	3.39	0.5	162,530.52	94.19	0.22	7.58	0.82	2.52	68,277.85	2.67
HM16JV019	E17JN14A399	0.01	<0.09	130,162.33	6.91	<0.01	38.86	1.74	1.63	163,783.86	184.57	0.33	15.59	1.02	5.89	79,971.64	12.44
HM16JV019	E17JN14A418	0.01	<0.10	133,612.80	7.51	<0.02	37.64	1.02	1.51	171,886.54	46.57	0.33	1.69	0.05	1.29	80,186.49	2.56
HM16JV019	E17JN14A420	0.01	<0.08	125,737.10	17.32	<0.01	47.14	1.17	0.55	162,687.03	12.35	0.36	5.89	0.05	1.89	91,691.91	0.47
HM16JV019	E17JN14A396	0.01	<0.09	130,706.68	7.59	<0.01	24.34	0.91	0.61	169,443.42	44.87	0.38	1.42	0.05	1.05	82,443.41	1.58
HM16JV019	E17JN14A424	0.01	<0.12	132,831.22	8.33	<0.02	44.09	1.74	2.62	169,101.88	30.3	0.56	11.56	0.05	0.83	79,063.59	1.46
HM16JV019	E17JN14A411	0.01	<0.08	123,776.25	16.05	<0.02	59.4	3.46	7.46	169,237.93	89.64	0.28	5.39	0.05	2.61	96,935.96	3.87

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Ag107	Ag109	Al27	As75	Au197	B11	Ba137	Bi209	Ca43	Ce140	Co59	Cr53	Cu65	Eu153	Fe57	Gd157
HM16JV019	E17JN14A411	0.01	<0.10	118,977.73	19.51	<0.02	85.27	3.67	9.51	160,618.44	166.08	0.37	5.86	0.49	2.51	96,295.55	4.89
HM16JV019	E17JN14A415	0.01	<0.07	116,314.29	4.89	<0.01	12.42	0.24	0.87	173,542.58	47.45	0.39	2.13	0.05	2.11	110,202.69	4.63
HM16JV019	E17JN14A425	0.01	<0.08	113,478.81	0.86	<0.01	17.87	2.82	0.28	167,718.92	374.57	2.22	18.49	4.75	23.43	112,899.31	20.28
HM16JV019	E17JN14A419	0.01	<0.08	123,340.54	3.48	<0.01	21.29	2.21	0.32	165,790.05	54.11	1.82	25.39	0.87	2.91	96,920.46	1.61
HM16JV019	E17JN14A416	0.01	<0.14	127,611.89	10	<0.02	50.04	0.46	2.34	160,542.86	15.25	0.52	5.56	0.05	0.27	81,701.27	0.58
HM16JV019	E17JN14A419	0.01	<0.12	119,784.58	2.82	<0.02	28.14	2.79	0.28	151,538.78	64.97	8.22	27.93	2.54	2.43	101,633.94	2.28
HM16JV019	E17JN14A397	0.01	<0.09	130,252.82	8.8	<0.01	27.45	0.18	2.69	169,877.17	12.34	0.34	2.45	0.05	0.2	82,633.29	0.31
HM16JV019	E17JN14A400	0.01	<0.19	128,275.42	3.87	<0.02	26.32	10.31	0.74	161,490.00	65.66	0.34	33.03	0.05	4.17	82,080.61	3.97
HM16JV019	E17JN14A416	0.01	<0.08	134,366.67	10.89	<0.01	54.93	1.19	3.19	166,512.45	36.97	0.55	5.81	0.05	0.93	76,990.80	1.99
HM16JV019	E17JN14A401	0.01	<0.08	135,658.33	6.86	<0.01	59.35	2.04	0.46	165,654.25	142.21	0.41	9.75	0.42	6.95	66,914.96	12.55
HM16JV019	E17JN14A414	0.01	<0.08	126,610.93	12.7	<0.01	65.92	2.62	1.47	164,107.81	44.62	0.36	4.81	0.05	1.04	87,073.08	1.36
HM16JV019	E17JN14A415	0.01	<0.09	112,541.10	6.74	<0.01	19.05	0.57	1.76	162,267.44	28.83	0.44	1.45	0.31	0.97	109,107.07	1.53
HM16JV019	E17JN14A413	0.01	<0.09	128,873.83	10.56	<0.01	54.72	1.58	0.83	164,763.80	142.94	0.37	4.61	0.05	2.69	83,141.20	4.73
HM16JV020	E17JN14A453	0.01	<0.28	106,146.03	3.99	<0.04	119.02	7.95	0.17	157,422.83	2,997.68	0.37	162.3	34.87	49.11	114,624.50	82.26
HM16JV020	E17JN14A450	0.01	<0.07	102,746.25	0.98	<0.01	24.01	2.39	0.16	164,716.56	345.62	0.24	4.55	3.33	80.88	128,962.53	151.64
HM16JV020	E17JN14A453	0.01	<0.09	110,118.63	5.07	<0.01	21.64	2.09	0.07	170,730.96	2,823.11	0.16	289.39	5.73	25.47	113,990.17	66.27
HM16JV020	E17JN14A447	0.01	<0.17	101,863.43	3.27	<0.03	54.08	5.59	0.23	156,560.92	2,575.69	132.81	2.66	232.48	16.05	121,529.89	18.89
HM16JV020	E17JN14A445	0.01	<0.08	109,276.98	2.04	<0.01	25.54	4.03	0.18	165,969.35	948.95	0.22	6.65	3.37	28.19	118,325.06	39.85
HM16JV020	E17JN14A451	0.01	<0.15	112,898.10	0.81	<0.02	7.86	2.28	0.09	171,298.94	195.12	1.87	45.51	14.7	3.82	117,634.88	5.99
HM16JV020	E17JN14A444	0.01	<0.14	106,911.20	0.06	<0.02	16.62	1.42	0.12	157,642.66	136.45	0.005	13.13	1.39	4.34	121,491.16	5.2
HM16JV020	E17JN14A455	0.01	<0.13	107,782.91	6.09	<0.02	55.86	3.09	0.36	156,339.15	3,265.87	7.79	47.31	21.11	60.96	117,217.10	126.54
HM16JV020	E17JN14A449	0.31	<0.24	114,512.01	0.06	<0.04	10.03	1.71	0.15	178,321.26	39.59	0.005	19.17	0.05	1.05	121,287.40	2.51
HM16JV020	E17JN14A454	0.01	<0.08	112,578.24	0.46	<0.01	25.51	9.01	0.28	169,269.78	179.99	1.39	6.91	1.98	10.16	114,091.56	15.36
HM16JV020	E17JN14A444	0.01	<0.09	111,467.08	0.58	<0.01	22.78	3.18	0.04	165,254.42	375.36	0.09	39.85	2.92	8.03	116,977.20	11.74
HM16JV020	E17JN14A455	0.01	<0.09	114,555.63	1.74	<0.01	73.25	1.59	0.2	170,702.53	965.16	2.55	12.88	8.38	20.42	111,354.86	36.59
HM16JV020	E17JN14A446	0.01	<0.12	102,600.89	0.06	<0.02	3.7	1.6	0.08	160,281.70	230.78	2.4	2.52	4	7.55	124,909.34	8.68
HM16JV020	E17JN14A446	0.01	<0.38	122,095.92	0.06	<0.05	6.52	5.27	0.005	173,720.25	128.7	0.005	0.2	0.05	11.69	118,910.75	11.33
HM16JV023	E17JN14A240	0.01	<0.32	114,638.42	14.9	<0.05	156.88	27.56	0.39	173,377.96	6,323.97	2.82	530	141.89	57.74	112,037.32	125.77
HM16JV023	E17JN14A231	0.01	<0.16	107,276.69	4.41	<0.03	156.37	11.3	0.26	153,648.89	2,499.39	1.14	263.52	101.86	23.09	118,243.17	50.99
HM16JV023	E17JN14A239	0.01	<0.09	106,701.57	2.99	0.02	71.24	8.14	0.23	162,992.48	1,114.50	0.64	395.76	55.73	12.08	122,626.55	24.29
HM16JV023	E17JN14A233	0.01	<0.08	111,795.36	13.03	<0.01	126.48	10.73	2.45	159,577.69	7,446.09	2.18	139.42	75.68	117.24	110,016.29	200.79
HM16JV023	E17JN14A240	0.01	<0.09	96,342.23	3.88	<0.02	68.65	10.07	0.11	162,559.12	1,771.97	2.58	469.89	58.98	25.17	114,660.70	36.06
HM16JV023	E17JN14A231	0.01	<0.14	115,308.50	4.65	<0.03	69.4	10.59	0.37	171,604.98	2,177.36	0.72	278.39	42	17.25	114,444.55	42.79
HM16JV023	E17JN14A244	0.01	<0.12	113,277.80	3.36	<0.02	127.71	7.14	0.1	171,031.90	1,355.02	0.62	233.94	48.76	25.55	114,393.40	36.14
HM16JV023	E17JN14A230	0.01	<0.07	101,208.32	2.23	<0.01	52.29	3.53	0.09	163,628.85	915.78	0.54	142.25	29.23	15.29	132,727.59	24.89
HM16JV023	E17JN14A234	0.01	<0.09	109,570.05	4.01	0.02	58.24	4.59	0.11	170,377.24	2,062.37	0.43	177.57	23.9	69.49	119,886.40	102.47
HM16JV023	E17JN14A232	0.01	<0.15	115,388.64	5.38	<0.02	88.2	14.48	0.26	167,356.52	2,688.67	0.59	269.75	36.29	52.87	111,628.20	86.06
HM16JV023	E17JN14A242	0.01	<0.28	117,239.20	3.04	<0.04	26.02	12.35	0.005	178,062.24	813.75	0.71	424.88	20.08	20	118,536.13	24.63
HM16JV023	E17JN14A235	0.01	<0.08	101,417.80	1.07	<0.01	67.15	2.05	0.07	161,653.30	521.3	0.94	86.16	58.86	5.89	132,306.90	9.7
HM16JV023	E17JN14A245	0.01	<0.31	112,649.58	0.06	<0.05	9.13	2.15	0.15	177,663.52	282.73	0.27	110.32	23.29	7.53	127,302.33	7.86
HM16JV023	E17JN14A226	0.01	<0.10	101,579.95	5.53	<0.02	45.9	5.27	0.67	152,132.70	2,617.75	1.66	46.22	56.38	58.39	125,608.87	102.62
HM16JV023	E17JN14A236	0.01	<0.11	112,639.52	2	<0.02	20.48	4.49	0.13	167,599.96	987.25	0.85	485.23	22.68	17.28	113,420.35	23.1
HM16JV023	E17JN14A244	0.01	<0.15	104,258.88	1.14	<0.02	46.99	3.8	0.005	155,723.22	558.94	0.23	195.82	18.35	18.5	116,861.52	20.32
HM16JV023	E17JN14A243	0.01	<0.29	123,569.26	0.06	<0.03	5.89	0.7	0.005	173,849.10	8.85	0.04	89.18	0.05	0.78	115,652.76	0.56
HM16JV023	E17JN14A238	0.01	<0.19	111,711.08	2.51	<0.03	33.4	13.07	0.33	153,728.30	1,276.10	1.53	401.22	20.59	14.3	110,352.88	26.06
HM16JV023	E17JN14A227	0.01	<0.10	101,498.92	0.06	<0.01	2.17	0.71	0.005	164,836.57	22.63	0.08	86.57	0.05	0.93	134,099.27	0.99
HM16JV023	E17JN14A237	0.01	<0.10	111,049.18	0.06	<0.02	5.35	1.19	0.005	166,772.82	13.09	0.04	86.76	0.05	0.65	117,770.75	0.46
HM16JV023	E17JN14A228	0.01	<0.26	113,883.61	1.14	<0.03	7.07	2.97	0.005	172,323.36	93.59	0.21	160.58	3.68	5.7	114,392.64	4.57
HM16JV023	E17JN14A229	0.01	<0.09	112,100.33	0.06	<0.01	3.66	0.62	0.005	165,710.71	32.71	0.06	136.37	0.05	6.05	112,687.44	3.39
HM16JV028	C17MA20A0101	0.01	<0.05	107,200.61	3.18	<0.01	9.66	421.15	5.5	143,913.05	494.56	1.37	264.97	6.73	10.31	97,828.67	22.22
HM16JV028	C17MA20A0102	0.01	<0.07	120,882.76	0.06	<0.01	1.88	1.19	0.13	166,769.38	71.58	0.6	18.89	0.55	0.72	94,387.70	1.28
HM16JV028	C17MA20A0099	0.01	<0.05	118,065.46	0.82	<0.01	4.48	5.6	0.17	154,704.41	519.01	7.87	33.46	5.58	5.26	96,374.41	12.01

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Ag107	Ag109	Al27	As75	Au197	B11	Ba137	Bi209	Ca43	Ce140	Co59	Cr53	Cu65	Eu153	Fe57	Gd157
HM16JV028	C17MA20A0100	0.01	<0.08	121,065.98	1.58	<0.01	4.42	6.27	0.29	156,583.17	814.63	2.81	35.92	5.64	8.19	90,301.36	18.51
HM16JV028	C17MA20A0105	0.01	<0.07	107,141.15	1.35	<0.01	4.63	11.68	0.41	151,864.47	327.19	4.9	19.41	1.91	3.94	109,104.02	6.9
HM16JV028	C17MA20A0110	0.01	<0.25	122,799.87	2.47	<0.04	0.3	8.33	0.26	182,150.21	669.33	0.58	26.88	0.05	6.83	101,709.29	11.61
HM16JV028	C17MA20A0108	0.01	<0.05	110,712.50	0.73	<0.01	2.38	8.06	0.32	147,541.08	434.79	15.51	17.06	1.23	4.64	109,337.60	10.7
HM16JV028	C17MA20A0103	0.01	<0.15	126,870.09	0.78	<0.02	3.25	4.02	0.33	181,832.69	97.91	0.74	0.2	1.16	1.36	95,138.05	1.99
HM16JV028	C17MA20A0104	0.01	<0.06	117,281.13	0.06	<0.01	1.51	7.12	0.39	168,381.69	137.62	0.51	3.08	0.87	1.58	102,862.01	2.8
HM16JV028	C17MA20A0109	0.01	<0.06	112,920.56	0.53	<0.01	2.76	6.34	0.36	157,039.80	307.87	2.03	13.19	1.1	3.25	103,250.36	7.58
HM16JV028	C17MA20A0107	0.01	<0.07	107,542.79	4.83	<0.02	3.98	3.97	0.25	161,042.64	2,187.84	0.43	63.84	0.44	28.61	106,938.68	65.36
HM16JV028	C17MA20A0116	0.01	<0.06	118,325.62	0.67	<0.01	3.16	6.18	0.17	168,499.18	352.83	0.63	26.99	2.21	4.42	102,388.79	9.02
HM16JV028	C17MA20A0112	0.01	<0.05	120,114.33	0.06	<0.01	2.36	2.32	0.35	165,381.80	65.61	0.4	0.71	1.58	0.84	96,004.30	1.32
HM16JV028	C17MA20A0113	0.01	<0.06	116,379.46	1.03	<0.02	2.28	2.37	0.31	157,649.83	420	0.33	7.75	1.41	6.27	94,791.20	15.52
HM16JV028	C17MA20A0111	0.01	<0.05	123,154.14	0.73	<0.01	2.01	2.08	0.49	163,047.04	275.72	0.54	11.01	2.26	3.16	93,230.70	7.17
HM16JV028	C17MA20A0113	0.01	<0.11	137,261.06	0.06	<0.03	0.3	0.67	0.26	185,387.14	176.74	0.37	2.06	0.05	2.24	81,577.27	6.28
HM16JV028	C17MA20A0114	0.01	<0.06	129,478.76	3.46	<0.01	2.39	2.34	0.17	176,897.24	1,515.07	0.47	33.91	1.35	20.28	89,066.21	51.48
HM16JV032	C17MA21A0336	0.01	<0.06	131,435.96	5.62	<0.01	101.4	22.12	0.87	177,742.41	77.48	1.75	1.62	4.24	0.82	87,265.38	1.16
HM16JV032	C17MA21A0337	0.01	<0.03	123,501.22	10.46	<0.01	88.73	4.66	2	164,301.93	36.11	0.48	1.7	0.78	0.95	91,385.64	1.28
HM16JV032	C17MA21A0339	0.01	<0.04	119,510.91	9.81	<0.01	76.95	4.5	1.36	164,523.44	30.07	0.44	0.2	0.05	0.76	94,807.81	1.18
HM16JV032	C17MA21A0338	0.01	<0.04	124,059.81	13.39	<0.01	90.8	5.59	2.85	164,958.42	56.42	0.46	0.77	0.28	1.15	90,258.20	1.62
HM16JV032	C17MA21A0335	0.01	<0.04	120,642.37	6.54	<0.01	65.86	3.22	1.26	164,412.91	11.49	0.53	0.2	0.37	0.62	94,714.00	0.55
HM16JV032	C17MA21A0340	0.01	<0.04	121,727.43	8.31	<0.01	52.09	3.72	0.95	166,650.73	7.64	0.27	1.03	0.05	0.28	98,391.64	0.27
HM16JV032	C17MA21A0347	0.01	<0.04	123,718.71	17.47	<0.01	107.43	5.92	4.25	168,408.37	124.34	0.29	2.89	1.18	3.58	95,506.15	4.62
HM16JV032	C17MA21A0341	0.01	<0.04	119,233.56	14.24	<0.01	92	5.64	2.77	163,693.17	41.57	0.38	3.11	0.45	1.54	97,612.96	1.39
HM16JV032	C17MA21A0342	0.01	<0.04	118,492.69	14.59	<0.01	96.84	5	3.34	163,661.71	50.79	0.38	2.01	0.6	1.6	99,168.97	1.84
HM16JV032	C17MA21A0352	0.01	<0.04	120,905.83	15.5	<0.01	97.39	5.56	3.45	165,508.10	45.24	0.38	1.77	0.39	2.34	95,640.31	2.02
HM16JV032	C17MA21A0346	0.01	<0.04	119,875.16	13.85	<0.01	95.93	6.36	2.64	163,649.46	65.77	0.39	1.23	1.29	1.73	95,705.85	2.04
HM16JV032	C17MA21A0343	0.01	<0.04	121,359.57	11.36	<0.01	107.26	3.6	2.95	163,724.53	53.79	0.51	0.2	1.37	1.15	94,231.65	1.72
HM16JV032	C17MA21A0348	0.01	<0.05	119,765.62	7.09	<0.01	93.24	3.49	1.17	160,629.97	16.96	0.49	0.2	0.97	0.59	93,960.55	0.58
HM16JV032	C17MA21A0348	0.01	<0.04	126,973.90	14.16	<0.01	76.54	6.24	1.93	170,873.75	40.55	0.35	0.2	1.12	1.39	90,429.19	1.41
HM16JV032	C17MA21A0350	0.01	<0.06	118,530.68	11.16	<0.01	92.26	4.37	2.72	159,331.61	32.61	0.57	0.2	0.94	0.93	94,663.18	1.2
HM16JV032	C17MA21A0344	0.01	<0.03	116,946.87	7.52	<0.01	58.46	6.36	0.77	165,997.64	32.42	0.43	0.2	0.68	0.58	99,871.32	0.87
HM16JV032	C17MA21A0345	0.01	<0.04	116,289.71	5.57	<0.01	51.97	3.2	1.02	164,266.65	19.18	0.4	0.2	0.62	0.4	103,901.20	0.63
HM16JV032	C17MA21A0351	0.01	<0.04	124,081.00	8.02	<0.01	82.43	4.69	2.47	163,976.63	37.91	0.42	0.2	1.32	0.56	89,214.85	1.19
HM16JV032	C17MA21A0350	0.01	<0.05	122,989.83	8.31	<0.01	62.1	5.77	1.42	168,998.82	32.63	0.47	0.2	3.75	1.02	97,181.49	0.98
HM16JV032	C17MA21A0349	0.05	<0.04	127,600.28	7.14	<0.01	84.73	4.26	1.24	169,633.17	28.58	0.44	0.2	0.69	1.18	85,804.84	1.71
HM16JV032	C17MA21A0349	0.01	<0.06	121,061.69	9.1	<0.01	80.25	5.38	0.68	159,628.14	6.43	0.35	0.2	0.05	0.98	91,046.67	0.78
HM16JV036	E17JN15A197	0.01	<0.17	113,215.96	3.04	<0.02	65.57	1.07	0.005	158,032.91	28.14	0.6	13.74	0.64	0.45	105,526.45	0.38
HM16JV036	E17JN15A191	0.01	<0.11	109,035.63	2.43	<0.01	10.17	1.3	0.005	161,532.59	159.84	0.21	29.93	1.72	2.06	111,258.45	4.17
HM16JV036	E17JN15A189	0.01	<0.06	112,650.38	4.21	<0.01	9.88	1.55	0.005	164,803.41	476.98	0.55	137.71	4.05	5.58	112,844.79	11.05
HM16JV036	E17JN15A193	0.01	<0.06	111,689.86	3.12	0.01	3.62	1.15	0.005	170,498.45	327.97	0.17	48.01	0.05	2.87	115,698.61	4.99
HM16JV036	E17JN15A187	0.01	<0.05	114,151.82	1.25	<0.01	5.93	0.45	0.005	165,474.64	4.45	0.13	9.83	0.18	0.04	110,699.20	0.05
HM16JV036	E17JN15A188	0.01	<0.13	122,992.47	2.68	<0.02	7.87	0.88	0.005	172,389.90	8.82	0.2	27.91	0.43	0.14	101,245.35	0.15
HM16JV036	E17JN15A192	0.01	<0.05	113,244.02	0.82	<0.01	7.88	1.2	0.005	163,149.63	196.81	1.25	437.9	6.97	1.31	112,718.30	2.27
HM16JV036	E17JN15A191	0.01	<0.07	113,250.65	2.56	<0.01	9.27	1.58	0.005	174,991.06	736.74	1.03	112.54	13.52	6.49	115,283.58	12.62
HM16JV036	E17JN15A182	0.01	<0.20	122,043.19	0.06	<0.03	3.72	0.47	0.005	175,763.77	156.88	0.77	758.32	1.89	2.71	108,110.11	5.88
HM16JV036	E17JN15A180	0.01	0.06	110,102.33	0.87	<0.01	8.79	1.72	0.07	162,709.02	199.21	0.49	348.93	2.5	2.13	113,384.64	4
HM16JV036	E17JN15A196	0.01	<0.07	114,262.56	1.15	<0.01	2.89	3.78	0.005	172,261.50	71.06	0.08	495.95	0.35	1.46	111,664.86	2.25
HM16JV036	E17JN15A186	0.01	<0.09	112,809.97	0.06	<0.01	0.81	0.76	0.005	167,970.38	2.37	0.13	411.62	0.05	0.83	113,466.03	1.7
HM16JV037	C17MA20A0228	0.01	<0.04	109,184.83	0.06	<0.01	10.91	0.72	0.3	160,081.69	14.74	0.16	3.45	0.05	0.42	119,026.55	0.36
HM16JV037	C17MA20A0227	0.01	<0.04	105,917.14	0.3	<0.01	13.84	1.14	0.59	160,890.64	40.03	0.29	1.56	2.91	0.57	125,444.15	0.53
HM16JV037	C17MA20A0251	0.01	<0.07	109,508.15	0.42	<0.01	51.29	6	0.36	154,459.61	141.36	0.18	1.98	2.4	1.07	111,451.03	1.97
HM16JV037	C17MA20A0242	0.01	<0.04	112,121.44	0.58	<0.01	21.93	3.13	0.63	160,432.46	38.68	0.62	1.07	3.18	0.54	112,553.99	0.86
HM16JV037	C17MA20A0254	0.01	<0.05	116,117.60	0.24	<0.01	22.32	2.13	0.14	163,384.87	57.69	0.29	1.7	5.01	0.84	106,229.71	0.91

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Ag107	Ag109	Al27	As75	Au197	B11	Ba137	Bi209	Ca43	Ce140	Co59	Cr53	Cu65	Eu153	Fe57	Gd157
HM16JV037	C17MA20A0226	0.01	<0.07	106,953.34	0.49	<0.01	17.56	2.5	0.16	152,476.63	81.02	0.68	0.2	1.83	0.87	115,685.66	1.38
HM16JV037	C17MA20A0253	0.01	<0.05	115,208.14	0.22	<0.01	26	3.39	0.25	161,983.32	94.55	0.36	2.75	4.92	0.95	105,724.10	1.47
HM16JV037	C17MA20A0250	0.01	0.13	125,882.70	0.06	<0.02	7.82	0.18	0.2	180,252.59	19.52	0.11	1.66	1.62	0.52	103,825.51	0.44
HM16JV037	C17MA20A0229	0.01	<0.04	120,773.39	0.29	<0.01	15.74	6.42	1.11	166,126.81	25.53	0.32	3.95	2.65	0.91	100,833.08	0.65
HM16JV037	C17MA20A0240	0.01	<0.04	113,686.00	0.46	<0.01	21.17	2.3	0.39	159,058.67	26.18	0.44	1.55	6.99	0.75	110,100.35	0.55
HM16JV037	C17MA20A0246	0.01	<0.05	117,828.70	0.27	<0.01	8.77	1.13	0.21	163,551.38	3.57	0.21	2.64	0.28	0.57	107,222.28	0.52
HM16JV037	C17MA20A0245	0.01	<0.05	116,843.61	0.06	<0.01	3.24	2.46	0.13	170,391.24	2.96	0.08	2.32	0.05	0.29	114,064.43	0.41
HM16JV037	C17MA20A0251	0.01	<0.07	114,717.86	0.06	<0.01	34.53	4.32	0.32	158,631.22	84.48	0.09	2.62	0.43	1.07	104,890.67	1.3
HM16JV037	C17MA20A0247	0.01	<0.05	114,344.34	0.44	<0.01	8.47	3	0.23	158,848.16	14.25	0.1	1.33	0.76	0.55	106,909.14	0.58
HM16JV037	C17MA20A0249	0.01	<0.05	116,260.04	0.19	<0.01	11.31	1.29	0.15	161,236.60	24.7	0.31	2.97	5.23	0.6	104,816.34	0.6
HM16JV037	C17MA20A0243	0.01	<0.04	115,616.75	0.32	<0.01	19.49	2.6	0.26	160,829.71	63.54	0.18	3.47	4.28	0.64	107,459.54	0.84
HM16JV037	C17MA20A0255	0.01	<0.04	119,602.03	0.06	<0.01	9.31	0.56	0.07	165,982.99	8.85	0.84	0.2	0.7	0.39	102,078.98	0.28
HM16JV037	C17MA20A0252	0.01	<0.05	119,601.71	0.4	<0.01	14.15	1.67	0.22	166,415.84	29.03	1.26	1.02	2.59	0.56	102,031.00	0.6
HM16JV037	C17MA20A0238	0.01	<0.05	106,742.83	0.35	<0.01	12.1	2.44	0.83	158,753.96	12.14	0.13	2.69	0.64	0.49	123,312.45	0.71
HM16JV037	C17MA20A0225	0.01	<0.04	111,819.71	0.32	<0.01	18	2.22	0.22	157,841.50	48.99	0.39	1.51	7.08	0.74	110,488.63	1.22
HM16JV037	C17MA20A0250	0.01	<0.07	112,673.52	0.38	<0.01	19.15	2.04	0.2	154,722.20	22.99	0.29	4.49	5.04	0.62	106,049.75	0.91
HM16JV037	C17MA20A0241	0.01	<0.05	101,807.09	0.45	<0.01	12	1.54	0.06	156,154.63	55.78	0.49	0.2	10.88	0.43	131,996.60	0.89
HM16JV037	C17MA20A0244	0.01	<0.04	115,987.09	0.06	<0.01	2.41	4.47	0.08	160,999.17	22.01	0.06	5.71	1.39	0.57	106,080.43	1.38
HM16JV037	C17MA20A0230	0.01	<0.04	109,386.85	0.73	<0.01	9.43	10.36	0.22	156,284.83	27.08	0.15	0.77	4.21	0.94	113,796.76	1.78
HM16JV037	C17MA20A0239	0.01	<0.05	110,633.58	0.46	<0.01	13.65	5.45	0.15	157,308.42	31.97	1.66	0.92	6.39	0.82	113,234.20	1.26
HM16JV037	C17MA20A0231	0.01	<0.04	112,440.96	0.95	<0.01	9.67	12.97	0.17	156,229.66	8.81	0.14	0.2	0.76	0.97	107,421.88	1.27
HM16JV037	E17JN14A047	0.01	<0.17	110,759.32	0.06	<0.03	8.07	0.78	0.005	176,424.07	5.52	0.12	6.24	0.05	1.12	124,236.38	2.53
HM16JV037	E17JN14A045	0.01	<0.32	112,992.77	0.06	<0.04	14.65	0.72	0.005	171,622.82	166	0.16	13.47	1	1.65	130,661.43	3.62
HM16JV037	E17JN14A055	0.01	<0.13	113,786.58	0.06	<0.02	11.69	2.51	0.44	172,329.44	0.11	0.12	34.22	0.05	0.1	119,701.87	0.005
HM16JV037	E17JN14A057	0.01	<0.11	110,082.16	0.06	<0.02	17.39	4.95	0.25	158,361.84	75.84	0.16	60.53	0.05	0.51	110,160.59	0.95
HM16JV037	E17JN14A061	0.01	<0.19	100,518.90	1.84	<0.03	18.07	7.72	0.29	154,225.82	325.1	1.2	23.85	0.58	3.77	126,243.14	8.19
HM16JV037	E17JN14A057	0.01	<0.12	117,075.98	0.06	<0.02	13.8	9.6	0.3	169,484.00	146.75	0.13	43.76	0.05	1.21	111,012.30	1.89
HM16JV037	E17JN14A061	0.01	<0.11	101,601.10	0.8	<0.02	17.12	6.31	0.06	156,943.88	306.18	1.6	27.47	0.77	3.06	127,522.11	5.33
HM16JV037	E17JN14A055	0.01	<0.14	118,582.03	0.06	<0.02	16.81	5.16	0.28	164,121.07	0.01	0.22	72.76	0.05	0.09	99,874.19	0.06
HM16JV037	E17JN14A035	0.01	<0.13	104,622.00	1.08	<0.02	9.42	5.47	0.37	157,001.63	72.86	0.35	9.5	0.05	1.22	121,151.04	2.31
HM16JV037	E17JN14A044	0.01	<0.12	113,982.93	1.37	<0.01	33.48	4.89	0.76	154,434.17	227.46	0.27	13.16	1.95	2.5	98,686.37	3.78
HM16JV037	E17JN14A054	0.13	<0.11	105,975.56	0.06	<0.02	1.94	2.48	0.005	159,629.13	48.54	0.21	32.17	0.05	0.57	125,938.45	0.94
HM16JV037	E17JN14A036	0.01	<0.11	109,062.26	0.79	0.02	7.04	0.84	0.005	168,527.17	11.2	0.37	1.47	0.18	0.3	124,017.73	0.26
HM16JV037	E17JN14A048	0.01	<0.11	105,653.18	2.13	<0.02	16.3	8.58	0.04	160,776.06	59.84	1.7	39.16	0.18	4.29	126,105.21	9.14
HM16JV037	E17JN14A046	0.01	<0.15	109,203.32	0.92	<0.02	16.42	0.46	0.005	158,083.68	28.99	0.21	4.72	0.31	2	116,619.23	4.04
HM16JV037	E17JN14A036	0.01	<0.15	104,613.99	0.83	<0.02	6.28	0.55	0.005	158,292.70	7.75	0.27	2.67	0.05	0.23	124,926.54	0.29
HM16JV037	E17JN14A033	0.01	<0.11	102,988.04	1.26	<0.02	9.34	4.79	0.005	166,405.22	141.78	0.68	4.84	0.55	4.16	133,179.43	7.79
HM16JV037	E17JN14A046	0.01	<0.11	114,325.87	0.93	<0.01	16.92	0.64	0.005	167,115.07	7.93	0.25	5.92	0.05	1.53	113,999.38	3.52
HM16JV037	E17JN14A058	0.01	<0.11	112,335.67	1.06	<0.01	6.63	4	0.42	165,099.81	58.31	0.35	16.83	0.2	2.62	116,681.68	3.04
HM16JV037	E17JN14A037	0.01	<0.14	109,915.93	0.06	<0.02	21.32	1.12	0.3	157,502.58	10.62	0.12	8.24	0.05	0.86	115,765.04	0.94
HM16JV037	E17JN14A035	0.01	<0.25	112,578.78	0.06	<0.04	9.13	1.75	0.61	171,246.92	91.06	4.41	4.18	0.05	0.89	128,263.28	1.48
HM16JV037	E17JN14A052	0.01	<0.18	103,946.17	0.06	<0.02	11.01	3.4	0.005	160,541.19	261.46	0.3	1.34	0.05	2.48	123,682.59	4.57
HM16JV037	E17JN14A037	0.01	<0.18	120,728.19	0.06	<0.02	26.7	1.88	0.53	169,878.37	50.01	0.14	11.8	0.38	1.86	106,299.34	2.35
HM16JV037	E17JN14A049	0.01	<0.16	101,213.74	0.06	<0.02	11.79	1.45	0.005	155,223.32	14.51	0.12	1.19	0.05	0.29	130,959.22	0.35
HM16JV037	E17JN14A052	0.01	<0.16	112,862.44	1.71	<0.02	15.21	3.9	0.005	170,650.83	403.05	0.22	1.91	0.05	3.17	118,836.71	5.82
HM16JV037	E17JN14A054	0.01	<0.12	116,579.27	0.06	<0.02	3.52	2.33	0.07	170,821.03	67.6	0.14	33.78	0.05	0.72	111,325.95	1.47
HM16JV037	E17JN14A060	0.01	<0.08	100,373.29	4.17	<0.01	21.82	2.15	0.13	157,014.24	108.64	0.08	0.2	0.22	2.68	128,250.47	3.77
HM16JV037	E17JN14A062	0.01	<0.08	107,700.81	0.06	<0.01	3.02	1.59	0.005	166,499.99	100.47	0.04	0.2	0.05	0.71	128,285.27	1.22
HM16JV037	E17JN14A051	0.01	<0.14	102,447.40	5.06	<0.01	37.51	5.35	0.17	155,613.21	207.32	0.2	4.2	0.05	2.34	127,975.32	4.37
HM16JV037	E17JN14A032	0.01	<0.09	103,960.91	4.79	<0.01	49.88	3.38	0.08	158,791.89	147.61	0.18	2.17	0.3	1.56	123,569.51	2.51
HM16JV037	E17JN14A050	0.01	<0.17	103,225.31	0.06	<0.02	15.63	2.27	0.005	159,537.03	43.02	0.13	1.82	0.05	0.39	124,825.69	0.4
HM16JV037	E17JN14A034	0.01	<0.08	101,915.75	2.13	<0.01	15.23	96.58	0.05	144,496.89	139.16	0.88	4.83	0.98	1.63	115,486.07	3.1

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Ag107	Ag109	Al27	As75	Au197	B11	Ba137	Bi209	Ca43	Ce140	Co59	Cr53	Cu65	Eu153	Fe57	Gd157
HM16JV037	E17JN14A056	0.01	<0.10	115,202.19	0.06	<0.02	4.63	6.96	0.08	166,538.11	15.13	0.05	3.58	0.05	0.23	111,721.20	0.3
HM16JV037	E17JN14A050	0.01	<0.22	105,989.65	0.06	<0.02	5.89	2.68	0.005	168,458.85	121.33	0.28	0.2	0.05	0.99	129,315.11	1.82
HM16JV037	E17JN14A049	0.01	<0.22	106,554.62	0.06	<0.02	4.11	5.59	0.005	173,261.90	27.42	0.09	0.2	0.05	0.26	127,709.60	0.32
HM16JV037	E17JN14A059	0.01	<0.09	99,081.28	2.89	<0.01	17.12	2.08	0.005	160,588.41	28.67	0.07	1.13	0.05	2.16	136,229.06	3.88
HM16JV038	E17JN14A074	0.01	<0.10	110,725.75	0.06	<0.02	0.75	0.29	0.005	167,458.03	0.17	0.02	0.2	0.05	0.24	120,574.46	0.08
HM16JV038	E17JN14A081	0.01	<0.31	119,028.81	0.06	<0.06	0.3	6.29	0.21	174,219.56	25.2	0.2	35.69	0.05	1.13	123,609.66	1.38
HM16JV038	E17JN14A076	0.01	<0.19	119,912.11	0.06	<0.03	3.67	3.04	0.25	177,456.75	84.13	0.005	23.89	0.05	1.08	111,835.86	1.91
HM16JV038	E17JN14A071	0.01	<0.15	119,913.17	0.06	<0.02	7.95	0.64	0.55	175,200.17	12.86	0.005	4.65	0.05	0.81	109,288.85	1.62
HM16JV038	E17JN14A067	0.01	<0.43	120,978.25	0.06	<0.07	18.33	13.88	0.005	176,582.34	103.82	1.86	29.37	1.36	1.58	116,882.84	2.41
HM16JV038	E17JN14A064	0.01	<0.12	112,828.95	0.06	<0.02	7.44	0.41	0.7	163,507.79	1.53	0.05	4.88	0.05	0.55	114,217.68	1.17
HM16JV038	E17JN14A083	0.01	<0.20	121,089.06	0.06	<0.03	1.19	3.33	0.26	179,236.15	20.55	0.2	51.39	0.05	0.63	112,855.99	1.17
HM16JV038	E17JN14A068	0.01	<0.12	114,316.63	0.06	<0.01	3.22	1.29	0.28	167,110.37	23.54	0.08	5.8	0.05	0.57	113,609.80	1.33
HM16JV038	E17JN14A077	0.01	<0.53	119,217.46	0.06	<0.08	4.37	2	0.31	170,426.02	36.22	0.08	4.77	0.59	1.04	123,915.71	1.58
HM16JV038	E17JN14A065	0.01	<0.11	108,013.43	0.06	<0.01	0.73	1.37	0.39	164,274.79	12.49	0.03	17.36	0.05	0.56	123,293.07	1.1
HM16JV038	E17JN14A091	0.01	<0.10	110,553.72	0.06	<0.01	1.72	0.78	0.27	168,377.73	5.81	0.05	19.54	0.05	1.24	120,423.02	2.06
HM16JV038	E17JN14A080	0.01	<0.09	114,271.17	0.06	<0.02	1.38	0.61	0.25	169,150.69	29.41	0.08	14.41	0.05	0.54	115,542.14	1.06
HM16JV038	E17JN14A092	0.01	<0.09	111,501.60	0.06	<0.01	2.85	1.68	0.59	168,812.12	16.11	0.04	15.46	0.22	1.41	120,763.32	2.36
HM16JV038	E17JN14A093	0.01	0.09	118,762.21	0.06	<0.01	5.6	1.42	0.12	171,373.47	32.72	0.04	25.68	0.05	0.83	108,536.44	1.51
HM16JV038	E17JN14A066	0.01	<0.33	123,262.82	0.06	<0.04	3.24	5.48	0.28	176,034.56	16.16	0.005	4.45	0.05	1.39	112,722.11	1.75
HM16JV038	E17JN14A069	0.01	<0.08	113,558.82	0.42	<0.01	1.74	0.39	0.16	166,323.79	6.27	0.05	5.37	0.05	0.56	113,595.16	1.22
HM16JV038	E17JN14A078	0.01	<0.31	125,870.11	0.06	<0.05	0.3	0.95	0.21	184,209.03	10.77	0.32	42.78	0.05	0.46	108,682.30	1.02
HM16JV038	E17JN14A072	0.01	<0.19	107,791.89	0.06	<0.03	5.45	3.38	0.29	162,189.98	23.91	0.005	0.2	0.05	1.19	124,531.15	1.58
HM16JV038	E17JN14A073	0.01	<0.10	117,412.20	0.06	<0.02	5.97	1.64	0.63	169,235.90	3.56	0.03	9.98	0.05	0.87	107,001.33	1.88
HM16JV038	E17JN14A075	0.01	<0.12	116,311.98	0.06	<0.02	0.74	1.13	0.33	170,192.26	46.4	0.06	22.98	0.05	0.7	112,969.84	1.73
HM16JV038	E17JN14A064	0.01	<0.21	123,930.07	0.06	<0.03	9.16	0.86	0.72	176,411.42	5.32	0.005	13.15	0.05	1.82	104,581.40	2.81
HM16JV038	E17JN14A084	0.01	<0.10	113,596.96	0.06	<0.02	1	1.38	0.15	165,905.35	9.11	0.03	45.39	0.05	2.25	113,476.44	3.88
HM16JV038	E17JN14A072	0.01	<0.13	115,457.09	0.06	<0.02	4.25	5.86	0.42	169,754.08	30.75	0.03	0.2	0.05	3.22	111,428.42	4.21
HM16JV038	E17JN14A063	0.01	<0.10	115,958.39	0.06	<0.02	6.14	0.85	0.45	166,790.69	6.8	0.02	9.33	0.05	1.53	113,066.75	2.92
HM16JV038	E17JN14A070	0.01	<0.07	109,887.60	0.06	<0.01	0.83	0.1	0.2	167,028.72	3.02	0.03	11.08	0.05	1.92	119,243.32	3.02
HM16JV038	E17JN14A079	0.01	<0.16	113,837.49	0.06	<0.03	1.37	0.56	0.24	170,091.91	7.19	0.11	24.02	0.05	0.46	114,216.74	0.77
HM16JV038	E17JN14A066	0.01	<0.13	108,515.17	0.06	<0.02	5.7	4.45	0.28	157,381.08	85.75	0.03	2.81	0.05	1.07	117,955.24	1.82
HM16JV039	E17JN14A108	0.01	<0.11	109,279.44	0.06	<0.01	64.55	1.75	0.23	170,125.15	117.08	0.08	0.2	0.34	0.88	122,292.33	0.85
HM16JV039	E17JN14A109	0.01	<0.09	99,470.37	0.06	<0.01	2.75	0.21	0.005	163,763.95	11.69	0.07	0.2	0.05	0.57	139,721.36	0.36
HM16JV039	E17JN14A096	0.01	<0.09	105,682.73	0.06	<0.02	13.46	3	0.13	165,330.58	107.46	0.12	17.99	0.78	0.91	131,288.27	2.23
HM16JV039	E17JN14A103	0.01	<0.18	102,973.60	0.06	<0.03	3.6	0.28	0.005	158,073.96	4.17	0.08	0.2	0.05	0.06	126,245.68	0.005
HM16JV039	E17JN14A095	0.01	<0.10	109,605.69	0.06	<0.02	29.52	3.16	0.24	167,741.56	132.26	0.33	7.69	2.75	1.53	121,376.10	2.01
HM16JV039	E17JN14A103	0.01	<0.14	107,065.08	0.06	<0.02	9.47	0.29	0.005	166,716.61	6.71	0.16	1.26	0.05	0.18	124,877.77	0.12
HM16JV039	E17JN14A103	0.01	<0.12	112,667.75	0.06	<0.02	1.61	0.18	0.005	173,747.66	0.42	0.13	0.2	0.05	0.12	121,236.60	0.005
HM16JV039	E17JN14A105	0.01	<0.08	112,304.50	0.06	<0.01	24.34	2.72	0.16	160,298.29	5.3	0.04	0.2	0.05	1.02	111,233.38	0.38
HM16JV039	E17JN14A103	0.01	<0.73	118,945.44	0.06	<0.17	0.3	0.005	0.005	176,059.32	0.005	0.18	0.2	0.05	0.53	124,525.53	0.005
HM16JV039	E17JN14A100	0.01	<0.08	114,558.77	0.06	<0.01	48.08	3.39	0.3	162,460.93	5.21	0.06	0.2	0.05	0.7	107,873.91	0.16
HM16JV039	E17JN14A112	0.01	<0.08	108,268.54	0.06	<0.01	11.45	0.64	0.005	164,368.52	1.66	0.15	0.2	0.05	0.15	121,432.09	0.02
HM16JV039	E17JN14A107	0.01	<0.12	104,585.91	0.06	<0.02	41.91	1.13	0.07	155,340.16	95.21	0.17	0.2	0.59	0.8	123,269.92	0.95
HM16JV039	E17JN14A107	0.01	<0.10	111,331.59	0.06	<0.02	30.38	0.75	0.04	163,773.75	30.41	0.15	0.2	0.4	0.7	119,148.90	0.24
HM16JV039	E17JN14A097	0.01	<0.12	113,857.23	0.06	<0.02	12.39	2.41	0.005	158,033.23	48.45	0.07	0.2	0.05	0.32	102,813.03	0.45
HM16JV039	E17JN14A097	0.01	<0.12	123,284.59	0.06	<0.02	19.29	2.32	0.005	167,070.40	121.07	0.04	0.2	0.05	0.61	95,326.53	0.67
HM16JV039	E17JN14A094	0.01	<0.12	113,618.14	0.06	<0.02	13.53	3.32	0.18	173,849.66	336.27	0.24	2.99	0.05	1.72	119,769.94	3.48
HM16JV039	E17JN14A098	0.01	<0.12	120,315.22	0.06	<0.02	31.1	3.48	0.35	166,080.71	1.76	0.06	0.2	0.05	0.6	101,644.35	0.21
HM16JV039	E17JN14A101	0.01	<0.07	100,911.82	0.06	<0.01	29.49	1.08	0.005	160,899.83	134.94	0.08	0.2	0.39	0.85	135,755.27	0.91
HM16JV039	E17JN14A110	0.01	<0.16	111,450.88	0.06	<0.02	21.85	3.06	0.17	161,025.21	9.92	0.07	0.2	0.05	0.54	117,204.98	0.34
HM16JV039	E17JN14A099	0.01	<0.08	113,491.81	0.06	<0.01	32.82	3.71	0.27	160,666.88	1.35	0.05	0.2	0.05	0.56	111,199.24	0.12
HM16JV039	E17JN14A110	0.01	<0.10	109,624.58	0.06	<0.01	43.41	3.34	0.15	158,129.85	154.23	0.01	0.2	0.68	0.75	119,942.71	0.9

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Ag107	Ag109	Al27	As75	Au197	B11	Ba137	Bi209	Ca43	Ce140	Co59	Cr53	Cu65	Eu153	Fe57	Gd157
HM16JV039	E17JN14A098	0.01	<0.11	111,292.44	0.06	<0.02	37.44	3.21	0.36	155,013.61	8.62	0.05	0.2	0.05	0.46	111,298.45	0.14
HM16JV039	E17JN14A111	0.01	<0.09	113,608.53	0.06	<0.01	79.65	1.08	0.1	156,196.58	2.61	0.11	0.2	0.05	0.35	111,290.83	0.05
HM16JV039	E17JN14A094	0.01	<0.11	109,903.40	0.62	<0.02	5.79	3.26	0.07	158,227.83	167.54	0.14	6.95	0.34	0.7	117,586.49	2.43
HM16JV039	E17JN14A114	0.01	<0.12	103,772.65	1.34	<0.02	15.03	11.67	0.08	161,700.29	249.01	0.14	20.33	0.71	1.87	107,081.00	4.38
HM16JV039	E17JN14A106	0.01	<0.08	101,913.93	0.06	<0.01	4.66	2.03	0.005	166,018.70	3.62	0.005	0.2	0.21	0.43	133,631.00	0.61
HM16JV039	E17JN14A102	0.01	<0.07	107,306.93	0.06	<0.01	11.02	1.61	0.03	158,810.88	7.16	0.04	0.2	0.05	0.57	124,897.74	0.37
HM16JV039	E17JN14A104	0.01	<0.08	113,904.70	0.06	<0.01	77.53	0.86	0.1	159,501.03	14.16	0.12	0.2	0.05	0.39	112,529.98	0.1
HM16JV053	E17JN15A284	0.01	<0.05	106,188.41	3.22	<0.01	86.56	4.2	0.42	162,087.25	1,809.43	0.71	5.71	1.05	11.52	125,606.58	18.32
HM16JV053	E17JN15A277	0.01	<0.08	103,784.96	2.99	<0.01	226.25	5.65	0.52	158,089.71	1,622.99	0.11	14.02	0.42	10.28	124,983.59	15.66
HM16JV053	E17JN15A264	0.01	<0.09	102,284.82	1.7	<0.01	71.23	2.63	0.28	154,144.37	930.32	0.27	7.75	1.18	6.35	124,279.29	9.02
HM16JV053	E17JN15A286	0.01	<0.04	102,286.83	2.79	<0.01	64.62	3.94	0.41	159,616.12	1,729.58	0.16	5.85	0.49	10.38	129,313.60	16.39
HM16JV053	E17JN15A269	0.01	<0.46	120,100.48	0.06	<0.07	48.86	1.11	0.21	173,131.62	883.33	0.72	20.05	0.05	5.23	120,229.02	8.38
HM16JV053	E17JN15A263	0.01	<0.05	108,578.83	2	<0.01	53.58	4.28	0.31	165,678.52	1,282.83	0.11	5.88	0.05	7.84	121,243.06	12.2
HM16JV053	E17JN15A279	0.01	<0.19	113,329.71	0.06	<0.03	157.14	5.55	0.12	185,884.01	767.65	0.4	12.77	1.69	4.65	122,118.25	8.32
HM16JV053	E17JN15A285	0.01	<0.09	110,108.81	2.15	<0.01	43.3	4.11	0.68	171,808.10	1,349.25	0.05	12.24	0.05	8.77	120,920.48	13.11
HM16JV053	E17JN15A266	0.49	<0.44	114,617.68	2.5	<0.05	34.45	4.92	0.53	174,744.18	944.68	0.005	4.23	0.05	7.47	124,152.53	11.56
HM16JV053	E17JN15A282	0.01	<0.06	103,281.61	0.06	<0.01	11.52	1.64	1	164,987.16	4.24	0.09	191.32	0.05	0.44	129,937.92	0.51
HM16JV053	E17JN15A261	0.01	<0.05	106,570.77	1.42	<0.01	28.99	2.48	0.17	166,812.00	1,062.52	0.1	5.01	0.36	8.51	125,901.74	12.63
HM16JV053	E17JN15A283	0.01	<0.26	114,382.30	0.06	<0.04	24.84	5.38	0.42	175,275.20	785.83	0.005	3.76	0.05	6.34	117,986.89	8.95
HM16JV053	E17JN15A270	0.01	<0.15	111,336.52	0.06	<0.03	96.72	1.54	0.26	178,414.73	432.78	0.005	5.92	1.05	3.58	131,067.62	5.69
HM16JV053	E17JN15A264	0.01	<0.10	115,977.51	1.38	<0.02	24.05	2.35	0.2	167,647.21	1,119.44	0.16	5.61	0.05	10.05	119,377.63	13.36
HM16JV053	E17JN15A278	0.01	<0.05	106,179.85	0.06	<0.01	13.93	2.62	1.16	165,398.03	4.57	0.17	52.44	0.05	1.05	123,570.15	1.28
HM16JV053	E17JN15A268	0.01	<0.05	102,152.74	0.54	<0.01	28.66	2.01	0.25	160,400.68	393.05	0.02	6.02	0.27	3.31	132,484.02	4.68
HM16JV053	E17JN15A267	0.01	<0.05	106,706.70	0.06	<0.01	36.47	9.33	0.8	157,180.62	243.84	0.48	20.73	0.66	2.51	119,341.79	3.38
HM16JV053	E17JN15A265	0.01	<0.14	113,272.93	0.06	<0.02	17.4	1.88	0.25	174,811.80	201.17	0.2	13.31	0.05	2.7	118,272.31	2.35
HM16JV053	E17JN15A262	0.01	<0.12	101,080.10	0.06	<0.03	19.15	0.95	0.24	158,772.62	278.93	0.005	3.54	0.05	3.67	123,770.85	4.86
HM16JV053	E17JN15A261	0.11	<0.10	107,493.07	0.06	<0.02	6.76	0.06	0.06	158,800.53	86.14	0.07	4.2	0.05	1.8	116,347.84	2.44
HM16JV064	E17JN15A089	0.01	<0.19	105,442.23	0.06	<0.03	21.67	15.26	0.005	159,480.61	41	0.67	58.31	1.46	1.2	111,622.19	2.26
HM16JV064	E17JN15A365	0.01	<0.08	138,576.79	5.65	<0.01	141.51	19.6	0.35	173,359.78	2,601.35	1.85	55.36	14.68	67.24	74,718.74	236.62
HM16JV064	E17JN15A089	0.01	<0.21	116,936.67	1.83	<0.04	8.22	1.52	0.005	172,301.98	164.36	0.51	27.19	0.05	4.23	119,499.41	6.7
HM16JV064	E17JN15A092	0.01	<0.21	121,112.03	0.06	<0.04	8.22	4.33	0.005	173,471.19	150.93	0.17	47.37	0.05	7.59	123,429.16	5.49
HM16JV064	E17JN15A091	0.01	<0.06	103,816.17	0.06	<0.01	12.54	5.1	0.005	160,626.27	40.34	0.16	23.89	0.24	1.71	123,194.14	2.24
HM16JV064	E17JN15A090	0.01	<0.09	116,718.38	0.64	<0.01	7.18	11.19	0.005	177,222.81	21.85	0.45	67.85	0.41	0.85	101,872.69	1.41
HM16JV064	E17JN15A096	0.01	<0.08	103,262.91	0.61	<0.01	31.7	4.66	0.005	159,259.56	98.54	0.79	46.97	0.55	2.83	126,373.62	3.99
HM16JV064	E17JN15A096	0.01	<0.05	107,244.78	0.63	<0.01	23.63	3.66	0.02	171,867.19	102.68	1.05	50.71	1.08	3	120,745.83	4.72
HM16JV064	E17JN15A093	0.01	<0.08	113,958.64	0.06	<0.01	13.47	3.36	0.005	174,911.23	33.67	1.1	42.05	0.45	2.81	118,793.81	2.86
HM16JV064	E17JN15A092	0.01	<0.12	103,341.11	0.06	<0.02	12.57	4.45	0.005	155,759.50	36.2	0.4	28.89	0.52	2.07	124,565.35	2.2
HM16JV064	E17JN15A094	0.01	<0.46	125,917.61	0.06	<0.06	0.3	10.98	0.005	174,360.99	18.26	0.005	36.9	0.05	1.3	107,869.66	1.4
HM16JV064	E17JN15A093	0.01	<0.06	110,381.27	0.06	<0.01	16.76	5.07	0.03	159,865.71	25.01	0.49	41.61	0.45	2.99	112,749.09	1.76
HM16JV064	E17JN15A095	0.01	<0.16	118,317.22	0.06	0.02	11.41	2.99	0.005	173,339.10	144.39	1.3	48.11	1.14	2.97	121,796.81	5.53
HM16JV064	E17JN15A094	0.01	<0.14	107,708.98	0.06	<0.02	3.03	1.37	0.005	157,168.85	13.57	0.14	27.39	0.05	0.63	116,890.22	0.81
HM16JV064	E17JN15A090	0.01	<0.07	111,485.60	0.45	<0.01	26.67	3.11	0.005	158,239.65	108.06	0.39	67.35	0.85	7.13	111,219.88	7.03
HM16JV064	E17JN15A095	0.01	<0.09	106,476.70	0.06	<0.01	9.3	2.34	0.005	157,188.18	34.03	0.29	18.15	0.05	2.45	120,004.03	3.14
HM16JV064	E17JN15A364	0.01	<0.08	115,389.51	0.06	<0.01	8.23	1.66	0.005	183,286.09	0.17	6.61	11.29	1.9	0.1	37,977.07	0.27
HM16JV068	E17JN15A124	0.01	<0.09	120,907.97	2.59	<0.01	100.98	17.39	0.13	173,533.14	964.36	0.2	53.08	6.67	12.17	103,289.11	20.1
HM16JV068	E17JN15A119	0.01	<0.20	121,309.81	2.44	<0.02	54.54	11.79	0.08	184,617.81	749.59	0.21	4.68	0.05	8.49	99,645.04	13.09
HM16JV068	E17JN15A123	0.01	<0.08	111,963.56	1.52	<0.01	81.32	6.49	0.04	160,708.01	342.77	0.15	30.07	0.86	5.39	111,063.08	8.98
HM16JV068	E17JN15A122	0.01	<0.06	115,328.78	1.14	<0.01	54.59	7.57	0.07	163,596.64	357.6	0.12	7.86	1.47	4.87	106,128.43	8.07
HM16JV068	E17JN15A115	0.01	<0.22	135,829.13	1.22	<0.03	36.58	4.95	0.27	182,429.76	138.53	0.19	30.96	0.05	2.5	88,453.78	4.13
HM16JV068	E17JN15A121	0.01	<0.05	111,363.47	1.65	<0.01	96.79	4.91	0.03	161,353.93	343.03	0.17	10.42	0.63	4.45	110,841.86	5.94
HM16JV068	E17JN15A120	0.01	<0.06	116,935.51	1.99	<0.01	47.02	10.87	0.02	163,862.07	96.12	0.12	5.7	0.78	2.17	98,517.13	2.83
HM16JV068	E17JN15A116	0.01	<0.10	117,448.68	0.83	<0.02	2.31	4.83	0.005	174,754.88	52.46	0.1	142.77	0.05	0.72	103,905.45	0.56

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Ag107	Ag109	Al27	As75	Au197	B11	Ba137	Bi209	Ca43	Ce140	Co59	Cr53	Cu65	Eu153	Fe57	Gd157
HM16JV068	E17JN15A117	0.01	<0.05	108,251.03	1.14	<0.01	44.5	14.33	0.005	157,424.31	122.98	0.09	10.58	0.33	2.5	114,327.55	2.71
HM16JV068	E17JN15A118	0.01	<0.12	116,394.83	0.75	<0.02	98.53	2.49	0.005	174,088.15	271.45	0.15	11.85	0.05	6.76	114,518.57	8.4
HM16JV069	C17MA21A0304	0.01	<0.04	120,278.07	0.25	<0.01	1.84	69.23	72.67	162,083.62	0.86	0.76	4.41	0.05	0.57	98,270.58	0.88
HM16JV069	C17MA21A0301	0.01	<0.04	120,184.90	0.48	<0.01	1.4	13.97	50.63	162,145.95	0.29	1.06	28.79	0.05	0.27	96,464.96	1.05
HM16JV069	C17MA21A0307	0.01	<0.04	121,280.74	0.36	<0.01	2.27	14.1	44.59	161,680.30	0.33	1.15	6.83	0.05	0.26	94,353.65	0.86
HM16JV069	C17MA21A0303	0.01	<0.03	117,828.09	0.43	<0.01	1.59	15.88	32.67	163,299.69	30.68	0.37	687.82	0.05	2.37	99,589.90	9.09
HM16JV069	C17MA21A0306	0.01	<0.04	118,639.01	0.62	<0.01	6.17	21.31	35.11	163,474.29	34.69	0.42	409.86	0.05	3.81	100,108.03	16.28
HM16JV069	C17MA21A0302	0.01	<0.04	117,873.45	0.55	<0.01	1.75	17.41	36.73	162,632.84	55.65	0.41	618.27	0.05	4.56	100,639.10	20.35
HM16JV069	C17MA21A0312	0.01	<0.05	120,129.17	0.32	<0.02	1.51	79.4	40.41	162,120.79	3.31	0.74	273.6	2.25	0.68	96,309.09	4.17
HM16JV069	C17MA21A0309	0.01	<0.04	122,118.95	0.74	<0.01	4.43	12.32	46.5	164,927.29	3.59	1.34	225.71	2.15	0.63	93,695.03	3.58
HM16JV069	C17MA21A0308	0.01	<0.04	118,997.88	0.23	<0.01	1.71	20.15	42.69	162,788.16	1.5	1.24	88.71	0.05	0.6	100,451.95	2.34
HM16JV069	C17MA21A0321	0.01	<0.05	119,241.14	0.62	<0.01	1.71	18.05	45.79	161,179.03	26.42	0.75	225.59	0.05	3.09	99,271.89	13.14
HM16JV069	C17MA21A0314	0.01	<0.04	120,741.03	0.41	<0.01	1.1	14.47	29.27	166,339.92	30.2	0.29	578.73	0.05	2.65	98,066.70	9.5
HM16JV069	C17MA21A0310	0.01	<0.04	118,833.47	0.51	<0.01	1.49	14.37	34.53	162,428.34	51.36	0.71	620.18	0.05	3.74	99,365.47	17.1
HM16JV069	C17MA21A0313	0.01	0.03	118,388.47	0.5	<0.01	2.31	18.27	28.79	162,101.16	53.75	0.38	623.45	0.05	3.79	99,757.18	16.24
HM16JV069	C17MA21A0311	0.01	<0.04	118,017.28	0.34	<0.01	1.75	15.48	27.44	162,078.80	55.04	0.34	597.97	0.05	4.22	100,538.04	18.22
HM16JV069	C17MA21A0322	0.01	<0.05	119,831.39	0.21	<0.01	1.34	18.81	26.25	162,450.39	4.07	1.16	952.68	0.05	0.71	96,465.08	3.86
HM16JV069	C17MA21A0324	0.01	<0.04	117,837.79	0.4	<0.01	1.74	68.12	40.5	162,908.16	32.75	0.76	799.31	0.05	2.76	99,041.39	11.45
HM16JV069	C17MA21A0327	0.01	<0.05	126,893.53	0.06	<0.01	1.27	59.32	23.63	171,012.70	0.73	0.57	193.78	0.05	0.52	93,271.68	1.98
HM16JV069	C17MA21A0327	0.01	<0.06	113,522.68	0.06	0.02	1.42	46.56	40.37	156,760.60	25.62	0.69	518.66	0.05	2.68	101,741.24	10.75
HM16JV069	C17MA21A0323	0.01	<0.05	119,025.44	0.87	<0.01	2.98	23.75	33.07	162,061.14	6.95	1.8	735.75	0.05	1.16	99,050.38	6.24
HM16JV069	C17MA21A0325	0.01	<0.04	119,402.58	0.87	<0.01	1.37	27.86	40.13	161,962.45	20.22	1	860.13	0.05	2.13	99,035.99	9.61
HM16JV069	C17MA21A0326	0.01	<0.04	119,070.88	0.85	<0.01	2.59	23.35	29.68	161,296.92	8.21	0.84	819.8	0.05	1.06	99,378.96	6.72
HM16JV069	C17MA21A0328	0.01	<0.04	119,639.94	0.23	<0.01	1.74	29.11	26.07	162,922.87	4.79	1.2	681.85	0.05	0.72	98,184.69	3.91
HM16JV069	C17MA21A0329	0.01	<0.04	119,689.93	0.28	<0.01	1.8	26.34	32.38	161,524.92	3.32	1.8	1,949.77	0.05	0.58	96,697.91	3.5
HM16JV069	C17MA21A0331	0.01	<0.04	119,448.71	0.37	<0.01	1.55	128.87	35.53	162,858.05	0.42	1.02	21.06	0.05	0.41	97,830.18	1.61
HM16JV069	C17MA21A0332	0.01	<0.04	119,810.42	0.17	<0.01	1.93	92.24	41.46	162,753.07	4.82	0.86	73.38	0.05	0.75	96,648.76	2.83
HM16JV069	C17MA21A0330	0.01	<0.04	123,000.11	0.59	<0.01	2.37	22.18	49.23	164,994.72	3.81	2.01	269.98	0.05	0.75	94,328.71	3.96
HM16JV069	C17MA21A0330	0.01	<0.08	111,994.17	0.56	<0.02	0.3	20.07	52.13	154,605.23	30.87	1.41	639.08	0.05	3.57	102,884.36	13.74
HM16JV069	C17MA21A0334	0.01	<0.04	118,399.46	0.38	<0.01	1.94	16.85	30.35	162,413.74	67.47	0.44	735.44	0.05	5.48	101,565.85	24.64
HM16JV069	C17MA21A0333	0.01	<0.03	117,887.44	0.37	<0.01	1.7	16.68	34.82	163,352.36	38.28	0.43	646.36	0.05	3.18	100,514.06	11.69
HM16JV073	E17JN14A395	0.01	<0.34	134,673.82	0.06	<0.08	24.26	0.005	0.25	184,061.83	47.65	0.52	0.2	0.05	1.18	89,943.01	1.84
HM16JV073	E17JN14A394	0.01	<0.08	126,666.93	2.71	<0.02	34.34	0.83	0.32	166,821.12	20.01	0.63	4.43	0.83	0.6	86,362.40	1.09
HM16JV073	E17JN14A378	0.01	<0.08	124,393.64	1.12	<0.01	12.95	2.05	0.11	169,650.41	47.82	0.78	4.83	0.93	1.86	91,324.62	4.29
HM16JV073	E17JN14A393	0.01	<0.10	125,160.92	1.38	<0.01	42.03	2.26	0.18	163,882.95	54.76	0.66	4.82	1.67	1.84	86,347.05	3.52
HM16JV073	E17JN14A386	0.01	<0.08	131,206.22	0.92	<0.01	44.88	2.7	0.1	172,447.74	87.95	0.29	5.02	1.7	2.22	85,148.98	4.64
HM16JV073	E17JN14A381	0.01	<0.35	137,308.57	0.06	<0.05	13.01	8.73	0.005	175,242.82	20.34	0.24	40.47	0.05	1.21	91,172.36	1.94
HM16JV073	E17JN14A392	0.01	<0.09	125,818.08	1.35	<0.01	54.41	3.16	0.08	167,859.01	97.28	0.49	14.05	2.96	2.87	88,713.38	5.58
HM16JV073	E17JN14A380	0.01	<0.48	137,321.50	4.23	<0.05	16.33	1.26	0.005	173,133.36	53.72	0.29	23.24	1.46	1.73	96,051.19	1.1
HM16JV073	E17JN14A390	0.01	<0.16	134,589.28	0.9	<0.02	18.95	2.59	0.005	175,852.45	46.19	0.23	4.96	1.27	1.76	84,844.65	3.24
HM16JV073	E17JN14A372	0.01	<0.07	127,609.52	0.06	<0.01	5.11	0.29	0.12	165,419.47	23.25	0.25	11.92	0.05	1.04	85,478.47	2.81
HM16JV073	E17JN14A376	0.01	<0.16	127,424.47	1.23	<0.02	15.18	4.42	0.28	173,369.98	23.78	0.54	8.28	0.96	0.8	87,310.33	1.3
HM16JV073	E17JN14A389	0.01	<0.08	124,721.25	0.93	<0.01	26.88	1.74	0.12	165,562.00	33.44	0.35	4.98	1.04	1.04	89,964.72	1.89
HM16JV073	E17JN14A384	0.01	<0.15	132,526.16	1.03	0.02	28.86	1.58	0.17	177,199.48	45.61	0.39	3.47	0.85	1.31	85,094.75	2.24
HM16JV073	E17JN14A388	0.01	<0.07	126,640.72	1.11	<0.01	30.79	1.92	0.09	165,821.62	37.32	0.47	1.1	1.01	1.81	88,699.18	3.63
HM16JV073	E17JN14A375	0.01	<0.11	129,002.18	0.77	<0.02	3.02	0.75	0.07	170,096.32	15.28	0.53	1.57	0.36	0.84	87,255.01	2.32
HM16JV073	E17JN14A384	0.01	<0.11	122,763.05	1.55	<0.01	72.66	3.27	0.17	159,820.69	79.76	0.47	2.17	1.62	1.8	89,807.55	4.02
HM16JV073	E17JN14A391	0.01	<0.08	124,451.66	0.74	<0.01	12.21	1.19	0.15	166,205.88	18.49	0.53	9.97	0.93	1.4	90,407.48	2.41
HM16JV073	E17JN14A373	0.01	<0.07	122,264.43	1.16	<0.01	18.15	2.84	0.2	165,104.13	50.32	0.43	2.28	0.64	1.11	95,712.09	2.26
HM16JV073	E17JN14A387	0.01	<0.06	123,138.02	1.88	<0.01	17.76	0.66	0.18	165,683.50	12.86	0.46	3.7	0.05	0.36	95,501.64	0.71
HM16JV073	E17JN14A385	0.01	<0.07	128,599.02	1.42	<0.01	30.71	1.3	0.1	167,112.36	47.76	0.56	4.68	0.78	2.63	82,283.02	5.3
HM16JV073	E17JN14A383	0.01	<0.09	124,852.36	1.06	<0.01	40.56	2.77	0.12	163,166.54	50.47	0.48	4.12	1.37	1.07	90,632.40	2.2

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Ag107	Ag109	Al27	As75	Au197	B11	Ba137	Bi209	Ca43	Ce140	Co59	Cr53	Cu65	Eu153	Fe57	Gd157
HM16JV073	E17JN14A377	0.01	<0.24	136,112.04	0.06	<0.03	10.82	12.54	0.005	178,211.97	26.03	0.64	0.2	0.05	0.77	82,918.48	2.47
HM16JV073	E17JN14A369	0.01	<0.19	98,415.79	1.27	<0.04	36.58	7.47	0.005	151,795.29	894.82	0.56	288.06	1.91	42.52	126,190.36	25.77
HM16JV073	E17JN14A386	0.01	<0.11	124,131.03	0.06	0.02	63.9	2.55	0.14	160,653.97	60.01	1.05	3.6	2.52	2.22	85,026.59	5.56
HM16JV073	E17JN14A382	0.01	<0.08	123,832.23	0.98	<0.01	20.4	2.54	0.12	164,984.61	63.92	0.42	3.59	1.08	1.75	93,169.69	3.61
HM16JV073	E17JN14A370	0.01	<0.09	129,970.02	1.03	0.02	14.01	1.31	0.11	170,728.73	29.2	0.71	6.49	0.38	0.75	85,713.33	2.24
HM16JV073	E17JN14A374	0.01	<0.11	121,853.36	1.05	<0.02	6.69	1.03	0.1	159,773.54	19.28	0.6	5.09	1.68	0.43	91,128.67	0.75
HM16JV073	E17JN14A379	0.01	<0.08	124,641.34	0.58	<0.01	6.48	0.64	0.08	166,960.68	6.26	0.42	13.92	0.05	0.17	92,420.73	0.25
HM16JV073	E17JN14A371	0.01	<0.11	132,108.50	1.07	<0.02	9.25	1.13	0.13	176,530.31	22.57	0.29	4.81	0.05	0.49	88,371.18	1.14
HM16JV073	E17JN14A369	0.01	<0.12	103,986.49	1.22	<0.02	51.84	3.15	0.31	154,747.35	332.14	0.37	255.46	1.01	22.71	122,099.70	11.2
HM16JV076	E17JN15A081	0.01	<0.06	104,954.52	1.67	<0.01	18.32	98.25	0.05	152,574.55	719.13	0.14	8.56	0.28	6.91	109,328.49	10.46
HM16JV076	E17JN15A082	0.01	<0.06	110,714.54	2.01	<0.01	17.69	63.89	0.16	158,508.25	1,122.97	0.32	5.35	0.44	10.87	108,612.05	15.86
HM16JV076	E17JN15A075	0.01	<0.10	115,203.51	0.9	<0.01	9.67	2.41	0.005	166,830.60	337.33	0.26	1.21	0.61	1.96	108,064.85	2.89
HM16JV076	E17JN15A080	0.01	<0.09	109,404.06	1.28	<0.01	11.97	17.07	0.15	156,513.75	788.08	0.29	6.01	0.05	7.29	113,573.50	9.9
HM16JV076	E17JN15A079	0.01	<0.05	110,270.07	1.01	<0.01	9.66	63.47	0.06	156,131.27	485.85	0.34	2.21	0.05	4.97	106,051.01	6.13
HM16JV076	E17JN15A075	0.01	<0.23	114,966.05	0.06	<0.03	7.68	1.51	0.005	178,130.12	314.51	0.07	3.19	0.84	2.31	112,246.12	3.36
HM16JV076	E17JN15A071	0.01	<0.06	104,719.67	0.99	<0.01	12.84	4.24	0.005	158,582.96	297.29	0.55	0.94	0.29	6.82	119,603.94	10.6
HM16JV076	E17JN15A072	0.01	<0.10	109,344.32	1.88	<0.02	31.66	6.91	0.005	171,260.45	343.51	0.17	0.2	0.47	2.07	117,967.30	2.75
HM16JV076	E17JN15A078	0.01	<0.13	102,796.02	1.96	<0.02	44.61	7.19	0.09	151,148.54	395.92	0.3	0.2	0.73	1.49	121,954.30	2.58
HM16JV076	E17JN15A070	0.01	<0.05	105,374.46	1.17	<0.01	2.23	0.44	0.005	162,293.60	21.56	0.2	0.2	0.05	0.19	126,347.69	0.29
HM16JV076	E17JN15A074	0.01	<0.07	109,350.07	0.73	<0.01	22.41	2.79	0.005	167,506.16	299.25	0.33	0.2	0.56	3.09	120,808.61	4.67
HM16JV076	E17JN15A073	0.01	<0.06	110,581.61	1.52	<0.01	19.66	3.9	0.03	164,861.76	265.81	0.49	0.2	0.39	1.84	114,499.19	2.35
HM16JV076	E17JN15A069	0.01	<0.05	113,511.09	0.82	<0.01	29.18	2.72	0.03	161,648.17	283.12	0.74	0.2	0.51	1.77	108,239.68	2.21
HM16JV076	E17JN15A068	0.01	<0.06	104,673.64	0.74	<0.01	7.28	8.53	0.005	160,216.03	76.08	0.22	0.2	0.05	0.44	122,762.98	0.53
HM16JV076	E17JN15A077	0.01	<0.06	114,323.01	0.76	<0.01	11.33	1.76	0.13	166,670.03	55.12	0.59	0.73	0.05	0.5	109,720.81	0.58
HM16JV076	E17JN15A076	0.01	<0.16	111,320.89	0.96	<0.02	2.35	0.31	0.005	174,729.37	86.6	0.27	0.2	0.05	0.65	124,799.69	0.64
HM16JV077	E17JN15A062	0.01	<0.07	119,691.34	0.8	<0.01	63.01	1.08	0.005	168,115.94	90.4	0.28	6.33	0.66	2.24	106,884.64	3.13
HM16JV077	E17JN15A065	0.01	<0.10	119,132.21	0.87	<0.02	51.52	2.56	0.005	170,632.03	95.64	0.18	41.22	2.12	2.3	101,153.13	3
HM16JV077	E17JN15A054	0.01	<0.06	122,094.69	2.06	<0.01	514.52	1.37	0.005	165,319.98	30.76	0.21	61.67	0.05	1.13	91,149.68	0.94
HM16JV077	E17JN15A058	0.01	<0.06	107,309.56	0.83	<0.01	21.54	10.15	0.005	160,839.97	77.55	0.1	4.05	0.68	1.67	119,592.17	4.11
HM16JV077	E17JN15A061	0.01	<0.07	130,967.51	0.96	<0.01	95.42	3.76	0.005	164,518.34	20.31	0.14	6.31	0.46	0.58	78,355.23	0.5
HM16JV077	E17JN15A063	0.01	<0.05	125,401.38	1.09	<0.01	88.93	2.8	0.03	160,458.02	66.86	0.21	14.78	1.72	1.17	89,753.49	1.71
HM16JV077	E17JN15A064	0.01	<0.13	124,923.48	0.96	<0.02	21.76	1.79	0.005	176,891.23	0.24	0.005	62.69	0.05	0.1	94,353.26	0.07
HM16JV077	E17JN15A067	0.01	<0.05	105,902.78	0.99	<0.01	18.65	7.37	0.14	161,331.94	70.75	0.05	1.99	0.27	1.02	124,679.61	2.06
HM16JV077	E17JN15A057	0.01	0.06	127,220.91	1.93	<0.01	139.94	2.12	0.03	169,471.29	94.45	0.3	9.51	0.05	2.37	89,182.80	3.37
HM16JV077	E17JN15A053	0.01	<0.05	131,386.97	0.92	<0.01	138.42	3.59	0.005	163,123.89	8.36	0.14	10.64	0.05	0.36	75,532.58	0.29
HM16JV077	E17JN15A055	0.01	<0.05	107,584.02	0.52	<0.01	16.95	12.36	0.04	159,683.00	56.98	0.02	0.66	0.34	0.53	120,593.85	1.31
HM16JV077	E17JN15A060	0.01	<0.12	103,791.61	0.06	<0.02	6.12	1.48	0.005	176,191.75	67.22	0.04	2.58	0.05	0.85	134,967.16	1.42
HM16JV077	E17JN15A066	0.01	<0.09	106,870.19	0.54	<0.01	9.64	4.17	0.18	171,949.82	64.85	0.07	0.2	0.05	1.8	132,122.32	1.83
HM16JV077	E17JN15A056	0.01	<0.08	137,566.26	2.37	<0.01	218.75	2	0.13	172,937.24	8.06	0.24	30.91	0.05	0.28	74,113.62	0.2
HM16JV077	E17JN15A060	0.01	<0.06	102,414.64	0.95	<0.01	29.99	7.2	0.005	160,711.95	17.73	0.04	1.1	0.23	0.31	131,119.67	0.3
HM16JV077	E17JN15A056	0.01	<0.06	129,162.34	0.93	<0.01	136.08	1.21	0.005	158,591.15	22.08	0.19	20.12	0.05	0.52	81,950.95	0.46
HM16JV077	E17JN15A059	0.01	<0.06	113,511.51	1.1	<0.01	12.58	17.16	0.005	165,405.49	7.17	0.05	0.2	0.05	0.08	110,623.34	0.22
HM16JV077	E17JN15A066	0.01	<0.06	99,305.53	0.06	<0.01	12.48	3.01	0.005	156,538.21	7.81	0.17	0.2	0.05	0.73	134,137.24	0.81
HM16JV082	C17MA20A0202	0.12	<0.08	112,348.92	0.06	<0.02	1.88	0.71	0.03	180,625.16	109.41	0.26	7.91	0.05	1.21	122,834.64	2.64
HM16JV082	C17MA20A0206	0.01	<0.04	94,960.85	1.99	<0.01	25.06	7.15	0.04	145,218.28	192.19	12.36	26.98	0.89	3.55	107,968.09	5.11
HM16JV082	C17MA20A0203	0.01	<0.05	108,397.21	0.48	<0.01	6.48	3.95	0.06	171,697.45	76.13	0.11	11.74	0.58	0.64	128,415.99	1.87
HM16JV082	C17MA20A0207	0.01	<0.04	102,044.80	0.06	<0.01	8.47	5.57	0.02	162,708.06	31.7	5.41	25.63	0.05	0.97	131,940.08	1.43
HM16JV082	C17MA20A0214	0.01	<0.07	110,036.72	1.69	<0.01	18	3.18	0.02	172,582.19	118	0.1	15.2	0.05	2.26	126,564.17	3.64
HM16JV082	C17MA20A0208	0.01	<0.04	100,549.28	0.27	<0.01	9.2	3.02	0.005	162,454.72	128.7	0.16	87.4	0.38	1.38	131,466.03	2.4
HM16JV082	C17MA20A0213	0.01	<0.08	112,475.22	1.82	<0.02	21.55	7.16	0.02	172,529.93	199.55	0.31	20.1	0.05	2.29	121,989.09	4.85
HM16JV082	C17MA20A0211	0.01	<0.07	116,596.19	1.28	<0.01	25.89	3.27	0.005	173,233.91	46.01	0.49	22.99	0.38	0.81	115,366.09	1.62
HM16JV082	C17MA20A0212	0.01	<0.07	107,901.10	0.35	<0.02	7.59	4.4	0.03	173,614.40	75.54	0.22	11.88	0.48	1.44	129,117.27	2.52

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Ag107	Ag109	Al27	As75	Au197	B11	Ba137	Bi209	Ca43	Ce140	Co59	Cr53	Cu65	Eu153	Fe57	Gd157
HM16JV082	C17MA20A0209	0.01	<0.05	103,077.83	0.92	<0.01	6.03	5.58	0.08	159,417.16	227.75	0.38	24.75	0.62	2.43	130,545.44	4.09
HM16JV082	C17MA20A0210	0.01	<0.05	110,090.81	0.52	<0.01	8.79	5.52	0.03	161,043.28	43.49	0.66	33.61	1.28	0.97	120,115.16	2.42
HM16JV086	E17JN15A015	0.06	<0.05	115,409.98	1.27	<0.01	37.36	6.65	0.005	164,522.21	84.79	0.62	1.84	13.56	2.21	108,110.41	5.3
HM16JV086	E17JN15A010	0.01	<0.06	120,136.67	1.65	<0.01	51.33	2.56	0.005	165,886.04	26.48	0.63	0.2	2.25	0.71	99,261.06	1.98
HM16JV086	E17JN15A018	0.01	<0.07	111,767.39	1.18	<0.01	3.39	0.56	0.005	164,750.16	0.1	0.34	0.88	0.05	0.06	111,816.34	0.005
HM16JV086	E17JN15A008	0.01	<0.07	124,536.24	0.74	<0.01	22.8	2.43	0.005	168,261.74	13.15	0.77	0.2	1.35	0.66	99,000.96	1.15
HM16JV086	E17JN15A008	0.01	<0.08	117,097.36	1.1	<0.01	30.42	1.98	0.005	161,617.18	0.67	0.7	0.2	0.05	0.14	102,417.28	0.11
HM16JV086	E17JN15A018	0.01	<0.07	115,076.98	1.04	<0.01	6.91	0.59	0.005	169,021.13	2.76	0.33	1.03	0.05	0.2	109,574.57	0.16
HM16JV086	E17JN15A022	0.01	<0.09	113,285.69	0.94	<0.01	33.07	1.64	0.005	160,222.13	6.19	0.35	0.2	0.9	0.23	108,037.21	0.58
HM16JV086	E17JN15A022	0.01	<0.06	124,094.24	1.36	<0.01	40.41	3.31	0.005	169,958.59	0.09	0.39	1.28	0.05	0.06	97,448.93	0.005
HM16JV086	E17JN15A017	0.01	<0.05	109,720.33	0.06	<0.01	5.69	0.92	0.005	165,105.93	0.01	0.3	1.81	0.05	0.01	120,184.67	0.005
HM16JV086	E17JN15A021	0.01	<0.10	134,472.58	1.9	<0.02	38.8	5.24	0.005	177,627.79	16.19	0.37	1.27	1.27	0.66	80,506.71	1.17
HM16JV086	E17JN15A025	0.01	<0.06	118,523.87	2.12	<0.01	25	4.77	0.03	163,347.32	6.32	0.42	3.18	0.05	0.31	102,544.55	0.46
HM16JV086	E17JN15A023	0.01	<0.07	127,599.42	1.27	<0.01	41.81	4.72	0.03	162,607.17	5.94	0.27	2.25	1.07	0.28	83,591.48	0.16
HM16JV086	E17JN15A012	0.01	<0.05	117,166.31	1.9	<0.01	21.25	0.65	0.02	165,624.98	0.01	0.37	0.68	0.05	0.05	106,005.60	0.005
HM16JV086	E17JN15A019	0.01	<0.06	129,761.51	0.76	<0.01	53.2	3.52	0.005	168,385.30	11.12	0.27	0.2	0.8	0.73	82,326.31	0.54
HM16JV086	E17JN15A009	0.01	<0.07	116,452.70	1.48	<0.01	8.79	0.82	0.005	167,894.25	2.47	0.33	0.2	0.39	0.13	109,947.49	0.22
HM16JV086	E17JN15A014	0.01	<0.06	119,112.57	1.96	<0.01	33.66	2.33	0.005	166,179.05	45.58	0.45	0.2	5.26	1.17	102,725.51	3.08
HM16JV086	E17JN15A009	0.01	<0.08	114,366.60	1.95	<0.01	17.46	0.92	0.005	160,612.19	6.66	0.37	0.2	1.37	0.23	107,432.32	0.54
HM16JV086	E17JN15A011	0.01	<0.05	119,344.81	1.25	<0.01	15.24	23.94	0.005	163,231.12	8.97	1.06	0.2	0.65	0.22	100,530.29	0.55
HM16JV086	E17JN15A026	0.01	<0.05	112,022.65	0.55	<0.01	12.75	0.66	0.005	165,346.31	0.91	0.38	1.2	0.05	0.13	115,846.60	0.09
HM16JV086	E17JN15A020	0.01	<0.27	138,467.23	0.06	<0.05	13.23	1.73	0.16	185,742.40	32.33	0.3	0.2	2.06	0.74	92,179.87	1.65
HM16JV086	E17JN15A024	0.01	<0.08	120,060.05	1.34	<0.01	8.22	0.22	0.005	174,098.42	0.05	0.42	0.76	0.05	0.03	104,973.26	0.03
HM16JV086	E17JN15A007	0.01	<0.08	117,508.77	0.06	<0.01	9.98	6.64	0.005	158,596.62	6.2	0.44	1.03	0.27	0.11	99,444.88	0.27
HM16JV086	E17JN15A024	0.01	<0.08	117,007.43	2.05	<0.01	9.56	0.24	0.005	161,957.78	0.04	0.34	0.2	0.05	0.01	104,046.91	0.005
HM16JV086	E17JN15A007	0.01	<0.06	123,568.81	0.06	<0.01	6.25	6.05	0.005	165,750.70	0.02	0.43	0.95	0.05	0.03	94,989.89	0.005
HM16JV087	E17JN15A158	0.01	<0.05	116,528.35	1.68	0.01	7.28	0.35	0.06	165,800.61	15.8	0.52	2.13	0.71	0.38	103,052.32	0.91
HM16JV087	E17JN15A153	0.01	<0.06	122,765.84	2.72	<0.01	7.76	0.24	0.06	168,622.37	13.1	0.67	2.19	0.4	0.52	93,747.15	0.95
HM16JV087	E17JN15A164	0.01	<0.06	124,953.71	1.89	<0.01	7.1	1.22	0.16	169,272.26	29.13	0.57	1.28	1.27	0.98	89,177.74	1.58
HM16JV087	E17JN15A152	0.01	<0.60	134,243.08	0.06	<0.11	18.75	7.3	0.5	175,896.53	117.86	0.59	0.2	0.05	3.6	83,230.18	2.57
HM16JV087	E17JN15A161	0.01	<0.08	131,654.05	3.02	<0.01	10.57	0.51	0.62	171,915.70	90.38	0.55	7.36	1.16	5.18	82,845.45	7.95
HM16JV087	E17JN15A149	0.01	<0.06	120,172.23	1.61	<0.01	30.51	3.39	0.25	157,073.57	134.1	0.36	4.17	6.23	4.62	82,933.44	8.5
HM16JV087	E17JN15A154	0.01	<0.09	129,078.17	2.04	<0.01	12.3	0.005	0.005	178,298.65	0.07	0.57	3.56	0.05	0.02	87,448.61	0.03
HM16JV087	E17JN15A148	0.01	<0.13	128,678.64	0.65	<0.02	0.3	0.47	0.25	180,138.87	0.91	0.69	21.62	0.05	0.09	89,967.95	0.27
HM16JV087	E17JN15A160	0.01	<0.05	124,382.45	2.21	<0.01	17.85	1.64	0.47	165,164.97	71.7	0.41	6.53	4.24	2.92	91,226.86	4.31
HM16JV087	E17JN15A151	0.01	<0.09	133,664.06	3.2	<0.01	27.21	0.3	0.09	173,635.75	13.21	0.46	2.55	0.66	0.56	81,251.11	0.58
HM16JV087	E17JN15A165	0.01	<0.21	139,480.07	2.47	<0.02	27.11	1.52	0.26	181,809.42	40.22	0.22	7.36	1.83	1.2	84,815.67	2.2
HM16JV087	E17JN15A157	0.01	<0.07	124,978.76	3.04	<0.01	22.85	1.83	0.62	163,892.08	85.14	0.53	4.16	6.14	2.13	88,999.38	3.34
HM16JV087	E17JN15A156	0.01	<0.10	132,633.03	2.91	<0.01	33.03	0.43	0.42	174,170.51	23.02	0.42	11.38	0.99	0.61	84,359.98	1.01
HM16JV087	E17JN15A150	0.01	<0.09	133,394.78	1.11	<0.01	21.81	1.04	0.25	171,607.51	63.85	0.51	2.01	3.25	2.06	80,315.03	3.64
HM16JV087	E17JN15A163	0.01	<0.06	127,228.04	2.31	<0.01	15.32	0.74	0.46	165,481.16	39.54	0.39	4.72	1.26	1.08	86,329.73	1.59
HM16JV087	E17JN15A162	0.01	<0.09	133,232.73	5.83	<0.01	51.23	2.55	1.96	173,505.44	203.05	0.34	12.45	4.96	5.71	81,830.26	9.34
HM16JV087	E17JN15A155	0.01	<0.06	126,600.84	2.03	<0.01	9.93	0.54	0.16	166,834.40	4.97	0.43	3.14	0.38	0.05	89,046.05	0.05
HM16JV087	E17JN15A151	0.01	<0.12	124,574.38	5.21	<0.02	49.92	0.005	0.32	161,546.01	0.03	0.48	2	0.05	0.04	84,217.49	0.005
HM16JV087	E17JN15A159	0.01	<0.06	128,461.31	3.65	<0.01	29.91	1.17	0.98	165,165.50	102.33	0.49	5.21	5.94	3.72	83,143.43	6.75
HM16JV088	E17JN14A282	0.01	<0.11	116,116.71	0.06	<0.01	13.81	5.06	0.15	160,190.36	102.94	0.47	38.46	0.26	1.34	102,932.33	2.96
HM16JV088	E17JN14A269	0.01	<0.10	124,844.30	0.06	<0.01	2.49	9.37	0.27	166,991.84	25.75	0.71	68.74	0.05	0.44	93,122.36	1.37
HM16JV088	E17JN14A283	0.01	<0.07	118,816.70	0.06	<0.01	5.82	5.63	0.39	164,484.78	60.82	0.48	36.87	0.05	1.26	103,550.59	2.34
HM16JV088	E17JN14A291	0.01	<0.09	115,261.58	0.06	<0.01	24.97	7.06	0.04	165,138.46	168.35	0.11	6.95	0.3	2.33	103,363.49	4.95
HM16JV088	E17JN14A281	0.01	<0.38	139,569.39	2.01	<0.04	8.07	6.03	0.005	175,275.75	122.68	0.68	12.4	0.05	1.6	94,700.26	3.54
HM16JV088	E17JN14A289	0.01	<0.08	120,930.01	0.4	<0.01	19.79	36.8	0.13	164,408.75	294.93	0.38	23.11	0.6	4.49	96,088.61	10.31
HM16JV088	E17JN14A288	0.01	<0.08	121,004.84	0.59	<0.01	18.59	42.78	0.35	157,756.78	289.55	0.56	47.17	0.67	3.76	92,217.43	9.84

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Ag107	Ag109	Al27	As75	Au197	B11	Ba137	Bi209	Ca43	Ce140	Co59	Cr53	Cu65	Eu153	Fe57	Gd157
HM16JV088	E17JN14A279	0.01	<0.13	126,471.92	0.06	<0.02	15.96	3.18	0.06	175,827.40	94.84	0.15	6.57	0.4	1.99	97,311.47	4.84
HM16JV088	E17JN14A294	0.01	<0.16	128,382.26	0.06	<0.03	4.46	3.13	0.005	175,550.88	120.65	0.21	16.42	0.4	1.75	91,955.02	4.86
HM16JV088	E17JN14A278	0.01	<0.09	126,844.39	0.06	0.02	3.37	1.14	0.005	169,690.30	4.08	0.37	20.68	0.19	0.05	93,806.04	0.09
HM16JV088	E17JN14A290	0.01	<0.08	117,860.84	0.46	<0.01	15.67	72.85	0.16	155,838.15	184.37	0.93	35.3	0.43	3.87	92,799.31	7.9
HM16JV088	E17JN14A284	0.01	<0.09	123,652.33	0.06	<0.02	2.05	4.28	0.12	167,822.75	79.94	0.29	95.74	0.05	1.69	94,095.62	2.93
HM16JV088	E17JN14A280	0.01	<0.09	124,738.85	0.06	<0.01	0.94	1.02	0.1	170,433.02	26.76	0.38	65.73	0.05	0.29	97,162.61	0.65
HM16JV088	E17JN14A268	0.01	<0.09	122,655.57	0.06	<0.02	1.66	8.58	0.14	159,437.10	2.87	0.71	65.63	0.05	0.22	89,730.88	0.75
HM16JV088	E17JN14A277	0.01	<0.08	119,645.39	0.39	<0.01	21.33	5.69	0.1	162,563.49	163.2	0.23	17.48	0.79	2	99,979.10	4.6
HM16JV088	E17JN14A292	0.01	<0.14	123,766.31	0.06	<0.02	4.84	3.7	0.06	160,643.73	49.81	0.31	18.08	0.32	1.45	85,380.80	3.98
HM16JV088	E17JN14A285	0.01	<0.07	115,632.89	0.06	<0.01	2.51	9.63	0.09	166,935.77	90.5	0.13	78.42	0.2	3	110,655.48	3.93
HM16JV088	E17JN14A286	0.01	<0.07	121,924.69	0.35	<0.01	13.06	6.1	0.05	163,577.46	130.27	0.08	51.94	0.37	2.7	95,074.58	4.79
HM16JV088	E17JN14A270	0.01	<0.15	130,173.13	0.06	<0.02	2.46	5.01	0.005	173,572.00	10.86	0.09	194.63	0.05	0.44	90,271.19	0.88
HM16JV092	C17MA20A0165	0.01	<0.04	124,773.67	0.94	<0.01	2.66	5.28	6.16	165,872.33	106.75	0.24	64.01	0.05	8.08	94,611.55	10.48
HM16JV092	C17MA20A0161	0.01	<0.06	125,460.61	1.28	<0.01	33.72	4.36	8.86	169,312.66	228.76	0.07	118.54	5.88	12.09	96,352.69	15.4
HM16JV092	C17MA20A0165	0.01	<0.07	113,020.16	1.02	<0.02	1.61	4.87	5.63	154,764.52	101.22	0.16	66.83	0.05	7.76	101,293.00	9.02
HM16JV092	C17MA20A0164	0.01	<0.05	125,214.24	0.51	<0.01	36.87	5.67	4.87	170,835.39	51.64	0.09	26.79	2.75	4.78	96,225.70	5.17
HM16JV092	C17MA20A0168	0.01	<0.05	123,277.99	0.6	<0.01	2.07	3.19	7.89	165,071.56	101.27	0.12	58.73	0.42	9.32	96,508.14	10.76
HM16JV092	C17MA20A0166	0.01	<0.04	119,242.40	0.72	<0.01	18.15	5.34	3.92	161,965.20	97.69	0.59	50.06	3.54	6.63	98,120.85	8.75
HM16JV092	C17MA20A0167	0.01	<0.05	121,256.46	0.84	<0.01	1.79	3.38	3.59	160,880.08	54.22	0.07	39.4	0.05	4.22	97,975.47	5.63
HM16JV092	C17MA20A0163	0.01	<0.06	118,750.70	0.7	<0.01	1.95	5.72	4.92	161,253.18	32.99	0.05	20.41	0.05	4.51	98,106.28	4.17
HM16JV092	C17MA20A0162	0.01	<0.06	125,046.06	0.8	<0.01	1.56	6.92	2.12	168,960.98	21.06	0.22	36.56	0.05	2.89	93,315.48	3.1
HM16JV092	C17MA20A0180	0.01	<0.07	127,996.34	1.94	<0.02	40.18	7.84	5.26	177,323.06	543.24	0.85	108.66	115.71	31.95	92,349.16	52.03
HM16JV092	C17MA20A0195	0.01	<0.05	124,411.48	0.51	<0.01	3.53	3.18	9.22	168,293.59	62.16	0.12	19.11	2.54	6.67	97,603.65	6.21
HM16JV092	C17MA20A0192	0.01	<0.06	121,902.96	0.73	<0.01	8.27	7.48	4.89	165,832.35	45.28	0.15	28.18	4.59	5.62	98,078.37	5.3
HM16JV092	C17MA20A0199	0.06	<0.04	127,140.46	0.52	<0.01	1.63	4.33	4.29	168,953.05	73.31	0.39	47.94	0.05	4.91	93,998.93	6.97
HM16JV092	C17MA20A0179	0.01	<0.05	125,622.29	1.34	<0.01	3.25	4.02	3.14	168,818.36	236.34	0.14	117.59	1.42	12.56	94,665.83	20.61
HM16JV092	C17MA20A0194	0.01	<0.05	125,811.00	0.21	<0.01	9.28	7.57	4.95	170,063.16	24.65	0.06	13.78	5.02	4.28	94,730.61	4.36
HM16JV092	C17MA20A0197	0.01	<0.09	113,469.56	0.69	<0.01	1.76	5.29	5.27	153,397.22	55.77	0.07	27.43	0.05	7.56	102,966.71	8.92
HM16JV092	C17MA20A0200	0.01	<0.05	123,300.55	0.45	<0.01	4.85	4.42	4.98	166,866.66	31.24	0.09	19.92	3.41	3.19	96,320.23	3.56
HM16JV092	C17MA20A0199	0.01	<0.06	114,206.59	0.81	<0.01	8.05	3.54	7.52	154,338.76	54.71	0.2	38.29	9.9	4.29	103,166.03	5.48
HM16JV092	C17MA20A0190	0.01	<0.06	126,170.20	0.93	<0.01	1.48	3.84	2.35	169,266.85	40.28	0.05	41.81	0.05	3.96	94,468.20	5.22
HM16JV092	C17MA20A0198	0.01	<0.05	117,952.73	0.76	<0.01	1.64	7.97	2.32	158,541.52	8.62	2.96	6.5	0.05	2.51	100,572.93	2.12
HM16JV092	C17MA20A0183	0.01	<0.15	135,490.31	0.06	<0.03	8.93	9.5	2.13	176,572.71	20.21	1.4	38.44	4.26	2.02	93,701.16	2.37
HM16JV092	C17MA20A0193	0.01	<0.05	120,661.32	0.6	<0.01	3.23	5.14	3.53	161,408.87	24.05	0.11	14.27	1.76	3.31	97,571.44	3.63
HM16JV092	C17MA20A0191	0.01	<0.06	125,463.96	0.71	<0.01	2.13	6.56	3.24	166,956.92	37.37	0.09	31.92	0.33	5.44	94,114.93	5.6
HM16JV092	C17MA20A0182	0.01	<0.05	124,746.15	0.58	0.01	1.89	5.79	3.14	167,362.24	33.78	0.63	22.89	0.05	4.04	94,855.92	4.12
HM16JV092	C17MA20A0181	0.01	<0.06	133,951.04	0.43	<0.01	25.34	4.35	3.82	178,608.21	12.56	0.4	1.88	2.14	0.18	93,058.10	0.67
HM16JV099	C17MA21A0291	0.01	<0.05	113,360.01	1.67	<0.02	10.52	3.71	0.27	155,217.20	386.82	0.2	14.58	0.05	7.72	103,099.92	14.9
HM16JV099	C17MA21A0291	0.01	<0.05	125,941.96	0.06	<0.02	2.03	2.83	0.15	172,619.59	12.52	0.92	11.2	0.05	4.06	97,649.51	8.2
HM16JV099	C17MA21A0290	0.01	<0.04	118,672.87	0.06	<0.01	1.21	1.28	0.05	163,167.74	11.95	0.17	21.99	0.05	3.75	99,801.54	7.97
HM16JV099	C17MA21A0294	0.01	<0.04	114,917.81	0.06	<0.01	1.85	1.3	0.12	163,214.81	6.02	0.005	9.39	0.05	2.41	107,713.80	5.79
HM16JV099	C17MA21A0295	0.01	<0.03	117,401.17	0.06	<0.00	1.07	1.68	0.12	163,267.83	27.9	0.005	30.18	0.05	2.56	104,506.74	6.42
HM16JV099	C17MA21A0293	0.01	<0.04	116,427.18	0.62	<0.01	1.08	0.13	0.09	164,326.34	41.71	0.005	29.61	0.05	2	106,929.24	5.69
HM16JV099	C17MA21A0298	0.01	<0.04	109,595.84	0.31	<0.01	1.45	1.15	0.07	164,350.23	7.29	0.005	9.25	0.05	1.64	115,528.88	3.91
HM16JV099	C17MA21A0299	0.01	<0.06	124,842.84	0.7	<0.01	4.75	1.51	0.21	169,046.29	137.07	0.005	78	0.05	2.72	98,747.99	4.86
HM16JV099	C17MA21A0297	0.01	<0.04	120,403.90	0.16	<0.01	1.54	2.49	0.09	171,574.74	13.63	0.005	31.71	0.05	1.22	110,153.55	3.64
HM16JV099	C17MA21A0297	0.01	<0.04	108,977.44	0.16	<0.01	1.53	2.06	0.11	161,750.14	12.62	0.18	33.08	0.05	1.26	115,727.60	4.09
HM16JV099	C17MA21A0300	0.01	<0.05	113,624.96	1.21	<0.01	6.61	1.91	0.2	161,278.52	3.69	0.005	12.53	0.05	3.28	107,389.91	7.52
HM16JV099	C17MA21A0296	0.01	<0.03	116,541.92	0.72	<0.01	1.3	1.34	0.22	164,950.23	98.2	0.005	68.54	0.05	3.64	103,966.06	10.02
HM16JV102	C17MA21A0380	0.01	<0.05	128,298.02	3.1	<0.01	32.14	3.07	0.35	175,278.55	20.57	0.63	97.51	8.06	2.4	93,251.51	1.77
HM16JV102	C17MA21A0380	0.01	<0.06	112,046.86	3.32	<0.01	27.55	3.69	0.14	158,142.07	19.64	0.53	55.04	12.1	1.23	104,389.87	1.56
HM16JV102	C17MA21A0387	0.01	<0.11	131,408.44	3.18	<0.04	28.86	17.29	0.32	180,893.62	84.28	0.46	158.41	27.17	3.77	89,174.11	7.74

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Ag107	Ag109	Al27	As75	Au197	B11	Ba137	Bi209	Ca43	Ce140	Co59	Cr53	Cu65	Eu153	Fe57	Gd157
HM16JV102	C17MA21A0388	0.05	0.05	108,085.06	5.01	<0.01	20.04	19.48	0.85	149,816.49	22.66	2.29	1,423.06	15.36	9.74	106,873.33	5.33
HM16JV102	C17MA21A0389	0.01	<0.08	121,573.81	1.95	0.03	14.33	39.1	0.55	175,724.70	17.44	0.24	1,807.38	2.81	6.19	103,813.22	4.13
HM16JV102	C17MA21A0390	0.01	<0.03	115,723.08	0.36	<0.01	5.51	7.7	0.02	163,226.27	11.51	0.17	81.64	4.08	0.53	105,657.98	0.66
HM16JV102	C17MA21A0392	0.03	<0.04	116,990.62	3.98	0.01	8.87	0.51	0.22	170,091.90	3.89	0.24	9.73	1.68	0.37	112,644.75	0.19
HM16JV102	C17MA21A0391	0.01	<0.05	118,625.01	1.08	<0.01	10.88	4.93	0.01	159,740.75	4.29	0.31	23.92	1.98	0.46	99,300.68	0.38
HM16JV102	C17MA21A0403	0.01	<0.04	124,015.06	2.01	<0.01	16.24	3.34	0.06	174,463.14	12.56	0.52	38.27	3.86	0.64	99,933.05	0.85
HM16JV102	C17MA21A0396	0.01	<0.06	133,079.32	1.39	<0.01	11.55	3.4	0.07	178,108.43	12	0.57	88.48	3.36	1.04	85,866.64	1.14
HM16JV102	C17MA21A0404	0.01	<0.04	117,215.93	1.22	<0.01	19.79	6	0.01	159,524.89	42.4	0.34	243.74	14.93	1.55	102,294.22	3.02
HM16JV102	C17MA21A0400	0.01	<0.04	121,220.83	0.8	<0.01	13.64	24.71	0.01	158,357.11	22.74	4.35	95.99	21.11	1.26	94,382.08	1.66
HM16JV102	C17MA21A0401	0.01	<0.04	120,302.58	1.07	<0.01	19.49	5.37	0.01	159,998.19	33.42	0.38	185.25	10.67	1.62	94,411.97	2.45
HM16JV102	C17MA21A0397	0.04	<0.04	123,560.91	1.21	<0.01	14.45	5.86	0.01	164,251.95	34.65	0.25	98.82	13.1	1.58	90,349.02	2.53
HM16JV102	C17MA21A0398	0.01	<0.06	132,594.99	1.52	<0.01	9.72	2.73	0.02	176,016.59	19.88	0.24	95.04	4.34	1.33	85,196.95	1.54
HM16JV102	C17MA21A0399	0.01	0.06	131,480.79	1.33	<0.01	8.54	3.7	0.01	176,240.52	33.03	0.31	39.3	7.02	1.34	89,108.79	2.24
HM16JV102	C17MA21A0395	0.01	<0.04	122,990.92	0.79	<0.01	5.04	2.55	0.01	162,008.36	10.83	0.35	74.31	3	0.77	92,502.76	0.98
HM16JV104	C17MA21A0406	0.01	<0.06	125,949.11	2.52	<0.02	6.03	10.1	3.65	172,799.09	223.14	2.38	1,356.91	0.05	17.42	99,354.44	135.28
HM16JV104	C17MA21A0406	0.01	<0.05	111,704.63	2.37	<0.02	9.02	13.23	4.05	161,875.58	167.07	0.35	433.24	0.68	8.2	106,957.48	85.79
HM16JV104	C17MA21A0405	0.01	<0.05	111,529.46	2.02	<0.01	6.86	6.96	4.04	168,590.46	45.19	0.41	387.41	1.93	4.26	108,775.79	14.7
HM16JV104	C17MA21A0413	0.01	<0.06	122,792.09	4.8	<0.02	17.14	14.79	6.8	175,348.84	68.02	0.96	250.3	2.02	6.53	101,826.16	57.09
HM16JV104	C17MA21A0411	0.01	<0.06	126,083.90	1.39	<0.02	3.55	7	3.33	176,062.30	71.08	0.32	1,348.29	4.18	3.88	100,392.44	45.94
HM16JV104	C17MA21A0416	0.01	<0.04	114,253.10	5.43	<0.01	28.86	18.68	7.37	162,282.30	17.69	0.14	189.07	1.67	2.22	108,561.93	3.66
HM16JV104	C17MA21A0407	0.01	<0.04	120,118.20	0.32	<0.01	1.19	11.49	1.88	171,321.09	14.46	0.32	983.94	0.98	0.57	103,640.03	0.9
HM16JV104	C17MA21A0414	0.01	<0.05	106,602.65	7.64	<0.02	30.91	31.11	4.22	166,056.27	31.52	0.24	77.53	4.51	2.78	114,040.53	12.91
HM16JV104	C17MA21A0412	0.01	<0.04	114,659.62	2.22	<0.01	6.64	11.26	4.27	163,868.05	43.3	0.09	21.3	2.64	7.01	107,470.11	20.63
HM16JV104	C17MA21A0415	0.01	<0.06	106,323.39	7.8	<0.01	41.93	30.02	3.14	157,615.88	30.09	1.44	135.47	8.78	1.66	118,712.65	5.21
HM16JV104	C17MA21A0410	0.01	<0.03	109,014.18	4.19	<0.01	40.7	27.2	1.49	176,094.75	128.77	0.36	41.61	19.48	1.46	116,357.33	6.54
HM16JV104	C17MA21A0409	0.01	<0.04	119,290.72	0.79	<0.01	2.38	6.2	1.88	169,229.69	3.44	0.23	48.5	0.05	1.27	104,948.55	3.69
HM16JV106	E17JN14A251	0.01	<0.08	124,199.28	4.98	<0.01	72.9	6.55	0.3	164,823.29	2.64	0.39	135.23	0.05	1.01	93,327.03	1.82
HM16JV106	E17JN14A267	0.01	<0.08	125,593.54	3.46	<0.02	37.07	4.87	0.14	168,028.96	5.91	0.34	194.79	0.97	0.51	95,245.07	2.29
HM16JV106	E17JN14A249	0.01	<0.07	121,672.07	4.84	<0.01	26.74	6.3	0.56	164,405.20	10.35	0.36	0.2	10.74	0.72	100,127.51	1.99
HM16JV106	E17JN14A247	0.01	<0.09	127,866.61	0.67	<0.01	1.41	2.47	0.45	160,365.38	0.005	1.19	0.2	0.05	0.005	83,848.39	0.005
HM16JV106	E17JN14A247	0.01	<0.10	134,823.12	0.79	<0.02	0.93	3.76	0.44	173,412.03	0.02	0.83	0.2	18.38	0.01	80,913.99	0.005
HM16JV106	E17JN14A252	0.01	<0.08	120,992.68	3.48	<0.01	28.73	3.52	0.27	166,591.08	1.46	0.53	3.48	2.85	0.23	98,651.27	0.43
HM16JV106	E17JN14A260	0.01	<0.07	106,881.58	2.69	<0.02	32.44	6.94	0.21	147,276.41	2.9	0.39	2.76	6.29	0.28	85,937.83	0.73
HM16JV106	E17JN14A250	0.01	<0.08	128,056.46	0.93	<0.01	1.43	1.62	0.86	163,108.80	0.02	0.85	2.05	0.05	0.01	87,027.05	0.04
HM16JV106	E17JN14A254	0.01	<0.13	142,522.11	0.7	<0.02	10.77	4.02	0.62	175,411.32	1.62	2.19	4.3	2.7	0.05	66,396.14	0.31
HM16JV106	E17JN14A266	0.01	<0.13	118,778.36	4.09	<0.03	27.09	7.7	0.18	159,921.00	1.95	0.49	20.98	0.05	1.24	99,546.38	1.21
HM16JV106	E17JN14A262	0.01	<0.10	125,522.62	4.1	<0.02	72.43	5.04	0.52	173,069.17	2.82	2.25	126.35	13.93	0.36	95,147.22	0.47
HM16JV106	E17JN14A248	0.01	<0.12	129,298.78	0.06	<0.02	11.38	2.85	1.61	176,298.68	9.07	0.36	0.2	13.27	2.61	93,115.18	0.83
HM16JV106	E17JN14A265	0.01	<0.07	124,376.78	0.57	<0.01	8.19	2.47	0.91	166,832.17	4.54	0.5	12.5	8.24	0.65	96,226.86	0.72
HM16JV106	E17JN14A259	0.01	<0.09	127,163.28	3.49	<0.01	40.86	8.22	0.18	169,312.25	3.19	0.41	17.06	1.87	3.3	91,816.81	3.8
HM16JV106	E17JN14A253	0.01	<0.10	105,965.15	1.17	<0.01	35.03	5.5	0.41	149,247.96	3.61	27.6	140.13	8.31	1.03	100,707.68	2.32
HM16JV106	E17JN14A261	0.01	<0.08	121,022.91	3.37	<0.02	41.41	5.09	0.5	164,164.35	2.45	0.39	73.62	6.42	0.26	99,386.04	0.69
HM16JV106	E17JN14A266	0.01	<0.08	125,604.06	4.61	<0.02	27.47	4.89	0.26	169,115.38	2.02	0.29	4.29	0.05	0.9	95,888.96	1.06
HM16JV106	E17JN14A246	0.01	<0.30	131,312.19	0.06	<0.05	0.3	3.08	0.93	174,702.26	4.07	0.14	0.2	1.82	3.79	91,585.75	2.31
HM16JV106	E17JN14A264	0.01	<0.11	127,775.14	4.03	<0.02	31.84	8.12	0.28	174,213.04	5.66	0.37	1.12	1.78	3.11	94,859.78	3.38
HM16JV106	E17JN14A257	0.01	<0.17	133,507.31	1.78	<0.03	15.78	4.02	0.1	178,190.00	3.56	0.27	107.44	1	0.18	91,875.52	1.18
HM16JV106	E17JN14A255	0.01	<0.09	125,728.55	4.71	<0.01	19.82	4.54	0.18	168,683.00	0.35	0.4	7.13	0.05	0.19	94,767.91	0.3
HM16JV106	E17JN14A253	0.01	<0.18	120,165.52	0.06	<0.02	4.1	1.1	0.75	158,982.58	0.84	0.88	161.19	0.4	0.44	92,246.92	1.04
HM16JV106	E17JN14A258	0.01	<0.09	121,004.27	6.08	<0.01	102.41	6.4	0.23	161,788.42	0.79	0.25	5.19	1.76	0.07	91,652.00	0.35
HM16JV106	E17JN14A264	0.01	<0.11	118,881.68	2.74	<0.02	27.22	5.33	0.25	161,172.14	3.77	0.43	5.63	7.04	0.29	99,573.42	0.47
HM16JV106	E17JN14A263	0.01	<0.08	123,185.83	2.41	<0.01	17.24	6.34	0.35	164,573.73	1.19	0.37	0.2	2.9	2.35	96,544.02	0.29
HM16JV106	E17JN14A256	0.01	<0.07	121,150.35	4.25	<0.01	27.73	0.45	0.005	164,091.08	0.03	0.29	0.2	0.52	0.01	100,467.04	0.03

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Ag107	Ag109	Al27	As75	Au197	B11	Ba137	Bi209	Ca43	Ce140	Co59	Cr53	Cu65	Eu153	Fe57	Gd157
HM16JV107	E17JN15A178	0.01	<0.07	108,333.70	1.43	<0.01	124.84	1.66	0.38	163,474.68	413.37	0.75	33.03	15.41	17.81	121,043.70	11.45
HM16JV107	E17JN15A178	0.01	<0.17	115,335.63	2.08	<0.02	104.24	1.28	0.19	180,653.19	231.91	0.9	19.5	18.26	9.19	115,743.98	6.81
HM16JV107	E17JN15A174	0.01	<0.11	117,009.53	0.73	<0.02	40.49	0.21	0.09	172,987.26	54.18	0.34	40.92	1.41	8.7	118,354.77	1.95
HM16JV107	E17JN15A179	0.01	<0.07	119,635.09	1.92	<0.01	77.41	3.06	0.36	169,622.47	703.6	1.25	56.79	33.8	27.84	103,561.83	40.84
HM16JV107	E17JN15A175	0.01	<0.06	112,514.19	1.51	<0.01	71.34	1.64	0.39	166,946.26	520.44	1.36	64.66	18.96	17.23	114,310.62	13.8
HM16JV107	E17JN15A177	0.01	<0.06	115,739.82	0.98	<0.01	68.36	1.01	0.28	160,782.72	368.74	0.93	39.51	16.73	14.41	105,856.88	19.23
HM16JV107	E17JN15A169	0.01	<0.07	109,938.77	1.15	<0.01	51.12	3.13	0.16	157,006.56	500.81	0.71	46.92	18.21	13.99	116,278.74	12.04
HM16JV107	E17JN15A176	0.01	<0.06	113,330.15	0.51	<0.01	17.46	0.78	0.14	166,111.22	176.72	0.53	27.1	7.42	4.63	110,165.99	3.5
HM16JV107	E17JN15A167	0.01	<0.10	108,860.78	0.88	<0.02	32.14	0.97	0.04	177,586.47	661.02	0.34	15.54	15.78	15.38	123,037.85	17.3
HM16JV107	E17JN15A173	0.01	<0.06	104,884.59	0.66	<0.01	55.93	2.7	0.18	162,117.91	405.81	0.55	47.9	10.2	15.07	122,201.10	6.25
HM16JV107	E17JN15A178	0.01	<0.12	105,394.52	0.06	0.02	4.3	0.005	0.005	160,748.40	25.41	0.32	32.3	0.74	5.41	119,699.64	1.56
HM16JV107	E17JN15A170	0.01	<0.07	102,283.51	0.06	<0.01	25.18	0.7	0.13	160,993.54	178.98	0.2	41.6	0.94	8.88	125,168.68	4.52
HM16JV107	E17JN15A179	0.01	<0.07	106,321.83	1.05	<0.01	38.37	2.68	0.06	154,602.46	448.4	0.91	45.42	16.73	15.44	116,950.78	29.38
HM16JV107	E17JN15A171	0.01	<0.05	106,462.68	0.06	0.01	11.02	0.61	0.005	167,549.61	83.58	0.29	23.22	2.82	2.87	124,282.71	0.85
HM16JV107	E17JN15A166	0.01	<0.09	103,325.44	0.61	<0.01	36.49	0.22	0.05	160,807.92	149.85	0.53	24.51	8.86	5.82	120,417.91	3.29
HM16JV107	E17JN15A172	0.01	<0.05	105,829.29	0.34	<0.01	6.46	0.3	0.005	164,925.38	40.51	0.2	15.39	0.3	3.12	120,953.07	0.44
HM16JV112	E17JN14A496	0.01	<0.24	117,221.49	0.06	<0.05	13.76	15.04	0.52	162,330.23	106.43	0.43	0.2	1.04	1.25	96,906.77	2.73
HM16JV112	E17JN14A496	0.01	<0.08	118,773.58	0.48	<0.02	9.8	22.25	0.47	166,681.40	185.14	0.32	2.03	1.05	3.92	98,804.27	3.09
HM16JV112	E17JN14A511	0.01	<0.08	118,520.37	0.98	<0.01	4.15	13.59	0.51	165,231.66	447.36	0.59	17.07	0.28	4.34	99,086.04	7.97
HM16JV112	E17JN14A510	0.01	<0.09	116,884.44	0.89	<0.01	3.73	24.88	0.38	170,073.34	282.01	0.51	11.93	0.26	3.35	105,420.78	6.13
HM16JV112	E17JN14A501	0.01	<0.07	110,069.28	0.4	<0.01	15.9	19.8	0.79	159,294.81	162.01	7.31	15.01	0.49	4.64	95,123.76	5.59
HM16JV112	E17JN14A506	0.01	<0.11	118,588.60	0.77	<0.02	6.37	17.71	0.87	167,813.18	328.21	0.63	12.01	0.96	3.42	101,914.23	6.03
HM16JV112	E17JN14A510	0.01	<0.14	113,975.98	0.06	<0.02	2.91	16.15	0.32	162,708.77	144.58	0.58	6.48	0.05	1.26	103,770.94	2.29
HM16JV112	E17JN14A508	0.01	<0.11	115,978.68	0.68	<0.02	13.73	20.8	0.33	163,694.79	459.13	0.25	49.44	0.6	3.85	102,628.43	7.66
HM16JV112	E17JN14A503	0.01	<0.07	118,270.63	0.06	<0.01	11.34	21.31	0.94	166,754.43	82.01	0.58	12.91	0.81	1.45	101,070.13	2.3
HM16JV112	E17JN14A508	0.01	<0.13	123,033.71	1.02	<0.02	13.04	19.13	0.31	172,037.92	525.01	0.67	47.03	0.61	4.11	99,389.13	7.73
HM16JV112	E17JN14A509	0.01	<0.16	108,557.47	1.64	<0.02	8.92	6.67	0.45	159,863.59	172.66	0.85	234.23	0.81	3.47	112,397.84	5.47
HM16JV112	E17JN14A498	0.01	<0.12	119,398.65	0.06	<0.02	2.8	16.87	0.19	160,817.14	50.33	0.47	11.78	0.05	2.11	97,153.44	3.38
HM16JV112	E17JN14A505	0.01	<0.37	132,472.01	0.06	<0.06	0.3	17.15	0.46	177,699.90	352.04	0.25	19.09	1.29	3.22	95,419.40	5.77
HM16JV112	E17JN14A504	0.01	<0.08	116,953.19	0.47	<0.01	11.57	17.83	0.64	167,476.07	460.75	0.5	18.68	0.26	4.58	102,247.35	8.33
HM16JV112	E17JN14A495	0.01	<0.07	118,012.37	0.47	<0.01	5.3	23.66	0.46	168,658.09	207.32	0.28	1.2	0.52	1.6	99,144.23	2.46
HM16JV112	E17JN14A500	0.01	<0.12	115,779.51	0.06	<0.02	5.66	7.93	0.22	162,537.74	123.35	0.34	4.85	0.05	4.18	100,148.84	6.77
HM16JV112	E17JN14A498	0.01	<0.09	125,646.36	0.06	<0.02	2.14	15.22	0.3	167,173.16	59.23	0.94	20.89	0.4	3.25	88,815.51	5.01
HM16JV112	E17JN14A507	0.01	<0.10	108,074.19	0.06	<0.02	2.84	1.44	0.4	168,129.59	25.04	0.3	1,012.13	0.33	0.25	116,562.26	0.45
HM16JV112	E17JN14A500	0.01	<0.09	122,711.20	0.06	<0.01	4.12	9.82	0.25	169,407.27	78.62	0.24	6	0.36	2.33	97,037.32	3.69
HM16JV112	E17JN14A492	0.01	<0.09	116,894.59	0.06	<0.01	5.46	10.34	0.38	167,154.43	110.1	0.18	0.2	0.77	0.64	104,028.77	0.76
HM16JV112	E17JN14A493	0.01	<0.09	119,561.72	0.91	<0.01	7.3	32.7	0.3	166,819.28	182.17	0.2	0.83	0.79	3.55	96,306.01	5.67
HM16JV112	E17JN14A499	0.01	<0.12	110,146.03	0.06	<0.02	8.5	10.23	0.39	159,873.59	179.36	0.41	292.84	0.05	3.69	108,835.12	8.1
HM16JV112	E17JN14A497	0.01	<0.13	116,631.19	0.06	<0.02	9.29	14.84	0.51	161,571.11	175.37	0.63	71.78	0.29	3.73	99,272.67	5.42
HM16JV112	E17JN14A494	0.01	<0.11	114,021.98	0.06	<0.02	3.88	23.04	0.14	161,401.75	4.43	0.23	0.2	0.78	0.09	105,065.42	0.17
HM16JV112	E17JN14A502	0.01	<0.08	116,497.72	0.42	<0.01	9.34	24.41	0.63	169,547.58	134.79	0.52	8.66	0.74	1.59	104,747.68	2.83
HM16JV112	E17JN14A494	0.01	<0.09	121,381.03	0.06	<0.01	3.98	20.01	0.32	168,066.71	18.44	0.24	0.2	0.84	0.51	96,944.44	0.97
HM16JV112	E17JN14A497	0.01	<0.10	117,852.02	0.06	<0.02	7.56	18.77	0.52	167,239.95	161.68	0.27	70.94	0.27	2.41	101,137.63	4.17
HM16JV114	E17JN14A168	0.01	<0.33	125,695.16	0.06	<0.05	0.3	5.01	0.005	173,861.36	0.005	0.005	0.2	0.05	0.03	110,396.72	0.005
HM16JV114	E17JN14A169	0.01	<0.09	110,205.63	0.06	<0.02	1.1	8.62	0.04	162,841.63	0.005	0.005	0.2	0.05	0.005	118,330.25	0.04
HM16JV114	E17JN14A180	0.01	<0.27	133,722.05	4.14	<0.06	4.85	2.37	0.005	179,582.24	58.09	0.05	5.56	0.05	2.23	98,565.36	4.43
HM16JV114	E17JN14A165	0.01	<0.09	113,576.47	33.64	<0.01	59.91	14.38	0.18	153,704.11	126.25	1.3	9.22	28.34	3.77	102,690.60	7.4
HM16JV114	E17JN14A165	0.01	<0.08	118,977.65	13.06	<0.01	29.52	6.42	0.1	168,519.51	169.56	0.64	9.41	13.77	5.79	98,697.18	11.14
HM16JV114	E17JN14A164	0.01	<0.10	125,226.31	8.95	<0.02	14.52	2.82	0.15	173,896.66	94.65	0.06	7.37	0.76	2.93	96,200.44	5.14
HM16JV114	E17JN14A174	0.01	<0.07	124,267.73	0.06	<0.01	3.37	0.83	0.005	168,419.52	71.57	0.04	5.5	0.24	9.13	92,577.82	8.15
HM16JV114	E17JN14A181	0.01	<0.26	132,527.20	12.79	<0.05	11.25	3.21	0.005	178,846.75	116.69	0.08	32.25	0.05	7.36	93,103.01	9.9
HM16JV114	E17JN14A175	0.01	<0.07	119,832.87	44.6	<0.01	42.54	1.35	0.22	165,653.12	42.82	0.17	7.83	0.33	2.02	102,418.86	2.45

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Ag107	Ag109	Al27	As75	Au197	B11	Ba137	Bi209	Ca43	Ce140	Co59	Cr53	Cu65	Eu153	Fe57	Gd157
HM16JV114	E17JN14A173	0.01	<0.08	110,985.78	0.06	<0.01	5.79	8.07	0.05	164,227.68	15.54	0.005	0.2	0.44	0.17	113,164.07	0.52
HM16JV114	E17JN14A184	0.01	<0.10	114,255.49	0.06	<0.02	2.4	9.3	0.005	161,416.89	20.96	0.005	0.2	0.41	0.14	108,036.78	0.41
HM16JV114	E17JN14A178	0.01	<0.12	120,983.88	22.11	<0.02	11.49	1.27	0.17	166,179.37	27.44	0.09	2.25	0.05	1.93	98,785.84	2.64
HM16JV114	E17JN14A177	0.01	<0.09	112,606.97	0.06	<0.01	1.17	6.54	0.005	168,163.03	0.47	0.005	1.54	0.19	0.09	118,720.93	0.04
HM16JV114	E17JN14A184	0.01	<0.11	123,245.59	0.06	<0.02	2.63	12.18	0.005	172,712.13	2.26	0.005	0.2	0.05	0.04	104,138.49	0.005
HM16JV114	E17JN14A182	0.01	<0.08	119,088.30	0.06	<0.01	3	9.63	0.1	166,580.86	3.93	0.005	0.2	0.2	0.11	103,952.59	0.14
HM16JV114	E17JN14A183	0.01	<0.08	120,322.50	0.06	<0.01	2.19	2.72	0.22	166,103.82	0.04	0.005	0.2	0.05	0.15	101,607.11	0.05
HM16JV114	E17JN14A170	0.01	<0.09	116,998.76	0.06	<0.02	0.83	3.38	0.005	171,541.08	0.21	0.005	0.2	0.05	0.02	109,462.88	0.005
HM16JV114	E17JN14A167	0.01	<0.08	116,030.96	0.06	<0.01	0.72	2.53	0.005	168,222.60	0.01	0.005	0.2	0.05	0.01	111,873.74	0.005
HM16JV114	E17JN14A176	0.01	<0.07	118,122.20	0.06	<0.01	0.68	13.62	0.08	164,840.61	0.005	0.005	0.2	0.05	0.02	105,209.54	0.02
HM16JV114	E17JN14A171	0.01	<0.08	114,521.74	0.06	<0.01	1.14	1.22	0.1	167,436.57	0.08	0.005	0.2	1.25	0.01	114,269.64	0.005
HM16JV118	C17MA20A0124	0.01	<0.05	113,951.85	13.48	<0.01	15.02	0.59	11.06	161,338.10	56.76	0.12	237.9	0.05	0.62	105,734.55	1.15
HM16JV118	C17MA20A0120	0.01	<0.05	116,253.49	6.24	<0.01	24	53.95	34.89	160,493.52	87.32	0.72	25.72	4.11	0.99	103,621.32	1.28
HM16JV118	C17MA20A0124	0.01	<0.07	125,900.12	14.37	<0.01	2.29	0.41	3.19	177,137.34	0.49	0.005	211.49	0.05	0.28	98,448.86	0.46
HM16JV118	C17MA20A0119	0.01	<0.09	110,712.02	3.92	<0.01	16.59	3.01	9.5	157,362.48	50.91	0.08	24.98	3.79	0.75	112,709.85	0.82
HM16JV118	C17MA20A0118	0.01	<0.10	130,136.61	1.02	<0.02	3.4	0.68	7.92	182,203.41	0.08	0.005	24.84	0.05	0.38	95,352.29	0.13
HM16JV118	C17MA20A0117	0.01	<0.07	124,306.29	4.16	0.01	8.67	1.45	9.91	177,546.30	2.36	0.16	5.72	0.05	0.13	97,275.58	0.48
HM16JV118	C17MA20A0121	0.01	<0.06	118,768.38	15.75	<0.01	24.98	0.76	4.78	171,907.61	9.6	0.73	56.08	0.05	1.12	106,749.90	0.23
HM16JV118	C17MA20A0125	0.01	<0.05	117,897.97	17.68	<0.01	19.01	0.86	0.61	168,741.69	1.47	0.08	0.43	0.05	0.2	105,446.18	0.03
HM16JV118	C17MA20A0137	0.01	<0.06	119,605.39	10.77	<0.01	37.05	3.48	45.8	155,862.57	40.52	0.23	24.71	2.12	0.86	95,437.33	2.14
HM16JV118	C17MA20A0135	0.01	<0.05	116,957.83	14.57	<0.01	37.69	0.43	19.08	159,749.03	13.92	0.17	7.36	0.3	0.23	94,856.15	0.44
HM16JV118	C17MA20A0127	0.01	<0.18	133,118.13	10.47	<0.03	43.4	0.005	19.9	186,096.43	0.005	0.13	6.9	0.05	0.22	95,440.13	0.26
HM16JV118	C17MA20A0134	0.01	<0.05	112,598.78	3.46	<0.01	8.03	1.48	4.2	162,129.81	37.92	0.15	7.35	0.6	0.39	110,548.43	0.61
HM16JV118	C17MA20A0136	0.01	<0.07	117,274.60	0.85	<0.02	2.24	0.85	2.06	165,026.07	0.3	1.74	9.69	0.05	0.19	111,040.55	0.12
HM16JV118	C17MA20A0143	0.01	<0.14	136,791.22	4.91	<0.02	4.17	2.13	4.54	180,895.07	0.86	0.005	15.86	0.05	0.53	90,518.72	0.64
HM16JV118	C17MA20A0141	0.01	<0.11	129,555.81	3.34	<0.02	7.38	0.72	9.83	183,287.72	0.09	0.15	5.97	0.05	0.2	101,256.83	0.36
HM16JV118	C17MA20A0139	0.01	<0.05	122,240.75	19.79	<0.01	65.42	0.17	22.53	163,138.91	0.04	0.14	3.58	0.05	0.12	95,962.47	0.2
HM16JV118	C17MA20A0144	0.01	<0.06	127,963.65	0.82	<0.01	1.52	1.45	5.77	170,560.46	3.02	0.21	7.35	0.05	0.35	89,955.12	0.32
HM16JV118	C17MA20A0140	0.01	<0.08	117,420.62	5.13	0.01	10.71	0.84	17.65	159,447.41	59.93	0.11	3.46	0.05	0.56	105,276.02	0.95
HM16JV118	C17MA20A0138	0.01	<0.05	121,874.27	12.41	<0.01	43.84	1.22	84.03	160,487.87	0.11	0.14	10.67	0.05	0.39	93,316.23	1.41
HM16JV123	C17MA21A0425	0.01	<0.06	131,219.19	55.86	<0.02	41.06	52.22	2.19	170,125.71	278.76	0.12	4.39	0.75	7.66	89,026.99	13.85
HM16JV123	C17MA21A0417	0.04	<0.04	119,868.88	43.75	<0.01	34.37	35.35	1.95	161,997.47	194.99	0.21	13.92	0.89	5.05	90,179.29	9.57
HM16JV123	C17MA21A0421	0.01	0.07	131,274.26	79.75	<0.02	65.34	40.26	5	178,666.09	50.24	0.15	6.74	0.05	4.94	94,083.89	3.04
HM16JV123	C17MA21A0422	0.05	<0.04	115,160.54	55.35	<0.01	42.4	52.44	1.26	163,827.24	70.52	0.21	20.96	0.87	3.65	93,252.44	3.96
HM16JV123	C17MA21A0423	0.01	<0.05	115,629.48	47.91	<0.01	31.78	43.51	2.07	151,840.55	467.5	0.26	6.69	0.92	11.62	85,763.10	24.96
HM16JV123	C17MA21A0420	0.01	<0.04	125,840.56	31.62	<0.01	46.18	6.56	0.6	164,374.14	14.97	0.2	1.01	0.05	1.54	86,047.04	0.85
HM16JV123	C17MA21A0419	0.01	<0.05	125,553.07	43	<0.01	49.89	27.8	1.5	162,109.70	9.36	0.21	1.03	0.24	2.38	88,650.40	1.24
HM16JV123	C17MA21A0426	0.01	<0.04	117,856.91	28.41	<0.01	13.18	8.57	0.59	163,692.78	7.86	0.13	0.89	0.3	1.67	93,510.13	1.04
HM16JV123	C17MA21A0427	0.01	<0.03	131,211.38	69.59	<0.01	106.7	26.6	2.49	163,041.00	0.62	0.22	1.58	0.05	0.85	77,257.62	0.14
HM16JV123	C17MA21A0418	0.01	<0.04	124,140.90	21.32	0.01	8.22	12.77	0.39	157,292.49	1.21	0.22	0.2	0.05	1.6	95,279.92	0.5
HM16JV123	C17MA21A0424	0.01	<0.05	132,669.20	11.87	<0.02	11.33	15.02	0.18	172,261.41	0.31	0.18	0.85	0.05	0.36	85,076.27	0.005
HM16JV123	C17MA21A0429	0.01	<0.04	119,759.71	2.41	<0.01	4.49	27.22	0.05	162,432.90	32.9	0.005	0.2	0.37	0.54	99,881.27	0.98
HM16JV123	C17MA21A0428	0.01	<0.04	128,832.33	6.8	<0.01	8.56	32.82	0.07	169,536.06	27.7	0.005	0.2	0.05	0.43	92,316.94	1.11
HM16JV123	C17MA21A0430	0.01	<0.08	124,534.30	3.64	<0.02	10.42	17.91	0.04	160,755.24	0.08	0.005	0.2	0.05	0.27	88,459.76	0.26
HM16JV123	C17MA21A0439	0.03	<0.04	111,071.84	117.74	<0.01	25.76	33.17	2.22	168,112.47	124.08	0.17	37.1	0.99	6.14	103,731.99	6.96
HM16JV123	C17MA21A0440	0.01	<0.04	124,215.09	7.39	<0.01	7.12	22.68	0.04	165,761.48	18.15	0.005	0.2	0.05	1.59	89,737.70	1.14
HM16JV123	C17MA21A0438	0.04	<0.03	111,498.25	151.92	<0.01	63.97	20.8	5.29	167,416.05	215.32	0.12	4.52	2.48	5.25	118,328.86	8.99
HM16JV123	C17MA21A0438	0.01	<0.05	101,440.74	144.38	<0.01	51.45	21.67	2.7	158,880.13	139.33	0.15	6.61	1.74	4.29	120,368.44	6.32
HM16JV123	C17MA21A0436	0.01	<0.03	119,286.41	69.1	<0.01	51.77	14.36	0.9	162,255.47	45.57	0.1	0.2	0.45	3.24	99,283.52	2.48
HM16JV123	C17MA21A0433	0.01	<0.04	121,687.73	106.86	<0.01	79.47	12.47	0.83	168,899.37	15.09	0.11	0.95	0.42	1.52	100,310.33	0.72
HM16JV123	C17MA21A0435	0.01	<0.03	118,410.56	3.84	<0.01	22.3	26.37	0.03	162,693.27	47.63	0.005	0.2	1.02	4.74	100,798.03	2.33
HM16JV123	C17MA21A0434	0.01	<0.04	133,153.58	2.72	<0.01	7.13	15.52	0.04	169,392.12	30.67	0.005	0.2	0.72	2.7	82,800.40	1.42

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Ag107	Ag109	Al27	As75	Au197	B11	Ba137	Bi209	Ca43	Ce140	Co59	Cr53	Cu65	Eu153	Fe57	Gd157
HM16JV123	C17MA21A0432	0.01	<0.04	133,807.57	10.83	<0.01	14.61	7.74	0.005	164,990.80	15.54	0.05	0.2	0.75	1.64	73,780.20	1.08
HM16JV123	C17MA21A0434	0.01	<0.05	118,055.12	2.89	<0.02	11.68	13.27	0.03	152,272.98	15.08	0.005	0.2	0.46	0.6	99,117.08	0.43
HM16JV123	C17MA21A0433	0.01	<0.06	117,639.48	2.53	<0.02	4.3	12.63	0.02	158,301.20	5.41	0.005	0.2	0.05	1.28	99,362.53	0.69
HM16JV130	C17MA20A0257	0.01	<0.04	100,999.76	0.06	<0.01	17.14	1.12	0.29	164,598.97	101.23	0.35	8.7	2.88	0.97	138,877.86	1.37
HM16JV130	C17MA20A0261	0.01	<0.04	103,033.40	0.26	<0.01	14.8	1.27	0.49	161,454.51	68.93	0.4	2.25	3.2	0.76	130,030.98	1.01
HM16JV130	C17MA20A0256	0.01	<0.04	106,464.72	0.45	<0.01	17.06	1.4	0.43	159,433.56	124.04	0.41	8.62	10.1	1.22	122,950.52	1.82
HM16JV130	C17MA20A0264	0.01	<0.04	114,460.06	0.67	<0.01	21.34	2.44	1.73	167,005.99	188.59	0.83	3.51	9.58	1.41	111,627.58	2.42
HM16JV130	C17MA20A0266	0.01	<0.04	102,665.70	0.06	<0.01	17.86	1.84	0.36	158,342.00	14.6	0.32	22.04	0.89	0.31	127,929.90	0.18
HM16JV130	C17MA20A0277	0.01	<0.05	96,293.99	0.06	0.01	8.77	0.56	0.21	157,822.42	71.8	0.84	32.36	1.7	0.73	142,000.32	1.14
HM16JV130	C17MA20A0276	0.01	<0.03	103,260.42	0.61	<0.01	38.87	4.6	0.9	156,926.57	249.64	2.63	27.73	50.37	2.24	123,255.05	4.01
HM16JV130	C17MA20A0273	0.01	<0.04	110,178.21	0.52	<0.01	33.94	2.24	1.13	162,482.17	119.16	0.33	7.41	9.25	1.11	117,543.37	1.85
HM16JV130	C17MA20A0274	0.01	<0.03	98,819.35	0.06	<0.01	18.12	1.34	0.72	159,366.15	93.44	2.35	26.51	6.61	0.91	132,140.02	1.55
HM16JV130	C17MA20A0279	0.01	<0.06	107,817.36	0.93	<0.01	73.95	7.36	1.67	150,206.61	454.83	2.01	48.11	59.27	4.2	114,781.74	9.07
HM16JV130	C17MA20A0280	0.01	<0.05	112,335.21	0.75	<0.01	64.11	6.76	1.41	153,129.95	300.18	1.88	21.63	48.63	2.69	110,093.83	5.11
HM16JV130	C17MA20A0278	0.01	<0.04	108,202.10	0.69	<0.01	27.86	4.8	0.89	156,560.06	265.68	1.83	27.04	20.55	2.36	115,676.15	4.29
HM16JV130	C17MA20A0272	0.01	<0.04	115,773.36	0.33	0.01	38.64	3.36	1.13	157,091.02	103.75	0.15	43.36	2.8	0.95	104,376.73	1.8
HM16JV132	C17MA20A0305	0.01	<0.04	117,038.82	1.65	<0.01	19.23	13.33	4.06	159,447.42	7.33	0.19	1.15	0.23	0.05	104,942.29	0.07
HM16JV132	C17MA20A0307	0.01	<0.06	115,274.72	2.08	<0.01	28.14	30.39	2.39	159,233.88	46.72	0.39	2.65	3.14	0.12	108,200.53	0.2
HM16JV132	C17MA20A0308	0.01	<0.05	107,949.51	1.03	<0.01	12.75	11.62	1.58	158,161.26	5.75	0.51	5.32	0.41	0.06	121,137.21	0.05
HM16JV132	C17MA20A0286	0.01	<0.04	112,023.71	0.3	<0.01	19.31	31.96	1.65	164,431.55	16.61	0.3	45.74	0.05	0.64	116,088.65	0.39
HM16JV132	C17MA20A0304	0.01	<0.05	117,173.92	1.85	<0.01	22	13.47	4.11	158,069.47	2.18	0.17	5.22	0.05	0.03	103,236.61	0.02
HM16JV132	C17MA20A0287	0.01	<0.04	112,409.16	1.4	<0.01	15.81	37.84	2.47	162,006.46	12.15	0.17	14.14	0.05	0.54	110,018.96	0.21
HM16JV132	C17MA20A0306	0.01	<0.06	121,854.91	1.72	0.01	25.89	14.42	3.49	172,951.82	7.55	0.26	5.85	0.05	0.06	105,789.82	0.03
HM16JV132	C17MA20A0310	0.01	<0.07	104,656.60	0.06	<0.01	3.16	16.59	1.68	158,272.15	3.15	0.06	129.36	0.05	0.04	125,203.41	0.02
HM16JV132	C17MA20A0310	0.01	<0.07	108,887.60	0.06	<0.01	2.26	19.8	1.42	167,986.82	1.66	0.14	131.44	0.05	0.07	123,222.33	0.18
HM16JV132	C17MA20A0284	0.01	<0.04	100,991.61	0.06	<0.01	1.76	2.4	0.12	164,182.36	29.42	0.005	0.99	0.35	0.09	137,647.28	0.04
HM16JV132	C17MA20A0312	0.01	<0.05	113,776.30	1.46	<0.01	73.16	15.16	12.15	159,022.76	13.31	0.25	39.11	0.97	0.83	111,366.83	0.33
HM16JV132	C17MA20A0313	0.01	<0.06	103,332.01	0.31	<0.01	57.59	19	5.47	154,221.18	14.85	0.31	47.97	0.7	3.8	124,677.44	0.5
HM16JV132	C17MA20A0312	0.07	<0.07	122,817.59	1.26	<0.01	62.21	17.81	10.73	176,888.16	9.64	0.08	42.53	0.05	0.79	102,089.87	0.25
HM16JV132	C17MA20A0285	0.01	<0.04	104,661.09	0.06	<0.01	1.84	4.62	0.46	167,093.07	0.57	0.03	43.51	0.05	0.05	127,135.21	0.05
HM16JV132	C17MA20A0311	0.01	<0.04	112,062.84	0.35	<0.01	39.27	38.06	1.92	161,147.28	30.06	0.16	43.57	0.45	3.87	113,118.53	0.76
HM16JV132	C17MA20A0313	0.01	<0.05	123,076.25	0.77	<0.01	62.92	19.05	12.34	168,766.55	6.97	0.08	47.79	0.05	2.17	102,244.11	0.21
HM16JV132	C17MA20A0294	0.01	<0.04	109,138.89	1.46	<0.01	13.64	61.32	1.39	158,307.17	9.24	0.11	2.73	0.05	0.34	106,810.32	0.04
HM16JV132	C17MA20A0303	0.01	<0.04	107,194.43	0.06	<0.01	2.6	3.85	0.62	160,820.14	0.04	0.17	2.44	0.38	0	129,803.76	0.005
HM16JV132	C17MA20A0325	0.01	<0.06	105,723.12	1.03	<0.01	10.24	14.07	0.79	161,097.29	0.1	0.39	4.07	0.05	0.005	127,515.16	0.005
HM16JV132	C17MA20A0314	0.01	<0.06	119,971.44	0.88	<0.01	9.27	8.89	0.23	175,181.83	6.04	0.42	4.99	0.05	0.04	110,424.43	0.005
HM16JV132	C17MA20A0324	0.01	<0.06	99,667.13	0.53	<0.01	3.88	7.72	2.36	155,719.29	0.95	0.19	40.47	0.39	0.04	133,645.93	0.04
HM16JV132	C17MA20A0320	0.01	<0.03	106,957.89	0.36	<0.01	2.67	13.62	0.4	163,703.43	6.21	0.05	50.42	0.05	0.03	126,407.32	0.09
HM16JV132	C17MA20A0327	0.01	<0.04	108,760.78	1.02	<0.01	36.7	8.1	8.39	169,659.01	0.46	0.23	12.13	0.05	0.74	125,283.06	0.06
HM16JV132	C17MA20A0315	0.01	<0.03	112,869.57	0.87	<0.01	8.13	10.13	0.92	166,486.21	0.33	0.22	9.83	0.05	0.04	119,859.10	0.04
HM16JV132	C17MA20A0318	0.01	<0.04	104,146.28	0.37	<0.01	3.22	12.44	1.59	161,097.15	0.04	0.29	45.46	0.05	0.01	129,183.13	0.01
HM16JV132	C17MA20A0322	0.01	<0.04	117,584.16	2.05	<0.01	62.13	26	15.15	156,987.27	10.06	0.09	14.68	0.05	0.48	101,412.37	0.18
HM16JV132	C17MA20A0328	0.01	<0.04	113,106.41	2.02	<0.01	70.71	20.15	9.31	155,234.66	40.74	0.11	21.36	1.15	0.38	108,875.15	0.16
HM16JV132	C17MA20A0316	0.01	<0.03	108,839.98	0.87	<0.01	9.2	9.88	0.58	161,076.35	0.91	0.29	6.54	0.24	0.04	123,977.63	0.03
HM16JV132	C17MA20A0326	0.01	<0.05	114,643.39	1.46	<0.01	49.82	25.45	7.27	157,475.68	5.51	0.14	30.47	0.35	0.54	108,470.18	0.07
HM16JV132	C17MA20A0319	0.01	<0.06	105,848.97	0.06	<0.01	2.39	24.37	0.4	158,697.07	0.39	0.09	56.67	0.05	0.005	124,647.72	0.005
HM16JV132	C17MA20A0321	0.01	<0.06	115,628.06	0.48	<0.01	1.71	23.7	0.43	176,009.64	0.12	0.08	56.09	0.05	0.02	118,489.53	0.02
HM16JV132	C17MA20A0321	0.01	<0.06	102,804.20	0.82	<0.01	9.23	28.56	0.75	154,968.86	8.5	0.78	38.74	1.54	0.1	123,323.69	0.11
HM16JV132	C17MA20A0323	0.01	<0.04	114,681.25	2.04	<0.00	45.88	39.62	3.82	159,126.06	1.02	0.43	16.8	0.05	0.78	106,672.51	0.09
HM16JV132	C17MA20A0317	0.01	<0.04	112,149.40	0.3	<0.01	1.22	14.74	0.35	173,868.38	0.17	0.36	8.43	0.05	0.06	122,927.33	0.08
HM16JV132	C17MA20A0324	0.01	<0.05	111,696.33	0.31	<0.01	3.26	31.4	0.97	173,122.14	1	0.18	40.76	0.05	0.05	123,672.58	0.05
HM16JV133	C17MA21A0442	0.05	<0.04	111,282.36	1.05	<0.01	22.92	174.16	30.15	148,454.25	399.57	0.64	17.46	1.6	3.58	102,881.03	5.35

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Ag107	Ag109	Al27	As75	Au197	B11	Ba137	Bi209	Ca43	Ce140	Co59	Cr53	Cu65	Eu153	Fe57	Gd157
HM16JV133	C17MA21A0441	0.01	<0.03	104,134.71	1.79	<0.01	14.63	5.35	42.91	161,598.05	307.58	0.62	1.22	3.36	1.29	124,993.64	1.49
HM16JV133	C17MA21A0443	0.01	<0.04	110,613.75	2.02	<0.01	13.41	12.12	51.82	167,103.41	721.29	0.74	34.23	1.41	7.66	114,955.13	11.78
HM16JV133	C17MA21A0444	0.01	<0.04	107,552.02	0.18	<0.01	0.98	6.62	0.1	162,558.54	0.51	0.1	80.1	0.05	0.27	117,955.31	0.23
HM16JV133	C17MA21A0450	0.01	<0.03	106,673.97	2.72	<0.01	30.73	19.71	60.19	160,454.86	432.23	1.1	27	2.29	0.89	118,376.10	1.12
HM16JV133	C17MA21A0446	0.01	<0.03	108,145.37	0.77	<0.01	16.77	9.07	14.81	160,670.25	326.99	0.5	48.57	0.59	2.58	118,359.21	3.49
HM16JV133	C17MA21A0448	0.01	<0.04	108,323.35	2.76	<0.01	15.31	11.05	25.43	158,880.02	218.54	1.99	48.73	1.55	2.19	117,486.40	2.91
HM16JV133	C17MA21A0447	0.01	<0.04	111,102.77	1.25	<0.01	14.08	6.05	14.61	163,320.05	411.73	0.23	32	0.38	3.79	114,653.28	5.99
HM16JV133	C17MA21A0449	0.01	<0.05	112,620.33	1.16	<0.01	9.87	8.14	30.15	171,334.89	78.67	0.94	108.37	1.92	1.5	115,234.05	0.58
HM16JV133	C17MA21A0445	0.01	<0.03	112,189.72	0.29	0.01	4.97	4.85	2.56	167,680.46	48.28	0.15	86.21	1.81	0.49	115,374.89	0.52
HM16JV133	C17MA21A0462	0.01	<0.03	113,407.05	1.84	<0.01	11.55	12.7	15.93	165,799.70	122.26	0.9	62.81	1.01	0.94	108,055.26	1.36
HM16JV133	C17MA21A0452	0.01	<0.07	103,284.01	2.55	<0.02	13.96	3.85	41.04	156,049.09	304.23	0.15	10.11	0.05	0.61	118,496.03	0.83
HM16JV133	C17MA21A0464	0.01	<0.04	106,742.03	1.84	<0.01	10.01	3.85	99.47	159,715.49	247.81	0.1	32	0.05	2.1	115,034.81	1.82
HM16JV133	C17MA21A0452	0.01	<0.03	110,891.73	5.69	<0.01	29.02	6.83	273.65	160,853.93	80.38	0.17	21.85	0.05	0.23	108,814.63	0.31
HM16JV133	C17MA21A0461	0.01	<0.04	113,614.02	3.39	<0.01	20.71	5.06	138.94	169,987.35	166.48	0.2	24	0.05	1.08	113,170.72	1.48
HM16JV133	C17MA21A0454	0.01	<0.03	110,518.65	3.56	<0.01	19.64	5.56	166.65	163,556.24	88.37	0.36	30.15	0.38	0.24	115,626.61	0.39
HM16JV133	C17MA21A0451	0.05	<0.04	112,187.97	1.84	<0.01	21	20.35	12.42	169,534.71	306.03	1.19	76.53	2.76	1.17	117,303.26	1.44
HM16JV133	C17MA21A0453	0.01	<0.03	109,211.76	0.93	<0.01	14.91	9.99	17.35	159,402.06	167.08	0.94	62.96	2.4	1.38	120,703.09	1.81
HM16JV133	C17MA21A0463	0.01	<0.10	117,199.46	1.28	<0.02	14.15	20.99	8.59	177,791.78	310.36	0.68	68.73	2.05	1.61	117,253.67	1.75
HM16JV133	C17MA21A0465	0.01	<0.03	109,638.65	1.86	<0.01	54.97	8.98	19.34	162,000.87	232.21	0.66	73.09	1.01	1.19	115,768.54	1.77
HM16JV133	C17MA21A0467	0.01	<0.03	112,009.34	1.04	<0.01	21.12	24.11	15.38	166,051.78	87.05	0.96	64.92	1.33	0.82	114,791.83	1.12
HM16JV133	C17MA21A0469	0.01	<0.06	104,867.91	1.18	<0.01	22.52	4.45	41.82	155,034.44	99.04	0.69	33.9	1.28	1.41	119,038.19	1.66
HM16JV133	C17MA21A0466	0.01	<0.03	106,625.22	0.87	<0.01	19.5	6.4	6.99	161,407.58	53.56	0.84	104.18	0.89	0.31	119,188.28	0.5
HM16JV133	C17MA21A0468	0.01	<0.04	102,634.08	0.89	<0.01	26.49	6.77	6.48	157,745.34	75.4	0.73	90.48	1.74	0.47	122,993.75	0.64
HM16JV133	C17MA21A0470	0.01	<0.05	108,000.31	0.54	<0.01	36.9	8.24	2.12	162,495.94	159.31	0.09	40.84	1.1	2.45	119,209.31	3.14
HM16JV136	C17MA20A0336	0.01	<0.04	114,056.20	3.93	<0.01	54.44	6.09	0.12	159,191.95	18.46	0.53	1.53	0.28	0.23	109,204.69	0.36
HM16JV136	C17MA20A0332	0.01	<0.07	101,954.25	19.1	<0.01	36.47	1.94	0.005	151,289.53	38.6	0.14	1.69	0.05	0.95	124,079.68	0.81
HM16JV136	C17MA20A0332	0.01	<0.04	106,166.42	5.41	<0.01	8.35	0.69	0.005	166,252.25	16.62	0.18	1.99	0.05	0.91	127,571.13	0.76
HM16JV136	C17MA20A0330	0.01	<0.04	111,056.11	1.8	<0.01	1.98	9.04	0.19	165,245.58	1.84	0.63	0.2	0.05	0.14	128,209.21	0.41
HM16JV136	C17MA20A0331	0.01	<0.06	120,212.14	20.57	<0.01	39.53	1.54	0.005	178,600.35	133.57	0.11	1.43	0.05	1.58	112,137.43	0.48
HM16JV136	C17MA20A0337	0.01	<0.05	108,549.46	23.99	<0.01	52.39	2.74	0.01	157,687.13	34.47	0.14	1.26	0.05	1.16	119,263.86	0.71
HM16JV136	C17MA20A0334	0.01	<0.04	110,281.85	9.24	<0.01	25.42	2.33	0.01	162,946.85	7.51	0.1	0.2	0.05	0.37	117,978.23	0.12
HM16JV136	C17MA20A0335	0.01	<0.09	98,422.39	5.44	<0.02	11.04	1.6	0.005	152,710.65	33.83	0.06	0.2	0.05	1.06	131,748.41	1.03
HM16JV136	C17MA20A0333	0.01	<0.04	107,253.65	3.47	<0.01	3.54	0.46	0.005	158,914.39	0.35	0.12	0.2	0.05	0.32	120,192.20	0.07
HM16JV136	C17MA20A0335	0.01	<0.05	115,513.12	8.59	<0.01	18.89	0.6	0.005	163,304.83	6.67	0.09	2.42	0.05	1.57	111,869.21	1.93
HM16JV136	C17MA20A0329	0.01	<0.04	113,378.90	1.29	<0.01	2.64	1.68	0.2	171,782.31	1.03	0.65	0.97	0.36	0.21	122,902.71	0.16
HM16JV136	C17MA20A0334	0.01	<0.10	109,061.49	7.92	<0.02	9.83	0.35	0.005	151,696.49	4.53	0.005	0.2	0.05	0.55	118,424.06	0.91
HM16JV136	C17MA20A0344	0.01	<0.03	102,830.42	9.05	<0.01	32.79	4.75	0.005	159,554.21	2.09	0.54	39.41	0.05	0.11	128,814.65	0.06
HM16JV136	C17MA20A0343	0.01	<0.03	99,349.45	6.74	0.01	18.34	4.04	0.005	160,083.67	10.04	0.55	23.3	0.05	0.07	135,345.02	0.02
HM16JV136	C17MA20A0340	0.01	<0.06	98,511.50	2.19	<0.01	8.17	7.07	0.005	150,045.15	76.15	0.37	40.74	0.05	0.28	134,153.23	0.1
HM16JV136	C17MA20A0339	0.01	<0.07	99,698.70	3.29	<0.01	12.47	6.01	0.005	155,850.92	572.19	0.3	44.59	0.05	1.01	134,295.53	1.13
HM16JV136	C17MA20A0339	0.01	<0.05	107,057.20	2.73	<0.01	8.16	5.02	0.005	170,033.00	7.8	0.31	45.63	0.05	0.04	128,465.95	0.005
HM16JV136	C17MA20A0342	0.01	<0.05	97,992.39	4.05	<0.01	14.26	7.39	0.005	152,905.41	57.62	0.46	54.7	0.05	0.3	128,520.07	0.21
HM16JV136	C17MA20A0342	0.01	<0.04	106,074.68	4.88	<0.01	14.7	6.07	0.005	164,932.34	57.14	0.45	33.03	0.43	0.2	126,260.54	0.15
HM16JV136	C17MA20A0341	0.01	<0.05	104,807.39	4.94	<0.01	13.2	4.06	0.005	164,809.16	32.13	0.52	37.51	0.05	0.21	128,484.44	0.12
HM16JV136	C17MA20A0341	0.01	<0.04	103,345.11	3.95	<0.01	14.04	4.94	0.005	162,824.68	245.38	0.77	30.64	0.05	0.64	131,287.57	0.67
HM16JV136	C17MA20A0338	0.01	<0.04	101,069.96	3.7	<0.01	10.92	3.19	0.005	162,131.35	0.11	0.27	58.56	0.05	0.04	135,172.12	0.005
HM16JV136	C17MA20A0346	0.01	<0.04	111,701.57	13.65	<0.01	39.65	3.31	0.005	156,494.38	23.63	0.12	4.73	0.05	1.53	111,247.98	1.47
HM16JV136	C17MA20A0347	0.01	<0.03	98,921.53	4.14	0.01	12.3	2.07	0.005	160,838.58	0.08	0.32	10.23	0.05	0.07	136,720.42	0.01
HM16JV136	C17MA20A0356	0.01	0.04	103,080.06	3.57	0.01	11.39	11.66	0.005	156,682.68	42.9	0.48	28.33	0.05	0.26	130,740.30	0.31
HM16JV136	C17MA20A0355	0.01	<0.03	106,396.24	8.23	<0.00	26.09	3.69	0.005	154,889.58	28.27	3.75	7.12	0.65	0.37	124,373.33	0.16
HM16JV136	C17MA20A0348	0.01	<0.07	124,785.26	11.57	<0.01	39.22	2.79	0.02	173,139.91	6.42	0.15	18.06	0.05	1.15	95,972.69	0.48
HM16JV136	C17MA20A0362	0.09	<0.07	104,488.49	0.75	<0.01	15.74	3.86	0.08	153,798.71	67.36	0.11	3.13	0.05	0.29	123,976.06	0.4

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Ag107	Ag109	Al27	As75	Au197	B11	Ba137	Bi209	Ca43	Ce140	Co59	Cr53	Cu65	Eu153	Fe57	Gd157
HM16JV136	C17MA20A0363	0.01	0.04	98,565.12	1.59	<0.01	26.5	3.91	0.01	148,851.40	98.24	0.19	1.8	0.4	0.23	115,572.12	0.24
HM16JV136	C17MA20A0362	0.01	<0.06	101,541.57	0.58	<0.01	5.55	1.43	0.005	159,299.82	4.25	0.13	1.62	0.05	0.14	135,244.80	0.2
HM16JV136	C17MA20A0360	0.01	<0.05	112,941.03	2.33	<0.01	17.76	3.95	0.005	157,825.97	17.81	0.1	1.62	0.05	0.08	111,451.07	0.04
HM16JV136	C17MA20A0364	0.01	<0.04	109,174.35	11.61	<0.01	23.24	2.68	0.01	165,301.21	87.19	0.19	7.69	0.05	1.26	121,727.93	1.07
HM16JV136	C17MA20A0361	0.01	<0.03	112,417.15	7.48	<0.01	12.96	1.67	0.005	160,996.50	40.47	0.15	0.74	0.29	0.7	114,857.54	0.24
HM16JV136	C17MA20A0358	0.01	<0.03	112,749.14	22.85	<0.01	49.57	2.73	0.005	156,759.73	18.44	0.27	13.25	0.05	1.79	112,164.70	1.11
HM16JV136	C17MA20A0357	0.01	<0.04	114,861.47	12.97	<0.01	41.71	3.35	0.005	153,960.94	43.61	0.18	6.05	0.05	2.28	104,655.77	2.28
HM16JV138	E17JN15A259	0.01	<0.04	114,669.64	0.6	<0.01	109.54	64.39	0.32	152,192.06	319.34	0.93	342.48	5.61	8.95	88,048.09	13.73
HM16JV138	E17JN15A260	0.01	<0.19	129,930.48	0.06	<0.03	61	5.75	0.5	176,084.46	64.51	0.55	545.86	1.02	3.54	93,907.11	3
HM16JV138	E17JN15A248	0.01	<0.06	117,175.40	0.79	<0.01	21.47	6.01	0.16	166,208.25	251.28	0.28	13.42	1.59	6.04	106,407.53	17.21
HM16JV138	E17JN15A252	0.01	<0.05	115,042.26	2.77	<0.01	30.15	5.07	0.17	163,961.47	1,330.61	0.36	8.81	1.86	22.06	107,156.11	90.16
HM16JV138	E17JN15A246	0.01	<0.09	119,047.41	0.06	<0.01	19.97	2.52	0.09	168,124.94	14.54	0.25	33.47	0.05	0.35	108,560.56	0.56
HM16JV138	E17JN15A247	0.01	<0.05	108,713.19	1.35	<0.01	23.53	1.59	0.2	163,841.93	442.05	0.34	11.5	3.96	11.24	120,065.63	29.01
HM16JV138	E17JN15A251	0.01	<0.08	111,074.27	0.06	<0.01	21.08	0.89	0.08	161,127.01	82.71	0.37	17.16	1.82	2.1	110,006.50	3.93
HM16JV138	E17JN15A258	0.01	<0.05	118,579.34	0.39	<0.01	32.34	3.07	0.23	164,248.00	92.51	0.39	50.5	3.7	3.14	98,574.47	4.35
HM16JV138	E17JN15A250	0.01	<0.06	108,700.76	1.8	<0.01	21.29	0.71	0.19	166,619.78	555.48	0.3	8.15	1.86	11.91	122,997.38	41.27
HM16JV138	E17JN15A249	0.01	<0.05	110,200.19	0.52	<0.01	12.65	4.03	0.22	157,876.54	104.43	0.35	26.91	1.31	3.86	113,846.81	6.13
HM16JV138	E17JN15A253	0.01	<0.05	118,489.35	0.37	<0.01	8.27	8.01	0.14	163,893.96	14.09	0.26	19.57	0.05	0.76	100,659.62	0.91
HM16JV138	E17JN15A251	0.01	<0.28	119,896.90	0.06	<0.03	14.38	2.16	0.005	180,052.40	129.06	0.61	15.95	0.95	2.88	107,021.45	10.7
HM16JV138	E17JN15A254	0.01	<0.05	111,901.79	1.39	<0.01	14.15	1.9	0.24	160,923.24	548.11	0.29	13.25	1.1	10.66	111,889.30	30.77
HM16JV138	E17JN15A255	0.01	<0.04	108,172.11	1.18	<0.01	13.91	0.61	0.5	164,147.80	601.82	0.36	9.32	2.02	9.1	120,118.83	32.44
HM16JV138	E17JN15A256	0.01	<0.04	109,600.39	3.04	<0.01	22.23	4.64	0.32	163,200.76	1,244.83	0.29	17.2	2.67	17.95	114,657.26	51.12
HM16JV138	E17JN15A250	0.01	<0.08	105,618.25	0.06	0.01	12.08	0.26	0.05	159,298.88	111.25	0.22	8.18	1.38	2.76	123,705.03	5.15
HM16JV139	C17MA21A0581	0.01	<0.06	117,893.35	2.03	<0.02	11.53	0.26	0.005	177,800.61	19.77	0.2	5.3	0.05	1.12	109,765.70	0.7
HM16JV139	C17MA21A0579	0.01	<0.04	105,343.32	1.29	<0.01	12.72	2.09	0.01	162,280.08	155.01	0.38	35.16	1.32	3.1	120,831.89	3.98
HM16JV139	C17MA21A0573	0.01	<0.04	100,484.77	0.62	<0.01	6.07	1.8	0.02	160,517.43	154.57	2.42	22.06	7.9	2.59	122,516.13	4.05
HM16JV139	C17MA21A0572	0.01	<0.04	89,959.46	0.85	<0.01	2.91	3.73	0.02	159,068.70	207.8	7.86	20.14	27.95	2.92	127,543.36	4.11
HM16JV139	C17MA21A0573	0.01	<0.06	97,251.82	0.93	<0.01	6.92	1.76	0.02	149,781.24	70.25	2.36	19.63	10.82	1.96	119,053.05	1.7
HM16JV139	C17MA21A0577	0.01	<0.05	93,841.35	1.08	<0.02	10.66	1.51	0.11	152,003.03	188.47	2.46	43.7	8.76	2.74	129,855.99	4.32
HM16JV139	C17MA21A0584	0.01	<0.04	109,784.83	1.78	<0.01	33.27	2.58	0.01	157,394.55	139.76	0.14	22.15	2.34	2.83	109,874.21	1.4
HM16JV139	C17MA21A0569	0.01	<0.06	112,064.44	1.07	<0.01	2.62	2.05	0.005	169,195.58	33.55	0.4	12.94	0.47	2.56	116,510.83	1.65
HM16JV139	C17MA21A0566	0.01	<0.06	107,375.47	2.22	<0.01	27.27	0.62	0.02	160,307.45	69.48	0.25	4.38	19.49	1.97	116,630.76	1.7
HM16JV139	C17MA21A0585	0.01	<0.05	103,677.01	0.06	<0.01	1.69	1.53	0.005	175,771.81	7.64	0.005	85.46	0.05	0.84	130,002.74	0.65
HM16JV139	C17MA21A0564	0.01	<0.09	110,997.94	0.47	<0.02	11.06	1.66	0.04	183,154.71	92.66	0.77	20.18	6.52	2.19	117,764.14	3.2
HM16JV139	C17MA21A0562	0.01	<0.05	94,635.85	0.38	<0.01	63.43	1.73	0.08	151,351.66	64.84	3.64	16.37	34.28	1.31	128,546.73	1.4
HM16JV139	C17MA21A0566	0.01	<0.08	100,643.21	1.87	<0.01	13.47	0.52	0.005	157,770.47	54.31	0.22	5.93	0.87	1.58	122,050.29	1.07
HM16JV139	C17MA21A0581	0.01	<0.04	111,285.29	2.62	<0.01	23.3	1.1	0.07	159,125.06	128.89	0.12	20.25	0.72	3.2	111,052.15	3.71
HM16JV139	C17MA21A0580	0.01	<0.05	102,497.87	2.12	<0.01	18.11	2.23	0.03	154,919.33	313.23	0.4	107.36	0.94	5.81	122,743.28	8.46
HM16JV139	C17MA21A0570	0.01	<0.05	106,296.93	3	<0.01	24.3	2.69	0.06	156,177.49	419.48	0.32	43.43	1.91	8.73	115,985.92	11.53
HM16JV139	C17MA21A0567	0.01	<0.04	102,665.12	1.49	<0.01	13.97	1.25	0.01	152,022.30	33.82	3.1	19.13	3.05	1.61	110,292.70	1.02
HM16JV139	C17MA21A0571	0.01	<0.03	103,775.93	1.71	<0.01	15.2	1.97	0.05	159,325.22	208.27	2.69	19.14	8.39	3.78	116,179.53	4.85
HM16JV139	C17MA21A0582	0.01	<0.04	111,566.78	1.97	0.01	16.99	1.52	0.03	159,395.93	13.29	0.32	30.64	0.79	1.52	108,102.80	0.62
HM16JV139	C17MA21A0574	0.01	<0.05	113,749.19	0.41	<0.01	4.87	2.73	0.06	167,275.14	123.2	0.07	50.25	0.42	3.57	108,419.73	3.65
HM16JV139	C17MA21A0562	0.01	<0.04	108,723.91	0.74	<0.01	3.25	1.41	0.01	166,689.50	16.67	0.58	20.19	0.98	1.36	118,126.86	0.71
HM16JV139	C17MA21A0575	0.01	<0.05	105,952.66	1.09	<0.02	12.39	1.77	0.005	158,889.43	247.23	1.87	32.81	11.34	4.04	116,553.23	5.44
HM16JV139	C17MA21A0586	0.01	<0.03	111,249.83	2.93	<0.01	29.25	2.54	0.12	162,633.91	223.13	0.53	118.66	2.89	3.48	110,298.59	4.11
HM16JV139	C17MA21A0577	0.12	<0.10	111,359.50	1.21	<0.03	2.94	0.37	0.07	180,798.75	137.79	0.46	55.36	0.05	3.03	119,918.99	4
HM16JV139	C17MA21A0565	0.01	<0.04	108,991.17	0.75	<0.01	7.2	1.15	0.01	158,513.31	9.81	0.1	26.61	0.05	1	111,271.53	0.39
HM16JV139	C17MA21A0576	0.01	<0.07	107,414.84	0.77	<0.02	4.82	0.51	0.02	162,941.00	20.21	0.23	13.3	0.66	0.86	117,839.49	0.66
HM16JV139	C17MA21A0568	0.01	<0.05	102,080.43	1.15	<0.01	5.54	0.81	0.1	158,406.71	223.39	1.03	12.85	2.75	3.68	121,753.61	4.96
HM16JV139	C17MA21A0583	0.01	<0.04	110,597.70	3.01	<0.01	27.37	2.78	0.06	166,126.79	493.26	0.25	39.28	2.48	8.77	117,127.22	12.71
HM16JV139	C17MA21A0566	0.01	0.05	119,482.73	3.69	<0.01	32.74	0.75	0.04	168,090.91	44.34	0.23	6.34	2.08	2.05	99,358.60	0.97

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Ag107	Ag109	Al27	As75	Au197	B11	Ba137	Bi209	Ca43	Ce140	Co59	Cr53	Cu65	Eu153	Fe57	Gd157
HM16JV139	C17MA21A0586	0.01	<0.04	108,996.51	2.96	<0.01	40.43	1.19	0.11	151,482.28	107.31	0.15	139.39	1.56	2.58	107,152.59	2.3
HM16JV139	C17MA21A0578	0.01	<0.04	108,988.59	0.74	<0.01	3.52	0.69	0.005	169,536.16	209.23	0.09	26.58	0.05	3.86	123,469.85	5.8
HM16JV139	C17MA21A0582	0.01	<0.10	101,059.26	1.24	0.03	10.54	0.6	0.04	153,323.09	119.1	0.33	25.76	1.39	2.34	124,319.42	4.06
HM16JV139	C17MA21A0568	0.01	<0.05	115,363.35	2.44	<0.01	22.2	0.99	0.07	168,576.27	260.94	0.47	21.19	1.47	4.76	107,903.67	6.88
HM16JV139	C17MA21A0574	0.01	<0.05	105,862.25	0.56	<0.01	6.06	2.3	0.04	155,289.81	103.62	0.73	61.25	1.88	2.15	112,557.71	2.31
HM16JV139	C17MA21A0564	0.01	<0.05	103,988.18	0.73	<0.01	3.51	0.12	0.005	157,307.05	2.01	0.18	8.86	0.05	1.31	124,357.38	0.37
HM16JV139	C17MA21A0563	0.01	<0.05	113,133.23	2.65	<0.01	35.64	0.8	0.13	159,022.20	3.8	0.18	353.87	0.05	0.93	104,971.68	0.77
HM16JV141	C17MA21A0537	0.01	<0.04	118,219.25	6.02	<0.01	7.68	3.55	0.17	161,572.63	0.11	2.26	256.44	0.05	0.53	107,606.65	0.07
HM16JV141	C17MA21A0536	0.01	<0.06	123,821.31	0.59	<0.01	1.29	15.57	0.71	168,692.69	1.74	1.08	365.51	0.05	1.29	104,216.13	0.78
HM16JV141	C17MA21A0538	0.01	0.07	121,846.64	3.61	<0.01	17.86	24.48	0.71	169,154.10	845.95	0.5	350.12	10.05	20.03	102,032.56	61.3
HM16JV141	C17MA21A0544	0.01	0.12	125,554.91	0.35	<0.01	0.3	16.09	0.1	174,832.62	2.6	1.3	254.71	0.47	0.71	98,688.11	0.68
HM16JV141	C17MA21A0540	0.01	<0.04	119,680.35	1.02	<0.01	2.51	10.35	0.11	162,289.80	28.31	0.12	34.1	0.69	2.21	107,067.59	5.94
HM16JV141	C17MA21A0539	0.01	<0.04	116,240.79	1.07	<0.01	6.37	11.15	0.12	158,959.79	34.84	0.18	288.23	0.56	0.84	105,933.96	1.69
HM16JV141	C17MA21A0542	0.01	<0.05	124,354.27	0.21	<0.01	0.3	3.46	0.2	170,811.47	1.65	0.2	17.45	0.05	0.47	102,563.28	1.39
HM16JV141	C17MA21A0543	0.01	<0.04	118,024.46	0.6	0.01	1.38	7.47	0.08	160,957.71	0.1	0.46	330.32	0.05	0.18	104,913.81	0.02
HM16JV141	C17MA21A0545	0.01	<0.04	119,584.50	0.06	<0.01	1.47	6.81	1.44	162,181.19	36.39	1.85	1,723.85	0.05	2.02	102,438.47	3.39
HM16JV141	C17MA21A0547	0.01	<0.03	115,070.81	0.2	0.01	1.19	7.33	0.31	160,115.98	0.8	0.54	789.25	0.05	0.34	108,091.04	0.25
HM16JV141	C17MA21A0546	0.01	<0.04	123,783.99	0.28	<0.01	0.3	6.44	0.25	169,368.80	26.55	0.8	589.62	0.24	0.77	102,103.42	1.31
HM16JV141	C17MA21A0548	0.01	<0.06	126,567.57	0.06	<0.02	1	5.93	0.12	169,663.92	18.39	1.95	312.62	1.22	0.36	102,883.77	1.48
HM16JV141	C17MA21A0550	0.01	0.06	116,997.00	0.48	<0.01	1.98	5.19	0.06	160,308.08	6.96	0.14	445.4	0.62	0.22	107,475.90	0.56
HM16JV141	C17MA21A0549	0.01	<0.05	122,690.67	0.21	<0.01	0.3	3.58	0.05	171,313.37	0.005	0.15	532.59	0.05	0.01	102,427.91	0.005
HM16JV141	C17MA21A0557	0.01	<0.03	118,607.56	0.37	<0.01	1.33	12.22	0.58	163,834.47	28.67	0.19	265.69	0.3	1.66	106,436.98	2.54
HM16JV141	C17MA21A0559	0.01	<0.07	117,544.27	0.44	<0.02	4.39	4.04	0.67	163,162.69	57.34	0.22	164.36	0.05	2.4	109,078.58	8.29
HM16JV141	C17MA21A0554	0.01	<0.05	123,291.21	0.36	<0.02	0.92	7.67	0.66	168,118.75	78.18	0.32	266.66	0.05	2.75	102,507.55	6.94
HM16JV141	C17MA21A0555	0.01	<0.06	128,379.62	0.51	<0.01	1.92	0.005	0.14	163,542.26	108.21	0.46	129.08	0.05	3.58	92,509.31	12.29
HM16JV141	C17MA21A0556	0.01	<0.07	111,385.55	2.52	<0.02	0.3	7.3	0.1	153,732.41	1.22	0.12	176.75	0.05	0.5	110,956.34	0.1
HM16JV141	C17MA21A0561	0.01	<0.03	120,847.09	0.35	0.02	0.98	4.63	0.34	165,810.99	19.59	0.16	250.86	0.37	0.98	104,550.16	5.21
HM16JV141	C17MA21A0560	0.01	<0.05	126,104.93	0.06	<0.01	0.3	4.17	0.39	178,376.17	2.25	0.005	170.19	0.05	0.47	100,396.69	0.75
HM16JV141	C17MA21A0552	0.01	<0.07	125,750.35	0.73	0.03	1.42	6.56	0.07	172,153.90	15.1	0.005	165.66	0.05	0.63	102,059.78	0.8
HM16JV141	C17MA21A0553	0.01	<0.04	115,823.83	0.59	<0.01	1.12	4.63	0.25	158,611.09	0.29	0.24	95.01	0.05	0.31	109,254.26	0.54
HM16JV141	C17MA21A0558	0.01	<0.08	130,769.11	0.95	0.03	0.3	7.61	0.1	177,713.52	0.56	0.15	133.9	0.05	0.44	97,762.02	1.17
HM16JV141	C17MA21A0551	0.01	<0.03	116,350.47	0.27	0.01	1.08	4.41	0.07	160,062.09	0.12	0.17	117.9	0.05	0.06	108,006.12	0.21
HM16JV143	E17JN14A357	0.01	<0.07	103,278.83	0.65	<0.01	16.55	5.95	0.005	166,274.06	166.93	0.27	12.4	2.17	8.3	129,063.66	21.32
HM16JV143	E17JN14A353	0.01	<0.17	102,270.04	0.06	<0.03	29.24	4.53	0.25	166,626.48	759.45	0.54	412.43	1.25	18.72	127,022.71	31.53
HM16JV143	E17JN14A363	0.01	<0.09	106,352.84	0.37	<0.01	13.67	3.71	0.005	164,328.99	107.93	0.09	7.64	0.31	8.59	125,011.39	11.35
HM16JV143	E17JN14A365	0.01	<0.07	107,222.46	0.36	<0.01	20.5	3.35	0.005	166,611.98	140.57	0.08	17.29	0.97	8.09	124,760.58	10.47
HM16JV143	E17JN14A368	0.01	<0.06	107,824.70	0.89	<0.01	44.75	3.85	0.14	164,045.02	372.93	0.25	168.92	1.35	12.78	121,221.95	12.34
HM16JV143	E17JN14A364	0.01	<0.13	106,268.06	1.08	<0.02	33.61	5.51	0.07	157,955.13	389.53	0.04	56.9	1.33	13.35	122,494.98	18.13
HM16JV143	E17JN14A361	0.01	<0.08	115,023.71	0.68	<0.01	32.32	11.34	0.05	162,814.12	78.77	0.09	12.52	0.48	9.46	103,729.10	6.73
HM16JV143	E17JN14A367	0.01	<0.08	110,996.03	0.41	<0.01	1.18	0.71	0.005	169,376.11	382.75	0.1	19.59	0.05	11.79	119,216.69	12.64
HM16JV143	E17JN14A367	0.01	<0.08	106,502.08	0.85	<0.01	1.28	0.35	0.005	162,527.56	510.06	0.13	24.26	0.05	13.82	119,698.68	16.93
HM16JV143	E17JN14A356	0.01	<0.07	115,395.04	0.06	<0.01	16.2	10	0.04	162,108.66	300.44	0.08	27.16	0.85	14.22	107,117.44	13.34
HM16JV143	E17JN14A366	0.01	<0.07	105,565.75	0.06	<0.01	15.53	2.46	0.005	163,163.38	72.94	0.1	5.49	0.43	3.66	127,535.09	6.48
HM16JV143	E17JN14A362	0.01	<0.10	119,893.19	0.86	<0.01	33.27	10.25	0.09	167,251.67	100.6	0.09	19.88	0.32	9.06	100,690.60	5.21
HM16JV143	E17JN14A359	0.01	<0.08	116,959.53	0.65	<0.01	22.84	17.2	0.005	161,860.15	248.51	0.2	30.05	1.05	22.93	102,739.62	16.69
HM16JV143	E17JN14A354	0.01	<0.16	124,589.68	1.22	<0.02	27.58	9.15	0.13	170,469.03	297.73	0.04	1,131.16	0.05	8.19	98,727.89	7.96
HM16JV143	E17JN14A358	0.01	<0.07	114,729.76	0.06	<0.01	18.9	10.51	0.04	161,351.21	90.47	0.24	21.89	0.66	4.64	106,211.51	9.53
HM16JV143	E17JN14A360	0.01	<0.08	111,501.17	0.06	<0.01	27.31	3.25	0.05	162,368.83	97.72	0.12	13.48	0.25	4.1	118,008.59	6.13
HM16JV149	E17JN15A133	0.01	<0.07	118,517.69	0.06	<0.01	33.7	2.23	0.03	169,818.41	13.95	0.18	3.3	0.05	7.89	104,058.05	0.98
HM16JV149	E17JN15A133	0.01	<0.07	111,472.15	0.06	<0.01	35.64	2.53	0.03	158,023.45	118.01	0.2	4.09	0.05	9.39	108,498.68	3.24
HM16JV149	E17JN15A131	0.01	<0.11	129,000.32	0.06	<0.02	22.7	1.75	0.005	176,271.06	30.64	0.08	7.17	0.05	4.6	89,645.76	1.32
HM16JV149	E17JN15A147	0.01	<0.09	131,212.68	13.65	<0.01	30.16	6.02	1.94	162,611.34	127.33	1.12	7.23	1.19	3.82	70,635.56	3.7

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Ag107	Ag109	Al27	As75	Au197	B11	Ba137	Bi209	Ca43	Ce140	Co59	Cr53	Cu65	Eu153	Fe57	Gd157
HM16JV149	E17JN15A138	0.01	<0.07	121,892.84	0.29	<0.01	33.82	3.05	0.005	161,809.57	125.05	0.12	10.72	0.85	16.25	94,014.35	3.62
HM16JV149	E17JN15A134	0.01	<0.09	117,690.62	0.06	<0.01	32.87	2.43	0.005	157,433.12	13.85	0.16	10.43	0.05	4.84	98,152.54	0.61
HM16JV149	E17JN15A136	0.01	<0.06	119,582.28	1.01	<0.01	30.72	2.12	0.29	165,345.08	35.78	0.15	20.54	0.28	23.26	99,961.10	1.53
HM16JV149	E17JN15A128	0.01	<0.07	111,642.44	0.06	<0.01	15.3	2.96	0.36	159,356.95	182.74	0.18	8.44	0.05	8.54	109,635.18	5.66
HM16JV149	E17JN15A127	0.01	<0.09	124,681.18	0.06	<0.01	26.5	4.49	0.19	171,016.78	112.54	0.08	12.09	0.05	6.26	91,477.26	3.45
HM16JV149	E17JN15A135	0.01	<0.07	119,202.68	0.06	<0.01	33.84	1.54	0.05	164,603.05	50.74	0.16	6.81	0.37	12.32	101,369.54	1.49
HM16JV149	E17JN15A147	0.01	<0.07	122,854.18	3.76	<0.01	17.3	4.18	0.28	170,012.34	142.32	0.33	2.58	1.51	90.57	98,199.06	5.04
HM16JV149	E17JN15A129	0.01	<0.05	117,393.71	0.06	0.01	23.95	7.96	0.005	160,222.03	111.35	0.24	5.76	0.05	3.9	98,986.02	2.46
HM16JV149	E17JN15A130	0.01	<0.05	122,868.84	0.06	<0.01	29.68	3.94	0.005	166,502.62	111.56	0.12	12.04	0.05	7.03	95,315.11	3.35
HM16JV149	E17JN15A126	0.25	0.35	105,045.71	3.17	<0.01	16.7	21.62	1.77	162,187.59	326.62	1	2.37	1.39	8.17	128,570.46	10.35
HM16JV149	E17JN15A132	0.01	<0.05	110,594.51	0.33	<0.01	9.45	0.92	0.005	164,032.81	248.27	0.15	2.75	0.05	72.25	115,917.80	8.57
HM16JV149	E17JN15A126	0.01	<0.11	100,145.44	3.69	<0.02	19.4	15.68	1.93	156,585.11	210.89	1.02	3.63	0.67	5.91	129,374.70	6.9
HM16JV149	E17JN15A146	0.01	<0.06	124,834.71	13.87	<0.01	48.13	22.07	0.42	165,274.39	154.93	1.53	1.75	7.28	2.55	88,972.66	4.93
HM16JV149	E17JN15A129	0.01	<0.09	123,223.55	0.06	<0.01	19.81	10.46	0.03	172,827.22	2.18	0.14	6.77	0.05	2.48	94,478.82	0.005
HM16JV149	E17JN15A145	0.01	<0.06	127,683.93	22.64	<0.01	55.42	25.6	0.87	168,581.51	34.48	1.66	0.2	0.85	0.99	89,283.55	1.18
HM16JV150	E17JN14A317	0.01	<0.21	128,423.30	0.06	0.04	0.3	1.41	3.29	177,630.89	16.67	0.55	541.2	0.05	0.98	93,130.79	2.87
HM16JV150	E17JN14A335	0.01	<0.09	122,682.25	0.06	<0.02	1.03	1.53	1.65	163,798.72	21.28	0.49	800.35	0.05	1.15	95,671.60	2.34
HM16JV150	E17JN14A316	0.01	<0.10	127,824.24	0.06	<0.02	5.23	0.72	3.12	172,450.23	5.31	0.87	129.33	0.05	0.23	89,542.55	0.7
HM16JV150	E17JN14A317	0.01	<0.09	122,175.76	0.06	<0.01	0.86	1.46	6.24	163,934.51	46.12	0.45	476.87	0.05	1.17	96,338.44	3.72
HM16JV150	E17JN14A332	0.01	<0.09	124,791.02	0.06	<0.01	1.67	2.92	0.57	163,982.71	5.17	0.72	38.01	0.05	1.03	91,911.39	3.31
HM16JV150	E17JN14A319	0.01	<0.10	124,172.98	1.28	<0.02	0.68	1.04	5.13	166,881.57	670.42	0.73	670.01	0.05	15.95	95,776.91	37.07
HM16JV150	E17JN14A318	0.01	<0.10	124,880.90	0.06	<0.01	0.8	0.43	72.13	165,146.32	0.06	0.74	33.48	0.05	0.01	91,582.23	0.005
HM16JV150	E17JN14A314	0.01	<0.09	123,055.75	0.54	<0.01	1.38	0.6	5.19	166,032.27	0.95	0.65	80.11	0.05	0.21	94,443.79	0.7
HM16JV150	E17JN14A316	0.01	<0.10	123,577.35	0.06	<0.01	0.8	0.33	1.74	161,156.23	0.39	1.15	72.1	0.05	0.07	89,759.84	0.19
HM16JV150	E17JN14A344	0.01	<0.09	126,461.71	0.48	<0.01	7.52	1.26	24.27	166,280.32	31.65	0.4	204.82	0.28	1.2	90,203.28	2.85
HM16JV150	E17JN14A345	0.01	<0.09	122,641.19	0.06	<0.01	0.71	0.89	10.3	164,563.54	52.02	0.46	691.48	0.05	2.09	97,942.12	4.38
HM16JV150	E17JN14A315	0.01	<0.09	121,407.41	0.06	<0.01	1.16	0.71	3.42	166,892.37	0.24	0.34	339.91	0.05	0.07	99,604.13	0.17
HM16JV150	E17JN14A330	0.01	<0.11	135,987.88	0.06	<0.02	3.79	0.97	28.04	172,298.52	14.45	0.61	30.89	0.05	0.67	80,715.87	1.56
HM16JV150	E17JN14A330	0.01	<0.11	124,534.54	0.06	0.02	4.34	0.77	34.29	160,733.02	0.31	0.52	17.43	0.05	0.02	86,582.88	0.04
HM16JV150	E17JN14A329	0.01	<0.09	127,677.31	0.06	<0.02	0.74	0.67	35.51	165,735.32	0	1.41	6.6	0.05	0.005	86,948.01	0.005
HM16JV151	C17MA21A0528	0.01	<0.05	116,541.16	0.37	0.01	2.55	30.86	0.49	157,428.06	1.83	1.31	28.23	0.05	0.37	102,585.98	1.11
HM16JV151	C17MA21A0519	0.01	<0.04	122,296.36	0.57	<0.01	4.54	14.22	1.33	164,097.78	2.2	0.95	81.7	0.05	0.83	95,160.60	2.21
HM16JV151	C17MA21A0530	0.01	<0.07	133,964.62	0.52	<0.02	1.34	22.51	1.53	173,768.71	2.16	0.89	6.92	0.05	1.16	88,732.93	2
HM16JV151	C17MA21A0535	0.01	<0.07	108,652.80	0.3	<0.02	0.3	7.06	1.59	155,033.44	2.69	1.04	1,433.84	0.05	0.92	112,476.49	6.15
HM16JV151	C17MA21A0520	0.01	<0.03	120,978.70	0.06	<0.01	1.2	20.33	1.15	162,869.93	2.06	1.14	31.2	0.05	0.46	98,049.39	1.29
HM16JV151	C17MA21A0517	0.01	<0.04	127,331.21	0.42	0.02	2.07	10.02	2.06	169,201.81	38.07	1.09	291.36	0.05	1.75	88,753.90	3.62
HM16JV151	C17MA21A0507	0.01	<0.06	131,208.10	0.33	<0.01	2.2	6.41	0.99	178,825.65	0.37	0.49	1.69	0.05	0.11	86,815.40	0.23
HM16JV151	C17MA21A0511	0.01	<0.04	127,149.09	0.06	<0.01	2.08	0.47	0.35	162,960.86	3.57	0.53	1.71	0.05	0.06	78,677.41	0.09
HM16JV151	C17MA21A0518	0.01	<0.03	118,086.22	0.15	<0.01	1.47	13.85	1.52	163,158.08	6.97	0.62	32.79	0.05	1.12	102,352.78	2.49
HM16JV151	C17MA21A0535	0.01	<0.05	127,986.59	0.84	<0.02	4	9.29	1.6	170,471.97	289.33	0.79	357.58	0.05	3.68	99,465.80	14.86
HM16JV151	C17MA21A0515	0.01	<0.05	119,021.53	0.19	<0.01	1.82	8.91	1.49	165,268.61	17.42	0.52	54	0.05	1.33	101,288.59	3.07
HM16JV151	C17MA21A0512	0.01	<0.04	122,906.90	0.06	<0.01	1.38	6.38	2.02	167,326.91	0.78	1.09	2.53	0.05	0.34	91,667.14	0.61
HM16JV151	C17MA21A0504	0.01	<0.11	144,949.02	0.55	<0.03	0.3	5.56	1.74	174,516.53	5.36	0.86	0.2	0.05	0.16	79,521.81	0.1
HM16JV151	C17MA21A0533	0.01	<0.04	121,466.89	0.21	<0.01	1.76	3.63	0.95	162,453.93	1.56	0.58	3.39	0.05	0.27	95,878.64	0.65
HM16JV151	C17MA21A0516	0.01	<0.05	121,981.46	0.22	0.01	1.24	8.24	2.73	160,061.87	0.24	1.22	13.87	0.05	0.03	91,567.09	0.09
HM16JV151	C17MA21A0531	0.01	<0.04	124,354.71	0.25	<0.01	1.53	8.32	1.77	162,763.28	66.46	0.68	220.64	0.05	4.17	92,077.95	5.74
HM16JV151	C17MA21A0514	0.01	<0.04	124,169.22	0.06	<0.01	1	5.57	2.91	163,839.80	0.29	1.19	13.08	0.05	0.07	89,896.73	0.17
HM16JV151	C17MA21A0529	0.01	<0.04	125,589.54	0.17	<0.01	1.43	8.32	1.78	162,223.55	2.17	1	9.08	0.05	0.38	88,687.89	0.69
HM16JV151	C17MA21A0505	0.01	<0.04	125,474.56	0.35	0.01	0.77	6.58	1.47	162,321.11	0.14	1.59	1.31	0.05	0.09	88,507.56	0.11
HM16JV151	C17MA21A0534	0.01	<0.04	125,414.19	0.06	<0.01	2.03	1.36	0.99	162,189.36	9.23	0.52	4.76	0.05	0.09	81,324.07	0.22
HM16JV151	C17MA21A0508	0.01	<0.04	126,836.43	0.06	<0.01	1.55	1.97	1.34	157,225.37	4.55	0.62	10.25	0.05	0.08	75,394.79	0.11
HM16JV151	C17MA21A0510	0.01	<0.05	118,139.67	0.21	<0.01	3.18	3.78	5.64	159,338.12	55.48	0.66	185.17	0.05	1.9	95,075.23	3.57

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Ag107	Ag109	Al27	As75	Au197	B11	Ba137	Bi209	Ca43	Ce140	Co59	Cr53	Cu65	Eu153	Fe57	Gd157
HM16JV151	C17MA21A0532	0.01	<0.04	123,228.44	0.8	<0.01	4.33	8.3	3.8	160,532.40	199.68	0.62	200.87	0.81	8.28	94,124.11	14.18
HM16JV151	C17MA21A0513	0.01	<0.07	126,045.67	0.06	<0.01	0.3	0.31	0.07	178,510.25	1.32	0.08	0.2	0.05	0.03	94,874.52	0.005
HM16JV151	C17MA21A0527	0.01	<0.04	127,035.78	0.21	<0.01	2.32	0.89	2.18	163,218.42	13.76	0.51	5.06	0.05	0.2	83,434.21	0.42
HM16JV151	C17MA21A0506	0.01	<0.04	124,722.08	0.34	<0.01	1.67	2.34	0.76	160,795.11	1	0.57	10.52	0.05	0.45	89,520.31	0.36
HM16JV151	C17MA21A0509	0.01	<0.03	121,747.49	0.06	<0.01	7.28	3.75	8.31	159,493.09	35.84	0.3	21.55	0.05	0.34	89,126.47	0.48
HM16JV151	C17MA21A0530	0.01	<0.08	121,380.98	0.06	<0.02	2.71	1.79	0.92	155,862.11	2.7	0.6	14.42	0.05	0.81	90,666.30	0.87
HM16JV151	C17MA21A0527	0.01	<0.09	118,002.67	0.06	<0.03	2.98	0.32	1.17	154,480.27	6.46	0.59	5.16	0.05	0.33	86,227.52	0.86
HM16JV152	C17MA20A0458	0.01	<0.03	117,773.64	0.58	<0.01	2.36	0.46	36.77	162,543.01	8.74	1.86	1.04	2.23	0.49	101,398.16	1.75
HM16JV152	C17MA20A0446	0.01	<0.03	123,459.07	0.06	<0.01	1.07	0.69	61.78	166,937.41	1.66	0.82	260.86	0.34	0.57	99,956.27	1.13
HM16JV152	C17MA20A0451	0.01	<0.04	128,171.37	0.66	<0.01	4.79	0.44	50.26	171,195.78	0.86	2.27	4.19	0.05	0.13	93,900.15	0.42
HM16JV152	C17MA20A0446	0.01	<0.05	114,439.06	0.69	<0.01	2.24	1.5	60.69	154,159.40	14.77	0.71	235.66	1.73	0.63	103,979.46	1.08
HM16JV152	C17MA20A0457	0.01	<0.03	118,064.47	0.57	<0.01	1.21	0.51	35.58	162,625.90	5.82	1.85	19.47	0.31	0.52	99,431.56	1.34
HM16JV152	C17MA20A0452	0.04	<0.03	116,616.79	0.22	<0.01	0.56	0.88	11.56	161,248.42	52.87	0.36	897.47	0.38	3.04	104,967.41	4.87
HM16JV152	C17MA20A0447	0.01	<0.03	119,097.93	0.19	<0.01	1.15	1.03	12.26	162,307.90	21.91	0.41	460.58	0.05	2.57	103,101.89	3.42
HM16JV152	C17MA20A0450	0.01	<0.03	117,464.84	0.39	<0.01	2.27	1.37	13.58	161,157.37	104.13	0.42	642.39	0.65	4.58	104,144.36	6.74
HM16JV152	C17MA20A0454	0.01	<0.03	118,382.84	0.65	<0.01	1.48	1.44	34.16	162,412.94	25.5	2.1	50.56	0.27	2.29	99,045.29	8.95
HM16JV152	C17MA20A0448	0.01	<0.03	118,669.98	0.82	<0.01	0.8	1.13	19.25	162,676.12	429.53	0.95	1,171.22	0.21	12.59	103,261.58	20.16
HM16JV152	C17MA20A0449	0.01	<0.03	116,656.85	1.03	<0.01	1.18	0.96	45.09	162,271.44	483.4	0.58	1,009.14	0.05	12.35	105,409.56	23.4
HM16JV152	C17MA20A0453	0.01	<0.03	119,007.17	0.57	<0.01	1.44	0.74	52.07	161,588.01	4.08	1.82	16.96	0.22	0.33	102,039.88	0.6
HM16JV152	C17MA20A0455	0.01	<0.03	121,155.39	0.44	0.01	1.36	0.37	30.85	161,729.17	0.36	1.67	4.17	0.05	0.04	94,528.10	0.1
HM16JV152	C17MA20A0456	0.01	<0.03	117,830.74	0.27	<0.01	1.11	0.96	12.09	161,111.19	79.83	0.35	892.95	0.05	3.05	103,214.19	5.05
HM16JV152	C17MA20A0459	0.01	<0.03	116,587.28	0.58	<0.00	0.78	0.99	15.73	163,171.55	202.86	0.35	1,042.72	0.05	8.19	104,363.98	12.57
HM16JV152	C17MA20A0462	0.01	<0.04	123,990.37	0.24	<0.01	0.8	3.46	33.58	172,320.80	22.6	0.87	565.18	0.05	1.72	99,244.02	2.61
HM16JV152	C17MA20A0464	0.01	<0.03	119,465.24	0.26	<0.00	1.9	1.07	48.53	163,834.53	22.29	0.85	2,384.01	0.41	2.37	101,615.11	7
HM16JV152	C17MA20A0465	0.01	<0.03	118,154.38	0.4	<0.01	1.72	1.74	39.73	161,286.67	45.51	0.7	836.93	0.05	4.6	102,805.76	8.19
HM16JV152	C17MA20A0469	0.01	<0.02	118,918.78	0.33	<0.01	2.44	0.41	28.98	163,483.32	1.6	1.48	1.5	0.05	0.78	96,617.56	1.5
HM16JV152	C17MA20A0466	0.01	<0.04	122,911.65	0.22	0.01	0.79	0.39	55.11	167,718.37	7.64	0.98	1,778.03	0.5	1.19	97,173.87	3.11
HM16JV152	C17MA20A0463	0.07	0.08	119,040.98	0.25	<0.00	4.95	0.41	60.97	161,336.57	9.13	1.41	904.15	2.74	1.12	102,470.41	2.93
HM16JV152	C17MA20A0467	0.01	<0.03	116,725.07	0.06	0.01	0.3	0.76	11.5	162,528.69	33.15	0.47	882.47	0.05	3.17	105,626.97	4.6
HM16JV152	C17MA20A0460	0.01	<0.03	115,136.87	0.89	<0.00	6.6	1.36	29.61	161,362.49	285.96	0.47	874.73	4.89	9.35	104,837.97	15.6
HM16JV152	C17MA20A0470	0.01	<0.04	126,219.25	0.26	<0.01	1.67	0.76	4.93	174,867.80	19.97	0.38	420.4	1.14	0.84	101,904.46	1.23
HM16JV152	C17MA20A0461	0.01	<0.07	111,174.30	1.22	<0.01	1.32	1.3	18.11	155,103.96	439.07	0.69	1,374.45	0.05	13.09	110,038.74	21.73
HM16JV152	C17MA20A0468	0.01	<0.03	118,778.53	0.48	<0.01	1.98	0.51	28.76	163,106.44	67.45	1.84	268.94	0.05	3.98	100,413.57	7.63
HM16JV154	E17JN14A296	0.01	<0.07	92,346.93	1.04	<0.01	59.91	20.09	0.005	152,886.80	467.94	2.05	3.08	130.87	3.94	148,337.82	5.51
HM16JV154	E17JN14A307	0.01	<0.08	91,858.45	1.46	<0.01	40.56	32.02	0.005	143,669.25	467.2	3.94	2.38	143.33	8.05	153,078.98	12.43
HM16JV154	E17JN14A312	0.01	<0.08	94,609.79	1.11	<0.01	30.08	22.75	0.03	149,867.13	458.12	2.4	3.37	120.68	7.04	150,441.93	11.12
HM16JV154	E17JN14A301	0.01	<0.08	94,769.03	0.06	<0.01	32.45	20.93	0.05	153,179.35	162.49	1.5	3.11	97.89	3.07	142,376.73	4.3
HM16JV154	E17JN14A308	0.01	<0.13	105,535.29	1.71	<0.02	67.92	48.01	0.15	146,787.81	417.84	4.23	4.81	148.29	6.87	131,407.28	9.84
HM16JV154	E17JN14A302	0.01	<0.08	91,828.36	0.06	<0.01	21.94	19.2	0.005	154,471.54	149.53	1.9	1.37	88.96	2.93	148,741.70	4.12
HM16JV154	E17JN14A299	0.01	<0.07	92,687.44	0.06	<0.01	16.27	10.33	0.005	158,125.99	129.14	1.07	1.57	74.37	2.24	148,712.11	3.01
HM16JV154	E17JN14A304	0.01	<0.11	90,242.21	0.06	<0.02	14.21	5.36	0.005	156,670.11	103.67	0.83	1.9	35.57	1.61	150,997.01	2.22
HM16JV154	E17JN14A310	0.01	<0.06	93,370.00	0.06	<0.01	26.09	10.82	0.005	158,100.32	170.32	1.13	1.77	63.63	2.37	148,629.06	3.2
HM16JV154	E17JN14A300	0.01	<0.08	106,847.18	0.06	<0.01	62.71	18.39	0.29	155,801.64	56.95	0.56	6.97	52.67	1.69	121,441.55	2.03
HM16JV159	E17JN14A031	0.01	<0.15	111,497.78	0.06	<0.02	6.71	2.41	0.39	158,259.99	22	0.11	42.3	0.05	4.69	114,569.47	11.68
HM16JV159	E17JN14A007	0.01	<0.14	114,825.92	0.06	<0.02	8.63	1.26	0.005	168,870.40	41.58	0.05	1.51	0.05	0.39	115,846.17	0.37
HM16JV159	E17JN14A007	0.01	<0.12	108,288.06	0.06	<0.01	3.68	1.03	0.005	157,486.97	27.14	0.04	1.99	0.05	0.33	120,740.81	0.27
HM16JV159	E17JN14A018	0.01	<0.15	117,534.00	0.06	<0.02	4.25	0.98	0.005	169,365.69	11.25	0.05	0.2	0.05	0.26	108,536.79	0.1
HM16JV159	E17JN14A008	0.01	<0.41	131,794.69	0.06	<0.04	11.3	8.01	0.005	176,868.53	2.52	0.005	0.2	0.05	0.35	99,303.18	0.07
HM16JV159	E17JN14A029	0.01	<0.15	118,616.86	0.06	<0.02	5.68	0.59	0.29	173,698.52	7.03	0.12	3.8	0.05	0.72	114,191.17	0.98
HM16JV159	E17JN14A008	0.01	<0.15	123,568.41	0.06	<0.02	18.65	7.18	0.005	166,591.20	9.98	0.04	0.98	0.05	0.36	96,656.09	0.13
HM16JV159	E17JN14A014	0.01	<0.11	114,547.33	0.06	<0.01	21.92	1.38	0.39	163,801.15	21.66	0.15	0.98	0.3	1.6	113,742.62	0.73
HM16JV159	E17JN14A012	0.01	<0.17	104,017.46	0.06	<0.02	5.06	3.52	0.005	162,023.65	14.31	0.17	8.53	0.05	1.28	130,998.85	1.68

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Ag107	Ag109	Al27	As75	Au197	B11	Ba137	Bi209	Ca43	Ce140	Co59	Cr53	Cu65	Eu153	Fe57	Gd157
HM16JV159	E17JN14A013	0.01	<0.11	115,715.54	0.06	<0.01	7.35	0.84	0.42	163,358.39	35.45	0.12	31.55	0.17	1.19	111,419.86	1.55
HM16JV159	E17JN14A018	0.01	<0.18	116,744.35	0.06	<0.02	10.45	2.55	0.005	157,529.38	1.92	0.03	0.2	0.05	0.26	104,232.19	0.03
HM16JV159	E17JN14A025	0.01	<0.15	116,391.74	0.06	<0.02	11.87	4.8	0.005	166,525.60	0.55	0.06	3.73	0.05	0.16	112,543.56	0.03
HM16JV159	E17JN14A017	0.01	<0.12	111,970.77	0.06	<0.01	10.64	0.77	0.005	163,774.14	8.19	0.19	0.2	0.05	0.1	116,783.57	0.16
HM16JV159	E17JN14A024	0.01	<0.19	117,285.33	0.06	<0.03	3.33	0.22	0.005	174,160.00	1.95	0.07	2.01	0.05	0.11	113,793.41	0.11
HM16JV159	E17JN14A016	0.01	<0.14	123,561.69	0.06	<0.02	5.88	2.93	0.09	170,822.19	0.91	0.04	0.2	0.05	0.24	102,992.13	0.11
HM16JV159	E17JN14A020	0.16	<0.12	116,283.33	0.06	<0.01	30.69	2.2	0.28	160,119.00	37.87	1.92	0.2	5.22	0.54	108,112.92	0.48
HM16JV159	E17JN14A024	0.01	<0.12	111,924.75	0.06	<0.02	7.78	0.15	0.005	159,810.80	50.96	0.08	3.34	0.15	0.24	113,564.85	0.32
HM16JV159	E17JN14A025	0.01	<0.14	109,460.12	0.06	<0.02	14.81	2.22	0.005	153,246.35	4.21	0.06	1.36	0.19	0.23	118,663.99	0.06
HM16JV159	E17JN14A023	0.01	<0.10	114,402.60	0.06	<0.01	5.9	2.9	0.005	159,236.98	0.13	0.04	0.7	0.05	0.15	112,570.41	0.04
HM16JV159	E17JN14A028	0.01	<0.11	124,751.06	0.06	<0.01	6.87	2.25	0.005	167,133.87	39.38	0.005	1.25	0.05	0.42	94,604.33	0.26
HM16JV159	E17JN14A015	0.01	<0.12	112,708.32	0.06	<0.02	1.63	0.59	0.1	158,998.57	4.33	0.09	8.1	0.05	0.07	114,117.30	0.13
HM16JV159	E17JN14A027	0.01	<0.13	119,140.22	0.06	<0.02	2.13	0.68	0.005	162,135.50	0.09	0.08	1.81	0.05	0.06	101,024.36	0.005
HM16JV159	E17JN14A009	0.01	<0.15	121,760.66	0.06	<0.02	6.01	7.92	0.005	155,491.12	3.63	0.005	0.2	0.05	0.42	92,093.22	0.04
HM16JV159	E17JN14A011	0.01	<0.11	105,905.17	0.06	<0.01	1.57	0.91	0.005	162,555.12	0.19	0.15	0.2	0.05	0.17	126,364.64	0.005
HM16JV159	E17JN14A010	0.01	<0.16	121,655.65	0.06	<0.02	14.52	2.37	0.005	153,909.00	2.98	0.07	0.2	0.35	0.6	94,572.75	0.07
HM16JV159	E17JN14A026	0.01	<0.39	127,813.58	0.06	<0.05	3.57	18.54	0.005	170,185.94	0.09	0.005	0.2	0.05	0.23	103,799.64	0.005
HM16JV159	E17JN14A010	0.01	<0.26	131,761.33	0.06	<0.03	14.98	2.16	0.005	171,799.66	0.92	0.005	0.2	0.05	0.75	90,229.76	0.005
HM16JV159	E17JN14A021	0.01	<0.08	126,318.05	0.06	<0.01	3.51	0.96	0.005	162,893.78	2.15	0.03	1.3	0.05	0.2	88,729.30	0.08
HM16JV159	E17JN14A009	0.01	<0.16	129,414.99	0.06	<0.02	5.72	10.98	0.005	170,722.79	0.42	0.005	1.69	0.05	0.65	83,869.20	0.06
HM16JV159	E17JN14A022	0.01	<0.16	134,213.05	0.06	<0.02	2.64	1.02	0.005	173,900.37	27.27	0.04	1.99	0.05	0.27	85,270.50	0.31
HM16JV159	E17JN14A019	0.01	<0.12	125,099.37	0.06	<0.01	6.31	13.12	0.005	163,523.21	0.28	0.005	0.87	0.05	0.39	88,919.73	0.03
HM16JV161	C17MA21A0480	0.01	<0.05	103,429.66	0.65	<0.01	5.16	0.37	0.01	165,569.21	122.69	0.18	2.89	0.05	0.64	129,649.89	0.18
HM16JV161	C17MA21A0476	0.01	<0.03	110,191.84	1.35	<0.01	16.81	1.14	0.02	167,477.00	30.46	0.21	8.58	0.05	0.41	120,818.10	0.07
HM16JV161	C17MA21A0476	0.01	<0.05	103,379.81	1.88	<0.02	20.48	2.15	0.05	155,500.51	143.34	0.13	12.41	0.05	0.6	122,048.27	0.28
HM16JV161	C17MA21A0478	0.01	<0.04	107,059.07	1.47	<0.01	18.09	1.88	0.02	159,408.16	146.53	0.12	5.36	0.05	1.04	119,654.32	1.22
HM16JV161	C17MA21A0475	0.01	<0.04	112,939.92	0.79	<0.01	13.48	5.31	0.03	168,930.60	25.32	0.34	26.2	0.05	0.82	115,864.87	0.71
HM16JV161	C17MA21A0478	0.01	<0.05	112,304.64	1.14	<0.01	17.72	2.5	0.005	166,441.15	300.03	0.16	8.42	0.05	1.93	114,027.54	2.25
HM16JV161	C17MA21A0477	0.01	<0.03	107,486.29	1.21	<0.01	2.81	2.43	0.005	163,821.34	14.77	0.15	0.2	0.05	0.29	118,885.27	0.45
HM16JV161	C17MA21A0479	0.01	<0.04	107,080.34	1.17	0.02	2.22	0.45	0.01	172,539.10	687.82	0.12	22.05	0.05	5.1	124,485.97	8.88
HM16JV161	C17MA21A0472	0.01	<0.06	101,710.67	0.06	<0.01	4.74	1.3	0.04	158,829.81	100.65	0.005	0.2	0.05	0.42	128,265.69	0.3
HM16JV161	C17MA21A0481	0.01	<0.06	117,496.18	0.36	<0.01	0.3	1.56	0.08	170,246.10	4.57	0.06	28.08	0.05	0.06	112,029.22	0.05
HM16JV161	C17MA21A0474	0.05	<0.04	110,159.56	0.66	<0.01	4.61	2.34	0.05	166,561.40	22.14	0.1	59.67	0.05	0.25	120,459.80	0.2
HM16JV161	C17MA21A0481	0.01	<0.06	107,781.92	0.24	<0.01	1.25	0.95	0.12	159,420.35	0.27	0.13	18.59	0.05	0.1	117,882.09	0.07
HM16JV161	C17MA21A0473	0.01	<0.04	107,125.80	0.39	<0.01	11.43	11.09	0.29	159,662.40	25.21	0.005	0.2	0.05	0.12	119,467.20	0.13
HM16JV161	C17MA21A0479	0.01	<0.05	102,713.47	1.72	<0.01	21.61	1.15	0.005	159,380.77	479.55	0.14	8.2	0.05	3.33	122,260.96	5.33
HM16JV161	C17MA21A0483	0.01	<0.04	111,031.75	0.31	<0.01	4.52	2.02	0.02	166,001.69	27.41	0.22	28.88	0.05	0.37	117,624.48	0.46
HM16JV161	C17MA21A0482	0.01	<0.05	109,028.78	0.42	<0.01	2.28	2.05	0.08	164,452.03	0.21	0.13	29.94	0.05	0.22	119,515.56	0.09
HM16JV161	C17MA21A0472	0.01	<0.05	108,691.88	0.54	<0.01	6.53	1.74	0.01	169,968.94	216.94	0.005	0.2	0.05	0.86	127,720.29	0.56
HM16JV161	C17MA21A0471	0.01	<0.04	105,313.75	0.06	<0.01	0.3	0.13	0.005	161,390.57	0.02	0.005	0.2	0.05	0.005	125,028.62	0.005
HM16JV161	C17MA21A0490	0.01	<0.07	100,277.24	0.06	<0.02	1.58	0.005	0.005	159,858.72	0.22	0.005	0.2	0.05	0.14	128,091.38	0.05
HM16JV161	C17MA21A0486	0.01	<0.05	107,563.16	0.49	<0.01	3.64	10.41	0.11	156,762.47	1.59	0.005	0.2	0.05	0.01	109,617.37	0.04
HM16JV161	C17MA21A0487	0.01	0.04	107,227.83	0.85	<0.01	16.01	1.46	0.01	170,186.70	136.48	0.08	4.24	0.51	0.49	124,795.00	0.17
HM16JV161	C17MA21A0489	0.01	<0.04	111,444.08	0.97	<0.01	7.17	0.67	0.005	170,208.48	145.07	0.11	3.51	0.05	1.05	120,933.06	1.08
HM16JV161	C17MA21A0488	0.01	<0.04	104,437.89	0.21	<0.01	3.84	9.71	0.03	157,621.83	48.72	0.005	11.65	0.05	4.2	116,999.06	10.88
HM16JV161	C17MA21A0485	0.04	<0.04	106,495.53	0.36	<0.01	9.95	3.98	0.02	167,551.02	5.66	0.45	13.04	0.05	0.43	124,366.53	0.1
HM16JV161	C17MA21A0495	0.01	<0.05	101,963.18	2.31	<0.02	19.4	3.2	0.02	157,201.48	586.52	0.08	10.02	0.05	3.4	127,868.69	5.06
HM16JV161	C17MA21A0495	0.01	<0.04	108,162.43	2.32	<0.01	25.7	2.76	0.03	166,239.92	156.91	0.07	2.5	0.05	1.07	123,155.22	1.33
HM16JV161	C17MA21A0496	0.01	<0.08	112,447.31	0.06	<0.02	0.3	2.05	0.005	177,566.16	52.06	0.005	3.93	0.05	0.55	123,833.62	1.01
HM16JV161	C17MA21A0489	0.01	<0.07	103,425.07	1.08	<0.02	10.05	4.53	0.005	155,163.73	192.25	0.18	5.24	0.54	1.3	118,085.09	1.03
HM16JV161	C17MA21A0492	0.01	<0.03	106,120.35	0.91	<0.01	8.1	3.26	0.02	164,737.02	251.93	0.07	0.2	0.4	1.16	126,368.83	1.41
HM16JV161	C17MA21A0484	0.01	<0.03	112,782.48	1.71	<0.01	7.68	2.53	0.04	169,215.02	31.41	0.21	22.87	0.05	0.41	117,151.49	0.43

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Ag107	Ag109	Al27	As75	Au197	B11	Ba137	Bi209	Ca43	Ce140	Co59	Cr53	Cu65	Eu153	Fe57	Gd157
HM16JV161	C17MA21A0493	0.01	<0.03	114,662.97	0.52	<0.01	3.85	3.19	0.02	169,553.23	122.62	0.005	0.2	0.05	1.27	111,897.26	2.38
HM16JV161	C17MA21A0486	0.01	<0.05	115,929.37	0.59	<0.01	4.78	11.07	0.06	170,724.26	43.72	0.005	0.2	0.27	0.21	107,068.82	0.13
HM16JV161	C17MA21A0491	0.01	<0.04	107,436.57	0.06	<0.01	1.73	1.68	0.005	170,181.28	9.1	0.08	0.2	0.05	0.26	123,583.00	0.29
HM16JV161	C17MA21A0494	0.01	<0.03	110,520.27	0.16	<0.01	1.59	1.96	0.01	169,013.17	2.27	0.005	0.2	0.05	0.42	120,543.81	0.34
HM16JV161	C17MA21A0490	0.01	<0.03	109,390.70	0.33	0.01	3.06	1.3	0.005	166,684.22	79.69	0.005	0.2	0.05	0.21	124,630.59	0.27
HM16JV161	C17MA21A0501	0.01	<0.04	102,344.58	1.16	<0.01	7.24	0.66	0.005	162,611.65	188.89	0.1	2.75	0.05	1.05	128,990.11	0.49
HM16JV161	C17MA21A0498	0.01	<0.06	118,408.72	3.27	<0.01	34.6	11.49	0.46	173,283.48	67.52	0.005	4.76	0.05	0.32	111,524.25	0.42
HM16JV161	C17MA21A0502	0.01	<0.08	123,449.64	0.71	0.02	0.3	2.18	0.18	173,204.80	48.39	0.3	32.73	0.05	7.72	106,992.99	19.41
HM16JV161	C17MA21A0503	0.01	<0.03	112,500.93	0.54	<0.01	0.3	4.28	0.15	165,792.34	17.34	0.1	15.93	0.05	4.22	112,442.35	6.83
HM16JV161	C17MA21A0499	0.01	<0.04	106,144.66	0.67	<0.01	2.18	1.73	0.12	163,460.58	6.3	0.21	39.57	0.05	1.8	121,427.25	2.37
HM16JV161	C17MA21A0500	0.01	<0.04	118,398.58	2.32	<0.01	10.95	7.35	0.01	162,951.19	85.76	0.08	9.76	0.05	0.8	94,654.01	0.63
HM16JV161	C17MA21A0497	0.01	<0.04	106,498.26	0.37	<0.01	2.79	4.97	0.005	165,050.21	43.66	0.06	0.2	0.05	0.1	125,105.50	0.05
HM16JV162	E17JN15A113	0.01	<0.05	103,710.62	0.3	<0.01	31.83	3.11	0.06	159,670.97	153.71	0.18	0.53	2.04	2.39	127,592.23	1.01
HM16JV162	E17JN15A112	0.01	<0.05	104,358.91	0.37	<0.01	19.64	2.2	0.005	162,466.92	42.4	0.66	1.57	6.95	2.5	127,914.71	0.71
HM16JV162	E17JN15A107	0.01	<0.09	120,318.86	0.06	<0.01	16.08	11.37	0.005	171,730.98	11.7	0.06	0.2	0.05	5.85	101,403.79	0.34
HM16JV162	E17JN15A100	0.01	<0.05	108,748.00	0.06	<0.01	4.35	1.42	0.04	162,262.51	1.17	0.06	0.2	0.05	0.56	122,673.49	0.21
HM16JV162	E17JN15A108	0.01	<0.06	111,575.06	0.06	<0.01	5.77	0.79	0.04	161,918.47	4.39	0.11	0.2	0.05	5.02	112,858.83	0.99
HM16JV162	E17JN15A107	0.01	<0.09	114,754.69	0.06	<0.01	10.83	7.45	0.05	155,371.11	12.08	0.07	1.36	0.3	11.37	101,090.28	1.86
HM16JV162	E17JN15A101	0.01	<0.05	117,516.70	0.06	<0.01	5.66	0.21	0.03	164,520.05	1.86	0.16	0.2	0.05	4.71	103,937.65	1.46
HM16JV162	E17JN15A110	0.01	<0.06	115,982.00	0.06	<0.01	80.19	7.2	0.28	161,675.34	38.06	0.22	0.59	1.39	3.13	105,544.46	0.88
HM16JV162	E17JN15A099	0.01	<0.10	114,260.77	0.49	<0.02	6.9	4.76	0.005	173,061.67	12.62	0.18	5.36	1.87	0.47	123,477.44	0.35
HM16JV162	E17JN15A111	0.01	<0.06	110,156.60	0.06	<0.01	45.88	3.14	0.06	160,709.19	31.93	0.15	1.02	1.6	3.68	116,486.02	1.17
HM16JV162	E17JN15A109	0.01	<0.07	109,113.53	0.06	<0.01	8.9	0.68	0.08	159,167.08	0.66	0.08	0.2	0.05	1.44	116,692.36	0.14
HM16JV162	E17JN15A104	0.01	<0.08	122,974.38	0.06	0.02	7.88	5.86	0.16	170,668.64	12.11	1.07	0.2	21.91	1.39	94,711.71	0.22
HM16JV162	E17JN15A103	0.01	<0.06	123,039.84	0.06	<0.01	33.8	0.99	0.005	167,207.55	7.28	0.08	0.2	0.37	1.17	96,912.96	0.25
HM16JV162	E17JN15A104	0.01	<0.20	135,429.28	0.06	<0.03	5.37	2.5	0.15	177,232.60	15.33	0.18	0.2	5.51	1.04	92,254.30	0.43
HM16JV162	E17JN15A102	0.01	<0.06	111,119.63	0.06	<0.01	5.27	2.4	0.005	162,388.48	0.75	0.06	0.2	0.05	0.7	120,935.66	0.11
HM16JV162	E17JN15A106	0.01	<0.06	101,472.81	0.06	<0.01	28.54	6.59	0.04	159,907.66	89.97	0.08	0.2	0.37	1.77	134,520.49	0.93
HM16JV162	E17JN15A098	0.01	<0.07	114,829.36	0.06	<0.01	5.71	1.62	0.08	170,085.78	14.53	0.06	0.2	0.05	0.6	118,451.06	0.16
HM16JV164	C17MA20A0431	0.01	<0.04	123,592.24	0.06	<0.01	1.89	9.68	23.41	161,415.64	0.52	2.08	837.2	0.05	0.7	93,059.07	2.14
HM16JV164	C17MA20A0426	0.01	<0.03	124,541.96	0.34	<0.01	2.13	21.97	17.82	163,027.18	0.94	1.24	293.65	1.06	0.5	91,185.53	1.36
HM16JV164	C17MA20A0425	0.01	<0.05	136,400.47	1.02	<0.01	5.66	17.03	26.18	178,087.33	3.93	0.5	220.7	0.58	0.68	83,449.10	2.01
HM16JV164	C17MA20A0428	0.01	<0.04	131,313.61	0.58	<0.01	11.97	119.46	17.23	165,054.11	0.21	3.08	90.26	0.6	0.23	78,487.39	0.64
HM16JV164	C17MA20A0429	0.01	<0.04	129,994.97	1.9	<0.01	35.27	47.03	27.07	163,977.71	13.15	2.23	194.5	1.25	3.17	80,460.78	12.27
HM16JV164	C17MA20A0422	0.01	<0.04	124,650.56	0.26	<0.01	2.37	4.08	38.49	161,226.23	3.91	0.59	27.18	0.05	0.84	93,483.27	1.84
HM16JV164	C17MA20A0423	0.01	<0.04	124,658.54	0.21	<0.01	1.41	3.73	35.97	160,598.56	3.29	0.48	19.48	0.05	0.73	92,404.17	2.32
HM16JV164	C17MA20A0427	0.01	0.08	134,444.07	1.22	<0.01	14.38	81.77	22.52	170,399.21	1.16	2.19	120.6	0.05	0.59	82,703.35	2.1
HM16JV164	C17MA20A0420	0.01	<0.04	126,380.94	0.06	<0.01	1.02	3.25	29.47	162,288.62	4.21	0.86	30.29	0.05	0.91	90,909.47	2.16
HM16JV164	C17MA20A0430	0.01	<0.04	123,944.52	0.43	<0.01	1.91	4.39	5.6	162,606.32	0.38	9.07	514.49	0.28	0.22	93,534.81	0.47
HM16JV164	C17MA20A0424	0.01	<0.04	135,011.13	1.35	<0.01	58.6	15.91	33.11	166,624.29	0.83	1.73	18.02	0.32	0.32	78,914.08	0.47
HM16JV164	C17MA20A0421	0.01	<0.04	133,357.86	1.06	<0.01	16.46	17.27	25.61	164,628.83	0.39	0.65	0.2	0.05	0.35	75,058.41	1.16
HM16JV164	C17MA20A0419	0.01	<0.04	133,307.92	0.15	<0.01	3.78	2.76	28.81	163,608.73	2.12	0.6	2.09	1.34	0.19	75,609.87	0.49
HM16JV164	C17MA20A0440	0.01	<0.04	123,328.43	1.44	<0.01	32.12	11.73	28.91	157,845.96	4.49	1.89	236.58	0.05	2.03	89,010.11	10.16
HM16JV164	C17MA20A0441	0.01	<0.03	128,282.78	2.73	<0.01	79.54	20.53	48.66	162,373.18	2.47	2.18	91.65	0.63	0.88	83,637.11	2.12
HM16JV164	C17MA20A0444	0.01	<0.05	125,121.93	1.9	<0.01	42.69	41.58	32.19	156,786.98	5.62	2.18	12.14	0.05	1.35	82,217.63	7.54
HM16JV164	C17MA20A0442	0.01	<0.04	124,002.97	0.56	<0.01	11.88	11.37	28.17	160,485.49	8.64	78.87	343.22	100.11	2.12	89,771.33	4.62
HM16JV164	C17MA20A0437	0.01	<0.04	135,313.88	2.25	<0.01	38.99	40.3	34.1	164,599.65	1.91	2.5	14.85	0.26	0.58	73,750.20	1.87
HM16JV164	C17MA20A0435	0.01	<0.04	131,646.64	1.03	<0.01	4.89	16.21	15.92	167,081.07	2.83	3.02	9.87	1.01	0.61	76,506.98	2.49
HM16JV164	C17MA20A0438	0.01	<0.03	125,509.35	0.52	<0.01	8.19	6.21	26.36	161,939.94	7.99	1.83	89.8	1.47	1.26	91,286.64	2.7
HM16JV164	C17MA20A0436	0.01	<0.04	127,456.00	0.18	<0.01	0.82	3.79	24.12	164,951.78	4.12	1.34	36.46	0.05	0.34	90,623.49	0.69
HM16JV164	C17MA20A0443	0.01	<0.04	136,308.26	0.76	0.01	3.47	6.19	34.48	176,758.10	2.31	2.55	24.18	2.08	0.31	80,329.97	1.21
HM16JV164	C17MA20A0433	0.01	<0.03	131,805.40	1.06	<0.01	41.8	21.54	23.78	161,181.84	1.2	0.95	1.74	0.05	0.46	79,347.68	1.56

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Ag107	Ag109	Al27	As75	Au197	B11	Ba137	Bi209	Ca43	Ce140	Co59	Cr53	Cu65	Eu153	Fe57	Gd157
HM16JV164	C17MA20A0443	0.01	<0.04	125,227.23	2.04	<0.01	35.25	25.47	38.9	156,596.77	1.21	1.65	70.95	0.63	0.57	82,601.41	1.84
HM16JV164	C17MA20A0445	0.03	<0.03	131,297.79	0.23	<0.01	0.9	2.78	27.55	163,017.78	4.55	1.76	131.66	0.34	0.47	80,265.45	1.56
HM16JV164	C17MA20A0434	0.01	<0.03	131,175.33	0.06	<0.01	1.66	2.72	22.73	162,402.77	2.07	0.94	69.33	0.46	0.38	80,744.22	1.36
HM16JV164	C17MA20A0439	0.01	<0.05	117,358.75	0.26	<0.01	0.3	5.11	2.31	153,825.09	0.06	0.72	5.64	0.05	0.04	97,792.30	0.09
HM16JV171	E17JN15A218	0.01	<0.34	112,707.32	2.52	0.08	30.2	14.16	0.18	177,656.22	239.41	0.005	18.84	0.05	5.98	121,965.55	11.77
HM16JV171	E17JN15A201	0.01	<0.17	112,445.08	2.87	<0.02	11.78	30.18	0.13	170,431.84	449.6	0.14	41.89	0.9	7.75	119,846.74	13.33
HM16JV171	E17JN15A211	0.01	<0.16	112,644.67	1.67	<0.03	9.14	33.01	0.42	166,733.39	706.82	0.11	51.63	0.05	11.83	117,502.68	26.92
HM16JV171	E17JN15A203	0.01	<0.14	110,331.36	1.97	<0.02	10.41	20.57	0.06	176,771.93	237.02	0.08	36.78	0.05	3.64	113,957.57	9.13
HM16JV171	E17JN15A217	0.01	<0.13	102,890.37	3.96	0.03	15.52	1.02	0.05	157,640.30	334.38	0.05	17.45	0.05	5.77	118,986.09	10.31
HM16JV171	E17JN15A204	0.35	0.4	110,351.43	1.5	<0.03	10.89	31.64	0.93	167,874.72	242.32	12.14	38.75	2.31	3.7	118,769.66	10.67
HM16JV184	C17MA21A0588	0.01	<0.04	120,133.14	0.73	<0.01	1.39	2.11	0.05	165,029.93	3.33	0.005	34.79	0.35	0.49	100,314.22	0.27
HM16JV184	C17MA21A0587	0.01	<0.03	127,599.78	0.89	<0.01	1.73	0.12	0.07	163,544.87	16.27	0.16	2.92	0.05	0.24	84,453.77	0.3
HM16JV184	C17MA21A0592	0.01	<0.04	108,704.46	3.57	<0.01	6.41	0.9	0.24	160,278.71	80.52	0.16	1.86	0.6	0.74	117,391.65	1.13
HM16JV184	C17MA21A0593	0.01	<0.07	109,310.99	6.07	<0.01	2.65	1.93	1.35	155,058.73	27.56	0.005	0.2	0.05	0.32	112,396.48	0.41
HM16JV184	C17MA21A0591	0.01	<0.04	123,775.46	1.29	<0.01	1.36	0.6	0.03	162,671.73	18.95	0.72	0.2	0.98	0.19	89,768.59	0.29
HM16JV184	C17MA21A0593	0.01	<0.04	112,915.88	3.25	<0.01	1.22	0.83	0.27	167,046.38	47.99	0.005	0.96	0.05	0.33	112,798.72	0.54
HM16JV184	C17MA21A0590	0.04	<0.04	113,707.79	1.94	<0.01	3.19	0.8	0.22	162,194.26	7.92	0.05	0.2	0.05	0.47	110,193.66	0.95
HM16JV184	C17MA21A0589	0.01	<0.04	114,286.78	0.44	<0.01	1.09	0.3	0.04	166,351.21	19.67	0.005	0.2	0.05	0.18	112,424.43	0.22
HM16JV191	C17MA21A0603	0.01	<0.05	110,043.21	0.66	0.01	1.34	7.79	0.15	161,415.11	20.96	0.05	18.58	0.05	1.96	116,842.98	4.11
HM16JV191	C17MA21A0595	0.01	<0.06	120,920.08	3.38	<0.02	16.73	4.52	0.03	170,668.93	55.58	0.005	10.27	0.05	0.98	104,530.10	1.06
HM16JV191	C17MA21A0594	0.01	<0.05	107,233.81	1.4	<0.01	14.94	4.59	0.005	168,183.37	118.08	0.09	10.85	0.05	0.68	125,052.77	0.31
HM16JV191	C17MA21A0594	0.01	<0.05	99,543.34	1.71	<0.01	34.02	1.26	0.005	157,383.70	84.52	0.18	5.19	0.26	0.48	130,401.07	0.14
HM16JV191	C17MA21A0604	0.01	<0.04	111,192.12	0.31	<0.01	0.3	0.66	0.14	163,095.84	7.8	0.11	15.45	0.05	1.76	115,666.21	3.92
HM16JV191	C17MA21A0596	0.01	<0.04	115,587.42	1.03	<0.01	18.49	6.58	0.005	167,707.96	116.65	0.12	58.03	0.05	1.66	108,058.89	0.82
HM16JV191	C17MA21A0606	0.01	<0.04	107,155.11	1.2	<0.01	5	0.63	0.01	167,795.15	55.89	0.07	2.62	0.05	1.04	123,491.64	1.53
HM16JV191	C17MA21A0606	0.01	<0.06	103,422.31	2.28	<0.01	14.85	0.97	0.005	156,666.82	26.8	0.005	3.91	0.05	0.92	124,088.99	1.01
HM16JV191	C17MA21A0607	0.01	<0.04	112,042.95	2.06	<0.01	28.66	1.1	0.02	168,765.85	92.51	0.09	3.65	0.05	0.67	117,712.83	0.62
HM16JV191	C17MA21A0612	0.01	<0.03	116,239.43	2.4	<0.01	23.83	7.32	0.01	166,390.51	301.14	0.12	9.11	0.34	1.11	102,670.57	0.95
HM16JV191	C17MA21A0608	0.01	<0.06	107,202.39	0.64	<0.02	17.77	0.18	0.04	160,773.94	99.79	0.13	5.5	0.05	0.68	122,865.82	0.75
HM16JV191	C17MA21A0608	0.01	<0.06	105,066.84	1.32	<0.02	20.75	1.44	0.03	157,581.62	229.33	0.08	4.95	0.05	1.16	121,711.40	0.9
HM16JV191	C17MA21A0609	0.01	<0.14	104,353.38	2.02	<0.02	66.03	2.34	0.07	155,867.38	120.58	0.34	4.37	0.05	0.94	123,353.58	1.26
HM16JV191	C17MA21A0610	0.01	<0.04	113,440.06	1.74	<0.01	30.5	4.23	0.03	164,463.83	144.3	0.17	10.74	0.05	1.36	112,844.98	1.56
HM16JV191	C17MA21A0607	0.01	<0.05	100,099.29	1.41	<0.02	12.96	0.86	0.02	157,136.56	469.9	0.11	16.42	0.05	4.38	129,315.75	6.16
HM16JV191	C17MA21A0609	0.01	<0.05	105,812.15	2.5	<0.01	60.88	1.94	0.11	159,392.34	197.44	0.66	6.45	0.37	1.32	119,266.53	1.99
HM16JV191	C17MA21A0605	0.01	<0.05	122,739.89	2.68	<0.01	20.59	11.16	0.03	170,912.60	114.59	0.005	11.42	0.05	0.6	93,773.05	0.24
HM16JV191	C17MA21A0609	0.01	<0.08	114,306.78	1.87	<0.01	38.1	2.85	0.08	176,641.73	209.8	0.19	9.91	0.05	2.15	113,245.36	3.27
HM16JV191	C17MA21A0605	0.01	<0.05	111,677.60	2.22	<0.01	19.51	11.35	0.02	155,516.99	1.67	0.005	13.64	0.05	0.4	100,460.85	0.07
HM16JV191	C17MA21A0617	0.01	<0.03	107,232.90	1.03	<0.01	15.8	0.72	0.01	161,196.16	24.57	0.24	2.13	0.05	0.63	121,376.76	0.81
HM16JV191	C17MA21A0622	0.01	<0.03	104,350.52	1.98	<0.01	39.37	4.53	0.1	161,154.58	50.48	0.14	19.42	0.05	0.52	126,709.53	0.39
HM16JV191	C17MA21A0616	0.01	<0.02	109,857.14	1.38	<0.01	40.44	2.66	0.03	160,404.22	295.98	0.68	7.75	0.77	1.23	113,190.91	1.59
HM16JV191	C17MA21A0624	0.01	<0.03	103,837.21	0.35	<0.01	2.29	1.83	0.005	160,494.21	0.73	0.08	9.64	0.05	0.13	123,897.33	0.05
HM16JV191	C17MA21A0615	0.01	<0.05	98,133.56	0.66	<0.02	7.02	2.42	0.005	156,309.16	180.67	0.005	4.18	0.05	0.75	131,783.14	0.85
HM16JV191	C17MA21A0618	0.01	<0.04	117,613.86	1.98	<0.01	33.35	2.19	0.08	172,712.46	262.82	0.005	5.43	0.05	1.55	113,947.58	1.7
HM16JV191	C17MA21A0621	0.01	<0.06	107,570.85	0.61	0.03	1.53	0.76	0.14	152,834.97	1.05	0.2	46.89	0.05	0.26	117,757.47	0.11
HM16JV191	C17MA21A0625	0.01	<0.04	105,876.35	0.43	<0.01	10.96	0.73	0.005	167,874.18	53.58	0.13	11.5	0.32	0.41	130,066.07	0.52
HM16JV191	C17MA21A0615	0.01	<0.03	108,140.18	0.87	<0.01	9.94	2.71	0.01	163,984.56	493.03	0.07	9.71	0.34	3.05	120,821.63	4.23
HM16JV191	C17MA21A0619	0.01	0.04	103,832.84	0.39	<0.01	5.09	1.14	0.01	176,004.56	158.36	0.18	4.26	0.05	0.75	122,022.52	0.77
HM16JV191	C17MA21A0621	0.01	<0.04	120,294.35	0.61	<0.01	1.16	0.81	0.07	171,427.65	0.45	0.07	40.83	0.05	0.4	108,529.65	0.13
HM16JV191	C17MA21A0613	0.01	<0.05	101,491.50	0.3	<0.01	10.13	1.94	0.005	156,820.91	0.14	0.005	8.26	0.05	0.16	122,630.05	0.03
HM16JV191	C17MA21A0614	0.01	<0.03	104,115.43	0.31	<0.01	2.92	0.36	0.005	163,486.32	0.16	0.09	10.05	0.05	0.18	125,935.67	0.06
HM16JV191	C17MA21A0623	0.01	<0.03	108,639.61	0.85	<0.01	47.38	1.02	0.005	167,807.30	1.15	0.14	19.94	0.05	0.41	122,346.01	0.19
HM16JV191	C17MA21A0623	0.01	<0.05	101,804.12	0.65	0.02	25.81	2.08	0.005	157,582.92	1.05	0.24	25.01	0.05	0.33	121,086.35	0.17

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Ag107	Ag109	Al27	As75	Au197	B11	Ba137	Bi209	Ca43	Ce140	Co59	Cr53	Cu65	Eu153	Fe57	Gd157
HM16JV191	C17MA21A0613	0.01	<0.05	119,579.60	0.06	<0.02	3.59	2.91	0.005	173,570.26	6.28	0.08	12.02	0.05	0.26	106,576.68	0.03
HM16JV191	C17MA21A0620	0.01	<0.05	114,892.07	0.91	<0.02	5.41	1.97	0.02	175,843.72	395.65	0.005	5.57	0.05	2.52	118,240.70	3.95
HM16JV191	C17MA21A0613	0.01	<0.04	110,426.88	0.31	<0.01	8.57	2.54	0.005	161,658.11	0.28	0.13	12.48	0.05	0.27	111,107.11	0.06
HM16JV192	C17MA21A0628	0.01	<0.04	103,904.43	3.97	<0.01	56.1	1.16	0.05	160,795.33	744.99	0.14	129.44	0.94	10.3	126,670.77	21.83
HM16JV192	C17MA21A0629	0.01	<0.04	109,717.55	2.21	<0.01	26.29	1.44	0.07	166,611.68	395.48	0.17	182.35	0.82	6.76	119,029.87	14.29
HM16JV192	C17MA21A0626	0.01	<0.04	111,084.23	5.33	<0.01	23.09	2.27	0.04	158,623.21	637.5	0.07	242.05	0.26	11.16	112,369.29	22.82
HM16JV192	C17MA21A0627	0.01	<0.04	117,862.98	1.85	<0.01	21.84	3.78	0.06	166,944.38	417.87	0.24	214.52	0.68	7.46	105,029.00	12.84
HM16JV192	C17MA21A0627	0.01	<0.07	106,765.13	2.14	<0.02	6.91	2.04	0.02	154,753.50	103.86	0.005	176.39	0.05	2.68	108,836.25	3.35
HM16JV192	C17MA21A0630	0.01	<0.03	109,291.46	3.54	<0.01	54.81	1.42	0.06	166,585.43	554.99	0.14	61.28	1.88	10.78	122,337.20	18.37
HM16JV192	C17MA21A0637	0.01	<0.03	107,506.47	6.29	<0.01	91.97	5.4	0.05	162,268.10	2,031.39	0.68	101.33	3.85	26.29	121,977.95	58.8
HM16JV192	C17MA21A0630	0.01	<0.07	99,043.66	2.26	<0.02	32.43	0.22	0.005	156,838.19	223.3	0.19	11.34	0.53	2.94	130,518.30	4.88
HM16JV192	C17MA21A0636	0.01	<0.03	108,394.82	3.12	<0.01	63.2	0.54	0.15	164,949.81	368.48	0.32	60.75	0.94	9.83	122,770.86	18.16
HM16JV192	C17MA21A0635	0.01	<0.03	106,169.42	3.7	<0.01	70.76	1.53	0.12	161,328.82	401.92	0.23	45.71	0.95	5.07	122,666.34	9.28
HM16JV192	C17MA21A0631	0.01	<0.06	103,185.39	1.09	<0.02	33.6	1.16	0.01	154,878.07	136.59	0.16	41.76	0.98	3	124,875.44	5.21
HM16JV192	C17MA21A0633	0.01	<0.03	107,760.41	0.79	<0.01	9.35	0.87	0.005	165,594.78	63.97	0.11	32.41	0.05	1.39	122,841.36	1.56
HM16JV192	C17MA21A0634	0.01	<0.03	108,448.56	2.39	<0.01	20.49	2.18	0.05	162,164.84	109.65	0.1	60.64	0.41	2.64	120,014.05	3.91
HM16JV192	C17MA21A0640	0.01	<0.03	113,559.86	1.44	<0.01	8.72	1.93	0.02	164,270.57	28.83	0.11	35.3	0.05	0.83	110,053.01	0.8
HM16JV192	C17MA21A0632	0.01	<0.03	104,738.36	0.39	<0.01	2.13	0.09	0.005	164,218.23	4	0.11	22.63	0.05	0.66	125,543.80	0.26
HM16JV192	C17MA21A0631	0.01	<0.03	119,282.02	2.08	<0.01	34.89	0.26	0.02	168,498.49	10.8	0.13	54.54	0.05	0.73	106,891.05	0.42
HM16JV192	C17MA21A0639	0.01	<0.03	118,229.59	0.33	<0.01	2.27	0.45	0.005	169,683.57	0.57	0.005	41.09	0.05	0.37	103,476.58	0.04
HM16JV192	C17MA21A0640	0.01	<0.05	106,680.54	2.13	<0.02	25.06	1.85	0.05	156,127.23	0.3	0.005	51.33	0.05	0.59	110,018.28	0.06
HM16JV192	C17MA21A0638	0.01	<0.02	103,281.93	1.34	<0.01	14.14	0.65	0.02	169,954.90	339.28	1.1	31.37	0.6	5.3	133,082.66	10.57
HM16JV192	C17MA21A0633	0.01	<0.06	97,406.49	1.2	0.02	14.51	1.98	0.03	154,870.69	24.75	0.005	93.36	0.53	1.73	127,331.68	0.74
HM16JV192	C17MA21A0638	0.01	<0.03	95,249.59	0.42	<0.01	2.65	0.05	0.01	158,513.31	19.32	0.3	19.97	0.05	1.09	141,968.19	0.55
HM16JV192	C17MA21A0639	0.01	<0.04	109,706.55	0.55	<0.02	5.18	0.31	0.005	156,778.48	0.1	0.11	54.64	0.34	0.44	108,934.16	0.12
HM16JV192	C17MA21A0642	0.01	<0.03	104,376.21	2.04	<0.01	8.62	0.59	0.02	166,438.58	407.67	0.49	26.57	0.33	5.1	131,460.71	9.32
HM16JV192	C17MA21A0645	0.01	<0.05	99,009.87	2.31	<0.02	20.96	1.83	0.11	161,795.52	243.91	0.1	32.83	0.86	3.53	131,495.37	4.78
HM16JV192	C17MA21A0641	0.01	<0.05	100,241.04	2.44	<0.02	17.11	0.46	0.02	157,806.22	418.92	0.3	36.18	0.05	6.22	128,595.43	11.65
HM16JV192	C17MA21A0644	0.01	<0.04	111,264.45	0.46	<0.01	14.48	1.15	0.01	176,510.33	104.49	0.11	29.03	4.74	1.36	122,364.39	1.61
HM16JV192	C17MA21A0646	0.01	<0.03	112,650.64	1.64	<0.01	27.17	0.39	0.01	159,466.53	5.87	0.1	45.48	0.39	0.88	110,852.30	0.3
HM16JV192	C17MA21A0647	0.01	<0.04	108,440.68	0.61	<0.01	15.36	0.08	0.005	163,269.53	0.09	0.14	30.03	0.05	0.41	119,729.17	0.12
HM16JV192	C17MA21A0641	0.01	<0.06	118,360.32	4.32	<0.02	21.33	1.45	0.03	177,242.93	434.86	0.11	67.31	0.05	10.87	108,846.54	19.21
HM16JV192	C17MA21A0643	0.01	<0.03	110,451.18	1.14	<0.01	17.07	0.29	0.005	166,303.35	10.81	0.09	36.18	0.05	1.12	122,851.95	0.28
HM16JV192	C17MA21A0649	0.01	<0.03	101,956.36	2.51	<0.01	21.87	0.26	0.01	161,118.31	4.07	0.08	30.23	0.05	0.89	126,303.79	0.17
HM16JV192	C17MA21A0648	0.01	<0.04	111,508.24	1.21	<0.02	9.73	1.4	0.04	165,669.45	20.55	0.09	46.27	0.05	2.07	115,749.21	0.95
HM16JV192	C17MA21A0650	0.01	<0.03	102,591.65	1.88	<0.01	68.84	1.1	0.03	159,856.59	192.16	0.44	35.14	3.82	2.14	131,232.63	3.05
HM16JV192	C17MA21A0651	0.01	<0.03	113,787.04	0.9	<0.01	21.39	1.04	0.005	162,766.83	0.5	0.17	52.74	0.05	0.56	106,817.68	0.1
HM16JV192	C17MA21A0649	0.01	<0.04	117,505.63	5.41	<0.01	57.49	0.9	0.08	173,238.14	134.39	0.1	58.63	0.05	4.49	109,390.53	7.39
HM16JV192	C17MA21A0648	0.01	<0.06	101,412.59	1.02	<0.02	18.61	0.98	0.02	151,228.60	19.47	0.19	47.14	0.05	1.43	125,974.81	0.82
HM16JV193	C17MA21A0660	0.03	<0.04	132,910.79	0.71	<0.01	1.39	0.19	0.005	174,156.24	0.27	0.45	1.15	0.05	0.04	78,509.51	0.005
HM16JV193	C17MA21A0660	0.01	<0.04	123,715.06	0.79	<0.01	1.93	0.42	0.005	158,810.22	7.66	0.84	2.16	0.05	0.04	82,367.72	0.03
HM16JV193	C17MA21A0656	0.01	<0.03	132,454.62	0.21	<0.01	1.01	0.28	0.005	165,807.27	0.98	1.41	0.2	0.05	0.02	75,823.95	0.04
HM16JV193	C17MA21A0666	0.01	<0.03	128,715.55	2.49	0.01	2.1	0.13	0.005	164,492.30	0.06	0.55	1.98	0.05	0.04	81,662.96	0.01
HM16JV193	C17MA21A0658	0.01	<0.03	124,343.14	1.49	<0.01	1.59	0.87	0.005	166,542.21	7.41	0.29	1.74	0.05	0.33	89,867.38	0.09
HM16JV193	C17MA21A0653	0.01	<0.03	124,181.28	0.82	<0.01	0.9	0.09	0.005	162,729.84	0.04	0.54	1.28	0.05	0.02	88,883.70	0.02
HM16JV193	C17MA21A0667	0.01	<0.03	127,699.78	0.54	0.01	1.08	0.29	0.005	167,394.22	0.69	0.72	0.2	0.05	0.02	81,114.87	0.02
HM16JV193	C17MA21A0662	0.01	<0.03	124,546.58	1.85	<0.01	1.6	0.15	0.005	162,536.78	0.03	0.62	0.2	0.05	0.01	85,703.75	0.005
HM16JV193	C17MA21A0652	0.01	<0.09	126,261.04	0.78	<0.03	0.3	0.23	0.005	182,859.30	47.56	0.43	4.68	0.05	0.09	96,203.85	0.005
HM16JV193	C17MA21A0665	0.01	<0.04	123,490.33	2.15	<0.01	1.49	0.13	0.005	162,257.44	0.15	0.7	2.03	0.05	0.03	86,857.15	0.03
HM16JV193	C17MA21A0661	0.01	<0.03	132,105.19	4.26	<0.01	4.92	0.33	0.005	165,132.22	0.41	0.4	0.84	0.05	0.02	73,944.46	0.06
HM16JV193	C17MA21A0655	0.01	<0.03	128,933.81	1.86	<0.01	3.59	1.09	0.005	173,111.67	17.11	0.62	0.2	0.05	0.08	83,800.13	0.005
HM16JV193	C17MA21A0659	0.01	<0.04	121,652.77	2.25	<0.02	2.66	2.3	0.005	160,516.83	53.3	0.6	5.27	0.05	0.28	88,460.15	0.31

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Ag107	Ag109	Al27	As75	Au197	B11	Ba137	Bi209	Ca43	Ce140	Co59	Cr53	Cu65	Eu153	Fe57	Gd157
HM16JV193	C17MA21A0655	0.01	<0.04	125,646.86	3.18	<0.02	2.23	0.33	0.005	165,989.21	6.37	0.42	1	0.05	0.02	82,539.24	0.005
HM16JV193	C17MA21A0658	0.01	0.06	117,075.37	1.55	<0.02	0.3	0.25	0.005	159,366.83	3.73	0.35	1.33	0.05	0.2	94,634.27	0.005
HM16JV193	C17MA21A0664	0.01	<0.03	117,572.96	1.66	<0.01	0.89	0.26	0.005	163,580.41	3.88	0.67	1.95	0.05	0.03	99,033.07	0.08
HM16JV193	C17MA21A0665	0.01	0.06	133,735.79	1.92	<0.02	0.3	0.45	0.005	174,243.30	0.43	0.61	2.25	0.05	0.07	79,861.21	0.06
HM16JV193	C17MA21A0652	0.01	<0.05	124,601.09	0.94	<0.01	4.14	1.43	0.005	158,609.96	50.2	0.87	1.1	0.3	0.16	81,142.40	0.19
HM16JV193	C17MA21A0657	0.01	<0.04	121,177.63	1.82	<0.01	2.31	1.14	0.005	160,646.76	3.75	0.53	1.18	0.05	0.03	88,641.78	0.02
HM16JV193	C17MA21A0663	0.01	<0.03	131,922.03	0.27	<0.01	0.94	0.18	0.005	165,865.62	0.01	1.29	0.2	0.05	0.005	76,657.62	0.01
HM16JV193	C17MA21A0654	0.01	<0.04	128,212.25	1.01	0.02	1.91	1.45	0.005	160,973.76	1.87	0.47	3.78	0.05	0.07	79,428.31	0.06
HM16JV193	C17MA21A0677	0.01	<0.08	138,182.25	0.06	<0.02	0.3	0.005	0.005	184,307.76	2.48	0.43	1.7	0.05	0.005	75,750.03	0.08
HM16JV193	C17MA21A0668	0.03	<0.03	130,320.43	0.14	<0.01	0.3	0.005	0.005	165,298.75	0.03	0.52	0.89	0.05	0.01	77,060.64	0.04
HM16JV193	C17MA21A0674	0.01	<0.05	124,105.97	1.61	0.01	0.3	0.19	0.01	158,618.20	0.18	0.84	1.62	0.05	0.03	83,961.92	0.005
HM16JV193	C17MA21A0671	0.05	0.07	116,979.88	2.83	<0.01	2.03	0.52	0.005	164,067.48	2.83	0.46	0.2	0.05	0.04	102,374.87	0.06
HM16JV193	C17MA21A0675	0.01	<0.03	127,399.57	2.01	<0.01	1.71	0.05	0.005	162,969.92	0.01	0.45	0.2	0.05	0.01	84,370.36	0.005
HM16JV193	C17MA21A0677	0.01	0.05	120,035.27	0.64	<0.01	2.37	2.74	0.01	157,310.95	75.17	1.14	0.2	0.05	0.33	90,377.56	0.43
HM16JV193	C17MA21A0673	0.01	<0.03	126,242.65	1.93	<0.01	1.27	0.07	0.005	162,285.81	0.03	0.47	0.2	0.05	0.04	85,761.42	0.01
HM16JV193	C17MA21A0674	0.01	<0.04	134,650.08	0.98	<0.01	1.66	0.18	0.005	174,267.10	1.49	0.77	0.99	0.05	0.02	75,792.53	0.01
HM16JV193	C17MA21A0676	0.01	<0.03	128,798.70	0.43	<0.01	1.11	0.29	0.005	164,889.39	8.12	0.96	0.2	0.05	0.05	79,618.47	0.07
HM16JV193	C17MA21A0670	0.01	<0.09	125,959.87	0.8	0.03	0.3	1.39	0.005	157,401.92	20.08	1.13	0.2	0.05	0.11	79,644.82	0.06
HM16JV193	C17MA21A0670	0.01	<0.03	130,689.21	0.53	<0.01	2.31	1.58	0.005	164,792.88	50.34	0.86	0.2	0.05	0.16	79,226.40	0.19
HM16JV193	C17MA21A0669	0.01	0.05	124,664.32	0.26	<0.02	2.82	2.27	0.005	158,302.68	42.01	1.21	0.2	0.05	0.15	77,068.44	0.19
HM16JV193	C17MA21A0678	0.01	<0.04	133,829.65	0.39	<0.01	1.46	0.42	0.005	165,735.55	40.48	1.35	0.2	0.05	0.18	73,053.66	0.11
HM16JV193	C17MA21A0669	0.01	<0.05	133,546.38	2.25	0.02	2.83	0.84	0.005	173,705.04	2.4	0.39	0.2	0.05	0.01	84,108.52	0.04
HM16JV193	C17MA21A0672	0.01	<0.03	124,956.61	0.72	<0.01	1.45	0.55	0.005	156,216.55	1.01	0.56	2.61	0.05	0.09	85,593.31	0.005
HM16JV203	E17JN15A326	0.01	<0.06	124,672.62	158.09	<0.01	18.26	60.48	8.51	162,719.14	2.41	0.05	0.2	0.05	0.19	99,105.91	0.39
HM16JV203	E17JN15A331	0.01	<0.05	123,246.59	46.51	<0.01	12.52	15.75	5.43	159,882.83	2.66	0.02	2.04	0.05	0.38	94,197.21	0.42
HM16JV203	E17JN15A329	0.01	<0.08	133,561.21	86.23	<0.01	73.28	5.96	15.63	172,209.64	8.59	0.15	7.93	0.05	0.89	83,984.97	1.43
HM16JV203	E17JN15A330	0.01	<0.09	125,678.53	110.1	<0.01	11.34	2.77	10.16	177,813.44	0.51	0.005	1.03	0.05	0.15	100,830.13	0.18
HM16JV203	E17JN15A328	0.01	<0.05	129,179.69	151.15	<0.01	141.57	5.6	21.66	164,215.36	4.39	0.1	11.1	1.48	0.42	89,565.81	0.52
HM16JV203	E17JN15A333	0.01	<0.04	128,256.13	7.59	<0.01	2.38	7.03	2.79	165,612.77	2.17	0.04	1.51	0.25	0.57	84,948.18	0.59
HM16JV203	E17JN15A332	0.01	<0.17	136,488.24	5.27	<0.02	0.3	4.89	2.07	178,760.11	2.5	0.005	0.2	0.05	0.36	89,764.18	0.29
HM16JV203	E17JN15A327	0.01	<0.10	148,501.17	0.93	<0.02	21.99	2.18	0.06	180,434.39	0.73	0.005	27.78	0.05	1.54	63,426.10	0.04
HM16JV208	E17JN15A491	0.01	<0.05	114,142.78	2.62	<0.01	0.91	5.44	0.64	163,872.14	0.25	0.08	0.2	0.05	0.28	109,503.58	0.12
HM16JV208	E17JN15A313	0.01	<0.08	109,419.37	7.91	<0.01	11.25	4.49	5.87	168,335.83	7.85	0.12	2.4	0.24	1.85	106,339.41	5.37
HM16JV208	E17JN15A316	0.01	<0.15	130,151.56	18.6	0.04	13.42	1.24	5.01	175,166.87	9.05	0.37	4.66	0.05	2.4	104,621.35	7.78
HM16JV208	E17JN15A492	0.01	<0.06	111,669.18	1.42	<0.01	0.71	1.22	0.58	158,553.35	0.06	0.02	7.27	0.05	0.08	114,068.68	0.06
HM16JV208	E17JN15A490	0.01	<0.06	112,354.26	1.8	<0.01	9.92	1.78	0.48	171,048.22	3.01	0.09	0.2	0.57	0.24	108,310.08	0.26
HM16JV208	E17JN15A318	0.01	<0.06	114,208.36	1.33	<0.01	0.87	1.45	0.55	165,755.74	0.12	0.1	1.21	0.05	0.27	110,510.75	0.19
HM16JV208	E17JN15A317	0.01	<0.06	113,784.53	1.79	<0.01	1.1	6.06	0.28	166,701.66	18.62	0.03	13.65	0.05	2.55	110,918.91	4.49

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Hf178	K39	La139	Li7	Lu175	Mg24	Mn55	Na23	Nb93	Ni60	Pb206	Pb207	Pb208	Sb121	Si29	Sn118
HM16JV002	E17JN15A237	2.82	10.14	6.06	0.025	0.02	641.21	974.3	29.96	0.04	0.65	3.64	4.5	4.13	0.03	173,671.14	0.49
HM16JV002	E17JN15A234	2.09	0.8	0.03	0.025	0.02	571.81	1,595.01	6.38	0.01	0.63	5.09	6.63	6.3	0.03	181,969.90	0.76
HM16JV002	E17JN15A236	0.45	60.65	23.8	1.88	0.06	772.14	2,530.71	31.99	0.005	0.82	6.14	7.34	6.88	0.03	162,755.40	1.2
HM16JV002	E17JN15A231	0.85	93.12	21.91	0.025	0.005	363.28	1,704.02	5	0.005	0.89	5.91	8.14	6.65	0.03	160,547.27	0.63
HM16JV002	E17JN15A229	1.95	12.1	46.1	1.62	0.23	914.62	1,063.86	5	0.06	0.21	22.3	25.4	24.54	0.03	165,192.46	3.08
HM16JV002	E17JN15A235	1.15	51.2	1.31	0.025	0.01	267.43	1,150.68	466.54	0.03	0.25	5.15	6.85	6.25	0.03	182,122.72	0.3
HM16JV002	E17JN15A233	1.18	0.8	0.03	0.15	0.01	352.15	1,121.22	5.68	0.03	0.29	3.38	4.36	4.04	0.03	184,321.79	0.34
HM16JV002	E17JN15A230	1.05	72.51	331.25	9.8	0.8	2,422.89	1,280.84	26.88	0.02	0.26	37.8	22.27	31.09	0.03	185,279.34	8.38
HM16JV002	E17JN15A225	1.05	9.97	51.79	1.02	0.31	440.53	1,076.26	30.09	0.13	0.41	15.17	14.96	13.61	0.22	178,536.53	3.49
HM16JV002	E17JN15A239	0.7	157.08	21.17	2.3	0.18	558.39	1,206.85	1,834.59	0.01	0.08	15.82	17.14	16.58	0.19	188,390.11	3.71
HM16JV002	E17JN15A227	1.36	247.27	74.57	4.78	0.3	1,965.32	913.11	348.98	0.005	0.01	16.12	15.6	14.64	0.03	165,340.33	2.17
HM16JV002	E17JN15A226	0.4	195.56	99.04	3.66	0.39	921.04	1,103.12	5	2.05	0.24	20.72	20.79	22.51	0.03	161,725.79	5.89
HM16JV002	E17JN15A241	0.96	0.8	103.2	2.03	0.44	545.5	927.24	19.51	0.05	0.22	11.06	8.65	9.46	0.34	162,165.61	5.19
HM16JV002	E17JN15A232	0.57	155.9	318.41	5.33	0.6	2,128.12	1,000.84	16.01	0.04	0.01	27.53	19.03	18	0.23	171,199.62	6.31
HM16JV002	E17JN15A245	0.63	6.39	175.34	4.98	0.45	2,172.96	1,129.46	34.79	0.005	0.01	30.11	24.22	25.81	0.03	173,690.70	3.74
HM16JV002	E17JN15A228	0.54	12.17	476.77	2.38	1.33	371.28	1,148.79	15.12	0.01	0.13	32.38	16.19	21.67	0.15	179,389.11	10.09
HM16JV002	E17JN15A238	0.005	0.8	112.43	0.025	0.33	379.87	1,292.08	5	0.005	0.01	23.85	18.61	18.01	0.03	164,970.75	4.55
HM16JV002	E17JN15A229	0.37	40.83	23.57	1.32	0.19	338.57	1,122.19	5	0.05	0.08	20.32	23.07	22.18	0.14	186,067.19	5.14
HM16JV002	E17JN15A243	0.19	19.29	69.78	2.76	0.13	1,022.87	1,072.37	28.19	0.02	0.26	19.83	22.32	21.49	0.24	172,358.23	2.02
HM16JV002	E17JN15A242	0.42	16.05	15.83	0.73	0.07	155.28	1,459.37	34.91	0.02	0.12	37.35	47.22	44.21	3.14	186,925.22	3.78
HM16JV002	E17JN15A240	0.33	54.11	25.77	2.33	0.04	544.11	662.78	17.05	0.1	0.36	10.33	11.47	11.82	0.21	177,470.37	0.47
HM16JV004	E17JN14A219	0.005	0.8	0	1.14	0	29.86	141.69	5	0.005	0.17	3.85	3.98	3.94	0.03	166,792.52	0.26
HM16JV004	E17JN14A219	0.005	0.8	3.05	0.47	0.005	14.8	137.52	5	0.005	0.13	4.05	4.35	4	0.03	178,072.01	0.28
HM16JV004	E17JN14A203	1.16	25.87	46.23	2.4	0.02	539.05	491.24	27.03	0.04	1.91	9.02	9.03	8.76	0.03	178,159.17	1.18
HM16JV004	E17JN14A215	0.59	18.85	60.21	2.56	0.13	304.04	703.34	54.58	0.25	0.75	16.28	14.71	13.4	1.23	167,398.63	2.2
HM16JV004	E17JN14A225	0.65	655.79	64	3.06	0.06	18,511.88	1,139.57	793.22	0.08	24.32	5.64	4.59	4.16	0.17	193,208.70	1.33
HM16JV004	E17JN14A203	1.23	0.8	109.98	0.88	0.03	225.16	435.28	10.92	0.15	0.74	11.92	8.5	9.02	0.03	170,450.39	2.03
HM16JV004	E17JN14A201	0.38	84.17	18.62	3.29	0.01	276.3	1,255.89	36.54	0.03	0.83	6.26	7.33	6.87	0.03	169,275.45	0.96
HM16JV004	E17JN14A200	0.31	107.1	4.26	2.76	0.02	380.17	2,125.19	30	0.01	1.46	11.39	14.54	12.87	0.03	171,102.01	2.18
HM16JV004	E17JN14A223	0.3	0.8	4.15	1.74	0.02	137.88	393.51	9.09	0.03	0.18	7.47	4.64	3.88	0.03	177,338.07	0.66
HM16JV004	E17JN14A217	0.25	9,641.41	11.8	1.83	0.03	464.88	657.21	1,899.26	0.24	0.8	12.25	11.47	10.49	0.84	189,917.87	1.15
HM16JV004	E17JN14A201	0.27	46.73	32.77	3.58	0.01	261.52	1,289.96	30.96	0.02	0.83	6.31	6.95	6.24	0.03	178,082.47	0.97
HM16JV004	E17JN14A212	0.37	19.21	54.86	2.18	0.03	276.53	790.82	19.17	0.06	0.93	10.85	9	7.88	0.46	182,584.69	1.35
HM16JV004	E17JN14A218	0.28	5.21	139.45	1.58	0.02	87.53	635.22	30.57	0.03	0.35	6.81	7.46	6.63	0.03	169,887.38	1.09
HM16JV004	E17JN14A218	0.26	5.88	346.86	2.3	0.03	85.73	576.68	46.64	0.02	0.29	7.28	6.23	5.52	0.03	179,556.83	1.08
HM16JV004	E17JN14A214	0.15	4.18	427.96	1.4	0.02	121.48	903.27	48.87	0.03	0.47	89.98	107.04	100.29	0.75	183,630.78	1.98
HM16JV004	E17JN14A214	0.06	0.8	356.58	0.72	0.04	166.8	1,047.67	34.21	0.08	0.31	107.66	135.31	126.05	0.03	165,102.26	2.1
HM16JV004	E17JN14A213	0.005	8.04	97.19	2.13	0.02	351.78	1,151.77	221.88	1.81	1.14	77.89	96.23	89.5	0.7	174,345.06	1.74
HM16JV004	E17JN14A216	0.08	0.8	5.42	0.94	0.11	259.48	1,302.08	5	0.02	1.04	12	9.07	7.67	0.03	166,928.24	4.76
HM16JV004	E17JN14A216	0.2	0.8	4.41	0.52	0.07	38.61	1,037.26	5	0.01	0.22	18.59	16.47	14.82	0.03	176,617.82	6.12
HM16JV004	E17JN14A202	0.27	0.8	3.29	0.48	0.005	54.61	3,188.83	5	0.005	1.56	7.37	5.13	4.46	0.03	168,255.61	0.83
HM16JV004	E17JN14A199	0.13	0.8	65.9	0.025	0.03	70.91	1,098.62	13.53	0.01	0.29	128.42	166.3	154.59	0.03	181,716.16	2.67
HM16JV004	E17JN14A211	0.1	61.17	13.74	5.14	0.01	663.8	443.9	31.51	0.01	2.4	10.89	13.32	11.49	0.03	176,656.66	1.94
HM16JV004	E17JN14A199	0.09	0.8	40.97	0.025	0.03	78.08	1,148.53	9.78	0.02	0.14	129.15	167.57	154.58	0.03	171,813.41	2.05
HM16JV004	E17JN14A211	0.07	107.88	15.4	6.47	0.005	1,515.21	578.82	41.86	0.01	5.15	15.45	20	18.37	0.03	179,454.43	1.77
HM16JV004	E17JN14A204	0.04	17.73	78.89	0.025	0.03	61.48	1,266.06	105.14	0.005	0.31	118.74	147.1	137.79	0.03	179,714.54	1.71

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Hf178	K39	La139	Li7	Lu175	Mg24	Mn55	Na23	Nb93	Ni60	Pb206	Pb207	Pb208	Sb121	Si29	Sn118
HM16JV004	E17JN14A220	0.02	0.8	75.46	0.17	0.09	12.35	1,007.98	7.93	0.03	0.09	9.43	7.17	5.76	0.03	168,079.23	3.29
HM16JV004	E17JN14A204	0.05	13.81	163.23	0.38	0.03	62.86	1,134.64	103.48	0.005	0.25	109.62	141.75	132.62	0.03	177,161.85	1.51
HM16JV004	E17JN14A221	0.04	2.63	72.18	0.27	0.01	32.5	1,712.45	23.57	0.005	0.24	4.57	4.81	4.46	0.03	177,412.91	0.52
HM16JV004	E17JN14A224	0.01	7.93	237.45	0.34	0.02	51.09	1,142.45	339.84	0.02	0.12	115.18	141.9	134.6	0.47	170,158.93	0.46
HM16JV004	E17JN14A222	0.07	3.45	70.26	0.76	0.01	41.23	460.39	15.88	0.01	0.25	3.81	3.77	3.47	0.03	176,292.36	0.56
HM16JV004	E17JN14A221	0.005	0.8	43.11	0.35	0.01	34.9	168	5	0.01	0.17	3.61	4.06	3.89	0.03	166,617.70	0.26
HM16JV006	C17MA20A0011	0.32	0.8	12.8	0.74	0.06	186.45	1,616.43	19	0.07	0.06			79.2	11.84	181,933.77	2.89
HM16JV006	C17MA20A0014	0.26	0.8	7.07	1.27	0.07	199.49	2,321.49	21.02	0.18	0.11			68.77	8.7	186,912.28	2.29
HM16JV006	C17MA20A0013	0.02	0.8	0.27	0.88	0.01	143.25	2,182.94	16.86	0.03	0.33			41.34	6.32	183,551.48	0.45
HM16JV006	C17MA20A0010	0.01	0.8	0.43	0.17	0.01	223.86	762.51	18.39	0.14	0.01			18.63	1.06	188,903.24	0.38
HM16JV006	C17MA20A0012	0.005	0.8	0.32	0.78	0.04	126.88	1,367.59	26.85	0.005	0.01			55.13	6.41	189,296.34	0.35
HM16JV006	C17MA20A0008	0.03	0.8	0.66	0.18	0.02	190.26	1,208.13	14.54	0.02	0.13			19.45	1.24	194,506.18	0.62
HM16JV006	C17MA20A0009	0.01	0.8	0.45	0.27	0.01	304.61	696.56	12.81	0.33	0.35			26.81	8.32	182,967.70	0.44
HM16JV006	C17MA20A0015	0.02	0.8	0.06	0.025	0.03	312.63	666.34	5	0.98	0.03			117.4	0.03	182,592.37	0.43
HM16JV006	C17MA20A0007	0.01	0.8	0.005	0.025	0	206.43	624.68	5	0.02	0.06			14.4	2.57	183,711.89	0.24
HM16JV006	C17MA20A0007	0.005	6.6	0.005	0.025	0.005	219.21	1,394.03	5.56	0.01	0.05			16.81	1.58	197,284.84	0.15
HM16JV006	C17MA20A0020	0.45	0.8	65.06	1.54	0.27	372.64	1,299.48	42.04	0.03	0.66			49.53	12.14	190,530.62	6.37
HM16JV006	C17MA20A0018	0.25	0.8	0.94	0.38	0.08	163.88	734.27	15.1	0.21	0.08			17.28	2.03	179,630.89	0.61
HM16JV006	C17MA20A0016	0.005	9.53	16.87	2.15	0.78	166.18	2,620.42	39.33	0.09	0.81			21.2	6.24	177,666.88	0.62
HM16JV006	C17MA20A0019	0.04	0.8	0.15	1.8	0.12	108.54	291.04	3.48	0.09	0.18			5.92	0.03	187,663.53	0.34
HM16JV006	C17MA20A0017	0.02	0.8	0.09	0.17	0	203.7	1,556.61	6.83	0.01	0.04			19.34	1.59	193,102.21	0.37
HM16JV006	C17MA20A0016	0.04	4.47	15.53	2.31	0.33	136.97	3,201.34	24.29	0.05	1.32			18.56	6.65	187,303.39	0.31
HM16JV006	C17MA20A0021	0.37	9.54	22.59	0.55	0.13	201.24	1,109.19	44.19	0.45	0.12			69.83	3.17	175,185.77	1.82
HM16JV006	C17MA20A0023	0.29	14.01	20.47	0.56	0.13	164.27	1,216.00	65.23	0.05	0.12			38.6	2.33	190,341.48	2.4
HM16JV006	C17MA20A0022	0.25	49.81	37.19	0.83	0.2	155.74	1,382.75	28.64	0.03	0.55			49.18	2.91	186,207.32	2.31
HM16JV006	C17MA20A0025	0.2	5.14	66.08	0.85	0.46	120.97	1,388.81	21.52	0.02	0.53			28.58	2.97	177,301.42	2.48
HM16JV006	C17MA20A0025	0.005	0.8	4.96	1.1	0.4	83.7	1,114.95	32.87	0.04	1.06			10.27	1.41	186,929.83	0.67
HM16JV006	C17MA20A0024	0.03	6.53	0.88	1.15	0.51	128.67	1,290.55	20.35	0.28	0.91			25.36	1.81	180,737.13	0.53
HM16JV006	C17MA20A0027	0.01	0.8	0.29	0.19	0.01	197.05	1,186.36	8.84	0.08	0.01			13.9	1.67	187,757.27	0.36
HM16JV006	C17MA20A0026	0.005	0.8	0.01	0.17	0.01	267.08	1,481.50	3.28	0.1	0.01			26.93	0.8	182,303.43	0.19
HM16JV006	C17MA20A0031	0.68	14.01	273.56	2.49	2.19	699.1	1,663.61	11.93	0.45	3.46			47.65	1.6	182,547.95	7.73
HM16JV006	C17MA20A0029	0.1	0.8	22.16	1.3	0.04	126.62	1,718.40	11.26	0.09	0.65			7.37	1.39	179,767.33	0.2
HM16JV006	C17MA20A0028	0.25	2.65	9.13	0.86	0.1	87.61	764.75	13.1	0.02	0.53			10.33	2.17	178,928.29	0.67
HM16JV006	C17MA20A0030	0.16	0.8	0.07	1.22	0.83	65.4	141.68	5	0.14	0.23			4.44	0.03	187,572.30	0.89
HM16JV006	C17MA20A0030	0.11	3.75	0.11	0.82	0.38	54.63	476.08	8.13	0.08	0.56			3.12	0.03	172,882.86	0.7
HM16JV007	E17JN14A480	0.92	3.26	113.22	1.64	0.09	83.92	2,402.03	15.32	0	1.12	6.02	6.14	5.92	0.31	179,871.39	6.3
HM16JV007	E17JN14A474	0.96	33.27	176.35	1.12	0.85	237.28	948.35	21.88	0.55	0.25	70.59	73.78	63.6	4.31	164,111.84	4.65
HM16JV007	E17JN14A488	0.61	0.8	21.38	1.07	0.11	91.64	1,325.11	5	0.03	2.75	11.04	12.47	11.38	0.3	178,830.48	4.32
HM16JV007	E17JN14A482	0.45	197.71	80.34	3.23	0.55	402.93	764.79	17.4	0.62	1.57	11.75	13	12.86	0.76	172,415.61	2.56
HM16JV007	E17JN14A478	0.37	51.69	17.61	2.37	0.08	1,764.29	1,124.69	12.51	1.54	7.86	5.31	7.06	6.92	0.03	162,135.45	3.77
HM16JV007	E17JN14A478	0.52	37.47	20.31	5.87	0.06	4,448.89	888.14	37.01	0.1	20.66	7.38	8.52	7.97	0.57	174,001.89	5.27
HM16JV007	E17JN14A481	0.42	32.93	4.24	1.51	0.03	301.24	422.85	5	0.005	1.43	5.2	6.14	5.86	1.62	170,820.73	3.92
HM16JV007	E17JN14A480	0.58	2.49	58.09	2.16	0.1	87.03	953.85	8.91	0.01	1.02	3.84	4.55	4.18	0.03	174,032.73	4.27
HM16JV007	E17JN14A483	0.5	6.13	250.27	1.57	0.29	116.77	943.05	48.69	0.1	0.72	17.37	18.54	18.19	0.69	174,279.45	2.28
HM16JV007	E17JN14A488	0.28	0.8	16.57	1.4	0.1	124.34	841.07	5	0.06	1.48	13.18	14.13	13.71	0.42	168,435.80	2.32
HM16JV007	E17JN14A478	0.54	27.46	17.67	2.05	0.08	484.84	1,074.42	23.83	0.58	2.08	8.56	5.43	5.45	0.69	163,267.52	4.49
HM16JV007	E17JN14A490	0.49	5.33	13.11	1.61	0.35	86.45	417.04	13.32	0.07	1.02	10.63	12.93	12.2	0.56	181,370.70	3.5
HM16JV007	E17JN14A489	0.45	5.37	52.1	1.83	0.14	121.03	2,224.35	18.84	0.08	0.63	25.61	27.43	26.85	0.39	175,208.90	2.86
HM16JV007	E17JN14A473	0.41	178.03	0.33	2.54	0.01	429.45	408.19	5.94	0.03	2.29	3.37	4.36	3.91	0.03	173,725.51	5.21
HM16JV007	E17JN14A475	0.35	63.92	0.05	2.86	0.03	230.32	242.44	10.16	0.03	1.81	2.62	3.05	2.87	0.03	172,526.88	4.74
HM16JV007	E17JN14A491	0.28	5.51	16.66	1.69	0.19	105.57	1,894.51	33.76	0.12	0.29	18.75	20.74	20.48	1.47	176,125.38	2.37
HM16JV007	E17JN14A487	0.15	0.8	14.95	2.31	0.06	86.08	3,831.90	10.9	0.005	1.79	9.24	11.21	10.58	0.03	179,492.61	3.96

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Hf178	K39	La139	Li7	Lu175	Mg24	Mn55	Na23	Nb93	Ni60	Pb206	Pb207	Pb208	Sb121	Si29	Sn118
HM16JV007	E17JN14A481	0.17	61.39	6.97	1.14	0.05	193.72	1,324.88	11.35	0.02	1.06	5.71	6.79	6.27	1.83	177,940.60	3.61

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.
**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Hf178	K39	La139	Li7	Lu175	Mg24	Mn55	Na23	Nb93	Ni60	Pb206	Pb207	Pb208	Sb121	Si29	Sn118
HM16JV007	E17JN14A479	0.29	53.65	0.12	1.07	0.03	136.99	604.32	5	0.07	1.02	2.74	3.4	2.96	0.37	177,169.20	3.67
HM16JV007	E17JN14A486	0.12	14.94	1.08	1.19	0.22	77.73	254.13	56.61	0.13	0.21	2.76	3.63	3.32	0.03	184,199.97	2.66
HM16JV007	E17JN14A486	0.14	7.19	7.36	1.45	0.18	69.89	278.28	33.95	0.09	0.8	4.04	4.14	3.98	0.03	175,858.52	2.28
HM16JV007	E17JN14A490	0.22	4.4	4.04	0.7	0.39	70.81	1,062.64	30.09	0.05	0.01	8.62	10.16	9.76	2.24	171,385.63	2.69
HM16JV007	E17JN14A487	0.15	0.8	1.66	2.38	0.06	89.92	2,912.06	5	0.02	1.18	5.12	5.85	5.22	0.03	170,525.47	3.7
HM16JV007	E17JN14A476	0.17	95.35	0.41	0.63	0.02	177.72	291.89	12.76	0.06	1.09	4.4	5.44	5.27	0.72	171,417.57	1.88
HM16JV008	C17MA21A0356	0.72	0.8	66.53	1.25	0.02	207.92	1,324.24	10.09	0.1	3.86			4.51	0.86	179,818.44	3.04
HM16JV008	C17MA21A0353	0.49	0.8	133.71	1.55	0.02	310.33	2,506.15	33.09	0.09	5.84			3.95	0.15	180,180.51	2.7
HM16JV008	C17MA21A0354	0.71	0.8	20.01	0.58	0.01	67.63	698.68	4.38	0.02	3.09			3.82	0.14	181,732.06	0.21
HM16JV008	C17MA21A0355	0.25	0.8	36.82	0.8	0.1	111.21	303.06	4.22	0.03	1.32			4.05	0.03	177,711.59	0.18
HM16JV008	C17MA21A0361	0.17	0.8	57.83	0.3	0.01	27.37	1,027.85	6	0.04	3.47			5.42	0.49	183,666.34	0.12
HM16JV008	C17MA21A0357	0.13	3.34	21.12	0.82	0.06	196.94	245.43	5.1	0.05	1.5			1.57	0.03	179,975.06	0.69
HM16JV008	C17MA21A0358	0.11	0.8	22.07	0.6	0.01	139.73	271.23	5	0.04	2.5			3.02	0.14	171,228.80	0.93
HM16JV008	C17MA21A0358	0.04	0.8	19.61	0.46	0.03	154.12	1,493.87	5	0.005	2.4			2.7	0.03	185,599.57	0.93
HM16JV008	C17MA21A0359	0.09	0.8	23.88	0.41	0.01	60.8	3,650.89	3.5	0.02	4.54			3.71	0.03	178,353.01	0.17
HM16JV008	C17MA21A0361	0.04	0.8	5.65	0.025	0.01	14.01	671.4	5	0	1.62			4.99	0.47	171,741.37	0.13
HM16JV008	C17MA21A0360	0.04	6.38	9.32	0.4	0.01	36.02	168.55	20.87	0.02	1.94			0.94	0.03	183,033.69	0.08
HM16JV008	C17MA21A0368	0.11	507.94	24.48	1.23	0.01	65.62	3,172.24	5.29	0.005	2.75			3.62	0.03	172,044.54	0.56
HM16JV008	C17MA21A0367	0.07	0.8	9.43	0.59	0.01	37.93	1,393.98	5	0.02	0.22			1.83	0.14	181,304.72	0.41
HM16JV008	C17MA21A0364	0.04	0.8	17.34	0.23	0.01	19.21	1,181.76	3.74	0.005	0.42			5.27	0.52	178,068.48	0.18
HM16JV008	C17MA21A0365	0.005	2.34	4.86	0.1	0	7.13	343.96	124.03	0	0.03			4.08	1.02	178,716.21	0.22
HM16JV008	C17MA21A0371	0.51	5.42	40.69	2.5	0.02	1,915.35	995.65	37.17	0.16	9.6			3.74	0.43	179,004.20	2.28
HM16JV008	C17MA21A0372	0.005	3.92	6.18	0.1	0.01	127.31	293.53	11.03	0.04	0.72			3.75	0.03	177,569.88	0.02
HM16JV008	C17MA21A0370	0.03	0.8	0.62	0.16	0.03	18.55	1,313.94	3.34	0.01	0.7			6.21	0.94	174,052.56	0.37
HM16JV008	C17MA21A0369	0.005	0.8	0.01	0.08	0.02	7.72	409.88	5	0.005	0.45			8.27	0.71	176,929.41	0.06
HM16JV008	C17MA21A0376	1.7	0.8	81.8	1.46	0.02	223.35	1,395.09	26.33	0.11	4.85			6.1	0.78	179,565.35	3.79
HM16JV008	C17MA21A0373	0.61	2.57	61.87	0.94	0.06	425.38	1,460.16	13.56	0.04	6.78			4.43	0.12	176,845.33	0.53
HM16JV008	C17MA21A0377	0.07	0.8	26.24	0.27	0.03	88.55	931.16	5.81	0.23	0.95			2.21	0.03	165,098.36	0.78
HM16JV008	C17MA21A0377	0.1	0.8	8.34	0.69	0.01	117.64	230.67	3.43	0.15	2.01			1.39	0.03	182,962.88	1.36
HM16JV008	C17MA21A0378	0.09	0.8	10.55	0.57	0.02	95.86	3,889.02	5	0.01	1.72			4.24	0.38	175,387.86	0.2
HM16JV008	C17MA21A0375	0.08	0.8	15.78	0.53	0.02	54.1	157.91	5	0.02	1.78			1.24	0.03	186,592.05	1.42
HM16JV008	C17MA21A0379	0.04	0.8	13.22	0.63	0.12	37.17	1,587.19	6.71	0.02	0.61			4.4	0.79	177,461.21	0.33
HM16JV008	C17MA21A0375	0.06	0.8	3.09	0.46	0.03	47.76	123.67	5	0.07	1.2			0.81	0.03	174,592.84	0.52
HM16JV009	E17JN15A034	1.47	0.8	1.99	1.64	0.29	163.25	1,878.50	20.76	0.02	0.1	48.77	58.96	54.83	0.69	178,566.90	2.05
HM16JV009	E17JN15A036	1.04	0.8	2.91	0.28	0.56	158.38	1,911.89	397.84	0.05	0.01	56.29	68.41	61.54	1.17	168,854.99	4.03
HM16JV009	E17JN15A030	1.08	0.8	5.67	0.29	0.29	145.47	1,096.49	7.19	0.005	0.09	52.48	64.02	58.77	0.75	180,095.52	3.52
HM16JV009	E17JN15A033	1.07	0.8	3.76	0.28	0.31	142.96	1,139.96	24.45	0.02	0.05	51.38	61.06	54.55	1.12	178,534.48	3.95
HM16JV009	E17JN15A031	1.08	0.8	0.8	0.17	0.33	148.37	1,097.24	7.46	0.02	0.06	42.57	54.28	49.48	0.42	179,978.58	2.29
HM16JV009	E17JN15A048	0.75	0.8	28.6	0.66	0.31	320.28	1,776.49	47.58	0.01	0.71	50.62	59.94	54.17	1.57	179,419.26	1.78
HM16JV009	E17JN15A038	1.15	0.8	0.23	0.29	0.31	169.87	931.18	6.63	0.01	0.09	29.17	36.7	34	0.19	177,080.31	1.16
HM16JV009	E17JN15A032	0.93	0.8	3.53	0.27	0.35	130.36	1,268.52	11.31	0.01	0.08	49.77	60.75	53.71	0.32	180,225.11	3.81
HM16JV009	E17JN15A047	0.87	0.8	0.58	0.19	0.28	162.3	2,186.78	5.86	0.02	0.01	54.4	69.82	64.12	3.2	179,361.50	2.52
HM16JV009	E17JN15A037	0.78	0.8	4.28	0.38	0.35	147.19	1,311.48	6.17	0.01	0.07	52.03	60.45	55.05	0.36	179,462.30	2.7
HM16JV009	E17JN15A046	0.64	0.8	0.01	0.025	0.19	136.83	792.16	5	0.02	0.01	27.15	37.01	33.8	0.03	171,981.62	1.47
HM16JV009	E17JN15A046	0.42	0.8	0.65	0.025	0.17	142.46	916.25	5	0.005	0.18	39.2	49	46.96	0.03	180,612.82	1.38
HM16JV009	E17JN15A045	0.53	0.8	0.05	0.26	0.17	132.7	1,008.83	6.36	0.02	0.08	47.17	61.38	56.19	0.28	181,582.29	1.93
HM16JV009	E17JN15A052	0.69	0.8	7.83	0.87	0.2	171.79	1,764.02	88.67	0.06	0.13	58.98	71.77	65.42	0.46	185,770.09	1.79
HM16JV009	E17JN15A052	0.3	0.8	9.05	5.2	0.17	165.39	1,580.88	242.75	0.01	0.05	59.87	73.75	66.59	1.13	176,531.65	1.63
HM16JV009	E17JN15A051	0.38	36.52	9.25	0.9	0.28	67.13	2,757.19	1,430.36	0.005	0.33	23	22.2	25.88	7.11	160,746.09	1.17
HM16JV009	E17JN15A050	0.18	43.78	4.6	0.79	0.05	136.91	918.16	100.79	0.005	0.01	11.03	14.57	12.23	0.84	157,863.10	0.76
HM16JV009	E17JN15A027	0.03	5.12	0.85	1.3	0.25	209.79	1,667.71	31.93	0.005	7.2	4.36	5.4	4.88	0.48	181,472.33	0.81
HM16JV009	E17JN15A028	0.05	14.52	12.96	1.05	0.22	745.91	2,429.87	75.61	0.005	2.97	5.97	7.83	7.31	0.34	170,758.81	1.01

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Hf178	K39	La139	Li7	Lu175	Mg24	Mn55	Na23	Nb93	Ni60	Pb206	Pb207	Pb208	Sb121	Si29	Sn118
HM16JV009	E17JN15A028	0.02	12.65	4.3	1.7	0.17	933.09	4,472.82	65.02	0.01	2.57	4.56	5.7	5.67	0.43	181,481.86	0.89
HM16JV009	E17JN15A029	0.04	13.35	8.7	0.96	0.34	1,043.03	2,480.60	49.56	0.01	6.38	3.73	4.52	4.23	0.42	178,890.95	0.51
HM16JV009	E17JN15A027	0.03	10.87	5.31	1.09	0.19	935.83	2,213.28	55.6	0.01	5.45	3.64	4.46	4.25	0.28	172,398.93	0.53
HM16JV009	E17JN15A029	0.04	8.36	5.81	1.3	0.12	341.86	2,266.84	36.91	0.005	5.72	3.51	3.96	4.06	0.53	183,793.42	0.59
HM16JV009	E17JN15A035	0.01	3.26	25.03	9.56	0.37	2,636.20	1,499.42	25.83	0.02	40.93	5.78	7.21	6.68	1.13	171,726.14	0.77
HM16JV009	E17JN15A049	0.005	8.58	6.91	0.32	0.02	120.93	336.18	44.29	0.01	0.61	9.1	11.28	10.43	0.48	177,970.33	0.62
HM16JV009	E17JN15A049	0.005	0.8	9.01	0.51	0.06	49.82	328.37	143.63	0.005	0.17	7.95	10.85	9.76	0.18	167,803.39	0.52
HM16JV013	C17MA20A0032	0.65	17.16	19.51	1.09	0.08	218.97	895.65	16.89	0.21	0.15			23.33	19.68	166,179.23	0.88
HM16JV013	C17MA20A0044	1.96	7.34	6.56	0.32	1.28	309.52	1,656.37	36.19	0.02	0.01			31.17	6.16	188,462.73	8.1
HM16JV013	C17MA20A0042	0.51	85	2,842.27	2.45	2.56	532.72	1,953.43	242.87	0.09	0.55			121.6	6.62	174,533.76	6.18
HM16JV013	C17MA20A0043	0.51	168.99	189.15	3.3	0.55	2,087.18	1,055.91	36.04	3.61	4.1			27.62	7.62	178,302.03	2.88
HM16JV013	C17MA20A0035	0.59	87.73	2,393.14	3.01	2.18	845.42	1,808.86	178.86	1.64	1.37			131.04	6.64	183,489.27	7.04
HM16JV013	C17MA20A0034	0.1	27.04	41.78	2.22	0.37	202.07	1,128.86	25.63	0.34	0.66			17.43	5.84	188,698.22	3.93
HM16JV015	C17MA20A0055	0.24	9.22	207.48	1.31	1.99	74.79	846	62.43	0.07	1.17			14.2	11.76	188,260.11	3.34
HM16JV015	C17MA20A0056	0.38	0.8	14.17	3.4	0.24	150.45	874.7	8.06	0.16	0.43			7.24	12.68	170,886.79	1.34
HM16JV015	C17MA20A0060	0.52	42.66	257.24	3.22	1.55	202.7	1,147.93	141.86	0.24	0.94			30.17	104.19	179,717.78	14.22
HM16JV015	C17MA20A0062	0.45	35.25	28.77	2.78	2.2	275	1,001.22	68.71	0.21	1.11			14.57	23.45	177,825.33	4.36
HM16JV015	C17MA20A0061	0.81	87.78	55.56	2.54	6.06	208.14	2,373.89	59.13	0.14	0.63			14.53	22.45	178,539.02	23.63
HM16JV015	C17MA20A0058	0.16	0.8	6.08	2.37	1.19	93.63	5,920.39	11.89	0.005	0.61			8.41	3.31	166,021.99	5.76
HM16JV015	C17MA20A0057	0.2	0.8	14.9	1.64	4.55	99.84	1,553.22	10.16	0.05	0.93			12.78	9.24	171,328.40	2.96
HM16JV015	C17MA20A0076	3.08	0.8	17.36	1.31	0.21	123.66	827.89	7.54	0.01	1.71			20.39	41.78	173,137.52	3.73
HM16JV015	C17MA20A0072	2.78	3.01	31.55	1.24	0.21	130.91	754.31	12.94	0.02	2.02			18.12	42.09	169,528.11	3.6
HM16JV015	C17MA20A0074	1.9	9	3.12	5.15	0.08	831.22	1,357.50	31.08	0.4	5.65			22.62	26.48	180,803.98	1.95
HM16JV015	C17MA20A0071	0.42	119.83	59.51	2.08	0.27	124.25	1,900.84	42.88	0.09	1.52			39.7	231.25	187,531.08	3.43
HM16JV015	C17MA20A0073	0.23	3.73	0.13	0.73	0.11	108.31	566.56	6.88	0	0.75			5.09	1.54	183,610.14	2.25
HM16JV015	C17MA20A0070	0.09	0.8	29.69	1.73	0.63	154.67	1,685.40	6.54	0.2	0.86			13.34	15.48	166,391.99	2.91
HM16JV015	C17MA20A0090	1.29	72.72	22.34	1.3	0.28	215.37	1,211.55	8.03	0.02	3.03			18.56	46.65	166,372.92	1.73
HM16JV015	C17MA20A0090	0.83	5.85	4.97	2.14	1.47	97.39	3,304.60	7.03	0.02	1.68			20.16	73.48	185,899.59	3.78
HM16JV015	C17MA20A0086	1.22	0.8	36.06	1.02	0.55	74.87	1,098.79	4.87	0.005	1.84			16.54	33.39	163,868.82	2.1
HM16JV015	C17MA20A0089	0.66	4.59	50.16	2.3	0.21	73.31	2,876.99	8.77	0.03	2.97			15.07	11.7	186,810.56	1.64
HM16JV015	C17MA20A0083	0.48	0.8	0.85	1.05	0.87	83.85	514.37	8.82	0.01	0.67			15.61	32.89	188,514.63	2.46
HM16JV015	C17MA20A0085	0.05	0.8	14.08	0.97	0.02	110.15	695.86	13.91	0.03	1.09			8.91	0.87	187,831.02	1
HM16JV015	C17MA20A0087	0.06	5.51	7.16	2.83	0.03	228.86	1,055.42	22.98	0.15	1.35			12.37	5.23	170,975.60	0.91
HM16JV015	C17MA20A0084	0.13	0.8	12.11	3.62	0.03	258.54	1,316.68	10.17	0.25	1.47			25.87	4.76	177,292.03	1.23
HM16JV015	C17MA20A0088	0.08	0.8	8.03	2.17	0.18	83.17	4,717.03	12.34	0	2.32			9.43	4.35	178,007.29	2.28
HM16JV019	E17JN14A422	0.96	16.12	50.24	3.33	0.25	297.52	962.94	31.54	0.64	0.52	60.64	77.99	72.48	3.02	177,024.93	2.91
HM16JV019	E17JN14A423	1.14	0.8	100.31	1.04	0.08	120.81	716.9	14.82	0.04	0.59	43.62	57.07	52.65	7.91	180,989.34	1.98
HM16JV019	E17JN14A398	0.84	190.59	112.71	4.12	0.07	650.12	1,611.09	188.08	0.28	3	23.78	29.17	27.05	6.5	177,343.39	1.19
HM16JV019	E17JN14A402	0.76	15.94	135.15	1.65	0.06	153.96	1,052.57	16.12	0.31	0.95	28.75	37.13	34.12	3.48	182,576.36	0.87
HM16JV019	E17JN14A409	0.81	0.8	49.27	3.57	0.12	104.86	1,356.60	17.54	0.07	0.53	44.47	56.48	52.94	8.17	181,538.08	1.65
HM16JV019	E17JN14A417	0.42	58.68	56.19	3.55	0.05	276.36	2,186.36	85.52	0.27	1.22	24.86	32.01	29.38	4.51	185,583.08	0.74
HM16JV019	E17JN14A410	0.51	4.92	38.04	2.83	0.25	89.79	1,328.17	14.67	0.07	0.22	45.77	58.37	53.33	2.63	183,114.86	1.24
HM16JV019	E17JN14A412	0.35	12.16	31.48	2.44	0.04	199.37	1,050.90	12.98	1.02	0.57	42.71	55.55	52.1	5.31	179,689.14	1.16
HM16JV019	E17JN14A418	0.35	4.1	84.35	1.62	0.04	124.98	1,153.28	20.33	0.42	0.86	27.08	33.87	32.26	2.64	189,380.73	0.79
HM16JV019	E17JN14A400	0.89	500.78	69.04	3.22	0.04	132.37	1,952.83	392.96	0.08	0.99	16.65	22.54	23.91	2.63	167,074.49	0.02
HM16JV019	E17JN14A421	0.43	51.64	40.4	8.43	0.08	137.04	3,056.34	16.9	0.05	0.31	36.99	45.61	42.75	1.61	185,721.48	1.4
HM16JV019	E17JN14A399	0.49	41.85	121.13	2.4	0.08	135.79	1,756.45	20.4	0.08	0.68	22.06	27.44	25.13	3.77	184,490.27	1.17
HM16JV019	E17JN14A418	0.19	3.2	28.28	0.84	0.02	114.04	1,087.11	13.74	0.13	0.8	23.62	30.94	26.82	2.35	177,049.15	0.46
HM16JV019	E17JN14A420	0.29	1.77	6.06	7.54	0.05	154.64	2,439.98	11.4	0.22	0.39	49.61	63.6	59.88	2.01	180,448.86	1.2
HM16JV019	E17JN14A396	0.27	0.8	19.56	0.96	0.04	133.98	1,028.06	7.87	0.12	0.68	18.36	23.24	22.16	2.33	179,838.22	0.51
HM16JV019	E17JN14A424	0.26	77.01	16.67	3.51	0.02	207.1	2,573.00	13.09	0.13	1.71	17.41	23.43	20.94	5.27	178,586.31	0.63
HM16JV019	E17JN14A411	0.26	3.95	47.8	3.81	0.06	125.32	1,275.81	24.76	0.29	0.52	64.51	83.97	78.63	7.87	175,615.02	1.32

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Hf178	K39	La139	Li7	Lu175	Mg24	Mn55	Na23	Nb93	Ni60	Pb206	Pb207	Pb208	Sb121	Si29	Sn118
HM16JV019	E17JN14A411	0.34	83.12	90.75	4.92	0.02	123.74	1,420.79	40.42	0.08	0.65	71.99	91.94	87.21	9.06	186,051.39	1.02
HM16JV019	E17JN14A415	0.18	0.8	31.31	1.26	0.02	184.64	491.24	5	0.96	0.69	19.39	25.7	23.95	1.05	173,048.72	0.73
HM16JV019	E17JN14A425	0.33	29.38	196.78	0.95	0.45	115.68	2,079.29	13.7	0.1	1.04	27.79	4.98	0.98	0.03	173,688.71	6.04
HM16JV019	E17JN14A419	0.17	30.46	24.96	8.29	0.07	1,698.02	659.13	12.44	0.1	7.6	20.87	27.13	24.76	1.56	178,519.95	0.71
HM16JV019	E17JN14A416	0.19	0.8	9.02	1.68	0.005	104.91	2,098.40	5	0.03	1.95	17.69	23.15	21.7	4.22	188,456.16	0.4
HM16JV019	E17JN14A419	0.17	23.47	34.95	26.84	0.04	5,664.48	794.98	18.32	0.08	44.98	17.65	21.44	20.61	1.13	185,267.64	0.64
HM16JV019	E17JN14A397	0.1	0.8	5.81	0.85	0.02	125.4	1,068.42	9.43	0.13	0.84	14.77	18.46	16.82	1.2	180,236.51	0.48
HM16JV019	E17JN14A400	0.18	331.18	35.4	2.94	0.03	123.65	1,651.60	1,843.98	0.06	0.66	18.69	24.38	21.17	1.6	182,523.57	0.67
HM16JV019	E17JN14A416	0.09	0.8	27.21	1.79	0.02	112.43	2,248.64	5	0.02	2.39	16.46	20.93	19.67	4.49	180,973.16	0.37
HM16JV019	E17JN14A401	0.08	3.32	98.73	4.08	0.1	147.86	2,789.32	22.19	0.06	0.74	35.74	44.69	40.98	5.29	185,016.31	1.12
HM16JV019	E17JN14A414	0.14	0.8	18.66	5.04	0.02	119.49	1,852.26	26.13	0.13	1.13	66.28	86.92	79.36	2.53	182,314.72	0.63
HM16JV019	E17JN14A415	0.03	0.8	18.21	0.75	0.01	125.01	523.31	5	0.32	1.71	27.02	35.73	32.48	2.66	185,308.00	0.51
HM16JV019	E17JN14A413	0.07	3.57	61.85	2.36	0.02	101.99	1,504.28	22.39	0.15	0.86	54.33	70.51	65.54	2.04	182,862.02	0.52
HM16JV020	E17JN14A453	2.09	29.94	1,295.64	0.67	3.18	76.95	1,014.20	55.23	2.61	0.51	49.86	14.85	23.51	0.03	182,463.20	13.88
HM16JV020	E17JN14A450	0.78	2.48	160.97	0.39	35.45	165.09	647.41	8.93	0.04	1.67	42.04	8.42	2.46	1.35	176,300.90	11.35
HM16JV020	E17JN14A453	0.73	2.64	1,243.36	0.55	1.37	83.2	1,319.15	9.25	15.33	1.15	34.87	7.09	4.16	0.3	168,810.91	13.9
HM16JV020	E17JN14A447	0.56	21.13	448.62	2.25	4.07	324.2	798.07	11.57	0.58	0.61	30.75	8.71	9	0.03	184,465.27	7
HM16JV020	E17JN14A445	0.41	2.99	447.64	0.41	7.32	79.03	668.79	11.89	0.37	0.37	10.33	3.94	4.09	0.34	174,459.82	7.34
HM16JV020	E17JN14A451	0.56	18.8	81.36	1.6	0.22	1,909.79	513.46	5	0.37	4.98	28.48	5.1	0.8	0.03	168,760.92	5.06
HM16JV020	E17JN14A444	0.32	4.88	69.99	0.63	0.21	42.73	1,948.00	5	0.04	1.98	22.17	4.48	1.96	0.03	181,497.73	10.61
HM16JV020	E17JN14A455	0.35	4.17	1,489.04	0.56	1.87	56.12	308.93	14.38	0.23	0.31	53.14	13.81	14.73	0.03	182,549.85	10.05
HM16JV020	E17JN14A449	0.25	0.8	17.94	1.09	0.06	45.81	1,058.39	5	0.005	0.7	5.18	1.21	0.31	0.03	161,506.00	5.61
HM16JV020	E17JN14A454	0.26	6.19	100.81	0.64	0.8	35.09	605.07	5	0.01	0.36	47.27	9.93	3.09	2.02	171,930.66	9.02
HM16JV020	E17JN14A444	0.13	0.8	193.1	0.6	0.11	44.1	2,716.86	5	0.01	1.71	11.83	3.13	2.08	0.03	173,956.45	4.99
HM16JV020	E17JN14A455	0.15	7.32	454.87	0.49	1.63	60	344.26	7.01	0.18	0.21	20.74	5.24	5.63	0.03	173,312.17	8.23
HM16JV020	E17JN14A446	0.06	0.8	90.16	0.36	5.62	102.96	264.94	5	0.8	0.24	6.13	2.27	2.08	0.03	181,557.77	9.2
HM16JV020	E17JN14A446	0.29	0.8	57.21	0.025	4.19	66.19	315.34	5	1.05	0.01	8.51	3.15	2.41	0.03	155,770.45	7.19
HM16JV023	E17JN14A240	10.82	149.82	2,522.49	3.83	1.39	1,091.90	810.36	206	4.04	5.17	59.46	14.69	32.25	0.03	161,619.89	6.4
HM16JV023	E17JN14A231	3.54	39.29	1,075.49	1.39	0.35	129.66	1,201.10	49.27	0.38	1.18	50.87	16.46	26.23	0.62	180,674.59	7.18
HM16JV023	E17JN14A239	3.5	104.2	446.74	0.96	0.2	139.9	2,349.76	38.2	0.29	1.76	31.57	8.82	16.85	0.22	174,557.53	5.61
HM16JV023	E17JN14A233	2.94	151.4	3,497.53	3.09	0.67	311.14	1,392.89	106.92	2.09	3.02	64.12	33.03	37.13	0.9	169,431.63	7.98
HM16JV023	E17JN14A240	3.37	48.82	759.01	2.56	1.14	1,035.46	846.31	49.06	35.4	6.12	37	8.25	15.86	0.53	176,562.81	12.53
HM16JV023	E17JN14A231	2.37	95.38	858.87	1.17	0.22	119.78	1,632.36	39.81	0.23	0.77	38	9.09	18.63	0.37	165,278.88	6.11
HM16JV023	E17JN14A244	1.66	10.41	576.88	0.66	0.8	75.41	652.29	554.23	0.2	1.35	44.08	12.08	27.64	0.03	170,864.73	10.19
HM16JV023	E17JN14A230	2.33	16.03	366.71	1	0.6	132.07	490.14	25.17	0.09	1.44	51.58	9.11	5.13	0.3	176,402.79	12
HM16JV023	E17JN14A234	2.22	12.74	983.2	0.53	4.31	103.75	251.74	37.03	0.15	0.53	53.34	10.37	6.99	0.58	170,516.63	9.59
HM16JV023	E17JN14A232	1.83	20.35	1,293.08	1.15	0.89	129.36	974.83	34.56	0.2	0.59	59.24	16.99	18.22	1.68	167,476.50	7.44
HM16JV023	E17JN14A242	1.22	360.65	341.23	1.26	1.08	246.61	715.83	52.4	0.35	1.56	19.13	2.89	9.47	0.03	158,829.12	5.6
HM16JV023	E17JN14A235	1.31	8.17	228.6	0.5	0.2	121.47	309.43	18.64	0.33	0.96	31.02	6.94	6.24	0.03	178,479.24	6.51
HM16JV023	E17JN14A245	1.23	67.43	122.91	0.025	0.34	74.28	2,051.49	1,443.70	0.005	2.43	22.46	3.47	2.77	0.03	157,386.80	7.94
HM16JV023	E17JN14A226	0.73	267.5	1,273.56	1.5	0.44	123.8	875.9	43.96	0.3	1.14	46.76	18.83	19.05	0.28	178,608.41	3.99
HM16JV023	E17JN14A236	0.67	57.77	413.12	0.96	0.97	106.19	1,413.22	128.34	0.26	1.63	22.55	5.36	14.39	0.28	171,517.22	9.4
HM16JV023	E17JN14A244	0.55	0.8	255.68	0.96	0.39	43.96	820.77	19.38	0.09	1.41	26.76	6.28	10.15	0.03	185,637.12	8.87
HM16JV023	E17JN14A243	0.35	0.8	2.64	0.025	0.23	55.7	141.07	5	0.37	0.01	4.63	1.2	0.47	0.03	161,023.74	4.2
HM16JV023	E17JN14A238	0.51	14.09	545.41	2.04	0.3	289.95	3,032.77	16.89	0.03	1.7	19.75	5.24	7.32	1.65	177,853.60	6.7
HM16JV023	E17JN14A227	0.68	0.8	6.41	0.23	0.19	107.14	396.24	5	0.21	0.49	12.74	2.28	0.85	0.03	176,263.26	6.23
HM16JV023	E17JN14A237	0.35	0.8	4.27	0.52	0.08	45.07	690.09	5.13	0.28	1.12	6.48	1.38	0.63	0.03	174,250.85	4.48
HM16JV023	E17JN14A228	0.08	59.94	32.42	0.37	0.52	55.26	687.31	5	0.1	0.31	10.52	1.93	3.23	0.03	169,292.05	5.09
HM16JV023	E17JN14A229	0.29	0.8	12.95	0.4	0.76	44.02	165.46	6.53	0.11	0.29	5.88	1.08	0.26	0.03	177,957.73	5.08
HM16JV028	C17MA20A0101	3.91	8,159.62	236.63	2.16	0.83	1,060.91	988.11	3,776.20	1.89	9.76			414.87	0.33	187,658.82	2.27
HM16JV028	C17MA20A0102	2.89	12.82	29.69	0.63	0.06	506.93	450.22	3.15	0.01	3.91			11.96	0.03	178,726.50	0.75
HM16JV028	C17MA20A0099	1.67	17.62	251.86	9.63	0.13	7,498.55	839.34	18.79	0.03	44.22			13.99	0.03	179,416.59	0.81

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Hf178	K39	La139	Li7	Lu175	Mg24	Mn55	Na23	Nb93	Ni60	Pb206	Pb207	Pb208	Sb121	Si29	Sn118
HM16JV028	C17MA20A0100	1.15	10.32	386.28	5.48	0.08	2,770.61	893.05	11.88	0.06	9.27			14.83	0.03	183,080.90	1.16
HM16JV028	C17MA20A0105	0.71	73.15	186.09	5.68	0.07	3,579.40	781.82	34.75	0.12	21.76			19.2	0.03	185,248.03	0.93
HM16JV028	C17MA20A0110	0.99	0.8	351.6	1.18	0.12	1,222.00	712.89	5	0.11	4.34			10.83	0.48	157,454.17	1.38
HM16JV028	C17MA20A0108	0.44	23.14	228.76	11.12	0.03	13,965.99	919.58	26.33	0.08	58.52			16.63	0.03	177,368.71	0.92
HM16JV028	C17MA20A0103	0.29	7.19	59.52	0.84	0.02	568.06	745.22	11.75	0.005	2.63			15.01	0.03	160,039.21	0.47
HM16JV028	C17MA20A0104	0.31	9.06	80.66	1.44	0.03	617.88	789.07	12.86	0.04	1.45			21.5	0.03	169,303.10	1.23
HM16JV028	C17MA20A0109	0.25	24.45	155.4	2.9	0.03	2,225.46	1,234.22	10.13	0.04	6.79			15.3	0.03	179,261.26	0.92
HM16JV028	C17MA20A0107	0.65	4.64	1,037.81	1.36	0.15	255.03	485.68	14.97	0.01	0.55			4.5	0.03	187,484.46	3.09
HM16JV028	C17MA20A0116	1.2	41.12	187.24	1.75	0.04	503.24	1,035.29	15.42	0.03	2.6			18.05	0.03	167,851.74	1.17
HM16JV028	C17MA20A0112	0.58	2.69	35.4	0.7	0.03	312.58	636	13.75	0.03	0.95			14.38	0.03	178,799.63	1.02
HM16JV028	C17MA20A0113	0.21	9.34	199.95	1.31	0.02	438.5	1,445.24	35.94	0.01	1.55			8.89	0.03	187,661.96	0.74
HM16JV028	C17MA20A0111	0.17	5.1	128.85	1.12	0.03	549.13	792.11	14.42	0.03	1.23			8.31	0.03	182,325.92	0.46
HM16JV028	C17MA20A0113	0.005	0.8	83.65	0.69	0.04	375.29	840.08	15.02	0.04	0.58			8.97	0.03	161,731.79	0.46
HM16JV028	C17MA20A0114	0.18	7.69	713.95	1.25	0.09	329.67	482.62	16.94	0.02	0.77			13.53	0.03	167,090.85	0.7
HM16JV032	C17MA21A0336	0.3	18.71	29.02	1.06	0.02	430.82	1,027.50	6.82	0.005	0.24			23.22	1.37	170,299.81	1.18
HM16JV032	C17MA21A0337	0.1	0.8	26.19	2.07	0.02	253.11	972.2	21.6	0.23	0.55			36	1.86	183,256.15	0.67
HM16JV032	C17MA21A0339	0.06	0.8	19.22	2.17	0.05	278.96	875.92	19.29	0.49	0.27			40.65	1.34	184,681.73	0.71
HM16JV032	C17MA21A0338	0.12	0.8	33.52	2.57	0.04	223.12	1,237.99	28.32	0.24	0.49			40.65	2.4	182,454.61	0.48
HM16JV032	C17MA21A0335	0.08	0.8	8.59	1.79	0.01	227.46	1,404.25	11.23	0.07	0.69			18.76	1.39	182,814.15	1.1
HM16JV032	C17MA21A0340	0.06	0.8	5.16	2.85	0.04	269.61	902.45	15.26	0.62	0.25			30.89	0.86	179,099.52	0.46
HM16JV032	C17MA21A0347	1.31	3.37	77.11	2.43	0.14	281.13	952.01	31.24	0.31	0.42			55.23	3.65	177,540.89	1.93
HM16JV032	C17MA21A0341	0.83	0.8	27.22	2.51	0.04	241.57	951.04	25.85	0.39	0.39			49.26	2.6	183,504.92	1.31
HM16JV032	C17MA21A0342	0.62	0.8	32.47	2.75	0.07	268.66	871.37	26.81	0.39	0.38			50.17	2.8	183,452.13	1.54
HM16JV032	C17MA21A0352	0.6	3.17	34.87	2.66	0.08	241.81	982.12	27.06	0.31	0.32			52.41	2.74	182,015.56	1.59
HM16JV032	C17MA21A0346	0.45	7.15	46.42	2.56	0.05	252.28	933.27	28.23	0.39	0.44			55.09	2.5	184,145.96	1.31
HM16JV032	C17MA21A0343	0.17	0.8	35.16	2.47	0.01	274.24	915.18	25.05	0.12	0.48			45.6	2.7	184,119.98	1.06
HM16JV032	C17MA21A0348	0.05	0.8	12.28	2.24	0	286.99	844.59	18.57	0.1	0.49			34.67	1.41	187,668.12	0.9
HM16JV032	C17MA21A0348	0.15	0.8	28.91	2.69	0.02	240.75	1,090.72	25.37	0.38	0.29			47.98	1.39	175,853.88	0.9
HM16JV032	C17MA21A0350	0.1	3.65	24.77	3	0.01	205.68	1,147.35	24.89	0.12	0.8			51.77	2.29	188,654.34	0.76
HM16JV032	C17MA21A0344	0.05	0.8	22.77	2.03	0.01	290.01	683.1	11.21	0.85	0.38			47.57	0.87	182,637.74	0.9
HM16JV032	C17MA21A0345	0.04	0.8	13.32	2.29	0.01	315.65	681.97	11.54	0.75	0.33			30.22	0.89	182,469.77	0.73
HM16JV032	C17MA21A0351	0.04	3.7	25.02	2.01	0.01	195.57	986.79	17.81	0.12	0.55			35.12	1.8	184,297.60	0.43
HM16JV032	C17MA21A0350	0.01	0.8	22.45	2.25	0.005	126.4	2,211.40	15.8	0.04	0.47			38.04	1.08	174,570.24	0.39
HM16JV032	C17MA21A0349	0.01	0.8	19.55	2.48	0.01	266.85	979.75	17.98	0.09	0.53			35.03	1.33	179,521.34	0.63
HM16JV032	C17MA21A0349	0.03	0.8	6.34	2.91	0.01	210.44	1,112.68	21.4	0.16	0.47			39.3	0.78	188,363.20	0.58
HM16JV036	E17JN15A197	4.52	217.68	21.12	2.81	0.03	439.23	558.29	45.64	0.02	0.6	22	28.13	25.72	0.03	184,487.63	3.34
HM16JV036	E17JN15A191	0.7	0.8	106.44	0.69	0.02	107.88	320.45	22.52	0.09	0.67	15.5	16.3	15.97	0.03	181,611.65	0.97
HM16JV036	E17JN15A189	1.07	11.32	292.12	2.31	0.03	757.82	547.02	46.34	0.06	1.82	13.76	15.04	13.23	0.03	174,526.27	0.97
HM16JV036	E17JN15A193	0.56	5.56	177	1.32	0.03	169.59	348.32	35.99	0.14	0.25	11	10.44	9.02	0.03	170,582.53	0.85
HM16JV036	E17JN15A187	0.51	0.8	3.36	1.1	0.02	128.02	811.57	9.53	0.03	1.46	8.63	9.24	8.64	0.03	177,098.64	0.47
HM16JV036	E17JN15A188	0.99	0.8	3.83	2.59	0.005	374.79	3,389.21	11.51	0.005	2.02	10.71	13.58	13.14	0.03	158,087.77	0.85
HM16JV036	E17JN15A192	0.91	4.69	124.19	3.93	0.03	1,748.37	572.64	39.87	0.05	3.94	13.81	14.63	13.29	0.03	173,402.76	0.61
HM16JV036	E17JN15A191	0.59	9.72	419.09	3.37	0.04	1,748.16	334	50.98	0.1	2.53	10.77	9.07	7.9	0.03	165,146.01	0.95
HM16JV036	E17JN15A182	1.93	0.8	92.41	1.35	0.06	549.88	250.65	5	0.005	1.36	7.36	4.91	3.92	0.03	162,707.11	0.77
HM16JV036	E17JN15A180	0.53	21.94	97.09	1.99	0.04	559.29	915.96	45.72	0.01	1.12	56.73	73.75	69.59	0.03	176,768.92	1.52
HM16JV036	E17JN15A196	0.05	8.66	34.88	0.28	0.12	49.95	913.41	16.5	0.01	0.2	70.09	93.83	85.95	0.19	168,041.14	2.45
HM16JV036	E17JN15A186	0.005	0.8	0.45	0.025	0.09	44.16	968.12	5	0.005	0.71	55.28	74.76	69.51	0.03	174,327.61	0.96
HM16JV037	C17MA20A0228	1.37	0.8	11.88	1.47	0.03	121.31	185.51	4.76	0.06	0.54			1.78	0.03	182,966.84	0.56
HM16JV037	C17MA20A0227	1.29	2.79	33.02	1.08	0.02	201.02	389.58	12.78	0.03	1.49			4.98	0.03	179,366.13	0.88
HM16JV037	C17MA20A0251	0.77	24.55	113.35	0.9	0.06	149.38	753.7	79.96	0.21	0.31			19.6	0.03	187,815.16	0.71
HM16JV037	C17MA20A0242	0.73	8.77	29.58	1.73	0.05	216.89	559.64	38.53	0.21	0.5			8.93	0.03	181,626.06	0.49
HM16JV037	C17MA20A0254	0.6	6.28	47.72	1.12	0.03	185.36	930.08	32.73	0.09	0.54			10.03	0.03	177,421.44	0.66

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Hf178	K39	La139	Li7	Lu175	Mg24	Mn55	Na23	Nb93	Ni60	Pb206	Pb207	Pb208	Sb121	Si29	Sn118
HM16JV037	C17MA20A0226	0.74	0.8	63.33	1.13	0.03	95.33	973.51	16.21	0.14	1.09			12.44	0.03	187,633.01	0.69
HM16JV037	C17MA20A0253	0.59	7.1	78.33	1.1	0.04	175.7	1,267.16	30.92	0.12	0.94			13.72	0.03	178,576.20	0.85
HM16JV037	C17MA20A0250	0.54	0.8	14.17	1.05	0.01	231.08	311.92	14.71	0.04	1.49			2.87	0.03	163,391.79	0.27
HM16JV037	C17MA20A0229	0.39	12.52	20.25	2.01	0.02	251.69	948.42	9.67	0.04	0.68			5.97	0.13	173,117.69	0.57
HM16JV037	C17MA20A0240	0.26	7.04	20.95	1.84	0.04	350.24	860.18	37.85	0.06	0.93			8.1	0.1	182,160.45	0.61
HM16JV037	C17MA20A0246	0.41	3.48	2.47	1.6	0.06	123.48	893.33	5	0.35	0.56			3.11	0.03	177,837.71	0.83
HM16JV037	C17MA20A0245	1.7	0.8	0.87	0.77	0.03	46.6	911.45	5	0.005	0.67			5.01	0.03	168,009.76	0.2
HM16JV037	C17MA20A0251	0.39	52.03	67.19	1.43	0.05	103.86	1,852.21	40.37	0.17	0.52			12.24	0.03	180,191.81	1.16
HM16JV037	C17MA20A0247	0.37	0.8	11.16	0.99	0.04	52.39	951.75	2.74	0.02	0.5			7.52	0.03	179,027.39	0.54
HM16JV037	C17MA20A0249	0.35	6.56	20.03	1.56	0.02	169.6	1,883.19	10.18	0.09	0.89			5.78	0.03	178,770.19	0.73
HM16JV037	C17MA20A0243	0.34	9.13	50.06	1.27	0.04	134.7	1,835.10	13.99	0.15	0.87			10.28	0.03	176,871.92	0.49
HM16JV037	C17MA20A0255	0.22	4.11	7.09	0.89	0.04	107.86	517.46	14.09	0.02	3.85			3.71	0.03	178,143.61	0.48
HM16JV037	C17MA20A0252	0.27	2.84	22.1	1.37	0.04	127.11	1,639.90	8.44	0.04	0.52			6.91	0.03	171,293.00	0.62
HM16JV037	C17MA20A0238	0.14	0.8	7.08	1.45	0.01	109.98	1,785.07	8.65	0.02	2.08			3	0.03	176,965.22	0.71
HM16JV037	C17MA20A0225	0.16	13.48	36.66	1.95	0.03	242.06	2,129.26	25.83	0.09	1.34			7.46	0.03	179,927.92	0.68
HM16JV037	C17MA20A0250	0.14	5.55	16.75	1.74	0.02	163.47	2,693.08	16.97	0.03	0.91			7.63	0.03	182,569.48	1.1
HM16JV037	C17MA20A0241	0.1	21.02	38.41	2.15	0.03	343.44	230.42	26.98	0.06	0.68			6.44	0.03	182,808.67	0.24
HM16JV037	C17MA20A0244	0.23	0.8	14.21	0.37	0.04	37.9	700.98	9	0.02	0.22			3.97	0.03	175,977.46	0.45
HM16JV037	C17MA20A0230	0.08	7.05	18.69	1.05	0.04	145.1	2,211.30	9.94	0.06	0.26			7.62	0.03	176,701.19	0.68
HM16JV037	C17MA20A0239	0.05	10.11	21.01	2.27	0.03	265.1	2,815.83	31.31	0.04	0.96			7.29	0.03	179,346.13	0.54
HM16JV037	C17MA20A0231	0.01	5.73	4.43	1.69	0.05	97.16	1,536.88	16.02	0.005	3.17			6.23	0.13	178,425.12	0.47
HM16JV037	E17JN14A047	1.58	0.8	2.02	0.025	0.13	36.6	151.79	5	0.01	0.34	17.13	17.47	16.38	0.46	163,450.28	3.03
HM16JV037	E17JN14A045	1.2	71.7	84.03	0.025	0.1	47.34	269.43	5	0.005	0.67	18.32	16.18	16.72	0.03	160,173.04	1.05
HM16JV037	E17JN14A055	2.87	0.8	0.08	0.54	0.04	51.21	821.92	5	0.05	0.49	5.91	7.34	6.81	0.03	167,943.83	25.16
HM16JV037	E17JN14A057	1.37	6.65	44.44	3.49	0.15	105.7	632.47	32.6	0.26	0.13	6.28	7.47	6.78	0.03	185,529.46	14.83
HM16JV037	E17JN14A061	0.52	38.28	173.59	3.09	0.12	848.91	943.93	30.06	0.03	1.41	10.97	10.27	10.81	0.44	182,087.58	1.27
HM16JV037	E17JN14A057	0.63	7.93	82.73	1.73	0.12	91.9	1,255.09	24.07	0.22	0.25	5.43	6.46	6.27	0.03	170,433.12	14.8
HM16JV037	E17JN14A061	0.64	22.36	168.25	3.12	0.05	1,100.85	1,020.19	41.18	0.16	1.95	9.35	8.95	9.01	0.03	177,797.28	1.09
HM16JV037	E17JN14A055	0.7	10.21	0.05	2.91	0.06	64.68	974.11	36.66	0.18	0.24	4.79	5.89	5.45	0.03	179,199.37	10.74
HM16JV037	E17JN14A035	0.34	3.51	46.28	1.17	0.07	169.33	960.79	9.37	0.005	0.46	5.71	5.58	4.77	0.03	180,952.94	0.97
HM16JV037	E17JN14A044	0.3	10.89	131.03	3.23	0.04	235.65	3,447.94	35.67	0.08	0.36	9.94	8.06	8.17	0.03	187,088.68	0.78
HM16JV037	E17JN14A054	0.25	2.82	29.89	1.44	0.14	242.35	265.22	5	0.13	0.3	2.55	2.92	2.57	0.03	181,030.65	5.55
HM16JV037	E17JN14A036	0.15	9.99	5.51	1.81	0.01	360.06	465.13	51.55	0.005	0.42	4.93	5.36	5.15	0.03	172,608.79	0.63
HM16JV037	E17JN14A048	0.17	11.27	32.86	4.47	0.11	1,622.43	606.62	97.2	0.03	2.44	8.77	8.43	7.51	0.03	174,361.91	0.96
HM16JV037	E17JN14A046	0.04	0.8	15.83	1.62	0.17	98.83	824.52	7.75	0.01	0.54	11.23	11.09	10.83	0.03	184,519.30	0.56
HM16JV037	E17JN14A036	0.09	5.24	3.76	2.34	0.02	134.22	521.14	30.35	0.01	0.4	4.61	5.47	4.76	0.03	182,065.56	0.77
HM16JV037	E17JN14A033	0.26	8.73	73.33	1.9	0.07	729.77	675.57	42.55	0.02	1.47	8.31	8.07	6.06	0.03	169,241.70	0.93
HM16JV037	E17JN14A046	0.02	0.8	3.02	1.74	0.12	88.55	917.08	11.24	0	0.71	10.11	10.48	9.32	0.03	175,224.47	0.54
HM16JV037	E17JN14A058	0.25	4.31	34.09	0.93	0.53	218.71	1,199.09	19.47	0.02	0.23	76.58	99.17	93.05	0.03	176,032.27	5.7
HM16JV037	E17JN14A037	0.06	0.8	6.26	2.55	0.02	76.64	1,982.64	23.22	0.005	0.84	7.37	5.17	4.24	0.03	182,203.01	0.49
HM16JV037	E17JN14A035	0.12	0.8	54.17	0.64	0.06	376.65	1,295.91	5	0.005	0.39	5.78	5.2	5.54	0.03	158,742.84	0.81
HM16JV037	E17JN14A052	0.13	20.3	140.28	2.03	0.04	297.87	833.23	14.62	0.06	0.74	7.15	7.75	6.35	0.03	179,928.64	0.8
HM16JV037	E17JN14A037	0.08	8.22	27.01	3.06	0.03	92.81	2,887.26	59.86	0.01	0.42	7.03	4.72	4.12	0.43	168,088.89	0.67
HM16JV037	E17JN14A049	0.03	0.8	7.68	1.1	0.01	84.29	1,116.29	8.92	0.005	0.72	4.98	6.58	5.88	0.03	180,399.87	0.78
HM16JV037	E17JN14A052	0.04	7.66	213.7	1.7	0.04	254.91	1,198.50	18.77	0.03	0.6	7.64	8.87	8.5	0.03	165,704.43	1.03
HM16JV037	E17JN14A054	0.07	0.8	39.45	1.11	0.14	152.05	273.45	5	0.07	0.08	3.22	3.36	3.24	0.03	171,030.84	2.26
HM16JV037	E17JN14A060	0.02	0.8	77.61	1.31	0.09	40.79	1,698.22	5.72	0.02	0.08	7.46	8.68	8.14	0.27	170,526.64	0.34
HM16JV037	E17JN14A062	0.11	1.94	60.67	0.025	0.02	21.12	300.44	5	0.01	0.01	4.38	5.29	5	0.03	173,306.37	0.62
HM16JV037	E17JN14A051	0.04	5.07	159.7	0.74	0.11	77.88	511.32	33.25	0.11	0.18	16.97	20.24	19.33	0.29	180,142.89	0.86
HM16JV037	E17JN14A032	0.05	8.83	99.01	1.89	0.08	108	1,789.93	41.88	0.06	0.14	12.79	16.2	14.97	0.37	175,459.06	0.97
HM16JV037	E17JN14A050	0.01	5.77	24.19	1.35	0.02	89.12	1,409.91	5	0.005	0.01	4.9	5.55	4.97	0.03	176,125.77	0.75
HM16JV037	E17JN14A034	0.06	10,935.00	88.48	1.94	0.06	349.92	1,064.99	488.3	0.04	0.61	7.67	8.53	8.03	0.21	185,380.74	0.66

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Hf178	K39	La139	Li7	Lu175	Mg24	Mn55	Na23	Nb93	Ni60	Pb206	Pb207	Pb208	Sb121	Si29	Sn118
HM16JV037	E17JN14A056	0.05	0.8	8.53	0.54	0.09	27.52	1,116.76	5	0.02	0.08	4.16	4.4	3.94	0.03	171,893.78	1.59
HM16JV037	E17JN14A050	0.03	0.8	67.29	1.57	0.03	176.97	845.74	20.18	0.02	0.16	5.9	5.69	5.01	0.03	167,715.14	0.82
HM16JV037	E17JN14A049	0.08	0.8	13.91	0.45	0.01	41.03	548.29	7.81	0.005	0.12	4.09	4.79	4.93	0.03	161,590.90	0.5
HM16JV037	E17JN14A059	0.03	0.8	18.88	0.58	0.06	28.38	1,558.31	5	0.005	0.62	7.47	8.03	7.7	0.25	169,653.16	0.59
HM16JV038	E17JN14A074	0.005	0.8	0.06	0.025	0.02	21.12	160.97	5	0	0.01	2.52	2.43	2.22	0.03	175,585.48	0.59
HM16JV038	E17JN14A081	0.7	69.36	14.88	0.025	0.05	342.45	827.81	59.51	0.005	0.01	30.08	28.55	28.78	0.03	158,817.30	1.87
HM16JV038	E17JN14A076	0.44	0.8	58.55	0.025	0.05	41.59	1,345.21	5	0.03	0.01	20.62	21.7	18.94	0.03	163,001.77	3.79
HM16JV038	E17JN14A071	0.51	0.8	4.95	0.38	0.03	82.02	680.94	5	0.01	0.24	13.23	10.53	9.61	0.03	169,159.97	0.73
HM16JV038	E17JN14A067	0.38	376.55	56.78	3.72	0.005	2,365.36	655.68	93.53	0.2	0.5	15.2	12.83	11.8	0.03	159,079.69	1.85
HM16JV038	E17JN14A064	0.65	0.8	0.43	0.22	0.02	47.01	668.97	5	0.005	0.12	14.27	13.76	11.95	0.03	180,135.58	0.69
HM16JV038	E17JN14A083	0.64	63.16	12.84	0.025	0.02	151.97	574.45	50.39	0.01	0.01	15.12	17.77	15.32	0.03	162,001.53	2.17
HM16JV038	E17JN14A068	0.31	3.39	9.61	0.7	0.04	157.35	630.85	20.28	0.005	0.28	8.62	7.74	6.86	0.03	177,366.14	0.93
HM16JV038	E17JN14A077	0.005	0.8	15.45	0.025	0.005	51.81	1,222.83	5	0.005	0.43	20.27	25.91	20.91	0.03	161,433.66	3.78
HM16JV038	E17JN14A065	0.3	4.66	7.41	0.025	0.01	27.31	821.17	5	0.02	0.27	28.86	32.3	29.48	0.03	176,553.89	1.59
HM16JV038	E17JN14A091	0.41	0.8	2.74	0.49	0.02	71.53	579.57	15.68	0.005	0.32	18.75	18.62	16.48	0.03	175,026.30	1.75
HM16JV038	E17JN14A080	0.32	3.2	17.32	0.34	0.01	82.34	533.81	24.16	0.005	0.22	13.66	13.25	12.09	0.03	174,852.42	0.74
HM16JV038	E17JN14A092	0.31	0.8	6.19	0.025	0.02	22.24	482.32	11.5	0.005	0.15	42.3	48.76	44.75	0.03	170,467.09	2.51
HM16JV038	E17JN14A093	0.11	0.8	15.05	0.3	0.04	57.75	763.68	10.13	0.01	0.07	9.19	8.91	7.78	0.03	173,113.60	2.3
HM16JV038	E17JN14A066	0.08	11.59	7.44	0.54	0.22	36.64	1,176.23	18.71	0.005	0.01	14.8	12.94	11.32	0.03	160,372.39	3.89
HM16JV038	E17JN14A069	0.18	0.8	3.36	0.37	0.02	121.38	505.98	5	0.005	0.28	7.32	5.66	5.1	0.03	178,900.35	0.71
HM16JV038	E17JN14A078	0.51	0.8	5.41	0.81	0.05	475.91	487.58	5	0.04	0.01	12.85	11.18	8.54	0.03	158,620.23	0.58
HM16JV038	E17JN14A072	0.14	0.8	11.76	0.26	0.07	19.47	501.03	5	0.01	0.01	22.48	21.04	19.42	0.03	178,075.77	1
HM16JV038	E17JN14A073	0.13	2.54	0.95	0.46	0.04	37.14	949.74	17.45	0.005	0.09	13.3	12.56	10.95	0.03	175,846.47	0.59
HM16JV038	E17JN14A075	0.25	12.01	26.75	0.26	0.04	71.49	646.53	5.7	0.04	0.25	12.32	12.74	11.68	0.03	173,302.52	0.92
HM16JV038	E17JN14A064	0.16	0.8	1.58	0.44	0.06	31.41	1,004.91	5	0.005	0.01	13.69	10.37	10.19	0.03	166,844.89	0.6
HM16JV038	E17JN14A084	0.15	0.8	2.71	0.24	0.09	16.79	524.59	5	0.005	0.13	16.44	14.07	11.81	0.03	176,833.40	8.63
HM16JV038	E17JN14A072	0.06	0.8	13.64	0.16	0.18	10.82	840.33	9.56	0.01	0.01	35.12	35.62	32.55	0.03	171,660.66	1.2
HM16JV038	E17JN14A063	0.11	1.98	2.52	0.31	0.08	46.12	961.67	5	0.01	0.07	17.77	16.3	13.86	0.03	175,136.84	0.93
HM16JV038	E17JN14A070	0.21	0.8	0.75	0.24	0.15	123.7	410.96	5	0.04	0.09	16.03	10.35	8.96	0.03	177,422.81	1.92
HM16JV038	E17JN14A079	0.04	36.82	3.27	0.025	0.02	92.7	526.24	11.53	0.2	0.01	10.08	11.17	9.73	0.03	175,427.76	0.66
HM16JV038	E17JN14A066	0.09	3.25	55.38	0.025	0.06	21.18	774.64	7.36	0.01	0.01	15.32	14.91	13.83	0.03	183,119.55	2.32
HM16JV039	E17JN14A108	1.13	0.8	63.01	0.39	0.01	64.39	215.06	9.29	0.005	0.11	7.34	7.42	7.17	1.87	170,432.93	1.41
HM16JV039	E17JN14A109	0.98	0.8	8.59	0.24	0.01	55.81	178.99	17.05	0.01	0.13	3.94	4.29	4.02	0.03	174,820.08	0.96
HM16JV039	E17JN14A096	1.63	23.11	56.66	0.65	0.02	128.16	1,667.46	52.94	0.08	0.13	16.53	15.3	14.3	0.03	170,776.67	1.55
HM16JV039	E17JN14A103	0.67	0.8	2.69	2.32	0.01	135.53	200.38	18.99	0.01	0.01	1.15	0.72	1.18	0.03	184,968.46	0.97
HM16JV039	E17JN14A095	1.03	51.1	96.77	2.05	0.02	356.49	1,665.71	67.39	0.1	0.32	16.18	15.08	13.32	0.03	169,589.80	2.47
HM16JV039	E17JN14A103	0.41	0.8	6.12	3.45	0.005	231.17	327.62	22.05	0.01	0.01	2.38	2.07	2.28	0.03	176,382.47	0.65
HM16JV039	E17JN14A103	0.29	0.8	0.37	2.47	0.01	158.72	210.5	5	0.03	0.01	1.14	1.41	0.98	0.03	167,841.18	0.66
HM16JV039	E17JN14A105	0.41	0.8	3.95	0.74	0.01	28.37	1,210.45	5	0.01	0.01	4.81	5.39	5.01	0.8	173,960.41	0.79
HM16JV039	E17JN14A103	1.27	0.8	0.45	0.025	0.09	132.12	172.77	5	0.005	0.01	1.07	2.2	1.21	0.03	156,869.66	0.02
HM16JV039	E17JN14A100	0.37	0.8	4.52	1.41	0	46.3	2,343.56	5.29	0.005	0.01	4.27	5.06	4.67	1.73	172,582.70	0.92
HM16JV039	E17JN14A112	0.35	0.8	1.38	2.64	0	177.37	640.38	10.76	0.04	0.06	1.56	1.82	1.6	0.03	176,349.24	0.58
HM16JV039	E17JN14A107	0.27	0.8	52.38	2.22	0.01	65.09	4,517.87	20.53	0.01	0.07	4.95	5.15	5.02	0.03	179,711.14	0.87
HM16JV039	E17JN14A107	0.31	0.8	21.97	2.38	0.03	67.83	4,776.02	10.68	0.01	0.01	3.45	3.73	3.46	0.03	170,068.62	0.79
HM16JV039	E17JN14A097	0.09	0.8	31.88	1.88	0.01	42.49	465.84	12.76	0.02	0.01	3.38	4.24	4.1	0.03	180,250.11	0.56
HM16JV039	E17JN14A097	0.19	0.8	74.5	2.18	0	29.68	498.96	7.96	0.03	0.17	3.12	3.65	3.48	0.03	170,709.29	0.49
HM16JV039	E17JN14A094	0.19	87.73	185.96	3.77	0	350.16	964.87	27.23	0.04	0.01	28.72	35.86	34.06	0.03	166,229.26	2.32
HM16JV039	E17JN14A098	0.11	0.8	1.64	1.19	0.005	32.61	2,410.82	9.57	0.005	0.01	3.43	4.08	3.93	0.97	167,005.09	0.55
HM16JV039	E17JN14A101	0.13	0.8	75.72	1.35	0	50.36	2,674.45	22.59	0.01	0.16	3.21	3.37	3.13	0.03	172,834.71	0.8
HM16JV039	E17JN14A110	0.005	0.8	7.47	2.05	0.005	53.27	3,617.37	17.87	0.005	0.01	2.7	3.4	2.93	0.03	172,159.89	0.8
HM16JV039	E17JN14A099	0.05	0.8	1.26	1.57	0.005	41.62	3,471.98	8.65	0.005	0.01	3.61	4.16	3.96	0.69	171,224.27	0.79
HM16JV039	E17JN14A110	0.08	2.22	107.53	1.88	0.005	52.58	3,279.99	28.28	0.03	0.06	3.8	3.87	4.03	0.24	175,771.98	1.07

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Hf178	K39	La139	Li7	Lu175	Mg24	Mn55	Na23	Nb93	Ni60	Pb206	Pb207	Pb208	Sb121	Si29	Sn118
HM16JV039	E17JN14A098	0.1	0.8	6.2	2.22	0.005	54.48	3,805.70	19.29	0.005	0.09	2.54	3.5	3.21	0.72	178,664.36	0.74
HM16JV039	E17JN14A111	0.04	0.8	3.03	5.49	0	92.06	4,068.60	12.25	0.005	0.07	2.22	2.83	2.54	0.03	179,090.06	0.57
HM16JV039	E17JN14A094	0.03	24.18	96.11	0.62	0.01	99.51	2,160.66	15.51	0.005	0.01	101.06	131.43	122.8	0.03	180,776.38	3.83
HM16JV039	E17JN14A114	0.1	70.86	107.82	0.33	0.02	96.78	3,883.61	24.25	0.91	0.12	115.29	148.2	138.39	0.03	177,505.20	6.59
HM16JV039	E17JN14A106	0.11	0.8	2.4	0.025	0	25.07	488.88	5	0.01	0.01	5.63	5.51	5.16	0.03	173,754.58	0.81
HM16JV039	E17JN14A102	0.05	0.8	6.08	1.87	0.005	60.93	4,332.83	11.23	0.02	0.01	1.6	1.52	1.45	0.03	174,973.83	0.88
HM16JV039	E17JN14A104	0.01	0.8	9.17	5.55	0.005	94.79	4,372.03	10.01	0.01	0.09	2.89	3.5	3.12	0.03	174,757.78	0.66
HM16JV053	E17JN15A284	0.84	6.69	935.47	0.5	0.14	68.75	2,487.30	48.96	0.06	0.13	13.75	9.49	9.63	0.34	172,629.89	2.59
HM16JV053	E17JN15A277	1.11	140.38	849.99	1.04	0.14	119.86	1,412.29	57.2	0.03	0.01	17.13	9.63	9.96	0.29	177,669.75	2.94
HM16JV053	E17JN15A264	0.65	6.94	481.43	1.2	0.12	61.21	1,737.54	46.37	0.09	0.01	11.54	6.38	5.74	0.03	183,464.03	3.08
HM16JV053	E17JN15A286	0.73	6.14	903.18	0.71	0.16	60.59	1,437.25	51.44	0.05	0.19	17.21	12.12	10.93	0.33	176,634.41	2.51
HM16JV053	E17JN15A269	0.78	107.22	413.58	1.98	0.29	567.69	1,185.11	5	0.005	0.01	9	7	4.05	0.03	157,817.40	2.05
HM16JV053	E17JN15A263	0.74	4.52	663.2	0.75	0.15	61.97	974.88	45.29	0.06	0.07	13.81	6.99	6.28	0.21	172,248.41	2.52
HM16JV053	E17JN15A279	0.45	283.24	384.18	1.96	0.13	350.52	1,133.60	5	0.12	0.01	11	7.35	6.59	0.03	154,984.20	3.79
HM16JV053	E17JN15A285	0.84	7.6	688.62	0.46	0.09	63.24	2,995.49	34.46	0.005	0.01	11.38	9.21	11.18	0.03	165,963.17	2.16
HM16JV053	E17JN15A266	0.51	231.39	513.44	0.025	0.11	105.37	2,033.15	100.12	0.1	0.39	13.2	6.11	7.7	0.03	158,343.72	1.66
HM16JV053	E17JN15A282	1.53	0.8	2.36	1.35	0.02	301.1	915.44	6.45	0.03	0.29	18.43	19.21	17.71	0.13	176,375.99	1.68
HM16JV053	E17JN15A261	0.65	5.93	558.68	1.22	0.16	96.13	832.32	36.69	0.05	0.11	17.81	7.45	5.87	0.14	173,034.31	2.47
HM16JV053	E17JN15A283	0.005	272.17	420.24	0.95	0.17	62.44	2,416.97	5	0.005	0.74	14.1	8.89	7.42	0.03	162,148.75	2.38
HM16JV053	E17JN15A270	0.31	0.8	202.85	0.65	0.07	74.51	1,821.85	5	0.04	0.13	11.45	6.23	5.19	0.77	156,849.16	1.87
HM16JV053	E17JN15A264	0.38	0.8	564.57	1.24	0.15	114.46	1,103.78	22.49	0.09	0.01	13.68	6.17	5.35	0.03	166,289.66	2.25
HM16JV053	E17JN15A278	0.84	0.8	2.56	1.94	0.05	471.06	570.72	9.55	0.03	0.31	20.64	15.08	13.46	0.32	176,537.56	1.94
HM16JV053	E17JN15A268	0.43	2.87	207.57	0.75	0.08	57.93	2,186.91	11.05	0.01	0.23	12.72	9.45	8.31	0.15	176,524.99	2.02
HM16JV053	E17JN15A267	0.32	900.47	118.89	2.75	0.07	504.54	2,431.71	81.67	0.02	0.33	16.34	12.5	12.9	0.41	177,430.51	4.23
HM16JV053	E17JN15A265	0.5	115.74	96.63	0.67	0.05	78.07	1,970.80	5	0.13	0.14	7.3	4.86	5.78	0.03	164,813.46	2.35
HM16JV053	E17JN15A262	0.06	21.32	147.85	0.55	0.12	72.6	988.23	15.36	0.03	0.01	15.62	6.72	5.61	0.03	183,141.84	2.89
HM16JV053	E17JN15A261	0.17	20.14	43.84	1.29	0.05	32.56	919.7	5	0.005	0.01	9.99	3.68	3.27	0.03	184,545.31	2.08
HM16JV064	E17JN15A089	1.94	9.29	25.55	0.91	0.13	334.72	2,200.64	5	1.07	2.28	7.05	7.5	7.05	0.03	179,958.52	0.41
HM16JV064	E17JN15A365	4.14	42.71	1,038.13	5.27	3.6	1,474.84	1,142.83	57.08	1.17	1.77	50.42	24.9	33.07	0.24	169,103.24	4.59
HM16JV064	E17JN15A089	2.76	0.8	111.31	0.82	0.41	470.7	234.26	59.48	2.29	0.78	3.36	3.32	3.7	0.03	163,574.70	0.02
HM16JV064	E17JN15A092	1.2	0.8	103.15	0.025	0.17	83.09	529.3	5	0.05	0.88	4.49	5.34	4.32	0.03	156,224.30	0.33
HM16JV064	E17JN15A091	0.77	0.8	27.38	0.25	0.11	21.26	746.21	18.22	0.01	1.36	4.55	5.89	5.8	0.03	180,781.82	0.36
HM16JV064	E17JN15A090	0.62	5.65	13.95	0.95	0.11	271.68	2,196.75	23.5	2.73	1.29	5.53	7.01	6.29	0.19	162,580.70	0.4
HM16JV064	E17JN15A096	0.5	14.59	59.88	1.57	0.14	459.31	346.32	8.93	0.06	1.38	3.34	4.06	3.55	0.03	181,034.58	0.42
HM16JV064	E17JN15A096	0.53	11.41	59.58	1.77	0.1	751.26	661.52	14.62	5.09	2.81	2.41	2.99	2.59	0.03	169,134.40	0.32
HM16JV064	E17JN15A093	0.48	3.33	21.46	1.31	0.08	841.48	479.9	26.52	0.02	2.29	3.64	4.56	3.91	0.03	165,269.48	0.39
HM16JV064	E17JN15A092	0.37	0.8	22.15	0.5	0.16	204.19	1,185.92	5	0.005	2.04	2.56	3.68	2.99	0.03	183,397.80	0.32
HM16JV064	E17JN15A094	0.22	98.11	10.93	0.025	0.13	54.35	1,527.92	5	0.005	0.01	3.88	7.52	5.83	0.03	157,030.21	0.02
HM16JV064	E17JN15A093	0.23	53.35	16.86	0.77	0.18	311.36	1,122.30	23.92	0.005	1	4.94	6.75	6.06	0.16	178,674.31	0.38
HM16JV064	E17JN15A095	0.2	6.77	86.37	2.41	0.12	1,279.04	694.44	14.38	0.35	4.22	1.82	1.85	2.29	0.03	161,240.36	0.31
HM16JV064	E17JN15A094	0.32	19.38	8.95	0.39	0.02	61.26	479.55	20.16	0.02	0.36	1.48	2.4	2.46	0.03	186,079.83	0.4
HM16JV064	E17JN15A090	0.17	4.47	68.49	1.04	0.51	313.28	2,985.11	17.09	0.93	1.44	3.55	3.69	3.71	0.49	178,631.07	0.53
HM16JV064	E17JN15A095	0.14	0.8	23.83	0.5	0.42	145.94	1,426.46	5	0.005	0.69	2.72	2.9	2.87	0.03	183,138.01	0.18
HM16JV064	E17JN15A364	0.1	73.46	0.08	14.15	0.12	6,333.66	407.29	33.24	1.17	8.46	1.25	1.54	1.54	0.03	206,469.44	1.25
HM16JV068	E17JN15A124	3	4.25	323.4	1.78	0.97	217.91	1,410.26	46.72	0.43	0.9	13.2	14.49	16.2	1.17	167,813.38	1.12
HM16JV068	E17JN15A119	0.43	9.88	344.15	0.66	0.64	158.33	1,244.19	85.28	0.51	0.01	19.28	22.66	20.62	1.49	162,669.96	0.99
HM16JV068	E17JN15A123	0.4	15.84	122.36	1.43	1.53	141.92	1,844.38	22.25	0.41	0.51	9.63	10.99	9.93	1.4	177,434.23	0.96
HM16JV068	E17JN15A122	0.33	3.85	138.6	1.11	0.92	93.31	1,091.02	23.07	0.18	0.68	7.58	7.92	7.97	0.95	178,086.11	0.76
HM16JV068	E17JN15A115	0.68	35.02	66.36	1.46	0.48	139.59	1,316.93	613	0.05	0.15	9.09	12.72	13.04	0.46	158,409.01	1.73
HM16JV068	E17JN15A121	0.24	9.19	149.47	1.85	0.46	173.67	2,324.41	20.54	0.14	1.59	9.94	11.7	10.52	0.92	176,909.09	0.6
HM16JV068	E17JN15A120	0.18	3.37	40	0.93	0.44	142.39	868.36	12.29	0.05	0.41	6.58	7.87	7.39	1.84	174,610.52	0.43
HM16JV068	E17JN15A116	0.25	0.8	24.71	0.025	0.03	53.3	876.37	9.45	0.005	0.35	72.89	96.64	89.78	0.03	174,183.29	0.9

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Hf178	K39	La139	Li7	Lu175	Mg24	Mn55	Na23	Nb93	Ni60	Pb206	Pb207	Pb208	Sb121	Si29	Sn118
HM16JV068	E17JN15A117	0.05	8.32	69.25	2.07	0.06	280.23	3,296.32	14.54	0.04	0.58	11.07	13.7	12.59	1.63	174,700.02	0.74
HM16JV068	E17JN15A118	0.005	11.45	130.38	1.27	0.89	213.04	842.53	10.84	0.08	0.53	2.04	1.97	1.7	0.03	164,941.98	0.62
HM16JV069	C17MA21A0304	3.72	0.8	0.32	0.14	0.5	289.15	1,589.97	8.93	0.005	0.74			52.76	0.03	183,164.92	1.56
HM16JV069	C17MA21A0301	1.99	0.8	0.11	0.3	1.4	363.36	1,383.23	11.16	0	0.98			37.92	0.03	184,236.28	1.78
HM16JV069	C17MA21A0307	1.77	0.8	0.07	0.41	0.83	364.8	1,315.30	12.03	0.005	0.79			33.73	0.03	184,795.14	1.61
HM16JV069	C17MA21A0303	1.17	0.8	11.99	0.19	1.32	200.22	942.69	3.45	0.005	0.3			50.86	0.03	184,348.73	1.68
HM16JV069	C17MA21A0306	0.86	0.8	12.97	0.15	1.37	189.36	888.94	11.77	0.005	0.27			52.76	0.03	183,254.91	1.55
HM16JV069	C17MA21A0302	0.71	0.8	20.64	0.22	1.42	201.2	879.4	5.49	0.005	0.25			51.99	0.03	184,043.33	1.42
HM16JV069	C17MA21A0312	3.39	0.8	1.08	0.12	1.09	301.02	1,227.67	6.91	0.005	1			47.67	0.03	184,336.04	3.18
HM16JV069	C17MA21A0309	1.96	0.8	1.27	0.36	1.29	530.42	1,330.07	54.7	0.005	1.62			37.06	0.03	181,959.40	1.34
HM16JV069	C17MA21A0308	1.25	0.8	0.45	0.15	0.62	400.57	1,267.00	16.38	0	0.11			33.52	0.03	183,228.01	0.82
HM16JV069	C17MA21A0321	1	0.8	10.65	0.11	1.13	308.19	1,119.67	3.6	0.005	0.32			43.58	0.12	184,681.87	0.97
HM16JV069	C17MA21A0314	1.18	0.8	12.22	0.09	1.38	194.71	971.92	4.52	0.005	0.28			49.61	0.03	180,701.63	2.24
HM16JV069	C17MA21A0310	0.93	0.8	20.65	0.13	1.47	209.93	904.4	3.22	0.005	0.12			46.04	0.03	184,120.54	1.59
HM16JV069	C17MA21A0313	1.14	3.58	22.15	0.26	1.63	188.9	915.75	16.78	0.005	0.19			50.21	0.03	184,474.08	1.77
HM16JV069	C17MA21A0311	1.06	0.8	22.4	0.18	1.85	193.96	894.18	2.94	0.005	0.15			46.26	0.03	184,432.75	1.91
HM16JV069	C17MA21A0322	2.37	0.8	1.22	0.025	0.95	297.58	1,154.18	4.2	0.01	0.72			36.25	0.03	184,722.15	1.58
HM16JV069	C17MA21A0324	2.14	0.8	12.23	0.11	1.39	217.96	1,059.10	3.71	0.005	0.27			59.36	0.03	184,397.33	2.38
HM16JV069	C17MA21A0327	1.45	0.8	0.18	0.025	0.95	320.18	1,267.74	4.64	0.005	0.32			43	0.03	174,619.20	1.17
HM16JV069	C17MA21A0327	1.01	0.8	10.44	0.025	1.16	270.07	1,199.50	7.82	0.005	0.43			47.53	0.03	190,743.00	1.56
HM16JV069	C17MA21A0323	1.16	0.8	1.82	0.025	2.28	345.13	1,195.36	4.63	0.005	0.55			43.28	0.03	184,220.88	1.01
HM16JV069	C17MA21A0325	0.86	0.8	7.28	0.025	0.94	414.12	1,258.89	5.13	0.005	0.4			46.55	0.03	183,893.46	0.66
HM16JV069	C17MA21A0326	0.76	0.8	2.39	0.1	1.29	420.9	1,338.73	9.17	0.005	0.26			43.8	0.03	184,448.84	0.47
HM16JV069	C17MA21A0328	0.6	0.8	1.41	0.025	0.78	297.84	1,159.46	8.12	0.005	0.18			44.69	0.03	183,938.92	0.64
HM16JV069	C17MA21A0329	0.68	0.8	0.82	0.025	0.66	364.85	1,180.02	5.38	0.005	0.43			38.53	0.03	184,909.89	0.44
HM16JV069	C17MA21A0331	5.18	0.8	0.12	0.1	1.63	268.33	1,165.55	7.64	0.005	0.6			53.84	0.03	183,746.17	3.42
HM16JV069	C17MA21A0332	3.91	0.8	1.7	0.45	1.32	262.37	1,124.45	10.81	0.005	0.79			55.02	0.03	184,336.81	3.04
HM16JV069	C17MA21A0330	2.31	0.8	0.99	0.27	1.94	437.25	1,443.97	7.64	0.005	1.27			41.15	0.03	180,871.33	0.99
HM16JV069	C17MA21A0330	1.51	0.8	11.11	0.23	2	325.75	1,234.59	7.73	0.005	1.15			50.13	0.03	192,542.96	1.71
HM16JV069	C17MA21A0334	1.23	0.8	24.76	0.25	2.09	188.68	919.06	10.04	0.005	0.63			46.98	0.03	183,032.10	2.1
HM16JV069	C17MA21A0333	0.92	0.8	14.26	0.16	1.25	192.34	975.31	17.4	0.005	0.47			53.22	0.03	183,693.01	2.03
HM16JV073	E17JN14A395	0.83	0.8	27.25	0.025	0.03	382.88	604.27	5	0.005	0.56	19.93	23.92	23.99	0.03	162,012.40	1.15
HM16JV073	E17JN14A394	1.65	17.12	11.76	0.41	0.01	483.43	839.72	38.63	0.05	0.8	24.18	31.57	29.25	1.71	182,263.93	1.15
HM16JV073	E17JN14A378	1.44	25.8	28.83	0.35	0.02	679.62	593.92	43.58	0.09	0.94	17.34	21.09	19.43	0.03	178,813.68	1.67
HM16JV073	E17JN14A393	1.57	26.98	32.56	0.54	0.03	534.56	949.09	22.69	0.06	1.25	21.22	27.33	25.19	0.59	185,254.18	1
HM16JV073	E17JN14A386	1.72	11.71	45.45	0.24	0.09	186	688.35	22.59	0.07	0.42	17.18	20.69	18.75	0.26	175,602.74	1.33
HM16JV073	E17JN14A381	0.83	300.16	12.77	0.025	0.46	303.54	1,429.75	5	0.07	0.6	21.33	27.55	24.13	0.03	163,754.24	2.23
HM16JV073	E17JN14A392	1.65	30.88	55.58	0.95	0.37	380.32	1,314.26	29.48	0.03	0.91	22.79	27.99	26.07	0.38	180,377.03	1.06
HM16JV073	E17JN14A380	1.79	0.8	31.94	0.025	0.005	199.63	965.68	110.34	0.005	0.01	39.69	39.5	45.8	0.03	162,843.11	1.81
HM16JV073	E17JN14A390	2.28	19.65	27.49	0.61	0.29	215.98	704.22	41.98	1.71	0.32	19.37	25.52	22.67	0.37	169,651.64	0.91
HM16JV073	E17JN14A372	1.58	4.39	10	0.025	0.07	159.34	566.32	7.49	0.04	0.43	12.81	16.95	15.34	0.85	183,589.07	1.66
HM16JV073	E17JN14A376	1.33	319.27	13.39	0.37	0.08	357.21	1,770.07	50.98	0.04	1.16	31.52	41.55	37.43	0.46	175,409.91	0.83
HM16JV073	E17JN14A389	1.2	12.66	21.58	0.3	0.22	243.17	778.35	34.13	0.03	0.55	19.65	24.77	23.32	0.44	182,877.35	1.06
HM16JV073	E17JN14A384	1.26	9.01	27.47	0.025	0.06	265.84	1,225.70	127.48	0.03	1.18	28.38	36.67	31.65	0.65	170,604.29	1.39
HM16JV073	E17JN14A388	0.98	13.48	22.35	0.41	0.12	267.38	1,134.48	25.27	0.03	0.57	20.36	26.44	24.04	0.03	181,319.13	0.75
HM16JV073	E17JN14A375	0.59	14.27	6.83	0.53	0.53	242.64	1,792.33	35.89	0.01	2.89	20.35	26.93	25.42	0.03	176,822.65	1.77
HM16JV073	E17JN14A384	1.22	20.9	47.71	0.31	0.08	220.41	1,256.08	35.71	0.04	1.18	29.6	37.66	35.83	1.11	188,072.33	1.6
HM16JV073	E17JN14A391	1.35	22.64	9.87	0.72	0.56	268.05	1,443.15	55.22	0.02	0.64	29.51	37.58	34.46	0.75	181,326.10	2.36
HM16JV073	E17JN14A373	1.16	7.31	30.82	0.28	0.56	258.2	1,200.87	21	0.04	0.39	35.15	46.64	42.32	0.49	180,779.67	1.35
HM16JV073	E17JN14A387	1.27	5.04	7.31	0.19	0	180.89	795.29	8.96	0.005	0.77	40.13	52.57	49.29	1.61	181,372.72	2.11
HM16JV073	E17JN14A385	0.76	12.52	26.06	0.42	0.08	337.85	1,245.83	34.17	0.04	1.3	18.72	23.64	21.6	0.25	182,688.69	0.89
HM16JV073	E17JN14A383	0.63	9.99	31.21	0.42	0.03	254.59	1,459.57	25.51	0.06	2.14	31.12	39.31	36.84	0.29	183,214.50	1.19

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Hf178	K39	La139	Li7	Lu175	Mg24	Mn55	Na23	Nb93	Ni60	Pb206	Pb207	Pb208	Sb121	Si29	Sn118
HM16JV073	E17JN14A377	0.9	457.65	15.55	0.025	0.01	496.63	1,409.70	17.37	0.005	1.56	21.66	28.89	24.67	0.03	167,432.22	1.34
HM16JV073	E17JN14A369	1.49	12.62	492.94	1.49	0.13	433.36	257.43	45.47	0.19	3.06	30.55	7.76	31	2.37	189,359.62	7.05
HM16JV073	E17JN14A386	0.78	44.84	29.62	1.25	0.13	391.81	798.35	29.92	0.02	2.34	16.03	19.12	18.68	0.4	189,248.39	0.92
HM16JV073	E17JN14A382	0.6	14.04	38.19	0.28	0.08	171.4	1,105.07	40.54	0.03	1.05	31.19	40.74	37.34	0.84	181,820.40	1.23
HM16JV073	E17JN14A370	0.7	6.48	16.89	0.025	0.05	253.32	828.29	17.31	0.005	1.2	18.94	23.95	21.41	0.79	177,742.12	0.51
HM16JV073	E17JN14A374	0.64	34.22	8.26	0.41	0.06	240.43	1,423.93	12.44	0.005	3.34	28.03	37.71	33.89	0.03	187,955.80	1.07
HM16JV073	E17JN14A379	0.62	11.64	3.4	0.18	0.03	249.43	964.05	26.3	0.02	1.68	25.16	31.87	29.47	0.27	180,542.79	0.94
HM16JV073	E17JN14A371	0.49	0.8	12.11	0.025	0.03	167.99	728.41	25.45	0.03	1.97	25.2	31.72	30.01	0.45	170,607.87	0.52
HM16JV073	E17JN14A369	0.65	12.18	211.45	1.57	0.07	198.59	839.04	23.88	0.04	4.64	17.56	5.57	19.11	1.7	186,465.57	4.55
HM16JV076	E17JN15A081	3.58	8,429.87	315.86	0.69	0.06	94.57	734.53	512.08	3.08	0.19	19.09	22.1	21.37	0.81	182,760.44	2.63
HM16JV076	E17JN15A082	0.74	3,701.05	578.73	1.25	0.03	211.54	765.82	772.13	0.12	0.46	16.91	19.15	18.21	0.64	179,508.21	1.68
HM16JV076	E17JN15A075	1.09	64.22	118.84	0.65	0.01	144.56	326.55	207.91	0.005	0.63	7.11	9.76	8.55	0.67	173,936.09	1.36
HM16JV076	E17JN15A080	0.45	1,412.71	352.44	0.89	0.04	172.96	858.58	49.05	0.06	0.43	14.77	17.72	16.09	0.47	180,321.25	1.55
HM16JV076	E17JN15A079	0.5	4,727.72	209.04	1.63	0.03	269.4	906.41	80.84	0.04	0.39	15.35	19.12	17.48	0.84	178,340.42	1.62
HM16JV076	E17JN15A075	0.54	51.52	121.36	0.025	0.03	136.25	323.98	112.34	0.05	0.01	6.41	8.16	7.14	0.03	161,337.61	1.1
HM16JV076	E17JN15A071	0.33	9.26	129.76	2.11	0.02	301.08	922.35	121.11	0.39	0.33	28.2	34.25	31.62	0.46	180,973.39	2.06
HM16JV076	E17JN15A072	0.18	11.82	126.3	1.06	0.02	101.04	1,147.18	17.51	0.02	0.89	16.88	21.5	20.01	1.43	160,596.90	1.51
HM16JV076	E17JN15A078	0.16	0.8	152.76	0.89	0.02	95.96	1,221.19	118.13	0.005	1.32	24.22	32.28	28.18	0.84	182,230.77	2.19
HM16JV076	E17JN15A070	0.13	0.8	7.27	1.78	0	147.08	262.48	5	0.14	0.14	4.55	6.02	5.51	0.03	179,405.09	1.22
HM16JV076	E17JN15A074	0.11	22.33	114.21	1.97	0.03	272.97	554.6	56.07	0.18	0.68	6.23	7.03	6.73	0.23	173,033.72	1.33
HM16JV076	E17JN15A073	0.17	11.01	96.06	1.63	0.01	216.08	967.1	30.08	0.12	1.07	20.75	27.26	25.5	2.77	176,300.59	1.28
HM16JV076	E17JN15A069	0.12	15.32	98.04	2.97	0.01	300.54	707.74	36.33	0.19	0.52	24.25	32.24	29.69	0.51	181,538.92	1.41
HM16JV076	E17JN15A068	0.15	0.8	28.76	0.74	0	80.56	1,418.18	8.26	0.02	0.87	21.08	27.47	25.57	0.52	174,320.73	1.83
HM16JV076	E17JN15A077	0.07	7.06	21.95	1.89	0.005	171.18	977.03	29.43	0.01	0.87	22.22	28.42	26.4	1.02	176,301.53	0.84
HM16JV076	E17JN15A076	0.005	0.8	31.99	0.73	0.01	90.81	247.99	19.47	0.005	0.25	4.38	4.69	4.51	0.03	165,302.29	0.86
HM16JV077	E17JN15A062	0.23	0.8	38.91	1.14	0.03	88.65	1,321.14	8.29	0.01	1.55	9.97	13.56	12.32	0.03	174,387.51	1.27
HM16JV077	E17JN15A065	0.22	9.19	50.64	1.86	0.02	362.63	825.28	23.1	0.03	1.24	17.32	20.13	20.07	0.03	176,270.53	1.31
HM16JV077	E17JN15A054	0.09	0.8	23.01	7.84	0.01	84.66	483.88	7.4	0.55	0.19	15.57	19.68	18.51	0.03	179,896.85	2.9
HM16JV077	E17JN15A058	0.06	4.6	43.61	0.67	0.01	44.71	817.65	14	0.19	0.59	7.98	10.25	9.53	0.03	177,838.88	2.32
HM16JV077	E17JN15A061	0.06	0.8	11	3.68	0.02	143.31	1,504.73	18.03	0.46	0.1	9.82	12.97	11.79	0.03	180,521.28	1.38
HM16JV077	E17JN15A063	0.1	11.07	30.99	4.2	0.01	197.02	3,394.89	8.82	0.01	0.44	7.72	10.05	9.26	0.16	181,173.04	1.22
HM16JV077	E17JN15A064	0.08	0.8	0.12	2.23	0.005	62.19	2,833.59	5	0.005	0.13	5.08	5.68	5.12	0.03	164,729.22	0.3
HM16JV077	E17JN15A067	0.13	0.8	36.41	0.36	0.01	31.14	795.27	5	0.005	0.5	7.68	9.9	9.06	0.12	177,964.84	1.79
HM16JV077	E17JN15A057	0.07	0.8	43.22	2.31	0.02	158.04	1,401.82	14.12	0.05	1	28.7	38.42	35.22	0.03	176,179.34	2.06
HM16JV077	E17JN15A053	0.03	2.5	4.38	4.22	0	122.66	1,574.94	7.62	0.11	0.12	10.65	13.62	12.68	0.03	183,012.29	0.84
HM16JV077	E17JN15A055	0.07	0.8	28.74	0.3	0	31.88	2,430.63	7.41	0.01	0.23	9.44	11.47	11.04	0.22	176,641.89	0.89
HM16JV077	E17JN15A060	0.07	0.8	34.54	0.58	0.02	23.01	705.84	5	0.02	0.11	2.77	3.61	3.13	0.03	166,562.59	0.94
HM16JV077	E17JN15A066	0.06	0.8	39.59	0.52	0.005	14.25	523.72	5	0.005	0.15	3.52	3.93	3.87	0.03	166,259.37	0.37
HM16JV077	E17JN15A056	0.03	0.8	3.87	6.58	0.005	152.09	3,833.19	9.3	0.02	0.17	15.75	19.61	19.19	0.03	171,779.16	0.86
HM16JV077	E17JN15A060	0.05	0.8	9.09	0.54	0	39.3	985.12	5	0.02	0.56	5.89	8.07	7.36	0.17	178,500.53	1.09
HM16JV077	E17JN15A056	0.005	0.8	9.98	6.82	0.01	149.67	4,289.59	7.89	0.005	0.2	7.25	9.36	8.92	0.03	184,095.50	0.83
HM16JV077	E17JN15A059	0.005	0.8	3.79	0.21	0.005	10.83	308.58	7.87	0.01	0.45	9.18	11.72	10.68	0.16	172,894.24	1.78
HM16JV077	E17JN15A066	0.005	0.8	3.86	0.025	0.02	11.72	346.19	5	0.005	0.06	3.05	3.84	3.64	0.03	182,389.80	0.41
HM16JV082	C17MA20A0202	0.16	0.8	52.83	0.025	0.05	21.46	310.58	5	0.005	0.01			18.54	0.03	161,482.09	0.32
HM16JV082	C17MA20A0206	1.21	119.95	89.37	2.58	0.09	507.7	1,360.25	3,156.43	0.74	0.78			10.4	0.47	199,546.86	6.27
HM16JV082	C17MA20A0203	2.23	0.8	36.76	0.55	0.01	70.9	940.94	5	0.005	0.49			10.06	0.49	165,671.05	0.7
HM16JV082	C17MA20A0207	1.14	3.85	16.21	1.36	0.04	197.64	1,420.39	3.4	0.03	0.67			4.78	0.49	173,962.49	1.28
HM16JV082	C17MA20A0214	2.51	0.8	56.2	1.25	0.08	75.34	1,307.01	5.28	0.02	0.31			6.78	0.48	161,583.26	5.38
HM16JV082	C17MA20A0208	4.11	9.62	55.75	1.89	0.04	144.01	454.84	26.64	0.14	0.15			4.29	0.46	177,844.46	12.38
HM16JV082	C17MA20A0213	1.55	12.1	94.51	3.45	0.03	579.7	2,207.31	7.51	0.04	1.07			5.65	0.44	161,678.27	5.96
HM16JV082	C17MA20A0211	2.25	5.61	21.21	2.44	0.03	408.48	3,061.40	4.44	0.005	0.85			5.13	0.4	161,856.79	7.9
HM16JV082	C17MA20A0212	1.02	10.41	35.01	8.14	0	1,245.13	1,556.55	4.94	0.005	1.75			7.05	0.03	163,334.69	0.97

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Hf178	K39	La139	Li7	Lu175	Mg24	Mn55	Na23	Nb93	Ni60	Pb206	Pb207	Pb208	Sb121	Si29	Sn118
HM16JV082	C17MA20A0209	0.87	4.96	114.64	1.01	0.02	294.94	2,115.36	4.63	0.02	0.67			9.09	0.21	175,784.36	1.02
HM16JV082	C17MA20A0210	0.53	8.77	28.8	1.81	0.03	327.24	3,073.20	4.9	0	0.77			6.28	0.21	173,723.32	0.96
HM16JV086	E17JN15A015	1.4	6.65	52.91	0.47	0.04	152.76	487.81	25.98	0.07	2.89	8.56	10.68	9.7	0.87	181,348.92	1.98
HM16JV086	E17JN15A010	0.64	3.17	19.16	0.59	0.02	146.79	497.59	16.12	0.08	1.16	14.35	17.28	16.28	4.35	181,321.44	1.55
HM16JV086	E17JN15A018	0.33	0.8	0.1	1.28	0.05	408.92	404.23	5	0.5	0.21	5.09	6.27	6.4	0.03	179,466.84	7
HM16JV086	E17JN15A008	0.22	0.8	9.88	0.29	0.01	182.78	376.03	8.44	0.01	1.89	11.24	14.2	13.33	3.03	176,152.88	1.49
HM16JV086	E17JN15A008	0.21	0.8	0.65	0.34	0	213.31	415.03	5	0.02	1.64	11.86	14.55	14.35	4.32	184,952.50	1.93
HM16JV086	E17JN15A018	0.3	0.8	1.58	1.27	0.04	349.12	436.82	5.58	0.48	0.29	6.41	7.9	7.76	0.03	175,707.38	5.46
HM16JV086	E17JN15A022	0.27	0.8	4.01	0.8	0.01	124.27	752.03	5	0.005	2.84	15.58	18.79	18.36	3.36	185,382.66	1.96
HM16JV086	E17JN15A022	0.25	0.8	0.06	0.27	0.02	108.72	479.68	5.54	0.02	0.89	21.53	28.37	25.89	7.84	175,091.06	1.82
HM16JV086	E17JN15A017	0.32	0.8	0.02	0.19	0.005	82	303.09	4.55	0.005	2.09	10.48	13.87	12.63	0.37	178,662.27	3.99
HM16JV086	E17JN15A021	0.37	0.8	12.02	1.45	0.03	138.13	948.49	9.04	0.02	0.12	18.6	24.85	21.58	0.72	170,433.80	2.67
HM16JV086	E17JN15A025	0.23	0.8	4.81	3.59	0.01	184.22	1,770.30	17.89	0.03	1.57	17.96	23.69	22.05	0.51	179,757.22	2.93
HM16JV086	E17JN15A023	0.1	0.8	0.83	1.12	0.03	108.07	735.79	25.45	0.01	0.54	31.44	41.01	37.85	6.25	183,979.87	2.71
HM16JV086	E17JN15A012	0.07	0.8	0.01	0.68	0.01	166.07	730.8	11.89	0.01	1.37	10.5	13.5	12.35	0.91	180,035.15	2.25
HM16JV086	E17JN15A019	0.06	0.8	6.84	0.4	0.02	124.69	410.32	9.26	0.02	0.5	23.5	31.15	28.68	5.36	180,078.44	3.33
HM16JV086	E17JN15A009	0.04	0.8	1.9	0.48	0.01	244.49	514.65	10.57	0.02	1.17	8.09	10.19	9.38	0.32	176,182.95	1.99
HM16JV086	E17JN15A014	0.05	2.31	29.39	0.76	0.03	169.12	916.63	26.06	0.04	1.63	8.61	10.85	10.43	0.5	179,762.96	1.32
HM16JV086	E17JN15A009	0.06	0.8	5.92	0.3	0.005	150.11	609.28	14.99	0.02	1.14	8.04	8.92	9.07	0.44	185,320.52	1.51
HM16JV086	E17JN15A011	0.05	2.17	6.06	2.16	0.01	153.58	1,505.35	3.98	0.1	2.84	26.52	34.14	31.85	0.33	179,234.01	1.32
HM16JV086	E17JN15A026	0.02	0.8	0.92	1.96	0	107.83	1,174.95	12.9	0.01	4.18	6.25	8.45	7.76	0.15	178,831.35	1.23
HM16JV086	E17JN15A020	0.005	0.8	22.83	0.61	0.03	101.4	443.7	32.67	0.13	0.01	18.23	18.32	20.31	1.53	155,486.77	0.48
HM16JV086	E17JN15A024	0.005	0.8	0.07	0.37	0	133.06	568.95	13.23	0.005	1.2	3.8	5.01	4.46	0.03	172,984.48	1.04
HM16JV086	E17JN15A007	0.005	0.8	2.87	0.34	0.01	90.45	463.33	5	0.04	0.78	20.89	27.87	25.89	0.99	187,563.94	1.18
HM16JV086	E17JN15A024	0.03	0.8	0.01	0.23	0.005	132.56	427.17	8.28	0.005	0.37	2.94	3.64	3.44	0.03	184,457.11	1.03
HM16JV086	E17JN15A007	0.02	0.8	0.02	0.28	0.02	79.83	410.11	5	0.02	0.87	17.54	23.23	21.48	0.51	180,595.94	1.02
HM16JV087	E17JN15A158	2.81	7.24	8.4	0.14	0.01	574.5	636.8	16.31	0.1	0.45	26.7	34.41	32.46	0.41	181,060.77	2.58
HM16JV087	E17JN15A153	1.91	5.72	7.2	0.23	0.01	452.89	834.68	20.67	0.21	0.61	19.81	25.38	23.16	0.03	180,021.27	2.23
HM16JV087	E17JN15A164	1.67	0.8	18.56	0.37	0.03	303.68	1,031.50	10.08	0.09	0.71	15.79	21.46	19.16	0.17	180,381.98	3.87
HM16JV087	E17JN15A152	2.05	226.73	73.63	0.025	0.07	242.59	1,215.53	5	0.005	0.97	21.72	25.4	25.05	0.03	170,810.69	4.21
HM16JV087	E17JN15A161	1.27	9.49	47.47	0.025	0.07	275.57	834.93	28.63	0.04	0.33	12.95	15.23	13.73	1.57	177,179.89	3.6
HM16JV087	E17JN15A149	0.9	29.36	74.31	0.99	0.06	225.66	1,195.28	22.68	0.05	0.48	20.31	25.01	23.53	0.24	196,004.54	4.1
HM16JV087	E17JN15A154	0.98	0.8	0.06	0.025	0.01	392.71	900.88	5	0.02	1.04	24.19	32.31	28.45	0.71	172,550.98	1.08
HM16JV087	E17JN15A148	1.46	0.8	0.58	0.025	0.02	444.25	528.42	8.97	0.01	0.28	11.78	15.55	14.46	0.03	168,665.37	3.37
HM16JV087	E17JN15A160	1.2	22.31	37.54	0.43	0.03	197.98	1,601.89	28.53	0.01	0.91	29.9	38.99	36.7	0.19	181,738.88	6.3
HM16JV087	E17JN15A151	0.84	5.87	5.79	0.025	0.01	271.24	1,106.91	5	0.03	0.47	24.81	31.76	29.72	1.83	175,473.88	1
HM16JV087	E17JN15A165	0.64	12.24	25.15	0.025	0.05	189.73	1,553.53	5	0.04	0.54	28.71	40.2	37.81	4.3	162,204.97	2.9
HM16JV087	E17JN15A157	1.15	33.75	41.5	0.68	0.03	297.14	1,470.13	16.47	0.03	0.93	28.16	36.95	33.49	1.32	183,464.32	5.37
HM16JV087	E17JN15A156	1.06	4.27	11.53	0.43	0.02	189.72	1,435.25	13.37	0.02	0.41	27.85	37.59	34.15	3.85	174,079.31	2.98
HM16JV087	E17JN15A150	0.4	35.01	34.83	0.22	0.04	205.04	828.56	1,473.88	0.04	0.56	25.77	32.1	29.22	0.29	176,494.76	2.19
HM16JV087	E17JN15A163	0.94	8.31	19.5	0.15	0.03	194.79	1,127.38	14.27	0.01	0.42	25.49	33.85	30.93	1.57	182,954.56	3.18
HM16JV087	E17JN15A162	0.75	9.56	98.99	0.025	0.05	140.59	1,206.41	26.21	0.01	0.3	18.74	21.88	21.14	6.61	174,796.88	2.93
HM16JV087	E17JN15A155	0.88	0.8	2.27	0.21	0	179.88	1,297.71	7.3	0.01	1.23	25.38	33.59	31.42	0.03	181,593.47	1.54
HM16JV087	E17JN15A151	1.06	4.97	0.05	0.025	0.01	193.9	1,199.11	5	0.005	0.28	30.62	40.71	37.09	5.88	189,815.07	1.12
HM16JV087	E17JN15A159	0.86	51.31	53.01	0.44	0.04	261.82	1,248.54	31.41	0.02	0.29	17.53	22.31	20.65	3.22	184,167.22	2.72
HM16JV088	E17JN14A282	1.74	78.48	43.52	0.4	0.04	148.46	1,260.47	16.46	0.2	1.06	12.75	15.86	14.12	0.03	184,814.02	2.52
HM16JV088	E17JN14A269	1.78	4.56	12.86	1.85	0.09	187.5	3,118.92	20.29	0.03	1.78	29.76	37.01	34.26	0.03	175,056.44	3.29
HM16JV088	E17JN14A283	1.53	85.24	24.92	0.48	0.03	135.57	877.01	5	0.05	1.99	11.17	14.31	13.32	0.03	180,412.73	2.08
HM16JV088	E17JN14A291	1.55	10.13	75.13	0.54	0.25	73.64	1,273.80	17.79	0.32	0.41	4.88	5.54	4.89	0.66	179,202.72	3.34
HM16JV088	E17JN14A281	1.7	36.38	61.23	0.85	0.08	236.77	1,024.75	5	0.005	0.93	14.48	15.61	15.63	0.03	156,324.06	1.67
HM16JV088	E17JN14A289	1.18	1,683.34	129.74	0.85	0.2	236.24	1,314.46	68.06	0.72	1.28	12.02	14.06	13.1	0.34	178,679.45	2.63
HM16JV088	E17JN14A288	1.04	1,553.05	127.73	0.84	0.15	304.88	1,392.65	1,961.96	0.54	1.27	12.77	15.5	14.27	0.21	184,217.60	1.82

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Hf178	K39	La139	Li7	Lu175	Mg24	Mn55	Na23	Nb93	Ni60	Pb206	Pb207	Pb208	Sb121	Si29	Sn118
HM16JV088	E17JN14A279	0.81	6.62	41.74	0.61	0.16	83.66	930.08	13.82	0.41	0.14	4.32	4.81	4.99	0.45	167,528.09	1.86
HM16JV088	E17JN14A294	1.02	21.48	55.28	0.41	0.16	106.41	560.71	9.53	0.13	0.37	12.08	14.12	13.41	0.03	171,383.90	1.98
HM16JV088	E17JN14A278	1.02	9.63	1.5	0.4	0.06	192.49	820.67	5	0.07	0.8	6.98	8.65	8.19	0.03	175,601.09	1.33
HM16JV088	E17JN14A290	1.41	3,871.12	78.21	1.52	0.51	668.47	1,183.92	1,495.32	4.77	3.67	12.57	12.31	11.14	0.48	186,103.13	2.26
HM16JV088	E17JN14A284	1.1	3.23	32.74	0.51	0.19	99.4	1,181.23	5	0.08	0.52	19.06	21.87	20.12	0.03	177,391.01	2.59
HM16JV088	E17JN14A280	0.94	0.8	11.18	0.2	0.04	136.84	699.1	5	0.02	0.96	6.8	8.53	7.72	0.03	175,220.38	1.84
HM16JV088	E17JN14A268	0.87	86.8	2.39	0.64	0.26	157.58	1,158.64	8.6	0.09	0.55	20.47	25.72	23.69	0.03	187,287.21	2.84
HM16JV088	E17JN14A277	0.84	32.31	64.48	0.99	0.15	116.21	1,507.71	13.11	0.27	0.89	10.12	12.44	11.7	0.03	180,745.63	3.8
HM16JV088	E17JN14A292	0.69	4.8	20.9	0.72	0.23	76.19	906.79	5	0.02	0.57	19.79	23.17	20.69	0.03	187,104.45	1.17
HM16JV088	E17JN14A285	0.58	143.15	41.13	0.22	0.1	86.27	958.02	7.18	0.05	1.06	11	13.17	12.75	0.03	175,296.71	3.56
HM16JV088	E17JN14A286	0.43	2.64	57.43	0.56	0.59	49.03	1,204.52	10.86	0.07	0.6	41.08	47.38	42.68	0.36	179,267.28	4.6
HM16JV088	E17JN14A270	0.08	0.8	4.75	0.28	0.47	13.69	566.15	5	0.01	0.21	61.58	70.19	63.75	0.03	166,623.51	4.7
HM16JV092	C17MA20A0165	0.82	4.75	52.13	0.76	0.43	181.35	1,030.08	891.09	0.01	0.01			40.28	0.03	178,816.71	5.68
HM16JV092	C17MA20A0161	1.03	19.36	113.69	1.47	0.53	198.18	923.56	4.61	0.005	0.09			44.58	0.16	175,143.74	5.62
HM16JV092	C17MA20A0165	0.66	5.36	49.97	0.82	0.41	177.16	1,066.87	94.83	0.01	0.1			43.44	0.17	193,059.76	8.08
HM16JV092	C17MA20A0164	0.92	40.9	30.6	1.31	0.3	337.73	1,020.36	6.08	0.02	0.23			46.72	0.2	174,385.50	3.91
HM16JV092	C17MA20A0168	0.81	0.8	49.31	1.17	0.46	194.77	985.65	3.19	0.07	0.05			39.42	0.12	180,154.34	5.82
HM16JV092	C17MA20A0166	0.72	22.98	48.24	1.42	0.32	249.24	980.07	8.66	0.01	0.19			50.52	0.11	184,122.51	4.78
HM16JV092	C17MA20A0167	0.63	0.8	25.45	0.68	0.33	175.44	1,025.46	2.9	0.005	0.01			40.61	0.03	184,031.57	5.18
HM16JV092	C17MA20A0163	0.55	0.8	19.59	0.48	0.39	134.07	1,063.03	3.29	0.005	0.04			53.58	0.03	185,317.29	4.13
HM16JV092	C17MA20A0162	0.59	0.8	11.39	0.66	0.27	145.4	1,010.70	5.45	0.02	0.05			49.92	0.03	177,774.54	3.71
HM16JV092	C17MA20A0180	1.19	7.18	282	6.04	0.59	1,057.80	988.32	36.82	0.1	1.59			44.21	0.17	168,598.95	5.59
HM16JV092	C17MA20A0195	0.98	0.8	39.16	1.01	0.43	284.71	980.39	31.79	0.005	0.35			34.85	0.03	176,525.35	5.9
HM16JV092	C17MA20A0192	0.69	14.91	20.6	1.6	0.29	461.55	920.24	10.1	0.03	0.58			42.65	0.43	179,582.57	3.67
HM16JV092	C17MA20A0199	0.84	0.8	34.15	0.46	0.26	170.39	1,016.89	11.37	0.01	0.01			39.49	0.14	175,696.08	3.62
HM16JV092	C17MA20A0179	0.93	0.8	116.73	1.08	0.48	170.68	1,023.83	5.32	0.005	0.01			39.71	0.03	176,641.21	5.02
HM16JV092	C17MA20A0194	0.62	0.8	10.04	1.07	0.34	424.28	985.49	5.2	0.005	0.29			45.22	0.49	175,456.09	3.45
HM16JV092	C17MA20A0197	1.05	0.8	26.82	0.84	0.37	166.08	1,016.88	5	0.005	0.06			43.37	0.03	192,764.13	5.4
HM16JV092	C17MA20A0200	0.69	21.78	14.37	1.26	0.25	382.58	950.54	7.24	0.01	0.59			43.24	0.14	178,947.16	3.61
HM16JV092	C17MA20A0199	0.68	26.74	26.38	2.2	0.25	557.88	1,003.14	19.73	0.03	0.87			42.69	0.17	191,018.07	5.48
HM16JV092	C17MA20A0190	0.69	3.86	15.53	0.38	0.26	170	970.34	4.48	0	0.01			40.71	0.27	176,180.16	3.19
HM16JV092	C17MA20A0198	0.75	0.8	4.18	0.35	0.29	153.18	1,095.09	3.74	0.005	0.01			46.37	0.25	186,559.32	4.45
HM16JV092	C17MA20A0183	0.96	44.33	9.37	4.98	0.22	4,679.24	1,171.53	12.92	0.005	4.73			42.3	0.03	158,816.46	1.23
HM16JV092	C17MA20A0193	0.67	0.8	9.86	1.44	0.24	312.15	1,027.51	5.96	0.005	0.37			46.46	0.2	183,966.72	3.52
HM16JV092	C17MA20A0191	0.73	0.8	15.08	0.58	0.26	139.29	1,042.76	4.79	0.01	0.04			53.09	0.18	177,477.88	4.47
HM16JV092	C17MA20A0182	0.6	0.8	13.44	0.28	0.24	156.29	1,015.72	5	0.005	0.04			49.45	0.14	177,953.73	3.11
HM16JV092	C17MA20A0181	0.1	0.8	6.6	0.19	0.09	85.53	1,119.53	9.48	0.55	0.09			74.72	0.21	164,299.89	0.12
HM16JV099	C17MA21A0291	0.71	0.8	172.83	0.41	0.31	20.56	596.38	11.94	0.01	0.49			7.66	0.83	190,548.97	0.82
HM16JV099	C17MA21A0291	0.15	0.8	4.86	0.74	0.35	14.81	485.92	5	0.01	1.94			6.41	0.47	170,316.92	0.96
HM16JV099	C17MA21A0290	0.08	0.8	4.11	0.19	0.51	5.87	269.08	5	0.005	0.45			4.46	0.03	182,462.62	2.06
HM16JV099	C17MA21A0294	0.58	0.8	2.05	0.22	0.12	28.59	787.91	5	0.005	0.57			4.71	0.03	182,457.09	1.62
HM16JV099	C17MA21A0295	0.25	0.8	11.06	0.22	0.18	15.28	1,105.38	5	0.005	0.92			7.12	0.03	181,099.13	5.94
HM16JV099	C17MA21A0293	0.09	0.8	17.72	0.12	0.16	44.01	328.62	5	0.02	0.12			5.34	0.03	181,813.84	0.69
HM16JV099	C17MA21A0298	0.67	0.8	2.66	0.14	0.2	30.44	1,023.31	5	0.005	0.97			6.49	0.03	180,579.14	1.93
HM16JV099	C17MA21A0299	0.39	0.8	63.04	0.32	0.57	43.35	3,184.04	5.93	0.01	0.61			2.5	0.35	170,476.21	3.01
HM16JV099	C17MA21A0297	0.26	0.8	5.01	0.15	0.02	21.61	1,218.45	5	0.02	0.84			6.14	0.03	169,596.00	2.18
HM16JV099	C17MA21A0297	0.27	0.8	4.82	0.72	0.02	479.66	1,103.47	5	0.01	3.7			6.16	0.03	182,682.91	2.56
HM16JV099	C17MA21A0300	0.38	0.8	1.09	0.28	0.26	17.43	421.98	5	0.01	0.47			7.03	1.05	184,229.53	1.01
HM16JV099	C17MA21A0296	0.08	0.8	41.64	0.18	0.16	15.17	632.4	5	0.005	0.13			6.36	0.43	181,929.54	0.36
HM16JV102	C17MA21A0380	1.96	0.8	21.5	0.67	0.38	169.76	1,709.58	18.94	0.15	1.48			16.35	0.14	170,377.79	0.66
HM16JV102	C17MA21A0380	1.44	0.8	21.94	0.62	0.26	157.85	1,114.05	13.39	0.45	0.87			21.52	0.03	189,453.73	0.51
HM16JV102	C17MA21A0387	1.11	496.82	97.44	0.61	0.29	141.33	1,506.49	113.35	0.41	0.97			20.54	0.03	165,770.10	0.54

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Hf178	K39	La139	Li7	Lu175	Mg24	Mn55	Na23	Nb93	Ni60	Pb206	Pb207	Pb208	Sb121	Si29	Sn118
HM16JV102	C17MA21A0388	3.11	852.13	15.86	4.24	2.26	1,477.56	1,212.48	7,565.72	0.01	6.61			33.71	1.7	189,008.04	16.81
HM16JV102	C17MA21A0389	1.17	464.39	9.9	1.48	1.31	221.25	659.84	12	0.005	0.88			17.15	0.99	168,627.44	8.12
HM16JV102	C17MA21A0390	0.36	160.95	11.84	0.44	0.05	91.01	939.72	7.93	0.01	0.69			6.39	0.03	182,530.72	3.2
HM16JV102	C17MA21A0392	0.11	0.8	5.54	0.23	0.14	103.16	753.89	5.66	0.03	0.55			8.57	0.08	173,633.07	1.73
HM16JV102	C17MA21A0391	0.09	133.88	4.25	1.53	0.03	59.6	1,120.99	9.3	0.005	0.99			3.66	0.03	185,818.30	1.1
HM16JV102	C17MA21A0403	1.53	0.8	12.62	0.64	0.3	182.42	808.11	13.37	0.37	0.72			25.68	0.03	170,804.89	0.42
HM16JV102	C17MA21A0396	1.25	29.16	12.29	0.43	0.25	123.28	1,232.08	21.5	0.06	1.04			13.57	0.03	168,846.02	0.45
HM16JV102	C17MA21A0404	1.53	27.15	42.47	0.46	0.25	86.51	1,531.87	29.87	0.05	1.21			13.27	0.03	185,405.10	0.98
HM16JV102	C17MA21A0400	1.17	1,638.04	24.71	4.66	0.18	3,109.41	1,045.95	764.75	0.13	16.94			9.72	0.03	183,649.88	0.63
HM16JV102	C17MA21A0401	0.92	11.25	34.46	0.58	0.33	93.99	1,269.89	36.77	0.04	0.8			11.47	0.1	186,875.59	0.46
HM16JV102	C17MA21A0397	0.87	41.21	38.14	0.54	0.17	90.62	1,081.07	89.41	0.05	0.71			11.41	0.03	184,179.94	0.66
HM16JV102	C17MA21A0398	0.66	0.8	22.97	0.77	0.18	65.61	1,413.23	329.21	0.005	1.12			8.91	0.03	170,774.15	0.37
HM16JV102	C17MA21A0399	0.23	35.38	34.5	0.43	0.13	93.53	888.32	152.26	0.02	0.27			8.36	0.03	170,530.26	0.53
HM16JV102	C17MA21A0395	0.41	7.16	11.44	0.62	0.2	73.35	1,606.83	16.17	0.03	0.75			8.34	0.03	184,253.88	0.55
HM16JV104	C17MA21A0406	1.03	5.67	65.4	3.37	10.03	2,695.77	1,588.77	39.86	0.005	30.21			100.27	0.17	166,921.18	1.76
HM16JV104	C17MA21A0406	0.52	5.95	65.17	0.67	7.6	187.54	1,476.76	45.01	0.005	1.73			109.43	0.24	185,067.88	1.58
HM16JV104	C17MA21A0405	0.49	0.8	25.34	0.3	3.55	130.25	1,603.04	15.31	0.005	2.79			94.99	1.45	180,262.00	2.48
HM16JV104	C17MA21A0413	1.53	5.21	20.61	2	9.16	983.19	1,874.73	25.52	0.05	11.41			111.12	3.84	168,710.78	3.56
HM16JV104	C17MA21A0411	1.21	4.56	24.15	0.58	7.94	138.2	1,476.59	19.41	0.005	2.79			89.31	0.48	166,648.42	1.8
HM16JV104	C17MA21A0416	0.36	4.27	11.38	0.53	1.2	91.36	1,701.57	31.78	0.01	1.21			122.34	3.73	182,164.45	1.91
HM16JV104	C17MA21A0407	0.25	0.8	9.39	0.12	0.63	45.24	1,301.11	4.55	0.005	2.26			79.48	0.03	174,222.27	0.83
HM16JV104	C17MA21A0414	0.4	6.35	18.89	0.76	3.41	92.67	1,761.35	47.96	0.05	0.95			127.86	2.95	182,740.04	2.14
HM16JV104	C17MA21A0412	0.25	3.15	21.43	0.21	3.41	72.78	1,326.13	25.6	0.03	0.68			103.93	1.38	181,840.60	1.81
HM16JV104	C17MA21A0415	0.1	25.97	20.65	2.07	5.21	882.15	1,764.39	60.81	0.08	17.37			121.57	1.94	185,227.82	0.43
HM16JV104	C17MA21A0410	0.04	9.54	88.4	0.82	1.96	232.36	1,584.36	72.23	0.03	7.9			52.46	1.28	171,619.44	0.31
HM16JV104	C17MA21A0409	0.04	0.8	0.75	0.1	0.58	97.74	1,247.25	7.9	0.005	2.55			86.25	0.11	176,202.09	0.22
HM16JV106	E17JN14A251	1.14	0.8	0.82	2.07	0.35	164.86	1,547.47	24.24	0.01	0.25	4.46	5.48	5.13	0.21	182,133.19	0.83
HM16JV106	E17JN14A267	1.21	0.8	2.16	1.22	0.3	139.77	1,188.03	132.33	0.005	0.51	4.36	5.39	5.03	0.03	177,882.79	0.4
HM16JV106	E17JN14A249	0.73	2.09	6.39	0.21	0.33	153.04	1,183.48	17.16	0.05	0.27	5.36	7.34	6.66	0.28	180,887.20	0.71
HM16JV106	E17JN14A247	0.37	0.8	0	0.23	0.2	486.48	2,459.99	14.11	0.01	0.3	12.3	16.39	14.95	0.03	186,165.76	0.9
HM16JV106	E17JN14A247	0.77	0.8	0.02	0.025	0.14	438.98	2,397.05	11.06	0.005	0.4	12.55	16.77	15.25	0.03	174,008.84	0.89
HM16JV106	E17JN14A252	0.44	0.8	1.13	0.025	0.12	169.59	1,402.11	5.3	0.05	0.67	4.16	5.04	5.01	0.03	180,866.63	0.56
HM16JV106	E17JN14A260	0.53	26.4	2.49	0.51	0.11	138.44	1,055.07	42.07	0.01	0.62	3.44	4.62	4.59	0.27	213,947.38	0.41
HM16JV106	E17JN14A250	0.48	0.8	0	0.14	0.27	438.07	2,380.36	8.49	0.005	0.49	12.94	16.57	15.56	0.28	182,641.01	0.81
HM16JV106	E17JN14A254	0.44	0.8	1.75	0.025	0.3	606.59	1,728.74	10.87	0.01	1.23	2.82	3.28	3.2	0.03	175,129.17	0.62
HM16JV106	E17JN14A266	0.63	19.9	0.94	1.07	0.35	223.02	1,371.11	54.36	0.05	0.6	3.23	4.39	3.58	0.46	186,535.59	0.56
HM16JV106	E17JN14A262	0.41	9.82	3.52	0.32	0.12	177.01	1,094.21	25.56	0.02	3.81	6.41	7.96	7.11	0.26	174,672.83	0.64
HM16JV106	E17JN14A248	0.51	0.8	5.4	0.025	0.49	203.41	1,491.05	21.52	0.005	0.37	13.54	17.56	16.14	0.03	170,267.53	1.1
HM16JV106	E17JN14A265	0.46	0.8	3.72	0.025	0.2	188.45	1,282.33	14.04	0.02	0.7	10.63	14.2	13.13	0.17	179,167.85	0.85
HM16JV106	E17JN14A259	0.38	71.74	1.67	0.52	0.96	147.52	1,202.03	39.38	0.02	0.89	4.24	5.1	4.49	0.03	177,754.97	0.48
HM16JV106	E17JN14A253	0.48	961.05	3.01	1.1	0.31	21,536.70	1,622.68	1,984.62	0.02	62.77	3.66	5.13	4.19	0.03	185,301.39	0.64
HM16JV106	E17JN14A261	0.43	0.8	2.65	0.46	0.11	189.21	1,158.14	29.15	0.01	0.94	5.28	7.13	6.61	0.34	182,090.57	0.54
HM16JV106	E17JN14A266	0.21	0.8	0.83	0.025	0.19	158.02	1,679.69	10.82	0.01	0.39	3.81	4.46	4.06	0.32	176,787.75	0.45
HM16JV106	E17JN14A246	0.24	25.27	1.83	0.025	0.23	164.31	1,217.27	1,986.58	0.005	0.01	9.03	10.74	11.86	0.03	169,526.12	1.17
HM16JV106	E17JN14A264	0.25	18.4	3.15	0.39	0.41	153.96	1,187.99	28.05	0.1	0.3	5.29	7.49	6.24	0.35	172,205.25	0.34
HM16JV106	E17JN14A257	0.22	0.8	2.32	0.025	0.18	187.02	1,133.78	10.71	0.005	0.37	1.75	2.69	2.37	0.03	166,401.02	0.25
HM16JV106	E17JN14A255	0.21	0.8	0.09	0.26	0.08	159.63	1,075.61	6.13	0.08	0.58	2.53	3.14	2.92	0.03	177,870.65	0.55
HM16JV106	E17JN14A253	0.06	15.39	0.28	0.025	0.15	335.82	1,311.31	94.04	0.01	2.03	9.49	12.01	10.58	0.03	190,347.11	0.85
HM16JV106	E17JN14A258	0.22	0.8	0.67	0.025	0.07	111.07	997.61	17.23	0	0.3	4.78	6.06	5.63	0.03	188,497.43	0.26
HM16JV106	E17JN14A264	0.19	3.04	3.85	0.025	0.09	130.5	1,196.47	25.64	0.05	0.67	7.54	9.56	8.56	0.28	186,100.51	0.37
HM16JV106	E17JN14A263	0.08	2.45	1.01	0.24	0.16	132.55	1,148.94	22.37	0.03	0.36	4.83	6.85	6.11	0.03	181,865.55	0.43
HM16JV106	E17JN14A256	0.03	0.8	0.04	0.16	0.02	105.67	943.4	7.78	0.01	0.21	0.59	0.62	0.72	0.03	182,137.91	0.24

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Hf178	K39	La139	Li7	Lu175	Mg24	Mn55	Na23	Nb93	Ni60	Pb206	Pb207	Pb208	Sb121	Si29	Sn118
HM16JV107	E17JN15A178	5.28	30.7	202.74	5.66	0.71	771.32	453.88	16.53	0.04	3.44	37.11	25.15	21.67	20.22	175,488.95	12.09
HM16JV107	E17JN15A178	4.94	25.29	117.7	4.38	0.48	975.45	470.66	5	0.005	3.91	17.93	17.28	15.04	20.76	160,476.74	11.98
HM16JV107	E17JN15A174	4.59	4.16	27.47	0.69	0.11	178.22	814.34	13.89	0.02	5.27	11.32	9.13	7.59	3.97	165,007.08	6.54
HM16JV107	E17JN15A179	2.92	121.08	370.64	3.29	0.48	830.8	655.64	57.2	0.08	8.58	43.52	28.5	23.73	11.53	170,340.71	6.31
HM16JV107	E17JN15A175	2.07	34.77	309.9	10.52	0.19	1,558.90	898.74	22.41	0.05	7.49	27.84	23.69	20.76	4.98	172,378.10	6.37
HM16JV107	E17JN15A177	0.78	10.67	190.67	6.54	0.22	1,047.32	781.31	12.51	0.04	8	26.21	16.11	13.99	4.53	181,014.02	3.98
HM16JV107	E17JN15A169	0.87	22.45	271.39	5.67	0.16	1,122.44	2,038.50	18.17	0.07	10.66	21.94	19.79	18.01	1.13	177,104.68	6.79
HM16JV107	E17JN15A176	0.63	8.42	90.63	3.04	0.11	528.19	824.57	8.07	0.08	8.78	12.97	10.25	8.72	0.27	177,209.36	5.2
HM16JV107	E17JN15A167	0.6	17.68	329.19	3.79	0.08	726.56	783.21	21.9	0.11	3.22	14.79	13.59	12.18	1.32	163,477.09	8.31
HM16JV107	E17JN15A173	0.6	24.71	203.19	3.34	0.39	565.64	873.18	12.4	0.1	3.6	24.11	20.08	18.46	6.48	177,082.65	7.43
HM16JV107	E17JN15A178	0.41	0.8	12.66	0.025	0.34	151.12	361.97	5	0.005	1.43	14.21	6.2	4.27	0.03	183,048.56	6.15
HM16JV107	E17JN15A170	0.28	27.82	118.32	0.25	0.26	148.02	376.26	8.15	0.02	1.31	10.85	8.61	7.28	6.24	181,755.45	7.63
HM16JV107	E17JN15A179	0.34	18.73	251.99	5.42	0.12	643.92	1,979.95	10.15	0.07	4.5	21.42	16.21	14.27	0.42	181,517.60	6.05
HM16JV107	E17JN15A171	0.23	11.33	40.58	1.43	0.09	221.73	290.26	10.65	0.02	1.33	5.58	5.58	5.53	0.59	175,168.61	6.53
HM16JV107	E17JN15A166	0.2	16.12	78.65	0.72	0.05	235.3	637.52	21.74	0.03	3.23	8.99	8.39	8.22	0.4	183,765.00	6.19
HM16JV107	E17JN15A172	0.06	2.76	17.16	0.3	0.06	143.79	402.2	5	0.02	1.04	4.15	4.5	4.14	0.03	179,245.66	4.69
HM16JV112	E17JN14A496	0.77	0.8	63.47	0.64	0.005	92.65	260.61	19.31	0.005	2.44	54.68	64.79	62.03	0.03	185,591.08	0.59
HM16JV112	E17JN14A496	0.7	3.22	93.05	0.81	0.01	137.01	246.09	18.18	0.05	0.86	58.88	68.85	63.72	0.03	179,242.35	0.59
HM16JV112	E17JN14A511	0.72	6.38	226.02	0.56	0.02	108.8	227.28	16.76	0.01	2.54	46.83	50.81	45.37	0.2	180,619.97	0.78
HM16JV112	E17JN14A510	0.64	3.58	144.44	0.83	0.02	146.79	248.06	22.16	0.03	1.22	45.34	50.04	45.76	0.2	175,537.86	0.58
HM16JV112	E17JN14A501	0.67	57.58	91.28	1.75	0.04	9,850.12	531.53	164.07	0.02	29.33	43.04	46.04	43.44	0.22	186,458.37	0.66
HM16JV112	E17JN14A506	0.7	0.8	164.58	0.78	0.01	314.86	276.7	17.67	0.005	2.77	47.19	51.41	46.1	0.03	176,662.08	0.85
HM16JV112	E17JN14A510	0.53	0.8	77.06	0.8	0.01	140.4	295.46	21.2	0.03	1.98	42.51	52.56	48.26	0.29	184,483.78	0.65
HM16JV112	E17JN14A508	0.73	0.8	228.84	0.8	0.03	99.01	349.92	29.75	0.02	1.03	56.23	60.85	54.7	0.03	180,158.43	1.02
HM16JV112	E17JN14A503	0.56	3.04	49.66	1.31	0.01	185.27	211.07	22.15	0.04	1.58	55.42	68.16	63.21	0.03	178,386.76	0.76
HM16JV112	E17JN14A508	0.74	0.8	249.7	1.13	0.03	582.79	289.75	32.06	0.08	1.56	52.45	58.73	52.97	0.03	169,593.68	0.85
HM16JV112	E17JN14A509	0.8	8.62	124.68	1.3	0.31	503.21	835.14	17.42	0.005	3.53	149.09	109.89	86.68	0.33	180,693.04	1.04
HM16JV112	E17JN14A498	0.69	3.68	30.7	0.69	0.04	129.45	306.41	22.07	0.02	2.38	43.08	50.3	45.94	0.03	182,998.29	0.78
HM16JV112	E17JN14A505	0.92	0.8	182.21	1.21	0.03	114.69	519.74	78.22	0.07	4.17	34.68	37.01	34.6	0.03	160,539.87	0.62
HM16JV112	E17JN14A504	0.5	3.93	251.99	1.03	0.02	160.49	229.94	21.24	0.03	1.16	51.55	53.02	49.21	0.03	177,955.77	0.91
HM16JV112	E17JN14A495	0.46	3.75	109.2	1.68	0	199.64	184.23	33.67	0.03	0.61	56.85	70.15	66.25	0.25	178,306.35	0.5
HM16JV112	E17JN14A500	0.38	0.8	73.54	0.67	0.03	72.11	332.34	11.44	0.005	2.26	39.62	45.6	41.09	0.03	183,262.13	1.07
HM16JV112	E17JN14A498	0.45	35.68	36.94	1.34	0.03	674.83	655.66	72.26	0.02	5.68	37.79	44.83	39.6	0.03	176,600.59	0.65
HM16JV112	E17JN14A507	0.4	0.8	14.71	1.36	0.01	200.04	488.96	22.27	0.01	0.59	44.9	55.75	52.03	0.23	174,489.81	1.3
HM16JV112	E17JN14A500	0.28	2.69	47.27	1.41	0.02	88.72	514.83	11.92	0.01	2.48	40.37	47.65	43.07	0.03	174,008.99	0.77
HM16JV112	E17JN14A492	0.26	0.8	63.05	0.7	0.01	77.78	311.11	5	0	0.87	62.64	78.66	73.25	0.33	177,125.88	0.88
HM16JV112	E17JN14A493	0.4	2.3	107.1	2.02	0.01	124.74	509.01	22.47	0.01	0.37	75.03	79.38	70.65	0.03	177,696.28	0.7
HM16JV112	E17JN14A499	0.57	4.32	93.27	0.99	0.93	144	474.3	14.21	0	1.19	82.61	71.6	59.06	0.03	180,802.92	1.02
HM16JV112	E17JN14A497	0.24	0.8	114.51	0.96	0.02	172.5	339.26	13.19	0.02	1.49	48.75	49.96	44.86	0.03	183,697.06	0.87
HM16JV112	E17JN14A494	0.12	4.68	2.68	1.92	0.01	318.07	478.77	11.83	0.07	0.69	85.37	109.9	103	0.03	181,045.31	0.94
HM16JV112	E17JN14A502	0.15	4.19	83.13	1.91	0.02	215.19	183.51	27.54	0.02	0.76	62.88	79.24	72.77	0.03	174,717.62	0.68
HM16JV112	E17JN14A494	0.11	5.62	9.98	2.81	0	313.57	836.7	22.86	0.01	0.78	65.39	80.75	75.24	0.39	174,178.84	0.95
HM16JV112	E17JN14A497	0.14	5.19	105.4	0.93	0.01	110.55	559.98	22.29	0.01	0.77	41.23	45.48	41.63	0.03	174,008.36	0.71
HM16JV114	E17JN14A168	0.005	10.88	0.005	0.025	0.005	18.85	414.95	590.44	0.005	0.01	5.24	5.41	4.89	0.03	165,274.91	0.02
HM16JV114	E17JN14A169	0.005	0.8	0.005	0.025	0	3.96	388.77	40.54	0.01	0.01	8.23	9.11	8.9	0.03	181,222.04	0.24
HM16JV114	E17JN14A180	9.97	0.8	32.07	0.025	0.17	64.37	1,547.92	75.03	0.26	0.67	8.87	8.44	6.45	0.03	160,186.13	0.93
HM16JV114	E17JN14A165	0.63	169.69	70.73	5.87	0.3	1,905.94	1,625.12	27.35	0.01	1.25	10.19	8.11	6.8	0.35	191,199.16	4.23
HM16JV114	E17JN14A165	0.4	131.18	91.91	1.75	0.48	620.03	1,773.75	33.41	0.04	0.97	11.78	8.33	7.36	0.27	179,725.37	3.57
HM16JV114	E17JN14A164	0.28	25.61	48.63	0.32	0.15	85.6	1,335.59	1,191.53	1.09	0.24	7.28	6.26	5.93	0.52	172,470.43	1.73
HM16JV114	E17JN14A174	0.17	0.8	34.79	0.52	0.43	20.42	362.61	5	0	0.13	13.23	3.24	1.61	0.03	179,644.16	4.95
HM16JV114	E17JN14A181	0.3	13.86	67.73	0.025	0.38	103.9	845.69	399.85	0.42	0.26	6.78	4.83	3.26	0.03	164,600.00	3.82
HM16JV114	E17JN14A175	0.11	0.8	22.1	0.17	0.09	106.86	1,715.37	5	0	0.26	9.49	10.57	9.84	0.97	180,061.37	1.96

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Hf178	K39	La139	Li7	Lu175	Mg24	Mn55	Na23	Nb93	Ni60	Pb206	Pb207	Pb208	Sb121	Si29	Sn118
HM16JV114	E17JN14A173	0.03	0.8	9.5	0.025	0.01	6.53	539.25	21.64	0.005	0.14	9.28	10.6	9.55	0.03	182,441.68	0.26
HM16JV114	E17JN14A184	0.005	0.8	7.89	0.025	0.03	9.84	1,495.41	5	0.005	0.12	8.71	10.03	9.1	0.03	183,783.29	0.24
HM16JV114	E17JN14A178	0.02	2.92	15.53	0.38	0.07	131.28	1,477.75	395.48	2.52	0.19	6.42	6.55	6.22	0.03	180,652.10	2.12
HM16JV114	E17JN14A177	0.01	0.8	0.26	0.025	0.01	5.5	296.14	45.44	0.03	0.05	6.12	7.26	6.39	0.03	175,780.13	0.23
HM16JV114	E17JN14A184	0.005	0.8	0.77	0.025	0.02	9.02	1,306.43	5	0.01	0.07	8.48	9.8	8.61	0.03	170,857.80	0.25
HM16JV114	E17JN14A182	0.01	0.8	1.59	0.025	0.03	15.55	1,730.54	4.61	0.005	0.14	7.76	8.78	8.38	0.03	178,551.34	0.33
HM16JV114	E17JN14A183	0.005	0.8	0.02	0.15	0.09	16.56	600.11	13.15	0.01	0.12	11.81	12.47	11.37	0.38	180,129.87	0.39
HM16JV114	E17JN14A170	0.005	0.8	0.06	0.025	0.02	16.67	681.22	5	0.02	0.15	6.96	8.26	7.07	0.03	174,962.68	0.32
HM16JV114	E17JN14A167	0.005	0.8	0.005	0.025	0.01	20.17	580.58	5	0.005	0.16	7.55	8.76	8.01	0.03	176,966.82	0.18
HM16JV114	E17JN14A176	0.005	0.8	0.005	0.025	0.02	5.53	543.05	5	0.005	0.08	12.8	14.31	13.35	0.03	179,810.39	0.2
HM16JV114	E17JN14A171	0.02	0.8	0.04	0.025	0.01	10.94	394.15	5	0.005	0.01	13.79	14.92	14.05	0.03	176,926.14	0.29
HM16JV118	C17MA20A0124	0.61	0.8	31.31	0.19	0.02	70.34	1,449.46	6.27	0.08	0.01			39.18	4.54	184,182.13	0.57
HM16JV118	C17MA20A0120	0.39	2,395.12	55.29	4.08	0.01	1,249.41	2,079.72	172.87	0.02	1.09			49.3	2.52	180,402.25	2.38
HM16JV118	C17MA20A0124	0.57	0.8	0.14	0.025	0.02	80.47	957.88	3.6	0.005	0.07			35.08	0.03	167,740.99	0.43
HM16JV118	C17MA20A0119	0.43	6.85	40.28	0.49	0.005	226.13	1,541.80	6.16	0.01	0.17			43.68	2.88	184,853.20	0.59
HM16JV118	C17MA20A0118	0.21	0.8	0.03	0.35	0.01	67.02	2,076.77	5	0.005	0.68			49.78	0.51	161,109.90	4.55
HM16JV118	C17MA20A0117	0.16	0.8	1.02	0.2	0.005	80.92	1,065.73	5	0.005	0.33			30.87	0.4	169,433.62	1.97
HM16JV118	C17MA20A0121	0.07	14.44	4.55	0.27	0.02	96.43	2,113.01	5.94	0.01	0.01			44.45	8.3	171,154.13	1.53
HM16JV118	C17MA20A0125	0.09	0.8	0.87	0.14	0	49.55	1,647.16	3.19	0.005	0.04			30.97	20.48	174,965.04	0.36
HM16JV118	C17MA20A0137	0.81	0.8	22.66	1.24	0.08	263.25	3,475.75	10.46	0.005	0.32			68.35	14.47	186,768.87	8
HM16JV118	C17MA20A0135	0.94	22.63	7.46	0.38	0.01	166.14	1,766.68	27.74	0.005	0.17			38.21	5.46	189,279.27	3.85
HM16JV118	C17MA20A0127	0.62	0.8	0.05	0.59	0.005	190.11	1,624.01	5	0.005	0.01			36.37	29.85	157,267.95	0.91
HM16JV118	C17MA20A0134	0.24	0.8	21.98	0.21	0	77.12	1,139.28	6.33	0.005	0.11			43.09	0.78	181,593.50	0.26
HM16JV118	C17MA20A0136	0.24	0.8	0.06	5.39	0.01	2,206.93	1,113.86	4.8	0.005	3.2			42.43	0.34	173,638.44	0.56
HM16JV118	C17MA20A0143	1.8	9.59	0.3	0.38	0.11	180.18	1,558.68	5	0.005	0.26			35.17	0.03	159,750.67	4.91
HM16JV118	C17MA20A0141	0.56	0.8	0.18	0.2	0.02	160.34	987.73	5	0.005	0.15			26.57	0.37	158,627.58	1.43
HM16JV118	C17MA20A0139	1.07	0.8	0.02	0.2	0	112.34	1,402.82	6.08	0.005	0.08			38.49	2.38	182,428.67	1.55
HM16JV118	C17MA20A0144	0.22	0.8	1.53	0.55	0.01	92.21	2,717.77	5.56	0.26	0.15			91.23	0.03	172,946.89	0.34
HM16JV118	C17MA20A0140	0.06	0.8	28.21	0.28	0.01	107.82	2,395.50	5	0.005	0.01			51.7	2.07	181,125.78	0.6
HM16JV118	C17MA20A0138	0.13	0.8	0.02	0.44	0.04	80.1	3,506.59	11.47	0.005	0.05			84.48	7.27	183,465.69	2.42
HM16JV123	C17MA21A0425	0.35	10.3	173.29	3.3	0.53	195.98	2,559.89	35.35	0.71	0.6			51.3	39.97	172,946.64	2.83
HM16JV123	C17MA21A0417	0.26	9.17	123.03	2.44	0.23	268.28	2,378.09	27.28	0.98	0.79			40.29	32.33	187,631.44	2.48
HM16JV123	C17MA21A0421	0.22	0.8	32.89	1.7	0.17	177.74	2,189.44	27.45	0.41	0.38			41.8	62.5	164,976.26	7.36
HM16JV123	C17MA21A0422	0.39	794.51	43.05	2.34	0.2	345.84	1,643.50	130.28	14.24	0.45			30.51	20.32	182,751.20	2.44
HM16JV123	C17MA21A0423	0.14	6.99	296.4	3.04	0.52	205.56	2,093.45	24.83	0.64	0.35			39.18	27.56	200,978.91	3.45
HM16JV123	C17MA21A0420	0.08	0.8	9.16	0.37	0.09	314.5	2,026.17	5	2.9	0.2			8.59	2.7	184,428.21	1.85
HM16JV123	C17MA21A0419	0.01	176.01	5.7	0.99	0.14	295.73	4,169.10	13.26	0.12	0.4			11.69	4.99	183,866.74	3.92
HM16JV123	C17MA21A0426	0.02	63.55	4.98	0.42	0.09	203.19	2,599.90	41.02	0.28	0.26			10.1	2.12	188,352.68	2.74
HM16JV123	C17MA21A0427	0.005	2.55	0.39	0.47	0.05	163.05	3,111.56	6.84	0.07	0.06			14.6	10.93	185,971.23	6.13
HM16JV123	C17MA21A0418	0.005	0.8	0.63	1.39	0.04	356.05	8,333.48	5.11	0.06	0.97			6.71	0.22	182,300.35	2.35
HM16JV123	C17MA21A0424	0.01	4.48	0.22	0.2	0	172.62	2,732.16	5	0.04	0.01			10.41	1.24	174,754.84	1.35
HM16JV123	C17MA21A0429	0.15	0.8	21.53	0.025	0.02	19.71	476.79	5	0.01	0.06			17.76	0.23	184,662.85	1.46
HM16JV123	C17MA21A0428	0.05	0.8	14.38	0.025	0.06	83.62	664.26	5	0.01	0.12			18.56	0.5	176,057.12	0.39
HM16JV123	C17MA21A0430	0.08	56.52	0.08	0.37	0.04	51.22	948.68	5	0.005	0.01			11.97	0.65	188,300.17	0.78
HM16JV123	C17MA21A0439	0.33	10.84	76.31	1.58	0.33	261.5	1,427.10	16.37	10.6	0.78			26.71	12.25	177,157.28	2.46
HM16JV123	C17MA21A0440	0.06	0.8	11.36	0.025	0.07	20.69	320.42	5	0.01	0.01			10.24	0.56	184,467.65	0.23
HM16JV123	C17MA21A0438	0.19	3.88	135.96	0.72	0.23	118.29	864.2	26.3	0.41	0.3			39.08	35.7	176,358.30	2.58
HM16JV123	C17MA21A0438	0.26	4.16	87.53	0.66	0.23	148.97	620.46	27.86	6.2	0.46			34.24	22.08	186,606.76	3.77
HM16JV123	C17MA21A0436	0.15	0.8	30.71	1.18	0.04	73.08	2,798.12	15.68	0.27	0.12			26.79	5.22	181,839.48	1.81
HM16JV123	C17MA21A0433	0.16	3.28	10.66	1.42	0.01	133.8	759.77	24.96	0.54	0.1			44.64	6.19	176,750.34	1.81
HM16JV123	C17MA21A0435	0.08	2.76	35.91	0.65	0.04	30.56	1,253.15	5	0.01	0.08			6.62	1.78	182,258.06	0.7
HM16JV123	C17MA21A0434	0.07	0.8	19.92	0.1	0.04	15.5	961.99	5	0.05	0.01			7.02	3.99	175,019.18	0.49

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Hf178	K39	La139	Li7	Lu175	Mg24	Mn55	Na23	Nb93	Ni60	Pb206	Pb207	Pb208	Sb121	Si29	Sn118
HM16JV123	C17MA21A0432	0.09	0.8	12.12	0.025	0.01	47.29	327.38	5	0.02	0.14			4.78	0.16	186,272.77	0.23
HM16JV123	C17MA21A0434	0.01	0.8	10.1	0.72	0.01	38.47	5,462.32	5	0.005	0.01			5.42	2.52	187,833.84	0.51
HM16JV123	C17MA21A0433	0.02	0.8	4.48	0.025	0.02	17.18	703.41	5	0.01	0.21			5.93	0.21	188,999.51	0.36
HM16JV130	C17MA20A0257	0.39	5.34	55.43	0.75	0.03	530.17	673.61	18.81	0.005	2.58			4.22	0.11	172,140.46	1.76
HM16JV130	C17MA20A0261	0.38	4.63	37.03	0.64	0.02	592.11	643.1	18.41	0.02	1.77			6.11	0.2	177,739.82	0.66
HM16JV130	C17MA20A0256	0.37	5.91	68.12	1.3	0.02	649.23	1,607.74	18.01	0	1.85			4.04	0.03	179,666.08	0.66
HM16JV130	C17MA20A0264	0.15	13.53	103.36	1.58	0.02	1,397.77	984.66	45.42	0.02	2.48			5.33	0.03	174,222.31	0.37
HM16JV130	C17MA20A0266	0.25	0.8	7.86	1.7	0.01	289.79	1,914.81	11.02	0.01	0.89			3.71	0.03	179,327.56	1.37
HM16JV130	C17MA20A0277	0.62	3.6	36.81	1	0.03	248.76	333.12	12.34	0.01	1.92			4.8	0.03	180,171.19	2.35
HM16JV130	C17MA20A0276	0.6	45.14	132.03	4.33	0.04	4,928.04	908.32	128.64	0.01	8.99			10.26	0.03	180,896.57	0.62
HM16JV130	C17MA20A0273	0.37	4.74	61.21	1.16	0.02	517.19	704.92	15.38	0.01	2.31			6.43	0.12	179,773.05	0.62
HM16JV130	C17MA20A0274	0.3	35.35	48.01	1.59	0.02	2,577.17	951.73	155.87	0.01	6.34			4.63	0.13	180,306.90	1.62
HM16JV130	C17MA20A0279	0.29	31.6	239.98	4.74	0.06	3,752.05	2,386.16	84.57	0.06	6.57			10.49	0.15	185,373.52	0.77
HM16JV130	C17MA20A0280	0.18	21.39	162.24	5.54	0.06	3,904.00	2,079.49	34.36	0.03	6.13			13.42	0.14	182,708.58	0.89
HM16JV130	C17MA20A0278	0.2	32.84	143.65	2.17	0.03	2,374.17	1,734.08	101.39	0.005	5.14			8.43	0.11	180,456.42	0.76
HM16JV130	C17MA20A0272	0.03	2.52	55.03	1.75	0.02	213.3	3,278.68	13.51	0.005	0.74			4.79	0.11	180,143.91	0.43
HM16JV132	C17MA20A0305	0.65	24.28	5.41	5.09	0.005	321.46	1,433.73	132.59	0.16	0.51			30.37	0.13	184,312.93	1.77
HM16JV132	C17MA20A0307	0.66	41.18	40.36	5.01	0.01	609.77	1,119.11	44.76	0.18	1.03			36.75	0.14	184,069.07	2.35
HM16JV132	C17MA20A0308	0.64	7.56	4.14	5.27	0	1,117.39	1,210.64	27.02	0.03	1.4			32	0.03	183,359.62	2.12
HM16JV132	C17MA20A0286	2.85	0.8	14.88	2.36	0	291.58	1,199.45	10.29	0.01	0.52			8.3	0.03	169,310.49	0.18
HM16JV132	C17MA20A0304	0.34	22.24	1.63	4.81	0.005	403.49	1,455.09	98.07	0.13	0.29			29.44	0.03	186,434.22	1.34
HM16JV132	C17MA20A0287	1.1	6.81	12.28	1.87	0.005	138.68	1,437.14	16.54	0.01	0.14			4.74	0.35	173,179.18	0.31
HM16JV132	C17MA20A0306	0.11	14.57	7.01	4.9	0.005	427.18	1,774.23	65.69	0.12	0.61			29.28	0.17	170,608.91	1.23
HM16JV132	C17MA20A0310	0.28	0.8	1.71	0.89	0.02	98.74	1,804.63	4.15	0.04	0.32			30.26	0.03	181,494.00	0.36
HM16JV132	C17MA20A0310	0.1	0.8	0.54	0.84	0.02	105.96	1,591.15	6.13	0.005	0.18			30.01	0.03	173,433.02	0.25
HM16JV132	C17MA20A0284	0.43	2.74	23.33	0.29	0.01	27.86	254.15	2.56	0.005	0.07			14.23	0.03	176,477.03	0.08
HM16JV132	C17MA20A0312	0.26	5.04	12.87	5.7	0.01	349.52	2,535.70	17.12	0.005	0.51			8.5	0.3	178,372.57	0.07
HM16JV132	C17MA20A0313	0.12	151.89	13.11	7.62	0.01	324.48	940.6	39.78	0.04	0.4			6.9	0.16	185,051.63	0.44
HM16JV132	C17MA20A0312	0.18	0.8	9.58	4.22	0.02	82.34	2,094.46	10.99	0.005	0.33			9.6	0.46	163,906.39	0.1
HM16JV132	C17MA20A0285	0.19	0.8	0.24	0.7	0	64.55	332.12	12.41	0.02	0.52			17.09	0.03	178,123.98	0.09
HM16JV132	C17MA20A0311	0.1	7.38	29.65	4.01	0.02	185.74	680.98	10.63	0.02	0.2			7.98	0.21	176,186.23	0.25
HM16JV132	C17MA20A0313	0.12	0.8	5.32	4.73	0	87.78	2,521.96	12.51	0.005	0.15			2.53	0.56	167,451.30	0.06
HM16JV132	C17MA20A0294	0.14	0.8	8.36	1.16	0.005	56.72	647.93	18.9	0.005	0.25			5.56	0.25	177,471.49	0.11
HM16JV132	C17MA20A0303	0.005	2.48	0.02	1.42	0	241.31	380.18	5.18	0.01	1.31			11.9	0.03	179,119.34	0.49
HM16JV132	C17MA20A0325	2.4	0.8	0.06	2.21	0.005	335.57	508.82	5.9	0.06	1.41			39.08	0.03	178,754.22	0.38
HM16JV132	C17MA20A0314	0.91	9.92	6.01	2.04	0.005	525.78	609.22	37.81	0.14	0.42			40.61	0.12	169,020.54	2.6
HM16JV132	C17MA20A0324	0.49	3.68	0.86	1.95	0.005	331.15	588.69	9.77	0.005	0.71			22.11	0.03	185,008.90	0.16
HM16JV132	C17MA20A0320	0.2	0.8	7.5	0.41	0	67.25	434.89	2.46	0.01	0.38			22.72	0.03	178,291.83	0.08
HM16JV132	C17MA20A0327	0.46	0.8	0.2	2	0.01	201.42	757.96	13.02	0.01	0.38			15.61	0.22	171,037.29	0.02
HM16JV132	C17MA20A0315	0.31	0.8	0.17	2.72	0.005	411.94	1,215.67	10.25	0.17	0.6			22.71	0.03	175,037.22	1.83
HM16JV132	C17MA20A0318	0.24	3.52	0.01	1.39	0	194.29	1,089.67	7.71	0.005	0.68			24.29	0.03	179,514.02	0.06
HM16JV132	C17MA20A0322	0.25	0.8	9.85	4.35	0.005	67.58	2,971.84	11.21	0.01	0.01			5.79	0.44	180,005.90	0.07
HM16JV132	C17MA20A0328	0.39	3.49	55.6	5.75	0	94.8	2,702.52	17.2	0.03	0.13			8.15	0.26	182,427.84	0.15
HM16JV132	C17MA20A0316	0.24	11.2	1.05	3.23	0	427.02	1,094.06	4.78	0.04	0.84			18.93	0.03	179,869.55	1.49
HM16JV132	C17MA20A0326	0.31	0.8	4.92	5.13	0.01	209.11	2,266.24	11.57	0.005	0.42			4.83	0.03	179,743.18	0.14
HM16JV132	C17MA20A0319	0.14	0.8	0.25	0.35	0.005	68.62	536.14	5	0.02	0.72			31.81	0.03	182,703.19	0.16
HM16JV132	C17MA20A0321	0.23	0.8	0.02	0.51	0.005	49.9	998.27	5	0.005	0.28			27.12	0.03	164,171.73	0.28
HM16JV132	C17MA20A0321	0.25	9.44	10.27	2.36	0.01	804.26	1,120.41	16.44	0.12	2.34			43.46	0.03	186,413.09	0.18
HM16JV132	C17MA20A0323	0.18	3.01	0.87	2.95	0.01	503.48	865.14	22.8	0.01	0.74			5.47	0.55	177,808.36	0.09
HM16JV132	C17MA20A0317	0.06	5.67	0.05	0.48	0.01	91.03	537.37	5	0.005	0.11			21.63	0.03	169,289.54	0.57
HM16JV132	C17MA20A0324	0.18	0.8	1.49	0.56	0.02	95.22	539.98	4.2	0.01	0.46			33.2	0.03	167,101.52	0.13
HM16JV133	C17MA21A0442	0.41	14,709.41	223.79	1.76	0.02	509.67	505.94	218.22	0.15	1.07			13.85	0.24	183,559.01	1.67

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Hf178	K39	La139	Li7	Lu175	Mg24	Mn55	Na23	Nb93	Ni60	Pb206	Pb207	Pb208	Sb121	Si29	Sn118
HM16JV133	C17MA21A0441	0.3	23.43	161.9	1.96	0.01	234.09	280.38	17.06	0.01	0.68			24.27	0.28	176,639.43	1.6
HM16JV133	C17MA21A0443	0.66	219.85	405.09	1.62	0.04	487.44	523.87	42.72	0.09	0.96			9.31	0.36	172,348.09	1.39
HM16JV133	C17MA21A0444	0.02	0.8	0.17	0.14	0.01	44.07	1,120.30	4.68	0.01	0.28			147.45	0.09	178,806.77	3.56
HM16JV133	C17MA21A0450	2.39	7.53	223.2	2.9	0.01	627.88	506.95	20.58	0.07	1.91			30.04	0.42	178,367.83	0.79
HM16JV133	C17MA21A0446	1.16	4.02	172.89	1.09	0.05	290.02	577.61	14.68	0.05	0.66			10.7	0.15	179,251.15	1.5
HM16JV133	C17MA21A0448	0.5	42.56	113.85	4.26	0.01	1,829.58	640.26	59.66	0.06	3.18			23.93	0.36	177,790.53	1.39
HM16JV133	C17MA21A0447	0.57	31.29	218.5	0.86	0.02	155.91	740.32	45.09	0.08	0.32			8.86	0.14	175,928.95	1.6
HM16JV133	C17MA21A0449	0.27	25.78	42.35	3.64	0.01	554.3	794.43	39.34	0.005	0.88			55.93	0.28	167,394.08	3.71
HM16JV133	C17MA21A0445	0.14	8.17	25.07	0.15	0.01	60.74	984.79	25.76	0.27	0.15			169.08	0.1	171,668.74	2.96
HM16JV133	C17MA21A0462	2.66	8.53	70.81	2.18	0.01	663.82	702.96	46.4	0.01	1.02			24.24	0.15	167,727.87	0.47
HM16JV133	C17MA21A0452	2.97	0.8	149.65	0.33	0.04	44.6	404.62	12.53	0.005	0.95			31.03	0.35	186,807.99	0.33
HM16JV133	C17MA21A0464	4.06	2.38	120.52	0.65	0.04	55.67	933.96	18.57	0.02	0.19			16.75	0.87	175,729.80	5.86
HM16JV133	C17MA21A0452	0.89	0.8	37.38	0.64	0.01	52.14	1,009.22	14.01	0.01	0.65			19.52	2.38	178,088.84	0.15
HM16JV133	C17MA21A0461	0.97	3.03	79.47	0.67	0.02	82.81	742.43	19.51	0.02	0.75			21.03	0.71	170,418.14	0.54
HM16JV133	C17MA21A0454	0.58	0.8	40.87	0.76	0.01	172.27	746.88	19.89	0.01	0.82			21.31	0.95	174,531.22	0.29
HM16JV133	C17MA21A0451	1.5	10.15	155.69	3.12	0.01	933.67	408.34	20.32	0.1	1.63			16.91	0.12	168,203.33	1.16
HM16JV133	C17MA21A0453	0.95	11.29	85.62	2.94	0.01	808.62	497.07	49	0.03	1.13			10.8	0.14	178,016.70	1.33
HM16JV133	C17MA21A0463	0.72	9.14	162.26	1.99	0.005	494.36	364.16	24.42	0.14	0.9			12.27	0.03	159,932.07	1.28
HM16JV133	C17MA21A0465	1.56	5.37	121.53	1.79	0.02	325.58	589.48	22.87	0.04	0.77			14.57	0.23	177,279.47	0.91
HM16JV133	C17MA21A0467	1.23	2,656.90	49.63	1.77	0.01	914.97	421.61	57.32	0.005	1.47			14.64	0.16	170,104.94	0.85
HM16JV133	C17MA21A0469	0.64	80.87	58.6	1.8	0.01	630.29	551.81	35.63	0.02	0.93			10.38	0.35	181,687.34	1.14
HM16JV133	C17MA21A0466	1	11.62	28.62	1.47	0	602.75	588.77	37.78	0.01	1.3			11.37	0.11	177,350.05	1.16
HM16JV133	C17MA21A0468	0.66	11.8	40.31	1.49	0.01	517.4	555.13	23.13	0.02	0.64			14.58	0.13	182,224.39	1.24
HM16JV133	C17MA21A0470	0.18	6.47	87.45	0.4	0.03	43.21	752.19	43.59	0.02	0.21			72.26	0.12	179,266.19	2.42
HM16JV136	C17MA20A0336	0.1	172.04	10.76	1.77	0.01	786.65	937.24	882.91	0.08	0.46			8.07	1.01	183,778.56	0.74
HM16JV136	C17MA20A0332	0.05	0.8	21.55	0.41	0.05	89.93	859.88	15.59	0.005	0.05			28.66	0.42	188,885.89	0.35
HM16JV136	C17MA20A0332	0.17	2.97	9.48	0.13	0.03	34.93	218.35	5.86	0.01	0.09			38.13	0.65	170,555.52	0.53
HM16JV136	C17MA20A0330	0.03	0.8	0.49	0.09	0.01	70.67	2,057.15	3.27	0	0.31			6.16	0.03	171,406.97	1.06
HM16JV136	C17MA20A0331	0.06	0.8	73.8	0.36	0.05	86.1	1,357.38	6.94	0.04	0.43			21.35	0.34	159,472.06	0.24
HM16JV136	C17MA20A0337	0.04	8	20.73	0.49	0.03	93.11	1,686.97	28.03	0.005	0.18			18.48	0.49	178,020.15	0.21
HM16JV136	C17MA20A0334	0.02	0.8	3.43	0.38	0.01	39.69	918.38	11.41	0.005	0.21			10.81	0.16	174,404.05	0.02
HM16JV136	C17MA20A0335	0.02	7.39	18.53	0.29	0.02	37.62	349.43	12.46	0.005	0.31			20.76	0.35	183,515.04	0.31
HM16JV136	C17MA20A0333	0.005	0.8	0.11	0.31	0.02	44.64	313.43	12.31	0.005	0.14			14.31	0.03	182,583.18	0.02
HM16JV136	C17MA20A0335	0.005	0.8	1.81	1.31	0.08	70.55	1,948.06	3.48	0.005	0.11			10.83	0.17	172,342.72	0.23
HM16JV136	C17MA20A0329	0.04	6.04	0.4	0.2	0.005	36.41	508.53	28.31	0.005	0.38			4.51	0.03	169,973.67	0.36
HM16JV136	C17MA20A0334	0.03	0.8	0.81	0.36	0.005	39.32	359.72	7.38	0.005	0.01			5.09	0.03	187,557.27	0.02
HM16JV136	C17MA20A0344	2.38	43.89	1.09	2.37	0.01	468.35	1,246.70	34.9	0.01	0.65			13.22	0.15	173,227.57	1.06
HM16JV136	C17MA20A0343	1.72	31.53	5.52	0.94	0.01	399.59	519.41	21.15	0.01	0.63			13.24	0.03	173,710.74	0.99
HM16JV136	C17MA20A0340	1.58	33.68	39.01	1.01	0.005	325.3	694.05	6.7	0.01	0.51			5.45	0.03	178,475.00	1.53
HM16JV136	C17MA20A0339	1.9	30.86	347.25	1.09	0.005	244.75	1,222.82	8.91	0.04	0.16			6.39	0.03	176,408.25	1.92
HM16JV136	C17MA20A0339	0.8	42.76	3.64	1.19	0.01	228.77	1,283.30	6.09	0.01	0.38			5.82	0.14	163,690.26	1.45
HM16JV136	C17MA20A0342	0.77	29.58	31.56	0.99	0.01	339.46	343.82	9.6	0.04	0.64			10.66	0.03	182,936.58	1.52
HM16JV136	C17MA20A0342	0.72	15.5	32.3	0.92	0	440.01	582.08	9.78	0.005	0.87			9.79	0.15	167,730.41	0.68
HM16JV136	C17MA20A0341	0.67	33.62	18.96	1.34	0.01	502.79	368.23	13.54	0.05	0.93			6.93	0.03	173,722.92	0.53
HM16JV136	C17MA20A0341	0.57	26.64	148.55	1.03	0.01	559.07	346.19	12.79	0.05	0.51			6.78	0.03	174,573.09	0.62
HM16JV136	C17MA20A0338	0.54	24.24	0.07	0.67	0	180.17	608.97	6.1	0.01	0.47			6.96	0.03	172,147.60	2.06
HM16JV136	C17MA20A0346	0.03	9.06	10.55	0.77	0.03	72.63	2,700.06	52.83	0.005	0.15			9.47	0.34	176,883.92	0.35
HM16JV136	C17MA20A0347	1.82	16.55	0.06	0.37	0.01	170.41	664.54	6.73	0.01	0.66			4.61	0.03	176,085.23	0.84
HM16JV136	C17MA20A0356	2.44	53.83	23.09	1	0.02	210.12	1,736.35	12.06	0.02	0.35			9.85	0.13	172,815.34	6.33
HM16JV136	C17MA20A0355	3.02	7.97	16.4	7.17	0	4,218.01	527.6	12.77	0.01	3.4			16.72	0.29	176,895.01	0.16
HM16JV136	C17MA20A0348	0.3	0.8	2.65	0.98	0.005	111.03	3,663.16	9.26	0.005	0.12			6.29	0.44	158,814.01	0.09
HM16JV136	C17MA20A0362	0.89	5.32	38.11	0.45	0	118.28	923.77	25.88	0.08	0.01			9.94	0.03	186,189.64	2.36

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Hf178	K39	La139	Li7	Lu175	Mg24	Mn55	Na23	Nb93	Ni60	Pb206	Pb207	Pb208	Sb121	Si29	Sn118
HM16JV136	C17MA20A0363	0.69	0.8	61.16	0.63	0.005	100.96	1,350.31	9.4	0.09	0.22			11.63	0.21	197,596.46	1.64
HM16JV136	C17MA20A0362	0.56	9.09	2	0.67	0.005	47.22	322.83	16.61	0.03	0.1			6.64	0.03	175,481.77	2.92
HM16JV136	C17MA20A0360	0.42	5.63	11.86	0.7	0.005	73.71	2,009.76	37.13	0.13	0.07			8.94	0.18	179,745.90	1.65
HM16JV136	C17MA20A0364	0.35	4.88	48.75	0.38	0.03	94.84	802.42	17.29	0.01	0.28			27.04	0.26	172,396.80	0.3
HM16JV136	C17MA20A0361	0.13	3.45	21.43	0.46	0.01	68.81	515.11	21.54	0.005	0.06			12.23	0.17	179,727.71	0.11
HM16JV136	C17MA20A0358	0.18	0.8	11.2	0.76	0.02	98.11	2,653.60	23.26	0.01	0.1			20.46	0.56	176,433.87	0.27
HM16JV136	C17MA20A0357	0.05	0.8	21.24	1.29	0.03	88.65	3,039.78	7.91	0.005	0.05			11.28	0.28	177,543.58	0.48
HM16JV138	E17JN15A259	6.02	2,941.03	154.5	2.87	0.35	1,659.55	972.6	592.86	0.55	8.62	51.11	56.24	54.98	3.37	196,041.58	3.52
HM16JV138	E17JN15A260	3.02	52.37	29.36	1.17	0.12	538.02	810.9	123.8	0.15	0.74	14.91	17.73	14.31	1.85	166,711.26	3.38
HM16JV138	E17JN15A248	1.08	0.8	215.56	0.86	0.13	198.38	636.28	24.03	0.04	0.83	12.56	15.21	14.31	1.6	176,421.53	1
HM16JV138	E17JN15A252	1.35	0.8	1,044.96	0.95	0.32	182.45	580.69	48.74	0.02	1.24	16.63	20.31	19.34	7.25	178,317.92	1.41
HM16JV138	E17JN15A246	1.06	0.8	8.21	1.21	0.03	270.04	696.39	5	0.1	1.77	7.86	10.45	9.34	2.15	172,067.80	1.17
HM16JV138	E17JN15A247	0.98	1.98	386.83	0.77	0.21	234.78	798.62	9.35	0.02	3.22	16.97	20.03	19.32	0.83	177,948.72	2.16
HM16JV138	E17JN15A251	0.45	0.8	52.25	1.58	0.07	354.39	653.95	33.82	0.2	1.14	9.7	11.57	10.7	1.2	184,446.44	1.09
HM16JV138	E17JN15A258	0.58	3.8	56.21	1.5	0.04	306.68	573.45	42.19	0.08	1.93	16.51	20.06	19.1	4.4	179,985.20	1
HM16JV138	E17JN15A250	0.71	3.92	434.89	0.96	0.31	226.14	485.24	5	0.005	2.3	12.09	13.77	13.59	0.74	175,094.29	3
HM16JV138	E17JN15A249	0.5	4.44	61.97	1.14	0.05	229.47	1,215.45	19.9	0.12	2.37	11.63	14.22	13.23	0.37	182,443.27	1.12
HM16JV138	E17JN15A253	0.28	0.8	7.85	0.91	0.02	161.45	1,358.45	5	0.16	0.84	8.56	11.3	10.44	0.67	177,199.32	0.84
HM16JV138	E17JN15A251	0.12	0.8	98.49	0.025	0.11	229.07	613.89	5	0.005	0.2	9.87	11.07	10.7	0.58	165,493.82	0.62
HM16JV138	E17JN15A254	0.24	0.8	407.75	0.83	0.12	195.97	530.51	18.58	0.04	0.83	7.81	9.12	8.63	1.66	182,199.30	0.86
HM16JV138	E17JN15A255	0.15	0.8	414.02	1.39	0.14	296.42	554.67	30.49	0.03	1.73	10	11.14	11.12	0.51	179,311.13	0.83
HM16JV138	E17JN15A256	0.12	2.76	785.11	0.65	0.22	225.06	945.51	71.84	0.02	1.89	16.56	19.69	18.88	0.59	179,235.34	1.34
HM16JV138	E17JN15A250	0.18	2.98	66.22	0.95	0.05	234.99	429.32	5	0.01	1.19	6.07	6.6	6.91	0.15	183,420.85	1.69
HM16JV139	C17MA21A0581	0.36	0.8	9.03	1.38	0.04	133.67	380.81	5	0.05	1.38			7	0.32	165,512.45	0.02
HM16JV139	C17MA21A0579	0.66	4.71	75.59	1.16	0.02	430.84	1,132.15	8.41	0.01	1.73			7.71	1.02	170,382.30	0.3
HM16JV139	C17MA21A0573	0.49	24.36	81.01	1.89	0.03	2,782.34	1,031.82	57.74	0.01	7.15			4.83	0.53	178,020.66	0.3
HM16JV139	C17MA21A0572	0.47	80.65	111.65	4.49	0.05	13,963.88	1,046.99	143.64	0.01	24.29			10.58	0.19	174,692.19	0.17
HM16JV139	C17MA21A0573	0.31	14.61	35.06	1.83	0.02	2,496.56	2,147.67	37.78	0.02	6.26			6.28	1.11	182,832.09	0.36
HM16JV139	C17MA21A0577	0.54	21.72	104.37	1.09	0.03	3,274.84	789.98	64.56	0.02	8.56			6.36	0.19	185,348.18	0.35
HM16JV139	C17MA21A0584	0.56	23.55	71.68	1.78	0.02	48.05	2,725.86	9.38	0.005	0.76			7.6	1.88	170,820.32	0.17
HM16JV139	C17MA21A0569	0.42	0.8	13.65	1.03	0.01	382.8	1,451.50	6.56	0.01	2.95			5.39	1.11	161,545.18	0.1
HM16JV139	C17MA21A0566	0.25	10.91	29.27	2.01	0.02	484.48	683.38	10.17	0.005	1.65			10.5	0.89	180,973.80	0.1
HM16JV139	C17MA21A0585	0.68	0.8	3.92	0.23	0.04	22.55	447.63	5	0.005	1.09			14.17	0.03	158,949.74	0.27
HM16JV139	C17MA21A0564	0.11	12.42	54.38	0.73	0.01	1,459.30	556.79	22.18	0.06	2.53			2.64	0.03	160,960.34	0.28
HM16JV139	C17MA21A0562	0.16	40.86	31.45	2.75	0.03	4,831.41	611.87	62.4	0.01	10.15			3.17	0.48	187,331.93	0.29
HM16JV139	C17MA21A0566	0.24	0.8	22.4	0.47	0.01	103.35	564.3	7.73	0.005	1.81			6.33	0.32	185,276.93	0.09
HM16JV139	C17MA21A0581	0.48	0.8	59.98	2.29	0.03	109.97	1,103.71	9.48	0.01	1.11			7.72	0.97	177,633.07	0.13
HM16JV139	C17MA21A0580	0.4	20.42	165.07	1.7	0.04	332.26	907.35	82.09	0.02	2.72			9.13	2.25	183,345.12	0.33
HM16JV139	C17MA21A0570	0.45	16.61	217.31	2.28	0.02	360.96	1,404.57	39.69	0.005	2.26			9.66	2.75	181,206.54	0.39
HM16JV139	C17MA21A0567	0.29	15.35	18.07	2.26	0.02	4,104.31	3,716.84	46.09	0.005	7.44			5.34	0.35	178,197.02	0.18
HM16JV139	C17MA21A0571	0.22	57.35	112.3	2.09	0.01	4,471.91	1,731.92	61.47	0.01	10.21			4.65	0.54	175,795.44	0.17
HM16JV139	C17MA21A0582	0.28	4.25	6.25	2.06	0.02	258.03	2,653.48	13.41	0.005	0.93			6.34	0.65	171,051.29	0.18
HM16JV139	C17MA21A0574	0.23	0.8	61.5	0.85	0.02	44.27	2,572.68	5	0.005	0.4			5.06	0.86	161,796.83	0.48
HM16JV139	C17MA21A0562	0.34	4.68	7.95	2.5	0.01	925.83	1,396.52	10.09	0.005	1.74			4.85	0.89	166,827.89	0.19
HM16JV139	C17MA21A0575	0.28	13.05	129.14	2.21	0.02	2,796.64	1,876.33	37.3	0.005	5.72			3.31	0.53	175,132.54	0.24
HM16JV139	C17MA21A0586	0.28	2.3	143.26	2.77	0.02	406.48	2,576.69	7.69	0.02	2.67			6.88	0.84	168,027.05	0.12
HM16JV139	C17MA21A0577	0.38	0.8	64.11	1.02	0.17	429.42	555.57	5	0.005	3.37			5.84	0.25	159,095.28	0.36
HM16JV139	C17MA21A0565	0.25	0.8	5.2	2.23	0.01	39.08	3,211.69	5	0.005	0.82			4.04	0.94	169,908.52	0.19
HM16JV139	C17MA21A0576	0.11	0.8	8.25	1.25	0.01	75.58	623.62	5	0.03	0.49			3.52	0.03	176,298.05	0.12
HM16JV139	C17MA21A0568	0.29	6.43	119.63	1.1	0.02	1,225.82	435.68	17.86	0.005	2.68			3.2	0.16	182,724.58	0.12
HM16JV139	C17MA21A0583	0.22	42.2	232.84	1.78	0.04	335.45	1,033.72	45.13	0	2.21			8.35	1.4	170,921.47	0.31
HM16JV139	C17MA21A0566	0.29	0.8	22.68	2.1	0.02	118.14	2,144.24	8.6	0.02	1.25			10.6	0.96	169,122.60	0.09

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Hf178	K39	La139	Li7	Lu175	Mg24	Mn55	Na23	Nb93	Ni60	Pb206	Pb207	Pb208	Sb121	Si29	Sn118
HM16JV139	C17MA21A0586	0.25	0.8	60.16	2.53	0.02	138.57	3,312.81	10.31	0.02	1.38			8.31	1.87	180,692.75	0.17
HM16JV139	C17MA21A0578	0.27	0.8	103.42	1.02	0.02	90.56	461.92	9.06	0.01	0.94			5.98	0.18	165,404.45	0.19
HM16JV139	C17MA21A0582	0.34	0.8	64.05	0.96	0.04	485.68	668.16	23.72	0.005	1.22			4.32	0.27	184,956.36	0.31
HM16JV139	C17MA21A0568	0.25	5.09	126.87	1.78	0.02	760.63	1,843.13	18.34	0.01	1.88			5.48	0.53	167,529.40	0.16
HM16JV139	C17MA21A0574	0.27	5.05	53.74	0.93	0.02	860.08	3,654.35	16.34	0.01	2.43			4.87	0.39	174,699.23	0.43
HM16JV139	C17MA21A0564	0.13	0.8	0.82	0.85	0.01	60.8	389.04	5.83	0.005	0.84			1.55	0.03	183,430.57	0.14
HM16JV139	C17MA21A0563	0.11	4.18	1.43	1.65	0.03	162.65	1,407.02	11.94	0.005	1.86			46.47	2.27	184,267.65	0.25
HM16JV141	C17MA21A0537	6.22	9.05	0.06	1.73	0.12	585.91	2,516.67	24.81	0.01	5.34			20.95	22.47	179,698.23	0.17
HM16JV141	C17MA21A0536	1.61	9.15	0.55	0.5	0.96	131.88	2,972.63	20.38	0.005	1.33			27.08	0.03	171,872.17	12.32
HM16JV141	C17MA21A0538	0.79	5.06	364.89	0.52	0.63	140.09	3,170.13	43.49	0.01	0.78			40.96	0.28	173,604.57	6.46
HM16JV141	C17MA21A0544	0.51	0.8	1.42	0.025	0.3	72.75	3,170.23	5	0.005	0.12			24.75	0.16	169,576.32	4.09
HM16JV141	C17MA21A0540	0.89	0.8	15.66	0.17	2.63	72.38	3,898.88	15.21	0.02	0.28			28.09	0.4	177,943.62	6.14
HM16JV141	C17MA21A0539	0.18	0.8	17.86	0.26	0.14	74.16	3,173.92	9.27	0	0.42			23.84	1	183,759.93	2.97
HM16JV141	C17MA21A0542	0.22	0.8	0.62	0.025	0.71	65.82	3,360.78	5	0.005	0.06			21.55	0.03	171,715.23	1.43
HM16JV141	C17MA21A0543	0.12	0.8	0.08	0.025	0.1	81.59	3,326.45	4.84	0.005	0.55			23.49	0.49	181,861.42	0.56
HM16JV141	C17MA21A0545	0.47	0.8	14.68	0.21	1.01	133.48	2,564.08	6.97	0.005	0.57			29.58	0.1	180,646.46	3.53
HM16JV141	C17MA21A0547	0.34	5.55	0.27	0.18	0.31	85.49	3,208.18	3.47	0.005	1.06			28.19	0.75	182,854.05	3.08
HM16JV141	C17MA21A0546	0.13	0.8	10.98	0.37	0.19	114.59	3,184.83	5	0.005	1.26			26.24	0.03	172,781.90	1.26
HM16JV141	C17MA21A0548	0.03	34.64	8.78	0.4	0.05	294.13	3,097.61	7.65	0.02	1.42			23.95	0.17	169,930.26	0.37
HM16JV141	C17MA21A0550	0.11	0.8	3.33	0.1	0.16	68.33	3,036.76	12.48	0.005	0.19			23.01	0.2	181,743.22	0.51
HM16JV141	C17MA21A0549	0.01	3.32	0.01	0.025	0.02	55.63	2,647.51	3.37	0.02	0.47			19.06	0.03	172,727.73	0.29
HM16JV141	C17MA21A0557	0.88	0.8	16.65	0.08	0.85	156.8	3,419.49	3.19	0.01	0.13			28.88	0.13	178,370.58	6.05
HM16JV141	C17MA21A0559	0.3	0.8	24.49	0.33	0.78	118.35	2,320.03	13.02	0.005	0.34			22.09	1.65	179,146.17	1.45
HM16JV141	C17MA21A0554	0.68	0.8	33.59	0.2	0.68	105.27	2,623.11	15.03	0.01	0.21			30.93	0.03	174,513.36	2.79
HM16JV141	C17MA21A0555	0.57	0.8	44.52	0.72	1.34	144.34	3,149.15	11.79	0.005	0.48			32.09	0.03	177,888.91	3.36
HM16JV141	C17MA21A0556	0.18	11.48	0.48	0.025	0.25	74.43	4,179.70	5	0.005	0.25			22.76	1.18	188,620.10	0.75
HM16JV141	C17MA21A0561	0.42	0.8	9.45	0.14	0.57	90.5	3,497.59	14.18	0.02	0.01			24.7	0.38	176,372.66	1.11
HM16JV141	C17MA21A0560	0.39	0.8	0.93	0.14	0.7	85.6	3,011.11	5	0.005	0.17			23.95	0.03	166,560.63	2.45
HM16JV141	C17MA21A0552	0.09	6.29	6.9	0.32	0.13	64.82	3,061.07	43.7	0.005	0.27			18.74	0.43	169,554.54	1.1
HM16JV141	C17MA21A0553	0.21	0.8	0.09	0.025	0.49	88.06	3,470.79	3.76	0.005	0.21			28.88	0.38	183,112.74	1.61
HM16JV141	C17MA21A0558	0.28	0.8	0.24	0.025	0.19	63.09	2,575.60	5	0.005	0.01			19.69	0.54	164,493.33	0.77
HM16JV141	C17MA21A0551	0.13	0.8	0.02	0.025	0.11	59.51	2,988.86	5	0.005	0.11			21.7	0.03	182,654.96	0.69
HM16JV143	E17JN14A357	1.86	7.36	89.82	0.95	0.4	596.37	256.47	11.02	0.03	1.91	52.41	10.83	3.15	0.94	176,571.06	2.62
HM16JV143	E17JN14A353	2.7	31.86	362.38	1.96	0.23	322.94	421.67	96.79	0.04	2.16	47.27	8.68	9.38	1.84	176,804.27	2.04
HM16JV143	E17JN14A363	1.11	0.8	67.74	0.67	0.21	167.37	337.81	5	0.02	2.47	46.09	9.77	2.42	2.19	176,593.05	1.76
HM16JV143	E17JN14A365	0.96	3.59	82.44	0.77	0.3	108.58	256.3	17.73	0.03	1.92	39.21	9.46	3.49	2	175,910.87	1.87
HM16JV143	E17JN14A368	0.94	9.11	203.06	1.18	0.07	314.63	527.86	20.44	0.04	3.59	20.02	6.05	7.3	1.95	177,763.21	2.92
HM16JV143	E17JN14A364	0.8	0.8	239.16	0.53	0.13	45.97	744.34	22.94	0.06	3.05	18.71	4.58	2.54	2.39	182,088.80	1.95
HM16JV143	E17JN14A361	0.6	2.68	58.24	0.85	0.15	175.82	259.94	5	0.01	0.69	24.09	6.95	3.75	6.01	178,288.86	1.35
HM16JV143	E17JN14A367	0.64	3.1	214.03	0.51	0.26	154.75	105.8	18.39	0.19	0.42	16.83	3.32	0.48	0.26	174,011.41	1.96
HM16JV143	E17JN14A367	0.5	4.31	278.66	0.51	0.17	201.19	136.84	15.18	0.12	0.3	25.97	4.45	0.54	0.2	182,336.05	2.04
HM16JV143	E17JN14A356	0.28	12.01	167.75	0.78	0.18	161.24	1,494.06	58.41	0.01	0.67	19.81	4.64	2.11	3.57	176,128.02	1.25
HM16JV143	E17JN14A366	0.23	2.28	44.9	0.79	0.09	173.31	1,019.48	11.99	0.02	4.48	12.19	3.02	1.21	0.03	176,400.00	0.78
HM16JV143	E17JN14A362	0.13	2.25	68.5	0.84	0.08	148.15	428.45	6.88	0.03	0.61	20.87	5.42	2.25	5.02	171,260.96	1.42
HM16JV143	E17JN14A359	0.27	5.82	159.24	1.13	0.23	414.23	518.81	23.03	0.03	1.33	26.25	6.23	2.67	4.75	177,492.27	1.37
HM16JV143	E17JN14A354	0.31	5.38	156.83	1.85	0.13	125.74	1,676.46	15.33	0.005	0.26	14	3.38	16.62	2.89	165,130.75	0.84
HM16JV143	E17JN14A358	0.13	3.76	61.34	0.92	0.21	536.65	1,628.30	19.89	0.01	1.62	15.81	3.94	1.87	0.93	177,531.61	1
HM16JV143	E17JN14A360	0.08	4.04	69.46	1.08	0.05	192.42	1,689.25	14.27	0.01	2.38	9.2	2.55	1.37	0.47	175,762.19	0.91
HM16JV149	E17JN15A133	0.57	0.8	10.76	0.59	0.03	93.73	618.92	5	0.02	2.72	3.08	3.74	2.98	1.62	172,394.85	1.79
HM16JV149	E17JN15A133	0.6	2.89	77.76	0.5	0.04	102.19	782.3	6.94	0.02	2.39	3.07	3.59	3.24	1.76	183,443.67	1.8
HM16JV149	E17JN15A131	0.55	0.8	16.75	1.18	0.06	87.83	390.15	10.31	0.23	0.4	2.98	3.43	3.15	0.03	166,846.85	1.22
HM16JV149	E17JN15A147	0.34	7.47	80.91	0.53	0.04	753.58	1,415.73	16.81	1.04	6	29.49	36.27	34.03	0.32	190,397.64	1.98

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Hf178	K39	La139	Li7	Lu175	Mg24	Mn55	Na23	Nb93	Ni60	Pb206	Pb207	Pb208	Sb121	Si29	Sn118
HM16JV149	E17JN15A138	0.37	0.8	113.44	1.12	0.08	84.75	1,551.43	23.12	0.07	0.87	4.49	4.63	4.45	0.64	177,592.87	1.33
HM16JV149	E17JN15A134	0.26	0.8	8.42	1.75	0.03	116.16	1,864.58	6.87	0	1.06	2.15	2.3	1.81	0.48	181,641.68	1.22
HM16JV149	E17JN15A136	0.21	0.8	30.99	1.64	0.05	103.25	1,715.29	5	0.05	1.8	3.75	3.72	3.58	0.69	175,726.76	0.51
HM16JV149	E17JN15A128	0.19	6.86	108.07	1.09	0.06	197.96	561.59	13.46	0.11	1.62	3.62	4.24	3.61	0.67	183,694.07	2.09
HM16JV149	E17JN15A127	0.07	0.8	68.95	1.19	0.02	99.42	999.95	14.41	0.12	0.94	4.78	5.71	4.92	0.87	168,847.53	1.29
HM16JV149	E17JN15A135	0.14	5.03	39.27	1.62	0.06	187.37	1,025.58	10.28	0.04	1.58	3.29	3.39	3.08	0.39	177,318.30	0.65
HM16JV149	E17JN15A147	0.12	6.37	95.25	0.34	0.2	229.6	505.1	16.95	0.19	0.78	19.67	21.73	20.47	0.55	174,359.80	0.79
HM16JV149	E17JN15A129	0.14	0.8	100.71	0.96	0.03	70.4	1,176.12	5.69	0.05	1.44	4.36	4.43	4.34	0.48	180,888.09	1.3
HM16JV149	E17JN15A130	0.14	0.8	77.82	1.04	0.03	86.13	2,023.36	13.85	0.05	1.03	2.33	2.51	2.39	0.76	171,785.71	1.1
HM16JV149	E17JN15A126	0.11	100.73	202.24	1.27	0.03	2,870.01	1,035.13	27.01	0.26	1.91	13.83	18.41	16.88	0.21	177,929.41	2.31
HM16JV149	E17JN15A132	0.1	0.8	179.17	0.42	0.17	83.85	336.25	9.58	0.02	1.2	6.32	4.44	3.76	0.15	177,842.98	0.51
HM16JV149	E17JN15A126	0.05	71.46	133.85	0.97	0.03	2,608.72	1,077.50	28.31	0.26	2.41	12.65	17.6	15.23	0.43	185,715.47	2.68
HM16JV149	E17JN15A146	0.02	14.01	102.66	2.69	0.02	2,025.09	1,221.75	37.53	1.03	9.04	34.02	44	41.07	0.26	182,083.81	1.45
HM16JV149	E17JN15A129	0.1	0.8	1.27	1.4	0.005	74.15	1,612.14	5	0.07	1.02	2.36	2.5	2.47	0.47	166,694.59	0.9
HM16JV149	E17JN15A145	0.31	8.74	24.01	0.74	0.01	633.21	1,570.71	17.22	1.03	3.03	44.22	56.76	52.19	0.32	178,781.30	2.08
HM16JV150	E17JN14A317	1.93	0.8	7.16	0.025	0.67	255.34	927.31	5	0.005	0.84	12.19	12.69	10.92	0.03	169,936.48	3.48
HM16JV150	E17JN14A335	1.25	0.8	9.49	0.025	0.47	246.73	1,051.61	7.16	0.005	0.96	11.64	12.41	11.36	0.03	182,459.41	1.4
HM16JV150	E17JN14A316	0.86	0.8	4.05	0.025	0.44	250.65	1,032.47	5	0.005	1.64	10.29	10.58	10.25	0.03	175,990.53	3.15
HM16JV150	E17JN14A317	1.24	0.8	22.27	0.025	0.72	204.77	930.57	5	0.005	0.85	14.34	14.06	13.02	0.03	182,663.68	2.98
HM16JV150	E17JN14A332	1.23	0.8	1.63	0.25	0.6	292.11	1,133.01	5.97	0.005	0.96	16.34	12.69	10.3	0.03	183,069.02	3.81
HM16JV150	E17JN14A319	1.44	0.8	301.38	0.57	1.63	224.89	934.06	7.27	0.005	1.18	38.98	19.83	19.44	0.03	178,506.53	3.21
HM16JV150	E17JN14A318	0.68	0.8	0.02	0.025	0.17	232.7	1,002.94	6.14	0.005	0.9	12.79	15.93	14.47	0.03	182,388.71	23.97
HM16JV150	E17JN14A314	0.79	0.8	0.3	0.025	0.4	398.38	1,066.70	5	0.005	0.38	10.35	11.42	10.65	0.03	181,873.98	2.18
HM16JV150	E17JN14A316	0.67	0.8	0.13	0.2	0.32	300.8	1,074.10	5	0.005	1.01	8.52	10.28	9.62	0.03	187,107.02	2.3
HM16JV150	E17JN14A344	1.31	0.8	15.93	0.025	0.37	165.5	952.64	5	0.005	0.79	14.53	16.71	16	0.03	181,295.12	3.71
HM16JV150	E17JN14A345	1	0.8	22.04	0.025	0.58	171.21	962.81	5	0.005	0.63	14.19	14.43	13.43	0.03	180,878.24	6.46
HM16JV150	E17JN14A315	0.82	0.8	0.09	0.025	0.24	162	1,132.79	5	0.005	0.46	15.37	20.05	18.23	0.03	179,694.67	0.82
HM16JV150	E17JN14A330	0.49	5.49	5.96	0.025	0.45	232.26	799.36	11.64	0.005	0.64	9.14	11.74	10.87	0.03	174,773.15	5.22
HM16JV150	E17JN14A330	0.34	6.21	0.08	0.025	0.14	202.32	716.52	12.97	0.005	0.48	9.77	13.41	11.86	0.03	189,110.60	6.96
HM16JV150	E17JN14A329	0.28	0.8	0.005	0.025	0.03	348.79	776.97	5	0.005	0.43	8.96	10.99	10.1	0.03	182,765.43	6.96
HM16JV151	C17MA21A0528	2.83	0.8	0.7	0.025	0.54	260.38	1,798.24	5	0.03	2.28			20.88	0.16	187,114.96	2.59
HM16JV151	C17MA21A0519	2.41	14.7	0.9	0.1	0.58	254.65	1,894.33	11.5	0.005	1.72			16.94	0.24	182,117.44	2.53
HM16JV151	C17MA21A0530	2.23	0.8	0.8	0.025	0.79	183.16	1,614.74	5	0.005	1.34			16.84	0.03	169,670.13	1.81
HM16JV151	C17MA21A0535	2.78	0.8	0.59	0.025	0.69	218.14	1,724.48	5	0.03	2.93			20.57	0.03	188,957.83	1.36
HM16JV151	C17MA21A0520	2.12	2.97	0.74	0.025	0.44	185.51	1,545.90	4.89	0.005	2.19			16.81	0.03	182,870.40	2.07
HM16JV151	C17MA21A0517	1.48	0.8	17.2	0.025	0.45	227.07	1,499.89	5	0.005	1.55			14.56	0.03	178,552.59	1.69
HM16JV151	C17MA21A0507	1.26	0.8	0.15	0.24	0.26	216.78	1,334.73	20.04	0.005	1.96			11.67	0.03	170,654.15	1.07
HM16JV151	C17MA21A0511	1.03	0.8	1.9	0.76	0.03	96.27	557.89	5	0.02	0.84			5.36	0.03	184,745.12	0.3
HM16JV151	C17MA21A0518	1.62	0.8	2.81	0.025	0.43	170.92	1,373.02	5	0.005	1.07			18.95	0.03	183,066.04	1.63
HM16JV151	C17MA21A0535	1.37	0.8	139.2	0.1	0.36	207.23	1,449.09	3.54	0.005	1.2			23.46	0.03	170,686.02	1.11
HM16JV151	C17MA21A0515	1.66	0.8	8.05	0.025	0.37	173.36	1,453.11	4.17	0	0.8			17.38	0.03	181,534.33	1.28
HM16JV151	C17MA21A0512	0.78	0.8	0.23	0.14	0.42	235.33	1,607.27	6.28	0.005	2.22			12.89	0.03	182,073.43	1.12
HM16JV151	C17MA21A0504	0.67	0.8	2.96	0.025	0.3	185.33	1,164.98	14.08	0.005	1.08			9.63	0.03	165,641.34	1.21
HM16JV151	C17MA21A0533	1.07	0.8	0.74	0.08	0.25	125.51	1,091.83	11.46	0.005	0.98			8.58	0.03	183,346.04	0.75
HM16JV151	C17MA21A0516	0.78	0.8	0.1	0.025	0.21	253.61	1,276.33	5	0	0.98			12.85	0.03	188,286.79	1.4
HM16JV151	C17MA21A0531	1.07	0.8	32.69	0.025	0.33	202.29	1,385.83	5	0.02	0.95			16.91	0.03	183,866.46	1.4
HM16JV151	C17MA21A0514	0.56	0.8	0.13	0.025	0.21	298.36	1,316.94	5	0	0.81			11.84	0.03	184,944.90	0.95
HM16JV151	C17MA21A0529	0.75	0.8	0.91	0.025	0.34	210.18	1,358.72	5	0.005	1.43			13.26	0.12	185,359.92	1.92
HM16JV151	C17MA21A0505	0.48	0.8	0.06	0.025	0.33	276.34	1,396.72	5	0.005	1.47			12.82	0.03	185,540.73	1.07
HM16JV151	C17MA21A0534	0.44	0.8	4.9	0.57	0.02	108.78	1,368.15	3	0.01	1.15			7.64	0.03	180,952.63	0.24
HM16JV151	C17MA21A0508	0.49	0.8	2.4	0.88	0.06	112.97	3,015.82	3.36	0.005	1.04			8.57	0.03	181,604.93	0.4
HM16JV151	C17MA21A0510	0.75	4.62	23.16	0.19	0.2	112.12	1,708.26	23.4	0.005	1.93			14.36	0.03	186,992.69	0.78

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Hf178	K39	La139	Li7	Lu175	Mg24	Mn55	Na23	Nb93	Ni60	Pb206	Pb207	Pb208	Sb121	Si29	Sn118
HM16JV151	C17MA21A0532	0.6	0.8	102.22	0.14	0.25	164.83	1,355.35	6.17	0.005	0.69			21.29	0.03	184,547.79	1.66
HM16JV151	C17MA21A0513	0.42	5.84	0.68	0.025	0	115.44	431.63	5	0.005	0.68			1.42	0.03	169,935.53	0.4
HM16JV151	C17MA21A0527	0.44	0.8	7.39	0.49	0.05	104.39	1,211.52	5	0.005	1.11			7.06	0.11	179,374.21	0.17
HM16JV151	C17MA21A0506	0.43	0.8	0.27	0.11	0.12	126.56	1,587.25	8.45	0.005	0.56			15.46	0.03	186,706.32	0.5
HM16JV151	C17MA21A0509	0.45	0.8	18.33	0.82	0.13	68.86	2,424.65	3.75	0.005	1.18			12.79	0.12	180,432.47	0.34
HM16JV151	C17MA21A0530	0.28	0.8	1.13	0.025	0.09	114.95	1,484.12	24.63	0.005	0.43			14.8	0.03	192,388.54	0.8
HM16JV151	C17MA21A0527	0.05	0.8	3.77	0.27	0.05	75.37	749.54	5	0.005	0.87			8.3	0.03	189,210.61	0.02
HM16JV152	C17MA20A0458	1.39	0.8	5.17	0.71	0.7	561.99	854.55	13.01	0	3.64			10.43	0.03	182,063.04	2.06
HM16JV152	C17MA20A0446	1.58	0.8	0.49	0.09	0.16	287.67	906.05	5	0.02	0.59			17.29	0.03	176,903.15	1.68
HM16JV152	C17MA20A0451	0.88	0.8	0.27	0.15	0.33	494.52	1,306.41	6.36	0.005	1.52			10.39	0.45	172,885.09	2.06
HM16JV152	C17MA20A0446	1.77	0.8	9.23	0.025	0.17	261.01	893.56	5.56	0.005	0.53			18.14	0.03	190,951.41	2.09
HM16JV152	C17MA20A0457	0.62	3.43	1.97	0.44	0.54	536.62	820.03	12.8	0.005	2.66			10.68	0.03	183,181.54	1.95
HM16JV152	C17MA20A0452	1.43	0.8	20.65	0.08	0.84	165.79	1,194.98	3.41	0.005	0.46			15.3	0.03	183,396.76	3.04
HM16JV152	C17MA20A0447	1.36	0.8	8.52	0.11	0.89	164.41	828.78	2.98	0	0.42			16.63	0.03	181,985.73	2.92
HM16JV152	C17MA20A0450	1.2	2.68	45.71	0.19	0.73	172.79	1,065.76	6.56	0.01	0.35			16.18	0.03	182,996.52	2.36
HM16JV152	C17MA20A0454	0.55	0.8	7.67	0.4	1.64	511.88	968.58	10.56	0.005	6.08			12.17	0.03	184,018.89	1.54
HM16JV152	C17MA20A0448	1.04	0.8	187.09	0.32	1.24	171.46	957.53	3.92	0	0.52			18.84	0.03	181,189.62	2.97
HM16JV152	C17MA20A0449	0.82	0.8	218.86	0.43	1.2	187.75	922.34	6.03	0	0.53			21.34	0.03	181,964.12	2.66
HM16JV152	C17MA20A0453	0.19	0.8	1.73	0.025	0.25	356.93	759.01	3.54	0.005	0.81			16.76	0.11	183,402.84	1.15
HM16JV152	C17MA20A0455	0.22	0.8	0.08	0.57	0.15	449.4	829.37	6.47	0	2.55			9.62	0.03	184,660.87	1.09
HM16JV152	C17MA20A0456	0.61	0.8	35.93	0.025	0.64	170.35	948.3	5	0.005	0.46			15.86	0.03	183,645.74	1.64
HM16JV152	C17MA20A0459	0.71	0.8	84.43	0.21	0.89	164.67	937.92	5	0.01	0.36			15.42	0.03	182,550.38	1.64
HM16JV152	C17MA20A0462	5.38	0.8	8.85	0.1	0.52	214.5	1,144.54	5.22	0.005	0.57			16.9	0.03	172,672.42	5.15
HM16JV152	C17MA20A0464	2.87	2.16	6.98	0.12	0.51	337.05	1,085.73	9.52	0.005	1.21			14.61	0.03	179,538.57	1.98
HM16JV152	C17MA20A0465	3.56	2.77	16.06	0.22	1.16	237.65	1,068.40	43.38	0.005	0.52			18.34	0.03	183,098.12	4.02
HM16JV152	C17MA20A0469	1.25	0.8	0.43	0.9	1.22	462.64	795.25	9.81	0.01	3.69			8.95	0.03	183,593.40	2.34
HM16JV152	C17MA20A0466	1.82	0.8	2.16	0.025	0.19	307.93	1,057.46	7.22	0.005	0.76			12.59	0.03	177,218.28	1.7
HM16JV152	C17MA20A0463	1	0.8	4.91	0.09	0.18	387.7	1,098.36	5.49	0.005	0.34			13.36	0.03	182,786.46	0.94
HM16JV152	C17MA20A0467	1.7	0.8	11.82	0.025	0.94	191.55	1,378.91	4.02	0.005	0.8			15.25	0.03	181,878.41	3.54
HM16JV152	C17MA20A0460	1.06	0.8	124.77	0.47	1.35	179.38	951.45	10.04	0.005	0.75			19.62	0.03	184,399.72	3.38
HM16JV152	C17MA20A0470	0.77	0.8	10.31	0.025	0.31	181.15	1,069.67	5	0.005	0.06			17.56	0.03	168,069.50	1.69
HM16JV152	C17MA20A0461	0.81	3.74	189.49	0.61	1.14	222.98	994.02	27.54	0.005	0.63			20.85	0.03	188,592.86	2.49
HM16JV152	C17MA20A0468	0.46	0.8	26.65	0.22	0.66	460.81	851.58	4.6	0.005	1.56			11.08	0.03	182,926.91	1.8
HM16JV154	E17JN14A296	0.31	821.4	296.68	41.88	0.08	6,601.60	911.2	53.05	0.04	3.05	16.94	18.41	18.33	0.3	174,700.59	2.06
HM16JV154	E17JN14A307	0.2	108.35	340.91	75.43	0.07	10,283.11	969.38	70.78	0.03	4.81	34.63	42.16	40.08	0.44	175,897.77	0.94
HM16JV154	E17JN14A312	0.31	126.33	274.55	59.17	0.08	8,191.84	1,484.29	47.09	0.05	3.58	6.57	7.51	7.18	0.37	170,413.56	1.51
HM16JV154	E17JN14A301	0.24	58.93	122.8	38.4	0.06	5,076.46	2,251.66	34.53	0.005	2.72	13.79	14.59	15.16	0.42	175,002.79	1.77
HM16JV154	E17JN14A308	0.1	145.34	282.95	79.31	0.05	11,515.03	5,256.99	59.56	0.05	5.92	26.4	33.08	30.63	0.58	163,113.97	1.06
HM16JV154	E17JN14A302	0.2	44.52	118.32	39.27	0.05	5,866.21	652.39	48.82	0.04	2.3	9.9	10.71	11.05	0.19	174,954.18	1.51
HM16JV154	E17JN14A299	0.16	30.36	99.31	27.29	0.06	3,889.36	524.57	26.19	0.06	1.56	25.83	30.47	29.56	0.03	175,126.56	1.8
HM16JV154	E17JN14A304	0.21	28.57	74.26	17.51	0.04	2,308.80	513.26	21.41	0.01	1.09	7.3	7.75	8.24	0.3	178,591.40	1.84
HM16JV154	E17JN14A310	0.1	81.18	104.55	26.55	0.04	3,369.26	609.54	25.47	0.06	1.87	3.04	2.97	2.91	0.03	174,662.56	1.27
HM16JV154	E17JN14A300	0.05	13.13	43.18	18.53	0.03	2,125.69	5,830.55	14.38	0.03	1.04	23.46	28.17	27.29	0.28	173,606.30	1.91
HM16JV159	E17JN14A031	5.08	0.8	9.41	0.025	0.45	63.77	1,802.94	8.53	0	0.01	32.34	42.82	39.8	0.03	183,713.98	35.03
HM16JV159	E17JN14A007	0.82	0.8	20.71	0.23	0.01	42.02	250.49	5	0.01	0.15	7.81	9.17	8.61	0.03	173,272.31	0.9
HM16JV159	E17JN14A007	0.74	0.8	13.24	0.34	0	31.92	218.51	5	0	0.17	7.51	9.57	8.43	0.03	183,864.01	1.12
HM16JV159	E17JN14A018	0.37	0.8	4.89	0.62	0.005	72.46	629.88	5	0.005	0.32	7.35	8.72	8.52	0.03	175,328.60	0.54
HM16JV159	E17JN14A008	0.2	0.8	1.95	0.025	0.005	27.33	388.8	5	0.09	0.01	9.04	10.68	8.89	0.03	161,298.07	0.43
HM16JV159	E17JN14A029	0.27	0.8	3.06	0.025	0.06	88.65	1,442.92	5	0.005	0.01	28.56	36.23	34.39	0.03	168,617.21	3.85
HM16JV159	E17JN14A008	0.29	0.8	5.46	0.28	0.01	24.89	384.1	5	0.01	0.09	8.87	11.05	10.03	0.03	176,824.85	0.53
HM16JV159	E17JN14A014	0.2	0.8	12.27	1.13	0.06	94.5	1,736.87	11.23	0.01	0.01	31.79	41.62	39.47	0.03	177,728.10	3.83
HM16JV159	E17JN14A012	0.2	12.5	6.65	2.28	0.05	150.2	539.4	5	0.01	0.15	10.93	14.38	13.32	0.03	177,666.28	1.49

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Hf178	K39	La139	Li7	Lu175	Mg24	Mn55	Na23	Nb93	Ni60	Pb206	Pb207	Pb208	Sb121	Si29	Sn118
HM16JV159	E17JN14A013	0.25	0.8	18.11	0.025	0.01	61.71	1,523.86	5	0.005	0.01	35.56	46.58	42.73	0.03	179,392.16	1.48
HM16JV159	E17JN14A018	0.08	0.8	0.8	1.78	0.005	56.4	1,558.01	5	0.005	0.37	4.13	5.09	4.68	0.03	185,934.31	0.6
HM16JV159	E17JN14A025	0.04	11.3	0.28	1.69	0	57.46	3,722.96	55.27	0.01	0.14	2.35	3	2.82	0.34	170,623.10	0.83
HM16JV159	E17JN14A017	0.04	0.8	4.96	1.48	0.03	147.72	304.71	5	0.05	0.15	1.62	2.19	1.95	0.03	179,161.04	0.66
HM16JV159	E17JN14A024	0.01	0.8	1.09	0.46	0.005	62.91	137.47	5	0.005	0.13	0.74	0.83	0.77	0.03	170,345.93	0.43
HM16JV159	E17JN14A016	0.29	0.8	0.24	2.15	0.02	79.2	3,037.06	14.2	0.01	0.1	11.63	13.82	13.12	0.03	170,562.99	1.32
HM16JV159	E17JN14A020	0.03	2.68	20.94	3.29	0.005	464.13	3,078.22	5	0.005	0.64	6.45	7.93	7.55	0.03	180,154.69	0.62
HM16JV159	E17JN14A024	0.005	0.8	31.44	0.51	0.005	41.13	129.75	5	0.04	0.12	0.66	0.88	0.79	0.03	184,615.91	0.51
HM16JV159	E17JN14A025	0.03	3.05	2.89	1.46	0.005	59.15	3,582.99	23.77	0.005	0.3	2.28	2.59	2.5	0.03	182,460.54	0.88
HM16JV159	E17JN14A023	0.02	0.8	0.09	2.32	0.005	40.83	2,707.97	5	0.005	0.81	3.55	4.26	3.94	0.03	180,242.45	0.62
HM16JV159	E17JN14A028	0.005	2.43	21.99	1.54	0	40.25	2,962.26	5.59	0.01	0.08	3.23	3.83	3.56	0.03	176,151.98	0.86
HM16JV159	E17JN14A015	0.06	4.07	2.67	0.025	0.01	50.93	1,297.05	15.74	0.005	0.01	25.99	35.35	32.72	0.03	183,787.78	0.65
HM16JV159	E17JN14A027	0.05	0.8	0.05	0.52	0.01	42.21	234.69	5	0.01	0.22	1.21	1.32	1.19	0.03	182,742.83	0.39
HM16JV159	E17JN14A009	0.03	0.8	1.85	0.2	0.005	38.99	404.53	5	0.005	0.01	6.01	7.68	6.93	0.41	188,200.50	0.54
HM16JV159	E17JN14A011	0.005	0.8	0.09	1.02	0.01	175.38	485.95	5	0.09	0.01	1.53	1.67	1.6	0.03	179,634.34	0.61
HM16JV159	E17JN14A010	0.005	0.8	1.87	2.32	0.005	67.08	3,779.02	10.46	0.01	0.16	4.17	5.38	4.85	0.03	186,945.54	0.8
HM16JV159	E17JN14A026	0.005	0.8	0.005	0.025	0.01	24.26	1,044.18	5	0.005	0.49	3.07	3.62	2.93	0.03	160,395.60	0.68
HM16JV159	E17JN14A010	0.005	0.8	0.39	2.34	0.005	64.58	3,477.75	5	0.005	0.01	3.76	5.38	4.03	0.03	168,746.28	0.57
HM16JV159	E17JN14A021	0.005	0.8	0.85	0.55	0.005	23.2	1,610.25	5	0	0.06	1.3	1.52	1.44	0.03	181,898.92	0.46
HM16JV159	E17JN14A009	0.02	0.8	0.23	0.025	0.01	6.61	314.06	5	0.005	0.01	7.69	9.59	9.56	0.6	174,617.99	0.38
HM16JV159	E17JN14A022	0.005	0.8	12.68	0.82	0.005	17.98	807.16	7.02	0.005	0.11	1.32	1.24	1.16	0.03	170,434.50	0.51
HM16JV159	E17JN14A019	0.005	0.8	0.17	0.025	0	6.1	355.63	5	0.005	0.01	6.43	8.16	7.42	0.69	178,477.76	0.4
HM16JV161	C17MA21A0480	1.45	0.8	65.4	0.35	0	62.78	214.24	4.1	0	0.48			9.37	0.12	175,839.43	1.81
HM16JV161	C17MA21A0476	0.92	9.27	15.05	1.71	0.005	76.17	1,237.39	6.53	0.005	0.28			5.16	0.03	172,298.94	0.47
HM16JV161	C17MA21A0476	0.84	5.79	76.33	1.6	0.005	94.7	1,635.84	5	0.04	0.18			6.08	0.03	183,146.75	0.85
HM16JV161	C17MA21A0478	0.5	5.82	86.49	1.81	0.01	76.93	748.27	43.13	0.02	0.11			5.22	0.17	180,839.93	1.23
HM16JV161	C17MA21A0475	0.32	48.26	13.84	1.76	0.01	266.69	1,920.57	14.28	0.02	0.46			52.51	0.44	169,532.97	2.02
HM16JV161	C17MA21A0478	0.46	4.55	173.91	2.18	0.005	121.08	429.3	12.32	0.01	0.01			5.32	0.15	174,208.93	0.94
HM16JV161	C17MA21A0477	0.13	0.8	8.3	0.69	0.01	115.61	504.57	5.8	0.01	0.09			7.14	0.24	178,147.98	1.12
HM16JV161	C17MA21A0479	0.32	0.8	400.32	2.47	0.005	218.29	363.11	5.98	0.03	0.01			2.37	0.03	171,376.24	1.71
HM16JV161	C17MA21A0472	0.11	0.8	51.72	0.13	0	11.35	122.21	5	0.03	0.16			3.89	0.03	184,389.46	0.27
HM16JV161	C17MA21A0481	0.07	0.8	5.09	0.025	0.005	47.31	1,002.56	5	0.005	0.01			116.56	0.03	171,429.48	0.34
HM16JV161	C17MA21A0474	0.13	15.36	14.6	1.92	0.005	84.95	1,103.26	5.21	0.01	0.11			66.12	0.03	173,535.15	1.04
HM16JV161	C17MA21A0481	0.12	0.8	0.04	0.025	0.005	47.44	1,037.98	4.04	0.005	0.01			124.57	0.03	184,071.04	0.36
HM16JV161	C17MA21A0473	0.07	0.8	14.69	1.89	0.005	41.16	2,920.35	5	0.06	0.11			5.28	0.03	179,118.61	0.56
HM16JV161	C17MA21A0479	0.13	0.8	264.9	1.3	0.02	24.74	381.12	25.73	0.01	0.13			3.76	0.03	184,143.73	2.55
HM16JV161	C17MA21A0483	0.07	26.23	14.61	0.92	0.01	161.98	1,037.25	14.07	0.01	0.25			37.43	0.1	175,080.40	1.17
HM16JV161	C17MA21A0482	0.07	0.8	0.12	0.025	0.01	37.68	1,213.44	5	0.005	0.09			90.45	0.31	177,706.30	1.04
HM16JV161	C17MA21A0472	0.11	0.8	117.72	0.4	0.005	15.73	163.88	5.03	0.05	0.07			5.58	0.03	169,351.67	0.35
HM16JV161	C17MA21A0471	0.02	0.8	0.01	0.025	0	4.63	95.84	5	0.005	0.01			1.15	0.03	182,465.53	0.26
HM16JV161	C17MA21A0490	0.005	0.8	0.12	0.025	0.005	9.05	145.08	5	0.005	0.01			4.31	0.03	184,583.13	0.16
HM16JV161	C17MA21A0486	0.005	0.8	0.87	0.12	0.01	3.54	271.64	5	0.01	0.01			14.62	0.71	181,726.98	0.12
HM16JV161	C17MA21A0487	1.61	3.69	74.46	0.61	0.005	67.62	382.94	17.25	0.05	0.36			7.54	0.09	171,860.72	1.81
HM16JV161	C17MA21A0489	0.99	0.8	86.08	0.52	0.01	48.19	187.9	13.94	0.01	0.34			6.42	0.03	172,050.36	1.97
HM16JV161	C17MA21A0488	0.69	6.07	23.86	1.06	0.01	17.09	1,378.08	38.78	0.005	0.01			6.18	0.45	178,053.64	9.4
HM16JV161	C17MA21A0485	1.09	103.99	3	4.69	0.005	397.56	404.19	42.35	0.03	0.39			8.96	0.14	172,416.24	1.21
HM16JV161	C17MA21A0495	0.28	4.18	309.02	1.55	0.005	38	1,047.40	24.28	0.02	0.23			5.73	0.25	180,377.11	1.8
HM16JV161	C17MA21A0495	0.28	0.8	95.24	1.62	0.01	36.74	1,295.65	21.35	0.005	0.32			6.34	0.3	170,575.99	1.01
HM16JV161	C17MA21A0496	0.3	0.8	28.8	0.8	0.005	26.03	388.25	5.61	0.005	0.13			2.2	0.03	163,727.76	0.57
HM16JV161	C17MA21A0489	0.13	0.8	112.35	0.93	0.005	61.46	2,105.24	24.86	0.03	0.16			3.38	0.03	183,889.85	4.39
HM16JV161	C17MA21A0492	0.13	3.84	154.03	1.46	0.005	29.82	624.78	17.87	0.03	0.04			5.33	0.03	175,184.84	0.51
HM16JV161	C17MA21A0484	0.06	21.55	26.79	1.08	0.01	109.86	1,330.01	9.54	0.03	0.08			69.47	0.03	171,447.65	1.2

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Hf178	K39	La139	Li7	Lu175	Mg24	Mn55	Na23	Nb93	Ni60	Pb206	Pb207	Pb208	Sb121	Si29	Sn118
HM16JV161	C17MA21A0493	0.03	0.8	59.91	0.94	0.005	17.2	1,432.77	14.77	0.01	0.04			6.03	0.03	169,503.69	1.96
HM16JV161	C17MA21A0486	0.04	0.8	22.06	0.15	0.005	4.11	260.79	5	0.01	0.01			11.07	0.16	164,528.93	0.16
HM16JV161	C17MA21A0491	0.03	0.8	4.59	0.025	0.005	16.74	349.77	5	0.005	0.04			6.8	0.03	169,650.28	0.16
HM16JV161	C17MA21A0494	0.01	0.8	1.3	0.33	0.01	33.33	1,536.21	6.45	0.005	0.23			8.12	0.03	171,398.67	0.2
HM16JV161	C17MA21A0490	0.005	0.8	38.44	0.19	0.005	12.98	193.88	5	0.005	0.04			6.55	0.03	171,410.37	0.23
HM16JV161	C17MA21A0501	2.07	0.8	102.46	0.68	0.005	45.38	165.03	6.21	0.02	0.16			8.11	0.15	177,591.83	0.81
HM16JV161	C17MA21A0498	0.22	0.8	36.64	2.58	0.005	47.55	3,017.31	5	0.08	0.01			6.34	0.14	164,520.56	0.73
HM16JV161	C17MA21A0502	1.02	0.8	9.53	0.025	0.01	80.93	1,223.54	5	0.04	0.01			105.8	0.18	167,284.60	6.77
HM16JV161	C17MA21A0503	0.54	4.08	4.64	0.14	0.04	67.86	1,248.03	5.14	0	0.07			116.98	0.03	178,672.64	8.43
HM16JV161	C17MA21A0499	0.52	19.89	1.7	0.39	0.01	60.07	1,163.59	3.3	0.005	0.25			121.53	0.32	179,077.79	6
HM16JV161	C17MA21A0500	0.09	0.8	41.31	0.73	0	144.13	810.65	6.33	0.005	0.09			5.1	0.45	173,888.16	0.47
HM16JV161	C17MA21A0497	0.01	0.8	25.28	0.42	0.005	16.68	175.62	5	0.01	0.01			6.88	0.03	175,500.36	0.1
HM16JV162	E17JN15A113	2.07	3.99	78.96	0.93	0.01	61.2	268.54	14.08	0.05	0.37	30.78	29.11	27.29	0.38	180,595.95	1.56
HM16JV162	E17JN15A112	1.4	8.85	24.69	2.89	0.01	154.87	352.3	11.63	0.04	1.03	34.85	36.59	33.15	0.22	178,382.87	10.34
HM16JV162	E17JN15A107	0.9	0.8	6.81	2.67	0	61.97	528.32	5	0.44	0.16	9.79	6.23	4.93	1.22	170,591.62	7.49
HM16JV162	E17JN15A100	1.17	1.81	0.42	3.22	0.005	48.15	1,379.89	5	0.005	0.64	8.1	5.04	3.8	0.41	177,711.79	0.83
HM16JV162	E17JN15A108	0.42	0.8	2.72	4.87	0.01	51.19	1,859.42	5.84	0.01	0.68	7.2	2.69	1.58	0.03	178,882.57	4.14
HM16JV162	E17JN15A107	0.38	6.3	8.7	4.49	0.03	22.78	2,057.01	24.11	0.02	0.17	15	5.21	3.41	0.71	184,151.11	20.13
HM16JV162	E17JN15A101	0.18	0.8	1.11	5.7	0.04	106.04	575.81	5	0.01	0.71	9.78	1.96	0.61	0.03	180,974.69	1.69
HM16JV162	E17JN15A110	0.3	0.8	20.78	3.26	0.01	103.46	450.64	8.92	0.05	0.3	14.94	10.73	9.46	6.45	180,034.46	1.28
HM16JV162	E17JN15A099	0.55	3.17	7.75	1.63	0.01	188.19	1,240.91	9.33	0.03	0.21	24.15	22.78	21.38	0.03	166,221.04	1.33
HM16JV162	E17JN15A111	0.3	4.69	21.34	3.15	0.01	36.44	1,485.41	11.49	0.01	1.17	8.71	4.75	4.13	0.03	178,338.67	2.05
HM16JV162	E17JN15A109	0.11	0.8	0.29	5.33	0.005	50.24	1,729.95	10.87	0.01	0.72	3.08	1.83	1.36	0.22	181,303.48	0.63
HM16JV162	E17JN15A104	0.09	4.7	6.84	18.01	0.005	1,119.43	2,015.79	5	0.01	1.08	10	5.85	5.07	2.06	172,624.09	1.1
HM16JV162	E17JN15A103	0.21	0.8	3.63	1.73	0	39.75	171.75	5	0.01	0.21	4.72	2.14	1.85	0.03	179,374.30	0.52
HM16JV162	E17JN15A104	0.005	0.8	7.84	6.59	0.01	365.69	2,641.52	5	0.005	0.43	7.02	4.31	3.38	0.77	159,872.11	0.65
HM16JV162	E17JN15A102	0.03	0.8	0.29	5.18	0.005	42.41	2,782.28	5	0.005	0.44	3.22	1.81	1.33	0.03	174,809.92	0.58
HM16JV162	E17JN15A106	0.08	0.8	42.66	3.58	0.02	39.44	3,649.01	5	0.02	0.05	8.7	9.47	9.06	0.3	175,367.54	3.11
HM16JV162	E17JN15A098	0.04	0.8	10.95	3.1	0.01	41.61	1,530.26	5	0.01	0.27	7.67	6.87	6.99	0.03	169,772.89	0.47
HM16JV164	C17MA20A0431	3.83	0.8	0.09	0.21	0.67	453.73	1,038.50	3.17	0.005	1.3			19.36	0.03	183,618.18	0.76
HM16JV164	C17MA20A0426	2.76	0.8	0.34	0.17	0.41	389.07	978.2	3.38	0.01	1.52			22.69	0.1	183,607.58	1.05
HM16JV164	C17MA20A0425	1.91	0.8	3.86	0.11	0.51	516.25	894.44	4	0.005	0.34			23.34	0.2	168,320.90	0.4
HM16JV164	C17MA20A0428	0.89	0.8	0.05	0.11	0.56	995.56	1,454.35	18.83	0.01	1.8			23.13	0.03	183,495.84	0.97
HM16JV164	C17MA20A0429	1.29	2.42	7.3	0.21	1.49	948.93	980.71	7.58	0.01	1			26.62	0.74	184,591.80	0.67
HM16JV164	C17MA20A0422	1.43	0.8	1.63	0.12	0.61	238.83	1,061.22	16.46	0	0.59			26.18	0.03	184,275.70	1.65
HM16JV164	C17MA20A0423	1.42	2.46	1.13	0.24	0.55	252.46	1,099.22	4.12	0	0.79			23.47	0.03	185,314.71	1.51
HM16JV164	C17MA20A0427	0.61	0.8	0.32	0.025	0.28	597.99	1,163.03	5.58	0.02	1.04			21.37	0.14	175,728.09	0.65
HM16JV164	C17MA20A0420	1.04	0.8	1.43	0.025	0.55	259.55	1,064.83	5	0.005	0.36			23.55	0.03	183,677.93	1.42
HM16JV164	C17MA20A0430	1.1	0.8	0.1	0.06	0.38	133.81	1,052.72	5	0.005	0.54			24.9	0.03	184,101.54	0.66
HM16JV164	C17MA20A0424	0.5	0.8	0.25	0.11	0.22	592.11	941.49	6.78	0	0.68			18.3	0.77	180,123.36	0.58
HM16JV164	C17MA20A0421	0.23	0.8	0.09	0.025	0.45	764.21	933.89	5	0	0.33			20.5	0.28	185,174.99	0.4
HM16JV164	C17MA20A0419	0.2	0.8	1.24	0.025	0.23	304.32	862.43	5	0.005	0.58			20.41	0.03	186,018.23	1.68
HM16JV164	C17MA20A0440	1.67	0.8	0.97	0.4	1.26	1,014.85	839.95	11.88	0.07	0.97			18.14	0.43	188,306.13	0.81
HM16JV164	C17MA20A0441	0.8	0.8	1.16	0.025	0.69	714.12	930.2	5.89	0.01	0.55			28	2.38	185,542.97	1.07
HM16JV164	C17MA20A0444	0.6	0.8	1.24	0.025	1.21	879.33	1,224.37	8.11	0.07	0.93			22.28	1.47	192,535.51	1.15
HM16JV164	C17MA20A0442	0.99	7.47	4.83	2.08	0.74	1,065.88	1,047.44	32.71	0.93	42.07			29.91	0.23	184,463.26	1.37
HM16JV164	C17MA20A0437	0.5	0.8	0.53	0.43	0.62	893.2	1,169.28	4.66	0.01	0.62			20.4	2.01	183,206.04	0.69
HM16JV164	C17MA20A0435	0.58	0.8	0.86	0.57	0.67	927	924.99	8.69	0.17	1.45			13.66	0.03	182,283.89	0.72
HM16JV164	C17MA20A0438	0.93	3.16	3.63	0.07	0.64	287.97	972.54	3.18	0.005	0.56			29.04	0.13	184,485.03	1.18
HM16JV164	C17MA20A0436	0.65	4.13	1.5	0.025	0.41	189.18	993.91	5	0.005	0.63			23.66	0.03	181,306.48	1.15
HM16JV164	C17MA20A0443	0.54	0.8	2.82	0.26	0.58	302.31	937.19	3.85	0.005	1.03			23.4	0.03	171,914.14	0.79
HM16JV164	C17MA20A0433	0.32	0.8	0.29	0.06	0.47	754.35	1,019.58	5	0.01	0.49			18.41	0.16	186,291.20	0.42

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Hf178	K39	La139	Li7	Lu175	Mg24	Mn55	Na23	Nb93	Ni60	Pb206	Pb207	Pb208	Sb121	Si29	Sn118
HM16JV164	C17MA20A0443	0.49	6.84	0.29	0.93	0.59	833.37	1,288.64	9.46	0.01	0.61			22.81	0.75	192,642.16	0.94
HM16JV164	C17MA20A0445	0.52	0.8	1.64	0.09	0.56	253.99	828.74	4.93	0.005	0.49			16.5	0.11	185,403.25	1.44
HM16JV164	C17MA20A0434	0.43	0.8	0.65	0.025	0.42	294.23	766.46	3.32	0.03	0.6			15.22	0.1	185,702.50	0.77
HM16JV164	C17MA20A0439	0.44	0.8	0.02	0.025	0.11	94.18	898.89	13.83	0.005	0.78			23.33	0.03	193,689.63	0.52
HM16JV171	E17JN15A218	15.26	127.9	123.19	0.025	0.41	1,526.09	1,599.39	104.27	0.005	1.78	24.37	23.43	22.47	0.03	156,475.32	2.28
HM16JV171	E17JN15A201	0.09	1,203.68	221.95	1.49	0.17	1,120.36	1,884.49	556.47	0.11	0.57	21.63	17.92	19.69	0.43	158,422.15	2.45
HM16JV171	E17JN15A211	0.41	1,192.97	318.36	0.8	0.3	1,373.20	1,629.50	393.59	0.005	1.58	21.83	20.29	26.72	0.03	164,970.34	1.69
HM16JV171	E17JN15A203	0.22	733.76	115.38	0.73	0.27	515.04	2,529.56	206.53	0.03	0.72	22.73	26.01	22.04	0.51	159,363.30	1.5
HM16JV171	E17JN15A217	0.42	5.67	168.81	0.9	0.18	140.98	1,593.19	62.79	0.005	0.47	18.98	16.27	19.07	0.03	182,927.42	4.08
HM16JV171	E17JN15A204	0.66	716.1	121	0.025	0.23	984.09	1,493.03	2,194.59	0.03	2.33	21.85	20.69	20.41	0.83	163,380.68	1.39
HM16JV184	C17MA21A0588	0.26	9.43	1.31	0.24	0	95.27	1,005.33	5	0.01	0.49			42.91	0.03	178,946.07	2.48
HM16JV184	C17MA21A0587	0.24	0.8	8.1	0.025	0.005	139.72	825.31	5	0.005	0.9			25.11	0.16	184,997.43	0.07
HM16JV184	C17MA21A0592	0.63	0.8	41.2	0.025	0	56.05	919.52	10.56	0.01	0.07			54.32	1.47	183,172.86	0.2
HM16JV184	C17MA21A0593	0.47	0.8	14.21	0.025	0	43.94	1,326.34	5	0.01	0.25			125.43	1.74	187,438.70	5.24
HM16JV184	C17MA21A0591	0.32	0.8	8.73	0.15	0.005	156.81	891.8	5	0	3.03			21.01	0.03	184,266.56	0.09
HM16JV184	C17MA21A0593	0.23	0.8	22.52	0.025	0.005	35.51	719.21	5	0.005	0.2			54.9	0.27	177,124.54	0.73
HM16JV184	C17MA21A0590	0.19	3.05	4.1	0.025	0.005	48.13	927.03	5	0.005	0.68			45.22	0.84	181,784.14	0.21
HM16JV184	C17MA21A0589	0.05	0.8	9.23	0.025	0.005	43.44	704.19	5	0.005	0.05			40.28	0.03	177,490.53	0.46
HM16JV191	C17MA21A0603	1.4	0.8	8.54	0.24	0.05	36.77	1,619.50	10.37	0.005	0.07			149.48	0.03	178,857.73	23.92
HM16JV191	C17MA21A0595	1.39	0.8	26.43	1.85	0.01	25.44	166.19	22.89	0.005	0.01			9.29	0.39	167,228.87	3.83
HM16JV191	C17MA21A0594	1.17	0.8	62.88	0.85	0.01	93.1	505.02	4.32	0.04	0.25			9.03	0.55	169,182.29	1.75
HM16JV191	C17MA21A0594	0.82	0.8	45.36	1.72	0.005	58.36	1,021.84	5.94	0.01	0.3			7.45	0.22	182,944.12	1.39
HM16JV191	C17MA21A0604	0.62	0.8	1.11	0.1	0.02	56.71	1,447.55	5.68	0.005	0.04			105.22	0.03	180,498.95	3.06
HM16JV191	C17MA21A0596	0.15	0.8	59.45	1.79	0.01	31.16	810.43	3.75	0.04	0.01			5.2	0.37	169,459.96	1.08
HM16JV191	C17MA21A0606	2.06	0.8	29.5	0.61	0.01	28.36	134.26	5	0.02	0.15			10.67	0.11	174,165.41	7.85
HM16JV191	C17MA21A0606	1.64	0.8	14.7	1.1	0.01	36.48	293.24	5	0.005	0.01			9.79	0.18	184,307.83	5.89
HM16JV191	C17MA21A0607	0.68	0.8	46.34	1.15	0.01	46.55	812.45	4.78	0.02	0.48			6.67	0.03	173,147.43	2.57
HM16JV191	C17MA21A0612	0.55	4.35	161.7	0.72	0	222.89	275.05	10.02	0.04	0.15			7.43	0.39	170,455.67	0.79
HM16JV191	C17MA21A0608	0.52	0.8	57.57	1.63	0.005	107.41	938.24	10.64	0.005	0.24			4.5	0.03	178,627.45	0.87
HM16JV191	C17MA21A0608	0.39	0.8	127.03	1.67	0.005	83.24	1,052.07	16.54	0.005	0.18			4.28	0.03	183,287.97	1.22
HM16JV191	C17MA21A0609	0.6	0.8	63.56	1.73	0.01	135.82	1,674.92	10.51	0.12	0.27			5.4	0.03	182,212.96	3.39
HM16JV191	C17MA21A0610	0.21	0.8	82.16	3.08	0.005	241.22	2,284.87	10.83	0.03	0.17			4.16	0.13	173,165.58	2.48
HM16JV191	C17MA21A0607	0.48	3.52	272.13	0.59	0.005	62.28	407.79	4.82	0.02	0.17			5.28	0.03	184,525.30	3.63
HM16JV191	C17MA21A0609	0.23	9.3	107.29	1.8	0	1,152.81	1,629.48	22.26	0.02	0.49			4.87	0.03	180,029.01	2.57
HM16JV191	C17MA21A0605	0.21	0.8	61.57	0.45	0.01	13.93	595.35	13.55	0.005	0.12			7.54	0.8	163,577.19	0.6
HM16JV191	C17MA21A0609	0.19	0.8	110.67	1.57	0.005	36.5	1,296.59	18.17	0.005	0.01			4.3	0.03	165,609.84	1.93
HM16JV191	C17MA21A0605	0.19	0.8	0.91	0.27	0.005	7.89	467.2	4.64	0.005	0.01			8.72	0.89	180,245.21	0.57
HM16JV191	C17MA21A0617	1.17	6.95	13.99	0.81	0.01	573.93	324.79	6.94	0.02	0.23			8.5	0.03	180,945.11	4.33
HM16JV191	C17MA21A0622	0.64	0.8	29.12	2.69	0	103.51	2,578.84	6.83	0.005	0.31			8.71	0.61	174,680.10	1.4
HM16JV191	C17MA21A0616	0.55	8.86	160.54	2.77	0	1,348.41	1,239.81	12.06	0.02	0.3			4.45	0.15	178,662.09	1.33
HM16JV191	C17MA21A0624	0.84	0.8	0.42	2.08	0	42.23	127.58	5	0.04	0.01			9.44	0.03	175,666.09	1.61
HM16JV191	C17MA21A0615	0.64	0.8	108.29	0.47	0	44.21	950.2	5.57	0.02	0.04			9.79	0.18	182,570.97	1.99
HM16JV191	C17MA21A0618	0.35	0.8	147.59	1.43	0.005	49.1	1,300.97	5.03	0.03	0.17			4.85	0.03	165,441.25	2.2
HM16JV191	C17MA21A0621	0.29	0.8	0.43	0.025	0	63.99	1,422.96	5	0.01	0.01			118.89	0.03	188,992.84	1.71
HM16JV191	C17MA21A0625	0.32	0.8	30.36	2.86	0.005	139.13	386.9	5	0.01	0.01			2.79	0.03	171,893.27	1.19
HM16JV191	C17MA21A0615	0.43	0.8	278.78	0.81	0	154.05	1,579.18	6.07	0.03	0.06			6.09	0.14	173,307.59	2.32
HM16JV191	C17MA21A0619	0.37	0.8	89.6	3.11	0.005	183.95	283.66	6.32	0.06	0.14			2.7	0.08	173,207.67	1.31
HM16JV191	C17MA21A0621	0.43	0.8	0.1	0.22	0.01	80.38	1,358.36	5	0.005	0.01			99.15	0.03	170,867.42	0.78
HM16JV191	C17MA21A0613	0.34	0.8	0.06	2.24	0.005	72.37	263.48	5	0.005	0.09			5.58	0.13	185,006.73	1.11
HM16JV191	C17MA21A0614	0.5	0.8	0.05	1.91	0.005	60.74	130.47	5	0.01	0.03			3.03	0.03	178,594.38	1.52
HM16JV191	C17MA21A0623	0.19	0.8	0.73	1.44	0	53.73	406.55	5	0.01	0.08			2.15	0.03	173,282.32	1.81
HM16JV191	C17MA21A0623	0.23	0.8	0.68	1.62	0.005	61.12	499.8	5	0.005	0.08			4.3	0.03	183,884.57	1.87

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Hf178	K39	La139	Li7	Lu175	Mg24	Mn55	Na23	Nb93	Ni60	Pb206	Pb207	Pb208	Sb121	Si29	Sn118
HM16JV191	C17MA21A0613	0.33	0.8	3.98	1.65	0	116.8	677.78	5	0.06	0.06			5.62	0.03	160,793.64	0.71
HM16JV191	C17MA21A0620	0.3	0.8	233.71	0.78	0	55.24	601.53	5	0.02	0.01			4.27	0.03	163,001.05	2.35
HM16JV191	C17MA21A0613	0.33	0.8	0.13	2.04	0.005	37.45	617.57	5	0.005	0.11			5.78	0.03	175,612.09	0.91
HM16JV192	C17MA21A0628	0.51	0.8	361.47	1.09	0.07	96.29	1,176.32	6.97	0.01	2.41			9.37	0.18	178,901.56	1.92
HM16JV192	C17MA21A0629	0.24	20.3	186.75	1.69	0.05	188.43	881.8	10.94	0.02	0.6			6.25	0.16	172,999.23	1.44
HM16JV192	C17MA21A0626	0.14	3.76	296.43	0.84	0.04	69.84	1,324.63	9.31	0	0.36			8.38	0.42	177,367.41	1.28
HM16JV192	C17MA21A0627	0.06	5.63	201.79	0.38	0.05	155.16	742.83	6.32	0.02	0.35			6.5	0.35	168,023.57	1.78
HM16JV192	C17MA21A0627	0.005	0.8	51.91	0.025	0.03	11.79	831.26	5	0.04	0.01			5.93	0.4	184,723.25	2.17
HM16JV192	C17MA21A0630	0.47	2.86	277.95	1.58	0.06	134.45	523.6	10.46	0.03	1.15			14.56	0.37	172,975.12	2.45
HM16JV192	C17MA21A0637	0.52	11.04	954.18	1	0.16	135.2	488.82	34.5	0.06	0.57			9.03	0.24	176,793.28	3.57
HM16JV192	C17MA21A0630	0.32	0.8	105.68	2.27	0.09	371.27	542.05	5	0.005	2.1			7.18	0.03	185,881.44	1.32
HM16JV192	C17MA21A0636	0.28	2.78	171.2	0.8	0.05	153.73	376.13	8.26	0.01	2.68			43.37	0.21	176,549.54	1.33
HM16JV192	C17MA21A0635	0.17	0.8	193.08	1.46	0.06	187.12	1,294.88	15.13	0.01	1.91			16.41	0.27	179,432.56	1.54
HM16JV192	C17MA21A0631	0.1	0.8	70.84	1.41	0.03	58.33	1,098.64	14.35	0.05	1.27			3.54	0.03	185,263.33	3.96
HM16JV192	C17MA21A0633	0.25	0.8	31.63	1.29	0.03	54.26	1,152.55	6.62	0.02	0.6			3.74	0.11	173,409.32	1.35
HM16JV192	C17MA21A0634	0.18	0.8	60.04	1.48	0.02	77.87	3,229.50	5.74	0	0.32			6.02	0.77	173,298.35	1.63
HM16JV192	C17MA21A0640	0.07	0.8	14.36	1.39	0.06	114.68	826.68	5	0.08	0.46			9.84	0.18	174,212.66	2.1
HM16JV192	C17MA21A0632	0.22	0.8	1.88	1.49	0.06	77.91	189.62	5	0.01	0.37			3.42	0.03	177,029.29	1.17
HM16JV192	C17MA21A0631	0.12	2.98	5.22	2.4	0.01	56.77	1,841.10	13.92	0.01	0.54			2.6	0.03	171,748.06	2.76
HM16JV192	C17MA21A0639	0.1	0.8	0.32	0.92	0	17.35	373.66	5	0.01	0.46			3.95	0.03	170,680.15	2.41
HM16JV192	C17MA21A0640	0.1	0.8	0.1	0.88	0.01	26.15	1,480.71	4.54	0.02	0.64			8.61	0.5	184,362.06	3.1
HM16JV192	C17MA21A0638	0.09	0.8	167.49	1.94	0.05	209.91	510.4	5	0.02	0.21			1.73	0.03	171,147.87	1.22
HM16JV192	C17MA21A0633	0.14	0.8	11.55	0.86	0.02	38.7	3,386.52	5	0.005	0.2			5.59	0.22	181,702.21	1.6
HM16JV192	C17MA21A0638	0.12	0.8	8.45	2.28	0.03	319.43	322.45	5	0	0.83			1.17	0.03	182,106.74	1.13
HM16JV192	C17MA21A0639	0.06	0.8	0.03	1.56	0	22.14	864.38	5	0.03	0.77			3.45	0.11	185,252.47	2.99
HM16JV192	C17MA21A0642	0.94	0.8	182.72	0.28	0.07	84.52	313.83	6.87	0	2.39			8.25	0.15	174,122.67	4.51
HM16JV192	C17MA21A0645	0.85	5.78	109.85	0.22	0.05	38.57	327.59	5	0.005	0.43			7.84	0.74	177,641.54	3.28
HM16JV192	C17MA21A0641	0.17	0.8	193.04	1.31	0.08	263.17	461.27	8.19	0.005	2.57			17.47	0.18	185,411.87	1.81
HM16JV192	C17MA21A0644	0.35	11.44	41.69	0.96	0.03	75.12	230.23	22.36	0.005	0.46			3.01	0.03	164,682.74	1.72
HM16JV192	C17MA21A0646	0.06	0.8	2.54	2.73	0	63.39	3,063.89	5.75	0.01	0.57			3.96	0.03	179,171.55	1.52
HM16JV192	C17MA21A0647	0.14	0.8	0.02	1.42	0.01	34.23	284.25	2.86	0	0.5			1.45	0.03	179,824.47	1.78
HM16JV192	C17MA21A0641	0.005	0.8	203.78	2.17	0.03	84.72	383.36	5	0.07	0.15			11.91	0.18	161,895.97	0.65
HM16JV192	C17MA21A0643	0.05	0.8	4.93	2.06	0.03	83.5	4,366.06	5.82	0.005	0.75			4.42	0.12	167,470.07	1.22
HM16JV192	C17MA21A0649	0.47	0.8	1.53	0.49	0.07	65.16	645.29	5	0.01	2.58			9.81	0.28	181,970.09	2.87
HM16JV192	C17MA21A0648	0.2	25.24	11.37	1.07	0.02	48.92	952.65	128.62	0.005	0.6			5.75	0.42	169,994.21	1.5
HM16JV192	C17MA21A0650	0.06	5.77	93.98	2.21	0.02	192.26	2,547.53	7.12	0.01	2.63			3.85	0.08	176,490.68	2.09
HM16JV192	C17MA21A0651	0.02	7.27	0.24	3.74	0.07	70.75	538.01	33.64	0.06	0.41			8.37	0.03	179,138.51	0.68
HM16JV192	C17MA21A0649	0.07	0.8	66.8	1.07	0.06	66.95	921.81	9.57	0.005	1.31			17.31	0.44	167,455.52	0.83
HM16JV192	C17MA21A0648	0.12	29.69	10.92	2.17	0.01	80.18	3,994.05	99.48	0.005	0.54			5.48	0.34	182,485.90	1.73
HM16JV193	C17MA21A0660	4	6.01	0.27	0.91	0.03	191.82	228.85	34.34	0.06	0.33			6.73	0.03	176,626.01	0.22
HM16JV193	C17MA21A0660	1.37	9.32	4.82	2.21	0.01	256.9	1,489.50	19.39	0.03	0.6			14.41	0.1	188,940.34	0.28
HM16JV193	C17MA21A0656	0.45	3.65	0.39	0.77	0.01	216.65	526.33	33.37	0.005	1.87			7.2	0.03	183,385.81	0.07
HM16JV193	C17MA21A0666	0.63	2.8	0.03	0.8	0	163.06	292.51	15.86	0.01	0.31			4.56	0.03	185,283.38	0.1
HM16JV193	C17MA21A0658	0.47	6.33	4.89	0.89	0.01	160.5	403.87	5	0.005	0.19			26.69	0.09	178,583.96	0.05
HM16JV193	C17MA21A0653	0.57	0.8	0.03	1.77	0.01	113.03	609.1	5.48	0.005	0.56			11.74	0.03	184,660.04	0.07
HM16JV193	C17MA21A0667	0.38	0.8	0.5	1.1	0	172.65	516.72	16.39	0.005	1			8.71	0.03	183,498.11	0.06
HM16JV193	C17MA21A0662	0.31	0.8	0.04	1.93	0	109.62	606.17	15.94	0.005	0.86			13.96	0.03	186,414.77	0.02
HM16JV193	C17MA21A0652	0.32	0.8	26.57	2.42	0.005	486.65	310.9	5	0.005	0.38			10.38	0.03	164,382.03	0.02
HM16JV193	C17MA21A0665	0.48	0.8	0.03	0.93	0.005	169.4	437.1	5.61	0	0.73			6.57	0.03	187,672.33	0.02
HM16JV193	C17MA21A0661	0.51	0.8	0.17	0.69	0.01	88.61	377.32	8.69	0.005	0.35			37.17	0.29	182,930.52	0.02
HM16JV193	C17MA21A0655	0.4	0.8	12.8	1.18	0.005	148.4	567.61	11.12	0.01	0.36			19.67	0.03	175,167.66	0.08
HM16JV193	C17MA21A0659	0.34	104.42	32.94	1.88	0.01	280.03	844.72	27.74	0.01	0.51			23.64	0.03	184,970.29	0.44

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Hf178	K39	La139	Li7	Lu175	Mg24	Mn55	Na23	Nb93	Ni60	Pb206	Pb207	Pb208	Sb121	Si29	Sn118
HM16JV193	C17MA21A0655	0.27	0.8	5.37	0.87	0.005	125.34	349.58	5.65	0.005	0.53			11.36	0.03	185,896.99	0.16
HM16JV193	C17MA21A0658	0.17	0.8	2.16	1.92	0	110.33	830.04	5.04	0.005	1.09			22.09	0.03	186,789.80	0.11
HM16JV193	C17MA21A0664	0.5	2.97	1.56	0.8	0.01	412.99	222.41	5.97	0.02	0.28			9.85	0.03	183,628.52	0.06
HM16JV193	C17MA21A0665	0.18	0.8	0.16	1.69	0.01	150.65	957.52	6.3	0.005	0.66			25.12	0.11	170,427.66	0.1
HM16JV193	C17MA21A0652	0.26	2.95	44.15	8.31	0.01	1,060.67	1,246.89	6.43	0.005	0.6			25.25	0.09	186,759.67	0.25
HM16JV193	C17MA21A0657	0.22	0.8	2.03	4.12	0.005	129.56	1,236.73	18.95	0.01	1.13			20.5	0.1	186,570.95	0.11
HM16JV193	C17MA21A0663	0.06	0.8	0.01	2.11	0.005	181.31	936.21	7.89	0.005	1.49			7.74	0.03	182,915.70	0.06
HM16JV193	C17MA21A0654	0.24	0.8	1.2	3.05	0	152.79	2,171.90	4.4	0.005	0.28			39.76	0.09	180,479.71	0.26
HM16JV193	C17MA21A0677	1.17	0.8	1.01	0.32	0.005	129.32	296.03	5	0.005	0.01			7.06	0.03	167,074.15	0.35
HM16JV193	C17MA21A0668	1.13	3.1	0.005	0.3	0.01	109.7	137.31	5	0.05	0.17			3.12	0.03	186,873.08	0.29
HM16JV193	C17MA21A0674	0.5	0.8	0.04	0.93	0.02	174.76	457.84	14.49	0.02	0.41			6.34	0.03	191,532.27	0.1
HM16JV193	C17MA21A0671	0.84	4.52	2.76	1.75	0.005	306.9	547.21	2.98	0.03	0.17			20.02	0.13	181,172.11	0.16
HM16JV193	C17MA21A0675	0.54	0.8	0.005	2.32	0.005	120.23	664.39	3.46	0.005	0.55			10.49	0.03	185,191.13	0.02
HM16JV193	C17MA21A0677	0.84	10.02	52.44	2.12	0	259.91	868.39	14.23	0.01	1.35			17.23	0.03	189,061.10	0.22
HM16JV193	C17MA21A0673	0.46	0.8	0.005	2.06	0.005	122.81	817.77	2.8	0	0.58			10.29	0.03	185,016.94	0.1
HM16JV193	C17MA21A0674	0.42	0.8	1.11	2.46	0.005	142.19	853.24	4.11	0.005	0.92			17.56	0.03	173,476.58	0.11
HM16JV193	C17MA21A0676	0.49	0.8	6.02	1.91	0	351.78	543.11	3.8	0.01	1.2			8.54	0.03	184,915.34	0.08
HM16JV193	C17MA21A0670	0.46	8.98	15.59	2.63	0.005	258.92	968.64	22.84	0.04	1.04			24.43	0.03	188,678.57	0.23
HM16JV193	C17MA21A0670	0.44	8.63	35.65	4.21	0.01	592.48	730.15	19.68	0.03	0.69			11.78	0.03	181,771.38	0.12
HM16JV193	C17MA21A0669	0.58	0.8	28.89	4.37	0.01	481.79	1,477.45	8.11	0.01	1.96			15.18	0.03	191,229.68	0.22
HM16JV193	C17MA21A0678	0.17	0.8	35.93	1.68	0	209.18	878.2	6.04	0.02	1.51			8.26	0.03	184,094.50	0.02
HM16JV193	C17MA21A0669	0.25	0.8	1.43	4.37	0.005	131.33	1,623.69	9.55	0.05	1.23			21.6	0.03	167,087.10	0.11
HM16JV193	C17MA21A0672	0.17	0.8	0.69	4.55	0.005	220.24	2,818.69	4.41	0.005	0.25			23.3	0.03	181,950.34	0.29
HM16JV203	E17JN15A326	1.22	0.8	1.07	0.81	0.01	378.19	1,960.00	38.31	0.16	0.24	32.01	42.05	39.02	6.88	179,940.58	0.35
HM16JV203	E17JN15A331	0.94	2.46	1.28	0.29	0.05	167.48	2,838.57	497.81	0.04	0.14	21.99	29.09	26.6	49.46	185,403.96	0.45
HM16JV203	E17JN15A329	0.61	0.8	3.8	0.87	0.07	293.13	2,526.48	19.63	0.02	0.01	17.36	24.05	21.7	215.21	174,431.27	0.28
HM16JV203	E17JN15A330	0.94	0.8	0.25	0.025	0.01	250.52	719.25	10.06	1.21	0.01	16.52	22.51	19.97	28.91	168,898.01	0.25
HM16JV203	E17JN15A328	0.65	0.8	1.92	1.05	0.02	335.17	2,703.27	28.8	0.02	0.06	22.37	29.91	27.47	446.77	180,004.01	0.31
HM16JV203	E17JN15A333	0.12	0.8	1.04	0.13	0.03	147.11	1,739.60	21.49	0.03	0.28	18.13	23.62	21.91	2.08	183,864.88	0.36
HM16JV203	E17JN15A332	0.05	0.8	0.85	0.025	0.005	129.82	1,576.55	5	0.005	0.01	18.45	22.53	21.78	1.93	165,308.45	0.28
HM16JV203	E17JN15A327	0.05	0.8	0.36	5.15	0.09	818.98	427.38	21.01	0.07	1.61	0.94	1.15	1.07	3.55	168,609.41	0.21
HM16JV208	E17JN15A491	0.91	0.8	0.5	0.025	0.06	52.08	1,593.92	5	0	0.18	104.59	136.4	124.86	0.15	177,547.28	0.32
HM16JV208	E17JN15A313	0.14	32.14	5.18	0.025	1.1	78.93	1,431.23	83.39	0.03	0.05	66.89	89.34	82.5	8.99	182,687.34	0.66
HM16JV208	E17JN15A316	0.35	0.8	2.85	0.5	3.48	107.78	2,319.19	33.31	0.005	0.01	66.27	87.64	79.34	19.09	161,009.23	0.02
HM16JV208	E17JN15A492	0.32	0.8	0.03	0.025	0.02	40.08	1,408.31	31.07	0.005	0.08	89.28	118.63	109.01	0.03	182,883.61	0.24
HM16JV208	E17JN15A490	0.2	0.8	3.17	0.12	0.04	48.33	1,226.85	5	0.005	0.5	88.54	111.6	105.97	0.13	176,716.27	0.27
HM16JV208	E17JN15A318	0.17	0.8	0.05	0.025	0.12	55.88	1,347.99	11.89	0.005	0.09	92.11	123.85	114.13	0.03	177,435.90	0.6
HM16JV208	E17JN15A317	0.15	602.62	6.51	0.025	0.9	24	939.43	109.89	0	0.01	43.2	56.91	51.71	0.22	171,031.32	1.13

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.
**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Sr88	Ta181	Th232	Ti47	Ti49	Tl205	U238	V51	Y89	Yb172	Zn66	Zr90
HM16JV002	E17JN15A237	622.44	0.005	0.2	1,703.76	1,698.65	0.005	0.26	175.14	1.76	0.08	14.58	80.96
HM16JV002	E17JN15A234	435.94	0.005	0.005	1,094.94	1,098.89	0.005	0.05	139.22	0.18	0.04	16.33	64.03
HM16JV002	E17JN15A236	1,866.75	0.005	2.93	905.52	825.58	0.005	1.05	113.53	6.38	0.28	6.22	53.08
HM16JV002	E17JN15A231	1,583.77	0.005	0.47	765.36	763.59	0.005	0.65	110.58	6.51	0.35	8.13	49.95
HM16JV002	E17JN15A229	1,827.40	0.005	7.44	567	593.37	0.005	3.06	253.37	29.59	2.47	4.44	42.68
HM16JV002	E17JN15A235	971.16	0.005	0.005	982.97	962.08	0.005	0.07	170.02	0.99	0.03	8.98	22.34
HM16JV002	E17JN15A233	371.68	0.005	0.005	1,117.82	1,124.39	0.005	0.01	154.84	0.05	0.005	9.89	20.43
HM16JV002	E17JN15A230	1,928.56	0.005	64.33	436.3	439.93	0.005	12.7	245.71	103.63	5.37	8.33	20.3
HM16JV002	E17JN15A225	1,905.74	0.01	5.08	664.15	647.05	0.005	2.36	131.41	28.06	2.21	6.39	16.83
HM16JV002	E17JN15A239	2,346.20	0.005	3.06	452.23	451.02	0.005	1.46	201.6	16.91	1.11	4.34	15.33
HM16JV002	E17JN15A227	3,083.87	0.005	3.66	366.7	372.44	0.005	4.35	183.26	66.8	2.75	4.1	12.26
HM16JV002	E17JN15A226	2,387.59	0.17	13.68	2,617.45	2,656.60	0.005	5.07	274.29	45.34	3.44	5.09	11.21
HM16JV002	E17JN15A241	4,219.25	0.005	17.44	345.38	346.46	0.005	4.01	165.21	39.01	3.49	3.72	11.05
HM16JV002	E17JN15A232	3,478.61	0.005	18.35	294.96	286.6	0.05	9.27	163.1	85.87	5.42	4.68	10.88
HM16JV002	E17JN15A245	1,793.72	0.005	24.08	454.14	441.96	0.005	7.93	154.78	51.11	3.03	6.16	10.04
HM16JV002	E17JN15A228	1,657.80	0.01	49.67	444.54	446.98	0.005	13.93	207.84	120.62	11.32	5.83	8.46
HM16JV002	E17JN15A238	1,801.38	0.005	7.69	406.7	425.6	0.005	5.78	333.77	48.32	2.88	5.28	7.82
HM16JV002	E17JN15A229	1,707.61	0.01	5.27	504.39	511.82	0.005	1.55	405.3	21.81	1.44	3.89	7.57
HM16JV002	E17JN15A243	1,668.49	0.01	11.29	525.55	530.63	0.005	2.56	180.94	21.71	1.29	6.42	7.13
HM16JV002	E17JN15A242	3,513.83	0.005	0.54	355.85	364.92	0.005	0.46	109.76	5.11	0.19	3.11	5.29
HM16JV002	E17JN15A240	2,843.69	0.005	0.88	310.96	289.95	0.005	0.9	220.06	6.73	0.41	3.66	4.92
HM16JV004	E17JN14A219	15,931.14	0.005	0.005	8.64	9.68	0.005	0.41	128.29	0.56	0.04	0.76	0.005
HM16JV004	E17JN14A219	20,775.94	0.005	0.005	7.87	8.68	0.005	0.1	93.95	0.54	0.03	0.62	0.005
HM16JV004	E17JN14A203	15,980.66	0.01	0.95	250.73	243.21	0.005	0.57	310.23	0.93	0.05	5.35	26.51
HM16JV004	E17JN14A215	9,928.16	0.005	0.06	606.49	625.54	0.005	3.7	595.07	8.88	0.64	5.94	20.57
HM16JV004	E17JN14A225	6,157.34	0	0.21	392.01	386.8	0.005	1.69	280.59	5.54	0.37	85.15	18.2
HM16JV004	E17JN14A203	14,283.12	0	9.68	95.41	95.02	0.005	4.12	403.86	7.93	0.31	2.65	15.73
HM16JV004	E17JN14A201	19,256.63	0.005	0.1	461.27	467.38	0.005	0.44	347.32	0.71	0.06	4.56	11.61
HM16JV004	E17JN14A200	17,237.52	0.005	0.03	284.12	285.18	0.005	0.37	511.92	0.42	0.03	6.34	10.73
HM16JV004	E17JN14A223	3,184.09	0.005	0.02	308.29	312.54	0.005	3.58	368.16	2.4	0.08	3.35	10.06
HM16JV004	E17JN14A217	5,947.20	0.01	0.4	369.78	371.65	0.17	2.81	374.47	3.16	0.26	4.68	9.77
HM16JV004	E17JN14A201	18,613.64	0.005	0.1	474.43	471.98	0.005	0.71	318.4	0.42	0.03	4.68	7.62
HM16JV004	E17JN14A212	13,736.31	0.01	0.46	422.27	383.58	0.005	1.89	347.96	3.76	0.32	3.86	6.43
HM16JV004	E17JN14A218	9,869.52	0.01	0.16	471.51	468.94	0.005	0.9	603.38	1.42	0.08	2.71	6.27
HM16JV004	E17JN14A218	7,995.29	0.005	0.43	637.31	634.2	0.005	1.62	648.06	2.29	0.05	2.9	5.9
HM16JV004	E17JN14A214	8,965.10	0.005	9.94	294.22	292.22	0.005	4.45	518.02	5.46	0.3	7.29	4.86
HM16JV004	E17JN14A214	8,519.08	0.005	26.49	416.8	426.84	0.005	3.64	439.68	3.68	0.15	5.25	4.82
HM16JV004	E17JN14A213	10,476.50	0.005	1.02	7,559.12	7,738.92	0.005	1.9	537.8	3.65	0.29	5.65	3.09
HM16JV004	E17JN14A216	13,397.36	0.005	0.04	88.6	91.52	0.005	4.22	475.25	13.13	0.68	3.92	2.97
HM16JV004	E17JN14A216	11,864.28	0.005	0.03	93.64	99.3	0.005	5.08	445.2	18.07	0.69	1.03	2.87
HM16JV004	E17JN14A202	21,545.84	0.005	0.33	55.69	56.42	0.005	1.94	300.56	1.08	0.03	0.58	2.59
HM16JV004	E17JN14A199	7,122.81	0.005	0.83	344.62	344.24	0.005	0.2	353.58	1.36	0.03	3.26	2.32
HM16JV004	E17JN14A211	11,495.29	0.005	0.06	797.9	807.5	0.005	0.84	834.28	0.89	0.07	8.28	2
HM16JV004	E17JN14A199	7,458.35	0.005	1.26	351.15	350.87	0.005	0.28	381.22	1.51	0.23	3.86	1.82
HM16JV004	E17JN14A211	12,436.11	0.005	0.005	719.68	741.1	0.005	0.59	711.27	1.26	0.04	16.54	1.7
HM16JV004	E17JN14A204	7,118.15	0.005	2.81	330.59	332.69	0.005	1.09	351.36	2.9	0.2	3.32	1.17

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Sr88	Ta181	Th232	Ti47	Ti49	Tl205	U238	V51	Y89	Yb172	Zn66	Zr90
HM16JV004	E17JN14A220	17,232.81	0.005	0.1	66.84	65.24	0.005	3.73	371.47	11.11	0.66	0.1	1.14
HM16JV004	E17JN14A204	7,125.01	0.005	5.12	252.04	257.63	0.005	1.69	388.02	3.94	0.15	2.71	1.05
HM16JV004	E17JN14A221	18,873.98	0.005	0.09	35.26	37.36	0.005	0.58	158.26	1.71	0.04	0.91	0.68
HM16JV004	E17JN14A224	10,328.75	0.005	16.33	32.26	27.76	0.005	3.56	37.82	2.74	0.12	3.53	0.65
HM16JV004	E17JN14A222	13,701.39	0.005	0.05	67.28	66.21	0.005	0.65	241.89	3.23	0.08	0.82	0.37
HM16JV004	E17JN14A221	12,852.81	0.005	0.02	28.91	29.86	0.005	0.3	139.51	1.28	0.02	0.63	0.36
HM16JV006	C17MA20A0011	8,878.24	0	0.02	381.76	380.56	0.005	1.9	394.55	11.38	0.39	2.5	5.93
HM16JV006	C17MA20A0014	7,040.03	0	0.01	300.78	305.36	0.005	1.94	395.42	12.69	0.6	2.25	5.56
HM16JV006	C17MA20A0013	6,096.98	0.005	0.005	67.92	66.37	0.005	0.42	281.11	1.8	0.12	1.29	0.81
HM16JV006	C17MA20A0010	3,730.04	0	0.005	165.24	166.99	0.005	0.66	462.61	1.23	0.05	1.96	0.78
HM16JV006	C17MA20A0012	4,356.49	0.005	0.005	126.04	125.08	0.005	1.05	282.32	3.5	0.28	1.5	0.77
HM16JV006	C17MA20A0008	3,687.85	0.01	0.01	93.41	94.9	0.005	0.64	367.59	2.17	0.17	1.53	0.7
HM16JV006	C17MA20A0009	4,581.21	0.02	0.01	395.57	404.49	0.005	0.71	700.79	1.44	0.07	2.08	0.6
HM16JV006	C17MA20A0015	11,603.28	0.005	0	335.66	339.56	0.005	0.21	928.87	1.87	0.09	1.42	0.17
HM16JV006	C17MA20A0007	3,411.52	0.005	0.005	133.52	130.82	0.005	0.59	283.11	0.31	0.05	6.3	0.12
HM16JV006	C17MA20A0007	3,865.50	0.005	0.005	84.15	82.89	0.005	0.12	266.94	0.14	0.005	6.49	0.03
HM16JV006	C17MA20A0020	5,085.19	0.005	0.05	318.81	329.94	0.005	25.4	747.83	58.34	2.13	4.08	11.91
HM16JV006	C17MA20A0018	3,336.78	0	0.02	447.29	456.87	0.005	1.76	331.19	9.72	0.68	2.63	8.92
HM16JV006	C17MA20A0016	15,705.43	0	0.18	234.08	232.01	0.005	0.93	238.62	45.51	5.66	4.16	0.78
HM16JV006	C17MA20A0019	6,363.98	0.005	0.005	581.91	574.5	0.005	0.03	620.21	2.24	0.6	2.59	0.58
HM16JV006	C17MA20A0017	4,372.75	0	0	100.79	102.53	0.005	0.54	321.4	1.04	0.05	1.53	0.48
HM16JV006	C17MA20A0016	13,407.63	0.005	0.03	161.45	166.94	0.005	0.43	173.66	12.02	1.8	3.71	0.43
HM16JV006	C17MA20A0021	6,087.88	0.01	0.18	573.5	566.95	0.005	2	552.44	8.98	0.69	2.55	18.33
HM16JV006	C17MA20A0023	4,644.15	0	0.08	288.61	285.4	0.005	1.68	423.44	13.84	0.96	2.59	7.95
HM16JV006	C17MA20A0022	8,052.68	0.005	0.03	209.63	216.75	0.005	3.33	517.45	34.28	1.6	3.12	7.48
HM16JV006	C17MA20A0025	7,517.38	0.005	0.14	218.61	219.44	0.005	5.37	574.4	34.53	3.39	1.47	5.96
HM16JV006	C17MA20A0025	8,413.25	0.005	0.01	170	167.64	0.005	0.17	314.45	9.67	2.08	1.55	1.68
HM16JV006	C17MA20A0024	9,010.99	0.005	0	287.88	279.68	0.005	0.16	577.22	9.8	2.87	5.75	0.62
HM16JV006	C17MA20A0027	3,543.78	0	0	179.61	184.39	0.005	0.39	309.51	1.04	0.04	2.51	0.48
HM16JV006	C17MA20A0026	5,153.64	0	0.005	86.33	87.6	0.005	0.15	432.13	0.25	0.005	5.72	0.08
HM16JV006	C17MA20A0031	2,611.14	0.01	16.76	1,409.45	1,454.87	0.005	14.29	475.72	199.1	17.19	7.96	10.99
HM16JV006	C17MA20A0029	12,768.00	0.005	0.16	289.01	297.33	0.005	0.17	215.27	3.06	0.27	1.72	9.45
HM16JV006	C17MA20A0028	13,503.20	0.01	0.11	264.33	271.05	0.005	0.19	301.19	4.02	0.64	3.77	7.88
HM16JV006	C17MA20A0030	7,056.93	0	0	488.09	491.98	0.005	0.04	377.35	10.56	3.51	0.68	5.04
HM16JV006	C17MA20A0030	6,737.82	0.005	0.01	525.84	539.66	0.005	0.08	265.95	13.65	2.39	1.36	2.8
HM16JV007	E17JN14A480	8,236.54	0.005	0.75	110.25	106.13	0.005	0.7	830.3	6.63	0.65	0.83	20.04
HM16JV007	E17JN14A474	10,068.19	0.03	7.95	608.6	604.29	0.005	13.16	454.13	63.42	4.98	3.33	18.28
HM16JV007	E17JN14A488	6,349.81	0.005	0.36	166.46	170.59	0.005	0.51	670.15	4.3	0.51	1.53	16.13
HM16JV007	E17JN14A482	8,414.26	0.02	4.78	992.96	995.94	0.07	1.25	456.38	14.67	2.67	5.09	13.05
HM16JV007	E17JN14A478	8,735.06	0.09	0.97	2,267.61	2,319.06	0.005	0.36	926.79	3.53	0.3	6.63	11.81
HM16JV007	E17JN14A478	8,682.49	0.005	0.64	238.37	242.93	0.005	0.5	818.1	3.79	0.28	21.89	11.79
HM16JV007	E17JN14A481	11,714.52	0.005	0.1	340.44	340.2	0.005	0.35	780.99	2.26	0.19	2.87	11.71
HM16JV007	E17JN14A480	7,261.50	0.005	0.32	500.81	493.33	0.005	0.49	749.28	6.67	0.52	2.05	11.62
HM16JV007	E17JN14A483	7,929.56	0.01	1.64	550.93	556.57	0.005	0.94	390.7	18.06	1.76	2.11	11.59
HM16JV007	E17JN14A488	7,348.72	0.005	0.27	492.63	492.49	0.005	0.53	599.55	5.1	0.59	0.85	10.7
HM16JV007	E17JN14A478	8,468.80	0.09	0.99	930.7	950.47	0.005	0.34	955.7	3.92	0.52	1.85	10.3
HM16JV007	E17JN14A490	7,071.82	0.005	0.44	692.51	705.98	0.005	0.41	543.97	10.69	2.07	1.44	9.98
HM16JV007	E17JN14A489	9,538.60	0.005	1.07	375.23	377.95	0.005	0.58	398.01	8.59	1.04	2.31	9.62
HM16JV007	E17JN14A473	7,317.73	0.005	0.02	311.58	309.73	0.005	0.11	641.98	0.69	0.06	2.48	8.51
HM16JV007	E17JN14A475	5,544.53	0.005	0.01	579.24	586.28	0.005	0.15	782.68	1.16	0.15	3.04	7.43
HM16JV007	E17JN14A491	14,951.02	0.01	0.73	478.99	480.41	0.005	0.64	295.69	8.09	1.16	1.73	7.35
HM16JV007	E17JN14A487	11,776.80	0.005	1.03	118.32	123.11	0.005	0.19	515.03	2.55	0.21	1	5.39

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Sr88	Ta181	Th232	Ti47	Ti49	Tl205	U238	V51	Y89	Yb172	Zn66	Zr90
HM16JV007	E17JN14A481	18,821.58	0.005	0.05	150.69	151.89	0.005	0.32	533.35	2.93	0.24	1.41	4.89

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.
**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Sr88	Ta181	Th232	Ti47	Ti49	Tl205	U238	V51	Y89	Yb172	Zn66	Zr90
HM16JV007	E17JN14A479	5,972.56	0.005	0.02	435.35	434.71	0.005	0.13	904.78	0.76	0.09	1.72	4.51
HM16JV007	E17JN14A486	3,230.02	0.005	0.07	721.06	709.9	0.005	0.15	525.93	7.16	1.29	1.53	4.19
HM16JV007	E17JN14A486	4,068.57	0.005	0.1	775.05	776.04	0.005	0.27	554.79	6.87	1.33	2.11	4.18
HM16JV007	E17JN14A490	15,708.02	0.005	0.03	341.04	356.58	0.005	0.4	331.77	11.3	1.68	1.45	4.15
HM16JV007	E17JN14A487	10,312.01	0.005	0.09	263.74	278.47	0.005	0.16	573.54	2.8	0.2	0.85	3.87
HM16JV007	E17JN14A476	17,263.60	0	0.01	238.34	244.91	0.005	0.15	483.13	1.09	0.08	1.72	3.68
HM16JV008	C17MA21A0356	8,629.07	0.005	0.6	229.43	233.85	0.005	0.44	462.24	2.05	0.11	2.14	16.5
HM16JV008	C17MA21A0353	7,573.10	0.005	0.7	118.98	118.01	0.005	0.65	391.21	3.23	0.09	2.09	14.15
HM16JV008	C17MA21A0354	5,423.14	0.005	0.28	234.91	239.13	0.005	0.69	123.46	1.11	0.07	1	9.55
HM16JV008	C17MA21A0355	6,661.85	0.005	0.38	381.91	389.81	0.005	0.48	194.13	2.94	0.48	1.69	8.6
HM16JV008	C17MA21A0361	12,608.60	0.005	0.42	75.27	80.96	0.005	0.49	61.23	1.56	0.02	0.72	5.4
HM16JV008	C17MA21A0357	3,802.23	0	0.15	265.43	270.18	0.005	0.21	442.86	1.7	0.23	1.65	4.07
HM16JV008	C17MA21A0358	8,440.08	0	0.16	277.42	272.33	0.005	0.29	243.56	1.06	0.12	1.3	3.53
HM16JV008	C17MA21A0358	9,779.04	0.005	0.31	165.28	164.2	0.005	0.29	126.45	1.04	0.02	1.24	2.1
HM16JV008	C17MA21A0359	9,712.33	0	0.27	46.87	46.13	0.005	0.26	69.87	0.95	0.04	0.64	2
HM16JV008	C17MA21A0361	15,682.15	0.01	0.04	76.82	71.95	0.005	0.21	67.52	0.93	0.11	0.64	1.52
HM16JV008	C17MA21A0360	2,429.41	0	0.08	378.02	383.35	0.005	0.14	119.87	0.7	0.04	1.02	0.89
HM16JV008	C17MA21A0368	9,477.03	0.005	0.26	32.84	32.12	0.005	0.32	370.63	1.02	0.02	0.74	2.19
HM16JV008	C17MA21A0367	4,928.90	0.005	0.22	17.58	17.51	0.005	0.14	338.14	1.38	0.05	0.62	1.5
HM16JV008	C17MA21A0364	20,148.25	0.005	0.13	8.6	9.72	0.005	0.2	162.95	1.66	0.09	0.35	1.37
HM16JV008	C17MA21A0365	17,362.88	0	0.07	21.63	19.34	0.005	0.23	140.4	1.46	0.04	0.46	0.32
HM16JV008	C17MA21A0371	7,707.56	0.005	0.69	273.01	278.7	0.005	0.4	397.25	1.75	0.11	5.54	12.75
HM16JV008	C17MA21A0372	3,947.43	0.005	0.33	35.83	33.64	0.005	0.04	67.62	0.9	0.03	1.24	0.62
HM16JV008	C17MA21A0370	13,622.52	0.005	0.01	70.85	69.55	0.005	0.18	77.14	1.7	0.18	0.61	0.54
HM16JV008	C17MA21A0369	13,965.74	0.005	0.005	38.81	40.92	0.005	0.02	49.8	0.78	0.09	0.29	0.01
HM16JV008	C17MA21A0376	5,268.35	0.005	0.89	124.16	123.37	0.005	0.5	322.81	2.59	0.12	2.81	50.94
HM16JV008	C17MA21A0373	6,255.16	0.005	0.77	87.52	87.5	0.005	0.95	171.73	3.19	0.31	1.37	14.51
HM16JV008	C17MA21A0377	7,665.03	0.005	0.84	316.4	321.83	0.005	0.28	291.08	1.08	0.005	1.41	4.44
HM16JV008	C17MA21A0377	3,462.36	0.005	0.26	449.29	437.94	0.005	0.11	396.67	0.49	0.04	0.99	4.06
HM16JV008	C17MA21A0378	8,968.59	0.005	0.21	69.12	69.51	0.005	0.18	86.86	1.35	0.21	0.67	2.8
HM16JV008	C17MA21A0375	3,109.56	0.005	0.38	435.25	449.23	0.005	0.11	408.1	0.92	0.07	0.63	2.55
HM16JV008	C17MA21A0379	15,787.15	0.005	0.41	35.42	38.72	0.005	0.37	245.8	5.39	0.47	0.65	2.2
HM16JV008	C17MA21A0375	2,519.39	0.005	0.02	432.2	447.18	0.005	0.05	244.08	0.59	0.13	0.43	1.12
HM16JV009	E17JN15A034	8,091.30	0.005	0.01	631.17	639.64	0.005	1.67	1,256.03	22.9	2.17	1.34	29.75
HM16JV009	E17JN15A036	6,571.99	0.005	0.005	589.48	585.42	0.005	3.24	1,129.25	34.72	3.47	2	24.72
HM16JV009	E17JN15A030	6,575.81	0.005	0.01	561.45	561.63	0.005	1.85	1,149.85	25.26	2.15	1.29	23.02
HM16JV009	E17JN15A033	6,252.48	0	0.02	666	667.95	0.005	2.96	1,329.41	34.44	2.6	1.27	22.32
HM16JV009	E17JN15A031	5,261.76	0.005	0.005	955	951.53	0.005	0.89	1,352.42	19.5	2.32	1.38	21.37
HM16JV009	E17JN15A048	8,902.02	0.005	0.43	630.77	634.7	0.005	3.25	1,207.55	27.26	2.35	1.65	21.04
HM16JV009	E17JN15A038	5,402.42	0	0.005	1,221.22	1,197.30	0.005	0.57	1,425.01	17.04	2.11	2	19.93
HM16JV009	E17JN15A032	6,350.23	0.005	0.01	663.78	672.86	0.005	2.3	1,208.74	30.11	2.62	1.5	19.65
HM16JV009	E17JN15A047	11,588.73	0.005	0.005	608.39	610.7	0.005	1.11	1,175.60	18.72	1.99	1.19	19.15
HM16JV009	E17JN15A037	8,177.11	0.005	0.01	732.84	730.36	0.005	4.05	1,364.39	34.96	2.47	1.4	17.19
HM16JV009	E17JN15A046	1,402.42	0.01	0.005	1,110.48	1,117.38	0.005	0.41	1,072.25	4.83	1.13	1.59	15.36
HM16JV009	E17JN15A046	1,820.16	0.005	0.005	981.3	988.43	0.005	0.44	1,010.17	5.33	1.04	1.99	15.27
HM16JV009	E17JN15A045	3,641.67	0	0.005	770.48	777.17	0.005	0.69	958.63	9.39	1.22	1.48	13.58
HM16JV009	E17JN15A052	13,676.79	0.005	0.005	731.74	743.42	0.005	2.32	1,174.15	15.85	1.37	0.82	12.77
HM16JV009	E17JN15A052	15,002.40	0	0.01	769.2	775.26	0.005	2.88	1,173.31	16.38	1.21	1.42	11.02
HM16JV009	E17JN15A051	18,537.39	0.005	0.005	118.06	127.35	0.005	3	735.03	24.98	0.97	0.1	7.8
HM16JV009	E17JN15A050	10,301.64	0.005	0.005	191.5	179.94	0.005	0.16	1,088.89	3.72	0.29	2.21	2.49
HM16JV009	E17JN15A027	7,174.93	0.005	0.005	46.06	46.77	0.005	0.13	690.21	5.64	1.22	1.75	2.15
HM16JV009	E17JN15A028	9,687.72	0.01	0.005	54.37	57.23	0.005	0.12	982.61	4.47	1.12	2.41	1.13

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Sr88	Ta181	Th232	Ti47	Ti49	Tl205	U238	V51	Y89	Yb172	Zn66	Zr90
HM16JV009	E17JN15A028	11,738.20	0.005	0.005	54.3	52.17	0.005	0.08	759.63	4.22	0.85	2.9	1.09
HM16JV009	E17JN15A029	10,133.28	0.005	0.005	36.63	38.06	0.005	0.05	670	2.77	0.99	3.54	0.81
HM16JV009	E17JN15A027	10,304.34	0.005	0.005	43.36	40.55	0.005	0.07	706.06	2.92	0.77	2.98	0.7
HM16JV009	E17JN15A029	10,004.86	0.005	0.005	35.74	36.04	0.005	0.02	682.29	2.85	0.7	2.28	0.66
HM16JV009	E17JN15A035	10,972.04	0.005	0.06	43.29	44.71	0.005	0.03	942.6	13.08	1.67	8.62	0.21
HM16JV009	E17JN15A049	5,302.69	0.005	0.01	51.39	52.41	0.005	0.28	883.21	3.28	0.32	1.07	0.12
HM16JV009	E17JN15A049	8,179.11	0.005	0.005	28.86	29.54	0.005	0.38	1,611.64	1.82	0.24	0.69	0.05
HM16JV013	C17MA20A0032	8,542.73	0.005	0.01	528.85	518.94	0.005	0.34	734.05	5.23	0.81	10.33	24.72
HM16JV013	C17MA20A0044	2,819.02	0	0.18	867.41	879.32	0.005	0.45	625.58	24.22	6.4	7.4	58.56
HM16JV013	C17MA20A0042	8,953.11	0.005	262.85	748.38	746.97	0.005	64.42	581.33	459.14	21.71	28.42	15.7
HM16JV013	C17MA20A0043	16,012.23	0.04	16.78	11,364.44	11,458.21	0.005	5.13	615.86	74.5	4.22	25.44	15.51
HM16JV013	C17MA20A0035	11,213.40	0.02	180.26	5,490.84	5,486.40	0.005	52.76	623.59	412.15	18.06	30.58	13.21
HM16JV013	C17MA20A0034	15,198.01	0.01	0.07	1,846.37	1,797.17	0.005	0.96	1,019.04	52.75	2.08	7.94	2.58
HM16JV015	C17MA20A0055	5,887.01	0.02	0.26	274.83	280.88	0.005	0.5	948.11	51.63	8.19	3.24	16.57
HM16JV015	C17MA20A0056	5,122.07	0.01	0.04	871.87	873.64	0.005	0.11	1,483.69	6.67	1.25	4.02	11.86
HM16JV015	C17MA20A0060	9,978.31	0.05	3.03	596.61	600.26	0.005	6.15	850.08	117.54	9.64	6.95	20.4
HM16JV015	C17MA20A0062	9,806.92	0.01	0.06	515.1	514.35	0.005	0.61	793.47	149.17	14.97	6.52	16.21
HM16JV015	C17MA20A0061	8,927.01	0.01	0.52	294.48	298.16	0.005	1.24	921.52	327.56	36.22	4.26	16.13
HM16JV015	C17MA20A0058	15,767.81	0.005	0.05	162.1	166.94	0.005	0.66	577.7	129.78	9.78	2.29	7.56
HM16JV015	C17MA20A0057	9,562.45	0	0.11	448.39	441.74	0.005	0.29	1,369.04	102.63	24.08	2.55	6.79
HM16JV015	C17MA20A0076	5,430.15	0.005	0.2	124.75	123.44	0.005	0.64	969.68	9.39	0.71	3.22	82.47
HM16JV015	C17MA20A0072	5,363.61	0.01	0.32	170.34	171.95	0.005	0.9	1,081.71	6.47	0.67	3.81	72.44
HM16JV015	C17MA20A0074	4,016.44	0.005	0.13	717.39	720.69	0.005	0.3	987.45	2.5	0.36	11.76	60.59
HM16JV015	C17MA20A0071	7,394.45	0.005	0.3	305.53	313.72	0.005	1.51	836.08	26.26	1.74	5.05	15.82
HM16JV015	C17MA20A0073	3,328.74	0.005	0.11	284.96	283.55	0.005	0.53	1,000.46	3.66	0.47	3.08	11.59
HM16JV015	C17MA20A0070	7,780.67	0	0.47	544.37	564.71	0.005	0.55	1,064.61	42.58	4.26	4.33	4.8
HM16JV015	C17MA20A0090	8,835.63	0.005	0.58	132.3	133.37	0.005	0.28	864.4	13.23	1.86	4.81	48.12
HM16JV015	C17MA20A0090	11,715.36	0.005	0.22	201.85	199	0.005	0.78	600.38	129.05	12.23	2.99	45.37
HM16JV015	C17MA20A0086	8,029.76	0.005	0.54	116.39	115.92	0.005	0.37	1,066.54	24.92	3.67	2.31	37.92
HM16JV015	C17MA20A0089	10,698.28	0.005	0.18	238.02	233.63	0.005	0.37	579.64	17.33	1.7	3.22	26.35
HM16JV015	C17MA20A0083	5,443.89	0.005	0.18	321.66	323.64	0.005	0.43	1,213.83	29.84	4.06	2.82	16.9
HM16JV015	C17MA20A0085	2,326.15	0.005	1.2	239.02	237.28	0.005	0.44	732	1.4	0.17	3.39	3.75
HM16JV015	C17MA20A0087	3,783.13	0	0.28	637.53	625.84	0.005	0.69	1,209.48	2.75	0.1	6.2	3.26
HM16JV015	C17MA20A0084	5,399.85	0.005	0.32	958.29	944.46	0.005	0.19	1,316.58	1.11	0.14	5.3	3.02
HM16JV015	C17MA20A0088	12,847.21	0.005	0.24	218.11	214.78	0.005	0.33	470.07	19.95	1.61	2.86	2.88
HM16JV019	E17JN14A422	3,378.00	0.02	0.79	1,081.09	1,073.07	0.005	0.51	645.09	22.53	1.89	11.4	46.02
HM16JV019	E17JN14A423	1,918.66	0	0.77	229.29	230.3	0.005	0.36	289.64	9.69	0.66	7.49	44.35
HM16JV019	E17JN14A398	3,656.62	0	5.22	524.82	528.84	0.005	0.99	321.41	10.25	0.58	10.43	27.39
HM16JV019	E17JN14A402	3,307.82	0.01	4.84	352.4	356.62	0.005	0.86	436.3	7.62	0.29	7.38	25.12
HM16JV019	E17JN14A409	2,800.43	0.005	0.51	226.25	222.9	0.005	0.46	228.18	11.54	0.83	5.98	24.96
HM16JV019	E17JN14A417	3,984.30	0.005	2.35	522.52	519.48	0.005	0.62	319.7	5.12	0.27	7.1	22.76
HM16JV019	E17JN14A410	4,777.82	0.005	0.9	355.26	345.83	0.005	0.8	158.36	32.76	1.89	6.45	17.58
HM16JV019	E17JN14A412	2,177.43	0.02	0.92	1,327.30	1,304.51	0.005	0.16	872.47	3.47	0.28	8.88	16.59
HM16JV019	E17JN14A418	2,399.02	0.01	2.54	397.16	386.9	0.005	0.5	169.69	5.81	0.31	8.5	16.09
HM16JV019	E17JN14A400	6,848.88	0.005	2.12	232.51	235.07	0.005	0.44	139.1	17.42	0.57	5.75	14.84
HM16JV019	E17JN14A421	3,576.79	0.005	2.18	418.81	426.23	0.005	0.77	122.43	11.04	0.62	6.91	14.48
HM16JV019	E17JN14A399	3,124.33	0.005	3.72	264.6	262.55	0.005	1.26	221.59	18.41	0.52	4.83	14.41
HM16JV019	E17JN14A418	2,297.60	0.01	0.55	315.43	312.73	0.005	0.34	150.46	4.2	0.25	9.21	13.54
HM16JV019	E17JN14A420	5,215.84	0.005	0.14	584.2	582.95	0.005	0.41	287.14	5.16	0.36	8.06	12.31
HM16JV019	E17JN14A396	2,012.75	0.005	0.005	581.67	580.77	0.005	0.3	170.29	3.42	0.26	7.21	11.63
HM16JV019	E17JN14A424	3,228.28	0.005	0.59	453.8	446.69	0.005	0.19	239.24	2.67	0.16	6.68	11
HM16JV019	E17JN14A411	4,320.28	0.005	0.46	640.8	656.16	0.005	0.32	496.25	6.15	0.27	8.63	10.29

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Sr88	Ta181	Th232	Ti47	Ti49	Tl205	U238	V51	Y89	Yb172	Zn66	Zr90
HM16JV019	E17JN14A411	4,225.10	0.01	3.16	313.85	311.53	0.005	0.49	328.85	4.81	0.23	8.52	10.16
HM16JV019	E17JN14A415	860.43	0.02	0.12	1,360.14	1,402.55	0.005	0.09	705.1	3.7	0.1	9.13	9.01
HM16JV019	E17JN14A425	7,742.46	0.005	0.46	218.38	217.75	0.005	15.97	946.65	106.62	2.98	1.47	8.11
HM16JV019	E17JN14A419	3,296.54	0.005	0.48	269.49	261.27	0.005	0.37	242.04	6.04	0.31	22.4	7.47
HM16JV019	E17JN14A416	2,285.09	0.005	0.1	110.97	116.63	0.005	0.07	121.43	0.72	0.005	4.63	7.2
HM16JV019	E17JN14A419	2,769.79	0.01	0.94	173.37	171.43	0.005	0.4	183.95	4.49	0.33	85.08	6.28
HM16JV019	E17JN14A397	1,390.42	0	0.22	474.13	477.08	0.005	0.23	187.44	0.54	0.09	6.73	6.18
HM16JV019	E17JN14A400	8,881.42	0.005	0.81	166.71	141.87	0.005	0.26	99.64	19.47	0.8	3.17	6.05
HM16JV019	E17JN14A416	2,873.77	0.005	1.12	141.8	138.79	0.005	0.34	116.68	8.46	0.1	5.7	6.04
HM16JV019	E17JN14A401	4,246.42	0.005	2.58	358.62	361.82	0.005	0.91	202.65	25.12	0.7	5.26	6.01
HM16JV019	E17JN14A414	4,610.36	0.005	0.6	429.59	422.19	0.005	0.16	231.75	2.65	0.14	11.22	5.31
HM16JV019	E17JN14A415	981.14	0.005	0.26	525.98	525.5	0.005	0.13	356.06	2.19	0.12	8.42	3.56
HM16JV019	E17JN14A413	3,732.54	0.01	0.13	426.13	443.04	0.005	0.18	225.63	4.85	0.24	13.49	3.18
HM16JV020	E17JN14A453	8,639.46	0.005	39.13	867.03	905.48	0.005	22.37	1,709.35	250.17	21.32	3.88	63.53
HM16JV020	E17JN14A450	5,230.69	0.01	1.03	150.57	151.97	0.005	25.87	672.66	2,325.62	211.56	1.59	27.63
HM16JV020	E17JN14A453	8,613.56	0.34	5.44	3,665.21	3,660.05	0.005	21.44	1,556.81	118.1	8.08	1.88	22.67
HM16JV020	E17JN14A447	7,911.54	0.01	0.79	419.91	403.9	0.005	13.12	1,157.62	451.99	34.03	7.33	13.57
HM16JV020	E17JN14A445	8,946.60	0	1.53	493.12	498.84	0.005	3.5	1,013.43	681.12	56.27	2.78	10.63
HM16JV020	E17JN14A451	7,248.63	0.01	0.24	430.4	435.35	0.005	19.97	1,100.08	18.42	1.6	20.55	9.42
HM16JV020	E17JN14A444	8,027.76	0.005	0.17	55.36	57.46	0.005	11.52	700.52	20.91	1.17	0.1	8.89
HM16JV020	E17JN14A455	6,380.66	0.005	0.64	302.9	292.18	0.005	28.31	1,165.01	354.6	14.85	3.38	8.07
HM16JV020	E17JN14A449	8,471.34	0.005	0.18	436.35	447.67	0.005	4.78	676.79	8.5	0.49	0.1	6.88
HM16JV020	E17JN14A454	12,343.33	0.005	0.06	96.55	97.49	0.005	29.98	546.92	60.2	5.34	0.53	5.68
HM16JV020	E17JN14A444	9,383.70	0.005	0.37	54.53	53.79	0.005	5.61	525.91	20.72	0.69	0.87	4.87
HM16JV020	E17JN14A455	5,234.19	0.005	0.25	481.33	476.99	0.005	11.17	842.74	283.3	12.4	1.63	3.26
HM16JV020	E17JN14A446	7,899.97	0.01	0.06	488.81	487.16	0.005	2.24	1,222.75	442.36	41.32	1.3	3.02
HM16JV020	E17JN14A446	14,867.78	0.005	0.09	559.59	534.63	0.005	4.94	1,044.89	433.59	31.66	1.01	1.56
HM16JV023	E17JN14A240	9,716.77	0.04	215.26	1,492.01	1,446.94	0.005	45.24	1,080.88	183.64	9.85	10.43	249.91
HM16JV023	E17JN14A231	13,455.00	0.005	96.73	397.67	371.56	0.005	26.02	584.71	53.98	2.13	2.57	89.06
HM16JV023	E17JN14A239	10,057.22	0.01	76.04	435.17	432.51	0.005	15.54	685.95	28.92	1.4	2.74	74.28
HM16JV023	E17JN14A233	19,946.91	0.11	59.82	1,075.35	1,067.38	0.005	29.34	619.67	173.06	5.25	11.2	68.78
HM16JV023	E17JN14A240	9,198.11	1.35	55.58	15,759.93	15,787.27	0.005	21.02	1,025.07	136.92	7.83	6.73	65.42
HM16JV023	E17JN14A231	11,758.05	0.01	76.36	291.82	302.44	0.005	23.55	577.96	36.23	1.65	2.26	53.43
HM16JV023	E17JN14A244	5,813.51	0.01	97.3	415.4	420.05	0.005	19.09	1,119.53	146.03	6.31	1.93	47.88
HM16JV023	E17JN14A230	6,246.55	0.005	14.04	250.03	251.6	0.005	33.14	945.04	59.54	3.58	1.66	44.27
HM16JV023	E17JN14A234	5,262.62	0.005	7.32	299.55	285.86	0.005	35.12	2,711.51	322.67	23.32	2.37	42.22
HM16JV023	E17JN14A232	15,211.32	0.02	15.89	234.76	236.78	0.005	35.29	961.32	221.18	7.09	3.24	38.64
HM16JV023	E17JN14A242	9,482.96	0.03	51.21	582.5	557.31	0.005	14.24	1,050.24	113.32	7.4	5.68	26.55
HM16JV023	E17JN14A235	5,252.70	0	9.7	572.41	560.52	0.005	16.53	992.08	21.25	1.33	2.33	25.15
HM16JV023	E17JN14A245	10,235.94	0.005	6.78	95.56	110.24	0.005	16.03	780.12	31.14	1.74	1.09	23.88
HM16JV023	E17JN14A226	21,383.07	0.03	16.51	404.57	398.42	0.005	18.77	399.25	71.84	2.6	4.67	19.52
HM16JV023	E17JN14A236	11,515.54	0	48.41	367.66	369.63	0.005	11.49	1,143.91	104.79	6.64	2.23	17.28
HM16JV023	E17JN14A244	11,998.71	0.01	32.56	337.54	328.39	0.005	13.97	790.72	117.46	3.37	0.49	15.45
HM16JV023	E17JN14A243	6,307.88	0.02	0.16	731.76	730.91	0.005	4.04	984.16	17.92	1.24	0.67	9.03
HM16JV023	E17JN14A238	21,189.40	0.02	20.4	100.66	103.19	0.005	10.74	409.93	65.26	3.53	6.44	8.78
HM16JV023	E17JN14A227	3,909.20	0	2.3	695.54	695.22	0.005	7.89	1,142.07	12.81	1.29	0.28	6.87
HM16JV023	E17JN14A237	8,664.97	0.005	1.19	575.65	570.9	0.005	3.74	680.8	7.43	0.63	0.45	5.85
HM16JV023	E17JN14A228	9,320.26	0.005	12.99	602.8	577.33	0.005	6.78	1,139.09	56.58	3.9	0.1	4.86
HM16JV023	E17JN14A229	6,341.11	0.005	0.44	570.93	568.11	0.005	3.79	1,455.67	66.38	5.22	0.24	4.08
HM16JV028	C17MA20A0101	23,085.32	0.08	30.15	1,538.88	1,537.15	0.19	10.95	296.1	78.21	5.2	7.21	165.43
HM16JV028	C17MA20A0102	10,953.37	0	0.14	243.24	238.45	0.005	2.64	296.18	1.6	0.24	6.9	71.07
HM16JV028	C17MA20A0099	15,577.49	0.005	0.38	247.85	244.73	0.005	9.1	317.38	8.28	0.66	42.56	51.97

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Sr88	Ta181	Th232	Ti47	Ti49	Tl205	U238	V51	Y89	Yb172	Zn66	Zr90
HM16JV028	C17MA20A0100	14,886.75	0.005	0.43	170.51	157.76	0.005	8.32	280.18	10.29	0.55	15.61	44.96
HM16JV028	C17MA20A0105	17,309.80	0.005	0.92	411.7	409.9	0.005	7.35	665.96	5.11	0.37	16.92	25.18
HM16JV028	C17MA20A0110	17,720.36	0.005	0.71	404.46	412.37	0.005	9.75	766.14	8.47	0.53	9.54	21.41
HM16JV028	C17MA20A0108	15,970.81	0.005	0.28	308.03	309.77	0.005	6.79	566.83	6	0.23	80.66	18.18
HM16JV028	C17MA20A0103	15,735.08	0.005	0.01	465.57	466.96	0.005	2.69	682.73	0.97	0.04	6.53	15.28
HM16JV028	C17MA20A0104	22,432.91	0	0.05	299.86	292.96	0.005	5.93	641.38	2.05	0.12	4.24	11
HM16JV028	C17MA20A0109	21,669.96	0.005	0.11	214.68	217.81	0.005	5.19	424.44	4.57	0.16	10.01	9.16
HM16JV028	C17MA20A0107	6,170.34	0	0.09	134.98	136.94	0.005	29.97	467.51	44.58	1.09	2.96	7.28
HM16JV028	C17MA20A0116	23,276.46	0	0.51	325.9	321.01	0.005	10.9	626.81	5.52	0.29	4.91	26.44
HM16JV028	C17MA20A0112	12,287.02	0.005	0.06	191.35	186.13	0.005	3.34	271.14	1.87	0.15	5.39	21.47
HM16JV028	C17MA20A0113	10,973.08	0.005	0.24	168.16	169.64	0.005	4.39	279.77	6.56	0.2	6.35	11.47
HM16JV028	C17MA20A0111	5,342.35	0.005	0.18	310.98	310.72	0.005	2.83	242.14	3.75	0.12	8.02	10.49
HM16JV028	C17MA20A0113	6,762.71	0.02	0.11	359.51	326.48	0.005	2.02	236.22	3.99	0.04	9.21	8.16
HM16JV028	C17MA20A0114	9,969.69	0.01	0.13	237.66	236.72	0.005	15.97	351.5	30.84	0.63	5.24	8.01
HM16JV032	C17MA21A0336	2,780.74	0.04	0.12	141.19	147.11	0.005	0.15	342.57	2.16	0.11	9.76	16.25
HM16JV032	C17MA21A0337	3,786.68	0.02	0.05	215.42	218.73	0.005	0.13	365.22	1.48	0.14	9.04	6.99
HM16JV032	C17MA21A0339	3,455.26	0.01	0.04	289.38	283.22	0.005	0.1	481.89	1.62	0.21	9.39	4.35
HM16JV032	C17MA21A0338	4,615.99	0.01	0.12	195.5	199.39	0.005	0.12	344.56	2.14	0.22	8.28	3.75
HM16JV032	C17MA21A0335	5,394.13	0	0.03	63.21	59.76	0.005	0.09	422.09	0.66	0.05	7.44	1.82
HM16JV032	C17MA21A0340	3,425.37	0.01	0.005	383.25	403.08	0.005	0.08	568.11	1.17	0.14	6.54	4.1
HM16JV032	C17MA21A0347	3,734.08	0.02	0.18	384.08	375.34	0.005	0.32	494.07	6.82	0.89	9.26	51.8
HM16JV032	C17MA21A0341	3,887.62	0.01	0.04	337.68	326.77	0.005	0.22	394.53	2.43	0.22	8.29	30.89
HM16JV032	C17MA21A0342	3,366.33	0.02	0.03	342.86	339.77	0.005	0.23	483.52	2.49	0.23	7.72	27.23
HM16JV032	C17MA21A0352	3,783.83	0.01	0.03	342.5	343.41	0.005	0.25	420.28	3.74	0.34	9.79	22.54
HM16JV032	C17MA21A0346	3,784.15	0.01	0.06	321.33	316.33	0.005	0.23	397.23	2.66	0.16	9.06	17.86
HM16JV032	C17MA21A0343	3,253.85	0.02	0.02	180.44	180.91	0.005	0.16	310.23	1.37	0.08	8.11	8.7
HM16JV032	C17MA21A0348	3,441.04	0.03	0.01	233.23	234.48	0.005	0.13	330.84	0.86	0.05	8.71	4.85
HM16JV032	C17MA21A0348	4,610.47	0.005	0	359.2	350.63	0.005	0.15	414.7	1.52	0.1	8.02	3.95
HM16JV032	C17MA21A0350	4,310.28	0.005	0.02	187.81	193.11	0.005	0.12	282.98	1.28	0.1	6.56	3.48
HM16JV032	C17MA21A0344	3,660.41	0.01	0.01	564.14	557.46	0.005	0.06	653.67	0.77	0.03	7	3.1
HM16JV032	C17MA21A0345	2,553.90	0.02	0	472.45	477.9	0.005	0.05	798.08	0.57	0.03	7.46	1.5
HM16JV032	C17MA21A0351	3,970.17	0	0.01	131.82	130.62	0.005	0.07	357.18	0.71	0.005	7.15	1.27
HM16JV032	C17MA21A0350	8,112.30	0	0.02	92.17	87.66	0.005	0.08	190.01	1.11	0.04	6.27	1.25
HM16JV032	C17MA21A0349	3,855.56	0.005	0.005	168.64	165.82	0.005	0.07	366.21	1.25	0.06	8.71	0.85
HM16JV032	C17MA21A0349	4,384.85	0.005	0.005	223.18	228.17	0.005	0.07	350.86	0.98	0.01	8.24	0.47
HM16JV036	E17JN15A197	9,655.23	0.005	0.005	350.72	342.03	0.005	0.73	757.46	1.51	0.19	7.7	164.18
HM16JV036	E17JN15A191	13,284.12	0.02	0.53	140.61	145.96	0.005	1.42	344.18	5.08	0.39	1.66	31.37
HM16JV036	E17JN15A189	12,640.00	0.005	0.11	182.54	187.75	0.005	2.04	458	7.3	0.3	6.38	22.12
HM16JV036	E17JN15A193	11,906.01	0.005	0.47	558.24	568.67	0.005	2.13	814.68	7.29	0.21	3.45	19.36
HM16JV036	E17JN15A187	8,830.76	0.005	0.33	123.95	125.08	0.005	0.95	227.86	0.25	0.06	3.41	18.95
HM16JV036	E17JN15A188	29,615.27	0.01	0.08	164.71	178.17	0.005	0.55	153.96	0.14	0.005	4.93	15.29
HM16JV036	E17JN15A192	14,962.14	0.005	0.07	181.89	181.51	0.005	1.82	247.61	2.78	0.18	11.89	13.34
HM16JV036	E17JN15A191	12,344.86	0.005	0.3	168.27	173.22	0.005	3.04	520.34	11.84	0.41	11.09	13.14
HM16JV036	E17JN15A182	11,336.73	0.005	2.51	332.2	359.54	0.005	3.32	443.25	9.15	0.6	3.04	12.94
HM16JV036	E17JN15A180	14,316.13	0.005	6.39	352.77	343.61	0.005	0.93	611.4	4.34	0.26	6.35	8.05
HM16JV036	E17JN15A196	15,153.64	0.005	0.03	262.78	271.47	0.005	0.37	474.15	9.06	0.53	1.78	1.76
HM16JV036	E17JN15A186	9,028.88	0.005	0.05	306.58	290.03	0.005	0.12	400.72	6.97	0.33	1.9	0.46
HM16JV037	C17MA20A0228	2,939.32	0.005	0.07	488.82	484	0.005	1.09	392.34	2.14	0.25	0.87	59.43
HM16JV037	C17MA20A0227	7,517.76	0	0.29	64.94	64.06	0.005	1.22	219.01	1.81	0.09	2.24	32.72
HM16JV037	C17MA20A0251	8,535.52	0.005	3.33	190.7	193.68	0.005	1.27	197.73	4.97	0.36	2.5	19.61
HM16JV037	C17MA20A0242	7,685.92	0	0.73	219.45	223.53	0.005	2.98	164.05	4.02	0.42	3.75	16.61
HM16JV037	C17MA20A0254	12,314.54	0.005	1.69	158.93	159.16	0.005	1.11	198.11	3.47	0.21	2.6	16.59

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Sr88	Ta181	Th232	Ti47	Ti49	Tl205	U238	V51	Y89	Yb172	Zn66	Zr90
HM16JV037	C17MA20A0226	11,154.97	0.005	1.23	119.86	116.09	0.005	0.95	192.77	4.55	0.32	1.64	16.36
HM16JV037	C17MA20A0253	13,550.89	0.01	2.2	171.33	164.93	0.005	1.34	186.89	3.91	0.23	2.49	15.36
HM16JV037	C17MA20A0250	4,704.09	0.02	0.88	239.42	224.59	0.005	2.9	304.31	2.29	0.08	2.09	13.02
HM16JV037	C17MA20A0229	15,245.97	0.005	0.6	265.99	260.56	0.005	1.54	290.25	2.65	0.17	2.53	12.29
HM16JV037	C17MA20A0240	7,912.78	0	0.47	219.23	220.9	0.005	2.36	275.46	3.12	0.23	3.42	11.98
HM16JV037	C17MA20A0246	7,238.85	0	0.03	307.48	322	0.005	1.58	206.69	3.24	0.3	1.29	11.1
HM16JV037	C17MA20A0245	12,015.10	0.005	0.81	71.6	70.29	0.005	5.17	101.49	3	0.2	0.73	10.56
HM16JV037	C17MA20A0251	15,959.97	0.005	2.39	127.93	129.12	0.005	1.19	167.44	3.91	0.19	1.49	10.52
HM16JV037	C17MA20A0247	17,807.21	0.005	0.3	94.51	91.11	0.005	2.19	133.95	3.12	0.27	0.92	10.32
HM16JV037	C17MA20A0249	13,002.56	0	0.72	121.66	123.5	0.005	1.86	146.93	2.32	0.24	2.1	9.85
HM16JV037	C17MA20A0243	15,269.82	0.005	1.59	116.87	118.63	0.005	1.34	133.48	2.8	0.18	1.86	7.82
HM16JV037	C17MA20A0255	6,924.07	0.02	0.25	306.17	293.63	0.005	1.09	266.14	3.15	0.22	2.08	7.7
HM16JV037	C17MA20A0252	18,870.83	0.01	0.95	125.09	124.14	0.005	1.71	144.53	3.11	0.23	1.95	7.37
HM16JV037	C17MA20A0238	14,741.37	0.005	0.09	48.9	47.74	0.005	0.79	164.11	1.18	0.1	1.06	5.62
HM16JV037	C17MA20A0225	15,660.54	0.005	0.73	99.79	99.14	0.005	1.58	123.91	3.1	0.2	3.37	5.16
HM16JV037	C17MA20A0250	17,743.64	0.01	4.28	102.55	94.74	0.005	0.92	135.88	2.34	0.25	2.29	4.99
HM16JV037	C17MA20A0241	6,273.11	0	0.58	82.17	84.49	0.005	1.09	120.49	2.61	0.21	4.03	4
HM16JV037	C17MA20A0244	19,545.65	0.005	0.7	111.51	110.31	0.005	3.1	64.51	4.35	0.36	0.4	2.88
HM16JV037	C17MA20A0230	24,504.59	0.005	0.32	56	56.21	0.005	2.96	122.46	5.98	0.21	1.61	2.78
HM16JV037	C17MA20A0239	15,564.35	0.005	0.5	54.78	52.66	0.005	2.76	126.22	4.47	0.24	3.91	1.75
HM16JV037	C17MA20A0231	24,322.72	0.01	0.02	58.88	58.19	0.005	4.59	120.71	6.91	0.29	0.84	0.7
HM16JV037	E17JN14A047	12,249.94	0.01	0.01	96.54	94.37	0.005	1.71	321.45	9.02	0.68	1.59	49.47
HM16JV037	E17JN14A045	12,956.02	0.005	0.05	79.35	86.44	0.005	2.4	264.48	8.02	0.98	1.85	47.74
HM16JV037	E17JN14A055	7,222.18	0.005	0.005	130.43	128.41	0.005	0.26	819.19	1.71	0.33	1.4	42.78
HM16JV037	E17JN14A057	7,263.08	0.005	0.11	567.77	552.91	0.005	0.33	1,073.92	3.69	0.59	2.01	23.35
HM16JV037	E17JN14A061	16,097.52	0.005	5.62	345.16	361.82	0.005	2.01	473.45	12.46	0.47	4.93	20.3
HM16JV037	E17JN14A057	9,179.86	0.005	0.24	389.91	384.75	0.005	0.28	908.64	3.42	0.48	1.92	19.43
HM16JV037	E17JN14A061	16,111.06	0.01	3.3	1,090.54	1,105.51	0.005	2.01	446.62	6.08	0.25	7.79	19.37
HM16JV037	E17JN14A055	9,871.54	0	0.005	499.27	503.88	0.005	0.2	846.38	2.43	0.35	1.69	12.8
HM16JV037	E17JN14A035	16,057.65	0.005	0.005	80.53	81.18	0.005	1.33	190.08	7.09	0.41	2.16	8.86
HM16JV037	E17JN14A044	14,291.88	0.01	0.16	98.93	93.93	0.005	2.59	87.7	5.24	0.39	2.29	8.32
HM16JV037	E17JN14A054	3,497.92	0.005	0.005	529.41	520.82	0.005	0.35	1,045.11	3.3	0.65	2.18	7.33
HM16JV037	E17JN14A036	6,012.69	0.005	0.19	336.23	339.94	0.005	0.32	595.99	0.84	0.06	3.6	6.41
HM16JV037	E17JN14A048	13,970.08	0	0.19	220.86	222.54	0.005	1.78	439.75	18.53	0.67	15.87	5.4
HM16JV037	E17JN14A046	5,211.25	0.005	0.01	114.87	108.15	0.005	1.73	317.94	13.75	1.05	2.67	5.3
HM16JV037	E17JN14A036	7,512.18	0.005	0.16	376.48	376.58	0.005	0.33	576.35	0.68	0.07	2.68	4.83
HM16JV037	E17JN14A033	14,611.66	0.005	0.01	115.76	112.68	0.005	2.81	392.41	9.73	0.27	6.12	4.81
HM16JV037	E17JN14A046	5,987.22	0	0.005	110.9	112.42	0.005	1.6	331.74	10.61	0.82	3.17	4.63
HM16JV037	E17JN14A058	5,941.90	0.005	0.2	419.57	404.57	0.005	0.45	442.38	26.73	2.81	2.65	4.55
HM16JV037	E17JN14A037	9,291.25	0.005	0.01	76.1	75.84	0.005	2.53	99.05	2.25	0.15	1.32	4.29
HM16JV037	E17JN14A035	18,224.97	0.005	0.02	136.69	116.15	0.005	0.61	320.69	3.68	0.32	2.34	4.02
HM16JV037	E17JN14A052	10,461.10	0.005	0.005	383.2	378.16	0.005	1.05	512.71	3.77	0.25	3.82	3.94
HM16JV037	E17JN14A037	12,234.55	0.005	0.005	85.89	90.64	0.005	2.39	127.04	5.03	0.2	2.29	3.69
HM16JV037	E17JN14A049	13,382.85	0.005	0.03	201.79	197.46	0.005	0.17	396.64	0.47	0.04	1.56	3.37
HM16JV037	E17JN14A052	15,100.13	0.005	0.01	326.3	332.22	0.005	1.49	533.19	4.62	0.23	2.66	3.32
HM16JV037	E17JN14A054	7,972.49	0.005	0.005	543.97	541.06	0.005	0.46	835.33	3.28	0.62	1.87	3.2
HM16JV037	E17JN14A060	34,476.08	0	0.11	145.58	144.98	0.005	0.66	283.2	11.55	0.63	1.63	2.93
HM16JV037	E17JN14A062	6,143.81	0.005	0.13	31.25	33.89	0.005	0.23	256.25	2.24	0.09	0.57	2.74
HM16JV037	E17JN14A051	15,206.19	0.005	0.11	155.2	160.61	0.005	0.62	263.37	8.85	0.48	3.44	2.69
HM16JV037	E17JN14A032	20,886.99	0.005	0.01	275.18	278.23	0.005	0.37	522.13	8.34	0.5	4.41	2.41
HM16JV037	E17JN14A050	19,546.81	0.005	0.2	247.44	252.58	0.005	0.22	351.4	0.62	0.06	0.73	2.25
HM16JV037	E17JN14A034	21,436.42	0.005	0.01	117.12	116	0.35	0.69	194.9	6.91	0.42	3.59	2.08

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Sr88	Ta181	Th232	Ti47	Ti49	Tl205	U238	V51	Y89	Yb172	Zn66	Zr90
HM16JV037	E17JN14A056	14,043.43	0.005	0.1	209.44	218.29	0.005	0.48	434.17	3.25	0.45	0.4	1.83
HM16JV037	E17JN14A050	14,888.06	0.005	0.09	217.77	224.74	0.005	0.99	410.65	2.43	0.19	2.29	1.81
HM16JV037	E17JN14A049	22,733.59	0.005	0.02	104.87	111.99	0.005	0.22	291.72	0.71	0.07	0.77	0.9
HM16JV037	E17JN14A059	25,154.08	0.005	0.04	21.54	21.29	0.005	0.79	158.39	6.5	0.33	1.48	0.77
HM16JV038	E17JN14A074	4,724.72	0.005	0.005	17.62	18.61	0.005	0.39	225.1	2.14	0.08	0.69	0.005
HM16JV038	E17JN14A081	8,993.19	0.005	0.31	137.25	131.54	0.005	2.77	402.15	4.98	0.21	3.38	5.84
HM16JV038	E17JN14A076	8,864.62	0.005	1.33	278.49	282.41	0.005	2.76	248.45	4.9	0.23	1.11	5.56
HM16JV038	E17JN14A071	3,792.52	0.005	0.09	135.49	145.34	0.005	4.02	241.76	7.6	0.42	2.06	5.32
HM16JV038	E17JN14A067	6,522.91	0.005	0.9	201.08	214.76	0.005	3.02	347.77	8.86	0.45	1.51	4.97
HM16JV038	E17JN14A064	3,980.32	0.005	0.01	61.74	60.74	0.005	3.13	211.92	6.7	0.18	2.03	4.74
HM16JV038	E17JN14A083	6,041.56	0.005	0.41	249.4	246.06	0.005	2.97	271.87	4.81	0.48	1.33	4.4
HM16JV038	E17JN14A068	2,455.80	0.005	0.005	194.2	187.53	0.005	1.8	297.41	4.8	0.25	2.27	3.88
HM16JV038	E17JN14A077	8,201.99	0.005	0.06	163.5	165.78	0.005	2.3	346.8	5.26	0.33	1.26	3.82
HM16JV038	E17JN14A065	7,266.47	0.005	0.18	112.91	116.01	0.005	2.24	297.59	3.75	0.12	1.57	2.91
HM16JV038	E17JN14A091	3,794.50	0.005	0.05	92.85	94.61	0.005	3.61	625.47	8.68	0.16	1.84	2.7
HM16JV038	E17JN14A080	2,636.54	0	0.63	279.43	280.1	0.005	2.35	291.8	3.66	0.13	2.15	2.69
HM16JV038	E17JN14A092	10,354.10	0.005	0.16	64.38	63.17	0.005	2.56	613.31	6.32	0.13	1.77	2.57
HM16JV038	E17JN14A093	3,281.01	0.005	0.61	305.15	322.33	0.005	1.54	360.3	5.96	0.22	1.65	2.52
HM16JV038	E17JN14A066	9,428.51	0.005	0.04	150.39	169.38	0.005	5.86	303.61	12.36	0.63	0.83	2.4
HM16JV038	E17JN14A069	1,782.06	0.005	0.02	348.87	356.46	0.005	2.02	303.81	4.84	0.15	1.95	2.25
HM16JV038	E17JN14A078	2,516.08	0.005	0.15	355.58	353.42	0.005	4.01	300.3	4.49	0.48	3.77	2.21
HM16JV038	E17JN14A072	6,190.60	0.005	0.09	31	32.37	0.005	3.92	447.66	12.41	0.44	0.83	2.07
HM16JV038	E17JN14A073	5,245.83	0.005	0.01	99.01	100.81	0.005	3.02	184.09	8.33	0.38	1.79	2.06
HM16JV038	E17JN14A075	3,578.81	0.005	0.1	373.55	377.62	0.005	1.71	269.79	4.94	0.2	1.45	2.06
HM16JV038	E17JN14A064	5,173.43	0.005	0.05	91.98	89.89	0.005	5.25	216.18	14.61	0.53	2.25	1.94
HM16JV038	E17JN14A084	6,327.72	0.005	0.06	189.27	192.84	0.005	4.83	616.31	14.9	0.82	1.06	1.84
HM16JV038	E17JN14A072	10,754.21	0.005	0.08	77.24	72.48	0.005	5.54	445.51	20.43	1.34	0.63	1.54
HM16JV038	E17JN14A063	4,853.85	0.005	0.06	142.84	147.26	0.005	4.79	326.52	12.68	0.59	2.06	1.51
HM16JV038	E17JN14A070	2,078.60	0	0.01	587.88	589.98	0.005	6.49	1,137.38	12.27	0.74	2.05	1.41
HM16JV038	E17JN14A079	2,188.31	0.005	0.1	529.6	542.11	0.005	1.78	313.24	4.37	0.23	2.25	1.38
HM16JV038	E17JN14A066	8,672.88	0.005	0.12	83.95	88.08	0.005	2.66	276.23	8.97	0.51	0.67	1.15
HM16JV039	E17JN14A108	10,949.82	0.005	0.18	108.83	115.71	0.005	0.52	380	0.9	0.05	1.29	35.88
HM16JV039	E17JN14A109	7,389.59	0.005	0.02	76.87	75.78	0.005	0.54	407.35	0.73	0.06	1.15	19.88
HM16JV039	E17JN14A096	10,079.00	0.005	1.54	111	110.79	0.005	2.29	549.26	3.07	0.08	1.55	16.49
HM16JV039	E17JN14A103	2,705.87	0.005	0.01	973.77	997.6	0.005	0.02	680.93	0.28	0.03	0.68	15.51
HM16JV039	E17JN14A095	12,912.54	0.005	1.17	317.37	316.24	0.005	2.38	903.42	3.94	0.07	3.78	15.18
HM16JV039	E17JN14A103	2,764.49	0.005	0.03	918.47	943.53	0.005	0.12	665	0.3	0.1	2.16	11.6
HM16JV039	E17JN14A103	5,249.26	0.005	0.005	989.54	1,007.02	0.005	0.06	705.12	0.31	0.01	1.11	11.07
HM16JV039	E17JN14A105	23,913.55	0.005	0.01	66.69	68.14	0.005	0.48	242.64	1.29	0.03	0.45	9.32
HM16JV039	E17JN14A103	8,983.79	0.005	0.005	1,055.48	1,075.01	0.005	0.01	725.38	0.32	0.005	0.1	8.87
HM16JV039	E17JN14A100	22,421.30	0.005	0.01	96.37	95.82	0.005	0.29	238.53	0.92	0.03	0.85	8.8
HM16JV039	E17JN14A112	7,887.48	0.005	0.01	791.26	792.97	0.005	0.1	592.78	0.25	0.05	1.2	8.19
HM16JV039	E17JN14A107	14,040.12	0.005	0.25	42.22	40.01	0.005	0.39	230.54	0.7	0.04	1.12	7.11
HM16JV039	E17JN14A107	15,114.53	0	0.11	44.81	50.09	0.005	0.33	247.41	0.56	0.02	0.9	6.15
HM16JV039	E17JN14A097	21,590.58	0.005	0.14	564.16	546.39	0.005	0.12	407.99	0.36	0.03	0.47	4.34
HM16JV039	E17JN14A097	21,052.38	0	0.25	597.3	595.74	0.005	0.2	353.6	0.53	0.02	0.58	3.79
HM16JV039	E17JN14A094	7,506.54	0.005	2.76	412.68	411.21	0.005	0.43	566.98	1.95	0.08	4.68	3.08
HM16JV039	E17JN14A098	26,109.54	0.005	0.005	129.89	128.1	0.005	0.22	193.86	0.68	0.005	0.43	2.8
HM16JV039	E17JN14A101	14,111.52	0.005	0.09	56.3	57.26	0.005	0.19	286.22	0.57	0.005	0.92	2.72
HM16JV039	E17JN14A110	18,110.03	0.005	0.05	64.22	62.55	0.005	0.33	207.51	0.99	0.04	0.53	2.39
HM16JV039	E17JN14A099	24,115.15	0.005	0	77.63	77.35	0.005	0.27	205.39	0.72	0.02	0.62	2.34
HM16JV039	E17JN14A110	14,708.05	0.005	0.4	67.28	68.94	0.005	0.44	217.95	1.06	0.03	0.78	2.18

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Sr88	Ta181	Th232	Ti47	Ti49	Tl205	U238	V51	Y89	Yb172	Zn66	Zr90
HM16JV039	E17JN14A098	20,002.31	0.005	0.01	98.44	99.04	0.005	0.24	190.59	0.61	0.005	0.47	1.95
HM16JV039	E17JN14A111	13,225.48	0.005	0.02	79.99	81.22	0.005	0.07	173.15	0.16	0.005	0.92	1.55
HM16JV039	E17JN14A094	7,578.89	0.005	2.17	435.08	426.92	0.005	0.11	331.3	0.94	0.03	4.82	1.45
HM16JV039	E17JN14A114	10,493.59	0.01	7.78	13,401.01	13,359.81	0.005	0.2	322.35	2.19	0.15	3.54	1.43
HM16JV039	E17JN14A106	9,613.16	0.005	0.01	46.29	46.84	0.005	1.03	181.17	2.06	0.1	0.78	1.15
HM16JV039	E17JN14A102	12,752.03	0	0.01	40.92	39.38	0.005	0.33	218.07	0.58	0	0.34	1.06
HM16JV039	E17JN14A104	15,134.90	0.005	0.01	73.66	77.03	0.005	0.08	179.07	0.15	0.01	1.17	0.99
HM16JV053	E17JN15A284	12,680.13	0.005	8.03	144.34	145.13	0.005	4.88	403.12	17.61	1.22	2.17	22.07
HM16JV053	E17JN15A277	13,574.82	0.005	3.51	217.93	221.61	0.005	4.96	437.74	13.14	0.93	2.58	21.73
HM16JV053	E17JN15A264	12,245.56	0.005	7.07	226.41	213.34	0.005	5.33	405.42	12.93	0.51	1.42	20.47
HM16JV053	E17JN15A286	11,764.47	0.005	4.9	148.81	143.1	0.005	6.34	451.39	19.28	1.1	1.59	18.58
HM16JV053	E17JN15A269	11,787.32	0.005	5.55	335.94	318.46	0.005	4.49	516.55	14.78	0.99	3.39	17.55
HM16JV053	E17JN15A263	12,241.07	0.005	3.9	299.69	304.76	0.005	6.78	500.49	18.08	1.04	1.38	16.98
HM16JV053	E17JN15A279	10,432.33	0.005	4.79	335.19	361.24	0.005	5.39	542.4	10.51	1.31	1.56	16.04
HM16JV053	E17JN15A285	12,410.60	0.005	16.62	120.86	122.59	0.005	3.82	377.68	16.4	0.99	0.81	15.72
HM16JV053	E17JN15A266	13,338.80	0.005	3.45	146.91	148.35	0.005	6.41	385.51	17.73	0.66	1.91	14.47
HM16JV053	E17JN15A282	6,194.44	0.005	1.33	83.68	83.95	0.005	2.92	391.12	6.74	0.25	1.71	13.22
HM16JV053	E17JN15A261	7,638.08	0.005	5.34	323.27	321.97	0.005	11.34	584.32	19.21	1.08	1.43	12.64
HM16JV053	E17JN15A283	12,943.87	0.005	2.25	108.49	112.56	0.005	6.9	363.64	17.2	1.44	0.93	11.64
HM16JV053	E17JN15A270	10,110.57	0.02	1.67	209.05	226.96	0.005	6.86	568.62	13.09	0.34	0.65	11.18
HM16JV053	E17JN15A264	10,963.83	0.05	3.85	313.2	304.28	0.005	8.83	501.91	14.34	0.72	2.48	10.4
HM16JV053	E17JN15A278	8,104.13	0.005	0.88	146.82	134.13	0.005	7.49	371.13	13.72	0.65	1.79	10.33
HM16JV053	E17JN15A268	9,000.81	0.005	0.92	110.49	111.21	0.005	4.35	473.83	12.57	0.54	0.88	8.66
HM16JV053	E17JN15A267	17,303.34	0.005	16.76	103.51	100.84	0.005	6.16	332.93	12.19	0.59	1.92	7.14
HM16JV053	E17JN15A265	11,236.26	0.005	6.01	250.57	270.2	0.005	4.48	445.24	10.4	0.79	1.96	6.92
HM16JV053	E17JN15A262	11,555.63	0.005	3.04	245.84	262.74	0.005	8.78	503.11	20.16	1.27	0.1	4.51
HM16JV053	E17JN15A261	6,864.05	0.005	3.69	408.36	407.07	0.005	4.92	404.3	13.6	0.21	0.83	0.9
HM16JV064	E17JN15A089	17,947.27	0.2	0.18	3,265.25	3,324.67	0.005	0.29	75.09	9.76	0.88	2.79	101.57
HM16JV064	E17JN15A365	2,752.85	0.07	95.91	1,998.18	2,033.35	0.05	26.1	814.31	428.87	28.77	12.18	98.32
HM16JV064	E17JN15A089	6,279.29	0.14	0.38	3,342.07	3,364.19	0.005	0.22	102.7	13.04	1.45	3.02	84.7
HM16JV064	E17JN15A092	12,546.28	0.05	0.06	204.82	182.59	0.005	0.47	110.05	20.03	1.63	1.61	32.61
HM16JV064	E17JN15A091	11,381.23	0.005	0.11	62.71	64.19	0.005	0.17	79.94	11.61	0.53	0.53	27.1
HM16JV064	E17JN15A090	17,699.47	0.47	0.02	5,715.62	5,775.42	0.005	0.15	103.19	10.56	0.86	2.48	19.99
HM16JV064	E17JN15A096	9,272.05	0.005	0.13	199.97	168.64	0.005	0.31	105.66	14.69	0.73	3.19	17.6
HM16JV064	E17JN15A096	7,206.43	0.32	0.15	5,442.42	5,494.75	0.005	0.21	120.95	8.67	0.56	4.41	17.33
HM16JV064	E17JN15A093	10,058.41	0.005	0.04	106.41	105.24	0.005	0.08	103.44	15.38	0.39	4.18	14.82
HM16JV064	E17JN15A092	10,892.71	0.005	0.03	92.6	93.86	0.005	0.14	86.28	10.72	0.54	1.38	13.47
HM16JV064	E17JN15A094	19,024.53	0.005	0.005	123.2	93.89	0.005	0.22	126.96	9.85	0.73	0.9	13.31
HM16JV064	E17JN15A093	16,308.98	0.005	0.02	126.15	126.69	0.005	0.08	125.55	32.41	1.1	2.15	13.24
HM16JV064	E17JN15A095	6,673.59	0.02	0.09	825.13	831.83	0.005	0.3	111.29	7.51	0.33	4.5	12.49
HM16JV064	E17JN15A094	5,968.92	0.005	0.01	316.52	329.88	0.005	0.09	148.62	4.01	0.13	0.6	10.18
HM16JV064	E17JN15A090	12,813.29	0.11	0.16	2,207.72	2,217.70	0.005	0.39	108.77	54.06	3.11	2.42	7.18
HM16JV064	E17JN15A095	9,274.00	0.005	0.03	107.96	115.18	0.005	0.25	89.63	45.26	2.07	1.09	6.67
HM16JV064	E17JN15A364	9.84	0.12	0.01	1,616.49	1,642.11	0.005	0.01	646.13	5.55	0.59	24.24	2.71
HM16JV068	E17JN15A124	10,521.40	0.03	64.02	329.97	331.71	0.005	0.96	284.14	40.61	5.59	5.18	39.17
HM16JV068	E17JN15A119	10,941.97	0.005	7.79	229.11	242.95	0.005	1.5	239.45	37.87	4.74	2.72	20.73
HM16JV068	E17JN15A123	15,295.37	0.04	1.3	294.22	308.78	0.005	0.51	188.47	63.67	8.91	2.71	11.74
HM16JV068	E17JN15A122	11,540.42	0.005	4	169.73	169.04	0.005	0.63	247.28	32.09	4.7	1.9	9.34
HM16JV068	E17JN15A115	10,224.81	0.005	0.23	512.91	507.45	0.005	0.52	125.42	19.97	2.51	2.22	9.25
HM16JV068	E17JN15A121	16,388.03	0.005	0.81	120.08	121.78	0.005	0.51	267.19	22.26	2.53	3.31	5.9
HM16JV068	E17JN15A120	25,125.44	0.005	2.16	66.3	66.45	0.005	0.28	157.18	22.22	2.92	2.03	4.24
HM16JV068	E17JN15A116	4,061.00	0.005	0.21	553.59	562.75	0.005	0.09	183.38	1.44	0.1	4.7	3.94

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Sr88	Ta181	Th232	Ti47	Ti49	Tl205	U238	V51	Y89	Yb172	Zn66	Zr90
HM16JV068	E17JN15A117	26,241.17	0	0.05	104.99	102.02	0.005	0.18	285.74	4.62	0.32	1.48	0.95
HM16JV068	E17JN15A118	11,679.47	0.005	0.16	434.27	447.61	0.005	0.88	322.2	53.14	5.59	1.28	0.88
HM16JV069	C17MA21A0304	2,965.46	0.005	0.02	700.93	706.54	0.005	0.53	231.77	24.28	3.28	3.95	107.32
HM16JV069	C17MA21A0301	1,422.77	0.005	0.005	1,776.90	1,789.60	0.005	0.1	382.29	32.9	7.01	5.16	84.06
HM16JV069	C17MA21A0307	1,368.77	0	0.005	1,989.65	1,993.49	0.005	0.1	368.66	28.28	4.85	4.98	67.81
HM16JV069	C17MA21A0303	1,864.21	0.005	1.24	579.28	579.84	0.005	1.32	365.5	74.66	8.34	2.29	23.31
HM16JV069	C17MA21A0306	2,130.10	0.005	0.4	575.79	584.8	0.005	1.4	363.44	110.08	9.05	1.94	22.12
HM16JV069	C17MA21A0302	2,107.12	0.005	0.87	525.36	533.63	0.005	2.26	380.06	125.68	9.71	1.89	18.24
HM16JV069	C17MA21A0312	3,060.36	0	0.01	755.39	755	0.005	0.19	296.32	47.45	5.75	3.26	116.05
HM16JV069	C17MA21A0309	1,489.24	0.005	0.005	1,916.98	1,949.53	0.005	0.19	356.44	48.53	7.94	5.02	85.21
HM16JV069	C17MA21A0308	1,829.09	0.005	0	673.97	664.96	0.005	0.11	285.44	33.99	4.03	6.7	46.18
HM16JV069	C17MA21A0321	2,031.12	0.005	0.27	640.4	641.24	0.005	0.92	318	95.05	7.2	4.29	35.26
HM16JV069	C17MA21A0314	1,878.21	0.005	0.57	630.91	630.53	0.005	1.35	380.8	85.39	8.52	1.98	27.58
HM16JV069	C17MA21A0310	1,897.91	0.005	0.66	629.38	625.83	0.005	1.56	382.7	112.7	9.84	2.8	23.1
HM16JV069	C17MA21A0313	2,021.19	0.005	0.73	573.5	558.71	0.005	2.26	378.43	117.83	10.81	2.15	22.15
HM16JV069	C17MA21A0311	1,850.69	0.005	0.49	562.29	558.01	0.005	1.69	424.59	133.13	12.56	2.54	22.03
HM16JV069	C17MA21A0322	1,515.97	0.005	0	811.61	799.02	0.005	0.06	264.43	40.82	5.4	4.39	84.12
HM16JV069	C17MA21A0324	2,363.70	0.005	0.56	666.93	671.03	0.005	1.41	315.92	94.21	9.4	5.6	61.94
HM16JV069	C17MA21A0327	2,799.50	0	0.01	738.2	741.53	0.005	0.09	279.78	39.97	5.4	3.24	55.75
HM16JV069	C17MA21A0327	2,402.03	0.005	0.41	625.63	623.82	0.005	1.18	299.73	83.58	7.33	3.04	43.81
HM16JV069	C17MA21A0323	1,668.43	0.005	0.01	690.77	673.58	0.005	0.19	277.53	70.92	11.97	5.53	38.86
HM16JV069	C17MA21A0325	1,584.16	0.005	0.14	588.8	587.98	0.005	0.25	272.31	67.99	5.88	4.95	32.03
HM16JV069	C17MA21A0326	1,553.01	0.005	0.02	555.19	559.53	0.005	0.17	276.33	54.24	6.86	4.4	31.61
HM16JV069	C17MA21A0328	1,460.56	0.005	0.01	563.91	581.89	0.005	0.1	279.5	49.17	5.09	3.44	25.39
HM16JV069	C17MA21A0329	1,195.32	0.005	0.02	603.61	609.65	0.005	0.04	261.01	43.56	4.34	4.68	20.74
HM16JV069	C17MA21A0331	2,958.27	0.005	0.005	801.81	808.88	0.005	0.22	279.41	43.52	8.16	5.08	161.22
HM16JV069	C17MA21A0332	2,856.28	0	0.04	708.45	715.3	0.005	0.34	299.08	45.37	7.09	3.67	135.19
HM16JV069	C17MA21A0330	1,046.18	0	0.005	2,079.42	2,090.50	0.005	0.13	345.94	57.56	10.05	6.2	83.15
HM16JV069	C17MA21A0330	1,353.48	0.005	0.27	1,374.92	1,398.00	0.005	2	344.61	103.81	10.53	3.67	56.11
HM16JV069	C17MA21A0334	1,937.50	0.005	1.35	614.56	603.83	0.005	2.57	413.05	174.43	14.35	2.11	25.84
HM16JV069	C17MA21A0333	1,922.26	0.005	0.75	560.31	545.7	0.005	1.8	362.98	89.23	8.16	2.23	21.13
HM16JV073	E17JN14A395	1,557.14	0.005	0.35	1,151.49	1,191.00	0.005	0.42	214.5	2.82	0.07	7.49	73.34
HM16JV073	E17JN14A394	1,299.02	0	0.32	1,350.90	1,347.58	0.005	0.18	235.68	2.26	0.09	9.2	64.72
HM16JV073	E17JN14A378	1,249.86	0.005	0.07	2,072.62	2,070.27	0.005	0.38	356.33	4.82	0.09	10.19	62.95
HM16JV073	E17JN14A393	1,645.52	0.01	0.5	1,274.66	1,246.18	0.005	0.47	283.89	5.54	0.27	8.74	55.7
HM16JV073	E17JN14A386	1,492.30	0.005	3.34	1,062.90	1,039.58	0.005	0.35	406.68	5.42	0.46	4.63	52.66
HM16JV073	E17JN14A381	2,624.69	0.005	0.18	883.18	898.14	0.005	1.12	277.79	21.57	2.85	6.32	50.34
HM16JV073	E17JN14A392	2,369.13	0.005	0.32	848.92	845	0.005	0.48	335.29	29.21	2.56	6.08	50.33
HM16JV073	E17JN14A380	2,887.10	0.005	1.8	420.73	469.54	0.005	0.22	283.15	3.51	0.13	3.25	49.89
HM16JV073	E17JN14A390	1,839.44	0.06	0.18	2,048.68	2,045.24	0.005	0.39	375.28	11.68	1.18	5.22	47.95
HM16JV073	E17JN14A372	1,024.59	0.005	0.04	1,092.63	1,095.37	0.005	0.19	428.03	4.57	0.48	3.33	45.5
HM16JV073	E17JN14A376	3,044.32	0.005	0.12	1,041.73	1,083.18	0.005	0.33	293.34	3.3	0.65	7.26	40.26
HM16JV073	E17JN14A389	1,667.49	0.005	0.13	969.43	962.21	0.005	0.35	414.3	8.92	1.31	5.2	34.25
HM16JV073	E17JN14A384	2,605.74	0.005	0.37	844.62	836.61	0.005	0.32	353.02	4.64	0.5	6.12	33.48
HM16JV073	E17JN14A388	2,642.98	0	0.14	687.74	684.92	0.005	0.61	322.21	10.71	0.78	5.73	32.5
HM16JV073	E17JN14A375	2,972.03	0.005	0.005	700.8	691.71	0.005	0.18	285.88	30.47	3.19	5.99	32.49
HM16JV073	E17JN14A384	2,619.31	0.005	0.72	476.71	466.04	0.005	0.26	260.25	6.74	0.65	6.08	31.53
HM16JV073	E17JN14A391	3,116.93	0.005	0.27	783.44	765.41	0.005	0.41	550.04	23.9	3.58	5.57	31.04
HM16JV073	E17JN14A373	3,601.06	0.005	0.18	668.34	671.64	0.005	0.32	533.32	15.43	3.23	4.57	30.25
HM16JV073	E17JN14A387	2,163.30	0.005	0.25	301.57	298.69	0.005	0.11	187.88	1.02	0.06	5.63	29.62
HM16JV073	E17JN14A385	2,657.49	0.005	0.32	487.98	487.54	0.005	0.72	214.18	10.42	0.62	8.07	29.12
HM16JV073	E17JN14A383	2,858.03	0.005	0.4	588.62	580.68	0.005	0.22	345.16	3.96	0.19	5.77	28.69

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Sr88	Ta181	Th232	Ti47	Ti49	Tl205	U238	V51	Y89	Yb172	Zn66	Zr90
HM16JV073	E17JN14A377	3,034.77	0.02	0.1	785.06	830.51	0.005	0.17	377.32	2.63	0.23	7.08	26.53
HM16JV073	E17JN14A369	7,792.11	0.005	127.69	467.81	472.42	0.005	15.52	868.61	55.84	0.99	2.44	22.96
HM16JV073	E17JN14A386	2,506.72	0.005	1.53	679.56	672.34	0.005	0.61	290.22	9.53	0.87	5.76	22.27
HM16JV073	E17JN14A382	3,020.61	0.005	0.23	362.81	361.35	0.005	0.43	281.73	5.95	0.46	5.73	21.75
HM16JV073	E17JN14A370	2,125.08	0.005	0.01	390.26	397.93	0.005	0.29	261.05	3.66	0.31	8.61	21.53
HM16JV073	E17JN14A374	3,143.93	0.005	0.01	384.33	380.34	0.005	0.13	279.41	2.37	0.2	5.33	18.64
HM16JV073	E17JN14A379	2,517.17	0.005	0.005	460.72	461.48	0.005	0.05	302.59	1.69	0.24	5.54	17.28
HM16JV073	E17JN14A371	2,408.36	0	0.02	213.45	207.88	0.005	0.11	261.15	2.15	0.09	7.6	14.13
HM16JV073	E17JN14A369	6,625.26	0.005	59.85	129.74	127.27	0.005	8.1	529.26	24.47	0.5	0.57	10.38
HM16JV076	E17JN15A081	15,390.97	0.02	12.68	3,211.70	3,242.53	0.19	2.04	513.89	7.93	0.39	3.82	162.71
HM16JV076	E17JN15A082	13,680.66	0	0.81	310.04	308.22	0.07	2.02	531.39	7.7	0.24	8.51	25.52
HM16JV076	E17JN15A075	13,720.63	0.005	0.14	111.13	118.93	0.005	0.35	674.61	1.19	0.02	6.46	20.56
HM16JV076	E17JN15A080	14,800.40	0.005	0.28	347.88	347.67	0.005	1.3	729.68	3.29	0.14	7.31	19.26
HM16JV076	E17JN15A079	23,161.96	0.005	0.29	323.71	326.07	0.14	0.99	701.9	2.99	0.13	7.82	16.14
HM16JV076	E17JN15A075	18,780.42	0.005	0.3	299.85	308.67	0.005	0.59	1,067.99	1.92	0.19	3.19	13.91
HM16JV076	E17JN15A071	12,559.49	0.005	0.17	1,081.20	1,090.14	0.005	1.24	825.64	6.66	0.2	9.35	12.89
HM16JV076	E17JN15A072	31,708.37	0.005	0.67	250.46	239.39	0.005	0.86	726.12	1.91	0.15	3.67	12.17
HM16JV076	E17JN15A078	21,807.16	0.005	0.39	154.73	153.57	0.005	0.37	516.35	0.77	0.14	3.37	12.06
HM16JV076	E17JN15A070	3,159.47	0.005	0.01	1,207.19	1,208.21	0.005	0.05	939.82	0.16	0.03	6.68	9.68
HM16JV076	E17JN15A074	7,551.00	0.005	0.31	976.59	983.39	0.005	1.02	1,151.42	4.57	0.2	9.86	8.21
HM16JV076	E17JN15A073	11,058.61	0.005	0.38	508.48	506.65	0.005	0.43	560.3	1.06	0.05	10.69	8.1
HM16JV076	E17JN15A069	6,782.27	0.005	0.18	836.8	837.33	0.005	0.31	587.45	1.97	0.08	17.78	7.64
HM16JV076	E17JN15A068	22,171.67	0.005	0.03	127.6	128.69	0.005	0.18	432.08	0.22	0.005	3.38	6.17
HM16JV076	E17JN15A077	8,850.95	0.005	0.14	305.35	311.09	0.005	0.26	373.16	0.41	0.02	10.57	4.7
HM16JV076	E17JN15A076	7,166.67	0.005	0.12	520.78	522.04	0.005	0.13	1,140.71	0.31	0.005	3.34	2.46
HM16JV077	E17JN15A062	4,709.13	0.005	0.19	74.25	78.36	0.005	0.25	373.3	3.37	0.23	2.34	6.02
HM16JV077	E17JN15A065	5,274.89	0.005	1.06	299.3	303.28	0.005	0.34	368.2	3.88	0.23	3.79	5.95
HM16JV077	E17JN15A054	8,121.93	0	0.22	1,920.34	1,930.96	0.005	0.14	809.97	1.01	0.04	3.19	3.51
HM16JV077	E17JN15A058	14,349.91	0	0.43	284.67	282.9	0.005	0.27	258.24	2.91	0.06	1.11	2.99
HM16JV077	E17JN15A061	10,428.92	0.01	0.27	528.19	526.71	0.005	0.07	372.83	0.67	0.06	1.84	2.88
HM16JV077	E17JN15A063	8,898.20	0.005	0.5	141.64	147.37	0.005	0.14	262.98	1.76	0.14	1.83	2.79
HM16JV077	E17JN15A064	16,900.17	0.01	0.03	119.19	124.24	0.005	0.08	79.31	0.3	0.04	7.24	2.43
HM16JV077	E17JN15A067	10,246.52	0.005	0.2	33.52	35.11	0.005	0.36	368.27	2.5	0.12	0.74	2.1
HM16JV077	E17JN15A057	6,391.62	0.005	0.03	393.52	392.79	0.005	0.25	332.64	4	0.2	3.04	1.77
HM16JV077	E17JN15A053	9,852.63	0	0.1	520.99	530.01	0.005	0.06	317.11	0.51	0.03	1.81	1.76
HM16JV077	E17JN15A055	15,246.69	0.01	0.38	14.67	15.26	0.005	0.18	165.98	1.25	0.05	0.47	1.47
HM16JV077	E17JN15A060	5,384.92	0.005	0.34	49.62	49.11	0.005	0.04	255.03	1.23	0.1	0.1	1.32
HM16JV077	E17JN15A066	9,845.49	0.01	0.34	3.07	2.39	0.005	0.11	162.15	3.52	0.07	0.57	0.93
HM16JV077	E17JN15A056	7,827.34	0.005	0.14	242.14	230.21	0.005	0.03	249.21	0.36	0.005	2.32	0.92
HM16JV077	E17JN15A060	8,412.18	0.01	0.06	58.63	57.35	0.005	0.04	230.54	0.44	0.005	0.83	0.53
HM16JV077	E17JN15A056	7,310.84	0.005	0.11	105.81	100.54	0.005	0.14	238.88	0.6	0.04	2.1	0.48
HM16JV077	E17JN15A059	18,673.05	0.005	0.07	438.68	430.75	0.005	0.01	221.75	0.21	0.005	0.47	0.45
HM16JV077	E17JN15A066	9,057.16	0.005	0.005	1.16	1.07	0.005	0.01	135.52	2.68	0.1	0.28	0.01
HM16JV082	C17MA20A0202	9,431.24	0.005	0.42	38.48	38.92	0.005	0.59	344.5	4.5	0.18	0.75	1.98
HM16JV082	C17MA20A0206	15,158.16	0.01	1.52	3,968.63	4,001.09	0.005	1.32	574.82	5.78	0.37	6.95	24.04
HM16JV082	C17MA20A0203	12,121.64	0.005	0.89	89.14	88.26	0.005	1.6	284.4	3.7	0.13	2.95	17.87
HM16JV082	C17MA20A0207	13,404.21	0.005	0.83	117.95	122.27	0.005	1.33	328.18	6.27	0.22	2.41	14.62
HM16JV082	C17MA20A0214	16,885.59	0.005	0.62	282.43	211.87	0.005	1.4	803.43	4.92	0.39	0.8	36.51
HM16JV082	C17MA20A0208	7,357.53	0	0.83	473.09	481	0.005	0.87	2,026.26	2.89	0.3	2.6	35.13
HM16JV082	C17MA20A0213	15,995.99	0.005	1.86	172.02	174.85	0.005	1.18	807.61	3.58	0.15	3.93	24.14
HM16JV082	C17MA20A0211	15,158.35	0.01	0.72	125.71	120.76	0.005	1.08	693.26	1.55	0.06	2.88	22.4
HM16JV082	C17MA20A0212	11,664.93	0.005	0.29	98.61	107.81	0.005	0.87	323.04	2.33	0.07	3.42	10.67

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Sr88	Ta181	Th232	Ti47	Ti49	Tl205	U238	V51	Y89	Yb172	Zn66	Zr90
HM16JV082	C17MA20A0209	12,760.16	0.01	0.78	98.82	104.54	0.005	1.44	253.32	4.33	0.18	3.16	9.66
HM16JV082	C17MA20A0210	14,064.38	0.005	2.22	114.3	110.59	0.005	1.23	167.33	4.34	0.22	4.26	9.02
HM16JV086	E17JN15A015	2,332.15	0.005	0.21	148.99	150.42	0.005	0.47	395.15	15.09	0.5	7.34	47.12
HM16JV086	E17JN15A010	2,932.79	0	0.39	197.5	194.27	0.005	0.11	402.83	4.29	0.15	7.07	30
HM16JV086	E17JN15A018	1,432.32	0.02	0.005	2,742.81	2,721.24	0.005	0.02	2,163.46	0.38	0.17	6.44	17.4
HM16JV086	E17JN15A008	3,062.02	0.01	0.005	159.29	150.85	0.005	0.05	368.97	2.81	0.07	8.02	15.41
HM16JV086	E17JN15A008	3,080.43	0.01	0.005	156.73	158.53	0.005	0.03	373.02	0.5	0.03	7.18	15.23
HM16JV086	E17JN15A018	1,632.94	0.01	0.02	2,210.89	2,189.63	0.005	0.05	1,762.03	0.76	0.22	5.72	14.4
HM16JV086	E17JN15A022	3,335.56	0.01	0.4	216.62	207.42	0.005	0.07	600.91	1.22	0.05	3.53	10.77
HM16JV086	E17JN15A022	5,130.49	0.02	0.005	272.06	272.32	0.005	0.09	522.12	0.75	0.13	4.33	9.96
HM16JV086	E17JN15A017	2,847.55	0.005	0.005	157.42	158.08	0.005	0.03	624.31	0.03	0.005	2.59	8.38
HM16JV086	E17JN15A021	5,523.36	0.005	0.64	508.73	498.73	0.005	0.22	476.69	1.62	0.22	5.64	7.69
HM16JV086	E17JN15A025	6,448.13	0.01	0.01	226.76	229.51	0.005	0.1	588.22	1.24	0.1	3.97	7.62
HM16JV086	E17JN15A023	7,173.14	0.005	0.02	325.7	327.34	0.005	0.21	367.99	1.24	0.26	3.65	5.12
HM16JV086	E17JN15A012	2,473.00	0.005	0.005	218.92	213.36	0.005	0.1	679.65	0.22	0.07	4.44	4.19
HM16JV086	E17JN15A019	5,447.11	0.005	0.35	350.47	353.45	0.005	0.22	387.19	1.58	0.16	4.44	4
HM16JV086	E17JN15A009	2,226.18	0.01	0.04	841.26	835.3	0.005	0.04	1,200.36	0.53	0.03	4.66	3.18
HM16JV086	E17JN15A014	2,465.13	0.005	0.58	217.02	216.14	0.005	0.23	640.25	6.24	0.24	5.54	2.81
HM16JV086	E17JN15A009	1,722.33	0.005	0.19	367	371.23	0.005	0.08	610.35	1.49	0.06	4.26	2.22
HM16JV086	E17JN15A011	9,287.38	0.01	0.1	266.06	267.21	0.005	0.06	301.28	1.04	0.04	5.57	2.11
HM16JV086	E17JN15A026	2,140.67	0.005	0.005	123.93	123.41	0.005	0.03	740.4	0.39	0.005	2.25	1.43
HM16JV086	E17JN15A020	4,887.94	0.005	1.11	212.77	213.94	0.005	0.27	464.84	1.57	0.005	3.65	1.23
HM16JV086	E17JN15A024	1,736.63	0.005	0.005	389.79	400.53	0.005	0.01	613.65	0.12	0.005	3.95	0.75
HM16JV086	E17JN15A007	4,413.63	0.005	0.2	358.09	359.8	0.005	0.05	445.06	0.77	0.11	3.98	0.5
HM16JV086	E17JN15A024	1,329.92	0.005	0.005	551.82	545.42	0.005	0.05	472.63	0.04	0.005	3.76	0.49
HM16JV086	E17JN15A007	3,900.46	0.005	0.005	343.96	330.29	0.005	0.05	381.17	0.26	0.09	4.62	0.21
HM16JV087	E17JN15A158	820.93	0.01	0.2	2,485.58	2,484.36	0.005	0.17	609.28	1.37	0.07	10.84	71.14
HM16JV087	E17JN15A153	750.77	0.02	0.02	1,675.83	1,698.02	0.005	0.14	487.41	1.77	0.13	10.04	61.7
HM16JV087	E17JN15A164	1,258.55	0.005	0.27	1,398.69	1,399.79	0.005	0.22	488.96	4.3	0.17	8.44	54.02
HM16JV087	E17JN15A152	2,724.49	0.005	3.46	888.06	956.64	0.005	1.4	364.3	16.2	0.31	8.89	46.71
HM16JV087	E17JN15A161	1,264.81	0.005	0.07	727.53	740.84	0.005	0.85	390.28	24.71	0.35	7.56	43.31
HM16JV087	E17JN15A149	2,748.54	0.005	1.42	720.31	716.24	0.005	0.97	357.82	17.6	0.39	4.7	37.93
HM16JV087	E17JN15A154	813.27	0	0.01	933.24	914.78	0.005	0.12	446.41	0.14	0.03	9.85	37.91
HM16JV087	E17JN15A148	1,616.53	0.005	0.01	2,294.38	2,274.89	0.005	0.1	807.81	0.77	0.005	7.49	33.36
HM16JV087	E17JN15A160	3,495.12	0	0.51	369.22	369.23	0.005	0.58	373.63	12.75	0.26	4.71	31.75
HM16JV087	E17JN15A151	1,208.38	0.01	0.06	329.49	331.12	0.005	0.13	440.99	1.63	0.05	7.9	30.31
HM16JV087	E17JN15A165	1,858.14	0.005	0.58	507.97	505.5	0.005	0.45	333.84	3.52	0.22	6.58	30.22
HM16JV087	E17JN15A157	3,463.03	0	1.96	339.52	340.8	0.005	0.41	301.78	8.56	0.2	5.49	27.77
HM16JV087	E17JN15A156	1,157.42	0	0.51	365.74	363.98	0.005	0.14	329.21	1.63	0.07	5.42	23.72
HM16JV087	E17JN15A150	2,195.30	0.005	0.91	318.03	314.67	0.005	0.57	233.57	6.88	0.26	4.97	23.44
HM16JV087	E17JN15A163	2,125.48	0.005	0.69	467.68	463.77	0.005	0.23	362.14	3.82	0.17	6.32	22.63
HM16JV087	E17JN15A162	2,672.02	0	2.48	249.92	239.29	0.005	0.92	336.82	21.21	0.55	5.87	22.5
HM16JV087	E17JN15A155	1,127.30	0	0.16	336.1	337.31	0.005	0.03	312.69	0.13	0.005	5.56	22.44
HM16JV087	E17JN15A151	1,001.45	0.005	0.005	296.86	295.31	0.005	0.08	328.78	0.29	0.09	8.68	19.3
HM16JV087	E17JN15A159	1,759.76	0.005	0.34	228.23	230.63	0.005	0.64	284.56	15.59	0.31	7.63	16.83
HM16JV088	E17JN14A282	4,538.60	0.005	0.43	531.19	523.03	0.005	0.16	317.36	3.1	0.28	2.24	83.43
HM16JV088	E17JN14A269	9,961.67	0.005	0.44	249.35	256.52	0.005	0.6	151.91	7.28	0.44	3.22	56.24
HM16JV088	E17JN14A283	3,425.65	0.01	0.16	243.01	243.77	0.005	0.19	226.8	3.36	0.29	1.91	47.87
HM16JV088	E17JN14A291	10,467.30	0.01	0.4	318.56	307.09	0.005	0.49	408.1	35.07	1.88	1.46	43.27
HM16JV088	E17JN14A281	10,572.02	0.005	0.93	390.54	387.91	0.005	0.45	357.52	9.41	0.8	2.44	42.56
HM16JV088	E17JN14A289	8,048.79	0.03	0.93	750.98	743.77	0.005	0.95	441.45	19.24	1.49	2.55	38.83
HM16JV088	E17JN14A288	8,263.23	0.04	1.18	520.35	514.34	0.005	0.84	314.84	15.24	0.97	3.03	37.93

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Sr88	Ta181	Th232	Ti47	Ti49	Tl205	U238	V51	Y89	Yb172	Zn66	Zr90
HM16JV088	E17JN14A279	7,512.03	0	0.52	524.77	539.77	0.005	0.41	479.92	14.49	0.97	1.31	34.12
HM16JV088	E17JN14A294	4,000.10	0.005	0.33	479.62	476.27	0.005	0.68	315.63	9.69	1.22	2.39	33.87
HM16JV088	E17JN14A278	3,469.52	0.005	0.03	495.57	501.79	0.005	0.14	325.73	0.85	0.22	2.57	32.35
HM16JV088	E17JN14A290	8,081.91	0.29	4.44	1,524.79	1,515.89	0.06	2.34	311.91	48.26	4.07	4.12	31.63
HM16JV088	E17JN14A284	7,330.58	0	0.77	303.03	296.81	0.005	1.29	327.32	6.89	1.18	1.51	31.39
HM16JV088	E17JN14A280	3,223.97	0	0.06	377.98	379.69	0.005	0.32	377.24	1.72	0.22	1.75	27.26
HM16JV088	E17JN14A268	5,507.61	0.01	0.26	436.06	446.98	0.005	0.52	182.78	9.5	1.36	3.21	26.66
HM16JV088	E17JN14A277	6,573.72	0.01	5.7	598.25	582.07	0.005	0.3	298.99	6.84	0.85	1.59	22.48
HM16JV088	E17JN14A292	8,479.92	0.005	0.42	149.54	145.68	0.005	1.34	192.72	12.92	1.67	1.93	18.66
HM16JV088	E17JN14A285	7,077.09	0.005	0.24	229.04	224.95	0.005	0.35	406.44	11.91	0.75	1.28	13.92
HM16JV088	E17JN14A286	10,928.17	0.005	1.07	247.54	258.11	0.005	3.53	328.6	35.49	4.51	1.08	8.82
HM16JV088	E17JN14A270	15,071.38	0.005	0.86	341.53	336.55	0.005	5.74	297.56	15.03	2.87	0.91	1.85
HM16JV092	C17MA20A0165	2,838.79	0.005	1.97	491.24	491.66	0.005	15.09	466.58	58.74	3.62	2.56	17.49
HM16JV092	C17MA20A0161	3,185.84	0.005	9.58	420.16	432.45	0.005	17.53	506.24	75.95	4.77	2.94	16.86
HM16JV092	C17MA20A0165	2,674.09	0.005	1.77	433.34	465.7	0.005	14.07	431.21	55.36	3.83	2.22	15.08
HM16JV092	C17MA20A0164	3,527.24	0.005	1.14	429.18	422.9	0.005	8.53	448.29	36.02	2.49	1.86	13.75
HM16JV092	C17MA20A0168	2,709.19	0.005	1.52	483.19	492.49	0.005	15.54	493.4	64.18	3.89	2.41	12.89
HM16JV092	C17MA20A0166	4,083.93	0.005	2.37	424.4	424.09	0.005	10.48	419.35	44.59	2.56	2.84	11.89
HM16JV092	C17MA20A0167	2,531.42	0	1.61	441.35	443.83	0.005	8.67	448.7	35.61	2.75	2.68	11.35
HM16JV092	C17MA20A0163	3,814.70	0	0.88	446.14	451.76	0.005	6.96	413.59	35.67	2.9	1.89	9.45
HM16JV092	C17MA20A0162	3,588.93	0.005	0.33	427.74	429.57	0.005	6.45	396.86	26.79	2.46	2.18	8.57
HM16JV092	C17MA20A0180	3,292.99	0.005	4.2	733.4	724.09	0.005	44.02	566.83	140.04	5.84	14.63	27.84
HM16JV092	C17MA20A0195	2,476.79	0.005	0.87	475.36	469.58	0.005	10.09	460.75	46.77	3.36	2.57	21.1
HM16JV092	C17MA20A0192	3,376.01	0.01	1.44	421.27	418.58	0.005	8.04	434.47	33.64	2.13	2.56	18.01
HM16JV092	C17MA20A0199	3,047.97	0.01	2.54	420	425.82	0.005	6.62	423.54	33.69	2.29	2.35	14.75
HM16JV092	C17MA20A0179	2,657.69	0.005	4.18	437.34	441.56	0.005	17.91	463.99	95.07	4.22	2.63	14.32
HM16JV092	C17MA20A0194	3,314.64	0	0.86	417.77	408.9	0.005	5.28	421.96	32.36	2.42	2.73	14.13
HM16JV092	C17MA20A0197	2,631.27	0.01	0.68	452.07	449.42	0.005	13.22	417.99	52.65	3.02	2.31	14.03
HM16JV092	C17MA20A0200	3,145.06	0.005	0.93	403.94	402.3	0.005	5.29	419.9	25.47	1.82	2.43	13.48
HM16JV092	C17MA20A0199	2,849.66	0.005	2.34	355.98	357.66	0.005	6.87	406.78	33.21	2.94	3.25	13.04
HM16JV092	C17MA20A0190	2,962.89	0.005	1.05	428.03	433.97	0.005	4.17	420.99	25.06	1.75	2.28	12.39
HM16JV092	C17MA20A0198	3,413.83	0.005	0.2	434.14	427.4	0.005	5.2	393.14	23.29	2.23	1.7	11.4
HM16JV092	C17MA20A0183	5,019.22	0.03	0.5	609.36	608.06	0.005	3.08	385.78	16.29	1.1	26.26	11.33
HM16JV092	C17MA20A0193	3,497.33	0	0.32	406.35	399.21	0.005	6.04	400.24	25.01	1.72	2.74	10.7
HM16JV092	C17MA20A0191	4,987.16	0.005	1.35	457.19	448.8	0.005	5.43	398.63	30.01	2.1	2.08	10.45
HM16JV092	C17MA20A0182	4,069.37	0	0.66	382.48	374.26	0.005	4.41	391.06	24.86	1.88	2.19	10.26
HM16JV092	C17MA20A0181	2,788.66	0.01	0.1	567.91	580.27	0.005	0.4	6.21	3.85	0.53	1.24	5.84
HM16JV099	C17MA21A0291	5,721.08	0.005	15.88	75.42	82.86	0.005	4.43	219.2	49.56	2.6	1.51	15.53
HM16JV099	C17MA21A0291	8,436.95	0.005	0.85	86.64	85.68	0.005	3.14	293.39	38.59	3.16	1.2	2.04
HM16JV099	C17MA21A0290	7,009.71	0.005	4.72	162.88	168.62	0.005	3.12	234.72	35.58	3.63	0.71	1.73
HM16JV099	C17MA21A0294	3,534.35	0.005	1.37	119.2	120.27	0.005	3.09	282.29	27.76	0.92	0.55	4.55
HM16JV099	C17MA21A0295	5,095.57	0.005	10.13	253.54	257.43	0.005	4.36	196.43	20.64	1.18	0.76	3.53
HM16JV099	C17MA21A0293	1,996.01	0.005	5.1	226.94	227.65	0.005	4.89	253.7	28.39	1.15	0.51	1.07
HM16JV099	C17MA21A0298	5,310.78	0.005	0.14	93.02	93.04	0.005	2.02	447.97	14.88	0.89	0.28	5.97
HM16JV099	C17MA21A0299	9,621.09	0.02	2.79	140.36	142.55	0.005	2.81	367.38	16.09	2.87	0.43	5.8
HM16JV099	C17MA21A0297	5,044.79	0.005	0.82	233.87	234.2	0.005	3.61	218.29	15.34	0.1	0.73	4.63
HM16JV099	C17MA21A0297	4,710.89	0.005	0.53	186.93	183.76	0.005	3.08	213.15	14.85	0.31	1.55	3.54
HM16JV099	C17MA21A0300	5,668.62	0.005	0.09	67.17	66.69	0.005	3.22	273.91	40.07	1.91	1.26	2.28
HM16JV099	C17MA21A0296	4,146.40	0.005	1.17	68.76	70.63	0.005	7.89	166.79	39.05	1.09	0.38	1.09
HM16JV102	C17MA21A0380	3,395.84	0.01	0.51	281.63	274.93	0.005	0.52	506.52	14.59	1.71	9.62	93.09
HM16JV102	C17MA21A0380	2,350.38	0.01	0.73	605.12	606.91	0.005	0.26	1,205.93	6.47	1.07	7.3	73.78
HM16JV102	C17MA21A0387	3,689.71	0.07	2.46	463.83	481.96	0.005	0.71	537.23	20.7	2.44	3.76	54.32

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Sr88	Ta181	Th232	Ti47	Ti49	Tl205	U238	V51	Y89	Yb172	Zn66	Zr90
HM16JV102	C17MA21A0388	3,477.29	0.005	0.96	255.27	253.78	0.04	9.04	1,512.51	111.41	13.44	9.57	114.48
HM16JV102	C17MA21A0389	2,666.01	0.005	0.61	569.05	550.92	0.005	4.33	1,083.82	73.45	7.44	1.93	13.82
HM16JV102	C17MA21A0390	3,075.89	0.005	0.24	315.53	317.47	0.005	0.24	623.38	1.49	0.26	2.11	11.74
HM16JV102	C17MA21A0392	988.6	0	0.15	666.04	669.82	0.01	0.81	811.13	2.02	0.42	2.6	7.03
HM16JV102	C17MA21A0391	4,005.66	0.005	0.07	283.55	281.19	0.005	0.2	310.31	2.4	0.27	2.34	2.01
HM16JV102	C17MA21A0403	2,753.85	0.005	0.98	681.17	703.98	0.005	0.32	1,233.13	5.97	1.65	5.89	65.31
HM16JV102	C17MA21A0396	4,206.66	0.02	0.56	244.36	237.57	0.005	0.88	373.55	13.53	1.76	5.68	46.82
HM16JV102	C17MA21A0404	3,170.44	0.005	2.98	242.1	237.06	0.005	0.66	290.03	10.62	1.21	4.42	37.33
HM16JV102	C17MA21A0400	3,935.22	0.01	0.86	315.4	324.54	0.05	0.88	232.79	9.12	1.12	23.14	33.27
HM16JV102	C17MA21A0401	3,981.38	0.005	2.05	309.42	307.69	0.005	1.02	262.64	12.12	1.78	4.14	29.77
HM16JV102	C17MA21A0397	3,210.25	0.005	1.72	359.66	352.13	0.005	0.79	221.04	8.93	0.94	4.59	27.02
HM16JV102	C17MA21A0398	4,641.14	0.005	0.9	168.82	180.71	0.005	1.03	164.56	11.02	1.41	2.3	26.48
HM16JV102	C17MA21A0399	2,500.31	0.01	0.96	374.52	377.74	0.005	0.62	291.94	5.74	0.72	3.37	19.66
HM16JV102	C17MA21A0395	4,179.87	0.005	0.35	292.29	282.92	0.005	0.8	222.91	7.02	1.1	2.33	16.9
HM16JV104	C17MA21A0406	3,037.82	0.02	0.12	212.78	231.91	0.005	0.49	565.76	1,140.82	63.49	15.16	10.95
HM16JV104	C17MA21A0406	2,981.50	0.005	0.17	160.28	161.31	0.005	0.24	484.92	927.11	48.39	2.74	7.79
HM16JV104	C17MA21A0405	2,950.17	0.005	0.02	272.4	272.07	0.005	0.08	389.15	333.04	26.02	1.86	6.98
HM16JV104	C17MA21A0413	3,253.75	0.03	0.13	418.2	416.5	0.005	0.38	584.44	537.59	52.24	6.33	19.83
HM16JV104	C17MA21A0411	2,963.09	0.005	0.02	333.11	320.39	0.005	0.13	537.73	562.02	47.49	2.37	18.4
HM16JV104	C17MA21A0416	3,026.33	0.005	0.01	387.25	387.54	0.005	0.07	472.33	62.1	7.03	2.08	7.72
HM16JV104	C17MA21A0407	2,899.38	0	0.01	228.73	220.78	0.005	0	264.92	41.97	3.74	0.8	6.37
HM16JV104	C17MA21A0414	4,149.92	0.005	0.01	273.76	282.97	0.005	0.11	257.85	168.89	18.27	2.37	6.29
HM16JV104	C17MA21A0412	2,661.10	0.005	0.05	356.41	369.02	0.005	0.13	510.95	286.31	20.93	1.4	4.04
HM16JV104	C17MA21A0415	3,725.78	0.005	0.01	238.25	239.81	0.005	0.05	274.52	182.77	29.64	6.72	2.01
HM16JV104	C17MA21A0410	6,495.13	0.005	0.05	165.78	161.85	0.005	0.04	185.41	43.73	8.96	3.02	1.05
HM16JV104	C17MA21A0409	3,049.76	0.005	0.02	113.91	120.41	0.005	0.01	182.13	87.01	4.09	1.55	0.91
HM16JV106	E17JN14A251	955.22	0.005	0.06	479.9	489.91	0.005	0.15	224.24	21.56	2.81	1.23	44.23
HM16JV106	E17JN14A267	812.96	0.005	0.11	437.46	435.14	0.005	0.1	332.07	20.28	2.43	1.19	32.74
HM16JV106	E17JN14A249	663.86	0	0.1	665.26	668.33	0.005	0.09	320.76	15.34	1.94	1.53	28.81
HM16JV106	E17JN14A247	551.27	0.005	0.005	1,685.29	1,678.19	0.005	0.03	306.81	2.44	0.88	4.96	25.84
HM16JV106	E17JN14A247	751.72	0.005	0.005	684.87	687.5	0.005	0.03	283.1	2.49	0.92	4.32	25.41
HM16JV106	E17JN14A252	832.64	0.005	0.01	504.16	500.26	0.005	0.04	335.88	5.15	0.77	1.38	22.09
HM16JV106	E17JN14A260	689.67	0	0.09	416.27	419.04	0.005	0.04	306.71	5.35	0.74	1.33	20.38
HM16JV106	E17JN14A250	584.74	0.005	0.005	1,307.46	1,300.61	0.005	0.03	336.99	2.72	1.28	3.61	20.09
HM16JV106	E17JN14A254	308.21	0.01	0.01	744.04	741.39	0.005	0.03	214.46	6.34	1.49	13.86	18.9
HM16JV106	E17JN14A266	745.18	0.005	0.06	608.99	601.78	0.005	0.13	327.88	16.44	2.11	1.33	17.35
HM16JV106	E17JN14A262	701.27	0.005	0.005	603.05	611.53	0.005	0.03	402.14	4.35	0.56	2.24	16.84
HM16JV106	E17JN14A248	850.36	0.005	0.01	600.72	599.22	0.005	0.08	436.02	22.68	2.74	2.26	16.59
HM16JV106	E17JN14A265	807.59	0.005	0.02	597.27	583.3	0.005	0.07	374.34	11.76	1.36	1.76	14.13
HM16JV106	E17JN14A259	954.65	0.005	0.07	518.13	527.93	0.005	0.26	212.02	69.32	7.12	1.38	13.03
HM16JV106	E17JN14A253	538.1	0.005	0.01	1,100.05	1,081.36	0.005	0.11	269.85	28.62	2.61	48.64	12.19
HM16JV106	E17JN14A261	783.45	0	0.01	461.52	455.94	0.005	0.04	342.28	6.06	0.68	1.16	11.9
HM16JV106	E17JN14A266	714.52	0.005	0.03	471.14	466.5	0.005	0.06	257.26	10.08	1.01	1.61	11.45
HM16JV106	E17JN14A246	750.47	0.04	0.005	490.22	507.68	0.005	0.04	476.47	21.16	2.26	2.27	11.3
HM16JV106	E17JN14A264	768.13	0.005	0.005	630.86	639.33	0.005	0.07	312.77	35.42	3.13	1.41	10.1
HM16JV106	E17JN14A257	771.11	0.005	0.01	514.51	532.12	0.005	0.05	357.13	5.13	0.64	0.82	9.89
HM16JV106	E17JN14A255	466.89	0.005	0.005	726.62	730.43	0.005	0.02	359.21	3.33	0.55	1.84	9.08
HM16JV106	E17JN14A253	514.14	0.005	0.005	547.95	554.33	0.005	0.05	326.26	11.63	0.88	2.42	8.4
HM16JV106	E17JN14A258	946.82	0.005	0.005	390.06	392.38	0.005	0.02	213.26	2.84	0.39	1.03	5.96
HM16JV106	E17JN14A264	663.23	0	0.01	361.55	371.55	0.005	0.01	265.19	4.5	0.53	1.32	4.39
HM16JV106	E17JN14A263	863.22	0.005	0.005	385.61	385.99	0.005	0.05	220.42	10.26	1.06	1.24	2.89
HM16JV106	E17JN14A256	286.99	0.005	0.005	258.93	255.57	0.005	0.01	269.86	0.28	0.08	1.03	2.53

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Sr88	Ta181	Th232	Ti47	Ti49	Tl205	U238	V51	Y89	Yb172	Zn66	Zr90
HM16JV107	E17JN15A178	8,728.20	0.02	1.83	205.9	204.93	0.005	11.32	1,348.58	50.35	4.27	10.79	206.77
HM16JV107	E17JN15A178	10,236.79	0.005	0.58	239.26	242.77	0.005	4.51	1,417.07	23.3	2.53	12.48	192.7
HM16JV107	E17JN15A174	7,128.24	0.01	0.12	203.18	199.93	0.005	3.75	1,112.13	9.25	0.52	3.5	130.25
HM16JV107	E17JN15A179	10,696.68	0.005	2.71	499.47	499.63	0.005	16.71	1,355.55	61.87	2.7	20.14	112.92
HM16JV107	E17JN15A175	9,202.16	0.01	0.59	451.66	457.72	0.005	6.65	1,234.97	21.33	1.2	13.42	75.57
HM16JV107	E17JN15A177	5,939.85	0.01	2.53	620.09	607.73	0.005	9.84	1,028.03	37.29	1.27	12.02	38.7
HM16JV107	E17JN15A169	15,162.76	0	1.23	214.94	215.2	0.005	5.42	922.04	20.13	1.11	13.55	35.23
HM16JV107	E17JN15A176	7,015.97	0.005	0.52	566.81	573.11	0.005	3.52	1,057.30	6.99	0.68	6.49	27.41
HM16JV107	E17JN15A167	10,339.88	0.005	0.66	224.67	243.17	0.005	4.17	1,661.16	16.11	0.31	16	20.85
HM16JV107	E17JN15A173	11,441.64	0.005	0.76	470.44	469.52	0.005	5.29	1,678.22	26.12	2.06	6.3	20.45
HM16JV107	E17JN15A178	5,877.18	0.005	0.3	448.21	442.33	0.005	5.87	1,593.51	11.28	1.26	2.28	16.47
HM16JV107	E17JN15A170	5,987.19	0.005	0.29	624.12	621.61	0.005	2.45	1,855.02	14.38	1.43	1.81	14.49
HM16JV107	E17JN15A179	15,407.21	0.005	1.39	270.03	273.07	0.005	8.12	1,295.98	34.76	0.77	10.4	10.99
HM16JV107	E17JN15A171	4,207.55	0.005	0.23	762.68	768.47	0.005	0.51	1,979.39	3.07	0.35	3.1	8.52
HM16JV107	E17JN15A166	6,905.61	0.005	0.15	292.39	298.91	0.005	1.27	1,339.79	3.86	0.37	6.64	8.02
HM16JV107	E17JN15A172	5,497.72	0.005	0.2	544.3	549.53	0.005	0.47	1,649.43	2.18	0.26	2.17	3.06
HM16JV112	E17JN14A496	7,667.91	0.005	0.59	143.34	126.28	0.005	2.63	146.86	1.7	0.005	3.51	37.56
HM16JV112	E17JN14A496	8,943.86	0.005	0.39	380.76	374.9	0.005	5.4	240.61	2.03	0.07	3.57	29.61
HM16JV112	E17JN14A511	8,302.11	0	0.24	123.79	128.88	0.005	6.29	192.87	3.57	0.13	4.44	27.81
HM16JV112	E17JN14A510	7,096.96	0.005	0.44	344.45	343.81	0.005	4.99	327.75	3.2	0.11	4.13	25.32
HM16JV112	E17JN14A501	8,227.13	0.01	0.19	370.25	377.25	0.005	4.99	272.76	4.47	0.16	35.58	24.91
HM16JV112	E17JN14A506	8,814.51	0.005	0.29	274.89	270.53	0.005	5.36	264.41	3.48	0.1	4.19	24.72
HM16JV112	E17JN14A510	6,413.81	0.005	0.27	248.77	254.99	0.005	1.79	261.8	1.41	0.03	3.75	24.51
HM16JV112	E17JN14A508	10,952.38	0.005	0.41	246.07	244.65	0.005	5.92	218.43	4.32	0.11	3.71	22.98
HM16JV112	E17JN14A503	8,522.08	0.01	0.61	562.61	568.93	0.005	2.76	256.75	1.83	0.1	5.8	22.54
HM16JV112	E17JN14A508	11,711.40	0.005	0.56	289.2	293.39	0.005	6.47	242.33	3.77	0.08	5.81	22.08
HM16JV112	E17JN14A509	14,264.40	0.005	0.5	356.83	342.35	0.005	39.38	694.97	22.43	1.4	7.08	20.75
HM16JV112	E17JN14A498	10,307.45	0.005	0.07	290.15	283.2	0.005	2.65	232.58	3.45	0.27	3.11	20.58
HM16JV112	E17JN14A505	11,341.58	0.005	0.34	265.99	276.28	0.005	4.5	225.54	3.65	0.43	5.16	19.63
HM16JV112	E17JN14A504	9,046.04	0.005	0.19	344.03	346.42	0.005	6.65	274.66	4.07	0.15	4.55	17.27
HM16JV112	E17JN14A495	8,614.10	0	1.37	649.15	654.61	0.005	1.27	292.32	1.36	0.04	5.37	16.03
HM16JV112	E17JN14A500	10,438.00	0.005	0.05	206.33	204.74	0.005	3.92	204.36	4.68	0.18	2.58	14.59
HM16JV112	E17JN14A498	12,413.51	0.005	0.02	282.03	278.67	0.005	3.56	189.96	4.07	0.13	7.24	13.88
HM16JV112	E17JN14A507	10,420.12	0.005	0.13	1,107.11	1,118.89	0.005	0.56	1,009.71	0.55	0.04	5.09	12.83
HM16JV112	E17JN14A500	11,114.35	0.005	0.06	271.69	282.16	0.005	2.74	238.59	4.54	0.17	2.47	12.31
HM16JV112	E17JN14A492	10,160.92	0	0.19	170.32	165.98	0.005	0.99	195.49	0.33	0.04	1.94	10.76
HM16JV112	E17JN14A493	13,070.55	0.005	0.08	417.15	420.02	0.005	7.32	193.79	2.26	0.04	3.51	10.35
HM16JV112	E17JN14A499	16,236.32	0.01	3.03	619.5	636.7	0.005	18.63	541.34	29.75	3.78	3.62	9.62
HM16JV112	E17JN14A497	9,679.47	0.005	0.06	346.86	356.59	0.005	7.8	277.02	5.1	0.19	4.74	9.58
HM16JV112	E17JN14A494	12,194.36	0.005	0.02	622.18	609.66	0.005	0.66	417.11	0.57	0.06	2.85	6.62
HM16JV112	E17JN14A502	10,150.12	0	0.17	965.64	959.35	0.005	2.44	276.29	1.69	0.05	5.49	5.56
HM16JV112	E17JN14A494	13,828.51	0.01	0.02	486.61	489.64	0.005	1.39	323.78	0.83	0.02	3.78	4.16
HM16JV112	E17JN14A497	17,183.16	0.01	0.01	228.66	223.02	0.005	4.21	261.49	3.57	0.16	5.05	3.86
HM16JV114	E17JN14A168	1,858.08	0.005	0.005	113.4	122.63	0.005	0.04	37.12	1.67	0.22	1.15	0.005
HM16JV114	E17JN14A169	3,120.13	0.005	0.005	16.76	14.18	0.005	0.01	18.95	0.42	0.05	0.27	0.005
HM16JV114	E17JN14A180	2,847.45	0.1	1.55	267.89	297.57	0.005	3.11	115.09	24.39	1.68	1.15	323.57
HM16JV114	E17JN14A165	2,020.38	0.02	1.72	272.86	266.8	0.005	3.06	274.51	44.52	2.62	15.99	16.18
HM16JV114	E17JN14A165	2,663.82	0.005	2.12	211.02	215.95	0.005	4.77	394.85	66.73	4.18	8.46	10.91
HM16JV114	E17JN14A164	2,569.52	0.06	0.84	304.9	293.1	0.06	1.72	195.53	24.68	1.26	2.1	6.07
HM16JV114	E17JN14A174	4,553.08	0.005	0.19	81.05	81.08	0.005	7.83	199.3	64.26	3.09	0.35	5.64
HM16JV114	E17JN14A181	3,773.00	0.005	0.82	400.91	415.52	0.005	4.12	291.36	55.9	3.07	1.92	4.14
HM16JV114	E17JN14A175	1,246.06	0.02	0.23	348.99	358.85	0.005	0.82	126.81	11.49	0.77	5.84	2.61

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Sr88	Ta181	Th232	Ti47	Ti49	Tl205	U238	V51	Y89	Yb172	Zn66	Zr90
HM16JV114	E17JN14A173	3,341.38	0.005	0.21	82.1	84.37	0.005	0.07	46.36	1.05	0.13	0.32	1.22
HM16JV114	E17JN14A184	3,595.59	0.005	0.36	55.55	53.39	0.005	0.09	83.08	1.18	0.19	0.34	1.05
HM16JV114	E17JN14A178	1,371.00	0.09	0.9	537.19	537.26	0.005	1.23	100.98	18.68	0.73	2.99	0.87
HM16JV114	E17JN14A177	2,424.61	0.005	0.02	35.66	35.51	0.005	0.02	12.49	0.57	0.02	0.4	0.73
HM16JV114	E17JN14A184	3,754.93	0.005	0.08	56.08	55.77	0.005	0.02	62.81	0.93	0.19	0.43	0.53
HM16JV114	E17JN14A182	3,377.51	0.005	0.03	98.63	100.87	0.005	0.06	53.4	1.74	0.26	0.62	0.49
HM16JV114	E17JN14A183	2,517.01	0.005	0.005	35.65	37.06	0.005	0.97	369.67	13.42	1.08	1.12	0.17
HM16JV114	E17JN14A170	2,338.30	0.005	0.01	101.88	100.77	0.005	0.16	130.23	1.77	0.18	0.3	0.06
HM16JV114	E17JN14A167	1,841.39	0.01	0.005	49.33	46.72	0.005	0.02	23.59	0.67	0.04	0.71	0.05
HM16JV114	E17JN14A176	4,842.70	0.005	0.005	68.76	68.23	0.005	0.04	32.86	1.04	0.24	0.2	0.02
HM16JV114	E17JN14A171	2,902.69	0	0.005	23.16	24.14	0.005	0.03	73.1	1.11	0.07	0.69	0.01
HM16JV118	C17MA20A0124	4,873.55	0.005	0.46	310.28	313.99	0.005	0.41	333.19	1.67	0.15	5.15	14.53
HM16JV118	C17MA20A0120	6,032.37	0.005	0.92	498.26	494.43	0.06	0.5	484.28	0.81	0.05	81.68	10.55
HM16JV118	C17MA20A0124	5,236.74	0.01	0.04	455.87	455.85	0.005	0.09	379.55	1.34	0.11	4.82	10.03
HM16JV118	C17MA20A0119	6,119.13	0.005	0.74	205.16	199.7	0.005	0.49	305.13	0.77	0.005	67.61	9.11
HM16JV118	C17MA20A0118	6,576.42	0.005	0.09	649.94	632.75	0.005	0.61	496.72	0.64	0.08	3.42	4.43
HM16JV118	C17MA20A0117	5,553.67	0.005	1.06	558.14	558.67	0.005	0.02	352.68	0.46	0.02	5.58	4.04
HM16JV118	C17MA20A0121	6,829.06	0.005	0.04	220.96	214.45	0.005	0.31	410.5	0.58	0.04	14.19	3.97
HM16JV118	C17MA20A0125	7,659.35	0.005	0.01	121.49	129.43	0.005	0.1	186.45	0.07	0.005	4.72	1.95
HM16JV118	C17MA20A0137	5,745.26	0.005	0.84	673.24	688.74	0.005	1	520.15	5.5	0.54	55.38	19.57
HM16JV118	C17MA20A0135	3,876.80	0.005	0.2	370.03	373.51	0.005	0.18	548.37	0.8	0.06	15.31	16.79
HM16JV118	C17MA20A0127	4,740.72	0.005	0.005	238.73	226.45	0.005	0.05	451.63	0.38	0.08	9.18	8.65
HM16JV118	C17MA20A0134	6,581.88	0.005	0.93	163.57	171.71	0.005	0.24	313.19	0.23	0.005	18.14	5.68
HM16JV118	C17MA20A0136	6,620.06	0.005	0.01	179.39	186.87	0.005	0.11	304.02	0.72	0.005	39.21	4.37
HM16JV118	C17MA20A0143	4,603.44	0.005	0.04	968.67	950.76	0.005	0.29	807.04	7.61	0.67	5.16	27.51
HM16JV118	C17MA20A0141	4,302.25	0.005	0.005	932.38	930.92	0.005	0.01	869.96	0.3	0.005	2.25	16.62
HM16JV118	C17MA20A0139	3,300.08	0	0.005	228.3	231.24	0.005	0.02	511.43	0.59	0.04	6.21	12.39
HM16JV118	C17MA20A0144	7,224.82	0.005	0.44	790.13	888.06	0.005	1.08	486.21	2.74	0.21	5.63	7
HM16JV118	C17MA20A0140	7,030.58	0.005	0.67	245.41	243.9	0.005	0.37	386.15	0.28	0.01	4.41	5.6
HM16JV118	C17MA20A0138	5,632.03	0.005	0.01	449.34	446.82	0.005	0.67	486.38	4.31	0.35	4	5.04
HM16JV123	C17MA21A0425	2,284.21	0.04	0.43	1,160.37	1,209.90	0.005	1.36	196.56	76.84	4.79	3.68	12.29
HM16JV123	C17MA21A0417	1,995.26	0.04	0.34	1,583.81	1,604.53	0.005	0.91	189.65	35.12	1.84	3.97	9.81
HM16JV123	C17MA21A0421	2,441.66	0.04	0.71	651.03	733.7	0.005	0.79	222.19	30.47	1.75	4.56	9.36
HM16JV123	C17MA21A0422	1,860.57	0.84	0.16	9,335.39	9,346.61	0.03	0.71	175.82	27.02	1.61	4.99	9.1
HM16JV123	C17MA21A0423	1,791.18	0.05	0.03	1,273.01	1,278.10	0.005	1.59	172.04	97.88	4.43	4.13	6.41
HM16JV123	C17MA21A0420	334.29	0.43	0.31	1,904.92	1,920.37	0.005	0.17	37.19	9.37	0.6	3.85	3.09
HM16JV123	C17MA21A0419	721.63	0.03	0.09	807.77	799.5	0.005	0.26	29.53	20.46	1.45	3.07	1.3
HM16JV123	C17MA21A0426	433.35	0.03	0.12	360.61	349.18	0.005	0.18	28.71	14.14	0.85	2.45	1.22
HM16JV123	C17MA21A0427	701.86	0.01	0	698.49	691.16	0.005	0.06	17.96	4.08	0.4	2.12	0.82
HM16JV123	C17MA21A0418	509.01	0.02	0.01	461.28	466.82	0.005	0.07	21.09	9.09	0.38	3.31	0.47
HM16JV123	C17MA21A0424	570.09	0.01	0.005	288.58	295.81	0.005	0.03	11.55	0.93	0.1	2.35	0.41
HM16JV123	C17MA21A0429	1,856.55	0	0.37	37.75	37.14	0.005	0.09	40.82	2.92	0.17	0.81	2.56
HM16JV123	C17MA21A0428	2,223.44	0.005	0.15	30.47	31.69	0.005	0.23	253.68	4.04	0.51	1.03	1.94
HM16JV123	C17MA21A0430	1,445.33	0.01	0.01	44.93	43.29	0.005	0.09	42.4	4.15	0.31	1.54	4.41
HM16JV123	C17MA21A0439	3,305.68	0.68	0.24	9,352.97	9,331.52	0.02	0.4	211.15	35.77	2.73	2.92	5.98
HM16JV123	C17MA21A0440	2,471.72	0.005	0.1	31.94	29.72	0.005	0.09	15.07	4.45	0.39	1.3	1.35
HM16JV123	C17MA21A0438	2,226.30	0.03	0.75	260.11	268.11	0.005	0.16	247.17	29.5	1.8	4.43	5.99
HM16JV123	C17MA21A0438	2,162.21	0.48	0.6	4,450.39	4,396.66	0.005	0.12	281.61	29.64	1.89	3.21	4.51
HM16JV123	C17MA21A0436	5,629.03	0	0.22	188.15	179.82	0.005	0.1	177.74	7.14	0.3	4.08	4.28
HM16JV123	C17MA21A0433	3,410.96	0.01	0.1	332.49	336.64	0.005	0.06	393.19	2.83	0.08	6.48	3.36
HM16JV123	C17MA21A0435	6,501.33	0.005	0.29	13.88	14.94	0.005	0.1	33.64	12.73	0.34	0.67	2.97
HM16JV123	C17MA21A0434	8,234.21	0.005	0.23	10.18	11.46	0.005	0.11	65.89	7.88	0.43	0.46	1.94

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Sr88	Ta181	Th232	Ti47	Ti49	Tl205	U238	V51	Y89	Yb172	Zn66	Zr90
HM16JV123	C17MA21A0432	2,105.88	0.005	0.22	15.55	16.35	0.005	0.12	5.79	6.06	0.15	2.07	1.53
HM16JV123	C17MA21A0434	6,695.07	0.005	0.19	1.1	1.8	0.005	0.02	28.72	1.27	0.07	0.33	0.76
HM16JV123	C17MA21A0433	2,793.44	0.01	0.01	19.11	19.29	0.005	0.05	22.33	5.79	0.12	1.02	0.04
HM16JV130	C17MA20A0257	7,811.06	0.005	0.39	151.37	151.56	0.005	0.85	756.11	1.33	0.13	2.01	16.03
HM16JV130	C17MA20A0261	8,578.70	0.005	0.21	74.69	75.74	0.005	2.28	258.31	1.37	0.1	2.21	12.02
HM16JV130	C17MA20A0256	8,581.95	0.005	0.63	71.56	70	0.005	2.38	172.1	1.67	0.11	2.16	10.13
HM16JV130	C17MA20A0264	8,324.82	0.005	0.66	170.55	176.46	0.005	0.84	178.96	2.54	0.16	4	5.15
HM16JV130	C17MA20A0266	10,455.77	0.005	0.07	408.99	403.25	0.005	0.35	743.49	0.61	0.06	1.66	4.72
HM16JV130	C17MA20A0277	5,779.70	0	0.13	243.23	244.18	0.005	0.86	894.89	1.06	0.1	1.63	15.83
HM16JV130	C17MA20A0276	8,127.21	0.005	1.07	151.35	156.18	0.005	3.21	218.24	4.04	0.26	15.59	15.43
HM16JV130	C17MA20A0273	5,416.79	0.005	0.28	166.75	168.61	0.005	0.74	229.68	1.56	0.14	3.42	10.18
HM16JV130	C17MA20A0274	6,419.71	0.005	0.24	293.7	295.79	0.005	0.55	698.19	1.14	0.1	10.19	9.42
HM16JV130	C17MA20A0279	9,699.50	0.005	1.46	151.82	156.06	0.005	1.79	217.83	6.83	0.4	11.95	9.26
HM16JV130	C17MA20A0280	9,368.60	0.005	1.65	206.81	205.86	0.005	1.44	198.03	5.46	0.34	12.12	9.1
HM16JV130	C17MA20A0278	12,932.10	0.005	0.94	126.81	124.77	0.005	1.45	201.6	3.96	0.2	8.73	6.21
HM16JV130	C17MA20A0272	15,115.65	0.005	0.38	66.99	68.46	0.005	0.47	141.03	1.9	0.13	1.22	2.15
HM16JV132	C17MA20A0305	2,114.03	0.005	0.35	575.13	586.92	0.005	0.28	296.09	0.2	0.01	8.17	16.94
HM16JV132	C17MA20A0307	2,066.28	0.005	1.67	375.51	382.44	0.005	0.22	438.24	0.2	0.02	27.55	15.44
HM16JV132	C17MA20A0308	2,250.41	0.005	0.19	138.93	130.92	0.005	0.12	249.92	0.07	0.005	13.75	15.38
HM16JV132	C17MA20A0286	21,962.52	0	0.46	124.33	126.71	0.005	3.55	188.93	0.53	0.03	2.98	11.54
HM16JV132	C17MA20A0304	1,743.12	0	0.21	367.4	376.31	0.005	0.2	282.57	0.14	0.01	7.49	9.55
HM16JV132	C17MA20A0287	24,143.62	0.005	0.12	57.52	60.09	0.005	1.87	143.71	0.2	0.005	1.96	6.55
HM16JV132	C17MA20A0306	2,517.80	0.005	0.26	201.76	216.07	0.005	0.05	214.73	0.08	0.05	12.67	6.25
HM16JV132	C17MA20A0310	5,997.03	0.005	0.005	1,102.17	1,150.56	0.005	0.35	174.62	0.76	0.1	2.38	5.56
HM16JV132	C17MA20A0310	6,038.90	0.005	0.005	206.48	203.75	0.005	0.25	178.21	0.72	0.06	1.14	5.2
HM16JV132	C17MA20A0284	3,632.09	0.005	0.17	80.47	81.73	0.005	0.21	199.8	0.13	0.02	2.13	4.36
HM16JV132	C17MA20A0312	12,049.28	0	0.23	89.7	96.78	0.005	1.28	71.16	0.67	0.06	7.18	4.04
HM16JV132	C17MA20A0313	8,170.55	0.005	0.28	615.13	602.17	0.005	0.85	313.17	0.68	0.05	4.89	3.8
HM16JV132	C17MA20A0312	13,736.51	0.005	0.13	102.56	112.9	0.005	1.11	79.74	0.42	0.04	3.74	3.73
HM16JV132	C17MA20A0285	2,331.00	0.005	0.03	207.97	212.04	0.005	0.07	215.29	0.18	0.03	1.87	2.97
HM16JV132	C17MA20A0311	16,184.96	0.005	0.19	488.88	481.29	0.005	1.03	251.32	1.1	0.03	2.43	2.63
HM16JV132	C17MA20A0313	16,053.79	0.005	0.13	134.19	139.13	0.005	1.07	51.79	0.89	0.05	1.99	2.42
HM16JV132	C17MA20A0294	31,059.07	0.005	0.07	50.95	49.8	0.005	1.03	107.1	0.09	0.01	1.24	1.17
HM16JV132	C17MA20A0303	820.63	0	0.005	63.53	58.33	0.005	0.02	244.67	0.05	0.01	6.38	0.62
HM16JV132	C17MA20A0325	5,737.15	0.005	0.005	261.61	282.08	0.005	0.15	177.24	0.14	0.005	3.74	64.54
HM16JV132	C17MA20A0314	1,549.71	0.005	0.06	275.73	280.75	0.005	0.02	379.83	0.08	0.005	9.86	25.92
HM16JV132	C17MA20A0324	3,906.05	0	0.02	107.1	95.8	0.005	0.34	154.81	0.21	0.05	4.47	9.28
HM16JV132	C17MA20A0320	3,087.78	0.005	0.18	202.24	200.65	0.005	0.08	215.75	0.14	0.02	1.54	6.27
HM16JV132	C17MA20A0327	7,639.80	0.005	0.88	53.23	57.59	0.005	1.34	81.54	0.36	0.05	1.97	5.95
HM16JV132	C17MA20A0315	1,794.22	0.005	0.02	198.67	196.54	0.005	0.12	352.71	0.2	0.005	6.53	5.28
HM16JV132	C17MA20A0318	4,900.27	0.005	0.01	107.47	109.27	0.005	0.12	146.68	0.16	0.02	2.56	4.52
HM16JV132	C17MA20A0322	16,679.67	0.005	0.42	64.41	63.86	0.005	0.54	46.23	0.4	0.06	2.56	4.46
HM16JV132	C17MA20A0328	13,213.76	0.005	0.32	70.88	64.08	0.005	0.62	100.15	0.27	0.02	3.95	4.32
HM16JV132	C17MA20A0316	1,613.96	0.005	0.04	173.78	170.25	0.005	0.16	296.04	0.3	0.02	7.19	3.94
HM16JV132	C17MA20A0326	13,889.13	0	0.24	50.59	45	0.005	1.29	144.01	0.4	0.01	2.22	3.94
HM16JV132	C17MA20A0319	4,423.66	0.005	0.005	411.37	417.75	0.005	0.08	192.01	0.14	0.05	1.85	3.41
HM16JV132	C17MA20A0321	8,795.89	0.005	0.2	191.06	182.82	0.005	0.35	147.23	0.3	0.03	1.22	3.39
HM16JV132	C17MA20A0321	6,657.87	0.005	0.45	572.77	560.3	0.005	0.11	188.74	0.27	0.005	10.78	3.12
HM16JV132	C17MA20A0323	18,847.97	0.005	0.1	100.93	101.58	0.005	0.79	77.69	0.61	0.07	2.65	2.73
HM16JV132	C17MA20A0317	2,734.47	0.005	0.07	134.12	140.82	0.005	0.24	283.22	0.63	0.07	2.43	2.73
HM16JV132	C17MA20A0324	8,035.73	0	0.06	115.85	116.64	0.005	0.17	135.51	0.28	0.04	1.7	2.66
HM16JV133	C17MA21A0442	13,746.43	0.01	0.47	421.17	422.28	0.57	3.64	452.48	6.3	0.22	8.85	10.34

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Sr88	Ta181	Th232	Ti47	Ti49	Tl205	U238	V51	Y89	Yb172	Zn66	Zr90
HM16JV133	C17MA21A0441	15,002.35	0.005	0.07	64.17	65.84	0.005	2.66	330.67	1.43	0.08	5.11	4.04
HM16JV133	C17MA21A0443	14,720.76	0.005	0.35	256.69	257.63	0.005	5.68	516.51	9.28	0.14	9.65	10.78
HM16JV133	C17MA21A0444	10,574.08	0	0	742.43	751.87	0.005	0.01	327.76	0.89	0.02	3.62	0.34
HM16JV133	C17MA21A0450	15,103.11	0.005	0.28	115.92	116.85	0.005	1.55	381.94	1.04	0.08	15.16	42.61
HM16JV133	C17MA21A0446	11,277.60	0.005	9.76	185.25	185.45	0.005	4.48	320	5.89	0.22	6.75	13.06
HM16JV133	C17MA21A0448	14,272.36	0	1	432.85	425.55	0.005	1.89	431.6	3.36	0.09	22.33	11.27
HM16JV133	C17MA21A0447	13,377.93	0	5.42	175.11	176.14	0.005	4.69	412.19	6.91	0.3	7.11	7.72
HM16JV133	C17MA21A0449	15,413.69	0.005	6.89	567.05	589.1	0.005	0.57	576.5	1.71	0.06	10.14	3.15
HM16JV133	C17MA21A0445	10,828.42	0	1.09	2,139.30	2,122.77	0.005	0.63	377.14	0.68	0.04	3.14	0.95
HM16JV133	C17MA21A0462	29,802.52	0.005	0.63	142.21	146	0.005	2.34	360.18	1.78	0.06	14.29	83.48
HM16JV133	C17MA21A0452	11,563.25	0.01	0.12	73.21	74.62	0.005	1.86	208.09	0.82	0.07	5.05	73.95
HM16JV133	C17MA21A0464	25,767.98	0.005	1.31	143.8	143.2	0.005	1.74	342.94	3.03	0.17	5.52	59.81
HM16JV133	C17MA21A0452	20,159.64	0	0.52	68.25	68.57	0.005	1.04	194.64	0.34	0.07	7.12	31.64
HM16JV133	C17MA21A0461	13,742.86	0.005	0.42	82.09	80.99	0.005	2.09	314.6	2.15	0.14	7.59	26.38
HM16JV133	C17MA21A0454	16,369.18	0.005	0.03	77.5	76.81	0.005	1.11	301.81	0.39	0.08	8.69	25.41
HM16JV133	C17MA21A0451	14,713.46	0.005	0.6	193.46	196.55	0.005	3.31	507.34	3.12	0.18	16.27	25.39
HM16JV133	C17MA21A0453	10,063.01	0.005	0.57	163.83	164.97	0.005	3.13	456.35	4.53	0.17	10.78	19.81
HM16JV133	C17MA21A0463	12,391.01	0.005	2.16	205.78	192.83	0.005	4.14	584.01	3.87	0.23	6.26	19.08
HM16JV133	C17MA21A0465	13,792.92	0.01	1.29	245.67	251.14	0.005	2.04	272.71	2.23	0.13	9.94	22.44
HM16JV133	C17MA21A0467	16,324.66	0.01	0.98	183.61	179.27	0.12	1.89	392.14	1.46	0.09	17.89	18.41
HM16JV133	C17MA21A0469	18,325.36	0.01	0.49	181.73	182.94	0.005	1.85	345.74	2.27	0.05	13.62	16.48
HM16JV133	C17MA21A0466	15,522.92	0.005	0.56	156.1	152.89	0.005	1.56	399.62	0.79	0.06	13.07	11.88
HM16JV133	C17MA21A0468	13,199.57	0.01	0.95	168.75	163.58	0.005	1.86	413.48	1.16	0.11	10.37	10.78
HM16JV133	C17MA21A0470	8,286.17	0.01	0.68	250.42	245.89	0.01	3.18	404.84	5.81	0.29	2.71	2.78
HM16JV136	C17MA20A0336	2,972.98	0.01	0.09	289.8	290.78	0.005	0.33	159.32	0.91	0.03	18.06	4.96
HM16JV136	C17MA20A0332	9,039.31	0	0.25	104.81	109.81	0.02	0.62	274.16	2.42	0.16	4.49	3.99
HM16JV136	C17MA20A0332	15,417.98	0.005	0.05	68.35	63.48	0.005	0.28	290.58	1.54	0.14	1.72	3.2
HM16JV136	C17MA20A0330	4,007.81	0.005	0	82.56	79.67	0.005	0.24	16.06	0.6	0.08	14.38	2.92
HM16JV136	C17MA20A0331	13,485.76	0.005	0.16	63.89	63.82	0.005	0.23	288.21	1.41	0.08	3.71	1.9
HM16JV136	C17MA20A0337	15,455.97	0.005	0.06	60.26	59.77	0.005	0.22	259.03	1.37	0.19	5.82	1.37
HM16JV136	C17MA20A0334	15,700.77	0	0.02	49.48	52.72	0.005	0.32	118.28	0.22	0.04	1.66	0.91
HM16JV136	C17MA20A0335	15,914.03	0.005	0.08	53.41	50.75	0.005	0.37	121.47	2.17	0.14	2.73	0.6
HM16JV136	C17MA20A0333	8,226.92	0.005	0.01	60.34	59.43	0.005	1.06	132.86	0.31	0.07	2.24	0.59
HM16JV136	C17MA20A0335	16,174.77	0.005	0.16	88.17	80.71	0.005	0.94	94.47	4.56	0.38	2.29	0.27
HM16JV136	C17MA20A0329	2,535.52	0	0.04	72.37	73.31	0.005	0.09	13.52	0.36	0.01	20.45	0.22
HM16JV136	C17MA20A0334	6,732.95	0.005	0.03	59.63	57.25	0.005	0.82	53.28	0.67	0.005	1.96	0.12
HM16JV136	C17MA20A0344	20,491.03	0.005	0.12	294.16	302.39	0.005	0.43	337.2	0.33	0.05	16.65	81.84
HM16JV136	C17MA20A0343	18,146.64	0.005	0.07	379.36	369.18	0.005	0.21	358.28	0.22	0.05	7.89	65
HM16JV136	C17MA20A0340	24,796.35	0.005	0.01	207.57	217.39	0.005	0.49	225.27	0.48	0.06	2.03	53.29
HM16JV136	C17MA20A0339	17,525.66	0.005	1.51	323.33	318.28	0.005	0.58	316.17	0.29	0.05	2.74	44.04
HM16JV136	C17MA20A0339	19,362.89	0.005	0.01	332.8	335.67	0.005	0.17	297.26	0.17	0.005	3.14	29.32
HM16JV136	C17MA20A0342	19,667.28	0.005	0.18	605.67	609.66	0.005	0.45	272.13	0.55	0.03	5.05	25.74
HM16JV136	C17MA20A0342	22,823.11	0.005	0.31	312.46	323.65	0.005	0.26	236.38	0.3	0.03	8.3	24.76
HM16JV136	C17MA20A0341	10,781.15	0.005	0.01	452.68	437.76	0.005	0.12	258.32	0.16	0.01	9.84	21.9
HM16JV136	C17MA20A0341	10,467.64	0.005	0.47	445.67	449.65	0.005	0.21	250.43	0.18	0.02	8.18	21.4
HM16JV136	C17MA20A0338	16,268.65	0.005	0.005	327.12	321.27	0.005	0.2	307.94	0.13	0.06	3.78	21.17
HM16JV136	C17MA20A0346	22,257.52	0.005	0.17	77.71	79.57	0.005	0.28	107.13	2.97	0.24	2.99	0.86
HM16JV136	C17MA20A0347	12,494.00	0.005	0.01	152.9	153.13	0.005	0.98	183.26	0.17	0.05	3	63.5
HM16JV136	C17MA20A0356	22,112.03	0.005	1.65	222.37	222.56	0.005	4.71	477.33	0.92	0.1	5.44	38.65
HM16JV136	C17MA20A0355	14,284.45	0.005	0.26	80.24	83.01	0.005	0.72	92.34	0.19	0.02	32.14	24.02
HM16JV136	C17MA20A0348	30,528.63	0.01	0.07	158.77	155.82	0.005	0.83	57.33	0.51	0.13	2.95	5.17
HM16JV136	C17MA20A0362	6,572.29	0.005	0.32	208.13	211.7	0.005	0.46	278.71	0.29	0.07	3.98	24.34

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Sr88	Ta181	Th232	Ti47	Ti49	Tl205	U238	V51	Y89	Yb172	Zn66	Zr90
HM16JV136	C17MA20A0363	10,286.52	0.005	0.41	113.58	114.01	0.005	0.55	310.11	0.17	0.01	2.33	19.52
HM16JV136	C17MA20A0362	12,417.80	0.005	0.01	196.03	182.73	0.005	3.01	970.01	0.15	0.005	4.09	16.71
HM16JV136	C17MA20A0360	13,166.74	0.005	0.07	143.09	140.72	0.005	0.12	264.08	0.13	0.005	2.93	12.15
HM16JV136	C17MA20A0364	13,794.99	0.005	0.09	92.91	91.97	0.005	0.35	212.56	1.6	0.17	3.81	8.23
HM16JV136	C17MA20A0361	8,012.40	0.005	0.19	113.76	111.51	0.005	1.04	145.36	0.6	0.05	3.04	5.23
HM16JV136	C17MA20A0358	19,668.78	0.005	0.08	147.62	148.73	0.005	0.44	202.41	2.73	0.17	5.13	4.01
HM16JV136	C17MA20A0357	25,988.81	0.005	0.08	162.69	157.51	0.005	0.44	104.27	5.15	0.22	3.45	1.6
HM16JV138	E17JN15A259	4,384.26	0.05	2.76	879.5	877.09	0.06	4.18	800.52	25.26	2.16	19.88	232.85
HM16JV138	E17JN15A260	4,508.39	0.09	0.86	664.41	687.45	0.005	1.3	767.03	5.35	0.73	10.61	131.71
HM16JV138	E17JN15A248	8,057.04	0.01	0.46	213.3	209.76	0.005	0.67	433.5	22.55	0.86	7.17	55.94
HM16JV138	E17JN15A252	7,938.96	0.005	0.8	177.91	173.82	0.005	1.54	367.98	124.68	2.86	11.05	47.44
HM16JV138	E17JN15A246	8,076.85	0.005	0.09	401.92	386.28	0.005	0.12	722.83	0.98	0.15	4.06	45.27
HM16JV138	E17JN15A247	6,013.37	0.005	1.09	122.5	125.06	0.005	1.27	504.34	46.59	1.6	16.35	36.93
HM16JV138	E17JN15A251	4,118.43	0.01	0.29	575.05	584.33	0.005	0.54	895.01	10.74	0.41	7.52	30.23
HM16JV138	E17JN15A258	10,374.50	0.005	1.61	294.01	288.04	0.005	0.93	506.78	7.33	0.34	13.05	21.17
HM16JV138	E17JN15A250	4,697.11	0.01	0.71	193.95	185.89	0.005	1.25	545.65	61.16	2.31	9.88	20.95
HM16JV138	E17JN15A249	9,743.74	0.005	0.57	247.32	242.99	0.005	0.61	522.02	9.14	0.49	8.04	20.18
HM16JV138	E17JN15A253	13,705.77	0	0.11	282.47	283.42	0.005	0.16	455.26	1.73	0.15	3.19	14.37
HM16JV138	E17JN15A251	6,366.93	0.005	0.39	298.76	289.91	0.005	0.63	556.82	15.2	0.48	5.17	13.08
HM16JV138	E17JN15A254	5,558.05	0.005	0.54	288.07	285.19	0.005	0.86	554.5	41.52	0.98	4.72	9.4
HM16JV138	E17JN15A255	3,435.41	0.005	0.99	243.72	245.84	0.005	1.04	706.66	40.43	1.01	8.32	7.47
HM16JV138	E17JN15A256	7,410.37	0.005	1.09	240.59	234.05	0.005	1.84	542.16	55.36	2.17	7.89	7.06
HM16JV138	E17JN15A250	2,657.63	0.005	0.34	370.74	384.75	0.005	0.49	847.46	9.55	0.44	5.15	6.9
HM16JV139	C17MA21A0581	10,588.99	0.005	0.01	230.74	221.12	0.005	0.51	298.1	1.02	0.21	3.43	24.55
HM16JV139	C17MA21A0579	28,156.44	0.005	1.26	115.33	116.46	0.005	1.1	297.91	4.55	0.19	2.33	21.93
HM16JV139	C17MA21A0573	18,244.77	0.01	0.77	170.02	175.71	0.005	1.79	300.28	3.32	0.18	15.86	19.09
HM16JV139	C17MA21A0572	21,765.99	0.005	1.09	72.44	67.43	0.005	1.23	270.81	5.22	0.23	51.11	18.68
HM16JV139	C17MA21A0573	31,792.84	0	0.35	126.96	122.47	0.005	1.25	182.19	3.32	0.19	12.21	17.73
HM16JV139	C17MA21A0577	17,216.23	0.005	0.99	79.28	77.75	0.005	1.07	304.79	3.73	0.17	15.3	16.72
HM16JV139	C17MA21A0584	37,529.19	0.005	0.22	147.07	142.24	0.005	0.71	212.83	3.89	0.15	1.03	16.11
HM16JV139	C17MA21A0569	29,793.87	0.005	0.06	191.97	187.35	0.005	0.84	401.49	4.31	0.19	5.68	15.16
HM16JV139	C17MA21A0566	11,929.20	0.005	0.07	117.64	118.91	0.005	0.64	295.94	1.2	0.15	3.65	14.97
HM16JV139	C17MA21A0585	27,116.67	0.005	0.25	60.78	64.77	0.005	0.81	278.49	3.85	0.11	1.12	14.8
HM16JV139	C17MA21A0564	12,886.15	0.005	0.01	81.21	92.56	0.005	1.43	341.15	2.06	0.07	8.16	14.42
HM16JV139	C17MA21A0562	11,798.37	0.005	0.06	257.99	268.14	0.005	0.62	403.4	1.67	0.13	21.4	14.34
HM16JV139	C17MA21A0566	12,888.39	0.005	0.06	90.38	84.06	0.005	0.49	301.69	0.9	0.11	2.5	14.34
HM16JV139	C17MA21A0581	19,666.90	0.005	1	208.52	211.49	0.005	1.2	287.53	3.84	0.15	3.93	14.24
HM16JV139	C17MA21A0580	14,580.32	0.005	1.87	179.01	179.43	0.005	2.67	371.23	5.36	0.17	3.54	14.15
HM16JV139	C17MA21A0570	17,887.31	0.005	2.85	171.76	174.53	0.005	3.13	353.22	8.85	0.28	3.58	13.7
HM16JV139	C17MA21A0567	34,656.95	0.005	0.05	128.66	127.24	0.005	0.58	206.52	2.28	0.11	19.92	13.25
HM16JV139	C17MA21A0571	22,311.45	0.01	0.89	177.31	173.65	0.005	1.11	335.26	3.54	0.12	18.36	12.45
HM16JV139	C17MA21A0582	33,478.80	0.005	0.11	154.36	160.69	0.005	0.61	244.2	3.25	0.18	3.27	12.42
HM16JV139	C17MA21A0574	37,818.24	0.005	0.31	114.91	118.19	0.005	1.55	156.56	6.04	0.22	0.71	12.17
HM16JV139	C17MA21A0562	25,797.55	0.005	0.01	244.9	238.71	0.005	0.78	331.88	3.18	0.24	4.87	11.98
HM16JV139	C17MA21A0575	22,475.70	0.005	1.45	185.82	178.09	0.005	1.52	241.83	2.98	0.13	12.97	10.85
HM16JV139	C17MA21A0586	32,631.97	0.005	1.65	113.47	122.65	0.005	2	223.8	3.47	0.07	5.05	10.51
HM16JV139	C17MA21A0577	17,935.26	0.005	1.34	135.67	139.35	0.005	2.09	279.05	4.96	0.51	1.98	10.49
HM16JV139	C17MA21A0565	37,574.55	0.005	0.02	102.56	102.37	0.005	0.36	119.08	1.32	0.06	1.17	10.45
HM16JV139	C17MA21A0576	16,942.68	0.005	0.17	194.41	182.67	0.005	0.61	351.39	0.92	0.07	1.07	10.21
HM16JV139	C17MA21A0568	12,785.12	0.005	0.9	225.49	222.46	0.005	1.13	364.02	2.75	0.11	6.69	10.05
HM16JV139	C17MA21A0583	16,891.05	0	2.72	152.7	145.75	0.005	3.25	358.69	6.99	0.28	4.23	10.03
HM16JV139	C17MA21A0566	23,439.89	0.005	0.12	170.73	181.37	0.005	0.51	245.96	1.43	0.19	2.34	9.77

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Sr88	Ta181	Th232	Ti47	Ti49	Tl205	U238	V51	Y89	Yb172	Zn66	Zr90
HM16JV139	C17MA21A0586	29,363.92	0.005	0.39	175.68	176.57	0.005	1.21	196.92	2.51	0.09	2.55	9.12
HM16JV139	C17MA21A0578	20,315.53	0.005	0.47	151.5	164.36	0.12	1.22	365.14	3.61	0.15	2.11	9.03
HM16JV139	C17MA21A0582	14,779.51	0.005	0.49	164.11	159.3	0.005	1.25	349.65	2.54	0.17	3.56	8.84
HM16JV139	C17MA21A0568	21,883.31	0.005	1.5	213.3	218.26	0.005	1.46	306.98	3.8	0.14	4.43	8.03
HM16JV139	C17MA21A0574	34,185.26	0.005	0.61	96.2	97.12	0.005	1.05	144.97	4.17	0.25	5.6	7.71
HM16JV139	C17MA21A0564	8,866.46	0.005	0.01	180.19	175.9	0.005	0.56	287.74	1.31	0.05	1.23	6.59
HM16JV139	C17MA21A0563	9,692.07	0.005	0.03	342.34	349.31	0.005	0.15	367.2	4.11	0.26	4.93	3.61
HM16JV141	C17MA21A0537	1,217.44	0	0.005	376.95	392.21	0.005	0.06	473.53	2.65	0.57	9.17	218.6
HM16JV141	C17MA21A0536	1,431.78	0.005	0.005	701.64	736.14	0.005	0.22	476.81	40.41	6.42	4.87	23.58
HM16JV141	C17MA21A0538	1,714.47	0.005	42.96	645.38	649.46	0.005	11.63	486.82	105.25	4.11	16.15	14.96
HM16JV141	C17MA21A0544	1,819.68	0.005	0.02	606.8	616.17	0.005	0.06	507.1	14.58	1.95	2.47	14.16
HM16JV141	C17MA21A0540	1,586.44	0.01	0.28	379.81	385.8	0.005	0.17	383.72	74.94	13.96	1.58	12.74
HM16JV141	C17MA21A0539	2,088.10	0.005	0.2	532.44	527.57	0.005	0.19	427.71	5.37	0.73	1.79	6.17
HM16JV141	C17MA21A0542	954.65	0.005	0.04	416.09	409.41	0.005	0.04	343.04	30.44	5.35	0.83	3.5
HM16JV141	C17MA21A0543	1,378.39	0.005	0.005	353.29	359.22	0.005	0.01	492.25	2.52	0.56	2.12	3.24
HM16JV141	C17MA21A0545	1,038.91	0.005	1.37	464.42	466.73	0.005	0.87	513.04	42.4	6.27	2.9	7.74
HM16JV141	C17MA21A0547	1,112.09	0	0.02	472.12	459.89	0.02	0.05	573.16	7.4	1.37	1.89	7.26
HM16JV141	C17MA21A0546	1,273.24	0.005	0.28	388.53	388.86	0.005	0.13	597.89	5.7	0.99	3.53	4.51
HM16JV141	C17MA21A0548	1,185.20	0.005	0.14	232.41	258.14	0.005	0.23	549.27	3	0.39	3.6	3.04
HM16JV141	C17MA21A0550	1,281.39	0.005	0.1	330.7	334.65	0.005	0.03	594.52	10.77	1.35	1.5	2.46
HM16JV141	C17MA21A0549	1,140.01	0	0.005	485.99	494.64	0.005	0	569.39	0.24	0.05	1.8	1.84
HM16JV141	C17MA21A0557	1,538.85	0.005	0.24	464.82	456.6	0.005	0.29	329.44	31.41	4.92	1.43	17
HM16JV141	C17MA21A0559	1,267.54	0.005	4.45	319.04	304.6	0.005	0.71	327.79	50.05	5.41	1.53	11.16
HM16JV141	C17MA21A0554	1,199.89	0.005	5.12	363.91	363.53	0.005	1.21	321.95	51.75	4.8	1.74	8.12
HM16JV141	C17MA21A0555	2,254.23	0.005	8.66	499.17	510.98	0.005	7.56	578.24	93.02	12.25	1.35	6.61
HM16JV141	C17MA21A0556	1,107.55	0.005	0.005	421.34	407.52	0.005	0.02	321.06	5.72	1.54	0.83	5.99
HM16JV141	C17MA21A0561	1,017.25	0.005	2.64	621.01	628.47	0.005	0.23	358.53	40.59	3.94	1.38	5.51
HM16JV141	C17MA21A0560	977.07	0.005	0.11	465.16	469.76	0.005	0.09	334.41	23.22	3.77	1.2	5.13
HM16JV141	C17MA21A0552	1,500.38	0.005	0.22	554.28	573.95	0.005	0.08	340.85	3.1	0.49	2.38	4.55
HM16JV141	C17MA21A0553	1,082.81	0.005	0	290.22	293.54	0.005	0.02	316.53	14.6	2.81	1.19	3.87
HM16JV141	C17MA21A0558	1,629.10	0.005	0.005	456.92	421.53	0.005	0.01	315.61	13.65	1.51	0.58	3.63
HM16JV141	C17MA21A0551	1,058.75	0.005	0.005	432.44	421.06	0.005	0.01	341.9	5.44	0.75	0.82	2.29
HM16JV143	E17JN14A357	4,801.43	0	3.62	79.72	77.62	0.005	33.06	787.23	50.36	2.87	1.34	35.14
HM16JV143	E17JN14A353	6,443.70	0.005	26.65	142.78	148.15	0.005	29.82	824.39	46.39	1.21	0.95	29.7
HM16JV143	E17JN14A363	7,536.46	0.005	0.33	72.64	77.03	0.005	28.43	729.58	24.76	1.3	0.47	20.75
HM16JV143	E17JN14A365	4,717.54	0	1.28	86.46	90.1	0.005	23.15	789.39	29.85	1.86	0.96	19.83
HM16JV143	E17JN14A368	6,449.92	0.005	16.74	136.23	134.49	0.005	10.98	559.06	21.64	0.6	1.03	19.66
HM16JV143	E17JN14A364	7,220.34	0.005	3.33	81.9	81.79	0.005	11.34	637	40.94	1.52	0.36	16.32
HM16JV143	E17JN14A361	16,525.86	0.005	0.95	138.36	137.43	0.005	13.34	504.49	21.63	1.27	0.55	13.24
HM16JV143	E17JN14A367	3,308.60	0.005	0.1	539.1	541.23	0.005	10.68	1,297.20	37.86	2.07	0.63	12.12
HM16JV143	E17JN14A367	3,516.66	0.005	0.22	281.81	280.45	0.005	16.74	939.3	56.92	1.2	0.89	6.27
HM16JV143	E17JN14A356	15,291.72	0.005	2.39	75.7	77.74	0.005	12.53	478.95	41.19	1.58	0.45	6.09
HM16JV143	E17JN14A366	7,422.40	0	0.66	51.57	51.36	0.005	6.57	522.42	12.54	0.65	0.46	5.27
HM16JV143	E17JN14A362	19,171.80	0.01	0.62	397.1	399.29	0.005	12.31	516.86	12.1	0.82	0.46	4.74
HM16JV143	E17JN14A359	16,001.36	0.005	2.36	139.33	140.64	0.005	16.01	564.45	49.89	1.8	0.73	4.43
HM16JV143	E17JN14A354	18,530.62	0.005	74.26	108.79	107.84	0.005	8.8	409.72	16.08	0.69	0.1	2.79
HM16JV143	E17JN14A358	15,474.58	0.005	1.01	103.57	103	0.005	9.32	425.1	25.56	1.55	0.77	2.3
HM16JV143	E17JN14A360	9,853.58	0.005	0.9	46.33	45.09	0.005	5.22	439.14	11.24	0.5	0.52	1.5
HM16JV149	E17JN15A133	12,657.36	0.005	0.03	118.32	123.85	0.005	0.47	429.67	3	0.24	1.12	26.92
HM16JV149	E17JN15A133	12,731.54	0.005	0.47	125.01	125.54	0.005	0.5	385.19	5.53	0.3	1.43	25.83
HM16JV149	E17JN15A131	13,036.14	0.005	0.7	564.82	584.18	0.005	0.25	912.61	4.07	0.49	6.48	17.5
HM16JV149	E17JN15A147	1,104.41	0.07	1.46	558.14	544.32	0.005	0.38	454.22	5.78	0.28	39.72	15.09

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Sr88	Ta181	Th232	Ti47	Ti49	Tl205	U238	V51	Y89	Yb172	Zn66	Zr90
HM16JV149	E17JN15A138	17,144.00	0	1.69	235.62	237.43	0.005	0.49	474.55	7.5	0.44	2.92	14.5
HM16JV149	E17JN15A134	17,169.57	0.01	0.03	205.17	211.28	0.005	0.24	439.46	2.16	0.18	1.28	12.54
HM16JV149	E17JN15A136	13,552.80	0.01	0.11	151.54	151.55	0.005	0.38	345.94	5.02	0.29	1.44	7.73
HM16JV149	E17JN15A128	8,560.79	0.005	0.33	335.1	340.78	0.005	0.25	443.97	7.62	0.4	2.47	7.39
HM16JV149	E17JN15A127	21,277.08	0.005	1.38	327.57	333.18	0.005	0.31	448.73	5.61	0.29	2.14	6.84
HM16JV149	E17JN15A135	10,591.40	0.005	0.18	304.53	300.15	0.005	0.31	524.2	4.02	0.28	2.16	5.96
HM16JV149	E17JN15A147	7,298.50	0.01	2.21	256.87	249.42	0.005	1.96	481.57	27.1	1.22	6.65	5.21
HM16JV149	E17JN15A129	15,578.25	0.01	0.55	154.9	153.46	0.005	0.16	306.93	5.33	0.21	2.23	4.41
HM16JV149	E17JN15A130	19,133.07	0.01	0.07	160.56	164.35	0.005	0.25	334.85	5.18	0.29	1.32	4.11
HM16JV149	E17JN15A126	1,130.42	0.005	1.59	52.65	45.42	0.005	0.22	130.43	13.16	0.3	29.54	3.99
HM16JV149	E17JN15A132	9,479.86	0.005	0.63	97.94	99.75	0.005	2.21	130.84	22.72	1.01	4.82	3.7
HM16JV149	E17JN15A126	1,232.57	0.005	1.06	24.83	23.03	0.005	0.22	109.84	9.27	0.25	27.82	3.4
HM16JV149	E17JN15A146	1,438.99	0.02	0.9	671.87	690.02	0.005	0.14	377.72	5.12	0.13	39.03	2.19
HM16JV149	E17JN15A129	22,189.47	0.005	0.03	145.13	143.31	0.06	0.08	315.96	0.99	0.07	2.03	2.11
HM16JV149	E17JN15A145	179.33	0.04	0.005	542.55	548.49	0.005	0.08	622.94	1.67	0.1	47.9	0.7
HM16JV150	E17JN14A317	767.22	0.005	1.08	752.07	780.58	0.005	2.06	510.31	23.7	3.17	2.26	66.66
HM16JV150	E17JN14A335	687.16	0.005	0.65	779.88	776.17	0.005	1.04	331.3	19	3.18	3.16	43.91
HM16JV150	E17JN14A316	463.41	0.005	0.08	1,319.04	1,285.06	0.005	1.18	555.63	11.1	1.71	3.84	43.69
HM16JV150	E17JN14A317	734.25	0.005	2.8	682.48	706.64	0.005	1.8	456.09	25.53	3.94	2.75	39.06
HM16JV150	E17JN14A332	839.45	0.005	0.005	708.47	718.32	0.005	3.84	446.97	32.37	3.68	4.57	35.39
HM16JV150	E17JN14A319	724.78	0.005	22.34	722.28	723.56	0.005	14.66	494.76	148.25	11.01	3.78	34.82
HM16JV150	E17JN14A318	466.67	0	0.005	1,114.30	1,120.00	0.005	0.33	485.27	0.81	0.66	3.57	33.05
HM16JV150	E17JN14A314	554.54	0.005	0.005	584.81	593.65	0.005	0.89	536.12	10.82	2.06	4.45	32.97
HM16JV150	E17JN14A316	371.79	0.005	0	1,191.63	1,221.18	0.005	0.53	535.32	4.76	1.39	4.7	30.41
HM16JV150	E17JN14A344	843.75	0.005	1.51	653.28	645.73	0.005	0.89	372.42	16.47	1.98	2.71	28.13
HM16JV150	E17JN14A345	683	0.005	2.52	572.62	571.97	0.005	1.62	447.34	31.39	3.5	2.17	23.41
HM16JV150	E17JN14A315	752.64	0.005	0.01	551.71	554.97	0.005	0.06	358.25	3.4	1.17	2.15	19.14
HM16JV150	E17JN14A330	785.81	0.005	0.43	656.74	637.05	0.005	0.35	508.32	12.67	1.99	5.4	17.96
HM16JV150	E17JN14A330	799.86	0.01	0.01	527.55	523.61	0.005	0.13	495.43	1.68	0.54	3.74	15.67
HM16JV150	E17JN14A329	542.22	0.005	0.005	487.33	486.22	0.005	0.13	662.27	0.3	0.13	8	12.5
HM16JV151	C17MA21A0528	1,386.11	0.005	0.05	893.95	905.01	0.005	0.08	811.74	20.02	2.74	9.68	117.73
HM16JV151	C17MA21A0519	1,319.88	0.005	0.02	879.72	876.03	0.005	0.1	771.71	35.58	3.87	9.37	111.98
HM16JV151	C17MA21A0530	1,462.08	0.005	0.01	864.42	869.67	0.005	0.07	652.7	29.37	3.96	5.67	99.52
HM16JV151	C17MA21A0535	975.28	0.01	0.09	1,396.68	1,360.85	0.005	0.04	420.03	52.86	4.9	5.75	78.87
HM16JV151	C17MA21A0520	1,256.36	0.005	0.03	737.39	726.39	0.005	0.07	727.82	20.85	2.66	7.15	78.57
HM16JV151	C17MA21A0517	1,073.56	0.005	1.32	984.5	978.37	0.005	0.47	521.69	24.61	2.91	8.41	60.67
HM16JV151	C17MA21A0507	920.77	0.005	0.005	749.02	761.84	0.005	0.17	427.91	6.28	1.6	6.25	60.34
HM16JV151	C17MA21A0511	11,683.73	0.005	0.005	538.25	548.26	0.005	0.01	469.14	0.18	0.09	3.48	55.56
HM16JV151	C17MA21A0518	1,270.39	0	0.11	677.55	680.06	0.005	0.45	357.94	24.21	2.73	5.06	50.24
HM16JV151	C17MA21A0535	1,340.85	0.005	18.06	682.8	682.68	0.005	1.85	357.25	36.33	2.48	5.54	44.39
HM16JV151	C17MA21A0515	1,107.93	0.005	0.22	637.92	630.81	0.005	0.51	388.71	22.29	2.25	4.14	41.8
HM16JV151	C17MA21A0512	899.26	0.005	0.005	1,151.26	1,158.03	0.005	0.1	504.6	17.1	2.6	8.57	35.58
HM16JV151	C17MA21A0504	1,417.80	0.005	0.005	664.26	675.48	0.005	0.35	490.6	6.29	1.73	6.11	34.41
HM16JV151	C17MA21A0533	3,975.59	0.005	0.005	544.02	537.58	0.005	0.05	466.65	9.66	1.39	3.68	32.85
HM16JV151	C17MA21A0516	975.45	0.005	0.01	618.05	610.73	0.005	0.28	497.17	3.55	0.95	11.16	32.61
HM16JV151	C17MA21A0531	1,059.46	0	1.94	562.37	560.85	0.005	1.03	504.94	28.1	2.26	5.99	30.94
HM16JV151	C17MA21A0514	849.26	0.01	0.01	526.67	535.5	0.005	0.31	517.63	3.94	0.94	11.82	27.5
HM16JV151	C17MA21A0529	899.48	0.005	0.05	681.7	693.05	0.005	0.38	521.75	11	1.87	8.24	27.13
HM16JV151	C17MA21A0505	837.38	0.005	0.005	650.61	653.67	0.005	0.24	475.4	6.09	1.49	10.66	24.69
HM16JV151	C17MA21A0534	19,397.88	0.005	0	357.68	358.32	0.005	0.03	416.52	0.24	0.06	3.84	22.9
HM16JV151	C17MA21A0508	27,300.68	0.005	0.005	303.2	298.05	0.005	0.05	303	0.82	0.23	3.92	19.99
HM16JV151	C17MA21A0510	7,087.15	0.005	2.87	353.49	355.02	0.005	0.77	212.69	11.88	0.96	3.57	19.63

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Sr88	Ta181	Th232	Ti47	Ti49	Tl205	U238	V51	Y89	Yb172	Zn66	Zr90
HM16JV151	C17MA21A0532	1,892.30	0	5.58	473.86	473.31	0.005	2.57	676.73	37.43	1.77	3.98	17.33
HM16JV151	C17MA21A0513	3,607.00	0.005	0.005	443.57	432.41	0.005	0.02	726.08	1.28	0.13	1.73	16.54
HM16JV151	C17MA21A0527	16,235.07	0.005	0.01	290.1	292.26	0.005	0.05	370.57	0.82	0.14	3.72	16.32
HM16JV151	C17MA21A0506	1,084.77	0	0.02	455.26	447.28	0.005	0.15	368.79	5.43	0.56	4.19	12
HM16JV151	C17MA21A0509	20,343.87	0	0.23	146.65	150.87	0.005	0.17	210.98	3.18	0.66	2.02	11.64
HM16JV151	C17MA21A0530	1,044.57	0.005	0.03	339.67	332.05	0.005	0.22	321.13	7.89	0.85	3.98	10.37
HM16JV151	C17MA21A0527	21,647.16	0.005	0.005	85.29	85.1	0.005	0.08	205.17	4.33	0.51	1.98	2.13
HM16JV152	C17MA20A0458	921.61	0.005	0.18	3,644.92	3,648.27	0.005	0.04	532.97	15.17	2.96	9.85	63.22
HM16JV152	C17MA20A0446	1,953.73	0	0	707.57	695.9	0.005	0.31	430.48	10.69	1.01	4.98	53.77
HM16JV152	C17MA20A0451	1,443.09	0	0.01	1,608.71	1,622.89	0.005	0.05	465	7.86	1.29	13.29	52.13
HM16JV152	C17MA20A0446	1,891.65	0.005	0.07	624.22	618.93	0.005	0.33	395.29	11.33	1.08	5.89	49.69
HM16JV152	C17MA20A0457	824.24	0.005	0.07	3,455.08	3,456.08	0.005	0.3	544.29	12.61	2.17	9.25	35.3
HM16JV152	C17MA20A0452	1,545.16	0.005	0.7	572.41	575.22	0.005	1.38	475.29	29.2	4.17	2.46	29.25
HM16JV152	C17MA20A0447	2,023.11	0.005	0.23	550.51	552.88	0.005	2.09	423.9	34.39	4.6	2.48	25.38
HM16JV152	C17MA20A0450	2,305.73	0.005	1.55	597.34	601.16	0.005	3.3	461.3	36.99	4.1	2.34	24.28
HM16JV152	C17MA20A0454	1,097.40	0	0	2,227.23	2,215.79	0.005	0.02	472.16	52.6	6.79	11.91	23.45
HM16JV152	C17MA20A0448	1,775.73	0	10.9	525.11	525.75	0.005	6.51	490.48	72.71	6.54	2.94	21.1
HM16JV152	C17MA20A0449	1,932.04	0.01	14.93	459.71	449.22	0.005	7.94	490.91	89.94	6.82	2.6	15.96
HM16JV152	C17MA20A0453	1,625.73	0.005	0.08	806.54	798.47	0.005	0.1	417.46	8.19	1.1	10.22	14.96
HM16JV152	C17MA20A0455	727.03	0	0.01	2,832.20	2,819.71	0.005	0.02	516.16	1.98	0.57	10.04	13.31
HM16JV152	C17MA20A0456	1,727.79	0	1.34	432.75	431.54	0.005	1.3	448.64	24.66	3.18	1.53	13.28
HM16JV152	C17MA20A0459	1,570.13	0.005	5.05	423.43	420.79	0.005	5.02	484.13	55.55	5.06	2.14	13.12
HM16JV152	C17MA20A0462	2,415.51	0	0.5	747.28	763.99	0.005	3.71	479.94	17.29	2.03	4.63	109.66
HM16JV152	C17MA20A0464	1,543.60	0.005	0.13	1,305.58	1,298.61	0.005	0.62	441.3	27.05	2.59	5.25	97.24
HM16JV152	C17MA20A0465	1,874.25	0.005	0.14	704.89	708.87	0.005	2.17	348.08	54.04	5.42	3.88	82.24
HM16JV152	C17MA20A0469	1,019.30	0.01	0.01	3,420.88	3,415.23	0.005	0.08	491.74	26.45	5.42	7.97	62.08
HM16JV152	C17MA20A0466	909.71	0.005	0.08	1,519.83	1,525.96	0.005	0.21	528.53	13.61	1.34	4.23	56.79
HM16JV152	C17MA20A0463	1,307.93	0.005	0.22	524.57	528.1	0.005	0.4	418.4	12.75	1.05	7.02	35.02
HM16JV152	C17MA20A0467	1,562.64	0.005	0.43	661.55	663.13	0.005	1.23	478.19	30.23	4.77	2.71	33.7
HM16JV152	C17MA20A0460	1,969.42	0.005	10.46	534.23	542.03	0.005	8.28	484.8	82.42	7.66	2.83	22.08
HM16JV152	C17MA20A0470	2,126.32	0.005	0.5	486.76	470.59	0.005	0.49	484	12.23	1.64	1.99	21.03
HM16JV152	C17MA20A0461	1,645.14	0.005	20.98	442.39	430.02	0.005	8.45	484.38	84.97	6.57	2.91	17.56
HM16JV152	C17MA20A0468	962.71	0.005	1.82	1,579.90	1,578.21	0.005	4.63	448.93	40.77	3.56	9.48	13.26
HM16JV154	E17JN14A296	8,106.05	0.005	0.53	527.63	535.39	0.07	0.69	1,493.28	8.88	0.4	397.14	11.59
HM16JV154	E17JN14A307	8,244.01	0.005	0.87	531.81	520.65	0.05	1.1	889.29	13.3	0.51	750.59	11.01
HM16JV154	E17JN14A312	12,315.74	0.005	1.42	379.04	382.6	0.005	1.12	1,098.90	11.17	0.51	579.91	10.76
HM16JV154	E17JN14A301	13,155.93	0.005	0.42	260.49	255.03	0.005	0.69	1,060.32	8.24	0.42	464.56	9.39
HM16JV154	E17JN14A308	25,418.08	0.005	0.91	150.65	146.61	0.06	1.17	385.9	11.4	0.45	802.83	7.09
HM16JV154	E17JN14A302	8,948.11	0.005	0.33	567.46	571.92	0.005	0.57	1,443.27	7.8	0.31	459.18	6.87
HM16JV154	E17JN14A299	5,159.05	0.005	0.27	682.21	685.5	0.005	0.52	1,833.09	7.5	0.39	378.32	5.18
HM16JV154	E17JN14A304	4,728.71	0.005	0.22	702.1	701.08	0.005	0.28	1,723.70	5.31	0.23	156.75	4.85
HM16JV154	E17JN14A310	6,487.93	0.005	0.31	651.91	651.91	0.005	0.69	1,311.30	4.73	0.31	277.91	3.58
HM16JV154	E17JN14A300	17,625.81	0.005	0.11	246.16	244.85	0.005	0.36	647.13	9.88	0.28	266.79	2.43
HM16JV159	E17JN14A031	3,196.86	0	0.08	390.58	389.44	0.005	0.08	366.11	45.35	2.74	2.71	72.17
HM16JV159	E17JN14A007	5,694.32	0.005	0.005	80.05	82.79	0.005	0.15	135.14	0.3	0.02	1.21	13.8
HM16JV159	E17JN14A007	5,205.41	0.005	0.005	69	68.56	0.005	0.1	124	0.3	0.005	1.17	13.09
HM16JV159	E17JN14A018	4,509.78	0	0.005	135.66	138.4	0.005	0.08	91.86	0.27	0.005	1.38	7.17
HM16JV159	E17JN14A008	8,987.11	0.005	0.01	100.82	85.75	0.005	0.19	114.79	0.45	0.03	0.1	6.78
HM16JV159	E17JN14A029	2,197.47	0.005	0.07	199.41	197.11	0.005	0.01	280.43	4.43	0.3	4.66	5.8
HM16JV159	E17JN14A008	9,066.92	0.005	0	87.25	83.59	0.005	0.12	111.24	0.45	0.04	1.04	5.45
HM16JV159	E17JN14A014	3,632.12	0.005	0.11	545.64	549.25	0.005	0.03	266.01	3.56	0.31	6.77	4.7
HM16JV159	E17JN14A012	4,590.21	0.005	0.05	748.76	761.12	0.005	0.16	573.07	3.42	0.27	3.06	3.94

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Sr88	Ta181	Th232	Ti47	Ti49	Tl205	U238	V51	Y89	Yb172	Zn66	Zr90
HM16JV159	E17JN14A013	2,292.65	0.005	0.1	289.13	294.05	0.005	0.03	305.24	3.12	0.11	3.94	2.24
HM16JV159	E17JN14A018	4,286.91	0.005	0.005	130.93	124.77	0.005	0.06	92.59	0.14	0.005	1.2	2.22
HM16JV159	E17JN14A025	10,899.59	0.005	0.005	118.22	115.12	0.005	0.02	124.49	0.28	0.005	1.1	1.4
HM16JV159	E17JN14A017	3,281.33	0.005	0.01	590.92	596.92	0.005	0.01	353.59	0.98	0.14	1.88	1.36
HM16JV159	E17JN14A024	2,180.35	0	0.005	479.29	469.61	0.005	0.02	315.86	0.28	0.03	0.69	1.34
HM16JV159	E17JN14A016	5,038.65	0.005	0.005	194.41	200.98	0.005	0.46	154.42	0.95	0.1	1.51	1.27
HM16JV159	E17JN14A020	6,034.09	0.005	0.01	90.67	87.32	0.005	0.04	81.43	0.26	0.005	1.85	1.06
HM16JV159	E17JN14A024	2,310.55	0.005	0.02	403.6	396.8	0.005	0.02	238.24	0.29	0.03	0.83	1.06
HM16JV159	E17JN14A025	9,801.69	0.005	0.005	75.14	76.1	0.005	0.02	98.09	0.16	0.02	0.69	1.05
HM16JV159	E17JN14A023	6,205.27	0.005	0.005	66.35	65.61	0.005	0.01	125.23	0.11	0.01	0.71	1.04
HM16JV159	E17JN14A028	6,952.77	0.005	0.01	98.37	102.02	0.005	0.04	109.59	0.21	0.02	0.69	1.04
HM16JV159	E17JN14A015	1,906.66	0.005	0.01	217.93	211.54	0.005	0.01	228.57	0.19	0.02	2.35	0.93
HM16JV159	E17JN14A027	5,396.68	0.005	0.005	391.48	390.39	0.005	0.04	158.32	0.14	0.02	0.65	0.88
HM16JV159	E17JN14A009	9,397.32	0.02	0.005	157.16	159.73	0.005	0.1	115.91	0.49	0.02	0.73	0.77
HM16JV159	E17JN14A011	3,307.13	0.005	0.005	381.76	383.23	0.005	0.07	303.82	0.44	0.05	1.8	0.75
HM16JV159	E17JN14A010	7,219.17	0.005	0.005	103	98.77	0.005	0.06	76.69	0.18	0.005	0.99	0.53
HM16JV159	E17JN14A026	20,096.61	0.005	0.005	122.16	119.85	0.005	0.01	117.2	1	0.04	0.1	0.48
HM16JV159	E17JN14A010	7,941.70	0.005	0.005	110.07	106.28	0.005	0.03	85.74	0.17	0.05	0.93	0.45
HM16JV159	E17JN14A021	6,968.67	0	0.005	213.36	214.12	0.005	0.04	45.75	0.12	0.005	0.55	0.39
HM16JV159	E17JN14A009	13,214.49	0.005	0	98.61	95.78	0.005	0.22	98.06	0.83	0.08	0.1	0.38
HM16JV159	E17JN14A022	6,529.82	0.005	0.01	296.25	294.71	0.005	0.06	44.02	0.25	0.005	0.1	0.29
HM16JV159	E17JN14A019	16,463.98	0.005	0.005	74.48	75.68	0.005	0.06	37.17	0.45	0.05	0.55	0.24
HM16JV161	C17MA21A0480	7,707.07	0.005	0.04	100.16	97.01	0.005	2.6	493.84	0.11	0.01	1.8	21.51
HM16JV161	C17MA21A0476	10,054.75	0.005	0.12	103.51	108.36	0.005	2.07	281.12	0.14	0.005	3.43	14.86
HM16JV161	C17MA21A0476	13,814.08	0.005	0.37	94.31	94.66	0.005	2.03	276.47	0.15	0.005	3.59	14.72
HM16JV161	C17MA21A0478	10,557.76	0.005	0.1	176.63	181.79	0.02	2.65	370.81	0.39	0.005	3.08	8.62
HM16JV161	C17MA21A0475	13,192.76	0.005	0.07	95.96	97.14	0.005	1.85	515.47	0.88	0.04	6.62	6.09
HM16JV161	C17MA21A0478	11,720.19	0.005	0.17	366.28	389.23	0.005	3.57	477.27	0.57	0.005	2.57	5.88
HM16JV161	C17MA21A0477	11,118.95	0.005	0.02	163.49	164.52	0.005	4.04	235.79	0.97	0.02	2.27	3.16
HM16JV161	C17MA21A0479	4,576.39	0.005	0.22	570.56	577.52	0.02	7.76	926.88	1.33	0.005	4.08	3.01
HM16JV161	C17MA21A0472	5,142.56	0.005	0.54	19.18	20.72	0.005	0.1	77.31	0.29	0.005	0.46	2.7
HM16JV161	C17MA21A0481	6,078.20	0.005	0.005	245.26	243.07	0.005	0.04	246.89	0.11	0.02	5.81	2.63
HM16JV161	C17MA21A0474	8,937.78	0.005	0.13	315.12	328.1	0.005	0.8	342.59	0.38	0.03	3.52	2.4
HM16JV161	C17MA21A0481	5,139.56	0.005	0	201.85	203.3	0.005	0.04	233.66	0.13	0.03	5.55	2.22
HM16JV161	C17MA21A0473	12,086.24	0.005	0.4	17.37	16.85	0.005	0.26	115.67	0.23	0.02	4.25	1.99
HM16JV161	C17MA21A0479	8,284.66	0.005	0.16	278.77	283.42	0.005	6.33	445.58	1.75	0.01	1.44	1.79
HM16JV161	C17MA21A0483	8,380.26	0.005	0.13	289.57	296.45	0.005	0.55	439.9	0.63	0.05	4.84	1.3
HM16JV161	C17MA21A0482	7,024.30	0	0.01	90.61	92.61	0.005	0.25	269.96	0.56	0.05	5.95	1.16
HM16JV161	C17MA21A0472	8,634.47	0.005	0.22	11.81	12.06	0.005	0.24	87.01	0.32	0.005	1.04	0.88
HM16JV161	C17MA21A0471	3,307.88	0.005	0.005	39.19	40.82	0.005	0.02	152.09	0.07	0.005	0.37	0
HM16JV161	C17MA21A0490	6,091.28	0.005	0.005	48.85	48.24	0.005	0.5	183.38	0.69	0.06	0.1	0.005
HM16JV161	C17MA21A0486	24,832.92	0	0.005	4.94	6.18	0.005	0.38	106.36	0.12	0.005	0.48	0.005
HM16JV161	C17MA21A0487	8,432.10	0.005	0.38	122.44	119.93	0.005	2.24	480.89	0.14	0.01	2.13	21.77
HM16JV161	C17MA21A0489	5,939.42	0.005	0.02	68.34	70.59	0.005	3.19	261.45	0.86	0.03	1.97	13.73
HM16JV161	C17MA21A0488	25,588.60	0.005	0.24	136.87	134.36	0.02	4.11	352.52	8.97	0.18	0.74	13.15
HM16JV161	C17MA21A0485	11,417.92	0.005	0.54	440.16	441.06	0.005	2.44	583	0.14	0.04	6.53	12.2
HM16JV161	C17MA21A0495	12,729.19	0.005	0.23	73.53	74.37	0.005	6.29	272	1.29	0.05	1.07	5.75
HM16JV161	C17MA21A0495	15,707.37	0.005	0.05	54.42	54.52	0.005	5.93	204.77	0.57	0.005	0.99	4.94
HM16JV161	C17MA21A0496	7,279.59	0.005	0.03	149.91	166.67	0.005	1.91	441.48	1.51	0.005	0.54	4.05
HM16JV161	C17MA21A0489	16,780.50	0.01	0.09	94.14	97.75	0.005	1.43	298.7	0.56	0.06	3.63	3.21
HM16JV161	C17MA21A0492	9,198.47	0.005	0.3	34.92	35.67	0.005	0.93	117.18	0.44	0.005	1.46	2.75
HM16JV161	C17MA21A0484	8,787.17	0	0.02	212.05	226.31	0.005	1.05	380.64	0.69	0.005	4.38	1.21

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Sr88	Ta181	Th232	Ti47	Ti49	Tl205	U238	V51	Y89	Yb172	Zn66	Zr90
HM16JV161	C17MA21A0493	15,596.38	0.005	0.07	62.1	61.83	0.005	4.03	206.34	1.07	0.005	0.33	0.4
HM16JV161	C17MA21A0486	29,101.05	0.005	0.12	3.38	5.32	0.005	0.74	111.53	0.19	0.005	0.63	0.33
HM16JV161	C17MA21A0491	14,862.53	0.005	0.03	14.32	14.02	0.005	0.73	165.56	0.57	0.005	0.54	0.19
HM16JV161	C17MA21A0494	9,655.85	0.005	0.01	78.32	81.9	0.005	1.21	157.11	1.03	0.06	1.02	0.17
HM16JV161	C17MA21A0490	11,298.41	0.005	0.07	46.42	49.11	0.005	0.78	166.17	0.64	0.005	0.51	0.16
HM16JV161	C17MA21A0501	11,093.73	0.005	0.07	63.63	66.32	0.005	8.03	217.66	0.24	0.005	1.13	26.83
HM16JV161	C17MA21A0498	12,666.37	0.005	0.04	58.97	60.23	0.005	0.75	159.82	0.46	0.04	2.16	8.57
HM16JV161	C17MA21A0502	5,314.18	0.005	0.03	227.54	215.63	0.005	1.92	495.9	15.59	0.2	12.31	8.28
HM16JV161	C17MA21A0503	5,141.95	0.005	0.04	224.12	226.26	0.005	1.35	439.18	10.7	0.3	7.36	5.51
HM16JV161	C17MA21A0499	7,861.86	0	0.01	142.28	141.22	0.005	0.45	521.65	3.02	0.03	6.09	3.82
HM16JV161	C17MA21A0500	29,810.49	0.005	0.27	85.57	90.36	0.005	0.94	246.36	0.23	0.005	1.05	2.05
HM16JV161	C17MA21A0497	10,103.10	0	0.03	3.82	4.59	0.005	0.09	58.77	0.06	0.02	1.28	0.1
HM16JV162	E17JN15A113	7,979.15	0.005	0.89	117.61	120.15	0.005	3.91	191.55	0.84	0.03	2.73	56.94
HM16JV162	E17JN15A112	6,592.82	0.01	0.17	191.82	195.99	0.005	4.58	546.73	0.96	0.05	5.77	42.88
HM16JV162	E17JN15A107	13,798.32	0.005	0.005	380.2	377.68	0.005	3.98	262	0.94	0.06	1.08	24.03
HM16JV162	E17JN15A100	6,682.98	0.005	0	89.55	88.41	0.005	3.61	113.35	0.45	0.01	0.54	14.52
HM16JV162	E17JN15A108	10,413.52	0.005	0.005	94.32	95.49	0.005	4.33	466.63	6.63	0.12	0.67	13.97
HM16JV162	E17JN15A107	16,386.39	0.005	0.05	135.7	131.82	0.005	8.6	552.92	10.04	0.29	0.41	13.76
HM16JV162	E17JN15A101	4,316.49	0.005	0.005	121.02	121.91	0.005	7.15	679.52	17.75	0.41	1.21	12.28
HM16JV162	E17JN15A110	11,023.13	0.005	0.47	195.04	194.12	0.005	4.06	163.25	1.58	0.03	2.08	8.89
HM16JV162	E17JN15A099	4,571.55	0.005	0.09	161.34	152.57	0.005	3.38	181.12	1.02	0.1	3.21	7.64
HM16JV162	E17JN15A111	11,706.49	0.005	0.34	102.92	103.68	0.005	3.26	311.83	2.58	0.06	0.99	5.47
HM16JV162	E17JN15A109	9,690.59	0.005	0.005	66.82	70.37	0.005	1.2	66.8	0.63	0.04	0.94	5.07
HM16JV162	E17JN15A104	11,722.74	0.005	0.33	112.18	121.74	0.005	3.11	84.03	1.22	0.02	22.12	2.29
HM16JV162	E17JN15A103	3,615.62	0.01	0.13	416.39	427.82	0.005	1.93	73.86	1.26	0.03	0.57	2.17
HM16JV162	E17JN15A104	10,119.57	0.005	0.28	130.52	124.4	0.005	2.82	86.85	1.11	0.06	5.48	1.93
HM16JV162	E17JN15A102	8,653.04	0.005	0.005	44.87	44.6	0.005	1.44	64.81	0.32	0.005	0.4	1.34
HM16JV162	E17JN15A106	10,116.64	0.005	0.52	10.51	10.34	0.005	0.07	143.51	4.65	0.09	0.7	1.21
HM16JV162	E17JN15A098	6,618.43	0.005	0.25	48.57	48.93	0.005	0.41	63.16	0.36	0.01	4.69	0.65
HM16JV164	C17MA20A0431	329.22	0.005	0.01	2,158.24	2,160.23	0.005	0.01	351.31	24.58	3.79	6.9	155.28
HM16JV164	C17MA20A0426	526.41	0.005	0	1,714.39	1,715.61	0.005	0.01	334.74	16.72	2.26	3.74	96.51
HM16JV164	C17MA20A0425	572.32	0.005	0.005	1,226.26	1,221.28	0.005	0.01	289.58	26.56	3.32	2.04	91.53
HM16JV164	C17MA20A0428	560.36	0.005	0.005	1,463.49	1,488.38	0.005	0.01	216.16	18.36	3.19	11.35	73.75
HM16JV164	C17MA20A0429	405.95	0.005	0.02	1,301.86	1,287.74	0.005	0.01	222.44	110.8	9.9	12.23	58.1
HM16JV164	C17MA20A0422	400.07	0.005	0.04	798.55	793.77	0.005	0.1	458.23	21.22	3.15	2.74	38.77
HM16JV164	C17MA20A0423	345.72	0.005	0.03	803.05	804.98	0.005	0.09	485.39	18.62	2.96	2.15	37.36
HM16JV164	C17MA20A0427	525.11	0	0.005	857.08	847	0.005	0	227.04	18.15	2.28	5.65	30.52
HM16JV164	C17MA20A0420	347.71	0.005	0.03	705.56	721.23	0.005	0.13	470.16	22.79	3.3	2.6	29.96
HM16JV164	C17MA20A0430	389.24	0.005	0.01	460.28	464.04	0.005	0.01	347.84	8.14	1.72	6.47	23.12
HM16JV164	C17MA20A0424	352.4	0.01	0	913.15	896.06	0.005	0.03	351.23	9.43	1.34	4.51	21.72
HM16JV164	C17MA20A0421	328.89	0	0.005	902.7	898.7	0.005	0	346.27	17.79	2.32	6.37	11.04
HM16JV164	C17MA20A0419	246.36	0.005	0.01	656.54	650.76	0.005	0.03	645.44	7.33	1.29	3.33	7.11
HM16JV164	C17MA20A0440	276.45	0.005	0.01	2,699.07	2,672.26	0.005	0.02	341.44	88.22	9.18	7.39	63.91
HM16JV164	C17MA20A0441	366.71	0.005	0.01	1,281.05	1,267.33	0.005	0.04	278.79	32.65	3.91	4.46	38.65
HM16JV164	C17MA20A0444	378.44	0	0.03	1,440.41	1,416.32	0.005	0.02	223.5	63.2	6.93	11.52	32.83
HM16JV164	C17MA20A0442	511.18	0.03	0.07	3,478.91	3,460.46	0.005	0.11	356.1	41.5	4.92	20.64	31.42
HM16JV164	C17MA20A0437	390.23	0.005	0.01	1,797.58	1,833.42	0.005	0.01	285.67	26.22	3.17	9.86	27.99
HM16JV164	C17MA20A0435	300.28	0.01	0.005	3,181.01	3,175.28	0.005	0.01	399.63	24.23	3.4	11.19	26.81
HM16JV164	C17MA20A0438	383.48	0	0.08	691.48	704.97	0.005	0.11	362.94	31.87	3.96	4.81	25.21
HM16JV164	C17MA20A0436	378.87	0	0.06	761.76	756.05	0.005	0.03	350.77	9.18	1.91	2.14	23.31
HM16JV164	C17MA20A0443	342.73	0.005	0.01	818.42	816.97	0.005	0.02	277.97	19.31	3	2.76	23.12
HM16JV164	C17MA20A0433	286.9	0.005	0.005	760.9	769.14	0.005	0	287.44	21.61	2.57	4.46	20.58

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Sr88	Ta181	Th232	Ti47	Ti49	Tl205	U238	V51	Y89	Yb172	Zn66	Zr90
HM16JV164	C17MA20A0443	362.46	0.005	0.005	953.96	972	0.005	0.02	309.09	23.52	3.16	8.02	20.33
HM16JV164	C17MA20A0445	252.03	0.005	0.09	682.06	672.83	0.005	0.02	518.64	19.22	2.75	4.18	18.69
HM16JV164	C17MA20A0434	236	0.005	0.02	759.62	761.65	0.005	0.02	402.98	15.82	2.38	3.54	16.99
HM16JV164	C17MA20A0439	425.47	0.01	0.005	418.95	434.79	0.005	0.01	210.03	2.32	0.51	1.72	11.01
HM16JV171	E17JN15A218	17,461.84	0.005	18.46	241.19	247.91	0.005	4.43	853.26	25.68	2.02	13	386.33
HM16JV171	E17JN15A201	24,602.68	0.005	16.62	371.68	359.04	0.17	7.05	677.57	32.87	1.55	9.34	18.61
HM16JV171	E17JN15A211	18,783.50	0.005	73.18	281.41	276.05	0.005	7.5	633.74	27.59	0.92	9.68	18.58
HM16JV171	E17JN15A203	26,814.25	0.005	5.5	304.48	345.84	0.005	3.64	640.97	17.94	1.24	5.78	17.13
HM16JV171	E17JN15A217	14,254.86	0.005	21.98	396.95	393.93	0.005	3.15	857.61	15.3	0.98	4.18	15.28
HM16JV171	E17JN15A204	22,920.25	0.005	3.69	276.89	280.26	0.005	3.06	537.89	14.9	0.94	7.87	14.6
HM16JV184	C17MA21A0588	6,470.04	0.005	0.04	678.68	668.23	0.005	0.36	334.25	0.66	0.06	7.01	9.26
HM16JV184	C17MA21A0587	3,594.36	0.005	0.41	122.24	118.7	0.005	0.11	136.75	0.23	0.01	7.54	4.45
HM16JV184	C17MA21A0592	4,416.44	0.005	1.11	244.66	255.26	0.005	0.67	470.06	0.18	0.01	4.61	16.38
HM16JV184	C17MA21A0593	7,180.40	0.005	0.75	193.53	194.76	0.005	0.18	529.74	0.41	0.005	3.93	8.58
HM16JV184	C17MA21A0591	6,184.27	0.005	0.52	235.15	232.5	0.005	0.07	148.07	0.16	0.02	25.84	6.71
HM16JV184	C17MA21A0593	6,094.60	0.005	0.93	84.01	78.12	0.005	0.17	666.69	0.12	0.005	5.03	4.49
HM16JV184	C17MA21A0590	4,863.70	0	0.05	158.4	158.83	0.005	0.35	442.7	0.75	0.01	4.06	3.75
HM16JV184	C17MA21A0589	4,855.08	0.005	0.39	74.87	76.5	0.005	0.14	342.97	0.1	0.005	3.59	1.6
HM16JV191	C17MA21A0603	8,979.55	0.005	0.07	347.3	347.76	0.005	1.32	311.67	6.51	0.36	3.71	18.65
HM16JV191	C17MA21A0595	17,863.72	0.005	0.06	90.52	93.5	0.005	3.82	255.41	1.91	0.005	0.87	15.57
HM16JV191	C17MA21A0594	15,648.19	0.005	0.32	86.4	88.51	0.005	3.05	631.8	0.12	0.005	1.27	13.75
HM16JV191	C17MA21A0594	9,177.20	0.005	0.31	83.45	75.78	0.005	1.37	498.63	0.11	0.005	1.73	11.69
HM16JV191	C17MA21A0604	3,041.54	0.005	0.07	474.55	479.71	0.005	1.13	359.58	3.31	0.11	5.36	4.42
HM16JV191	C17MA21A0596	20,772.94	0.005	0.8	324.14	330.82	0.005	3.07	498.47	0.44	0.005	1.35	4.35
HM16JV191	C17MA21A0606	9,462.80	0	0.02	66.59	74.76	0.005	6.2	313.64	1.57	0.02	1.11	25.25
HM16JV191	C17MA21A0606	9,479.38	0	0.02	68.46	62.61	0.005	4.51	292.39	1.49	0.12	0.87	19.1
HM16JV191	C17MA21A0607	7,676.16	0.005	0.23	64.23	64.63	0.005	1.74	296.66	0.93	0.05	1.95	10.5
HM16JV191	C17MA21A0612	26,357.55	0.005	0.48	94.39	101.76	0.005	1.3	343.46	0.3	0.005	3.44	8.81
HM16JV191	C17MA21A0608	9,031.31	0.01	0.04	173.21	167.77	0.005	2.23	343.8	0.46	0.005	1.86	8.79
HM16JV191	C17MA21A0608	8,772.68	0	0.21	169.35	167.33	0.005	2.29	302.24	0.79	0.06	2.42	7.79
HM16JV191	C17MA21A0609	11,903.53	0.005	0.49	45.54	42.17	0.005	1	229.04	0.87	0.005	3.37	7.77
HM16JV191	C17MA21A0610	14,194.48	0	0.58	111.56	109.69	0.005	2.01	336.31	1.59	0.03	3.51	5.97
HM16JV191	C17MA21A0607	6,979.71	0	0.35	76.67	82.17	0.005	5.53	368.45	1.95	0.06	1.81	5.78
HM16JV191	C17MA21A0609	12,270.06	0.005	0.22	65.47	63.86	0.005	1.16	243.94	0.71	0.01	7.68	4.99
HM16JV191	C17MA21A0605	33,612.36	0.005	0.15	112.25	115.29	0.005	0.78	275.53	0.15	0.02	1.24	3.15
HM16JV191	C17MA21A0609	12,887.05	0.005	0.08	71.4	74.73	0.005	2.22	295.98	0.89	0.06	1.4	3.03
HM16JV191	C17MA21A0605	32,332.21	0	0.03	115.5	118.81	0.005	0.57	250.34	0.13	0.005	0.69	1.95
HM16JV191	C17MA21A0617	5,960.89	0.005	0.1	69.15	67.57	0.005	2.82	322.23	1.3	0.05	6.54	14.91
HM16JV191	C17MA21A0622	14,574.25	0.005	0.33	84.31	80.87	0.005	2.47	559.33	0.16	0.005	7.77	11.85
HM16JV191	C17MA21A0616	13,083.97	0.005	0.56	379.91	379.56	0.005	1.66	469.79	0.42	0.02	14.97	9.66
HM16JV191	C17MA21A0624	19,647.96	0.005	0.02	490.97	491.08	0.005	0.37	1,038.16	0.08	0.005	0.85	9.63
HM16JV191	C17MA21A0615	12,477.84	0.005	0.51	60.55	63.89	0.005	4.11	242.43	0.83	0.02	2.22	7.76
HM16JV191	C17MA21A0618	11,692.87	0.005	0.4	64.21	66.81	0.005	2.27	247.33	0.81	0.01	2.15	7.72
HM16JV191	C17MA21A0621	3,339.27	0	0.02	494.93	500.39	0.005	0.15	330.37	0.68	0.06	5.37	6.08
HM16JV191	C17MA21A0625	5,814.33	0.005	1.55	582.15	580.19	0.005	2.19	1,232.88	0.1	0.005	3.21	5.61
HM16JV191	C17MA21A0615	14,875.49	0.005	3.05	97.58	97.25	0.005	5.9	252.89	1.27	0.01	4.16	5.32
HM16JV191	C17MA21A0619	5,945.22	0.005	0.56	732.21	733.83	0.005	1.84	899.41	0.51	0.01	3.22	5.13
HM16JV191	C17MA21A0621	3,505.09	0.005	0.005	749.46	758.97	0.01	0.16	381.24	0.56	0.07	6.79	5.03
HM16JV191	C17MA21A0613	11,516.02	0.005	0.01	537.65	533.8	0.005	1.15	891.46	0.04	0.03	1.59	3.82
HM16JV191	C17MA21A0614	6,683.05	0	0.02	585.86	587.55	0.005	0.75	1,290.50	0.09	0.005	1.21	3.77
HM16JV191	C17MA21A0623	8,060.58	0.005	0.02	545.62	545.94	0.005	2.14	917.6	0.51	0.04	1.43	3.7
HM16JV191	C17MA21A0623	13,892.88	0.005	0.05	464.6	472.17	0.005	1.54	811.34	0.26	0.005	1.33	3.05

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Sr88	Ta181	Th232	Ti47	Ti49	Tl205	U238	V51	Y89	Yb172	Zn66	Zr90
HM16JV191	C17MA21A0613	24,974.79	0.005	0.06	458.84	466.16	0.005	1.58	665.2	0.09	0.005	2.36	2.97
HM16JV191	C17MA21A0620	12,230.47	0.01	0.12	262.88	264.26	0.005	4.47	435.11	1.56	0.05	1.18	2.58
HM16JV191	C17MA21A0613	21,863.33	0.005	0.04	469.99	478.66	0.005	1.3	671.84	0.13	0.005	1.94	2.12
HM16JV192	C17MA21A0628	7,764.30	0.01	1.34	97	97.5	0.005	3.52	642.6	14.06	0.35	1.83	13.28
HM16JV192	C17MA21A0629	10,789.85	0.01	1.61	433.86	436.91	0.005	2.13	872.54	10.27	0.34	1.67	6.12
HM16JV192	C17MA21A0626	18,039.06	0.005	1.28	143.95	143.55	0.005	3.43	554.01	16.8	0.36	0.99	3.71
HM16JV192	C17MA21A0627	23,695.68	0.005	1.39	111.92	108.96	0.005	2.37	503.24	9.51	0.19	1.16	2.81
HM16JV192	C17MA21A0627	22,210.92	0.005	0.25	100.79	92.36	0.005	0.74	408.86	3.75	0.27	0.1	1.52
HM16JV192	C17MA21A0630	8,344.77	0	0.4	272.53	284.19	0.02	4.45	789.9	15.21	0.4	2.89	17.59
HM16JV192	C17MA21A0637	6,669.13	0.005	0.69	473.89	462.48	0.005	7.67	1,088.21	37.19	0.9	6.79	12.95
HM16JV192	C17MA21A0630	4,116.44	0.005	0.16	255.85	268.35	0.005	1.65	721.46	4.67	0.25	2.92	8.84
HM16JV192	C17MA21A0636	5,235.69	0.005	0.17	172.1	175.36	0.005	3.35	668.51	13.41	0.38	3.84	7.46
HM16JV192	C17MA21A0635	7,066.91	0.005	0.35	187.26	185.32	0.005	1.38	641.17	6.61	0.3	3.31	7.29
HM16JV192	C17MA21A0631	6,745.70	0.005	0.07	357.62	363.3	0.005	1.31	966.27	4.34	0.33	1.43	4.86
HM16JV192	C17MA21A0633	10,954.89	0.005	0.04	325.01	330.98	0.005	0.49	956.84	2.66	0.24	1.26	4.59
HM16JV192	C17MA21A0634	16,001.35	0.005	0.1	101.51	99.91	0.005	1.08	521.59	3.98	0.12	0.83	4.55
HM16JV192	C17MA21A0640	16,143.64	0.005	0.005	604.77	604.22	0.005	0.51	883.42	2.05	0.28	1.1	3.8
HM16JV192	C17MA21A0632	8,365.76	0.005	0	473.6	470.21	0.005	0.31	1,209.34	1.82	0.17	0.86	2.85
HM16JV192	C17MA21A0631	8,452.30	0	0.01	539.15	536.95	0.005	0.2	761	1.71	0.1	1.26	2.67
HM16JV192	C17MA21A0639	16,561.68	0	0.01	471.75	469.56	0.005	0.11	1,035.31	1.02	0.04	0.43	2.65
HM16JV192	C17MA21A0640	18,932.06	0.005	0.005	278.4	282.43	0.005	0.12	540.71	1.37	0.18	0.39	2.43
HM16JV192	C17MA21A0638	4,789.94	0.01	0.12	501.37	494.32	0.005	2.19	1,323.37	6.37	0.13	2.22	2.3
HM16JV192	C17MA21A0633	19,444.25	0.01	0.09	40.5	40.41	0.005	0.39	536.44	2.11	0.07	0.48	2.19
HM16JV192	C17MA21A0638	1,976.31	0.005	0.01	510.59	504.05	0.005	0.97	1,366.87	1.4	0.15	2.3	1.59
HM16JV192	C17MA21A0639	12,679.28	0	0.005	452.83	433.36	0.005	0.17	750.8	1.26	0.05	1.02	0.9
HM16JV192	C17MA21A0642	5,041.45	0.005	0.26	104.02	108.27	0.005	1.68	838.36	7.49	0.36	1.58	26.55
HM16JV192	C17MA21A0645	13,744.80	0.005	0.19	72.27	78.04	0.005	1.36	787.49	5.14	0.16	0.75	16.41
HM16JV192	C17MA21A0641	4,188.88	0.01	0.22	123.25	128.07	0.005	2.31	686.45	8.08	0.48	2.39	7.42
HM16JV192	C17MA21A0644	9,067.03	0.005	0.05	394.27	386.49	0.005	0.68	1,234.85	2.33	0.17	0.7	3.89
HM16JV192	C17MA21A0646	11,683.64	0.005	0.02	234.34	234.88	0.005	0.2	513.25	1.37	0.07	1.4	1.34
HM16JV192	C17MA21A0647	4,820.11	0.005	0.01	570.26	575.31	0.005	0.28	823.6	1.7	0.05	1.75	1.29
HM16JV192	C17MA21A0641	16,329.40	0.005	0.21	689.52	702.18	0.005	4.49	951.32	13.69	0.17	2.35	1.16
HM16JV192	C17MA21A0643	14,106.10	0.005	0.06	88.01	91.06	0.005	0.39	585.44	1.16	0.05	1.09	1.06
HM16JV192	C17MA21A0649	7,260.96	0.005	0.005	112.32	111.57	0.005	0.35	648.73	1.52	0.25	1.76	16.2
HM16JV192	C17MA21A0648	20,137.18	0.005	0.05	205.25	209.37	0.01	1.36	652.89	3.33	0.12	1.34	3.25
HM16JV192	C17MA21A0650	10,024.13	0.005	0.38	60.5	59.68	0.005	0.56	554.79	2.37	0.12	1.52	2.13
HM16JV192	C17MA21A0651	12,068.39	0.005	0.01	734.89	732.05	0.005	0.09	827.66	2.02	0.35	2.07	1.69
HM16JV192	C17MA21A0649	12,565.97	0.005	0.08	137.89	139.54	0.005	1.23	565.24	5.35	0.18	1.77	1.62
HM16JV192	C17MA21A0648	16,489.08	0.005	0.12	37.63	35.53	0.005	1.25	447.97	2.06	0.11	1.54	1.56
HM16JV193	C17MA21A0660	3,264.33	0.005	0.005	839.26	813.79	0.005	0.03	411.55	0.52	0.12	6.8	117.4
HM16JV193	C17MA21A0660	9,367.05	0.005	0.01	471.25	465.78	0.005	0.09	281.78	0.31	0.04	8.55	42.44
HM16JV193	C17MA21A0656	5,666.39	0.005	0.02	146.4	145.96	0.005	0.13	222.59	0.07	0.005	10.1	33.34
HM16JV193	C17MA21A0666	3,396.68	0.005	0.005	357.51	363.54	0.005	0.13	141	0.04	0.01	5.13	22.53
HM16JV193	C17MA21A0658	11,335.42	0.005	0.01	462.37	477.84	0.005	0.62	246.02	0.62	0.05	5.45	20.12
HM16JV193	C17MA21A0653	6,311.10	0.005	0.005	107.03	110.65	0.005	0.09	147.73	0.03	0.005	4.71	18.57
HM16JV193	C17MA21A0667	5,540.85	0	0.05	179.37	184.88	0.005	0.08	169.98	0.03	0.005	6.45	17.19
HM16JV193	C17MA21A0662	6,282.48	0.005	0.005	105.42	97.81	0.005	0.11	122.05	0.02	0.005	5.39	15.99
HM16JV193	C17MA21A0652	6,172.01	0.005	0.1	834.84	867.24	0.005	0.12	445.22	0.06	0.005	8.22	13.07
HM16JV193	C17MA21A0665	4,409.44	0.005	0.005	311.08	309.88	0.005	0.06	153.89	0.05	0.01	6.29	11.8
HM16JV193	C17MA21A0661	10,757.87	0.005	0.005	174.12	176.81	0.005	0.24	99.22	0.24	0.02	4.76	10.9
HM16JV193	C17MA21A0655	9,040.83	0.005	0.2	289.34	298.28	0.005	0.34	145.62	0.18	0.005	5.81	8.85
HM16JV193	C17MA21A0659	12,159.40	0.005	0.33	308.25	308.97	0.005	0.19	270.93	0.48	0.04	9.57	8.5

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix III: Hemlo district epidote mineral chemistry collected by LA-ICP-MS

Sample ID	Analysis	Sr88	Ta181	Th232	Ti47	Ti49	Tl205	U238	V51	Y89	Yb172	Zn66	Zr90
HM16JV193	C17MA21A0655	4,842.36	0.005	0.14	219.92	208.18	0.005	0.14	106.25	0.08	0.005	5.8	7.66
HM16JV193	C17MA21A0658	11,648.80	0.01	0.01	137.4	150.09	0.005	0.37	144.94	0.29	0.005	5.17	7.54
HM16JV193	C17MA21A0664	4,475.20	0.005	0.04	1,350.12	1,351.17	0.01	0.06	406.37	0.06	0.01	10.1	7.14
HM16JV193	C17MA21A0665	12,782.09	0.005	0.01	295.85	293.67	0.005	0.28	156.13	0.19	0.01	5.71	6.88
HM16JV193	C17MA21A0652	13,347.90	0.005	0.21	237.81	237.01	0.005	0.49	150.73	0.19	0.02	12.72	6.27
HM16JV193	C17MA21A0657	9,946.91	0.005	0.3	121.07	117.98	0.005	0.06	123.32	0.08	0.01	5.09	5.15
HM16JV193	C17MA21A0663	6,309.77	0.005	0.005	68.36	70.27	0.005	0.07	148.53	0.02	0.005	8.28	4.57
HM16JV193	C17MA21A0654	18,700.80	0.005	0.005	350.18	345.28	0.02	0.62	99.42	0.42	0.005	4.37	4.36
HM16JV193	C17MA21A0677	3,569.80	0.005	0.005	714.11	719.8	0.005	0.06	295.08	0.67	0.05	4.89	35.67
HM16JV193	C17MA21A0668	1,638.73	0.005	0.005	609.24	604.86	0.005	0.01	264.65	0.55	0.09	4.83	34.7
HM16JV193	C17MA21A0674	4,124.45	0.005	0.005	110.57	103.02	0.005	0.3	140.77	0.18	0.04	6.99	32.38
HM16JV193	C17MA21A0671	6,028.19	0.005	0.1	964.63	952.01	0.005	0.09	459.35	0.21	0.03	8.82	30.26
HM16JV193	C17MA21A0675	4,700.71	0.005	0.005	99.3	95.57	0.005	0.3	116.66	0.1	0.005	5.41	19.35
HM16JV193	C17MA21A0677	9,097.12	0.005	1.03	230.45	233.92	0.005	0.15	184.49	0.19	0.005	12.11	18.93
HM16JV193	C17MA21A0673	6,072.50	0.005	0.01	115.14	117.59	0.005	0.21	115.04	0.07	0.005	4.96	16.4
HM16JV193	C17MA21A0674	10,427.68	0.005	0.005	107.22	107.69	0.005	0.18	138.69	0.14	0.05	5.37	15.85
HM16JV193	C17MA21A0676	5,550.24	0.005	0.03	174.85	173.39	0.005	0.13	169.45	0.15	0.03	7.92	15.81
HM16JV193	C17MA21A0670	11,944.53	0.005	0.07	324.85	316.03	0.005	0.13	211.77	0.4	0.005	9.26	14.14
HM16JV193	C17MA21A0670	8,029.23	0	0.03	330.02	321.9	0.005	0.11	218.64	0.16	0.03	10.89	13.5
HM16JV193	C17MA21A0669	10,336.20	0.005	0.2	185.24	174.45	0.005	0.12	204.68	0.15	0.03	13.31	12.76
HM16JV193	C17MA21A0678	5,096.29	0.005	0.31	87.66	83.37	0.005	0.08	95.86	0.07	0.01	10.69	10.52
HM16JV193	C17MA21A0669	14,781.17	0.005	0.01	213.71	196.1	0.005	0.07	110.96	0.03	0.02	4.12	5.4
HM16JV193	C17MA21A0672	19,461.96	0.005	0.01	299.49	302.77	0.005	0.3	128.43	0.19	0.03	4.94	4.74
HM16JV203	E17JN15A326	525.6	0.01	0.04	50.54	50.67	0.005	0.07	8.02	1.97	0.07	6.75	47.41
HM16JV203	E17JN15A331	492.98	0.005	0.005	90.84	90.34	0.04	0.18	41.26	3.55	0.34	2.53	38
HM16JV203	E17JN15A329	381.96	0.01	0.02	357.22	341.73	0.005	0.04	33.25	6	0.38	5.1	23.56
HM16JV203	E17JN15A330	335.75	0.08	0.005	427.02	422.78	0.005	0.01	15.38	1.45	0.13	1.68	22.63
HM16JV203	E17JN15A328	291.61	0.005	0	99.3	100.24	0.005	0.05	17.82	2.4	0.14	5.57	21.9
HM16JV203	E17JN15A333	483.17	0	0.005	109.34	111.42	0.005	0.07	33.38	4.21	0.26	2.68	4.32
HM16JV203	E17JN15A332	499.73	0.005	0.005	26.89	22.97	0.005	0.03	8.98	1.41	0.07	2.45	1.23
HM16JV203	E17JN15A327	2,153.57	0.01	0.01	99.64	99.99	0.005	0.01	64.75	5.37	0.77	3.79	0.6
HM16JV208	E17JN15A491	10,948.15	0.005	0.005	22.12	21.79	0.005	0.67	40.59	2.17	0.26	1.01	19.72
HM16JV208	E17JN15A313	6,459.78	0.005	0.01	142.09	133.21	0.005	0.24	271.81	91.03	7.01	3.81	6.14
HM16JV208	E17JN15A316	5,297.45	0.005	0.05	186.54	163.72	0.005	0.32	214.94	117.7	16.86	2.62	5.99
HM16JV208	E17JN15A492	6,419.95	0.005	0.005	30.67	31.67	0.005	0.1	44.45	0.85	0.11	0.86	5.48
HM16JV208	E17JN15A490	8,309.00	0.005	0.005	56.34	58.15	0.005	0.44	17.27	1.38	0.21	1.11	4.35
HM16JV208	E17JN15A318	7,043.32	0.005	0.005	158.08	153.49	0.005	0.03	417.12	7.76	1.06	1.39	2.38
HM16JV208	E17JN15A317	18,514.43	0.005	0.05	115.65	108.2	0.005	0.3	343.32	43.48	6.15	0.82	2.05

* For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix IV: Hemlo district chlorite mineral chemistry collected by LA-ICP-MS

Sample	Analysis	Ag107	Ag109	Al27	As75	Au197	B11	Ba137	Bi209	Ca43	Ce140	Co59	Cr53	Cu65	Eu153	Fe57	Gd157	Hf178	K39	La139	Li7	Lu175	Mg24
HM16JV002	E17JN15A405	<0.19	<0.16	88,177.55	<0.93	<0.02	184.44	5.04	<0.06	3,877.98	0.05	0.79	4.17	1.2	0.1	13,778.72	0.12	0.27	681.94	0.05	499.51	<0.01	196,919.50
HM16JV002	E17JN15A406	<0.11	<0.11	97,480.98	1.36	<0.01	253.85	5.6	<0.04	3,234.19	0.06	0.84	2.56	3.78	0.15	14,327.93	0.59	0.24	803.95	0.08	605.86	0.01	190,144.32
HM16JV002	E17JN15A408	<0.08	<0.10	103,078.00	<0.47	<0.01	22.02	0.15	<0.04	433.93	0.03	84.82	12.19	0.59	<0.01	130,128.55	<0.03	<0.02	42.33	0.01	277.42	<0.00	125,897.00
HM16JV002	E17JN15A409	<0.03	<0.04	108,195.04	<0.23	<0.00	3.64	0.41	<0.02	229.76	<0.00	95.36	17.96	0.66	<0.00	127,201.48	<0.02	<0.01	22.9	<0.00	226.65	<0.00	138,121.08
HM16JV002	E17JN15A410	<0.03	<0.04	108,058.55	<0.23	<0.01	2.98	0.44	<0.02	235.32	0	95.29	20.44	0.79	0.01	127,532.22	<0.01	<0.01	22.26	<0.00	231.36	<0.00	138,194.17
HM16JV002	E17JN15A411	<0.03	<0.03	108,709.60	<0.23	<0.01	2.08	0.37	<0.02	983.8	0.03	101.92	5.28	0.59	<0.00	124,452.30	<0.01	0.02	19.73	<0.00	193.29	0	138,977.86
HM16JV002	E17JN15A412	<0.04	<0.03	107,760.35	<0.22	<0.01	2.74	0.68	<0.02	651.05	<0.00	90.36	12.09	0.65	<0.00	127,758.20	<0.01	0.01	24.18	<0.00	246.83	0	136,825.90
HM16JV002	E17JN15A413	<0.10	<0.09	81,139.03	1.01	<0.02	38.87	3.6	<0.04	3,511.73	0.12	0.76	10.52	1.27	0.12	14,683.94	0.28	0.4	489.32	<0.01	441.26	0.01	201,928.74
HM16JV002	E17JN15A414	<0.04	<0.04	113,459.48	<0.27	<0.01	2.82	<0.02	<0.02	294.27	<0.00	103.99	24.1	0.98	<0.00	133,640.14	<0.02	<0.01	28.39	<0.00	191.28	0	136,483.93
HM16JV004	E17JN14A668	<0.05	<0.05	88,939.60	<0.26	<0.01	14.46	11.91	<0.02	1,574.77	17.77	105.54	269.29	15.24	0.18	187,975.17	0.53	0.09	42.23	22.66	195.42	0.01	106,915.11
HM16JV004	E17JN14A669	<0.06	<0.07	91,729.81	0.46	<0.01	10.84	16.33	<0.03	825.98	23.6	107.4	203.74	13.54	0.22	192,129.33	0.62	0.07	18.2	29.07	192.86	0.01	111,419.53
HM16JV004	E17JN14A670	<0.05	<0.05	88,522.42	0.46	<0.01	10.2	11.03	<0.02	610.49	19.52	107.15	260.92	10.81	0.16	190,058.07	0.46	0.03	50.78	24.91	185.48	0.01	108,451.65
HM16JV004	E17JN14A671	<0.06	<0.06	90,075.78	0.34	<0.01	42.96	29.29	<0.02	1,330.25	44.06	104.18	372.71	18.07	0.42	192,734.57	1.02	0.13	63.08	52.98	174.62	0.01	107,836.33
HM16JV004	E17JN14A672	<0.06	<0.06	89,962.41	<0.35	<0.01	14.56	19.65	<0.02	1,125.96	35.86	105.5	240.64	13.19	0.27	192,276.12	0.74	0.12	74.3	41.89	178.99	0.01	110,073.92
HM16JV004	E17JN14A673	<0.05	<0.06	87,606.17	<0.30	<0.01	17.72	16.12	<0.02	1,183.67	26.46	107.13	328.63	14.91	0.2	185,400.43	0.63	0.11	32.56	36.2	177.97	0.01	108,125.61
HM16JV004	E17JN14A674	<0.08	<0.11	84,692.26	<0.52	<0.02	11.67	20.49	<0.04	905.64	27.28	108.18	98.6	11.45	0.22	186,414.65	0.35	<0.01	50.68	37.14	195.73	0.01	103,194.22
HM16JV004	E17JN14A675	<0.04	<0.05	90,472.86	<0.25	<0.01	7.87	11.43	0.02	538.64	13.81	106.11	139.95	7.57	0.13	188,291.82	0.3	0.01	18.99	20.78	190.41	0.01	108,684.94
HM16JV004	E17JN14A676	<0.05	<0.05	88,659.98	<0.27	<0.01	15.19	17.08	<0.02	828.98	27.45	106.47	226.28	25.32	0.25	189,219.27	0.71	0.09	35.45	50.12	193.92	0.01	109,875.23
HM16JV004	E17JN14A678	<0.05	<0.05	88,544.80	<0.24	<0.01	23.13	32.3	<0.02	1,169.65	3.39	110.22	349.18	23.82	0.12	183,238.52	0.28	0.13	44.58	17.13	175.57	0	108,546.60
HM16JV004	E17JN14A679	<0.05	<0.05	91,119.35	<0.26	<0.01	13.61	25.59	<0.02	552.92	2.05	107.51	335.34	16.58	0.06	190,225.03	0.11	0.02	24.91	9.46	191.67	0	106,911.35
HM16JV004	E17JN14A680	<0.06	<0.06	91,272.56	<0.34	<0.01	10.11	24.29	<0.02	568.04	2.58	109.62	311.45	14.73	0.06	190,408.24	0.14	<0.01	13.31	11.07	200.13	0	111,413.32
HM16JV004	E17JN14A681	<0.05	<0.05	89,948.81	<0.25	<0.01	9.55	23.78	<0.02	545.22	2.2	108.68	283.26	16.34	0.05	189,810.45	0.12	0.02	22.73	10.8	182.58	0	107,775.01
HM16JV004	E17JN14A682	<0.06	<0.07	90,514.70	0.33	<0.01	48.67	69.69	<0.02	2,826.43	14.11	105.4	255.29	33.79	0.17	186,736.77	0.47	0.27	118.24	87.39	183.39	0	109,888.42
HM16JV004	E17JN14A683	<0.11	<0.10	93,285.71	0.64	<0.02	26.27	35.86	<0.05	1,461.83	5.29	104.56	89.72	24.43	0.12	188,879.26	0.11	0.15	37.75	25.15	185.2	0	112,646.78
HM16JV007	E17JN14A580	<0.16	<0.15	92,820.08	<0.77	<0.03	9.79	13.76	<0.08	1,436.98	0.41	68.93	4,802.01	47.04	0.23	162,166.63	0.53	<0.02	293.6	1.59	103.09	0.01	130,171.67
HM16JV008	C17MA21A0362	0.04	<0.04	100,037.23	<0.13	<0.01	31.38	1.49	<0.01	357.85	3.58	57.32	219.43	1.35	0.17	145,503.97	0.62	0.01	24.58	6.71	460.49	<0.00	133,674.40
HM16JV008	C17MA21A0202	<0.06	<0.06	112,899.08	<0.20	<0.01	6.96	0.97	<0.01	461.4	1.34	78.98	9.18	1.68	0.03	156,458.13	0.21	<0.01	68.27	1.06	203.11	<0.00	128,183.82
HM16JV009	E17JN15A297	<0.08	<0.08	100,820.73	<0.48	<0.02	2.67	1.26	<0.03	<190.81	0.07	19.28	49.47	12.07	<0.01	185,892.80	0.02	<0.02	86.75	0.05	163.14	<0.00	112,366.74
HM16JV009	E17JN15A299	<0.16	<0.16	98,449.99	<0.87	0.05	5.25	1.25	<0.04	<429.77	0.79	18.8	1,225.50	74.54	0.05	172,859.49	0.21	<0.02	91.45	0.36	162.24	0.01	120,216.74
HM16JV009	E17JN15A299	<0.12	<0.12	91,037.74	<0.62	<0.02	6.71	1.4	<0.03	<237.00	0.28	19.7	1,317.83	25.67	0.01	178,383.47	<0.03	<0.02	78.67	0.12	105.76	<0.01	106,265.32
HM16JV009	E17JN15A299	<0.07	<0.07	90,718.17	<0.36	<0.01	6.71	1.6	<0.02	236.21	0.4	17.4	1,977.52	40.75	0.01	178,398.45	0.09	<0.01	161.18	0.18	137.87	0.01	111,262.80
HM16JV009	E17JN15A300	<0.04	<0.04	92,878.56	<0.24	<0.01	4.46	0.73	<0.01	218.81	0.49	20.15	1,817.96	32.66	0.01	189,291.45	0.04	<0.01	82.96	0.22	117.38	0	107,878.45
HM16JV009	E17JN15A301	<0.10	<0.08	98,884.40	<0.49	<0.01	7.18	0.11	<0.03	217.27	0.51	20.11	1,446.43	26.67	0.02	188,441.69	0.03	0.04	39.65	0.3	114.42	0.01	111,800.96
HM16JV009	E17JN15A302	<0.04	<0.04	93,684.12	<0.20	<0.01	2.98	0.57	<0.01	275.87	0.3	17.8	1,992.36	60.16	0.01	183,564.82	0.03	<0.01	100.78	0.2	103.1	<0.00	114,615.84
HM16JV009	E17JN15A303	<0.06	<0.06	94,346.31	<0.34	<0.01	3.52	0.26	<0.02	<116.75	0.18	19.6	680.75	5.15	0.01	189,324.55	0.02	<0.01	28.26	0.04	105.13	<0.00	111,278.51
HM16JV009	E17JN15A304	<0.06	<0.05	96,499.96	<0.36	<0.01	4.08	0.31	<0.02	196.37	0.26	17.06	1,741.38	43.61	0.01	187,854.90	0.05	<0.01	40.4	0.08	103.35	0	113,503.51
HM16JV009	E17JN15A306	<0.04	<0.04	94,016.84	<0.22	<0.01	2.99	1.21	<0.02	201.65	0.31	17.79	2,264.50	97.26	0.01	184,787.54	0.05	<0.01	129.94	0.08	102.58	<0.00	113,795.92
HM16JV009	E17JN15A308	<0.14	<0.17	98,165.72	<0.76	<0.04	4.64	1.35	<0.06	<284.75	0.17	14.13	1,442.45	19.72	0.03	186,460.02	<0.05	<0.04	55.44	0.08	89.85	<0.01	119,733.04
HM16JV013	C17MA20A0033	<0.07	<0.08	102,677.17	<0.47	<0.01	11.19	8.93	<0.02	354.86	1.05	101.7	57.17	185.72	0.06	195,623.58	0.24	<0.01	19.98	0.57	111.67	<0.00	103,460.80
HM16JV013	C17MA20A0053	<0.07	<0.09	90,485.40	<0.44	<0.01	4.54	4.89	<0.02	290.22	0.21	46.68	46.14	27.39	0.01	197,681.00	0.02	0.01	62.9	0.14	106.91	0.01	90,476.81
HM16JV015	C17MA20A0063	<0.06	<0.05	87,972.51	2.58	<0.01	14.22	13.83	<0.02	357.3	1.37	58.56	229.16	19.76	0.1	181,494.28	0.37	0.04	72.09	1.11	102.36	0.01	107,058.81
HM16JV015	C17MA20A0065	<0.05	<0.05	88,268.01	2.12	<0.01	8.59	14.29	<0.01	293.17	0.13	57.94	165.5	0.55	0.07	182,849.62	0.34	0.08	65.57	0.71	105.78	0	109,407.33
HM16JV015	C17MA20A0066	<0.06	<0.06	84,904.07	3.34	<0.01	13.03	12.97	<0.02	415.34	0.19	59.06	230.78	1.14	0.1	180,711.56	0.34	<0.00	51.22	0.84	87.47	0.01	107,309.88
HM16JV015	C17MA20A0067	<0.05	<0.04	90,591.27	4.2	<0.01	17.36	16.71	0.02	1,190.29	2.49	53.95	257.22	0.7	0.18	176,590.19	0.53	0.03	68.04	1.53	118.39	0.02	109,230.39
HM16JV015	C17MA20A0069	<0.06	<0.06	88,873.15	2.41	<0.01	7.81	10.81	<0.02	452.33	0.28	57.4	703.12	<0.25	0.07	179,330.71	0.21	0.18	72.81	0.46	130.96	0	107,702.45
HM16JV015	C17MA20A0091	<0.06	<0.06	91,234.87	1.36	<0.01	9.68	22.31	<0.02	6,500.18	0.68	53.38	300.03	0.39	0.05	175,499.89	0.31	0.21	128.02	0.77	115.15	0.09	115,690.94
HM16JV015	C17MA20A0092	<0.05	<0.05	97,889.22	1.61	<0.01	2.57	9.7	<0.01	336.78	0.15	57.7	320.76	<0.21	0.02	184,045.12	0.01	0.05	61.55	0.17	136.9	0	114,154.46
HM16JV015	C17MA20A0093	<0.04	<0.04	85,108.35	3	0.01	7.71	8.31	<0.01	2,361.10	0.17	57.48	230.81	0.18	0.02	177,136.14	0.09	0.13	94.93	0.25	106.62	0.05	110,135.51
HM16JV015	C17MA20A0094	<0.04	<0.04	98,253.71	6.38	<0.01	8.42	15.71	0.02	19,341.96	21.94	50.59	192.44	0.28	0.88	172,296.15	6.6	0.29	69.14	10.59	156.76	0.34	99,075.76
HM16JV015	C17MA20A0095	<0.04	<0.04	90,349.59	2.65	<0.01	3.74	11.49	<0.01	564.29	0.47	57.11	256.67	0.46	0.04	182,078.30	0.24	0.14	85.95	0.3	126.67	0	108,532.34
HM16JV015	C17MA20A0096	<0.06	<0.06	97,103.66	1.83	<0.01	4.9	16.53	<0.01	492.39	0.96	55.74	374.15	0.44	0.08	181,333.52	0.49	0.22	81.91	1.02	124.45	0.01	116,903.54
HM16JV015	C17MA20A0097	<0.05	<0.05	91,788.54	1.37	<0.01	4.63	11.89	<0.01	615.92	0.43	59	255.5	0.32	0.06	180,302.04	0.22	0.1	68.26	0.68	153.02	0	108,566.01
HM16JV015	C17MA20A0098	<0.05	<0.05	96,496.91	1.44	<0.01	4.41	9.92	<0.01	853.75	0.32	55.62	236.76	0.28	0.04	182,549.72	0.12	0.1	77.11	0.37	136.44	0	112,926.66

*For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.
**All elements in ppm

Appendix IV: Hemlo district chlorite mineral chemistry collected by LA-ICP-MS

Sample	Analysis	Ag107	Ag109	Al27	As75	Au197	B11	Ba137	Bi209	Ca43	Ce140	Co59	Cr53	Cu65	Eu153	Fe57	Gd157	Hf178	K39	La139	Li7	Lu175	Mg24
HM16JV019	E17JN14A427	<0.10	<0.12	105,319.63	<0.54	<0.02	9.83	18.73	0.04	876.9	0.52	44.78	103.55	17.48	0.06	197,528.47	0.35	<0.01	90.88	3.92	508.76	0.02	91,172.73
HM16JV019	E17JN14A428	<0.08	<0.09	112,151.56	0.5	<0.01	6.82	24.87	0.06	422.87	0.55	44.11	75.51	17	0.1	199,242.40	0.31	0.01	75.16	4.54	495.22	0.01	94,088.57
HM16JV020	E17JN14A456	<0.12	<0.12	102,053.75	<0.64	<0.02	14.48	16.68	<0.04	211.12	17.83	87.21	806.97	242.49	0.27	212,612.24	1.13	0.21	92.88	23.6	44.64	<0.00	96,282.80
HM16JV020	E17JN14A462	<0.08	<0.07	92,641.30	0.44	<0.01	50.27	11.39	<0.03	168.39	14.27	96.17	109.93	222.11	0.35	209,003.28	0.83	0.3	43.95	21.54	37.03	0.01	93,972.14
HM16JV020	E17JN14A463	<0.08	<0.06	95,240.45	<0.27	<0.01	12.92	9.15	<0.02	230.74	12.97	96.67	108.96	201.36	0.37	212,575.71	1.18	0.07	44.85	25.97	37.8	0.01	95,098.20
HM16JV020	E17JN14A465	<0.18	<0.17	98,257.62	2.08	<0.04	23.06	15.63	<0.06	281.29	429.26	96.99	35.81	248.71	0.61	214,518.25	2.05	0.3	358.33	26	45.55	0.01	95,257.80
HM16JV020	E17JN14A466	<0.06	<0.06	95,102.72	<0.25	<0.01	13.88	7.95	<0.02	270.2	14.85	97.57	34	178.93	0.4	211,800.31	0.97	<0.00	38.56	20.11	49.92	0.01	94,961.82
HM16JV023	E17JN14A648	<0.14	<0.14	100,426.54	<0.51	<0.01	9.67	4.44	<0.04	422.9	5.77	390.67	307.77	131.82	0.06	227,823.86	0.37	0.12	324.19	4.92	75.26	0.01	86,718.80
HM16JV023	E17JN14A650	<0.11	0.16	92,925.17	1.12	<0.02	9.89	7.01	<0.06	496.42	6.84	379.68	357.99	142.87	0.05	227,073.07	0.43	<0.01	184.07	7.27	41.25	<0.01	93,869.95
HM16JV023	E17JN14A651	<0.08	<0.10	92,095.82	<0.44	<0.01	20.23	6.67	<0.04	263.68	6.61	408.98	211.92	254.82	0.1	223,112.73	0.29	0.18	191.44	7.2	43.57	<0.00	81,219.82
HM16JV023	E17JN14A657	<0.17	<0.18	108,098.06	<1.00	<0.03	9.31	5.95	<0.08	356.14	7.23	344.88	79.29	124.3	0.19	215,271.18	0.48	<0.04	29.1	8.18	88.68	0.02	93,926.81
HM16JV032	C17MA21A0258	<0.05	<0.04	95,301.55	0.4	<0.01	30.59	17.82	<0.01	355.02	13.66	57.23	75.4	40.38	0.05	133,717.95	0.22	0.04	75.48	0.71	287.79	0.01	104,772.91
HM16JV032	C17MA21A0259	<0.04	<0.04	104,980.98	0.51	<0.01	3.52	3.46	0.01	249.75	0.21	60.06	23.42	8.8	0.01	148,733.54	0.06	<0.02	47.69	0.12	290.09	0.01	125,300.04
HM16JV032	C17MA21A0261	<0.09	<0.10	93,226.17	<0.40	0.08	14.57	9.51	<0.02	522.84	0.81	62.75	29.33	115.13	0.07	147,447.16	0.26	<0.01	192.26	0.35	341.73	0.01	117,923.56
HM16JV032	C17MA21A0263	<0.04	0.04	109,425.49	0.41	<0.01	3.27	1.74	<0.01	264.38	0.18	55.55	29.05	0.74	<0.00	151,284.08	0.04	<0.00	61.36	0.07	317.81	0.01	127,007.25
HM16JV032	C17MA21A0264	<0.04	<0.03	101,719.27	0.55	<0.01	6.41	8.2	<0.01	600.98	1.07	58.76	15.31	3.81	0.04	143,029.41	0.23	0.06	77.64	0.46	307.29	0.01	111,403.73
HM16JV032	C17MA21A0217	<0.07	<0.07	111,364.08	0.67	<0.02	12.59	54.21	<0.01	786.4	9.68	60.97	35.24	23.75	0.1	152,871.13	0.51	0.13	127.19	2.26	355.38	0.02	117,415.23
HM16JV032	C17MA21A0218	<0.04	<0.04	97,989.42	0.33	<0.01	5.21	7.61	0.01	395.13	0.23	57.77	35.46	16.2	0.03	142,859.49	0.05	0.04	77.46	0.26	289.57	0.02	110,759.86
HM16JV032	C17MA21A0219	<0.04	<0.04	112,285.55	0.99	<0.01	8.83	9.52	<0.01	576.56	1.04	69.28	41.59	15.82	0.09	161,053.54	0.3	0.06	106.54	0.64	319.37	0.02	121,814.13
HM16JV032	C17MA21A0213	<0.03	<0.03	106,884.90	0.36	<0.01	5.62	5.19	0.03	459.51	0.43	55.13	112.1	16.89	0.04	153,317.56	0.17	<0.00	38.83	0.29	331.23	0.03	120,588.32
HM16JV032	C17MA21A0214	<0.03	<0.03	106,299.19	1.48	<0.01	8.45	8.76	0.01	2,190.72	0.91	56.46	32.84	18.65	0.07	157,227.58	0.27	0.02	86.75	0.89	331.99	0.02	118,218.29
HM16JV032	C17MA21A0215	<0.04	<0.04	107,643.14	0.78	<0.01	6.04	2.71	0.01	354.73	0.43	57.36	191.01	25.45	0.06	156,870.49	0.18	0.01	47.46	0.31	356.11	0.01	116,661.44
HM16JV032	C17MA21A0216	<0.06	<0.06	104,709.55	0.21	<0.01	5.43	25.05	0.41	600.33	0.57	62.9	88.83	59.73	0.06	160,882.53	0.13	<0.00	104.05	0.93	267.9	<0.00	129,214.95
HM16JV032	C17MA21A0203	<0.04	<0.03	101,793.14	0.76	<0.01	9.24	4.4	0.01	490.8	0.61	50.73	47.69	67.67	0.03	143,440.33	0.11	0.05	74.6	0.28	295.23	0.02	110,190.77
HM16JV032	C17MA21A0204	<0.04	<0.04	107,173.31	0.34	0.01	5.72	3.84	<0.00	394.21	0.43	48.36	51.56	48.15	0.04	146,025.13	0.06	<0.00	79.89	0.13	279.42	0.02	121,982.41
HM16JV032	C17MA21A0208	<0.04	<0.04	106,635.06	0.6	<0.01	10.66	5.4	0.01	496.52	1.12	55.92	23.7	37.85	0.06	154,210.38	0.3	0.03	72.89	0.42	312.91	0.03	115,332.92
HM16JV032	C17MA21A0212	<0.03	<0.03	94,453.69	0.32	<0.01	5.88	15.03	<0.00	2,829.25	1.19	65.96	73.22	7.53	0.05	158,783.92	0.11	0.01	108.13	0.59	294.33	0	123,538.38
HM16JV036	E17JN15A427	<0.04	<0.04	95,135.11	<0.28	<0.00	4.71	1.34	<0.02	264.97	1.3	68.62	444.85	47.87	0.04	197,574.90	0.08	0.04	10.92	1.42	116.09	0	106,596.81
HM16JV036	E17JN15A430	<0.07	<0.07	99,346.13	<0.37	<0.01	11.58	5.08	<0.03	387.5	3.61	69.79	513.23	84.08	0.08	195,299.08	0.08	0.05	50.46	2.48	119.63	<0.00	108,852.30
HM16JV036	E17JN15A431	<0.03	<0.04	93,096.66	<0.18	<0.01	18.24	2.41	<0.01	256.24	1.79	70.63	326.82	63.83	0.03	193,575.12	0.05	0.05	35.47	2.04	118.03	0	107,356.60
HM16JV036	E17JN15A433	<0.03	<0.03	91,000.22	<0.23	<0.01	7.38	3.85	<0.01	286.47	2.86	69.69	471.7	84.84	0.03	196,147.49	0.09	0.11	29.88	2.4	101.93	0	104,897.92
HM16JV036	E17JN15A434	<0.03	<0.04	91,800.37	<0.21	<0.01	6.77	4.54	<0.01	360.53	4.04	67.48	576.83	101.16	0.05	196,382.66	0.12	0.2	30.38	2.74	100.63	<0.00	105,327.34
HM16JV037	E17JN14A623	<0.06	<0.06	89,697.64	<0.31	<0.01	2.05	9.95	<0.02	411.77	0.12	79.83	66.41	1.44	0.01	124,744.99	0.05	0.14	97.23	0.2	100.55	<0.00	75,342.60
HM16JV037	E17JN14A624	<0.12	<0.12	92,530.94	0.69	<0.02	1.6	11.64	<0.05	4,256.07	2.63	126.73	37.34	3.37	0.05	188,610.42	0.16	0.08	43.19	1.7	169.18	<0.00	111,501.54
HM16JV037	E17JN14A625	<0.09	<0.08	89,698.27	<0.44	<0.01	4.61	16.35	0.05	23,484.00	10.65	146.77	39.87	3.41	0.31	165,803.10	0.76	0.04	50.79	6.91	231.52	0.03	94,913.05
HM16JV037	E17JN14A625	<0.10	<0.09	93,224.00	<0.49	<0.01	2.33	12.18	<0.04	859.91	0.18	158.99	71.98	2.04	<0.00	181,680.90	0.09	0.02	28.36	0.23	249.26	<0.00	119,671.55
HM16JV037	E17JN14A626	<0.16	<0.14	96,590.06	<0.68	0.02	<1.07	10.87	<0.06	686.36	1.8	116.45	25.35	3.18	0.09	198,131.49	0.1	0.1	67.91	1.06	150.6	<0.00	108,393.92
HM16JV038	E17JN14A684	<0.05	<0.05	90,652.36	<0.27	<0.01	48.83	7.51	<0.02	326.48	0.05	63.24	164.93	9	0.04	167,900.79	0.19	<0.01	64.86	0.74	137.81	0	119,986.50
HM16JV038	E17JN14A685	<0.11	<0.10	93,594.58	<0.57	<0.02	22.86	8.6	<0.04	292.78	0.07	62.03	223.8	6.92	0.02	167,119.38	0.14	<0.02	54.19	0.96	116.12	0.01	128,852.62
HM16JV038	E17JN14A686	<0.09	<0.08	93,671.09	<0.46	<0.01	22.25	6.95	<0.03	259.43	0.05	65.67	174.4	5.43	0.05	170,618.34	0.15	<0.01	29.64	0.72	117.23	<0.00	125,742.23
HM16JV038	E17JN14A687	<0.06	<0.06	90,559.68	<0.38	<0.01	18.05	8.13	<0.03	290.04	0.09	57.79	181.14	6.15	0.06	170,055.98	0.19	<0.01	30.46	1.08	127.03	0.01	118,171.22
HM16JV038	E17JN14A688	<0.05	<0.06	95,540.93	<0.37	<0.01	10.21	4.41	<0.02	246.73	0.06	54.35	165.96	2.17	0.06	174,749.85	0.15	0.03	8.99	0.87	168.09	0	118,382.27
HM16JV038	E17JN14A689	<0.05	<0.05	93,563.15	<0.32	<0.01	7.18	9.1	<0.02	331.6	0.06	59.52	126.71	2.03	0.04	170,976.35	0.19	<0.01	67.51	1.04	160.84	0	120,631.27
HM16JV038	E17JN14A690	<0.08	<0.08	98,396.20	<0.49	<0.01	9.52	6.4	<0.03	664.09	0.07	50.41	184.55	1.97	0.04	173,681.82	0.09	0.02	16.21	0.95	158.98	<0.00	118,758.00
HM16JV038	E17JN14A690	<0.09	<0.09	92,160.80	<0.54	<0.02	10.23	5	<0.04	2,381.78	1.22	51.03	193.93	2.32	0.08	171,293.47	0.15	0.04	18.61	1	147.79	<0.00	111,457.34
HM16JV038	E17JN14A692	<0.09	<0.09	66,986.74	<0.46	<0.02	93.09	64.64	0.05	3,125.18	1.91	88.35	58.99	16.26	0.67	131,116.10	2.17	0.06	121.66	25.15	202.23	0.04	104,956.22
HM16JV038	E17JN14A693	<0.06	<0.05	91,294.37	<0.29	<0.01	6.35	15.1	<0.02	412.38	0.15	56.11	248.39	3.36	0.05	166,080.69	0.14	<0.01	29.58	1.26	148.84	<0.00	119,286.79
HM16JV038	E17JN14A694	<0.05	<0.05	91,515.92	<0.30	<0.01	6.55	10.68	<0.02	323.1	0.06	60.95	256.01	2.53	0.03	171,341.78	0.15	<0.01	26.36	1.03	167.15	0	116,512.45
HM16JV038	E17JN14A695	<0.05	<0.06	93,236.63	<0.26	<0.01	5.2	10.3	<0.03	357.32	0.09	58.69	213.45	2.41	0.04	172,139.50	0.12	<0.01	15.69	1.22	156.35	<0.00	117,681.46
HM16JV038	E17JN14A696	<0.07	<0.07	95,369.14	<0.29	<0.01	5.21	12.01	<0.03	303.84	0.1	50.38	245.6	2.08	0.05	169,201.89	0.2	<0.01	55.16	1.46	146.21	<0.00	124,316.30
HM16JV039	E17JN14A697	<0.08	<0.09	96,539.09	<0.46	<0.01	9.22	3.37	<0.03	223.69	1.26	26.51	10.11	28.03	0.11	200,036.27	0.02	0.05	92.63	1.25	139.81	0.01	106,949.00
HM16JV039	E17JN14A698	<0.06	<0.06	92,309.45	<0.30	<0.01	8.75	2.29	<0.02	376.9	0.91	24.13	12.37	26.73	0.04	201,060.65	0.06	0.05	56.06	1	145.61	0.01	105,862.47
HM16JV039	E17JN14A699	<0.07	<0.06	93,283.82	<0.33	<0.01	10.96	1.52	<0.03	426.15	5.63	33.79	10.17	16.57	0.01	203,706.33	0.1	0.01	51.85	0.74	152.74	<0.00	105,657.93

*For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix IV: Hemlo district chlorite mineral chemistry
collected by LA-ICP-MS

Sample	Analysis	Ag107	Ag109	Al27	As75	Au197	B11	Ba137	Bi209	Ca43	Ce140	Co59	Cr53	Cu65	Eu153	Fe57	Gd157	Hf178	K39	La139	Li7	Lu175	Mg24
HM16JV039	E17JN14A700	<0.18	<0.23	98,457.33	<0.86	<0.04	3.67	4.88	<0.10	505.26	1.5	71.72	1.57	34.28	0.12	205,669.58	0.97	<0.03	39.57	2.47	138.22	<0.01	103,377.11
HM16JV039	E17JN14A701	<0.11	<0.11	90,943.39	<0.57	<0.02	16.84	1.21	<0.06	275	0.27	37.08	10.73	24.63	0.06	203,166.80	0.02	0.03	85.02	0.42	133.03	<0.00	94,898.31
HM16JV039	E17JN14A703	<0.05	<0.06	91,161.08	<0.36	<0.01	17.8	7.25	<0.02	566.37	1.96	41.95	13.22	67.02	0.07	206,137.91	0.33	0.14	224.85	2.63	152.24	0.01	99,684.00
HM16JV039	E17JN14A704	<0.07	<0.10	85,439.58	1.04	<0.01	18.59	15.53	0.14	9,978.09	3.23	71.95	11.83	71.92	0.21	205,654.66	0.44	0.3	733.73	4.38	250.49	0.02	97,045.53
HM16JV039	E17JN14A705	<0.04	<0.06	89,577.55	<0.26	<0.01	19.02	8.09	<0.02	472.8	0.69	52.91	5.12	38.22	0.07	202,384.35	0.21	0.1	524.67	1.18	155.45	0	102,354.33
HM16JV045	C17MA21A0220	<0.03	<0.03	73,979.25	0.16	<0.01	7.27	2.69	0.04	2,950.19	2.4	36.51	74.23	0.94	0.22	75,044.06	0.77	0.26	98.5	0.75	191.65	0.01	174,437.18
HM16JV045	C17MA21A0221	<0.03	<0.03	63,471.67	0.23	<0.01	12.17	4.3	0.07	2,428.81	2.77	37.17	32.04	0.22	0.3	71,275.08	0.87	0.26	62.01	0.85	287.84	0.02	171,039.72
HM16JV045	C17MA21A0222	<0.05	<0.05	74,279.06	0.57	<0.01	10.32	7	0.04	1,371.29	1.85	36.17	100.81	0.29	0.13	81,830.37	0.49	0.18	385.11	0.47	289.06	0.01	163,446.69
HM16JV045	C17MA21A0223	<0.05	<0.05	82,679.22	0.22	<0.01	8.25	3.63	0.02	883.08	1.43	27.04	144.77	<0.22	0.15	73,495.91	0.46	0.02	89.09	0.45	285.26	0	186,354.26
HM16JV045	C17MA21A0225	<0.04	<0.04	78,763.93	<0.15	<0.01	11.89	4.3	0.02	3,415.57	2.3	33.96	16.19	1.96	0.23	72,077.54	0.63	0.19	79.33	0.8	162.28	0.02	171,351.92
HM16JV045	C17MA21A0226	<0.04	<0.03	70,936.05	0.17	<0.01	8.05	2.78	0.17	3,037.49	1.57	37.61	6.84	3.25	0.16	75,888.64	0.39	0.13	73.68	0.55	163.52	0.01	165,775.29
HM16JV045	C17MA21A0229	<0.03	<0.03	50,730.27	<0.12	<0.01	2.78	0.82	<0.00	128.1	0.25	45.54	<0.56	<0.16	0.01	64,105.90	0.04	0.01	378.54	0.03	84.99	0	164,176.02
HM16JV045	C17MA21A0230	<0.03	<0.03	52,968.65	<0.12	<0.01	3.18	0.35	<0.00	164.05	0.32	42.22	<0.54	0.29	0.04	62,830.91	0.03	0.01	55.32	0.04	76.96	0.01	171,910.35
HM16JV045	C17MA21A0233	<0.03	<0.03	37,435.73	0.21	<0.01	4.49	1.82	0.05	122.78	0.39	54.21	1.34	0.23	0.02	55,942.75	0.06	0.03	671.08	0.05	136.67	0.01	164,390.52
HM16JV045	C17MA21A0234	<0.03	<0.03	72,000.68	0.4	<0.01	11.88	0.76	0.2	387.17	0.86	97.08	48.57	0.42	0.06	77,105.26	0.19	0.05	155.05	0.17	122.34	0.01	164,428.90
HM16JV045	C17MA21A0236	<0.04	<0.03	53,145.73	0.36	<0.01	6.56	1.92	<0.01	330.06	0.72	53.49	3.22	0.46	0.05	59,780.10	0.15	0.06	293.41	0.11	112.02	0.01	173,940.81
HM16JV045	C17MA21A0237	<0.03	<0.04	80,905.11	0.31	<0.01	9.04	1.92	<0.01	229.41	0.65	56.11	7.34	0.4	0.05	80,159.28	0.16	0.14	427.51	0.16	147.33	0.01	167,387.49
HM16JV045	C17MA21A0238	<0.04	<0.04	89,529.66	0.69	<0.01	12.96	1.85	<0.01	334.5	0.77	56.39	2.57	0.34	0.05	85,051.83	0.21	0.05	240.52	0.14	143.9	0.01	166,811.77
HM16JV045	C17MA21A0240	<0.06	<0.07	52,765.04	<0.24	<0.02	60.64	2.83	0.01	731.25	2.49	40.11	5.97	3.09	0.13	67,186.02	0.41	0.31	153.89	0.95	226.39	0.01	164,145.76
HM16JV045	C17MA21A0243	<0.03	<0.03	78,850.14	0.19	<0.01	5.76	8.66	<0.01	1,005.99	1.16	37.13	14.46	0.35	0.14	80,534.71	0.28	0.14	603.03	0.42	389.22	0.01	174,082.91
HM16JV045	C17MA21A0244	<0.03	<0.03	79,010.43	<0.09	<0.01	6.86	5.74	<0.01	1,256.37	1.29	39.32	31.42	0.3	0.15	77,678.33	0.44	0.12	412.82	0.36	429.89	0.02	175,426.92
HM16JV045	C17MA21A0245	<0.03	<0.03	80,122.09	0.16	<0.01	5.21	7.68	0.01	1,545.86	1.22	37.08	8.99	0.31	0.14	79,982.23	0.51	0.05	550.41	0.31	372.89	0.01	176,611.36
HM16JV045	C17MA21A0246	<0.04	<0.04	107,616.18	<0.09	<0.01	1.47	0.64	<0.01	177.65	0.22	54.12	9.96	<0.21	0.02	86,634.09	0.06	<0.00	25.22	0.09	124.24	<0.00	170,352.34
HM16JV045	C17MA21A0247	<0.03	<0.04	102,659.86	<0.10	<0.01	2.23	1.31	<0.00	151.93	0.14	54.59	17.07	0.3	0.01	86,764.25	0.09	0.01	108.17	0.05	162.29	0.01	169,861.33
HM16JV045	C17MA21A0248	<0.03	<0.04	81,622.80	<0.13	<0.00	4.8	5.45	<0.00	1,176.35	1.09	35.81	17.71	0.26	0.13	78,340.88	0.32	0.09	249.57	0.31	361.39	0.02	179,367.15
HM16JV045	C17MA21A0255	<0.04	<0.04	80,603.15	0.15	<0.01	5.2	5.92	0.01	958.47	1.6	38.46	10.54	0.37	0.18	80,851.11	0.54	0.08	365.76	0.44	397.1	0.03	175,667.94
HM16JV053	E17JN15A378	<0.09	0.1	86,727.08	<0.52	<0.01	54.88	2.6	<0.03	782.66	12.37	46.4	80.55	8.37	0.07	179,665.49	0.21	0.38	43.55	6.96	188.64	0.01	104,904.78
HM16JV053	E17JN15A380	<0.06	<0.08	92,670.74	<0.47	<0.01	35.82	3.34	<0.03	745.76	11.86	47.95	118.69	7.19	0.07	189,668.06	0.44	0.26	32.29	6.23	128.35	0	114,799.81
HM16JV053	E17JN15A382	<0.06	<0.05	89,055.67	<0.35	<0.01	76.5	3.36	0.07	307.84	10.07	43.39	373.64	12.9	0.06	178,796.37	0.25	0.17	85.22	5.64	192.4	<0.00	112,342.22
HM16JV053	E17JN15A383	<0.03	<0.04	87,966.54	<0.21	<0.01	135.13	5.27	<0.01	1,434.43	16.41	40.52	107.83	13.73	0.12	155,194.16	0.46	0.27	120.54	9.47	441.14	0.01	122,683.97
HM16JV053	E17JN15A387	<0.05	<0.05	93,153.11	<0.28	<0.01	70.55	4.93	<0.02	1,022.08	18.7	28.77	88.83	11.91	0.17	176,910.09	0.42	0.31	126.96	10.09	145.37	0.01	118,506.75
HM16JV064	E17JN15A353	<0.17	<0.20	102,543.78	<1.09	<0.03	18.99	23.93	<0.05	1,282.81	3.74	81.01	51.95	8.42	0.15	218,706.41	0.23	<0.02	444.74	1.87	157.04	0.03	92,550.48
HM16JV064	E17JN15A354	<0.04	<0.04	100,934.89	<0.31	0.01	10.53	9.86	<0.02	500.01	1.26	81.97	23.13	3.91	0.07	206,133.48	0.13	<0.01	83.41	0.62	345.7	<0.00	96,883.51
HM16JV064	E17JN15A355	<0.10	<0.10	104,421.14	<0.55	<0.01	11.14	14.39	<0.04	1,175.32	1.45	81.03	52.67	4.84	0.04	195,073.17	0.11	<0.02	150.01	1.02	272.38	0.02	101,908.07
HM16JV064	E17JN15A358	<0.08	<0.10	99,254.29	0.83	<0.02	14.21	11.3	<0.04	324.53	0.86	83.68	172.01	4.58	0.07	203,534.25	<0.06	<0.01	287.34	0.28	338.88	<0.01	100,237.83
HM16JV064	E17JN15A359	<0.15	<0.17	103,349.58	<0.99	<0.02	15.27	19.52	<0.06	626.39	1.6	79.04	43.17	13.66	0.09	202,354.53	0.24	<0.03	85.86	1.03	203.47	<0.01	104,032.41
HM16JV068	E17JN15A465	<0.04	<0.05	88,713.69	<0.27	<0.01	11.53	51.16	<0.01	482.52	1.26	115.16	62.53	46.91	0.13	192,620.89	0.31	<0.01	89.1	1.22	73.11	0.01	108,399.47
HM16JV068	E17JN15A469	<0.11	<0.12	86,236.10	<0.70	0.03	32.43	49.19	<0.04	1,292.53	1.59	99.47	42.06	34.11	0.07	168,306.02	0.28	0.04	154.68	1.11	105.97	0.03	116,171.14
HM16JV073	E17JN14A553	<0.08	<0.11	114,204.47	<0.47	<0.02	13.76	3.16	<0.04	215.1	0.05	108.78	51.83	6.19	0.03	169,865.83	0.21	<0.02	144.11	0.38	156.08	<0.00	116,752.74
HM16JV073	E17JN14A554	<0.18	<0.22	118,089.81	<0.89	<0.04	14.33	4.09	<0.09	370.76	0.22	122.72	176.3	18.44	0.26	156,393.09	0.51	0.09	43.38	1.43	119.36	0.01	119,966.65
HM16JV073	E17JN14A555	<0.13	<0.16	79,924.83	1.3	<0.02	15.74	12.26	<0.06	2,433.33	0.53	89.93	97.12	26.69	0.22	113,663.42	0.48	0.06	98.96	1.47	100.73	<0.00	90,422.55
HM16JV073	E17JN14A557	<0.20	<0.18	105,966.84	<0.94	<0.02	12.08	5.33	<0.08	462.46	0.06	126.1	111.26	17.4	0.13	149,042.07	0.55	<0.03	26.25	1.23	120.44	<0.01	122,480.61
HM16JV073	E17JN14A557	<0.12	<0.11	109,811.95	<0.57	<0.01	6.56	4.8	<0.05	304.42	0.25	119.17	113.63	16.66	0.1	152,562.27	0.64	<0.02	22.13	1.15	113.48	0.01	129,051.81
HM16JV073	E17JN14A558	<0.13	<0.12	107,467.85	<0.69	0.02	31.63	5.92	<0.06	11,207.26	7.85	114.35	115.37	19.9	0.45	150,036.92	1.12	0.14	70.21	4.89	135.7	0.06	106,501.95
HM16JV073	E17JN14A558	<0.08	<0.08	112,176.28	<0.44	<0.01	20.54	5.75	<0.04	13,409.43	7.31	110.12	131.91	18.45	0.41	150,521.71	1.19	0.06	115.12	4.42	141.45	0.02	108,348.32
HM16JV073	E17JN14A559	<0.10	<0.10	109,708.27	<0.47	<0.02	45.7	4.86	<0.04	258.57	0.07	126.44	55.02	22.96	0.14	154,788.02	0.62	<0.02	116.43	1.07	133.55	0.01	116,943.36
HM16JV073	E17JN14A560	<0.09	<0.08	92,528.14	<0.37	<0.01	12.49	3.72	<0.03	395.22	0.07	106.53	134.46	15.93	0.09	130,869.65	0.42	0.01	25.58	0.71	125.6	0.01	106,321.73
HM16JV073	E17JN14A561	<0.09	<0.09	105,952.13	<0.38	<0.01	43.28	7.59	<0.03	308.26	0.07	124.09	102.67	25.81	0.17	145,226.83	0.77	0.05	95.15	1.26	132.2	<0.00	119,439.97
HM16JV073	E17JN14A562	<0.08	<0.08	106,463.43	<0.33	<0.01	11.22	5.54	<0.03	354.13	0.04	123.26	123.33	14.35	0.14	147,637.86	0.54	<0.02	14.79	1.33	132.07	0.01	120,600.77
HM16JV073	E17JN14A563	<0.28	<0.40	115,050.65	<1.25	<0.06	6.84	<0.24	<0.14	<455.02	0.11	122.17	114.95	6.25	<0.02	150,813.30	0.97	<0.06	36.65	0.34	95.4	<0.01	125,278.90
HM16JV073	E17JN14A564	<0.09	<0.08	110,307.24	<0.42	<0.01	17.22	3.97	<0.04	338.39	0.05	128.13	111.84	14.7	0.15	151,634.11	0.67	<0.01	18.01	1.19	118.14	<0.00	125,356.11
HM16JV073	E17JN14A565	<0.32	<0.25	120,467.55	<1.24	<0.05	3.62	6.18	<0.13	662.9	<0.01	106.41	41.08	11.18	<0.03	162,643.88	0.19	0.39	250.93	0.77	152.84	<0.02	118,505.33
HM16JV073	E17JN14A567	<0.13	<0.11	108,296.49	<0.45	<0.02	11.37	2.47	<0.04	275.23	0.03	119.3	238.95	10.33	0.11	155,696.82	0.3	0.05	11.46	0.78	135.72	0	128,217.49

*For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.
**All elements in ppm

Appendix IV: Hemlo district chlorite mineral chemistry collected by LA-ICP-MS

Sample	Analysis	Ag107	Ag109	Al27	As75	Au197	B11	Ba137	Bi209	Ca43	Ce140	Co59	Cr53	Cu65	Eu153	Fe57	Gd157	Hf178	K39	La139	Li7	Lu175	Mg24
HM16JV073	E17JN14A568	<0.21	<0.16	113,689.13	<0.66	<0.02	17.07	3.93	<0.08	11,855.05	0.53	112.6	228.19	17.48	0.23	153,578.26	1.27	0.06	65.86	2.53	122.75	0.02	119,174.80
HM16JV077	E17JN15A366	<0.06	<0.07	88,075.14	<0.32	<0.01	63.54	21	<0.02	1,013.84	6.47	90.59	102.42	34.82	0.48	162,407.15	1.31	0.06	55.34	5.69	324.81	0.01	117,572.74
HM16JV077	E17JN15A366	<0.04	<0.05	93,186.19	0.26	<0.01	28.96	15.38	<0.02	1,445.42	5.67	91.82	95.56	23.01	0.3	167,320.53	1.18	0.07	44.43	4.18	327.09	0	120,358.67
HM16JV077	E17JN15A367	<0.11	<0.10	82,140.40	<0.62	<0.01	78.21	18.43	<0.04	971.32	5.19	79.65	205.52	40.26	0.32	148,815.89	0.94	0.23	101.15	4.31	275.65	<0.00	106,133.31
HM16JV077	E17JN15A368	<0.04	<0.04	92,360.14	0.25	<0.01	46.93	19.4	<0.01	1,070.86	6.68	89.84	108.83	31.42	0.45	165,015.59	1.4	0.04	41.71	5.03	341.5	0.01	119,780.64
HM16JV077	E17JN15A369	<0.04	<0.05	94,084.29	<0.26	<0.01	28.33	19.55	<0.02	1,601.83	7.38	87.82	67.63	33.17	0.4	166,234.73	1.37	0.01	30.47	5.58	284.51	0.01	124,685.99
HM16JV077	E17JN15A370	<0.05	<0.05	94,484.16	0.41	<0.01	33.3	22.1	<0.02	1,628.09	7.79	87.43	97.94	43.29	0.4	168,296.51	1.49	0.01	81.62	5.17	323.69	0.01	121,970.78
HM16JV077	E17JN15A371	<0.16	<0.16	96,098.94	<1.00	<0.02	25.51	20.05	<0.05	1,249.62	9.83	87.58	90.28	54.49	0.19	167,798.92	2.84	<0.03	131.23	6.81	200.51	<0.01	121,746.69
HM16JV077	E17JN15A371	<0.06	<0.06	90,011.25	0.77	0.01	55.16	22.89	<0.02	1,651.50	10.61	87.69	73.23	63.59	0.67	163,335.09	2.31	0.05	82.09	7.98	286.75	0.02	116,423.26
HM16JV077	E17JN15A372	<0.05	<0.05	91,776.15	0.52	<0.01	31.4	18.73	<0.02	786.09	7.61	82.52	87.02	123.31	0.41	165,062.24	1.28	<0.01	70.28	4.54	330.71	0.01	119,961.07
HM16JV077	E17JN15A374	<0.04	<0.04	96,005.83	<0.24	<0.01	18.88	16.01	<0.02	742.55	5.28	88.78	74.4	47.26	0.35	167,174.61	1.08	0.02	29.11	3.51	384.21	0.01	121,945.99
HM16JV077	E17JN15A375	<0.11	<0.13	95,238.43	1.09	<0.02	19.12	21.25	0.06	1,054.36	6.63	93.57	173.45	23.1	0.4	167,688.37	1.33	0.07	38.93	7.73	263.41	0.01	122,597.25
HM16JV077	E17JN15A376	<0.07	<0.09	96,038.17	1.75	<0.02	28.88	22.86	<0.03	1,026.61	7.96	91.73	203.31	29.99	0.44	163,061.21	1.83	0.22	48.76	6.35	264.15	0.02	122,612.99
HM16JV077	E17JN15A377	<0.06	<0.06	92,696.51	0.52	<0.01	18.08	17.25	<0.02	1,249.23	6.7	94.85	117.47	18.98	0.46	163,979.17	1.26	<0.01	24.56	5.37	254.38	0.01	126,085.67
HM16JV082	C17MA20A0215	<0.05	0.05	110,794.20	0.31	<0.01	9.6	24.72	<0.01	1,403.18	9.29	70.45	44.34	6.55	0.48	188,720.12	1.36	0.27	53.3	24.24	196.06	0.01	105,776.05
HM16JV082	C17MA20A0221	<0.05	<0.06	97,049.87	0.58	<0.01	15.9	34.95	<0.01	419.54	11.4	63.27	61.47	12.15	0.8	195,041.22	2.66	0.32	67.51	31.89	109.81	0.02	111,628.20
HM16JV082	C17MA20A0224	<0.04	<0.04	106,498.10	0.3	<0.01	8.12	21.43	<0.01	206.82	1.33	77.35	27.11	6.75	0.56	187,115.56	2	0.15	69.93	14.92	189.64	0.01	105,509.69
HM16JV086	E17JN15A289	<0.19	<0.16	102,034.72	<1.04	<0.03	12.16	15.63	<0.05	830.7	33.88	79.65	24.24	61.03	0.85	155,901.30	4.42	<0.03	85.18	28.48	94.41	0.02	129,667.04
HM16JV086	E17JN15A290	<0.17	<0.15	96,773.32	<1.01	<0.03	5.95	10.82	<0.08	4,308.88	20.43	81.74	21.75	43.52	0.65	154,418.83	1.84	<0.06	84.71	15.7	70.89	0.01	132,323.28
HM16JV086	E17JN15A291	<0.07	<0.07	89,787.52	<0.43	<0.01	11.5	16.22	<0.03	2,857.43	32.7	90.63	166.61	74.14	0.65	153,064.45	2.63	<0.02	121.69	26.44	79.89	0.02	125,604.44
HM16JV086	E17JN15A291	<0.07	<0.08	98,112.21	<0.43	<0.01	8.71	18.16	<0.04	287.46	33.92	85.7	178.49	73.16	0.71	155,531.32	3.18	<0.02	110.9	28.92	93.63	0.04	132,825.32
HM16JV086	E17JN15A292	0.15	<0.13	123,326.46	<0.71	<0.02	30.78	9.14	<0.05	<285.40	31.62	57.51	130.41	106.14	0.68	175,893.54	1.91	<0.03	50.05	12.02	145.59	0.02	112,611.23
HM16JV086	E17JN15A292	<0.10	<0.11	109,647.12	<0.59	<0.02	7.64	2.68	<0.04	<243.89	78.72	62.05	181.2	44.16	0.14	172,479.26	0.95	<0.03	31.57	5.24	151.57	<0.01	101,775.04
HM16JV087	E17JN15A446	<0.06	<0.05	111,068.24	<0.30	<0.01	19.28	1.43	<0.02	294.24	1.4	132.27	42.86	22.51	0.02	159,021.73	0.03	0.09	20.59	0.79	144.54	<0.00	122,525.97
HM16JV087	E17JN15A447	<0.11	<0.09	114,818.33	<0.60	0.02	10.72	0.9	<0.04	393.82	0.78	134.53	60.82	17.4	0.01	163,370.54	<0.03	0.05	16.38	0.67	154.58	0.01	118,624.25
HM16JV087	E17JN15A448	<0.07	<0.06	105,660.64	<0.40	<0.01	7.95	2.48	<0.03	<148.60	1.02	127.76	13.69	20.47	<0.01	155,522.32	<0.02	0.03	77.58	0.9	153.02	0	124,854.09
HM16JV087	E17JN15A449	<0.07	<0.07	112,688.13	<0.44	<0.01	5.15	1.32	<0.03	<171.04	0.63	125.94	14.28	24.39	0.03	153,287.70	0.07	<0.01	34.38	0.64	126.53	0.01	128,934.76
HM16JV087	E17JN15A450	<0.06	<0.06	112,683.81	<0.33	<0.01	13.94	1.37	<0.02	<126.52	0.77	124.4	55.9	22.62	0.04	153,544.85	<0.03	0.05	16.13	0.52	134.21	0.01	125,769.19
HM16JV087	E17JN15A453	<0.12	<0.13	108,824.77	<0.74	0.01	8.09	3.05	<0.05	<306.12	1.3	117.7	30.65	22.56	0.07	148,936.37	<0.02	0.07	465.19	1.39	153.96	<0.01	128,139.81
HM16JV087	E17JN15A456	<0.06	<0.07	114,279.25	<0.36	<0.01	8.4	1.9	<0.03	<153.19	1.86	111.2	124.77	34.76	0.02	155,750.85	0.06	0.02	62.54	1.86	135.22	<0.00	127,195.43
HM16JV087	E17JN15A457	<0.04	<0.05	108,851.53	<0.23	<0.01	12.17	2.35	<0.02	196.28	16.78	116.39	165.62	62.94	0.05	159,976.30	0.17	0.05	18.44	2.11	188.29	<0.00	121,115.49
HM16JV087	E17JN15A458	<0.09	<0.11	114,631.33	<0.55	<0.02	8.12	3.12	<0.03	<205.85	2.29	106.73	168.5	38.16	0.03	160,503.68	0.04	<0.02	34.31	1.36	133.57	0.01	120,485.39
HM16JV087	E17JN15A459	<0.05	<0.06	111,110.57	<0.30	<0.01	8	1.46	<0.02	<129.74	54.06	105.42	133.33	50.77	0.05	167,201.19	0.2	0.02	14.08	1.95	148.37	<0.00	116,166.87
HM16JV088	E17JN14A600	<0.06	<0.06	97,598.07	<0.32	<0.01	100.6	123.01	<0.03	399.62	45.42	104.45	83.08	18.26	1.12	201,163.55	4.27	0.11	43.37	49.38	89.62	0.03	103,297.59
HM16JV088	E17JN14A600	<0.08	<0.09	89,250.24	<0.44	<0.02	59.46	18.31	<0.04	177.44	2.04	102.12	60.8	13.88	0.12	199,761.19	0.49	0.1	42.13	4.15	73.53	0.01	97,599.84
HM16JV088	E17JN14A601	<0.05	<0.05	95,831.96	<0.28	<0.01	50.97	17.8	<0.02	392.39	1.03	101.89	74.83	12.65	0.09	202,427.76	0.48	0.05	47.33	2.73	107.75	0.01	101,767.61
HM16JV088	E17JN14A602	<0.13	<0.14	101,086.88	<0.73	<0.02	12.3	22.85	<0.06	351.18	2.76	101.04	130.57	10.9	0.11	207,695.99	0.43	<0.02	40.95	4.25	63.64	0.01	105,213.39
HM16JV088	E17JN14A604	<0.10	<0.11	101,604.43	<0.55	<0.01	46.48	57.97	<0.04	680.86	5.91	98.67	45.56	15.3	0.26	200,983.75	0.64	0.06	317.92	11.83	99.08	0	101,028.77
HM16JV088	E17JN14A605	<0.06	<0.08	92,170.85	0.42	<0.01	13.19	9.96	<0.02	245	0.25	103.41	251.84	9.63	0.04	188,807.49	0.32	0.02	43.96	1.12	83.51	<0.00	102,030.25
HM16JV088	E17JN14A612	<0.18	<0.18	95,444.04	<0.73	<0.02	35.54	12.79	<0.06	<272.25	0.55	108.76	624.68	15.45	0.06	197,510.78	0.16	0.25	58.06	3.41	204.92	0.02	96,765.27
HM16JV099	C17MA21A0283	<0.05	<0.05	113,577.71	<0.15	<0.01	1.68	<0.03	<0.01	863.45	0.01	95.65	3.14	<0.28	<0.00	143,282.96	<0.01	0.02	<3.66	<0.00	138.94	<0.00	136,261.63
HM16JV099	C17MA21A0284	<0.08	<0.07	116,700.90	<0.20	<0.02	2.62	6.02	<0.01	201.94	0.07	92.43	82.55	<0.41	0.03	142,307.63	<0.02	<0.01	9.74	0.44	146.57	<0.00	134,960.80
HM16JV099	C17MA21A0285	<0.05	<0.05	107,671.63	<0.14	<0.01	14.7	5.47	<0.01	162.5	0.14	104.3	46.81	<0.28	0.02	142,578.90	0.11	0.22	16.02	0.78	155.49	0	129,839.71
HM16JV099	C17MA21A0286	<0.04	<0.04	109,399.87	<0.14	<0.01	4.85	4.13	<0.00	161.25	0.13	107.5	23.35	0.32	0.02	143,304.46	0.05	0.1	14.74	0.62	145.86	<0.00	129,289.12
HM16JV099	C17MA21A0287	<0.05	<0.04	110,112.98	<0.17	<0.01	8.33	8.41	<0.00	412.62	0.51	92.4	42.93	<0.20	0.08	149,403.64	0.18	0.12	21.67	1.76	164.22	0.01	128,638.07
HM16JV099	C17MA21A0288	<0.03	<0.03	108,279.22	<0.11	<0.01	6.38	5.88	<0.00	180.48	0.6	105.44	522.64	0.22	0.04	145,592.22	0.1	0.09	21.81	1.15	147.66	<0.00	127,680.60
HM16JV099	C17MA21A0289	<0.03	<0.04	112,558.62	0.17	<0.01	9.07	6.55	<0.00	224.09	0.08	105.5	31.72	<0.19	0.06	141,961.22	0.17	0.07	71.24	1.23	162.78	<0.00	130,766.31
HM16JV099	C17MA21A0277	<0.03	<0.04	108,449.07	0.17	<0.01	3.83	4.04	<0.00	113.74	0.73	108.66	46.78	<0.18	0.05	142,072.70	0.12	0.04	18.26	1.07	144.96	0	132,351.56
HM16JV099	C17MA21A0278	<0.05	<0.05	108,830.78	<0.16	<0.01	44.24	8.61	<0.01	398.88	0.42	91.16	80.27	1	0.09	145,991.50	0.24	0.3	31.25	1.99	155.64	<0.00	128,708.49
HM16JV099	C17MA21A0280	<0.03	<0.03	108,034.57	<0.11	<0.01	2.63	3.77	<0.00	196.13	0.38	109.11	49.04	0.25	0.02	142,035.29	0.08	0.06	24.35	0.68	152.08	<0.00	131,278.23
HM16JV099	C17MA21A0281	<0.03	<0.03	108,015.52	<0.11	0.01	2.1	2.71	<0.00	<109.13	0.07	109.35	33.11	0.19	0.02	140,598.78	0.04	0.04	17.41	0.42	144.02	0	132,586.53
HM16JV099	C17MA21A0282	<0.03	<0.04	108,284.79	<0.12	<0.01	6.87	5.51	0.01	131.24	0.26	104.26	71.33	0.24	0.03	147,813.68	0.15	0.01	9.51	1.08	161.01	<0.00	126,680.73
HM16JV099	C17MA21A0267	<0.05	<0.05	108,761.47	<0.16	<0.01	15.83	11.69	<0.01	288.93	0.43	79.65	55.73	<0.25	0.08	143,421.00	0.25	0.31	53.03	1.83	168.36	<0.00	130,386.66

*For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix IV: Hemlo district chlorite mineral chemistry collected by LA-ICP-MS

Sample	Analysis	Ag107	Ag109	Al27	As75	Au197	B11	Ba137	Bi209	Ca43	Ce140	Co59	Cr53	Cu65	Eu153	Fe57	Gd157	Hf178	K39	La139	Li7	Lu175	Mg24
HM16JV099	C17MA21A0268	<0.06	<0.06	114,963.44	0.26	<0.01	23.41	20.17	<0.01	751.46	0.73	66.89	87.5	<0.32	0.27	143,281.23	0.75	0.27	66	4.14	242.11	0.01	127,479.61
HM16JV099	C17MA21A0269	<0.04	<0.04	109,291.35	<0.10	<0.01	6.02	11.75	0.02	128.11	0.24	93.95	74.42	<0.20	0.09	147,046.03	0.25	0.01	37.04	1.64	165.01	0	126,826.44
HM16JV099	C17MA21A0270	<0.04	<0.05	109,615.22	<0.09	<0.01	4.88	10.8	<0.01	310.33	0.22	93.8	81.96	0.36	0.08	146,934.15	0.2	<0.01	38.44	2	170.21	0	126,494.37
HM16JV099	C17MA21A0271	<0.04	<0.04	107,724.47	0.15	<0.01	6.56	15.29	<0.01	223.64	0.21	99.66	45.89	0.21	0.05	146,398.85	0.23	0.02	58.83	1.69	179.97	0	127,143.48
HM16JV099	C17MA21A0272	<0.03	<0.03	109,186.66	<0.14	<0.01	10.75	15.7	<0.00	238.73	0.17	101.84	28.95	0.3	0.07	146,595.38	0.32	0.13	76.63	1.74	172.65	0	127,508.63
HM16JV099	C17MA21A0273	<0.03	<0.04	114,590.31	<0.15	<0.01	15.39	27.12	<0.01	408.77	0.81	84.49	59.06	0.28	0.17	139,496.53	0.72	0.16	73.81	4.44	215.99	0.01	132,155.99
HM16JV099	C17MA21A0274	<0.03	<0.04	109,334.95	<0.13	<0.01	7.56	12.67	<0.00	241.18	0.16	62.04	39.48	<0.22	0.07	143,890.58	0.33	0.01	44.96	1.77	141.28	0	133,514.84
HM16JV102	C17MA21A0186	<0.04	<0.05	113,800.91	<0.23	<0.01	6.35	3.39	<0.01	3,316.20	0.84	103.82	760.77	532.5	0.1	176,014.39	0.24	<0.01	30.42	1.01	118.9	<0.00	108,686.14
HM16JV102	C17MA21A0187	<0.08	<0.09	117,731.48	<0.37	<0.01	11.86	5.25	<0.01	663.96	0.24	113.03	509.75	728.95	0.05	178,256.21	0.08	<0.01	36.03	0.62	140.01	<0.00	111,315.02
HM16JV102	C17MA21A0189	0.08	<0.04	106,744.75	0.17	<0.01	4.24	9.96	<0.00	449.57	0.06	97.92	514.3	274.96	0.03	160,445.57	0.11	<0.01	274.72	0.76	185.19	0.01	88,025.13
HM16JV102	C17MA21A0191	<0.05	<0.06	111,893.48	0.23	<0.01	18.08	101.3	<0.01	5,575.41	4.01	116.93	492.6	571.85	0.17	174,809.73	0.81	0.06	60.59	5.16	134.72	<0.01	105,812.87
HM16JV102	C17MA21A0192	<0.07	<0.07	110,660.10	<0.27	<0.02	10.76	8.23	<0.01	749.75	0.22	115.62	1,233.54	847.37	0.07	185,828.00	0.39	0.06	60.68	0.52	141.42	0.01	107,866.61
HM16JV102	C17MA21A0173	<0.06	<0.06	115,264.79	0.29	<0.01	13.66	4.66	<0.01	425.18	0.19	96.53	1,497.44	477.67	0.02	180,715.98	0.27	<0.00	21.67	0.48	105.44	<0.00	110,711.86
HM16JV102	C17MA21A0174	0.08	<0.08	122,497.04	<0.27	<0.01	7.1	6.23	<0.01	4,397.10	2.14	61.61	515.51	320.56	0.04	172,122.14	0.21	<0.01	44.46	1.73	112.65	<0.01	105,825.35
HM16JV102	C17MA21A0175	<0.04	<0.04	116,389.64	<0.18	<0.01	3.83	3.1	<0.01	222.63	0.08	110.31	117.48	180.06	0.03	172,745.40	0.13	0.06	66.51	0.18	143.9	<0.00	111,961.23
HM16JV102	C17MA21A0176	<0.07	<0.08	108,471.11	<0.34	<0.01	8.76	3.87	<0.01	280.93	0.38	120.23	1,294.63	300.26	0.09	176,618.67	0.11	0.11	63.57	0.39	144.1	<0.00	102,790.81
HM16JV102	C17MA21A0177	<0.05	<0.07	116,821.05	<0.21	<0.01	3.24	3.19	<0.01	2,839.97	3.03	86.94	335.18	108.07	0.03	170,544.50	0.07	<0.01	183.8	1.15	122.57	<0.00	115,054.96
HM16JV102	C17MA21A0180	<0.03	<0.03	106,044.33	<0.14	<0.01	3.52	6.36	<0.01	228.87	0.2	97.6	1,823.47	251.6	0.02	174,108.49	0.11	0.01	306.33	0.45	136.35	<0.00	109,290.37
HM16JV102	C17MA21A0181	<0.04	<0.04	109,822.27	<0.15	<0.01	4.7	5.96	<0.01	252.52	0.17	97.44	2,108.91	343.59	0.03	174,868.17	0.11	0.04	120.03	0.6	133.69	0	106,841.20
HM16JV102	C17MA21A0182	<0.04	<0.04	106,023.31	<0.16	<0.01	5	5.78	<0.01	208.23	0.19	103.41	2,744.04	300.05	0.02	172,225.21	0.11	0.04	154.98	0.59	144.17	0	110,902.57
HM16JV102	C17MA21A0183	<0.08	<0.08	109,901.35	<0.29	<0.01	5.83	3.34	<0.01	<217.20	0.19	97.34	1,376.71	238.77	<0.00	182,743.14	0.25	0.25	91.16	0.39	134.21	0.01	109,356.71
HM16JV102	C17MA21A0184	<0.09	<0.08	104,728.75	<0.26	<0.01	4.34	3.35	<0.01	1,727.88	0.19	105.14	876.79	296.53	0.06	176,113.12	<0.03	0.07	83.56	0.61	115.73	0.01	102,188.43
HM16JV102	C17MA21A0169	<0.04	<0.05	108,412.70	<0.14	<0.01	3.98	2.82	<0.00	131.88	0.14	114.23	347.08	155.63	0.02	187,313.52	0.14	0.03	34.26	0.41	79.58	0	108,873.38
HM16JV102	C17MA21A0171	0.04	<0.03	109,302.35	0.84	<0.01	16.26	14.13	<0.01	465.76	2.31	134.64	83.12	736.82	0.17	186,095.87	0.78	<0.01	100.66	3.48	138.94	0.02	104,936.12
HM16JV104	C17MA21A0131	<0.04	<0.04	107,058.94	<0.12	<0.01	2.1	0.78	0.01	178.2	0.04	73.68	19.6	10.41	<0.00	171,528.28	0.01	<0.02	80.9	0.01	158.27	0.01	110,947.26
HM16JV104	C17MA21A0164	<0.06	<0.07	103,401.91	0.25	<0.01	7.34	11.41	0.07	1,259.12	0.11	80.68	884.46	60.28	0.01	163,323.81	0.08	<0.01	656.66	0.04	200.46	0.05	114,062.69
HM16JV104	C17MA21A0165	<0.04	<0.04	108,151.31	<0.14	<0.01	2.41	0.52	<0.01	<108.23	0.08	78.38	813.28	19.78	<0.00	171,212.95	<0.01	<0.01	231.9	0.03	187.8	0.01	110,771.89
HM16JV107	E17JN15A435	<0.03	<0.04	85,886.30	1.09	<0.00	21.93	13.87	0.21	418.98	18.52	88.82	61.56	185.42	0.13	174,496.41	0.46	0.07	111.27	9.32	118.46	0	115,642.41
HM16JV107	E17JN15A436	<0.04	<0.04	93,149.92	0.42	<0.00	18.19	1.91	<0.01	1,111.77	1.71	88.83	89.13	55.64	0.02	178,316.46	0.08	0.08	72.68	0.75	100.42	0	115,985.74
HM16JV107	E17JN15A437	<0.06	<0.05	86,979.96	<0.29	<0.01	21.62	3.6	0.02	<122.74	3.36	92.82	120.41	90.94	0.02	177,302.27	0.07	0.04	142.59	1.27	88.73	<0.00	109,339.58
HM16JV107	E17JN15A438	0.06	0.08	64,116.05	0.71	<0.01	21.6	7.45	<0.03	<140.53	4.85	69.31	69.98	81.3	0.02	132,187.25	0.14	0.02	177.72	2.74	52.93	<0.00	85,269.30
HM16JV111	C17MA21A0134	<0.03	<0.04	88,605.61	<0.17	<0.01	7.06	6.16	0.01	520.37	1.94	8.98	180.79	39.47	0.04	185,858.54	0.19	<0.00	54.42	2.47	75.2	0	113,801.65
HM16JV111	C17MA21A0143	<0.04	<0.04	68,299.48	<0.17	<0.01	9.82	2.57	<0.01	1,788.76	0.78	7.46	15.9	29.45	0.04	137,272.97	0.11	0.01	47.37	0.96	52.4	<0.00	82,908.10
HM16JV111	C17MA21A0145	<0.04	<0.04	93,887.49	0.18	<0.01	3.89	3.99	0.06	404.28	0.33	14.14	152.35	16.06	0.03	187,529.71	0.07	0	93.64	0.96	81.72	0.01	111,593.44
HM16JV112	E17JN14A514	<0.06	<0.08	93,394.12	<0.34	<0.01	3.51	21.83	0.03	3,219.96	11.91	130.77	858.25	2.72	0.23	159,202.44	0.58	0.03	31.06	7.4	80.61	<0.00	127,981.68
HM16JV112	E17JN14A514	<0.08	<0.10	89,133.68	<0.42	<0.01	3.57	19.78	<0.03	2,156.14	3.14	133.37	579.25	2.43	0.18	154,547.31	0.46	<0.01	23.68	1.87	98.31	0	119,239.30
HM16JV112	E17JN14A514	<0.13	<0.16	76,266.52	<0.68	<0.02	5.2	15.28	<0.05	<232.04	1.23	115.93	568.77	2.31	0.15	136,281.15	0.38	<0.02	12.3	1.43	105.13	0.01	104,072.31
HM16JV112	E17JN14A515	<0.07	<0.10	94,727.12	<0.39	<0.01	2.74	16.26	<0.03	395.27	0.59	132.32	920.49	2.27	0.12	157,810.63	0.32	<0.01	25.76	0.87	80.2	<0.00	132,049.77
HM16JV112	E17JN14A516	<0.15	<0.18	89,179.75	<0.71	<0.02	1.67	18.03	<0.06	13,191.96	4.91	114.73	1,160.25	2.16	0.24	154,228.49	0.41	<0.02	33.39	2.42	79.64	0.01	112,484.93
HM16JV112	E17JN14A517	<0.08	<0.10	96,904.27	<0.43	<0.01	1.9	12.14	<0.03	218.97	0.39	97.38	485.79	1.18	0.09	192,632.96	0.35	<0.01	42.13	0.51	125.19	<0.00	109,404.13
HM16JV112	E17JN14A518	<0.06	<0.08	91,990.70	<0.35	<0.01	3.62	26.88	<0.03	1,579.65	0.84	123.07	670.37	2.31	0.15	162,651.94	0.31	0.06	52.21	1.11	79.42	<0.00	125,242.85
HM16JV112	E17JN14A519	<0.12	<0.12	86,238.17	0.81	<0.02	9.1	18.77	0.15	11,711.64	2.06	112.32	114.11	2.71	0.48	153,418.31	1.11	0.12	488.67	0.96	146.17	0.02	114,333.89
HM16JV112	E17JN14A520	<0.07	<0.07	94,567.94	<0.30	<0.01	8.13	15.89	<0.02	238.18	0.28	131.32	68.23	57.02	0.07	154,699.50	0.23	0.01	31.37	1	78.7	<0.00	130,563.58
HM16JV112	E17JN14A521	<0.07	<0.09	93,277.18	<0.39	<0.01	10.59	14.87	<0.03	247.97	0.26	136.46	99.81	60.45	0.07	155,312.12	0.17	<0.01	29.56	1.03	78.25	<0.00	132,494.22
HM16JV112	E17JN14A522	<0.07	<0.07	92,148.52	<0.29	<0.01	14.25	25.76	<0.02	319.91	1.39	126.41	43.62	119.78	0.17	153,273.49	0.49	<0.02	27.56	3.4	69.07	<0.00	133,485.49
HM16JV112	E17JN14A523	<0.08	<0.07	93,436.84	<0.28	<0.01	5.67	16.77	<0.03	275.75	0.52	130.37	1,467.06	8.04	0.09	169,120.23	0.16	<0.02	18.2	0.7	83.65	<0.00	120,722.77
HM16JV112	E17JN14A524	<0.07	<0.07	97,198.18	<0.28	<0.01	1.99	6.84	<0.02	127.45	0.28	137.67	2,771.82	1.5	0.05	162,870.10	0.14	<0.02	11.62	0.38	73.37	0	122,849.68
HM16JV112	E17JN14A525	0.08	<0.09	100,035.88	<0.38	<0.01	20.01	15.59	<0.03	314.22	0.78	141.19	23.75	27.93	0.12	197,005.94	0.3	<0.01	15.39	0.82	209.53	0	104,988.28
HM16JV112	E17JN14A526	<0.26	<0.25	105,282.83	<1.29	<0.05	14.6	21.18	<0.12	458.94	1.28	106.5	57.52	22.86	0.19	180,216.14	<0.10	<0.02	28.94	1.06	132.68	0.02	116,100.41
HM16JV112	E17JN14A527	<0.22	<0.21	88,561.46	<0.92	<0.03	9.04	24.87	0.13	<346.11	1.79	118.06	960.61	6.3	0.13	149,132.67	0.07	<0.02	29.55	0.83	78.87	<0.00	115,209.67
HM16JV112	E17JN14A528	<0.19	<0.19	98,333.87	<0.70	<0.03	9.45	20.39	<0.09	<262.60	0.93	126.18	741.96	9.57	0.13	169,819.68	0.25	<0.04	184.73	0.93	91.66	<0.00	125,544.72
HM16JV112	E17JN14A529	<0.09	<0.07	98,707.46	<0.35	<0.01	12.55	12.55	<0.03	190.88	0.48	102.74	152.05	45.03	0.06	185,795.84	0.15	<0.02	13.26	0.49	110.06	0.01	113,657.19
HM16JV114	E17JN14A198	<0.11	<0.13	114,954.05	<0.63	<0.02	10.66	21.61	<0.04	915.92	1.03	46.57	90.16	13.39	0.05	190,257.10	0.08	0.02	792.2	0.63	279.19	<0.00	102,451.38

*For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix IV: Hemlo district chlorite mineral chemistry collected by LA-ICP-MS

Sample	Analysis	Ag107	Ag109	Al27	As75	Au197	B11	Ba137	Bi209	Ca43	Ce140	Co59	Cr53	Cu65	Eu153	Fe57	Gd157	Hf178	K39	La139	Li7	Lu175	Mg24
HM16JV116	E17JN14A146	<0.09	<0.08	92,919.23	<0.36	<0.01	15.53	11.19	<0.03	358.81	2.72	63.58	877.42	9.4	0.26	216,191.82	1.52	0.02	128.98	6	226.58	0.01	92,050.29
HM16JV116	E17JN14A147	<0.12	<0.12	97,338.00	<0.52	<0.02	15.87	8.25	<0.05	561.93	1.04	61.73	842.03	20.36	0.3	215,525.68	1.45	0.02	144	4.65	196.31	0.02	94,600.42
HM16JV116	E17JN14A148	<0.63	<0.80	101,054.68	<1.86	<0.10	20.56	5.51	<0.25	<663.35	0.55	64.63	980.88	24.65	0.19	220,707.42	1.84	<0.07	78.09	5.12	144.8	<0.02	98,069.28
HM16JV116	E17JN14A149	<0.07	<0.08	93,556.65	<0.32	<0.01	19.19	10.67	0.15	371	1.15	62.98	950.85	28.79	0.27	218,252.19	1.61	0.05	166.42	4.8	187.52	0.02	94,186.10
HM16JV116	E17JN14A152	<0.11	<0.11	94,081.79	<0.59	<0.02	12.99	8.29	<0.05	383.41	1.08	40.5	2,046.21	31.74	0.11	228,638.23	0.88	<0.01	57.19	3.03	126.77	<0.00	90,939.29
HM16JV116	E17JN14A153	<0.08	<0.06	87,707.28	<0.38	<0.01	16.56	7.37	<0.03	337.66	1.16	42.92	2,241.72	51.38	0.16	222,238.77	0.88	<0.01	72.47	3.92	128.15	0.01	85,768.93
HM16JV116	E17JN14A153	<0.10	0.09	90,281.63	<0.46	<0.01	13.19	7.99	<0.04	366.84	1.14	41.78	2,190.41	52.24	0.15	229,822.35	0.85	<0.01	78.36	4.01	131.55	0.01	88,815.50
HM16JV116	E17JN14A154	<0.09	<0.08	92,068.65	0.6	<0.01	10.54	6.66	<0.04	415.09	1.06	41.25	2,440.26	20.04	0.12	232,357.41	0.77	0.03	56.94	2.93	126.55	<0.00	87,543.70
HM16JV116	E17JN14A155	<0.06	<0.05	90,441.94	<0.32	<0.01	14.01	6.76	0.04	727.01	1.14	41.19	2,625.45	21.46	0.11	231,815.30	0.56	0.02	67.55	2.85	139.77	0.01	88,146.24
HM16JV116	E17JN14A157	<0.09	<0.08	90,364.70	<0.47	<0.02	64.51	4.47	0.18	630.14	3.09	40.65	2,497.79	41.53	0.1	229,784.22	0.68	0.18	77.67	4.16	116.81	<0.00	87,529.54
HM16JV116	E17JN14A158	<0.07	<0.07	88,846.46	<0.37	<0.01	21.43	5.49	0.04	385.88	0.74	39.64	2,183.93	28.18	0.04	220,282.64	0.25	0.03	76.84	1.43	156.69	0	85,617.80
HM16JV116	E17JN14A159	<0.38	<0.43	102,809.14	<1.44	<0.06	8.26	3.62	<0.12	1,497.31	11.01	37.35	2,091.83	17.21	0.19	230,733.17	0.74	<0.03	38.51	6.42	131.22	0.07	86,575.99
HM16JV116	E17JN14A160	<0.06	<0.06	94,195.85	<0.33	<0.01	13.95	5.03	0.1	407.6	0.65	41.49	2,332.41	15.97	0.04	221,956.29	0.13	0.01	63.2	1.2	197.34	0	87,325.31
HM16JV116	E17JN14A161	<0.40	<0.44	93,606.64	<2.29	<0.09	15.31	3.06	0.25	10,060.97	53.14	37.23	1,622.85	28.65	1.68	212,376.95	4.21	<0.05	16.93	27.16	92.16	<0.02	89,886.04
HM16JV116	E17JN14A162	<0.11	<0.11	93,996.13	<0.55	<0.02	6.79	3.03	<0.05	429.75	0.82	42.73	2,026.16	7.83	0.04	232,256.31	0.15	0.04	22.57	1.7	104.75	0.01	88,134.56
HM16JV118	C17MA20A0122	<0.04	<0.04	104,388.29	<0.21	<0.01	4.77	2	<0.01	<142.13	22.24	72.29	421.54	3.69	0.11	170,308.77	0.32	<0.00	57.82	16.29	140.28	<0.00	112,907.03
HM16JV118	C17MA20A0123	<0.14	<0.15	114,639.83	<0.72	<0.02	4.2	0.47	<0.04	<549.10	21.34	57.08	56.74	4.19	0.04	182,735.60	0.15	<0.01	35.01	16.2	129.21	<0.01	113,412.19
HM16JV118	C17MA20A0146	<0.05	<0.05	89,991.05	<0.26	<0.01	2.57	14.59	<0.01	358.13	52.94	91.88	53.79	1.77	0.33	189,631.33	0.68	<0.00	949.51	38.07	115.54	<0.00	114,047.60
HM16JV123	C17MA21A0124	<0.04	<0.04	114,616.39	0.67	<0.01	6.87	11.26	0.01	990.96	0.1	37.42	87.34	5.5	<0.00	149,113.39	0.06	0.03	374.45	0.15	360.56	0.01	123,294.48
HM16JV132	C17MA20A0296	<0.03	<0.03	91,167.08	<0.19	0.01	4.41	22.61	0.01	2,606.98	5.26	40.33	36.63	34.35	0.05	178,338.81	0.13	0.34	238.14	3.94	266.8	<0.00	116,515.46
HM16JV132	C17MA20A0297	<0.04	<0.03	91,340.63	0.31	<0.01	4.92	21.92	0.04	1,031.53	8.34	34.35	68.14	40.36	0.1	177,388.68	0.17	0.33	210.29	8.16	271.91	<0.00	119,622.55
HM16JV132	C17MA20A0298	<0.07	<0.06	83,179.61	<0.28	<0.02	5.61	14.68	0.05	3,867.70	6	48.62	74.98	37	0.05	174,682.97	0.19	0.54	186.24	4.84	253.69	0	103,188.22
HM16JV132	C17MA20A0299	<0.06	<0.06	96,186.96	<0.32	0.01	5.48	19.57	<0.01	316.77	7.08	44.79	64.29	46.26	0.03	182,779.97	0.12	0.38	135.67	5.36	272.38	<0.00	116,648.61
HM16JV132	C17MA20A0300	<0.05	<0.05	95,391.94	<0.20	<0.01	4.02	20	0.02	166.4	6.69	45.26	44.77	45.03	0.05	180,690.84	<0.02	0.43	146.44	6.15	235.1	0	118,465.57
HM16JV132	C17MA20A0301	<0.07	<0.07	87,177.32	<0.29	<0.01	7.22	23.63	0.03	455.05	8.13	38.56	35.8	59.72	0.1	176,927.51	0.14	0.32	177.67	6.93	293.95	<0.00	115,116.34
HM16JV132	C17MA20A0301	<0.12	<0.12	86,586.75	<0.49	<0.02	8.59	20.04	<0.02	<324.77	9.5	35.89	27.28	82.11	0.05	171,366.60	0.08	0.35	285.14	9.12	312.56	<0.00	114,693.97
HM16JV133	C17MA21A0101	<0.04	<0.04	91,982.48	<0.21	<0.01	8.37	11.07	0.47	256.46	10.27	75.24	120.76	14.24	0.11	197,296.54	0.33	0.05	59.91	7.68	216.46	<0.00	101,068.17
HM16JV133	C17MA21A0102	<0.03	<0.03	95,272.03	0.17	<0.01	7.57	10.78	0.22	176.78	9.81	77.25	146.95	13.31	0.07	202,044.92	0.26	0.04	26.81	7.31	217.97	<0.00	100,832.76
HM16JV133	C17MA21A0103	<0.04	<0.04	94,196.19	0.25	<0.01	15.97	15.31	0.36	445.49	12.04	75.58	48.55	20.98	0.13	202,726.36	0.36	0.12	33.2	9.32	196.97	<0.00	103,043.69
HM16JV133	C17MA21A0104	<0.04	<0.04	92,810.72	<0.17	<0.01	8.73	11.15	0.81	504.53	15.98	75.29	72.95	21.86	0.16	199,210.26	0.5	0.04	45.07	11.87	226.92	<0.00	100,654.96
HM16JV133	C17MA21A0105	<0.11	<0.11	89,914.71	<0.40	<0.02	15.46	6.83	0.37	529.55	10.99	75.2	57.13	20.35	0.09	196,018.50	0.26	0.04	34.52	7.95	196.13	0	93,064.85
HM16JV133	C17MA21A0106	0.08	0.08	88,229.12	0.53	0.01	19.53	15.75	0.45	296.85	16	71.26	133.93	34.2	0.16	192,928.98	0.3	0.22	63.96	12.2	182.34	<0.00	93,239.34
HM16JV133	C17MA21A0107	<0.03	<0.03	90,870.20	0.21	<0.01	11.11	10.9	0.51	383.73	16.64	76.91	31.08	26.69	0.13	197,487.62	0.34	0.08	47.24	11.72	217.4	0.01	99,768.00
HM16JV133	C17MA21A0108	<0.04	<0.04	93,338.93	0.23	<0.01	18.54	11.86	0.45	443.35	12.17	76.81	127.24	20.75	0.1	198,569.52	0.24	0.09	33.61	8.62	229.03	0	101,615.15
HM16JV133	C17MA21A0109	<0.03	<0.04	92,504.73	0.16	<0.01	8.79	9.12	0.44	430.64	12.38	77.9	84.82	19.7	0.13	199,677.29	0.28	0.03	35.32	9.01	253.41	0	103,071.27
HM16JV133	C17MA21A0110	<0.03	<0.04	87,862.62	0.29	<0.01	23.56	23.24	0.49	810.75	39.83	74.08	50.89	57.74	0.49	202,827.30	1.23	0.15	75.34	30.23	153.44	0.01	91,713.20
HM16JV133	C17MA21A0111	<0.04	<0.04	96,376.67	<0.19	<0.01	5.38	13.21	0.24	499.17	11.34	76.71	83.23	13.31	0.09	204,760.61	0.19	0.07	33.08	7.72	233.42	0.01	101,264.60
HM16JV133	C17MA21A0114	<0.04	<0.04	94,032.66	0.42	<0.01	10.53	10.55	0.65	198.27	14.03	75.97	81.42	33.83	0.15	202,339.67	0.29	0.13	47.9	9.54	226.68	0	97,441.92
HM16JV133	C17MA21A0115	<0.04	<0.04	92,386.03	1.01	<0.01	15.23	15.14	0.75	380.41	17.92	75.94	53.72	45	0.18	196,818.40	0.37	0.12	46.8	12.01	218	0.01	95,975.58
HM16JV133	C17MA21A0116	<0.05	<0.04	95,220.22	0.22	<0.01	16.18	15.75	0.17	377.53	11.95	73.47	40.54	14.51	0.1	206,398.52	0.14	0.05	52.05	8.65	192.31	0	96,514.77
HM16JV138	E17JN15A395	<0.04	<0.04	98,913.06	<0.22	<0.00	23.33	0.96	0.06	743.95	3.06	53.8	996.95	18.45	0.24	189,854.98	1.5	0.12	45.91	2.87	121.9	0.04	106,387.34
HM16JV138	E17JN15A398	<0.05	<0.05	98,923.27	<0.29	<0.01	11.12	2.26	0.03	913.75	2.35	69.31	588.53	10.75	0.23	191,978.62	1.65	0.03	54.56	2.38	116.27	0.04	105,335.43
HM16JV138	E17JN15A399	<0.05	<0.04	99,456.89	<0.24	0.01	12.51	0.93	<0.02	228.94	2.32	46.96	1,249.81	7.27	0.22	192,943.60	1.41	0.02	29.37	2.27	103.24	0.04	106,738.87
HM16JV138	E17JN15A400	<0.06	<0.06	104,855.79	<0.31	<0.01	4.4	0.79	<0.02	168.03	1.5	48.32	639.68	5.14	0.15	192,249.15	0.84	<0.01	29.61	1.44	104.23	0.01	105,681.76
HM16JV138	E17JN15A401	<0.06	<0.06	97,545.70	<0.29	<0.01	24.23	1.07	<0.02	233.02	2.36	48.97	669.05	8.08	0.26	187,149.71	1.68	0.02	34.65	2.31	108.92	0.03	100,076.40
HM16JV138	E17JN15A402	<0.04	<0.05	98,167.35	<0.24	<0.01	12.58	0.89	0.02	145.93	2.45	61.34	667.39	11.56	0.22	186,675.89	1.63	0.01	42.2	2.51	83.96	0.02	111,764.87
HM16JV141	C17MA21A0063	<0.04	<0.04	104,797.33	0.17	<0.01	2.92	1.57	<0.01	<130.56	0.03	101.25	4.37	5.79	0.01	188,446.05	<0.01	<0.01	39.08	0.01	145.99	<0.00	100,795.22
HM16JV141	C17MA21A0066	<0.07	<0.07	111,183.40	<0.25	<0.02	3.36	4.05	<0.01	<169.91	0.02	100.75	2.98	15.65	<0.01	190,591.72	<0.02	<0.02	36.05	0.02	148.49	<0.00	104,318.02
HM16JV141	C17MA21A0067	<0.04	<0.03	108,389.88	0.25	<0.01	2.49	1.35	<0.00	165.99	0.02	105.08	479.6	2.45	0	190,017.90	<0.01	0	15.36	0.02	153.67	<0.00	100,830.84
HM16JV141	C17MA21A0069	<0.04	<0.05	87,913.13	0.3	<0.01	6.45	7.65	0.02	496.3	0.42	119.21	455.33	17.65	0.02	200,428.05	0.19	<0.01	44.21	0.24	137.02	<0.00	97,542.00
HM16JV141	C17MA21A0071	<0.05	<0.05	93,007.74	0.39	<0.01	3.11	7.65	<0.01	429.81	0.17	125.54	444.36	7.92	0.01	217,321.26	<0.01	<0.01	61.85	0.1	59.61	<0.00	99,020.47
HM16JV141	C17MA21A0072	<0.04	<0.04	91,564.22	0.4	<0.01	4.47	8.51	0.02	347.77	0.21	176.25	338.44	8.2	0.02	215,317.44	0.09	<0.01	94.61	0.12	59.35	0.01	97,450.92
HM16JV141	C17MA21A0073	<0.04	<0.04	92,359.35	0.23	<0.01	4.8	10.73	<0.01	475.38	0.59	121.43	238.71	13.82	0.03	203,532.32	0.14	0.02	82.64	0.25	162.9	<0.00	103,919.21

*For analyses with prefix C17MA21- Pb isotopes 206 and 207 were not measured.
**All elements in ppm

Appendix IV: Hemlo district chlorite mineral chemistry collected by LA-ICP-MS

Sample	Analysis	Ag107	Ag109	Al27	As75	Au197	B11	Ba137	Bi209	Ca43	Ce140	Co59	Cr53	Cu65	Eu153	Fe57	Gd157	Hf178	K39	La139	Li7	Lu175	Mg24
HM16JV141	C17MA21A0074	<0.04	<0.04	93,875.48	<0.14	0.01	3.1	5.85	0.03	259.76	0.06	121.34	259.26	5.69	<0.00	204,780.74	<0.02	<0.01	137.3	0.03	181.14	<0.00	102,047.77
HM16JV141	C17MA21A0075	<0.04	<0.04	85,568.28	0.68	<0.01	10.84	11.56	<0.01	680.62	0.78	120.71	339.01	26.96	0.07	199,398.10	0.22	0.06	85.06	0.48	137.08	0.01	98,220.26
HM16JV141	C17MA21A0076	<0.04	<0.04	91,510.97	0.28	<0.01	4.74	4.85	<0.01	352.16	0.09	118.08	184.28	9.58	<0.00	211,844.34	0.09	0.03	44.19	0.06	82.68	<0.00	100,024.76
HM16JV141	C17MA21A0077	<0.04	0.05	92,718.23	<0.13	<0.01	4.54	9.52	<0.01	596.73	0.28	120.04	729.45	13.52	0.02	200,514.91	<0.01	<0.01	87.69	0.18	148.34	0.01	102,336.97
HM16JV141	C17MA21A0035	<0.04	<0.04	92,067.95	0.24	0.01	5.25	7.64	<0.01	1,172.91	0.51	117.69	607.22	19.1	0.04	198,093.37	0.09	0.01	67.68	0.19	201.17	0	102,365.30
HM16JV141	C17MA21A0036	<0.05	<0.05	90,846.24	<0.20	<0.01	5.05	11.29	<0.01	633.17	0.45	127.23	621.52	13.81	0.05	214,958.28	0.09	0.03	107.15	0.21	67.77	0	99,197.49
HM16JV141	C17MA21A0037	<0.06	<0.08	92,168.93	<0.29	<0.02	4.69	4.77	<0.01	319.94	0.16	127.13	400.62	10.64	0.03	211,194.69	0.05	<0.01	47.3	0.18	87.75	<0.00	100,271.09
HM16JV141	C17MA21A0038	<0.11	<0.10	82,362.10	<0.46	<0.02	6.64	6.88	<0.01	618.29	0.31	123.61	215.11	10.22	0.02	209,009.44	<0.02	<0.01	110.33	0.22	68.7	0.01	89,978.04
HM16JV141	C17MA21A0046	0.1	<0.04	90,446.93	0.68	<0.01	7.14	11.16	<0.01	550.94	0.85	121.12	336.45	25.79	0.04	205,612.51	0.15	0.02	87.06	0.31	126.07	0	103,937.70
HM16JV141	C17MA21A0051	<0.04	<0.04	90,171.49	0.15	<0.01	3.21	4.73	<0.01	242.75	0.19	126.37	411.17	9.58	0.01	212,384.14	0.07	<0.01	106.84	0.06	86.48	0.01	96,315.55
HM16JV143	E17JN14A537	<0.09	<0.09	90,642.57	<0.40	<0.01	8.96	11.92	<0.03	1,789.31	7.32	85.1	954.35	1.13	0.11	207,376.09	0.4	0.2	34.79	4.11	104.98	0.02	97,286.32
HM16JV143	E17JN14A537	<0.14	<0.17	89,839.37	0.68	<0.02	8.01	11.08	<0.05	479.64	6.56	86.29	945.53	1.46	0.07	209,621.68	0.17	0.09	35.89	3.96	101.67	0.01	97,123.57
HM16JV143	E17JN14A543	<0.08	<0.09	86,119.02	<0.39	<0.01	25.28	22.56	<0.04	1,799.15	17.18	87.1	700.37	3.23	0.17	198,486.96	0.29	0.22	58.16	10.57	118.94	0.02	97,517.44
HM16JV143	E17JN14A544	<0.10	<0.10	91,797.57	0.51	<0.01	26.94	13.02	0.09	622.31	10.58	77.57	826.05	5.24	0.1	198,606.90	0.3	0.16	52.53	5.62	103.3	0.01	96,390.19
HM16JV147	C17MA20A0365	<0.03	<0.04	106,392.48	0.28	<0.01	3.96	2.81	0.01	226.81	0.1	40.87	80.75	63.8	0.02	162,263.08	0.09	0.01	73.01	0.17	306.54	0	115,833.70
HM16JV147	C17MA20A0366	<0.03	<0.03	106,132.46	0.24	<0.01	5.14	2.73	0.02	163.63	0.12	40.57	87.59	69.53	0.01	161,881.00	0.06	0.03	59.7	0.19	294.08	0	115,485.27
HM16JV147	C17MA20A0367	<0.03	<0.03	106,200.39	0.16	<0.01	5.88	2.92	<0.01	165.51	0.12	40.63	73.77	69.04	0	161,940.51	0.08	0.02	82.55	0.18	303.32	0	118,749.91
HM16JV147	C17MA20A0369	<0.09	<0.09	118,593.65	<0.38	<0.02	1.73	6.39	<0.02	<328.31	<0.01	41.26	87.64	37.78	<0.01	161,420.48	<0.03	<0.01	80.43	0.15	271.52	<0.00	125,748.30
HM16JV147	C17MA20A0370	<0.04	<0.04	103,910.31	<0.17	<0.01	3.9	3.62	0.02	215.56	0.11	44.6	74.79	53.59	0.01	162,160.00	0.05	0.04	86.75	0.1	313.35	0	110,824.67
HM16JV147	C17MA20A0371	<0.04	<0.04	110,357.60	<0.23	<0.01	6.45	4.88	0.03	435.84	0.18	39.93	73.15	81.56	0.05	160,334.72	0.15	0.16	118.82	0.36	295.3	0.01	119,682.95
HM16JV147	C17MA20A0372	<0.03	<0.03	106,843.88	0.21	0.01	3.94	1.97	0.01	172.78	0.06	44.73	24.91	49.69	0.01	162,186.18	0.06	0.01	51.46	0.12	295.54	0	115,764.28
HM16JV147	C17MA20A0373	<0.03	<0.03	107,809.73	0.36	<0.01	4.53	2.92	<0.01	223.89	0.11	40.2	26.35	62.55	0.01	165,258.26	0.09	0.09	60.54	0.12	305.63	<0.00	121,634.09
HM16JV147	C17MA20A0374	<0.04	<0.04	109,374.55	0.31	<0.01	5.43	2.8	<0.01	285.13	0.13	33.5	28.18	83.58	0.01	161,451.87	0.09	0.01	104.9	0.33	305.84	<0.00	120,368.07
HM16JV147	C17MA20A0375	<0.03	<0.03	106,313.27	0.17	<0.01	3.22	2.9	0.01	276.11	0.07	34.41	49.81	68.06	0.01	163,442.01	0.03	<0.01	66.92	0.13	290.65	<0.00	115,772.69
HM16JV147	C17MA20A0376	<0.04	<0.04	111,506.30	<0.16	<0.01	2.69	1.95	<0.01	252.49	0.01	36.2	18.49	36.79	0.01	162,758.85	0.06	<0.01	90.95	0.05	288.4	<0.00	120,447.93
HM16JV147	C17MA20A0377	<0.03	<0.03	105,236.26	<0.16	<0.01	3.71	3.18	0.02	323.04	0.04	36.3	51.28	48.43	0.01	162,644.76	0.04	<0.00	101.44	0.04	284.48	<0.00	114,500.13
HM16JV147	C17MA20A0378	<0.04	<0.04	111,904.10	0.45	<0.01	5.7	2.7	<0.01	263.06	0.28	54.53	234.51	70.7	0.01	164,101.38	0.13	0.1	32.22	0.18	288.51	<0.00	121,348.14
HM16JV147	C17MA20A0379	<0.04	<0.04	109,009.46	0.2	<0.01	7.71	4.8	0.01	198.03	0.26	56.92	95.82	68.01	0	161,867.89	0.05	0.02	120.24	0.27	273.65	<0.00	118,878.58
HM16JV147	C17MA20A0380	<0.03	<0.04	104,917.33	0.23	<0.01	6.39	1.8	0.01	<126.64	0.15	60.1	63.55	64.99	0.02	162,981.60	0.07	<0.01	60.06	0.14	277.14	<0.00	114,628.16
HM16JV147	C17MA20A0381	<0.03	<0.04	112,989.92	0.44	<0.01	6.35	2.58	<0.01	188.61	0.24	53.14	107.15	76.48	0.02	161,555.33	0.19	0.02	55.41	0.3	283.85	<0.00	120,655.71
HM16JV147	C17MA20A0382	<0.05	<0.06	102,635.89	0.97	<0.01	23.74	2.15	0.02	493.57	0.46	59.69	102.13	114.53	0.05	160,082.37	0.12	0.07	67.49	0.45	285.86	0.01	111,999.53
HM16JV147	C17MA20A0384	<0.03	<0.03	102,214.33	<0.16	<0.01	5.4	5.91	0.01	1,491.11	0.06	27.71	32.2	45.93	0.01	126,484.28	0.02	0.02	144.17	0.08	243.62	0	88,146.85
HM16JV147	C17MA20A0385	<0.03	<0.03	108,762.85	0.41	<0.00	4.06	1.65	<0.01	141.69	0.05	36.41	57.9	45.65	<0.00	167,902.49	0.01	0.02	68.72	0.05	284.8	<0.00	117,358.61
HM16JV147	C17MA20A0386	<0.03	<0.03	110,541.53	0.31	<0.01	3.95	1.06	<0.01	132.48	0.05	25	67.12	23.12	<0.00	164,940.72	0.02	0.01	26.55	0.03	262.57	<0.00	113,145.39
HM16JV147	C17MA20A0387	<0.03	<0.03	105,702.21	0.18	<0.01	7.14	1.73	<0.01	242.93	0.04	37.7	98.44	60.15	0	163,749.91	0.04	0.01	57.04	0.04	283.8	<0.00	115,819.46
HM16JV147	C17MA20A0388	<0.03	<0.03	107,681.63	0.16	0.01	7.06	2.26	0.01	314.5	0.06	36.73	83.96	67.46	0	162,986.51	0.03	0.05	109.14	0.05	281.59	0	117,304.60
HM16JV149	E17JN15A460	0.06	0.07	94,712.37	<0.26	<0.01	14.29	1.59	0.09	387.34	1.54	29.46	230.89	18.35	0.02	241,025.66	0.44	0.05	91.99	0.81	145.66	<0.00	80,334.89
HM16JV149	E17JN15A461	<0.04	<0.05	91,399.58	<0.27	<0.01	8.23	16.83	<0.02	300.72	1.34	56.62	131.45	1.48	0.12	217,541.58	0.66	0.01	419.67	0.47	89.59	<0.00	92,714.54
HM16JV149	E17JN15A463	<0.10	<0.13	97,432.46	<0.62	<0.02	11.82	8.97	<0.05	1,041.05	2.93	53.13	165.58	1.78	0.19	205,304.45	1.37	<0.03	284.6	1.29	91.69	<0.01	81,687.64
HM16JV151	C17MA21A0099	<0.04	<0.04	94,355.09	0.28	<0.01	46.54	0.8	0.32	182.68	2.45	121.74	256.48	4.39	0.02	179,600.02	0.03	<0.01	43.13	1.05	156.07	0	109,720.09
HM16JV151	C17MA21A0054	<0.04	<0.05	98,791.89	<0.18	<0.01	23.56	1.61	<0.01	267.61	1.1	124.59	203.56	3.04	0.01	180,203.29	<0.02	0.01	29.74	0.42	214.1	0.01	109,585.96
HM16JV151	C17MA21A0055	<0.06	<0.05	101,037.15	<0.20	<0.01	25.76	0.96	<0.01	930.41	1.28	131.07	153.23	2.04	0.04	177,492.83	0.05	0.02	18.83	0.44	239.1	0	105,571.50
HM16JV151	C17MA21A0056	<0.05	<0.05	88,672.61	<0.15	<0.01	48.47	2.53	0.09	1,677.47	2.48	116.69	334.95	5.09	0.02	169,576.87	0.09	0.08	31.6	0.94	104.87	0.01	99,987.17
HM16JV151	C17MA21A0057	<0.04	<0.04	93,808.54	<0.12	<0.01	47.52	2.37	0.01	371.88	3.34	121.96	290.81	4	0.02	173,984.91	0.09	0.03	38.08	1.56	160.4	<0.00	107,044.98
HM16JV151	C17MA21A0058	<0.07	<0.06	96,288.34	0.28	0.03	27.01	1.16	<0.01	<187.77	4.05	125.63	251.57	3.59	0.11	179,917.33	<0.03	<0.02	41.23	1.61	109.01	<0.00	104,278.02
HM16JV151	C17MA21A0060	<0.05	<0.04	99,689.84	0.18	<0.01	43.79	1.37	0.96	578.83	2.89	121.14	241.97	5.61	0.04	172,244.34	0.06	0.11	40.97	1.19	235.2	<0.00	109,940.84
HM16JV151	C17MA21A0061	<0.07	<0.07	93,868.35	<0.22	<0.02	53.87	2.97	<0.01	1,146.74	5.13	105.04	441.59	4.25	0.09	169,565.89	0.09	0.04	59.2	2.26	145.19	0.01	119,174.46
HM16JV151	C17MA21A0062	0.04	<0.03	91,055.06	<0.14	<0.01	102.39	2.59	0.12	6,366.77	6.97	113.44	260.38	7.52	0.09	169,407.83	0.22	0.06	62.87	3.03	172.39	0.01	99,825.26
HM16JV154	E17JN14A710	<0.09	<0.07	71,520.04	1.22	<0.01	103.01	32.64	<0.04	29,709.82	170.24	48.79	1.31	289.23	3.12	182,908.53	5.2	0.03	262.48	138.94	124.36	0.03	74,562.10
HM16JV159	E17JN14A588	<0.06	<0.06	103,311.42	<0.30	<0.01	11.37	2.06	<0.03	322.28	3	66.71	105.57	2.06	0.08	199,148.37	0.39	<0.01	21.48	1.05	248.68	<0.00	100,159.91
HM16JV159	E17JN14A590	<0.05	<0.05	103,740.80	<0.26	<0.01	9.78	0.78	<0.02	140.53	0.09	14.15	43.17	3.7	0.01	213,527.42	<0.01	<0.00	41	0.06	243.14	0	88,538.53
HM16JV159	E17JN14A592	<0.05	<0.05	95,814.88	<0.29	<0.01	37.83	1.63	<0.02	367.89	0.32	29.58	63.69	6.79	0.02	177,423.02	0.16	0.01	21.6	0.23	299.33	<0.00	111,917.21
HM16JV159	E17JN14A593	<0.11	<0.09	103,913.21	<0.52	<0.02	29.49	2.31	<0.05	460.42	0.73	27.49	37.67	5.21	0.08	184,869.21	0.2	<0.01	24.07	0.23	288.89	<0.00	113,033.50

*For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.
**All elements in ppm

Appendix IV: Hemlo district chlorite mineral chemistry collected by LA-ICP-MS

Sample	Analysis	Ag107	Ag109	Al27	As75	Au197	B11	Ba137	Bi209	Ca43	Ce140	Co59	Cr53	Cu65	Eu153	Fe57	Gd157	Hf178	K39	La139	Li7	Lu175	Mg24
HM16JV159	E17JN14A594	<0.07	<0.06	100,143.46	<0.30	<0.01	37.88	2.15	<0.02	366.72	0.36	35.02	38.4	6.25	0.02	184,950.79	0.09	0.02	26.89	0.19	224.69	<0.00	113,044.80
HM16JV159	E17JN14A597	<0.07	<0.07	89,453.80	<0.38	<0.01	94.55	2.25	<0.03	475.23	0.42	41.87	29.91	9.34	0.03	176,634.42	0.16	0.02	60.02	0.24	189.69	<0.00	110,544.42
HM16JV161	C17MA21A0078	<0.04	<0.04	85,886.14	0.15	<0.01	16.83	8.03	<0.01	956.52	2.67	78.88	38.1	10.25	0.06	172,032.18	0.15	0.16	104.51	7	338.88	<0.00	115,504.42
HM16JV161	C17MA21A0079	<0.03	<0.03	90,570.89	0.37	<0.01	13.02	7.86	<0.01	713.82	2.78	77.44	37.55	10.22	0.07	176,107.31	0.1	0.07	113.68	7.29	318.93	<0.00	118,279.92
HM16JV161	C17MA21A0087	<0.04	<0.05	88,614.29	<0.19	<0.01	18.55	9.65	<0.01	811.51	2.92	74.68	42.03	10.45	0.03	175,998.23	0.16	0.13	89.72	8.22	315.71	<0.00	117,925.19
HM16JV161	C17MA21A0088	<0.04	<0.04	87,165.49	0.37	<0.01	29.05	10.08	<0.01	1,319.50	5.91	78.17	49.77	16.11	0.15	174,850.13	0.16	0.18	79.54	12.5	309.19	<0.00	113,832.07
HM16JV161	C17MA21A0089	<0.04	<0.03	86,487.14	0.3	<0.01	27.42	10.82	<0.00	1,362.73	4.04	78.84	45.31	16.91	0.07	173,269.48	0.14	0.27	116.77	9.63	331.55	<0.00	115,042.00
HM16JV161	C17MA21A0090	<0.04	<0.04	91,105.68	<0.18	0.01	14.71	11.16	<0.01	624.2	2.35	74.75	34.78	10.11	0.04	175,989.16	0.17	0.06	58.54	6.41	319.14	<0.00	120,934.03
HM16JV161	C17MA21A0091	<0.04	<0.04	90,116.45	0.31	<0.01	21.47	8.71	<0.01	776.86	4.32	77.99	74.4	11.63	0.06	180,275.48	0.15	0.39	54.94	8.73	334.71	<0.00	111,009.75
HM16JV161	C17MA21A0093	<0.03	<0.03	90,455.19	0.52	<0.01	19.53	9.47	<0.01	1,021.26	4.39	79.11	29.71	16.41	0.09	180,532.71	0.15	0.24	76.51	10.26	321.32	<0.00	110,072.75
HM16JV161	C17MA21A0094	<0.09	<0.08	92,948.71	<0.37	0.02	10.1	11.29	<0.02	1,589.11	4.02	73.99	28.76	10.04	0.05	175,554.85	<0.04	0.18	189.7	7.67	312.22	<0.00	123,667.64
HM16JV161	C17MA21A0095	<0.05	<0.05	87,591.68	<0.23	<0.01	14.71	9.96	<0.01	957.53	2.94	79.66	46.61	11.41	0.06	170,681.98	0.08	0.04	99.05	7.65	336.38	<0.00	119,690.93
HM16JV161	C17MA21A0096	<0.03	<0.04	93,622.96	<0.19	<0.01	4.46	5.42	<0.01	223.18	0.88	70.61	61.65	3.97	0.01	192,286.81	0.1	0.05	14.6	1.99	325.51	<0.00	94,890.78
HM16JV161	C17MA21A0097	<0.04	<0.03	87,692.23	0.16	<0.01	17.25	9.48	<0.01	722.99	1.29	48.89	29.15	10.17	0.04	170,641.94	0.06	0.12	52.71	4.91	326.92	<0.00	117,871.28
HM16JV161	C17MA21A0098	<0.04	<0.03	88,320.56	<0.12	<0.01	15.72	8.31	<0.01	1,835.46	0.99	48.54	27.95	8.73	0.03	174,040.93	0.08	0.16	51.02	4.41	329.8	<0.00	115,701.25
HM16JV162	E17JN15A350	<0.11	<0.12	85,024.72	<0.57	<0.02	35.61	19.9	<0.04	1,338.76	33.98	60.62	10.43	312.28	0.16	192,754.21	0.83	0.22	430.71	26.73	450.54	0	91,315.97
HM16JV162	E17JN15A351	<0.12	<0.14	96,632.96	<0.68	<0.01	35.51	12.96	<0.04	1,806.34	17.46	22.39	4.63	179.33	0.07	204,333.66	0.14	0.3	83.71	13.23	402.94	<0.00	100,104.63
HM16JV184	C17MA21A0034	<0.04	<0.04	102,935.04	0.24	<0.01	4.04	1.29	<0.00	<121.32	17.64	69.67	16.28	3.74	0.11	190,708.45	0.13	<0.01	21.25	12.27	148.94	<0.00	100,265.00
HM16JV191	C17MA21A0030	<0.04	<0.03	92,897.51	<0.13	<0.01	13.95	7.59	<0.01	512.58	0.28	61.13	18.84	5.52	0.01	181,472.71	0.02	0.06	52.49	1.68	320.02	<0.00	113,105.54
HM16JV191	C17MA21A0031	<0.04	<0.04	94,151.03	<0.15	<0.01	15.56	11.55	<0.01	719.75	0.81	57.14	26.51	6.81	0.02	179,165.86	0.02	0.07	63.5	3.72	299.15	<0.00	117,410.08
HM16JV191	C17MA21A0022	<0.04	<0.04	87,173.15	0.38	<0.01	35.94	11.42	<0.01	1,036.18	0.77	71.06	29.57	12.93	0.04	174,843.92	0.07	0.32	75.64	3.66	367.77	<0.00	113,351.87
HM16JV191	C17MA21A0023	<0.04	<0.04	87,888.86	<0.16	<0.01	20.47	6.55	<0.01	852.38	0.36	84.02	29.54	6.98	0.02	176,774.22	0.03	0.09	60.82	1.95	337.24	<0.00	115,246.88
HM16JV191	C17MA21A0024	<0.04	<0.04	89,301.93	0.16	<0.01	30.45	9.7	<0.01	746.98	0.81	41.4	43.03	13.18	0.04	173,390.51	0.08	0.11	63.27	3.85	309.43	<0.00	114,432.96
HM16JV191	C17MA21A0025	<0.04	<0.03	88,374.48	<0.15	<0.01	19.86	6.71	<0.01	939.21	0.33	66.59	73.03	10.4	0.02	176,215.79	0.02	0.2	82.39	1.93	333.58	<0.00	112,898.53
HM16JV191	C17MA21A0026	<0.04	<0.03	89,497.18	<0.14	<0.01	22.84	6.73	<0.01	949	0.37	64.36	78.76	9.62	0.02	180,010.95	0.03	0.13	53.63	1.8	318.22	<0.00	110,388.16
HM16JV191	C17MA21A0027	<0.04	<0.04	86,993.52	<0.14	<0.01	28.25	8.75	<0.01	1,935.28	0.23	81.29	50.33	11.09	0.01	173,944.34	0.06	0.29	90.07	1.58	334.65	0	113,305.24
HM16JV191	C17MA21A0028	<0.04	<0.04	87,976.93	<0.14	<0.01	41.23	11.89	<0.01	1,849.68	0.62	78.42	57.74	13.36	0.06	175,611.66	0.08	0.24	78.41	3.36	320.58	<0.00	113,246.29
HM16JV191	C17MA21A0029	<0.04	<0.03	85,167.87	<0.13	<0.01	32.13	7.32	<0.01	768	0.6	74.57	42.71	13.84	0.02	173,621.13	0.06	0.36	65.26	2.57	287.02	0	102,842.20
HM16JV193	C17MA21A0007	<0.04	<0.04	99,463.94	<0.20	<0.01	6.81	14.66	<0.01	438.19	0.77	97.18	26.68	9.46	0.04	195,820.32	0.17	0.05	45.45	3.51	406.32	0.01	96,586.23
HM16JV193	C17MA21A0008	<0.04	<0.04	101,136.01	<0.21	<0.01	5.56	16.48	<0.01	353.94	0.93	97.48	28.7	9.39	0.07	198,313.99	0.18	0.03	40.61	4.65	394.67	<0.00	99,899.54
HM16JV193	C17MA21A0009	<0.05	<0.04	102,915.41	<0.22	<0.01	9.37	15.37	<0.01	369.25	0.36	98.26	144.68	9.26	0.04	196,637.22	0.13	0.2	52.42	2.12	416.68	0	99,897.76
HM16JV193	C17MA21A0010	<0.05	<0.04	102,634.01	<0.20	<0.01	6.78	13.89	<0.01	466.23	0.64	97.91	123.84	7.8	0.03	194,861.54	0.07	0.08	35.98	2.82	516	<0.00	97,584.50
HM16JV193	C17MA21A0011	<0.06	<0.06	99,003.99	<0.26	<0.01	5.47	13.94	<0.01	412.9	0.79	97.91	94.4	8.3	0.08	190,639.25	0.18	0.3	31.57	3.33	455.19	<0.00	98,043.81
HM16JV193	C17MA21A0012	<0.05	<0.05	103,320.27	<0.21	<0.01	5.01	14.1	<0.01	510.16	0.85	98.66	48.72	8.23	0.05	199,970.87	0.22	0.09	45.17	4.32	423.1	<0.00	99,983.79
HM16JV193	C17MA21A0013	<0.04	<0.05	98,864.63	<0.22	<0.01	6.36	14.91	<0.01	312.09	0.86	101.23	93.02	8.22	0.05	193,466.51	0.08	0.3	32.06	2.49	482.54	<0.00	95,645.22
HM16JV193	C17MA21A0015	<0.05	<0.05	102,689.27	<0.18	<0.01	16.62	17.57	<0.01	419.91	0.66	101.87	43.84	14.21	0.04	192,646.47	0.21	0.27	58.82	2.46	461.17	<0.00	102,943.06
HM16JV193	C17MA21A0016	<0.05	<0.05	106,021.93	0.25	<0.01	10.88	13.29	<0.01	177.71	0.62	101.02	99.89	6.63	0.04	193,473.35	0.05	0.11	61.85	1.95	443.23	0.01	101,323.22
HM16JV193	C17MA21A0017	<0.04	<0.04	99,908.78	<0.18	<0.01	11.11	14.46	<0.01	378.93	0.68	98.6	70.77	7.76	0.03	191,315.60	0.15	0.2	61.69	2.34	363.37	0	99,989.98
HM16JV193	C17MA21A0018	<0.04	<0.04	101,617.89	<0.17	<0.01	6.33	13	<0.01	283.84	0.54	95.88	47.72	6.04	0.04	193,186.66	0.08	0.03	50.84	1.84	369.91	0	102,077.53
HM16JV193	C17MA21A0019	<0.05	<0.04	96,394.93	0.47	<0.01	4.78	8.82	<0.01	284.01	0.55	99.8	42.4	6.81	0.04	192,648.10	0.09	0.02	43.42	2.75	270.29	<0.00	101,510.25
HM16JV193	C17MA21A0020	<0.05	<0.04	101,516.94	<0.17	<0.01	4.34	11.73	<0.01	318.63	0.66	96.4	22.93	7.42	0.03	192,447.41	0.08	<0.01	35.82	2.8	351.46	<0.00	103,828.69
HM16JV193	C17MA21A0021	<0.04	<0.04	101,927.07	<0.16	<0.01	5.96	12.99	<0.01	358.73	0.73	96.13	15.48	8.09	0.05	192,819.36	0.13	0.01	49.01	2.68	418.01	0	100,943.35
HM16JV208	E17JN15A309	<0.13	<0.13	79,866.32	0.7	<0.02	32.5	0.33	<0.04	312.7	0.8	49.78	140.31	1.4	0.02	156,719.09	<0.05	0.08	145.91	0.22	84.21	<0.00	103,461.23
HM16JV208	E17JN15A309	<0.06	0.06	93,974.21	0.67	<0.01	7.03	1.24	<0.02	335.06	0.64	54.07	144.21	0.95	<0.00	182,082.14	0.05	0.01	301.15	0.33	85.06	<0.00	120,045.29
HM16JV208	E17JN15A311	0.06	0.12	84,401.42	0.4	<0.01	55.94	1.09	<0.02	464.5	0.99	50.34	191.53	1.14	<0.00	165,602.46	0.03	0.02	312.17	0.56	103.51	<0.00	111,367.91
HM16JV208	E17JN15A312	<0.10	0.28	76,018.56	<0.77	<0.01	20.85	0.32	<0.05	14,589.89	0.32	45.39	20.54	1.82	<0.01	155,014.24	<0.03	0.07	324.2	0.36	72.11	<0.01	102,171.72

*For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix IV: Hemlo district chlorite mineral chemistry collected by LA-ICP-MS

Sample	Analysis	Mn55	Na23	Nb93	Ni60	Pb206	Pb207	Pb208	Sb121	Si29	Sn118	Sr88	Ta181	Th232	Ti47	Ti49	Tl205	U238	V51	Y89	Yb172	Zn66	Zr90
HM16JV002	E17JN15A405	747.04	602.51	<0.01	<0.12	0.69	1.05	1.11	<0.34	167,811.99	0.72	18.07	<0.01	0.02	142.67	148.57	<0.08	0.28	45.64	2.98	0.08	76	5.5
HM16JV002	E17JN15A406	863.46	783.2	<0.00	0.37	0.72	0.31	0.68	<0.21	164,416.96	0.61	16.93	0.02	<0.01	219.26	209.89	<0.06	0.5	43.81	3.25	0.11	93.19	6.62
HM16JV002	E17JN15A408	2,416.41	24.77	<0.01	204.29	0.16	<0.04	0.07	<0.20	141,489.45	<0.11	1.77	<0.01	<0.01	82.18	80.2	<0.05	<0.01	91.14	0.15	<0.03	1,022.21	0.12
HM16JV002	E17JN15A409	2,528.17	9.53	<0.00	226.89	0.03	0.04	0.03	<0.08	129,472.93	0.19	1.35	<0.00	<0.00	80.85	78.33	<0.02	0.01	92.59	0.04	<0.02	893.34	0.03
HM16JV002	E17JN15A410	2,512.75	13	0	230.51	0.03	0.05	0.03	<0.08	129,344.40	0.19	1.37	<0.00	<0.00	79.04	78.61	<0.02	0	91.66	0.05	<0.01	876.37	0.03
HM16JV002	E17JN15A411	2,527.70	11.85	<0.00	210.67	0.03	0.06	0.03	<0.08	129,519.74	0.13	5.97	<0.00	<0.00	93.08	95.14	<0.02	<0.00	101.4	0.03	<0.01	935.03	0.17
HM16JV002	E17JN15A412	2,515.92	9.45	<0.00	239.44	0.03	0.06	0.02	<0.08	130,258.65	0.17	2.18	<0.00	<0.00	79.03	78.97	<0.02	<0.00	85.53	0.04	<0.01	863.85	0.07
HM16JV002	E17JN15A413	789.82	719.24	0.09	0.17	0.21	0.35	0.39	<0.23	170,094.72	0.27	18.36	<0.01	0.05	143.11	168.06	<0.06	0.3	41.75	2.2	0.14	103.01	4.88
HM16JV002	E17JN15A414	2,583.06	<4.31	<0.00	149.44	0.02	<0.03	0.02	<0.11	122,136.58	0.1	0.75	<0.00	<0.00	102.96	108	<0.02	0	135.27	0.02	<0.01	947.53	0.01
HM16JV004	E17JN14A668	2,809.14	226.41	0.03	306.61	3.59	2.51	4.17	<0.10	132,576.02	0.31	2.37	<0.00	0.17	51.65	48.05	<0.03	0.01	142.25	1.34	0.03	1,035.55	2.78
HM16JV004	E17JN14A669	2,831.59	180.26	0.02	281.69	2.95	1.95	4.07	<0.12	124,741.15	0.18	2.39	<0.00	0.14	33.69	35.48	<0.04	0.01	162.61	1.49	0.04	958.5	1.93
HM16JV004	E17JN14A670	2,823.48	213.58	0	294.23	2.6	1.84	4.35	<0.10	131,175.87	0.23	2.86	<0.00	0.1	31.78	33.95	<0.03	0.01	132.66	1.25	0.06	1,032.62	1.32
HM16JV004	E17JN14A671	2,860.38	367.64	0.04	294.42	4.98	3.43	8.15	<0.12	127,920.50	0.2	9.95	0.01	0.61	60.76	63.72	<0.04	0.02	134.06	2.2	0.09	976.03	3.73
HM16JV004	E17JN14A672	2,816.89	327.87	0.02	274.91	2.51	1.67	4.1	<0.12	126,913.20	0.18	4.48	<0.00	0.17	56.47	55.44	<0.03	0.01	139.26	1.64	0.08	963.55	3.38
HM16JV004	E17JN14A673	2,720.22	352.44	0.04	322.43	2.02	1.25	2.22	<0.09	134,558.10	0.15	20.72	0	0.13	63.28	63.51	<0.03	0.03	101.95	1.79	0.06	1,025.16	4.62
HM16JV004	E17JN14A674	2,727.76	420.49	0.01	313.09	1.34	0.71	1.32	<0.17	140,550.18	0.17	6.32	<0.01	0.04	52.61	55.99	<0.05	0.03	143.28	1.39	<0.01	1,123.55	1.85
HM16JV004	E17JN14A675	2,776.11	123.69	0.01	302.96	1.38	0.78	1.17	<0.10	130,572.12	0.14	2.12	0	0.02	34.3	37.14	<0.03	0.02	133.67	0.98	0.03	1,024.86	0.55
HM16JV004	E17JN14A676	2,803.04	263.51	0.02	290.93	4.21	3.52	4.41	<0.11	130,290.98	0.14	5.41	0	0.03	33.89	33.17	<0.03	0.02	143.97	2.04	0.06	999.28	2.75
HM16JV004	E17JN14A678	2,652.10	193.72	0.03	346.57	1.17	0.64	0.76	<0.11	134,858.94	0.16	4.82	<0.00	0.02	65.58	68.06	<0.03	0.03	87.17	0.69	0.02	986.53	4.05
HM16JV004	E17JN14A679	2,881.24	104.38	0.01	339.91	0.84	0.4	0.57	<0.10	130,009.83	0.16	2.53	<0.00	0.01	34.01	34.09	<0.03	0.02	104.06	0.43	0.01	1,018.36	1.39
HM16JV004	E17JN14A680	2,827.62	77.78	<0.00	306.75	0.56	0.33	0.47	<0.11	126,378.34	0.12	2.59	0.01	0.01	31.73	27.74	<0.03	0.01	133.07	0.4	0.02	948.89	0.8
HM16JV004	E17JN14A681	2,880.40	96.48	0.02	325.79	0.82	0.49	0.6	<0.10	130,679.47	0.15	2.28	0	0.01	43.43	43.97	<0.03	0.01	121.01	0.43	0.02	1,010.47	0.91
HM16JV004	E17JN14A682	2,719.31	342.29	0.06	303.75	2.07	1.59	2	<0.13	128,659.22	0.18	12.02	0	0.03	124.78	118.74	<0.04	0.01	127.25	1.03	<0.01	918.81	6.12
HM16JV004	E17JN14A683	2,782.67	137.81	0.04	301.2	1.46	1.06	1.12	<0.20	124,087.28	0.17	5.83	<0.00	0.01	81.83	74.61	<0.06	0.03	134.58	0.62	<0.02	870.21	2.47
HM16JV007	E17JN14A580	2,530.88	312.58	2.34	521.57	1.92	1.01	1.35	<0.34	123,301.26	0.28	5.65	0.07	0.04	876.84	843.37	<0.09	<0.01	104.81	1.58	0.04	531.85	0.52
HM16JV008	C17MA21A0362	2,690.79	32.86	0.01	956.08			0.48	<0.08	128,394.74	0.07	1.84	0	0.05	12.64	12.59	0.07	0.07	141.61	0.97	<0.01	390.84	0.82
HM16JV008	C17MA21A0202	3,097.05	7.84	<0.00	378.66			0.22	<0.11	114,866.34	<0.08	0.37	<0.00	0	120.91	114.25	0.04	0.01	359.37	0.29	0.02	503.63	0.15
HM16JV009	E17JN15A297	5,605.96	114.17	<0.01	27.66	0.37	0.45	0.52	<0.18	118,456.23	0.26	2.16	<0.01	0.01	26.04	17.19	<0.04	<0.01	1,376.32	0.03	0.06	286.6	<0.01
HM16JV009	E17JN15A299	3,247.12	41.63	<0.01	336.95	0.13	<0.06	0.16	<0.31	123,405.70	0.33	1.16	<0.01	0.02	25.73	34.28	<0.08	<0.01	490.28	0.13	0.06	277.14	<0.04
HM16JV009	E17JN15A299	2,820.56	29.86	0.02	528.64	0.09	0.15	0.28	<0.24	137,470.35	0.25	0.8	<0.01	<0.01	35.6	39.89	<0.07	<0.01	526.98	0.05	<0.02	382.2	<0.03
HM16JV009	E17JN15A299	3,202.30	40.92	0	444.25	0.18	0.25	0.2	<0.13	133,116.09	0.21	1.12	<0.00	<0.00	52.34	51.18	<0.04	<0.00	506.92	0.07	<0.01	354.37	0.03
HM16JV009	E17JN15A300	3,135.37	26.94	0.01	686.24	0.17	0.19	0.19	<0.08	127,411.39	0.2	1.11	<0.00	0.01	28.82	30.09	<0.02	<0.00	489.56	0.05	0.01	346.61	0.16
HM16JV009	E17JN15A301	3,337.91	27.25	<0.01	873.75	0.08	0.24	0.15	<0.19	119,655.56	0.22	1.39	<0.01	0.02	20.19	23.63	<0.05	<0.00	503.72	0.11	<0.01	288.59	0.2
HM16JV009	E17JN15A302	3,079.53	39.65	0	745.02	0.2	0.39	0.41	<0.08	124,747.08	0.14	1	<0.00	0	33.43	31.2	<0.02	<0.00	521.49	0.05	<0.01	308.63	0.05
HM16JV009	E17JN15A303	3,111.15	52.07	<0.01	445.86	0.07	<0.03	0.11	<0.10	124,507.32	0.1	0.58	<0.00	<0.00	14.81	16.54	<0.03	<0.00	534.75	0.02	<0.01	321.37	<0.00
HM16JV009	E17JN15A304	3,345.03	44.78	0.01	343.9	0.22	0.36	0.29	<0.12	120,901.19	0.1	0.89	<0.00	0.01	18.81	15.84	<0.03	<0.01	515.68	0.03	<0.01	306.8	0.03
HM16JV009	E17JN15A306	3,308.38	92.24	0.01	879.98	0.54	0.45	0.59	<0.08	123,940.42	0.18	1.2	<0.00	0.01	25.79	25.57	<0.02	0.01	499.19	0.07	0.01	318.98	0.01
HM16JV009	E17JN15A308	3,257.72	68.53	<0.01	1,230.52	0.37	0.63	1.16	<0.28	115,274.01	0.36	0.87	<0.01	<0.01	18.84	21.53	<0.08	<0.01	496.19	0.06	<0.04	284.63	<0.01
HM16JV013	C17MA20A0033	2,931.78	15.55	<0.00	148.07			3.73	<0.24	119,637.07	<0.09	4.42	<0.00	<0.00	18.71	20.38	<0.03	0.03	277.37	0.58	<0.01	931.73	0.02
HM16JV013	C17MA20A0053	2,415.22	9.64	0.02	36.83			2.39	<0.19	139,644.10	<0.08	2.55	<0.00	<0.00	51.29	64.31	<0.03	<0.00	395.41	0.07	0.01	970.05	0.01
HM16JV015	C17MA20A0063	3,116.17	110.09	<0.00	345.43			6.21	<0.12	138,138.93	<0.07	2.41	<0.00	0.01	9.62	10.59	<0.02	0.01	130.76	0.94	0.05	903.28	1.34
HM16JV015	C17MA20A0065	3,140.74	119.04	0.01	347.83			1.39	<0.12	135,345.57	<0.06	2.7	<0.00	0.03	7.06	8.42	<0.02	0.02	125.7	0.71	0.01	884.67	1.72
HM16JV015	C17MA20A0066	3,133.11	107.17	0.04	420.13			1.8	<0.15	141,058.11	0.08	2.18	0	0.02	15.36	15.35	<0.02	0.01	127.56	0.8	0.02	929.54	1.31
HM16JV015	C17MA20A0067	3,138.42	78.82	0	318.62			4.1	0.27	136,568.61	0.12	35.79	<0.00	0.03	27.28	26.28	<0.02	0.03	139.36	1.35	0.09	799.33	1.05
HM16JV015	C17MA20A0069	3,080.26	69.45	<0.00	298.82			0.89	<0.16	137,829.70	0.09	1.85	0	0.03	13.2	11.8	<0.02	0.03	151.76	0.65	0.01	881.12	3.26
HM16JV015	C17MA20A0091	3,163.10	175.48	0.01	280.64			5.2	<0.16	128,127.78	0.09	4.15	<0.00	0.03	16.49	14.67	<0.03	0.03	147.8	1.09	0.14	736.97	4.8
HM16JV015	C17MA20A0092	3,174.97	74.52	<0.00	305.07			0.68	<0.13	122,384.19	<0.06	2.16	0.01	0.02	12.31	13.24	<0.02	0	148.17	0.22	0	765.26	2.42
HM16JV015	C17MA20A0093	3,103.69	137.13	0	295.27			1.15	<0.10	139,637.93	0.11	2	<0.00	0.02	10.61	12.21	0.02	0.02	145.3	0.56	0.18	858.34	2.91
HM16JV015	C17MA20A0094	2,832.73	105.57	0.16	252.42			3.88	1.07	128,161.61	1.29	656.24	0.01	0.32	172.15	165.68	<0.02	0.74	212.32	31.14	2	679.84	7.23
HM16JV015	C17MA20A0095	3,126.88	178.23	<0.00	334.7			1.11	<0.09	134,346.95	<0.06	2.75	0	0.03	29.45	28.08	<0.02	0.02	144.59	0.77	0.06	865.94	3.44
HM16JV015	C17MA20A0096	3,205.23	86.15	<0.01	264.81			2.13	<0.14	122,417.06	<0.07	4.19	0.01	0.07	11.57	12.62	<0.03	0.05	156.48	1.25	0.07	773.96	4.59
HM16JV015	C17MA20A0097	3,056.53	73.06	<0.01	288.76			2.34	<0.11	134,221.64	0.05	2.12	0	0.02	18.36	17.9	<0.02	0.03	158.02	0.61	0.01	832.73	2.26
HM16JV015	C17MA20A0098	3,237.10	70.48	<0.00	291.39			0.4	<0.13	125,118.51	0.16	2.48	<0.00	0.01	22	23.97	<0.02	0.02	156.01	0.49	0.04	789.38	2.58

*For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix IV: Hemlo district chlorite mineral chemistry collected by LA-ICP-MS

Sample	Analysis	Mn55	Na23	Nb93	Ni60	Pb206	Pb207	Pb208	Sb121	Si29	Sn118	Sr88	Ta181	Th232	Ti47	Ti49	Tl205	U238	V51	Y89	Yb172	Zn66	Zr90
HM16JV019	E17JN14A427	2,855.51	11.19	0.64	318.67	1.14	0.72	0.97	<0.28	124,591.03	0.29	1.76	0.03	0.08	875.35	729.12	<0.06	0.02	192.62	1.77	0.04	693.42	0.2
HM16JV019	E17JN14A428	2,947.41	12	0.17	315.48	0.7	0.47	0.86	<0.19	115,953.89	0.29	2.21	0.02	0.06	236.55	253.72	<0.05	0.01	209.25	1.69	0.03	623.87	0.12
HM16JV020	E17JN14A456	2,961.76	25.08	0.08	225.62	1.52	0.52	1.23	<0.23	115,016.50	<0.10	3.46	<0.01	1.08	118.65	123.21	<0.06	0.07	231.99	1.02	0.02	842.76	7.49
HM16JV020	E17JN14A462	2,871.82	12.23	0.03	270.03	1.18	0.34	2.28	<0.16	127,656.53	0.26	2.11	0.01	1.66	47.45	49.66	<0.04	0.04	237.35	1.07	0.04	1,220.04	8.6
HM16JV020	E17JN14A463	3,000.63	11.73	0.01	278.38	1.04	0.27	1.23	<0.12	122,310.27	0.2	2.45	<0.00	1.37	42.28	41.44	<0.03	0.03	236.85	1.2	0.04	1,193.14	2.71
HM16JV020	E17JN14A465	3,192.37	10.63	0.04	230.07	4.16	2.23	3.86	<0.38	118,060.66	0.27	2.42	<0.01	2.47	42.34	39.09	<0.10	0.03	282.85	1.54	0.09	727.11	7.67
HM16JV020	E17JN14A466	3,128.07	242.85	0	232.36	3.6	1.4	3.25	<0.15	122,979.32	0.17	1.78	0.01	1.07	40.04	37.13	<0.03	0.02	280.22	1	0.05	909.74	0.61
HM16JV023	E17JN14A648	2,458.85	33.4	0.68	664.02	1.66	1.13	1.44	<0.23	114,588.59	0.25	2.43	0.05	0.09	457.12	456.22	<0.07	0.05	210.61	0.49	<0.02	644.02	1.84
HM16JV023	E17JN14A650	2,375.03	29.87	1.07	693.2	4.08	1.46	3.82	<0.25	116,209.58	0.62	2.79	0.08	0.06	718.01	448.53	<0.07	0.33	227.23	0.77	0.04	587.19	0.79
HM16JV023	E17JN14A651	2,350.65	1,297.02	0.14	744.58	3.11	0.9	2.72	<0.19	128,562.74	0.43	2.94	0.01	0.27	210.52	217.2	<0.04	0.04	282.81	0.57	0.04	657.53	4.42
HM16JV023	E17JN14A657	2,961.66	24.64	<0.01	636.59	0.37	<0.09	1.64	<0.36	110,148.58	<0.15	1.85	<0.01	<0.01	103.31	85.59	<0.11	0.02	139.9	0.72	<0.03	758.19	0.45
HM16JV032	C17MA21A0258	2,280.55	19.88	0.06	89.45			0.82	<0.08	162,768.82	0.17	1.59	<0.00	0.01	362.96	365.71	0.02	0.01	114.48	0.54	0.06	434.36	0.91
HM16JV032	C17MA21A0259	2,130.23	8.31	0.04	102.37			0.42	<0.07	129,547.92	0.15	0.98	<0.00	0	325.61	331.04	<0.01	0	135.14	0.22	0.03	482.38	0.1
HM16JV032	C17MA21A0261	2,285.64	12.04	0.27	125.56			2.61	<0.25	146,049.06	<0.14	1.95	<0.01	<0.01	118.59	130.33	0.07	0.02	105.29	0.63	0.04	538.37	3.25
HM16JV032	C17MA21A0263	2,296.17	6.08	0.14	109.49			1.17	<0.08	122,554.31	0.15	1.51	0.01	<0.00	414.42	417.34	0.02	<0.00	145.57	0.19	0.03	471.41	0.13
HM16JV032	C17MA21A0264	2,299.88	76.07	0.14	98.05			3.1	<0.07	146,368.72	0.14	2.87	<0.00	<0.00	191.1	189.17	0.02	0.01	128.27	0.78	0.06	427.57	1.26
HM16JV032	C17MA21A0217	3,625.55	12.1	0.03	98.04			12.54	<0.13	126,134.04	0.09	9.43	<0.00	<0.00	266.93	267.85	0.02	0.05	153.17	1.22	0.08	476.83	3.65
HM16JV032	C17MA21A0218	2,158.72	9.94	0.17	84.48			1.01	<0.08	150,464.55	0.16	2.61	0.01	0.01	237.32	238.26	0.03	0	142.84	0.42	0.02	465.35	1.12
HM16JV032	C17MA21A0219	2,659.20	10.46	0.08	103.24			0.87	<0.09	117,912.85	<0.06	4.44	0.01	0.01	151.07	155.95	0.02	0.01	133.77	1.27	0.08	450.42	0.26
HM16JV032	C17MA21A0213	2,444.35	8.83	0.19	110.28			2.12	<0.06	128,365.41	0.11	3.16	0.02	0.01	242	243.7	<0.01	0.01	154.36	0.84	0.12	507.16	0.22
HM16JV032	C17MA21A0214	2,544.17	12.2	0.13	111.91			3.4	<0.07	127,248.78	0.13	4.91	0	0.01	166.16	169.39	0.02	0.01	149.38	1.06	0.14	508.26	0.52
HM16JV032	C17MA21A0215	2,417.09	10.59	0.2	113.97			2.21	<0.09	128,626.50	0.16	2.37	0.01	0.01	198.95	191.27	<0.02	0	152.41	0.93	0.11	526.4	0.1
HM16JV032	C17MA21A0216	2,445.23	4.3	0.02	113.14			91.14	<0.11	119,068.19	<0.08	1.95	0.02	<0.00	40.35	41.85	<0.02	0.03	192.54	0.77	<0.01	473.45	0.18
HM16JV032	C17MA21A0203	2,155.84	15.94	0.03	88.46			1.89	<0.07	147,012.11	0.11	2.12	0.01	0.02	334.19	324.32	0.02	0.01	174.34	0.67	0.1	441.53	1.44
HM16JV032	C17MA21A0204	2,130.67	16.21	0.19	86.83			1.23	<0.07	131,636.05	0.22	1.63	0.01	0.01	370.18	370.69	<0.01	<0.00	186.94	0.46	0.06	433.6	0.78
HM16JV032	C17MA21A0208	2,454.53	9.22	0.1	105.66			1.12	<0.08	132,155.89	0.17	3.06	0.01	0	253.62	255	<0.01	0.01	143.13	1.08	0.15	466.73	0.92
HM16JV032	C17MA21A0212	2,328.17	8.35	0.04	117.5			1.26	<0.06	132,452.90	0.08	3.43	0	<0.00	57.1	61.44	0.01	0.01	110.91	0.36	0.02	544.78	0.38
HM16JV036	E17JN15A427	2,491.79	125	0.05	265.28	1.69	1.5	1.9	<0.08	122,914.59	0.19	1.25	<0.00	0.04	21.89	20.99	<0.02	0.01	207.31	0.2	0.01	695.78	1.29
HM16JV036	E17JN15A430	2,437.08	182.13	0.03	259.43	3.63	3.11	3.83	<0.14	118,657.29	0.17	3.31	<0.01	0.05	27.15	25.11	<0.03	0.01	215.18	0.33	<0.02	627.43	1.93
HM16JV036	E17JN15A431	2,373.78	220.22	0.01	324.2	2.56	2.14	2.7	<0.08	126,564.69	0.18	1.83	<0.00	0.02	19.23	18.18	<0.02	<0.00	172.93	0.17	<0.01	706.64	1.08
HM16JV036	E17JN15A433	2,390.70	220.82	0.03	227.87	2.87	3.1	3.22	<0.09	128,651.81	0.14	2.4	<0.00	0.04	24.39	27.32	<0.02	0.01	234.18	0.16	0.02	744.74	2.8
HM16JV036	E17JN15A434	2,401.96	180.81	0.03	231.37	3.65	3.67	3.96	<0.09	127,363.77	0.13	2.72	<0.00	0.06	26.13	27.87	<0.02	0.01	232.8	0.16	<0.01	735.84	4.39
HM16JV037	E17JN14A623	1,650.12	26,799.38	<0.00	70.13	0.48	0.25	0.55	<0.13	179,847.92	0.21	13.83	0	0.02	4.09	5.15	<0.03	0.01	111.23	0.1	<0.01	574.29	4.13
HM16JV037	E17JN14A624	2,681.91	70.17	0.07	115.52	1.31	1.29	1.29	<0.26	123,542.14	0.27	215.5	<0.01	<0.01	847.24	893.48	<0.08	0.02	249.8	0.54	<0.02	755.82	3.82
HM16JV037	E17JN14A625	2,344.36	8.75	<0.01	156.78	5.17	4.48	4.3	<0.17	140,148.99	0.63	1,612.35	0	0.01	42.66	53.45	<0.05	0.6	143.47	3.65	0.18	804.54	1.38
HM16JV037	E17JN14A625	2,567.80	8.45	0.09	162.95	0.47	0.34	0.61	<0.19	123,619.91	0.19	15.78	<0.00	0.01	219.94	230.64	<0.06	0.01	143.17	0.16	0.02	802.67	0.44
HM16JV037	E17JN14A626	2,785.55	10.54	<0.00	87.52	0.47	0.4	0.77	<0.27	119,752.55	<0.11	14.53	<0.00	<0.01	37.28	38.03	<0.08	<0.01	275.96	0.14	0.03	739.89	2.26
HM16JV038	E17JN14A684	2,909.41	78.8	<0.00	316.79	0.15	0.03	0.24	<0.11	134,093.91	0.21	2.24	<0.00	0.01	11.56	9.9	<0.03	0.01	129.86	0.87	0.05	883.79	0.56
HM16JV038	E17JN14A685	2,945.96	77.89	<0.01	309.11	0.24	0.1	0.21	<0.22	125,170.92	0.26	4.22	<0.00	0.04	21.24	22.95	<0.06	0.04	151.59	1.08	<0.01	762.12	0.75
HM16JV038	E17JN14A686	2,979.14	59	0.12	295.34	0.29	0.06	0.13	<0.18	125,420.05	0.15	2.09	<0.00	0.02	85.31	104.67	<0.04	0.03	152.13	1	0.03	755.53	0.4
HM16JV038	E17JN14A687	3,004.69	128.27	0.02	312.33	0.25	0.08	0.28	<0.15	134,305.10	0.2	2.22	0	0.01	11.79	14.73	<0.03	0.02	134.76	0.82	0.04	853.61	0.13
HM16JV038	E17JN14A688	2,923.71	62.34	<0.00	283.86	0.17	0.07	0.15	<0.11	127,070.40	0.22	1.7	<0.00	0.01	18.85	17.07	<0.03	0.01	186.79	0.82	0.02	763.88	0.13
HM16JV038	E17JN14A689	2,953.48	71.47	<0.00	308.89	0.3	0.13	0.31	<0.12	129,220.64	0.17	2.58	<0.00	0.02	34.84	33.33	<0.03	0.01	159.29	0.62	0.02	822.56	0.03
HM16JV038	E17JN14A690	2,982.72	81.9	0.08	305.18	0.24	0.06	0.18	<0.20	124,200.72	0.25	1.98	<0.00	<0.00	539.21	519.17	<0.04	0.04	158.4	1	0.06	743.94	0.4
HM16JV038	E17JN14A690	2,853.49	56.18	<0.01	329.47	0.84	0.69	0.82	<0.21	136,053.17	0.28	45.09	<0.00	0.01	68.4	55.87	<0.05	0.07	131.12	0.7	0.02	855.42	0.16
HM16JV038	E17JN14A692	1,024.17	1,119.08	0.04	181.95	5.19	3.25	7.01	<0.20	187,478.80	1.52	25.51	<0.00	0.15	75.36	79.12	0.09	0.12	185.44	8.79	0.25	450.09	0.44
HM16JV038	E17JN14A693	2,873.32	110.86	<0.00	329.43	0.39	0.16	0.56	<0.13	135,112.11	0.2	2.94	<0.00	0.02	25.79	24.89	<0.03	0.02	144.37	0.64	0.03	861.52	0.12
HM16JV038	E17JN14A694	2,861.15	73.26	<0.00	296.98	0.29	0.1	0.36	<0.11	133,961.57	0.18	1.84	<0.00	0.01	18.05	17.69	<0.03	0.01	177.92	0.52	0.02	880.85	0.27
HM16JV038	E17JN14A695	2,868.65	78.94	<0.00	287.49	0.24	0.11	0.35	<0.10	131,123.90	0.18	1.95	<0.00	<0.00	16.45	17.46	0.04	0.01	165.51	0.48	0.02	822.5	0.05
HM16JV038	E17JN14A696	2,946.89	81.92	<0.00	301.44	0.28	0.17	0.3	<0.13	125,873.10	0.16	2.7	<0.00	<0.00	31.15	24.26	0.03	0.01	140.32	0.67	0.01	737.69	0.04
HM16JV039	E17JN14A697	3,057.06	301.47	0.03	49.32	11.19	9.96	10.72	<0.18	119,948.75	0.2	3.35	<0.01	0.07	49.72	43.92	0.09	0.01	200.33	0.33	0.03	545.34	2.62
HM16JV039	E17JN14A698	3,045.11	244.49	0.03	42.08	9.62	8.2	9.08	<0.09	123,861.34	0.24	2.8	<0.00	0.04	33.45	32.72	0.06	0.01	199.47	0.32	0.02	586.39	1.63
HM16JV039	E17JN14A699	3,108.62	162.51	0.03	41.19	4.83	3.91	4.14	<0.13	121,559.01	0.13	2.64	0	0.02	33.04	36.68	0.07	0.01	199.2	0.25	0.02	556.68	0.7

*For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix IV: Hemlo district chlorite mineral chemistry collected by LA-ICP-MS

Sample	Analysis	Mn55	Na23	Nb93	Ni60	Pb206	Pb207	Pb208	Sb121	Si29	Sn118	Sr88	Ta181	Th232	Ti47	Ti49	Tl205	U238	V51	Y89	Yb172	Zn66	Zr90
HM16JV039	E17JN14A700	3,911.29	583.28	<0.01	40.53	10.4	8.21	8.57	<0.60	116,773.34	<0.19	2.12	<0.02	0.13	42.34	33.37	<0.12	<0.02	207.6	0.36	<0.03	561.68	0.87
HM16JV039	E17JN14A701	3,152.85	246.12	0.02	34.44	3.05	2.44	2.94	<0.30	132,182.01	0.19	1.36	<0.01	0.01	122.19	135.9	<0.07	<0.01	176.68	0.19	<0.02	657.55	2.08
HM16JV039	E17JN14A703	3,179.31	712.52	0.03	60.67	12.86	9.96	11.35	<0.12	125,932.17	0.31	4.58	<0.00	0.29	66.74	69.53	0.21	0.02	161.28	0.7	0.02	601.87	1.8
HM16JV039	E17JN14A704	3,755.41	776.49	0.16	41.35	8.23	7.48	7.17	<0.19	125,463.76	0.38	21.37	<0.01	0.17	1,048.28	989.74	0.15	0.14	218.6	1.41	0.07	850.32	4.09
HM16JV039	E17JN14A705	4,241.86	358.69	0.06	34.83	4.65	4.46	4.3	<0.11	126,465.11	0.17	3.42	0	0.02	309.82	309.74	0.06	0.01	378.9	0.4	0.02	981.57	1.6
HM16JV045	C17MA21A0220	1,035.16	1,328.63	0.02	38.49			1.17	<0.07	161,792.18	0.21	12.05	<0.00	0.93	9.96	10.06	0.01	0.83	111.63	1.32	0.06	65.56	7.75
HM16JV045	C17MA21A0221	988.35	1,225.24	0	39.37			3.05	<0.06	176,360.06	0.13	12.56	<0.00	0.94	14.49	12.86	0.01	0.83	90.34	1.6	0.09	63.88	8
HM16JV045	C17MA21A0222	1,069.04	2,457.63	0.03	43.33			1.92	<0.10	165,893.22	0.16	15.11	0.01	0.61	110.91	108.34	0.04	0.48	115.29	1.04	0.11	80.4	4.17
HM16JV045	C17MA21A0223	1,063.66	369.28	0.01	32.69			0.74	<0.09	147,582.41	0.19	5.97	<0.00	0.46	56.18	50.77	<0.02	0.31	125.7	0.92	0.05	62.05	2.91
HM16JV045	C17MA21A0225	1,026.79	3,696.78	<0.00	32.1			1.53	<0.09	160,033.42	0.31	19.11	0.01	0.98	8.09	8.22	<0.02	0.53	105.28	1.11	0.02	60.15	8.41
HM16JV045	C17MA21A0226	996.39	1,363.63	0.02	39.43			1.88	<0.07	170,727.35	0.22	9.79	0	0.44	7.07	8.31	<0.01	0.5	99.71	0.72	0.04	67.27	4.49
HM16JV045	C17MA21A0229	1,097.99	84.97	0.01	6.54			0.09	<0.07	199,502.84	0.07	0.72	<0.00	0.05	14.64	13.97	0.02	0.02	16.45	0.11	<0.01	134.94	0.26
HM16JV045	C17MA21A0230	1,153.04	71.09	0.01	6.36			0.16	<0.08	192,444.18	0.11	0.62	<0.00	0.07	11.52	11.15	<0.01	0.02	15.89	0.2	<0.01	134.75	0.37
HM16JV045	C17MA21A0233	796.15	158.38	0.03	63.27			0.17	<0.06	215,835.12	0.08	1.17	<0.00	0.08	50.05	50.89	0.02	0.02	32.81	0.19	0.01	115.22	0.59
HM16JV045	C17MA21A0234	1,253.05	142.8	0.01	227.08			0.53	<0.06	172,221.01	0.1	1.47	<0.00	0.23	60.2	61.87	0.01	0.07	69.43	0.52	0.05	118.49	2.01
HM16JV045	C17MA21A0236	967.1	146.68	0.02	24.24			0.48	<0.06	192,281.94	<0.04	2.04	<0.00	0.23	43.48	43.17	0.01	0.05	45.25	0.6	0.05	100.25	2.22
HM16JV045	C17MA21A0237	1,379.77	88.6	0.01	19.5			0.78	<0.07	160,311.03	0.08	1.86	<0.00	0.32	44.96	43.99	0.02	0.05	54.73	0.56	0.05	123.22	3.15
HM16JV045	C17MA21A0238	1,488.89	94.42	0.02	20.6			0.28	<0.08	150,149.96	0.1	1.53	0	0.27	50.34	51.66	<0.01	0.07	66.24	0.54	0.07	130.24	1.59
HM16JV045	C17MA21A0240	852.7	347.78	0.05	47.57			1.01	<0.13	195,289.49	0.23	4.54	0.01	0.71	41.44	42.13	<0.02	0.14	86.5	0.89	0.03	76.69	5.66
HM16JV045	C17MA21A0243	998.11	251.23	0.1	51.21			0.62	<0.07	155,702.66	0.41	7.29	<0.00	0.35	300.83	297.69	0.04	0.07	192.26	0.83	0.08	83.3	5.1
HM16JV045	C17MA21A0244	1,032.26	435.22	0.09	48.85			0.77	<0.07	156,025.76	0.47	9.63	0.01	0.55	250.08	252.21	0.03	0.12	203.05	0.97	0.1	70.42	4.41
HM16JV045	C17MA21A0245	1,028.38	286.02	0.05	48.61			0.49	<0.08	152,647.49	0.44	7.19	0.01	0.28	236.81	236.54	0.03	0.1	216.19	1.19	0.08	77.48	2.48
HM16JV045	C17MA21A0246	1,684.80	23.49	0.03	19.82			0.25	<0.08	130,414.63	<0.05	0.4	0	0.07	288.12	291.39	<0.01	0.01	153.06	0.07	<0.00	147.6	0.26
HM16JV045	C17MA21A0247	1,571.54	38.14	0.02	28.96			0.15	<0.07	135,085.73	0.07	0.9	<0.00	0.06	265.73	263.98	<0.01	0.01	168.01	0.2	0.02	142.75	0.36
HM16JV045	C17MA21A0248	1,007.46	223.84	0.05	48.97			0.52	<0.07	150,729.37	0.3	7.79	<0.00	0.25	141.92	141.14	0.04	0.11	201.36	0.99	0.08	77.48	1.63
HM16JV045	C17MA21A0255	1,045.12	328.01	0.06	47.1			0.65	<0.09	152,884.74	0.34	6.76	0.01	0.51	210.49	207.5	0.03	0.18	208.76	1.24	0.15	79.93	2.28
HM16JV053	E17JN15A378	2,997.83	268.06	0.04	174.15	0.69	0.3	0.67	<0.17	141,812.05	0.75	3.34	<0.00	0.21	86.02	86.83	<0.04	0.02	257.91	0.62	0.06	603.38	5.72
HM16JV053	E17JN15A380	3,244.48	157.6	0.01	94.82	1.18	0.5	0.96	<0.15	123,134.86	0.22	3.78	<0.00	0.16	9.65	9.98	<0.04	0.01	206.61	0.53	<0.01	435.23	4.11
HM16JV053	E17JN15A382	3,016.53	188.62	<0.00	293.99	9.56	10.25	10.77	<0.13	134,630.14	0.37	3.31	<0.00	0.14	32.6	34.87	<0.03	0.02	166.36	0.32	<0.01	606.2	5.16
HM16JV053	E17JN15A383	2,342.99	378.96	0	144.44	4.91	5.16	5.53	<0.07	141,291.86	0.74	7.18	<0.00	0.34	39.35	38.54	<0.02	0.03	189.59	0.79	0.05	456.33	8.12
HM16JV053	E17JN15A387	2,879.20	211.9	<0.00	110.73	0.41	0.17	0.35	<0.12	127,399.26	0.34	5.16	0	0.25	19.81	19.3	<0.03	0.02	159.63	0.74	0.03	478.42	8.97
HM16JV064	E17JN15A353	2,830.61	34.12	0.26	92.22	<0.05	<0.08	<0.04	<0.37	113,699.45	0.26	4.06	<0.01	<0.02	417.46	397.81	<0.08	0.01	285.07	1.59	0.15	280.2	1.41
HM16JV064	E17JN15A354	2,514.89	51.55	0.11	94.94	<0.02	0.04	0.04	<0.12	120,218.78	0.26	2.54	<0.00	<0.00	208.27	210.17	<0.03	<0.00	226.99	0.36	0.04	348.17	0.03
HM16JV064	E17JN15A355	2,344.62	136.71	0.59	92.86	<0.04	0.06	<0.03	<0.23	118,990.10	0.19	2.04	0.02	<0.01	915.19	923.75	<0.06	<0.01	222.89	0.63	0.1	303.94	<0.02
HM16JV064	E17JN15A358	2,511.96	94.39	1.14	86.73	<0.05	<0.04	0.04	<0.20	119,669.91	<0.15	3.01	0.14	<0.01	1,303.50	1,282.63	0.07	<0.01	307.44	0.41	<0.02	314.41	<0.02
HM16JV064	E17JN15A359	2,682.10	153.16	0.27	78.06	<0.07	0.17	0.1	<0.30	114,715.92	<0.22	2.42	0.04	<0.01	168.37	178.46	<0.09	<0.01	281.1	0.68	0.15	284.09	<0.03
HM16JV068	E17JN15A465	3,211.66	124.91	0.02	400.69	6.19	6.4	7.12	<0.10	129,710.19	0.26	3.17	<0.00	0.03	71.73	76.73	0.05	<0.00	123.54	0.77	0.04	707.12	0.66
HM16JV068	E17JN15A469	4,527.01	44.79	0.02	480.87	4.61	5.16	5.35	<0.24	139,145.66	0.26	3.46	<0.01	0.02	25.62	28.36	<0.07	0.03	86.45	1	0.24	743.24	3.14
HM16JV073	E17JN14A553	2,883.59	<6.30	<0.01	226.05	0.12	0.07	0.22	<0.23	114,760.41	0.22	0.55	<0.00	<0.00	178.64	173.55	<0.06	<0.00	174.16	0.41	<0.01	776.81	0.55
HM16JV073	E17JN14A554	3,270.14	655.95	0.16	211.11	0.11	<0.10	0.22	0.64	116,117.79	0.26	3.04	<0.01	<0.01	274.87	278.7	<0.11	<0.01	244.23	2.31	0.06	681.28	0.5
HM16JV073	E17JN14A555	2,251.37	48.5	<0.02	146.84	0.26	0.09	0.3	<0.32	198,457.81	0.2	9.55	0	0.04	66.59	59.9	<0.07	0.03	153.31	2.18	0.03	545.34	2.02
HM16JV073	E17JN14A557	2,943.43	<14.88	0.11	233.41	0.37	0.17	0.35	<0.36	130,024.06	<0.15	0.65	<0.01	<0.01	100.16	93.12	<0.10	0.01	92.9	1.23	<0.03	870.63	0.38
HM16JV073	E17JN14A557	3,070.24	<8.81	<0.01	219.41	0.17	0.13	0.33	<0.22	119,595.36	0.12	1.23	<0.01	0.01	53.58	53.94	<0.06	0.01	82.31	1.77	0.07	728.6	0.27
HM16JV073	E17JN14A558	2,768.36	<10.64	<0.01	199.27	4.24	4.93	5.45	<0.29	133,351.69	0.57	224.52	<0.01	3.01	203.97	193.23	<0.07	0.17	144.66	7.25	0.41	742.38	2.42
HM16JV073	E17JN14A558	2,883.83	<7.10	0.06	185.99	3.21	3.98	4.37	<0.19	125,924.69	0.38	226.24	<0.01	2.84	216.37	222.89	<0.05	0.16	179.18	5.86	0.2	694.34	1.97
HM16JV073	E17JN14A559	3,047.04	22.85	0.01	216.83	0.05	<0.05	0.14	<0.23	127,442.74	0.27	0.81	0	0.01	112.12	113.96	<0.06	<0.01	214.75	2.2	0.04	876.45	0.69
HM16JV073	E17JN14A560	2,734.78	<4.81	<0.01	183.94	0.04	<0.04	0.08	<0.19	165,650.43	0.16	0.84	<0.00	0.02	74.71	76.3	<0.05	0.01	137.72	1.71	0.02	642.87	0.9
HM16JV073	E17JN14A561	3,065.17	1,834.25	<0.01	242.51	0.16	0.13	0.17	<0.18	133,505.01	0.14	3.27	<0.00	0.03	74.4	74.06	<0.05	0.01	163.83	2.53	0.05	729.6	2.61
HM16JV073	E17JN14A562	3,128.20	8.5	<0.00	221.25	0.06	0.09	0.17	<0.16	131,846.91	<0.08	1.17	<0.00	<0.01	80.54	79.74	<0.04	0.01	188.15	1.84	0.02	767.45	0.22
HM16JV073	E17JN14A563	3,377.40	<22.50	0.08	191.11	<0.18	<0.14	0.1	<0.99	118,804.69	<0.39	1.11	<0.02	0.03	112.89	115.39	<0.18	0.03	252.1	1.37	<0.07	752.88	0.43
HM16JV073	E17JN14A564	3,227.09	7.78	0.01	231.12	0.11	0.08	0.17	<0.20	122,308.90	0.1	1.37	<0.00	<0.00	83.64	83.97	<0.05	0.01	192.14	2.38	<0.01	770.86	0.27
HM16JV073	E17JN14A565	2,935.04	156.21	1.17	238.16	<0.14	0.27	0.16	<0.54	111,101.63	<0.20	1.87	0.32	0.03	1,092.26	1,075.67	<0.18	0.03	180.2	1.14	<0.04	673.24	0.6
HM16JV073	E17JN14A567	3,225.37	11.63	<0.01	280.38	0.09	0.07	0.1	<0.25	119,462.71	0.15	0.87	<0.01	<0.00	49.99	47.94	<0.05	<0.00	95.86	1.4	<0.03	742.42	0.44

*For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix IV: Hemlo district chlorite mineral chemistry collected by LA-ICP-MS

Sample	Analysis	Mn55	Na23	Nb93	Ni60	Pb206	Pb207	Pb208	Sb121	Si29	Sn118	Sr88	Ta181	Th232	Ti47	Ti49	Tl205	U238	V51	Y89	Yb172	Zn66	Zr90
HM16JV073	E17JN14A568	3,330.00	12.45	0.03	183.05	<0.10	<0.10	0.1	<0.45	115,290.02	0.21	9.06	<0.01	0.07	109.22	106.69	<0.09	0.02	204.34	4.05	0.07	685.54	0.87
HM16JV077	E17JN15A366	2,141.74	11.73	0.01	457.15	3.7	3.14	3.62	<0.13	141,481.93	0.34	4.04	<0.00	0.53	11.59	12.19	<0.03	0.03	120.47	2.24	0.05	585.04	3.51
HM16JV077	E17JN15A366	2,192.82	10.74	0.02	426.99	2.52	2.1	2.33	<0.09	131,645.74	0.31	58.91	<0.00	0.31	12.93	13.88	<0.02	0.03	129.47	1.51	0.02	502.65	2
HM16JV077	E17JN15A367	2,018.47	<9.46	0.07	420.2	2.47	2.2	2.31	<0.21	163,766.79	0.42	3.36	<0.01	0.5	129.16	158.32	<0.05	0.04	114.21	1.71	0.11	502.05	3.97
HM16JV077	E17JN15A368	2,233.12	11.54	0.01	426.47	3.33	2.29	2.88	<0.08	134,369.47	0.2	10.13	<0.01	0.1	16.15	16.03	<0.02	0.03	134.26	2.3	0.08	544.33	1
HM16JV077	E17JN15A369	2,255.67	8.01	0	425.19	2.79	2.06	2.67	<0.10	128,100.85	0.22	42.97	<0.00	0.02	11.16	12.01	<0.03	0.05	123.65	2.3	0.1	486.76	0.27
HM16JV077	E17JN15A370	2,313.49	225.69	0.01	403.35	2.17	1.8	1.98	<0.11	128,308.63	0.29	20.17	<0.00	0.11	44.89	39.65	0.04	0.05	149.45	2.75	0.06	479.6	0.77
HM16JV077	E17JN15A371	2,341.92	58.22	<0.02	427.54	1.47	0.99	1.42	<0.33	127,846.37	<0.19	4.52	<0.01	0.24	12.85	8.9	<0.08	0.07	117.84	3.17	0.31	458.31	3.64
HM16JV077	E17JN15A371	2,183.59	14.07	0.02	464.66	1.88	1.57	1.84	<0.12	139,704.09	0.27	24.63	<0.00	0.26	11.17	9.85	<0.03	0.04	115.83	3.17	0.16	556.43	2.85
HM16JV077	E17JN15A372	2,226.31	16	0.03	418.37	3.3	2.13	2.82	<0.09	134,883.62	0.24	2.77	0	0.27	29.59	29.72	<0.02	0.02	135.45	2.17	0.07	547.15	1.53
HM16JV077	E17JN15A374	2,285.09	13.21	<0.00	387.83	2.24	1.49	1.92	<0.10	128,423.65	0.23	3.9	<0.00	0.04	13.74	12.15	<0.03	0.04	146.3	1.58	0.08	508.8	0.31
HM16JV077	E17JN15A375	2,342.15	928.16	<0.02	410.96	7.3	5.78	6.23	<0.27	127,564.86	<0.19	8.26	<0.01	0.21	10.83	14.79	<0.07	0.08	123.57	2.26	0.09	431.63	0.73
HM16JV077	E17JN15A376	2,325.16	276.38	0.07	437.18	4.48	2.84	3.36	<0.16	129,985.41	0.84	7.63	<0.01	0.67	17.93	22.11	<0.06	0.02	115.99	2.82	0.03	462.58	6.5
HM16JV077	E17JN15A377	2,145.37	11.73	<0.00	487.27	5.67	3.98	4.97	<0.10	129,924.04	0.18	5.84	0	0.02	6	7.94	<0.03	0.04	99.86	2.05	0.09	469.59	0.15
HM16JV082	C17MA20A0215	2,897.24	7.93	<0.00	73.12			0.62	<0.12	114,039.84	0.08	102.33	0.01	0.16	189.16	183.54	<0.02	0.01	282.34	1.59	0.06	916.45	7.23
HM16JV082	C17MA20A0221	2,607.06	14.32	<0.00	168.01			0.92	<0.13	119,069.08	<0.06	2.09	0.01	0.19	51.23	61.3	<0.02	0.02	78.35	2.55	0.07	674.59	9.06
HM16JV082	C17MA20A0224	2,923.70	5.97	<0.00	74.82			0.21	0.16	119,793.53	<0.05	2.02	<0.00	0.06	142.59	149.11	<0.01	0	314.26	2.77	0.04	1,009.60	2.52
HM16JV086	E17JN15A289	1,890.68	51.84	<0.01	257.16	5.92	3.82	5.33	<0.34	124,382.70	<0.23	2.46	<0.02	0.15	19.39	17.67	<0.10	0.06	152.66	8.47	<0.03	513.77	0.71
HM16JV086	E17JN15A290	1,837.15	98.37	0.31	238.89	2.92	1.84	3.4	<0.29	125,342.87	0.84	96.99	<0.02	0.05	366.03	350.38	<0.08	0.07	161.67	5.68	0.06	527.26	0.45
HM16JV086	E17JN15A291	1,789.37	46.29	<0.00	262.64	1.97	1.14	2.17	<0.14	138,549.48	0.4	79.93	0.01	0.02	23.33	21.29	<0.03	0.02	135.58	7.66	0.14	677.92	0.44
HM16JV086	E17JN15A291	1,845.33	46.96	<0.00	247.27	1.88	1.07	1.99	<0.15	125,873.38	0.25	2.23	0.02	0.01	13.62	12.42	<0.04	0.01	134.54	10.12	0.2	566.53	0.16
HM16JV086	E17JN15A292	1,353.89	18.81	0.34	369.73	1.67	1.55	1.58	<0.27	106,852.45	0.24	0.83	0.02	2.13	494.61	512.21	<0.07	0.03	316.36	3.93	0.1	485.53	1.34
HM16JV086	E17JN15A292	1,209.72	<9.54	0.33	427.08	1.03	0.64	1.21	<0.25	129,440.64	0.38	0.81	0.01	0.14	468.43	449.99	<0.06	0.02	330.66	1.84	0.16	694.45	0.36
HM16JV087	E17JN15A446	2,793.73	<5.92	0.17	221.93	0.2	0.05	0.18	<0.12	119,662.44	0.32	0.69	<0.00	0.32	122.5	119.72	<0.03	0.02	206.01	0.15	0.02	768.66	3.35
HM16JV087	E17JN15A447	2,829.80	13.14	0.13	193.45	<0.03	<0.05	0.14	<0.22	116,547.93	<0.11	0.7	<0.01	0.16	234.66	242.29	<0.06	0.02	226.68	0.13	<0.03	804.76	1.31
HM16JV087	E17JN15A448	2,609.19	<8.79	0.03	170.67	0.14	0.03	0.1	<0.15	125,127.09	0.24	0.24	<0.00	0.08	65.52	69.06	<0.04	0.03	75.57	0.12	<0.02	837.3	1.92
HM16JV087	E17JN15A449	2,667.71	<9.01	0.03	167.07	0.17	0.04	0.19	<0.16	117,230.64	0.16	0.44	<0.00	0.14	61.35	66.18	<0.04	0.01	82.77	0.07	<0.02	730.15	1.99
HM16JV087	E17JN15A450	2,623.02	284.37	<0.01	176.32	0.1	0.05	0.07	<0.11	119,250.94	0.15	0.72	0	0.12	46.76	54.66	<0.03	0.01	83.5	0.06	0.01	743.46	1.79
HM16JV087	E17JN15A453	2,427.49	22.52	<0.02	198.55	<0.05	0.07	0.06	<0.30	123,632.11	0.2	0.7	<0.01	0.37	75.86	70.81	<0.06	<0.01	87.6	0.05	<0.03	796.39	0.71
HM16JV087	E17JN15A456	2,553.02	<6.58	0.01	155.68	0.12	0.04	0.22	<0.15	115,532.25	0.13	0.47	<0.00	0.15	67.73	67.64	<0.04	0.01	99.7	0.13	<0.01	758.09	0.9
HM16JV087	E17JN15A457	2,829.65	<4.57	<0.01	204.44	0.16	0.12	0.29	<0.10	122,183.91	0.2	0.47	0.01	0.41	53.86	52.25	<0.03	0.02	110.58	0.22	<0.01	743.19	2.08
HM16JV087	E17JN15A458	2,601.20	<9.84	0.02	159.12	0.08	<0.05	0.17	<0.22	117,449.53	0.2	0.59	<0.01	0.02	121.41	125.38	<0.06	<0.01	120.96	0.04	<0.02	706.88	0.59
HM16JV087	E17JN15A459	2,743.14	<5.32	<0.00	162.66	0.04	0.04	0.18	<0.12	119,799.09	0.22	0.61	<0.00	0.29	104.47	107.65	<0.04	0.01	177.98	0.25	<0.01	781.93	1.65
HM16JV088	E17JN14A600	3,774.28	5.48	0.06	270.16	0.44	0.18	0.53	0.22	120,394.72	0.43	1.77	<0.00	1.48	90.85	94.08	<0.04	0.02	267.15	5.84	0.19	420.96	5.53
HM16JV088	E17JN14A600	2,560.97	8.19	<0.01	289.4	0.44	0.27	0.41	<0.17	134,038.30	0.49	2.93	<0.00	0.12	87.34	84.73	<0.05	0.01	306.42	0.98	0.05	492.72	1.54
HM16JV088	E17JN14A601	2,588.09	5.81	0.01	278.97	0.26	0.13	0.28	<0.10	123,255.58	0.31	0.84	<0.00	0.07	110.91	107.88	<0.03	0.01	263.59	1.1	0.04	438.7	1.4
HM16JV088	E17JN14A602	2,688.60	8.72	<0.01	250.03	0.3	0.16	0.16	<0.29	112,803.10	0.25	1.54	0.02	<0.01	144.45	161.31	<0.07	<0.01	292.01	1.52	0.1	368.53	0.37
HM16JV088	E17JN14A604	2,987.04	28.94	0.05	275.2	0.51	0.27	0.52	<0.19	119,013.47	0.47	16.11	<0.01	0.13	121.94	129.82	<0.05	0.07	274.97	2.17	0.03	375.48	5.14
HM16JV088	E17JN14A605	2,486.43	6.17	0.01	298.88	0.51	0.35	0.4	<0.15	134,679.31	0.07	1	0.01	0.01	99.76	95.71	<0.03	0.01	188.75	0.79	0.04	390.43	0.22
HM16JV088	E17JN14A612	2,945.83	13.24	<0.01	313.02	1.44	0.59	1.18	<0.37	130,111.37	0.19	1.37	0.02	0.12	33.39	27.75	<0.07	0.07	90.67	1.15	0.05	502.1	2.09
HM16JV099	C17MA21A0283	873.95	<3.59	<0.00	151.69			0.03	<0.09	117,083.41	<0.07	2.79	<0.00	<0.00	379.82	349.71	<0.02	<0.00	189.05	0.26	0.01	677.78	<0.00
HM16JV099	C17MA21A0284	987.71	15.27	<0.01	266			0.14	<0.13	116,147.99	0.12	1.16	<0.01	<0.01	386.01	371.38	<0.03	0.01	201.04	0.54	<0.01	620.73	0.66
HM16JV099	C17MA21A0285	826.46	6.5	0.06	287.98			0.16	<0.10	127,929.42	0.19	1.01	<0.00	0.05	426.7	424.28	<0.02	0.03	159.9	0.49	0.01	767.47	3.26
HM16JV099	C17MA21A0286	804.67	5.19	0.01	314.69			0.15	<0.07	126,352.87	0.09	0.71	<0.00	0.03	496.38	490.62	<0.01	<0.00	209.42	0.4	<0.01	760.35	1.2
HM16JV099	C17MA21A0287	1,063.58	17.14	0	277.48			0.36	<0.08	122,328.66	0.15	2.93	<0.00	0.05	333.44	334.2	<0.02	0.02	274.68	1.14	0.03	700.34	2.01
HM16JV099	C17MA21A0288	899.92	6.17	0	268.34			0.24	<0.07	126,893.24	0.12	1.13	<0.00	0.04	344.29	339.09	<0.01	0	260.8	0.55	0.01	777.57	1.47
HM16JV099	C17MA21A0289	841.55	10.88	0.01	310.95			0.28	<0.07	123,073.41	0.12	1.08	<0.00	0.09	487.05	503.81	<0.02	0.01	243.04	0.78	0.03	747.7	1.71
HM16JV099	C17MA21A0277	818.23	5.12	0.01	332.28			0.33	<0.07	125,652.60	0.11	0.78	<0.00	0.29	403.37	399.02	<0.01	<0.00	178.27	0.36	0.03	751.97	0.99
HM16JV099	C17MA21A0278	1,084.29	21.15	<0.00	375.59			0.29	<0.10	125,381.32	0.31	1.95	0.01	0.21	329.97	326.34	<0.02	0	206.17	1.39	0.02	679.14	5
HM16JV099	C17MA21A0280	809.65	7.24	0.03	354.2			0.12	<0.06	126,814.89	0.11	0.6	0	0.05	378.6	371.29	<0.01	0.02	176.7	0.32	<0.01	766.08	0.9
HM16JV099	C17MA21A0281	824.8	4.45	0.03	348.97			0.09	<0.07	126,771.45	0.14	0.53	<0.00	0.01	391.85	390.62	<0.01	0	177.49	0.23	0.01	768.76	0.51
HM16JV099	C17MA21A0282	1,008.86	8.1	<0.00	317.38			0.53	<0.07	126,587.95	0.09	0.83	<0.00	0.03	332.39	327.67	<0.01	0.01	274.21	0.64	0.02	739.74	0.54
HM16JV099	C17MA21A0267	1,302.64	26.05	0.04	405.62			0.3	<0.10	125,714.59	0.19	2.23	<0.01	0.1	256.69	252.93	<0.02	0.01	245.34	1.32	0.02	616.77	3.21

*For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix IV: Hemlo district chlorite mineral chemistry collected by LA-ICP-MS

Sample	Analysis	Mn55	Na23	Nb93	Ni60	Pb206	Pb207	Pb208	Sb121	Si29	Sn118	Sr88	Ta181	Th232	Ti47	Ti49	Tl205	U238	V51	Y89	Yb172	Zn66	Zr90
HM16JV099	C17MA21A0268	1,392.93	48.4	0.05	282.98			0.52	<0.11	122,103.18	0.54	4.77	<0.00	0.14	270.6	260.33	<0.02	0.05	357.96	3.09	0.09	572.69	4.31
HM16JV099	C17MA21A0269	1,139.81	20.76	0.02	428.43			0.18	<0.08	125,894.35	0.09	1.73	0	0	394.73	396.34	<0.01	0	218.08	0.82	0.01	687.32	0.26
HM16JV099	C17MA21A0270	1,138.96	20.09	0.01	422.17			0.14	<0.08	125,818.39	0.14	1.77	<0.00	0.01	389.08	395.36	<0.01	0	217.6	0.85	0.02	673.32	0.47
HM16JV099	C17MA21A0271	1,033.30	27.99	0	387.55			0.16	<0.07	127,446.13	0.09	2.29	<0.00	0.01	343.16	342.92	<0.01	0.01	227.33	1.09	0.04	717.06	0.79
HM16JV099	C17MA21A0272	1,015.87	22.78	0.01	359.63			0.21	<0.07	125,713.18	0.15	2.29	0	0.04	385.96	387.86	<0.01	0	250.93	1.18	0.02	733.52	2.72
HM16JV099	C17MA21A0273	1,103.32	29.37	0.01	271.7			0.5	<0.10	121,450.32	0.36	4.58	0	0.06	344.25	341.84	<0.01	0.04	307.93	2.89	0.03	679.37	3.54
HM16JV099	C17MA21A0274	1,322.36	26.37	0.03	384.69			0.15	<0.09	122,661.06	0.07	1.99	<0.00	0	297.94	282.06	<0.01	<0.00	134.39	0.97	0.03	604.52	0.65
HM16JV102	C17MA21A0186	2,381.54	168.46	<0.00	355.15			1.54	<0.11	115,084.11	0.11	48.66	<0.00	0.07	266.83	266.51	<0.01	0.03	204.21	1.1	0.01	582.3	0.28
HM16JV102	C17MA21A0187	2,357.32	98.86	0.05	398.26			1.07	<0.16	110,127.73	<0.10	1.77	<0.00	0.04	160.97	155.53	<0.03	<0.00	199.63	0.68	0.04	581.42	0.42
HM16JV102	C17MA21A0189	1,676.48	12,239.45	0.02	461.13			0.53	<0.08	141,428.73	<0.06	10.64	<0.00	0.06	318.43	325.47	<0.01	0.01	269.14	0.44	0.03	484.84	0.54
HM16JV102	C17MA21A0191	3,899.44	22.35	0.08	379.34			10.23	<0.10	117,437.55	<0.07	17.96	<0.00	0.19	257.87	251.81	<0.02	0.03	257.48	1.92	0.04	577.34	1.96
HM16JV102	C17MA21A0192	2,432.63	4.51	<0.00	422.69			1.21	<0.16	113,834.55	0.21	5	<0.01	0.06	155.3	147.39	<0.02	0.02	200.87	1.45	0.08	617.59	3.07
HM16JV102	C17MA21A0173	2,945.36	<4.23	0.02	387.36			0.2	<0.12	110,534.54	<0.09	1.08	<0.00	0.03	332.98	340.96	<0.02	0.01	246.55	1.04	0.04	538.3	0.36
HM16JV102	C17MA21A0174	2,584.94	36.29	<0.00	325			0.63	<0.15	111,562.48	0.13	48.55	<0.00	0.18	269.38	267.07	<0.03	<0.00	258.53	0.68	<0.02	490.97	0.69
HM16JV102	C17MA21A0175	2,296.50	754.74	<0.00	317.13			0.13	<0.08	114,612.77	0.06	1.12	<0.00	0.08	169.71	182.71	<0.02	<0.00	298.06	0.34	<0.01	526.66	1.04
HM16JV102	C17MA21A0176	2,364.54	20.27	<0.01	390.51			0.12	<0.16	125,848.22	<0.09	0.89	<0.00	0.06	179.93	187.3	<0.02	<0.00	211.73	0.38	<0.02	602.06	1.81
HM16JV102	C17MA21A0177	2,522.92	8.37	<0.01	321.23			0.65	<0.12	111,576.19	<0.07	93.81	<0.00	0.45	259.02	263.3	<0.02	0.05	250.07	0.55	0.02	500.57	0.13
HM16JV102	C17MA21A0180	2,477.87	5.52	0.03	407.89			0.54	<0.07	123,942.83	0.07	0.68	0	0.03	249.47	239.34	0.02	<0.00	227.04	0.28	<0.01	589.5	0.36
HM16JV102	C17MA21A0181	2,523.95	5.08	0.02	412.12			0.29	<0.06	121,881.10	0.06	0.8	<0.00	0.07	203.99	200.99	<0.01	0	238.43	0.41	<0.00	591.04	1
HM16JV102	C17MA21A0182	2,485.52	4.67	0.02	462.15			0.51	<0.06	123,273.85	0.06	0.68	<0.00	0.05	200.79	198.88	<0.01	0	213.73	0.36	<0.01	594.13	0.69
HM16JV102	C17MA21A0183	2,518.95	9.67	0.04	380.57			0.43	<0.15	115,797.02	<0.11	0.63	<0.00	0.17	208.74	166.58	<0.02	0.01	252.71	0.47	<0.02	550.84	9.59
HM16JV102	C17MA21A0184	2,523.65	<6.14	<0.01	421.51			0.28	<0.16	129,132.96	<0.11	1.39	<0.00	0.04	192.67	208.35	<0.02	0.01	245.58	0.56	<0.02	638.15	1.52
HM16JV102	C17MA21A0169	2,835.73	3.72	<0.00	338.36			0.3	<0.07	115,308.58	0.07	0.45	<0.00	0.05	243.52	228.39	<0.01	<0.00	396.59	0.33	0.03	543.96	0.63
HM16JV102	C17MA21A0171	2,811.06	5.59	<0.00	511.35			0.45	<0.07	117,815.96	<0.05	1.91	<0.00	0.01	132.49	128.13	0.02	0.02	204.51	1.97	0.03	707.32	0.53
HM16JV104	C17MA21A0131	3,508.75	478.03	0	1,502.07			0.23	<0.07	123,494.64	<0.05	1.47	<0.00	0	164.88	162.88	<0.01	<0.00	162.09	0.02	<0.01	390.49	0.01
HM16JV104	C17MA21A0164	4,055.72	192.05	<0.01	1,469.08			1.59	<0.13	127,387.59	<0.09	1.64	<0.00	0.01	125.56	139.65	0.06	<0.00	208.34	0.56	0.28	387.69	0.12
HM16JV104	C17MA21A0165	3,576.65	29.59	<0.00	1,497.54			0.25	<0.07	122,458.23	0.05	0.43	0	<0.00	159.2	153.52	<0.01	0	214.62	0.07	0.02	387.88	0.27
HM16JV107	E17JN15A435	2,569.06	24.98	0.01	368.21	44.86	31.11	38.33	0.09	137,906.27	0.23	3.38	0	0.23	36.25	36.67	0.06	0.06	317.99	1.12	0.05	444.79	1.68
HM16JV107	E17JN15A436	3,007.87	21.02	1.45	350.34	3.72	3.94	4.14	<0.08	127,662.66	0.48	1.96	0.1	0.08	951.04	965.11	<0.02	0.01	348.2	0.2	0.02	366.64	1.58
HM16JV107	E17JN15A437	2,903.42	31.17	0.11	398.09	8.89	9.75	10.29	<0.13	140,122.26	0.28	1.24	0.01	0.09	97.31	92.33	<0.03	0.01	325.9	0.19	<0.01	443.33	1.44
HM16JV107	E17JN15A438	1,989.77	31.18	0.03	252.56	18.56	19.14	20.06	<0.15	206,940.74	0.27	2.4	0.01	0.13	54.6	54.07	<0.03	0.02	219.55	0.23	<0.01	357.24	0.74
HM16JV111	C17MA21A0134	2,792.37	12.06	0	256.37			0.4	<0.07	129,946.46	0.08	3.15	<0.00	0.01	29.72	31.42	0.01	0.02	234.11	0.32	<0.01	913.8	0.02
HM16JV111	C17MA21A0143	2,068.18	19.28	0.36	130.39			0.78	0.08	200,023.84	0.35	2.69	<0.00	0.13	1,246.46	1,272.30	0.02	0.01	243.17	0.26	<0.01	681.48	1.12
HM16JV111	C17MA21A0145	2,800.08	9.91	0.02	276.67			3.41	<0.07	125,979.50	0.16	2.54	0	0.03	86.27	91.78	<0.01	0.01	271.26	0.16	0.02	922.84	0.35
HM16JV112	E17JN14A514	2,188.92	14.07	<0.01	812.91	2.41	1.77	1.76	<0.15	128,463.04	0.18	492.94	<0.00	0.06	17.19	16.88	<0.04	0.18	151.63	0.6	0.02	671.71	0.79
HM16JV112	E17JN14A514	2,379.13	7.89	<0.01	811.88	2.15	1.6	1.77	<0.20	142,743.46	0.25	155.29	<0.00	0.01	23.49	25.37	<0.05	0.13	169.14	0.35	0.05	639.28	0.66
HM16JV112	E17JN14A514	1,969.87	<9.69	0.03	773.75	1.37	0.75	0.74	<0.31	178,574.29	0.13	4.21	0.01	<0.01	12.97	12.58	<0.08	0.07	126.74	0.34	0.05	531.12	0.14
HM16JV112	E17JN14A515	2,176.17	<5.10	0.01	758.47	0.51	0.11	0.25	<0.20	127,081.98	0.14	3.36	<0.00	<0.00	11.09	12.68	<0.04	0.02	144.07	0.32	<0.01	697.05	0.55
HM16JV112	E17JN14A516	1,902.83	<10.88	0.09	697.24	3.26	3.09	3.03	<0.36	140,597.32	0.21	735.46	<0.00	0.02	50.49	46.44	<0.07	0.15	148.91	0.29	<0.02	645.67	0.6
HM16JV112	E17JN14A517	2,259.86	36.82	0.01	340.12	0.32	0.16	0.22	<0.18	122,482.16	0.11	2.36	0	<0.01	8.02	6.93	<0.04	0.06	77.66	0.24	<0.02	528.56	0.7
HM16JV112	E17JN14A518	2,094.86	28.99	<0.00	681.09	0.76	0.3	0.47	<0.14	131,324.74	0.14	4.66	<0.01	<0.00	12.41	12.55	<0.04	0.03	143.88	0.37	0.01	692.68	1.8
HM16JV112	E17JN14A519	2,433.20	786.27	1.84	726.29	2.23	0.98	0.78	<0.21	142,625.16	0.56	9.95	<0.01	0.06	753.66	759.59	<0.07	0.32	112	4.39	0.36	609.98	2.06
HM16JV112	E17JN14A520	2,026.86	13.44	<0.00	380.12	0.66	0.29	0.49	<0.13	131,163.97	0.1	2.09	<0.00	<0.00	9.8	10.69	<0.04	0.02	153.25	0.14	<0.01	751.4	0.02
HM16JV112	E17JN14A521	2,032.36	11.78	<0.01	378.84	0.76	0.21	0.41	<0.17	130,387.16	0.11	2.08	<0.00	<0.01	12.34	10.13	<0.04	0.03	156.47	0.13	0.04	774.65	0.13
HM16JV112	E17JN14A522	2,268.69	15.75	<0.00	465.98	1.06	0.55	0.74	<0.14	131,568.29	0.13	3.35	0	<0.00	17.23	18.8	<0.02	0.03	186.24	0.35	0.01	787.56	0.16
HM16JV112	E17JN14A523	2,232.78	12.08	<0.00	753.04	0.64	0.21	0.41	<0.13	129,864.59	0.16	2.24	<0.00	0	12.15	12.29	<0.03	0.03	120	0.21	0.01	725.65	0.34
HM16JV112	E17JN14A524	3,028.40	7.24	<0.00	807.71	0.26	0.08	0.2	<0.13	127,180.87	0.15	1.16	<0.00	<0.00	88.73	87.2	<0.04	0.02	197.5	0.11	0.01	866.85	0.02
HM16JV112	E17JN14A525	1,295.91	8.75	<0.00	509.57	1.2	0.56	1.02	<0.20	121,132.35	0.19	2.44	<0.00	0.04	10.51	11.19	<0.05	0.04	75.61	0.33	0.03	505.75	1
HM16JV112	E17JN14A526	1,924.39	468.49	<0.01	548.53	0.79	<0.15	0.48	<0.58	117,285.71	<0.18	5.44	<0.01	0.06	7.96	6.91	<0.15	<0.01	89.19	0.17	0.11	467.46	1.52
HM16JV112	E17JN14A527	2,149.67	1,152.95	<0.01	696.26	1.52	0.31	0.88	<0.48	150,246.28	0.21	3.87	<0.01	<0.01	11.04	13.07	<0.09	0.02	103.35	0.15	<0.03	574.18	0.87
HM16JV112	E17JN14A528	2,211.95	319.01	<0.02	659.59	0.5	0.26	0.32	<0.50	121,802.93	<0.15	2.63	<0.02	0.05	8.71	8.66	<0.11	0.03	114.97	0.25	<0.03	606.64	2.26
HM16JV112	E17JN14A529	2,220.64	11.65	<0.01	450.97	0.63	0.23	0.48	<0.16	121,863.27	0.15	1.4	<0.00	<0.01	7.33	8.07	<0.05	0.05	95.83	0.14	<0.01	589.54	0.09
HM16JV114	E17JN14A198	3,588.22	15.49	0.04	212.91	0.26	0.16	0.33	<0.30	111,485.20	0.28	16.56	0.03	0.04	261.48	275.02	<0.05	0.01	184.87	0.2	<0.01	727.79	0.73

*For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.
**All elements in ppm

Appendix IV: Hemlo district chlorite mineral chemistry collected by LA-ICP-MS

Sample	Analysis	Mn55	Na23	Nb93	Ni60	Pb206	Pb207	Pb208	Sb121	Si29	Sn118	Sr88	Ta181	Th232	Ti47	Ti49	Tl205	U238	V51	Y89	Yb172	Zn66	Zr90
HM16JV116	E17JN14A146	2,200.39	14.72	0.03	943.67	1.56	0.41	1.09	<0.15	124,423.48	0.26	3.35	0.01	0.03	111.17	113.3	0.06	0.01	286.34	3.03	0.06	192.27	0.35
HM16JV116	E17JN14A147	2,203.90	13.56	<0.00	912.75	3.62	1.16	2.4	<0.24	118,936.81	0.25	4.17	<0.00	0.09	24.13	23.75	<0.06	0.04	290.17	4.75	0.17	194.9	0.99
HM16JV116	E17JN14A148	2,371.09	<28.23	<0.05	894.28	3.36	2.49	3.41	<1.61	110,019.30	<0.55	4.1	<0.01	0.23	57.56	52.16	<0.31	0.05	276.53	4.88	<0.03	183.07	1.67
HM16JV116	E17JN14A149	2,297.91	25.59	0.03	854.43	5.72	2.2	4.42	<0.15	120,928.53	0.24	4.07	<0.00	0.14	51.82	51.58	0.03	0.04	291.24	4.52	0.13	212.14	2.53
HM16JV116	E17JN14A152	3,097.53	8.68	<0.00	1,014.53	3.24	1.2	2.3	<0.25	115,494.98	0.16	3.21	<0.00	0.01	17.64	15.31	<0.05	<0.00	364.7	1.97	<0.01	290.23	0.35
HM16JV116	E17JN14A153	3,039.42	8.85	<0.00	1,018.37	2.63	1.07	1.95	<0.14	128,839.70	0.23	2.75	<0.00	0.04	12.73	12.27	<0.03	0.02	386.59	2.51	0.05	338.24	0.35
HM16JV116	E17JN14A153	3,157.81	14.9	0.01	964.48	2.38	0.99	1.73	<0.17	119,611.24	0.18	3.71	<0.00	0.08	10.91	11.34	<0.04	0.03	413.1	2.75	0.06	314.59	0.33
HM16JV116	E17JN14A154	3,153.19	6.98	0.05	1,026.06	3.03	1.15	2.36	<0.17	117,375.86	0.17	2.92	<0.00	0.03	26.9	23.69	<0.04	<0.01	302.42	1.83	0.05	308.05	0.44
HM16JV116	E17JN14A155	3,231.57	5.51	0.16	1,054.33	3.61	1.3	2.55	<0.14	118,162.80	0.26	3.07	0.01	0.08	99.98	118.87	<0.03	0.02	316.13	2.04	0.04	317.28	0.8
HM16JV116	E17JN14A157	3,181.33	8.01	0.02	1,048.26	6.35	3.26	5.5	<0.17	120,155.13	0.2	3.09	<0.00	0.56	30.76	32.14	<0.04	0.04	215.51	2.49	0.04	351.42	5.85
HM16JV116	E17JN14A158	3,054.96	36.46	0.01	1,043.64	12.58	5.72	10.89	<0.17	129,153.15	0.27	2.73	<0.00	0.09	31.13	32.31	<0.03	0.01	224.2	0.89	0.01	362.84	1.35
HM16JV116	E17JN14A159	2,985.07	312.98	<0.01	1,010.76	5.02	3.39	3.92	<0.95	109,166.67	0.4	37.58	<0.01	0.16	25.44	24.4	<0.15	0.17	167.07	2.17	0.47	271.7	2.34
HM16JV116	E17JN14A160	2,990.48	37.33	0.01	981.46	7.61	5.67	7.23	<0.13	122,078.68	0.29	2.66	0	0.02	33.27	31.8	<0.03	0.01	205.93	0.65	<0.01	326.43	0.5
HM16JV116	E17JN14A161	3,038.19	48.35	<0.01	920.3	3.28	2.79	2.93	<0.93	120,504.97	0.62	299.6	<0.02	1.81	22.99	15.9	<0.26	1.26	237.25	10.47	1	242.46	4.81
HM16JV116	E17JN14A162	3,166.73	8.82	0.01	1,104.40	1.88	0.91	1.72	<0.30	115,622.14	0.23	1.92	<0.00	0.12	10.14	13.03	<0.05	0.01	229.03	0.98	0.02	287.97	0.84
HM16JV118	C17MA20A0122	2,927.41	4.53	<0.00	147.61			4.77	<0.10	125,643.72	<0.04	0.3	<0.00	0.03	82.66	81.33	<0.02	0	124.13	0.1	<0.01	1,664.36	0.04
HM16JV118	C17MA20A0123	2,969.89	8.62	<0.02	102.56			3.37	<0.32	108,997.49	<0.19	0.37	<0.01	0.09	94.66	104.58	<0.06	<0.01	178.24	0.15	<0.03	1,367.62	<0.03
HM16JV118	C17MA20A0146	2,756.23	8.78	0.08	61.8			2.85	<0.12	125,658.06	0.18	2.27	<0.00	<0.00	289.17	272.22	0.08	0.01	160.06	0.21	<0.01	1,228.17	0.08
HM16JV123	C17MA21A0124	2,553.01	8.89	0.04	108.9			1.99	<0.08	121,203.87	0.09	0.77	0	<0.00	507.64	500.79	<0.01	<0.00	129.55	0.15	<0.01	475.41	0.97
HM16JV132	C17MA20A0296	2,653.20	216.04	0.09	108.25			7.45	0.18	128,470.84	0.06	78.44	<0.00	1.54	112.44	126.27	<0.02	0.39	132.79	0.08	0.02	979.94	7.14
HM16JV132	C17MA20A0297	2,643.51	192.26	0.51	119.38			12.81	<0.08	127,240.49	0.3	3.65	0.01	2.13	427.99	494.26	<0.02	0.96	143.21	0.23	0.03	994.67	8.43
HM16JV132	C17MA20A0298	2,665.76	378.38	0.07	107.56			10.8	<0.13	147,100.53	<0.09	78.68	<0.00	1.54	75.35	69.83	0.03	0.31	136.17	0.13	<0.01	1,099.82	6.3
HM16JV132	C17MA20A0299	2,483.85	11.64	0.08	90.55			4.13	<0.14	123,127.31	0.19	1.98	<0.00	2.22	76.35	81.12	<0.03	0.28	115.84	0.1	<0.01	953.99	7.91
HM16JV132	C17MA20A0300	2,991.09	283.24	0.17	98.74			4.97	<0.12	123,253.04	<0.05	2.65	0.01	2.01	95.03	98.65	<0.02	0.28	136.3	0.09	<0.01	1,055.82	7.87
HM16JV132	C17MA20A0301	2,438.39	16.51	0.05	105.97			9.92	<0.14	135,565.79	0.08	2.25	<0.00	0.42	54.55	50.03	<0.03	0.09	125.65	0.17	<0.02	1,175.76	6.79
HM16JV132	C17MA20A0301	2,317.12	18.49	0.05	101.9			12.23	<0.24	139,891.77	0.16	2.12	<0.00	0.28	43.42	41.2	<0.05	0.1	116.09	0.26	0.05	1,211.29	6.3
HM16JV133	C17MA21A0101	2,453.48	11.34	0.02	99.24			1.62	<0.10	130,055.84	0.14	2.51	0	0.04	112.93	116.48	0.02	0	211.92	0.37	<0.01	1,221.04	0.63
HM16JV133	C17MA21A0102	2,550.69	7.92	0.01	91.46			1.46	<0.07	124,551.17	0.12	2.14	0	0.03	41.7	39.27	<0.01	0.01	254.63	0.46	<0.01	1,149.88	1.06
HM16JV133	C17MA21A0103	2,481.14	9.15	0.06	91.75			2.03	<0.07	123,084.17	0.17	2.52	<0.00	0.08	239.24	347.15	<0.01	0.02	238.29	0.62	0.02	1,137.07	1.5
HM16JV133	C17MA21A0104	2,459.66	12.16	0.01	89.07			1.74	<0.06	128,366.84	0.07	3.6	<0.00	0.09	109.68	118.32	<0.01	0.01	223.06	0.58	<0.01	1,180.40	0.94
HM16JV133	C17MA21A0105	2,422.43	15.81	0.07	98.51			2.51	<0.21	138,394.09	0.22	3.48	<0.01	0.09	441.21	437.57	<0.03	0.03	225.32	0.46	0.05	1,396.07	1.57
HM16JV133	C17MA21A0106	2,337.10	14.9	0.05	99.12			2.13	<0.10	141,973.41	0.2	2.63	<0.01	0.15	294.16	336.66	0.02	0.05	200.71	0.74	0.02	1,143.74	3.63
HM16JV133	C17MA21A0107	2,441.81	12.01	0.03	93.14			2.8	<0.07	131,800.87	0.16	3.07	<0.00	0.09	227	216.46	<0.01	0.02	229.55	0.7	0.01	1,245.70	1.82
HM16JV133	C17MA21A0108	2,485.86	13.82	0.22	90.4			2.95	<0.08	126,923.59	0.71	2.69	<0.00	0.08	924.53	818.22	<0.01	0.03	270.76	0.49	0.03	1,208.88	1.63
HM16JV133	C17MA21A0109	2,436.00	10.9	0.02	89.11			2.01	<0.07	126,437.10	0.11	3.19	<0.00	0.09	166.16	177.8	<0.01	0.01	255.65	0.51	<0.01	1,207.53	1.39
HM16JV133	C17MA21A0110	2,409.95	20.44	0.02	79.17			0.94	<0.07	137,291.54	0.62	5.5	<0.00	0.03	75.5	74.8	0.02	0.09	353.65	1.87	0.06	1,131.29	2.87
HM16JV133	C17MA21A0111	2,539.33	9.52	0.06	93.91			0.9	<0.08	121,231.66	0.08	5.12	<0.00	0.04	232.03	280.22	<0.01	0.02	247.62	0.46	<0.01	1,169.74	0.62
HM16JV133	C17MA21A0114	2,459.63	14.58	0.01	95.54			2.81	<0.08	128,084.63	0.12	2.55	0	0.02	69.63	70.83	<0.01	0.01	241.06	0.69	0.03	1,208.29	1.91
HM16JV133	C17MA21A0115	2,412.48	18.87	0	97.31			3.82	<0.08	133,908.07	0.13	2.88	0	0.04	57.84	61.96	<0.02	0.01	243.96	0.91	0.05	1,216.50	2.84
HM16JV133	C17MA21A0116	2,534.65	13.01	<0.00	85.63			0.53	<0.09	125,269.09	0.09	2.9	<0.00	0.09	94.54	98.7	<0.01	0.01	202.16	0.48	0.01	1,138.77	1.21
HM16JV138	E17JN15A395	2,945.70	50.6	0.37	453.05	6.57	7.69	7.24	<0.09	122,959.84	0.66	1.55	0.04	0.33	187.85	211.9	<0.02	0.54	364.61	9.93	0.3	861.21	2.81
HM16JV138	E17JN15A398	2,964.93	70.24	<0.00	508.74	4.36	5.15	4.96	0.1	122,708.39	0.21	2.36	<0.01	0.11	76.4	80.05	<0.02	0.18	369.23	10.67	0.37	874.87	0.72
HM16JV138	E17JN15A399	2,966.19	63.93	<0.00	383.75	1.68	2.07	1.82	0.11	120,664.25	0.23	1.34	<0.01	0.07	83.35	84.08	<0.02	0.18	419.05	10.19	0.21	849.59	0.61
HM16JV138	E17JN15A400	2,945.07	76	0.01	549.02	0.93	1.18	1.26	<0.12	117,568.03	0.17	1.02	<0.00	0.04	81.79	83.05	<0.03	0.1	427.14	5.86	0.1	748.62	0.21
HM16JV138	E17JN15A401	2,862.66	72.05	0.06	454.73	2.53	2.85	2.4	<0.11	131,276.74	0.29	1.46	0.01	0.15	92.84	103.19	<0.03	0.4	440.4	11.09	0.35	975.71	1.14
HM16JV138	E17JN15A402	2,895.98	90.54	<0.00	338.99	3.95	4.55	4.94	<0.09	122,351.97	0.17	1.17	<0.00	0.16	31.79	32.11	<0.03	0.15	308.86	8.66	0.22	755.98	0.43
HM16JV141	C17MA21A0063	6,022.32	5.93	0.03	205.94			0.15	<0.09	122,902.13	<0.06	0.26	<0.00	0.01	205.73	211.66	<0.01	<0.00	98.84	0.02	<0.01	426.66	0.1
HM16JV141	C17MA21A0066	5,968.12	<3.48	0.03	232.01			0.21	<0.15	113,035.53	<0.10	0.44	0.03	0.04	388.23	343.34	<0.03	<0.00	108.79	0.09	<0.03	405.21	0.76
HM16JV141	C17MA21A0067	5,940.23	2.79	0.01	267.76			0.18	<0.09	118,279.49	<0.06	0.2	<0.00	<0.00	204.97	198.39	<0.01	0	169.79	0.03	<0.02	419.55	<0.00
HM16JV141	C17MA21A0069	3,775.49	8.78	0	364.13			0.55	<0.09	133,704.89	0.07	1.65	<0.00	0.01	53.86	54.8	<0.02	<0.00	241.8	0.28	<0.01	463.12	0.11
HM16JV141	C17MA21A0071	3,998.33	6.03	<0.00	376.49			0.21	0.17	117,936.38	0.1	1.25	<0.00	0.01	20.51	21.19	<0.01	<0.00	276.45	0.06	0.03	384.17	<0.01
HM16JV141	C17MA21A0072	3,976.44	14.19	0.02	359.21			1.27	0.31	121,693.22	<0.05	1.83	<0.00	0.01	31.49	35.85	0.02	<0.00	275.69	0.14	<0.01	419.68	0.29
HM16JV141	C17MA21A0073	3,932.86	8.12	<0.01	344.36			1.06	0.19	122,978.09	0.12	1.69	0.01	0.01	45.02	45.67	<0.02	<0.00	295.67	0.23	<0.01	451.91	0.05

*For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix IV: Hemlo district chlorite mineral chemistry collected by LA-ICP-MS

Sample	Analysis	Mn55	Na23	Nb93	Ni60	Pb206	Pb207	Pb208	Sb121	Si29	Sn118	Sr88	Ta181	Th232	Ti47	Ti49	Tl205	U238	V51	Y89	Yb172	Zn66	Zr90
HM16JV141	C17MA21A0074	3,859.10	6.44	<0.00	311.35			0.28	<0.09	122,509.48	0.06	0.97	0	0.01	41.17	47.1	<0.02	<0.00	307.87	0.05	<0.01	408.8	0.01
HM16JV141	C17MA21A0075	3,726.64	12.52	0.03	357.23			1.51	<0.09	135,768.54	<0.05	1.94	<0.00	0	66.1	79.24	0.03	0.01	234.34	0.55	0.03	525.59	1.43
HM16JV141	C17MA21A0076	3,895.42	5.7	0.01	302.35			0.34	<0.08	121,978.78	<0.05	1.39	0	0.01	131.7	125.52	<0.02	0	307.41	0.1	<0.01	410.86	0.49
HM16JV141	C17MA21A0077	3,941.31	8	<0.00	316.61			0.6	<0.07	125,311.67	<0.05	1.74	<0.00	0.01	45.63	39.6	0.02	0.01	305.85	0.19	<0.02	451.46	0.02
HM16JV141	C17MA21A0035	3,635.69	9.96	0.05	367.12			0.52	<0.08	126,430.48	<0.07	2.11	0	0.01	1,000.14	960.9	<0.01	0	343.74	0.31	0.03	383.53	0.05
HM16JV141	C17MA21A0036	3,857.57	8.47	0.06	419.44			0.71	<0.11	120,588.18	<0.08	1.56	<0.00	<0.00	387.57	375.55	<0.02	<0.00	332.48	0.26	<0.01	360.11	<0.00
HM16JV141	C17MA21A0037	3,688.91	17.59	<0.00	412.77			0.6	<0.16	121,601.40	5.61	1.72	<0.00	0.01	28.94	27.56	<0.03	<0.00	303.54	0.06	<0.01	382.63	1.04
HM16JV141	C17MA21A0038	3,748.66	11.95	0.05	394.57			1.16	<0.22	139,257.47	<0.15	1.13	<0.00	0.01	252.15	258.68	<0.04	<0.01	288.92	0.25	<0.02	418.87	<0.01
HM16JV141	C17MA21A0046	3,713.77	9.99	<0.00	328.81			1.78	<0.08	123,460.44	0.1	1.88	0	0.01	54.26	53.26	<0.01	<0.00	303.05	0.34	<0.01	412.92	<0.01
HM16JV141	C17MA21A0051	3,792.76	5.15	0.01	364.34			0.37	<0.09	125,674.01	<0.07	0.83	<0.00	0.01	27	26.25	0.03	<0.00	348.35	0.05	<0.01	390.62	0.14
HM16JV143	E17JN14A537	2,014.10	7.04	1.45	324.27	1.13	0.36	0.7	<0.19	126,283.67	0.51	2.61	0.1	0.19	1,385.19	1,439.83	<0.04	0.17	283.25	0.63	0.29	245.44	5.69
HM16JV143	E17JN14A537	2,015.01	<9.20	0.07	331.16	0.61	0.09	0.52	<0.34	127,516.03	<0.16	2.2	0.01	0.11	245.69	315.77	<0.07	0.06	269.08	0.43	0.02	259.51	2.91
HM16JV143	E17JN14A543	1,938.68	16.14	0.05	262.18	1.93	0.5	1.3	<0.19	136,563.69	0.32	6.45	0.01	0.24	198.69	195.53	<0.06	0.04	294.55	0.85	0.06	272.9	8.34
HM16JV143	E17JN14A544	1,969.02	3,653.90	<0.01	281.31	0.68	0.15	0.7	<0.20	130,903.70	0.19	5.43	0.02	0.39	90.83	86.3	<0.06	0.03	232.66	0.5	0.07	225.08	5.2
HM16JV147	C17MA20A0365	2,403.89	21.58	<0.00	54.27			0.38	<0.08	127,323.13	<0.04	1.31	0	0	70.41	75.05	<0.01	<0.00	200.7	0.13	0.01	678.04	0.13
HM16JV147	C17MA20A0366	2,421.46	21.72	<0.00	57.51			0.4	<0.08	128,083.47	<0.04	1.4	<0.00	0.02	72.21	69.48	<0.02	0	223.6	0.17	<0.01	671.43	1.19
HM16JV147	C17MA20A0367	2,418.49	20.7	0	56.03			0.38	<0.08	125,459.15	<0.04	1.36	0	0.02	73.06	74.48	<0.02	0.01	212.94	0.15	<0.01	653.88	1.3
HM16JV147	C17MA20A0369	2,454.11	16.78	<0.01	33.25			0.19	<0.22	109,630.15	<0.11	0.98	<0.00	<0.00	92.12	94.46	<0.04	<0.00	220.56	0.15	<0.02	548.55	0.26
HM16JV147	C17MA20A0370	2,352.50	22.54	<0.00	39.99			0.44	<0.08	133,501.19	<0.06	1.51	<0.00	0.01	75.01	78.2	<0.01	0	202.22	0.09	0.01	666.12	1.68
HM16JV147	C17MA20A0371	2,425.92	29.39	<0.00	36.71			0.47	<0.12	121,883.82	<0.07	3.41	<0.00	0.11	69.35	70.64	0.02	0.01	212.89	0.2	0.02	569.55	3.97
HM16JV147	C17MA20A0372	2,361.82	26.44	0	37.93			0.25	<0.09	127,153.68	<0.04	1.33	<0.00	0.02	99.24	91.52	<0.01	<0.00	203.2	0.09	<0.01	663.15	0.73
HM16JV147	C17MA20A0373	2,461.03	11.56	0.01	38.83			0.33	<0.09	119,883.71	<0.05	1.57	<0.00	0.01	62.49	58.53	<0.02	<0.00	205.76	0.15	0.03	553.55	1.13
HM16JV147	C17MA20A0374	2,608.29	32.76	0	61.02			0.5	<0.08	121,505.23	<0.05	2.69	<0.00	0.02	108.2	104.24	<0.02	0	257.46	0.14	<0.01	558.64	2.17
HM16JV147	C17MA20A0375	2,636.60	26.37	<0.00	60.11			0.53	<0.08	126,608.99	<0.04	1.62	0	0.01	101.15	95.45	<0.01	0	234.3	0.11	0.01	586.69	0.55
HM16JV147	C17MA20A0376	2,612.01	19.68	<0.00	39.54			0.43	<0.09	118,835.80	<0.05	1.42	<0.00	0.01	137.79	140.71	<0.02	0	265.21	0.06	0.01	576.54	0.15
HM16JV147	C17MA20A0377	2,581.58	39.03	<0.00	45.55			0.57	<0.08	128,996.84	0.06	1.57	<0.00	0.01	93.29	96.1	<0.01	<0.00	234.27	0.08	0.01	633.44	0.31
HM16JV147	C17MA20A0378	2,426.47	11.27	0.01	106.92			0.37	<0.10	116,948.73	<0.05	1.28	<0.00	0.07	76.41	79.84	<0.02	<0.00	241.86	0.23	0.05	597.91	2.02
HM16JV147	C17MA20A0379	2,356.89	19.45	0.01	107.57			0.4	<0.09	122,902.06	<0.04	1.38	<0.00	0.04	66.88	70.79	<0.02	<0.00	235.52	0.14	0.02	609.97	1.64
HM16JV147	C17MA20A0380	2,285.63	27.24	<0.00	117.32			0.43	<0.10	129,224.03	<0.04	0.72	0.01	<0.00	71.41	66.41	<0.02	0	247.36	0.12	<0.01	695.12	0.07
HM16JV147	C17MA20A0381	2,379.34	24.48	<0.00	111.82			0.32	<0.09	118,212.93	<0.05	1.53	<0.00	0.01	71.96	72.86	<0.02	<0.00	249.56	0.22	<0.01	574.92	0.95
HM16JV147	C17MA20A0382	2,253.25	33.36	0.01	133.85			0.91	<0.12	134,625.91	0.2	1.08	<0.00	0.09	69.86	109.84	<0.03	0.01	242.36	0.3	<0.01	745.81	3.26
HM16JV147	C17MA20A0384	2,011.02	17,068.99	<0.00	37.7			0.41	<0.09	162,787.57	0.05	226.27	<0.00	0.02	57.23	54.55	<0.01	<0.00	170.95	0.07	<0.01	459.34	0.86
HM16JV147	C17MA20A0385	2,675.97	11.85	0.01	46.02			0.47	<0.10	120,599.92	<0.05	1.27	<0.00	0.02	146.81	146.51	<0.02	<0.00	208.51	0.08	<0.01	595.23	0.38
HM16JV147	C17MA20A0386	2,690.41	7.63	0.03	91.83			0.36	<0.09	124,119.81	<0.05	0.53	<0.00	0	247.4	246.12	<0.02	0	90.85	0.03	<0.01	583.72	0.13
HM16JV147	C17MA20A0387	2,726.17	13.22	<0.00	56.04			0.48	<0.09	126,885.44	<0.05	1.01	<0.00	0.01	83.63	84.42	<0.02	0	202.1	0.08	0.01	634.17	0.79
HM16JV147	C17MA20A0388	2,734.34	16.66	0	56.5			0.39	<0.09	124,390.86	<0.06	1.3	<0.00	0.01	83.69	85.94	<0.02	0	215.21	0.1	0.02	580.32	1.46
HM16JV149	E17JN15A460	3,117.94	33.06	0.01	326.62	22.03	19.26	21.52	0.1	117,044.62	0.24	3.76	<0.00	0.19	69.47	64.93	0.05	0.96	493.66	1.15	0.06	502.93	1.73
HM16JV149	E17JN15A461	2,708.56	71.73	0.01	278.23	4.88	5.15	5.11	<0.10	124,786.12	0.22	3.03	<0.00	0.04	36.69	37.47	0.06	0.02	612.41	2.01	0.04	333.25	0.44
HM16JV149	E17JN15A463	2,484.65	7,044.35	<0.01	440.05	6.76	5.83	5.78	<0.21	130,714.29	<0.12	26.66	<0.01	0.05	41.21	35.04	<0.08	0.07	290.95	3.54	0.26	455.48	0.78
HM16JV151	C17MA21A0099	3,922.65	20.5	0.03	484.81			5.53	<0.08	131,064.64	0.08	0.71	<0.00	0.73	278.52	270.48	0.01	0.01	323.99	0.17	<0.01	312.31	0.63
HM16JV151	C17MA21A0054	4,054.29	11.94	0.01	498.5			1.17	<0.09	126,824.35	0.07	0.97	<0.00	0.18	167.35	176.17	<0.01	0.01	356.27	0.11	<0.01	312.61	0.06
HM16JV151	C17MA21A0055	4,439.76	10.39	0.03	497.19			1.03	<0.11	128,793.11	0.13	43.67	<0.00	0.26	278.49	297.13	<0.02	0.01	283.22	0.29	0.06	429.98	0.91
HM16JV151	C17MA21A0056	3,684.47	3,987.06	0.03	540.97			1.93	<0.09	146,338.30	0.19	1.73	<0.00	0.49	238.71	238.46	<0.02	0.02	276.54	0.11	0.03	328.24	4.19
HM16JV151	C17MA21A0057	3,711.61	22.12	0.03	531.7			1.33	<0.08	136,987.80	0.11	0.83	<0.00	0.71	240.01	234.41	0.02	0.01	311.69	0.16	<0.01	304.34	0.55
HM16JV151	C17MA21A0058	4,162.58	24.83	<0.00	442.13			1.75	<0.17	133,252.65	<0.11	0.54	<0.00	0.64	306.34	319.8	<0.02	0.02	334.62	0.13	<0.02	392.04	1.44
HM16JV151	C17MA21A0060	3,567.34	28.27	0.14	558.1			1.32	<0.08	130,384.97	0.09	2.07	0.01	1.14	405.91	405.06	<0.01	0.01	270.56	0.17	0.01	303.53	1.51
HM16JV151	C17MA21A0061	3,811.47	46.3	0.15	441.63			1.32	<0.13	129,336.26	0.15	2.65	<0.00	1.12	451.38	420.54	<0.02	0.01	403.67	0.15	0.06	322.29	7.68
HM16JV151	C17MA21A0062	3,442.04	41.25	0.04	490.29			3.56	<0.08	143,529.12	0.35	393.51	<0.00	1.37	404.31	410.01	0.02	0.04	388.76	0.98	0.03	325.32	1.57
HM16JV154	E17JN14A710	2,699.63	170.37	0	75.22	34.21	36.16	41.12	<0.21	155,292.70	0.47	3,068.05	<0.00	1.22	74.63	72.31	0.12	0.34	243.81	6.89	0.21	2,167.83	6.84
HM16JV159	E17JN14A588	3,790.59	6.93	<0.01	73.01	0.08	0.07	0.21	<0.13	118,920.64	0.17	1.23	<0.01	0.02	112.32	108.16	<0.03	<0.00	119.19	0.17	0.03	1,190.83	0.11
HM16JV159	E17JN14A590	3,725.47	8.8	<0.00	61.52	0.09	0.04	0.06	<0.12	119,023.91	0.13	0.62	<0.00	0.01	75.64	74.33	<0.03	<0.00	180.57	0.03	0.01	1,363.16	0.12
HM16JV159	E17JN14A592	3,252.69	13.58	0.01	88.65	0.13	0.11	0.13	<0.09	129,716.87	0.25	3.12	<0.00	0.01	46.57	50.47	<0.03	0.01	105.03	0.2	0.01	1,308.89	0.15
HM16JV159	E17JN14A593	3,358.13	222.62	<0.01	79.02	0.34	0.12	0.39	<0.19	117,130.78	0.21	2.43	<0.01	0.01	27.05	29.25	<0.06	0.01	81.71	0.3	<0.02	1,163.84	1.03

*For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.

**All elements in ppm

Appendix IV: Hemlo district chlorite mineral chemistry collected by LA-ICP-MS

Sample	Analysis	Mn55	Na23	Nb93	Ni60	Pb206	Pb207	Pb208	Sb121	Si29	Sn118	Sr88	Ta181	Th232	Ti47	Ti49	Tl205	U238	V51	Y89	Yb172	Zn66	Zr90
HM16JV159	E17JN14A594	3,408.12	11.96	0.01	96.83	0.14	0.1	0.11	<0.14	120,545.46	0.1	2.65	0	0.01	71.94	73.57	<0.04	0.01	115.94	0.18	<0.01	1,158.11	0.55
HM16JV159	E17JN14A597	3,098.25	16.61	0.02	79.87	0.35	0.45	0.61	<0.14	136,771.30	0.25	2.86	<0.00	0.06	124.83	115.68	<0.04	<0.01	162.91	0.15	<0.01	1,400.57	0.54
HM16JV161	C17MA21A0078	2,034.27	22.39	0	90.98			1.36	<0.08	139,407.48	<0.06	4.71	<0.00	0.05	20.08	22.73	0.02	0.05	177.54	0.06	<0.02	917.04	3.99
HM16JV161	C17MA21A0079	2,086.78	17.55	0.02	88.65			1.05	<0.07	130,856.20	0.05	5.27	0.01	0.04	20.2	18.26	<0.01	0.01	167.43	0.07	<0.01	877.82	2.39
HM16JV161	C17MA21A0087	2,163.77	27.11	0.01	91.44			1.39	<0.10	132,780.72	0.26	9.34	<0.00	0.06	32.68	30.85	<0.02	0.03	168.31	0.05	<0.01	908.84	2.74
HM16JV161	C17MA21A0088	2,078.27	26.7	0.15	91.5			2	<0.07	137,502.85	0.14	9.41	<0.00	0.22	169.94	158.87	<0.01	0.05	161.11	0.14	<0.01	948.54	7.15
HM16JV161	C17MA21A0089	2,029.52	28.29	0.05	90.41			1.69	<0.07	138,162.66	0.11	10.26	<0.00	0.23	45.8	39.83	<0.01	0.02	170.22	0.1	<0.01	951.44	8.38
HM16JV161	C17MA21A0090	2,106.63	16.48	0.01	85.93			1.51	<0.08	128,476.34	<0.06	4.48	<0.00	0.01	19.97	20.3	<0.01	0.01	184.3	0.03	<0.01	858.59	1.6
HM16JV161	C17MA21A0091	2,114.50	20.04	0.03	91.12			2.16	<0.08	134,270.82	0.1	10.73	<0.00	0.74	33.64	32.83	<0.01	0.03	178.36	0.08	<0.00	886.15	6.97
HM16JV161	C17MA21A0093	2,135.15	33.35	0.03	92.73			1.51	<0.08	134,404.11	0.08	6.64	0	0.37	29.42	28.07	<0.01	0.02	149.47	0.11	<0.01	909.35	7.36
HM16JV161	C17MA21A0094	2,100.12	29.42	<0.00	82.87			1.09	<0.18	124,332.68	<0.14	8.83	<0.00	0.16	26.18	37.91	0.07	<0.00	158.87	0.04	<0.02	805.52	2.53
HM16JV161	C17MA21A0095	2,040.68	21.59	0.01	93.57			1.74	<0.11	135,497.76	0.13	4.49	<0.00	0.05	32.04	30.57	<0.02	0.01	165.09	0.07	0.02	864.13	1.65
HM16JV161	C17MA21A0096	2,354.46	5.31	0.01	67.8			0.2	<0.08	136,936.30	0.07	2.04	<0.00	0.03	11.43	11.77	<0.01	0	93.26	0.01	<0.01	744.59	0.81
HM16JV161	C17MA21A0097	2,066.25	27.74	0.01	90.35			1.14	<0.07	137,040.29	0.05	5.56	0	0.03	19.77	19.76	<0.01	0.01	121.44	0.05	<0.01	937.36	2.06
HM16JV161	C17MA21A0098	2,142.18	61.7	0.02	80.8			0.8	<0.07	135,352.39	0.07	5.06	<0.00	0.09	19.66	19.8	<0.01	0.01	133.86	0.03	<0.01	895.4	4.48
HM16JV162	E17JN15A350	3,589.42	104.51	0.18	31.58	31.51	27.03	29.03	<0.22	144,415.64	1.12	5.41	0.03	0.3	270.25	276.44	0.07	<0.01	192.89	0.6	<0.02	1,100.87	3.56
HM16JV162	E17JN15A351	3,599.98	54.9	0.81	38.99	8.11	7.12	6.89	<0.24	120,042.66	0.29	3.23	<0.00	0.23	1,146.35	1,195.00	<0.06	0.11	140.89	0.44	0.04	688.93	4.37
HM16JV184	C17MA21A0034	3,509.67	<2.43	0	53.3			3.3	<0.09	124,301.66	<0.07	0.27	<0.00	0.03	112.69	113.9	<0.02	0.01	190.64	0.08	0.02	1,868.28	0.27
HM16JV191	C17MA21A0030	2,276.28	26.6	0	84.74			0.24	<0.07	129,723.91	0.13	5.41	<0.00	0.03	14.38	15.3	<0.01	0.01	91.27	0.01	<0.01	867.01	1.66
HM16JV191	C17MA21A0031	2,234.26	30.69	0.01	86.52			0.84	<0.08	126,536.68	0.15	6.98	<0.00	0.09	24.12	24.95	<0.01	0.01	88.52	0.02	<0.00	892.61	2.7
HM16JV191	C17MA21A0022	2,159.09	42.4	0.03	109.42			1.77	<0.07	137,952.45	0.14	8.06	0	0.06	93.38	93.92	<0.02	0.01	107.17	0.04	<0.01	1,094.39	5.95
HM16JV191	C17MA21A0023	2,227.70	28.92	0.01	94.57			0.86	<0.07	135,008.34	0.1	6.7	0	0.05	15.48	15.98	<0.01	0.01	110.58	0.01	<0.00	926.46	3.05
HM16JV191	C17MA21A0024	2,261.01	26.63	0.01	90.08			2.38	<0.09	136,420.09	0.08	5.73	0	0.09	36.59	34.9	<0.01	0.01	106.86	0.03	<0.01	1,042.80	3.06
HM16JV191	C17MA21A0025	2,153.30	31.1	0.02	89.93			0.47	<0.08	136,677.39	0.11	6.98	<0.00	0.09	20.38	19.68	<0.01	0.01	102.46	0.01	<0.01	960.69	5.54
HM16JV191	C17MA21A0026	2,179.63	21.47	0.01	94.22			0.46	<0.08	135,372.74	0.1	5.56	<0.00	0.05	18.63	17.29	<0.01	0.01	92.03	0.01	<0.00	951.18	3.35
HM16JV191	C17MA21A0027	2,078.35	67.53	0.02	90.62			0.38	<0.08	138,309.96	0.09	9.54	<0.00	0.07	26.86	27.48	<0.01	0.01	104.15	0.01	0.01	935.79	7.67
HM16JV191	C17MA21A0028	2,112.73	40.36	0.01	91.42			1.07	<0.08	136,517.62	0.18	9.52	<0.00	0.3	23.98	25	<0.01	0.02	100.05	0.02	<0.01	969.23	3.44
HM16JV191	C17MA21A0029	2,024.54	32.11	0.02	83.02			1.16	<0.08	149,138.41	0.09	5.87	<0.00	0.15	27.67	27.94	<0.01	0.02	107.24	0.02	<0.01	889.79	8.08
HM16JV193	C17MA21A0007	2,352.52	10.02	0	84.24			2.77	<0.07	127,473.59	0.09	3.05	<0.00	0.06	26.48	25.27	<0.02	0.01	186.04	0.15	0.01	1,663.74	0.51
HM16JV193	C17MA21A0008	2,375.29	8.31	<0.00	85.37			4.27	<0.07	122,005.91	<0.07	3.39	0.01	0.01	30.78	31.12	<0.02	0.01	185.82	0.18	0.03	1,617.88	0.18
HM16JV193	C17MA21A0009	2,331.36	12.06	0.02	81.46			1.49	<0.08	121,372.31	<0.07	3.02	0.01	0.04	40.32	41.14	<0.02	0.01	152.16	0.19	0.02	1,603.87	2.69
HM16JV193	C17MA21A0010	2,336.44	6.42	0.06	90.81			2.7	<0.08	124,273.89	0.08	2.8	<0.00	0.03	116.39	119.07	<0.02	0.01	180.11	0.13	<0.01	1,584.63	0.97
HM16JV193	C17MA21A0011	2,345.52	8.21	0.03	81.36			3.95	<0.11	129,740.70	0.2	2.59	<0.00	0.07	69.41	71.9	<0.02	0.04	218.88	0.16	<0.01	1,664.52	6.4
HM16JV193	C17MA21A0012	2,374.14	16.99	0.02	89.26			3.68	<0.09	118,882.62	<0.07	3.35	<0.01	0.01	37.88	33.34	<0.02	0.01	171.2	0.19	0.02	1,598.84	1.16
HM16JV193	C17MA21A0013	2,280.03	7.16	0.01	86.26			2.78	<0.09	130,164.69	0.07	2.51	<0.00	0.07	24.98	26.91	<0.02	0.02	172.55	0.14	0.01	1,667.09	2.1
HM16JV193	C17MA21A0015	2,159.66	22.02	<0.00	79.28			4.2	<0.10	121,534.94	0.09	3.59	<0.00	0.07	36.31	36.8	<0.02	0	175.4	0.17	<0.01	1,826.93	4.32
HM16JV193	C17MA21A0016	2,508.94	14.95	0.01	80.77			2.2	<0.11	119,553.05	0.11	1.93	<0.00	0.11	45	43.71	<0.02	0.01	158.98	0.16	<0.01	1,400.90	1.78
HM16JV193	C17MA21A0017	2,470.66	9.36	0	88.73			1.75	<0.09	127,213.12	<0.06	2.47	<0.00	0.13	44.71	43.34	0.03	0.01	187.88	0.12	<0.01	1,465.76	4.39
HM16JV193	C17MA21A0018	2,505.15	6.42	0	84.07			1.58	<0.08	123,106.47	0.09	2.01	<0.00	0.03	30.49	30.82	0.02	<0.00	191.34	0.07	<0.01	1,356.68	1
HM16JV193	C17MA21A0019	2,976.68	5.92	<0.00	79.39			3.2	<0.07	127,938.94	<0.07	2.33	0	0.01	80.71	81.86	<0.01	0	222.49	0.08	0.01	1,887.35	0.07
HM16JV193	C17MA21A0020	2,640.45	7.39	0	75.7			2.96	<0.08	122,014.25	0.08	2.9	<0.00	0.01	51.7	55.1	<0.01	<0.00	194.86	0.14	0.01	1,687.20	0.24
HM16JV193	C17MA21A0021	2,592.77	8.52	0.01	73.25			2.27	<0.08	123,484.60	<0.06	2.77	<0.00	0.03	218.83	221.58	<0.01	0.01	191.18	0.14	<0.01	1,659.23	0.96
HM16JV208	E17JN15A309	3,277.37	<12.39	<0.00	151.29	1.35	1.1	1.71	<0.24	163,122.21	<0.17	3.8	<0.01	<0.01	26.07	23.85	0.14	<0.01	248.12	<0.01	<0.02	765.74	0.36
HM16JV208	E17JN15A309	3,832.63	33.84	0.01	144.49	0.76	0.89	0.93	<0.11	122,141.85	0.17	3.27	<0.00	<0.00	36.14	36.3	0.06	0	292.96	0.02	0.01	695.53	0.25
HM16JV208	E17JN15A311	3,452.47	253.31	<0.00	161.38	4.08	2.99	4.7	<0.10	147,112.55	0.17	5.06	<0.00	<0.00	25.05	26.24	0.09	0.01	240.86	0.01	<0.01	742.94	0.53
HM16JV208	E17JN15A312	3,250.10	171.64	<0.01	94.72	2.72	1.9	3.72	<0.27	159,183.15	0.28	18.18	0.02	<0.01	39.02	45.51	<0.07	0.01	272.56	<0.01	<0.03	668.31	0.35

*For analyses with prefix C17MA21A- Pb isotopes 206 and 207 were not measured.
**All elements in ppm

Appendix V: Hemlo district pyrite mineral chemistry collected by LA-ICP-MS

Sample	Source Filename	Ag107	Al27	As75	Au197	Bi209	Ca43	Cd111	Co59	Cr53	Cu65	Fe57	Gd157	Hf178	K39	Mg24	Mn55	Mo95	Na23	Nb93	Ni60
HM16JV006	D16JN20a402	1.22	5.06	60.99	0.05	0.63	<38.76	0.04	1,759.69	<0.30	510.43	465,000.00	<0.00	<0.00	7.65	<0.04	<0.25	<0.01	4.11	<0.00	365.85
HM16JV006	D16JN20a383	<0.04	8.18	32.56	<0.01	0.06	<188.64	<0.12	1,263.03	<0.84	0.57	465,000.00	<0.00	<0.01	<6.08	0.34	<1.08	<0.02	<12.15	<0.01	265.2
HM16JV006	D16JN20a401	0.03	1.31	<1.76	<0.00	0.04	<115.08	<0.04	1,017.10	<0.95	<0.25	465,000.00	<0.00	<0.01	<5.38	<0.13	<0.81	<0.01	<12.38	<0.00	127.08
HM16JV006	D16JN20a382	<0.01	<0.12	154.36	<0.00	0.02	<46.36	<0.02	579.53	<0.19	0.13	465,000.00	<0.00	<0.00	<1.52	<0.04	<0.28	<0.01	<3.36	<0.00	1,005.48
HM16JV006	D16JN20a398	<0.01	<0.10	124.65	0	<0.00	<40.67	<0.03	2,148.14	<0.27	0.11	465,000.00	<0.00	0.01	<1.38	0.28	<0.24	<0.00	<3.49	<0.00	968.9
HM16JV006	D16JN20a384	0.01	<0.12	105.87	<0.00	0.01	<36.63	<0.02	2,176.04	0.2	<0.08	465,000.00	<0.00	<0.00	<1.51	<0.04	<0.24	<0.00	<3.51	<0.00	364.58
HM16JV006	D16JN20a390	<0.01	<0.14	17.28	<0.00	<0.00	<37.06	<0.02	72.59	<0.21	0.11	465,000.00	<0.00	<0.00	<1.82	<0.08	<0.31	0	<4.00	<0.00	224.93
HM16JV006	D16JN20a394	<0.01	0.26	16.78	<0.00	<0.00	<42.85	0.04	196.83	<0.26	<0.07	465,000.00	<0.00	0.01	<1.50	<0.06	<0.24	<0.00	<4.09	<0.00	70.51
HM16JV006	D16JN20a385	0.27	<0.16	53.45	0	0.11	<35.50	0.06	962.37	<0.26	0.93	465,000.00	<0.00	<0.00	<1.97	0.07	0.32	0.02	<4.21	<0.00	435.74
HM16JV006	D16JN20a395	0.01	<0.17	18.47	<0.00	<0.00	<41.40	0.03	77.67	<0.26	0.07	465,000.00	<0.00	<0.00	<1.78	0.05	<0.29	<0.00	<4.31	<0.00	103.79
HM16JV006	D16JN20a400	<0.00	<0.17	0.8	<0.00	<0.00	<39.57	0.03	571.2	<0.28	0.07	465,000.00	<0.00	<0.00	<1.63	0.05	<0.34	<0.00	<4.35	<0.00	145.78
HM16JV006	D16JN20a386	0.12	<0.23	2.46	<0.00	0.1	<47.33	<0.03	233.14	<0.40	116.08	465,000.00	<0.00	<0.00	<2.25	0.09	<0.44	<0.00	<4.44	<0.00	353.91
HM16JV006	D16JN20a387	0.02	<0.19	<0.57	<0.00	<0.00	<43.93	<0.03	38.17	<0.32	0.11	465,000.00	<0.00	<0.00	<1.61	<0.04	<0.39	<0.00	<4.61	<0.00	586.03
HM16JV006	D16JN20a393	<0.01	<0.17	33.62	<0.00	<0.00	<47.42	<0.01	419.78	<0.25	<0.10	465,000.00	<0.00	<0.00	<1.52	<0.07	<0.29	<0.00	<4.65	<0.00	152.72
HM16JV006	D16JN20a392	<0.01	<0.16	18.27	<0.00	<0.00	<57.84	<0.01	569.55	<0.29	<0.10	465,000.00	<0.00	<0.00	<1.60	0.21	<0.29	<0.00	<4.74	<0.00	65.91
HM16JV006	D16JN20a391	0.02	<0.16	18.51	<0.00	<0.00	<56.23	<0.01	247.19	<0.28	<0.09	465,000.00	<0.00	<0.00	<1.69	0.09	<0.29	<0.00	<4.74	0.01	98.35
HM16JV006	D16JN20a396	<0.01	<0.16	23.98	<0.00	<0.00	<49.29	<0.02	586.71	<0.26	0.29	465,000.00	<0.00	<0.00	<2.24	<0.04	<0.38	<0.00	<5.34	<0.00	332.28
HM16JV006	D16JN20a380	<0.02	<0.21	0.78	<0.00	<0.01	<70.60	<0.02	723.33	0.47	0.28	465,000.00	0.03	<0.00	<2.99	<0.06	<0.44	0.01	<6.14	0.01	418.48
HM16JV006	D16JN20a389	<0.01	<0.25	16.24	<0.00	<0.00	<54.40	<0.05	113.54	0.38	<0.11	465,000.00	0.01	<0.00	<2.57	<0.12	<0.46	<0.01	<6.15	<0.00	47.82
HM16JV006	D16JN20a379	1.86	<0.21	38	<0.00	2.73	<80.94	<0.03	1,424.30	1.04	2.54	465,000.00	<0.00	<0.00	<2.85	<0.08	<0.50	<0.01	<6.70	0.02	365.37
HM16JV006	D16JN20a397	<0.01	0.37	5.6	<0.00	0.07	<92.58	<0.06	448.29	<0.53	<0.18	465,000.00	<0.00	<0.00	<3.27	<0.09	<0.60	<0.00	<8.08	<0.00	159.77
HM16JV006	D16JN20a399	<0.02	<0.25	<0.76	<0.00	<0.01	<75.07	0.03	90.45	<0.51	<0.11	465,000.00	<0.00	<0.01	<2.91	0.27	<0.56	<0.01	<8.10	<0.00	86.71
HM16JV006	D16JN20a399	<0.01	<0.25	5.92	<0.00	0.01	133.8	0.07	8,957.46	<0.54	<0.11	465,000.00	<0.00	<0.01	<2.94	<0.09	<0.59	<0.01	<8.26	<0.00	57.12
HM16JV006	D16JN20a388	<0.01	0.97	18.9	<0.00	0.03	<70.61	<0.05	258.65	<0.38	0.16	465,000.00	<0.01	<0.00	5.2	1.35	<0.52	<0.01	<8.29	<0.00	126.24
HM16JV006	D16JN20a381	0.02	3.57	123.14	<0.00	<0.01	<110.51	<0.03	3,926.75	<0.47	0.15	465,000.00	<0.01	<0.00	<3.84	0.69	<0.59	<0.01	<8.84	<0.00	907.43
HM16JV009	D17JN21a341	<0.00	0.14	1.57	<0.00	0.02	<33.25	<0.01	1.12	<0.27	<0.06	465,000.00	0.03	<0.00	<1.29	<0.04	<0.31	<0.00	<4.02	<0.00	757.97
HM16JV009	D17JN21a338	<0.00	<0.09	<0.37	0	<0.00	34.08	<0.04	0.04	<0.23	0.1	465,000.00	<0.00	<0.00	<1.36	0.04	<0.28	<0.00	<3.83	<0.00	62.32
HM16JV009	D17JN21a312	0	<0.09	0.62	<0.00	0.01	<33.86	<0.01	58.51	<0.26	<0.05	465,000.00	<0.01	0.01	<1.41	<0.03	<0.22	<0.00	<4.26	<0.00	74.02
HM16JV009	D17JN21a327	<0.00	<0.11	0.43	<0.00	<0.00	<33.75	<0.01	1.56	0.58	<0.06	465,000.00	<0.00	0	<1.41	<0.02	<0.28	<0.00	<3.91	<0.00	334.43
HM16JV009	D17JN21a320	<0.00	0.32	<0.45	<0.00	<0.00	<37.21	0.03	0.54	0.39	0.07	465,000.00	<0.01	<0.00	<1.42	9.1	<0.30	<0.01	<4.20	<0.00	621.95
HM16JV009	D17JN21a340	<0.00	<0.09	<0.36	<0.00	<0.00	<32.49	0.02	2.49	<0.23	<0.06	465,000.00	<0.00	<0.00	<1.43	<0.06	<0.28	<0.00	<3.42	<0.00	271.65
HM16JV009	D17JN21a313	<0.00	<0.09	<0.34	<0.00	<0.00	<24.03	<0.02	1.11	<0.27	<0.06	465,000.00	<0.00	<0.00	<1.48	<0.03	<0.26	<0.00	<3.77	<0.00	334.51
HM16JV009	D17JN21a324	0.01	<0.11	<0.42	0	<0.00	<35.67	<0.01	3.36	<0.30	0.06	465,000.00	0	<0.00	<1.48	<0.06	<0.25	<0.00	<3.88	<0.00	268.41
HM16JV009	D17JN21a323	<0.01	<0.12	3.68	<0.00	0.06	<38.51	<0.02	4,955.15	0.29	0.15	465,000.00	<0.00	<0.00	<1.52	<0.05	<0.31	<0.01	<4.52	<0.00	17.03
HM16JV009	D17JN21a311	<0.00	<0.14	<0.45	<0.00	<0.00	<35.97	<0.02	25.46	<0.25	0.05	465,000.00	<0.01	<0.00	<1.52	<0.03	<0.28	<0.00	<4.10	<0.00	189.29
HM16JV009	D17JN21a322	<0.00	<0.11	2.83	<0.00	0.02	<38.77	<0.04	33.9	<0.18	0.07	465,000.00	<0.00	<0.00	<1.53	0.47	0.37	<0.00	<3.78	<0.00	153.24
HM16JV009	D17JN21a328	0.01	<0.15	<0.39	0	0.03	<29.17	<0.02	0.19	<0.16	<0.08	465,000.00	<0.01	<0.00	<1.53	<0.02	<0.25	<0.00	<4.01	<0.00	565.05
HM16JV009	D17JN21a325	<0.00	<0.11	<0.42	<0.00	<0.00	<37.37	<0.01	227.39	0.27	0.12	465,000.00	0.02	<0.00	<1.58	<0.06	<0.25	0.01	<4.13	<0.00	184
HM16JV009	D17JN21a314	<0.01	<0.10	<0.37	<0.00	<0.00	<30.67	<0.02	2.56	<0.27	<0.06	465,000.00	<0.00	<0.00	<1.64	0.13	<0.29	<0.00	<4.17	0	574.66
HM16JV009	D17JN21a329	0	<0.15	<0.42	<0.00	0.01	<27.17	<0.02	0.32	<0.22	0.12	465,000.00	<0.01	0	<1.71	<0.03	<0.29	0	<4.23	<0.00	574.47
HM16JV009	D17JN21a315	<0.01	<0.11	0.51	<0.00	<0.00	<44.06	0.01	2.94	<0.32	<0.10	465,000.00	<0.00	<0.00	<1.78	<0.04	<0.39	<0.00	<4.90	<0.00	310.83
HM16JV009	D17JN21a337	<0.00	<0.13	2.05	<0.00	0.15	<34.22	0.05	15.34	<0.36	<0.08	465,000.00	<0.00	0	<1.83	0.29	<0.34	<0.00	<5.36	<0.00	807.05
HM16JV009	D17JN21a319	<0.00	6.62	<0.51	<0.00	0.08	<44.90	<0.01	4,728.39	<0.32	0.35	465,000.00	<0.01	<0.00	<2.00	17.25	<0.41	0.01	<5.07	0.01	32.24
HM16JV009	D17JN21a339	<0.01	<0.15	<0.56	<0.00	0.06	<44.26	0.06	2.23	<0.30	<0.09	465,000.00	<0.00	<0.00	<2.25	<0.06	<0.42	<0.01	<5.09	<0.00	354.82
HM16JV009	D17JN21a317	<0.01	<0.15	<0.67	0	<0.00	<46.44	0.03	11.2	<0.35	<0.10	465,000.00	0.02	0.01	<2.31	<0.06	<0.39	<0.00	<5.80	<0.00	251.69
HM16JV009	D17JN21a318	0.05	<0.17	<0.60	<0.00	<0.00	<49.96	0.02	1.24	<0.31	0.64	465,000.00	0.01	<0.00	<2.46	0.15	<0.48	0.03	<6.08	<0.00	441.42
HM16JV009	D17JN21a326	<0.00	0.47	1.09	<0.00	0	83.19	<0.02	41.59	<0.38	0.34	465,000.00	<0.01	<0.00	<2.51	1.4	<0.43	<0.00	<6.44	0.01	249.54
HM16JV009	D17JN21a321	<0.01	<0.32	6.97	0.03	<0.00	<101.09	<0.10	1.25	<0.68	<0.12	465,000.00	<0.01	<0.01	<3.75	<0.09	<0.74	<0.00	<10.85	<0.00	1,118.36
HM16JV009	D17JN21a316	<0.02	<0.32	<1.40	<0.00	0.17	<106.34	<0.03	24.41	<0.89	<0.25	465,000.00	<0.01	<0.00	<4.65	<0.15	<0.98	<0.00	<13.45	<0.00	276.41
HM16JV012	D16JN20a199	0.82	3.88	72.15	<0.01	2.74	<139.58	<0.06	8.82	<1.18	<0.26	465,000.00	0.07	1.5	<5.02	1.28	<0.82	0.02	<10.08	<0.00	191.87

*All elements in ppm

Appendix V: Hemlo district pyrite mineral chemistry collected by LA-ICP-MS

Sample	Source Filename	Ag107	Al27	As75	Au197	Bi209	Ca43	Cd111	Co59	Cr53	Cu65	Fe57	Gd157	Hf178	K39	Mg24	Mn55	Mo95	Na23	Nb93	Ni60
HM16JV012	D16JN20a211	<0.04	<0.61	733.87	<0.01	<0.02	<189.56	<0.10	268.64	<1.23	<0.28	465,000.00	<0.01	<0.01	<7.67	<0.21	<1.29	<0.01	<17.97	<0.00	20.4
HM16JV012	D16JN20a200	<0.01	<0.15	1,606.34	<0.00	0.01	<38.89	<0.02	1,217.57	<0.27	<0.09	465,000.00	<0.00	0	<1.48	0.04	<0.25	<0.00	<2.52	<0.00	38.61
HM16JV012	D16JN20a199	0.01	0.37	1,123.82	0.01	0.4	<40.92	<0.02	199.84	<0.35	<0.08	465,000.00	<0.00	<0.00	<1.47	<0.04	<0.24	<0.01	<2.96	<0.00	32.57
HM16JV012	D16JN20a195	<0.01	<0.14	1,239.51	0	<0.00	<38.91	<0.03	31.87	<0.27	<0.08	465,000.00	0	<0.00	<1.41	<0.03	<0.28	<0.00	<2.98	<0.00	42.7
HM16JV012	D16JN20a206	<0.01	<0.15	1,617.96	<0.00	<0.00	<38.08	<0.03	83.9	<0.29	<0.07	465,000.00	<0.00	<0.00	<1.25	<0.05	<0.30	<0.00	<3.02	<0.00	56.24
HM16JV012	D16JN20a217	<0.02	<0.14	1,381.37	<0.00	<0.00	<36.37	<0.03	475.62	0.27	0.22	465,000.00	<0.00	<0.00	<1.43	<0.04	<0.27	<0.01	<3.12	<0.00	18.58
HM16JV012	D16JN20a197	<0.01	<0.14	483.71	0.01	<0.01	<29.49	<0.03	1,079.91	<0.29	<0.07	465,000.00	0.01	0	<1.59	<0.05	<0.23	<0.00	<3.25	<0.00	14.63
HM16JV012	D16JN20a214	<0.01	<0.14	1,230.70	<0.00	<0.00	<44.79	<0.03	744.93	<0.24	<0.07	465,000.00	<0.01	<0.00	<1.90	0.07	<0.27	<0.00	<3.28	<0.00	20.68
HM16JV012	D16JN20a213	<0.01	0.12	2,627.29	<0.00	<0.00	<37.88	<0.02	49.89	<0.25	<0.07	465,000.00	<0.01	<0.00	<1.53	<0.03	<0.24	<0.00	<3.38	<0.00	85.6
HM16JV012	D16JN20a194	<0.01	0.7	699.95	<0.00	0.01	<34.27	<0.03	173.83	<0.35	0.09	465,000.00	<0.00	<0.00	<1.56	0.66	<0.33	<0.01	<3.47	<0.00	20.21
HM16JV012	D16JN20a207	<0.01	<0.17	1,207.56	<0.00	<0.01	<44.14	<0.04	38.48	<0.29	<0.09	465,000.00	<0.00	0	<1.60	<0.06	<0.32	<0.00	<3.47	<0.00	21.98
HM16JV012	D16JN20a196	<0.01	<0.16	576.72	<0.00	<0.01	<49.16	<0.04	931.11	<0.29	<0.09	465,000.00	<0.00	<0.00	<2.12	0.08	<0.32	<0.00	<3.55	<0.00	28.01
HM16JV012	D16JN20a201	<0.01	<0.16	1,918.74	<0.00	<0.01	<50.44	<0.05	2.29	<0.36	<0.11	465,000.00	0.01	<0.00	<1.84	<0.05	<0.31	<0.00	<3.61	0	92.76
HM16JV012	D16JN20a216	<0.02	<0.17	2,190.88	<0.00	<0.00	<45.36	<0.04	279.17	<0.31	<0.07	465,000.00	<0.00	0.01	<2.00	0.26	<0.34	<0.01	<3.67	<0.00	70.28
HM16JV012	D16JN20a215	<0.02	<0.18	2,845.33	<0.00	0.02	<45.02	<0.05	804.28	<0.34	<0.07	465,000.00	<0.00	<0.00	<2.14	<0.09	<0.32	<0.01	<3.73	<0.00	30.79
HM16JV012	D16JN20a208	<0.02	<0.15	828.1	<0.00	<0.01	<35.25	<0.04	80.39	<0.35	<0.08	465,000.00	<0.00	<0.00	<2.00	<0.05	<0.30	<0.00	<3.75	<0.00	30.19
HM16JV012	D16JN20a204	<0.01	<0.16	1,166.67	<0.00	<0.00	<55.82	<0.05	72.9	<0.27	<0.08	465,000.00	<0.00	0	<1.54	<0.04	<0.29	0.01	<3.76	<0.00	29.82
HM16JV012	D16JN20a209	<0.01	13.04	999.41	<0.00	<0.01	<34.09	<0.06	143.27	<0.41	<0.09	465,000.00	<0.00	<0.00	<1.98	<0.05	<0.32	<0.00	<3.88	<0.00	35.68
HM16JV012	D16JN20a202	<0.01	<0.14	1,034.76	<0.00	<0.00	<37.66	<0.04	85.33	<0.37	<0.09	465,000.00	<0.01	<0.00	<1.53	<0.04	<0.27	<0.00	<3.90	<0.00	47.53
HM16JV012	D16JN20a212	<0.01	<0.14	664.92	0	<0.01	<42.95	<0.02	1,355.63	<0.30	<0.09	465,000.00	<0.00	<0.00	<1.54	<0.04	<0.27	<0.00	<3.92	<0.00	23.65
HM16JV012	D16JN20a203	<0.01	<0.14	1,757.76	<0.00	<0.00	<40.94	<0.04	5.67	<0.30	<0.09	465,000.00	<0.01	<0.00	<1.60	<0.04	<0.28	<0.00	<4.02	<0.00	131.84
HM16JV012	D16JN20a193	0.04	<0.22	528.49	<0.00	0.12	<49.58	<0.06	60.01	<0.37	0.11	465,000.00	<0.00	<0.00	<2.17	<0.04	<0.38	0.01	<4.26	<0.00	133.75
HM16JV012	D16JN20a210	<0.01	0.19	757.9	<0.00	<0.01	<35.13	<0.06	312.06	<0.33	<0.10	465,000.00	0.02	<0.00	<1.83	<0.04	<0.31	<0.00	<4.39	<0.00	40.92
HM16JV012	D16JN20a202	<0.01	<0.20	745.49	<0.00	<0.01	<53.33	<0.06	34.94	<0.53	<0.13	465,000.00	<0.01	<0.00	<2.17	<0.05	<0.38	<0.00	<5.33	0.01	20.04
HM16JV012	D16JN20a205	<0.02	<0.27	1,433.55	<0.00	<0.01	<82.47	<0.05	48.19	<0.54	<0.10	465,000.00	<0.00	0.02	<2.59	<0.06	<0.50	<0.01	<5.93	<0.00	22.97
HM16JV013	D17JN21a284	16.01	99.22	54.89	0.21	8.72	<39.06	<0.01	249.07	<0.22	311.56	465,000.00	<0.01	0.05	2.69	102.56	3.79	21.87	4.56	<0.00	115.05
HM16JV013	D17JN21a304	4.89	50.08	66.65	0.17	8.66	<40.23	0.05	274.32	0.41	126.43	465,000.00	<0.00	0.01	6.21	65.31	1.15	<0.00	<4.02	<0.00	763.28
HM16JV013	D17JN21a309	3.97	0.17	177.83	0.09	1.6	81.57	0.1	420.35	<0.22	2,111.02	465,000.00	<0.00	0	<1.28	0.47	1.32	0	<3.35	<0.00	1,017.17
HM16JV013	D17JN21a308	1	<0.11	60.35	0.01	1.15	<46.90	<0.03	66.57	<0.22	399.96	465,000.00	<0.00	<0.00	<1.29	<0.04	<0.26	0	<3.05	<0.00	1,196.12
HM16JV013	D17JN21a301	<0.01	<0.10	27.81	<0.00	<0.00	<36.35	0.02	695.91	0.21	0.3	465,000.00	<0.00	<0.00	<1.49	<0.03	<0.25	<0.00	<3.82	<0.00	117.72
HM16JV013	D17JN21a281	0.28	<0.09	21.09	0.03	0.08	<22.97	<0.01	735.26	<0.20	47.58	465,000.00	<0.00	<0.00	<1.56	<0.04	<0.27	<0.00	<4.16	<0.00	223.92
HM16JV013	D17JN21a294	0.74	1.36	176.77	0.05	1.94	<31.81	<0.02	10,751.67	<0.19	33.54	465,000.00	0.02	<0.00	<1.62	<0.06	<0.25	<0.00	<3.73	<0.00	47.42
HM16JV013	D17JN21a280	2.2	6.3	26.83	0.04	9.85	<26.67	0.02	86.25	0.34	1,642.70	465,000.00	<0.00	<0.00	<1.65	7.91	<0.27	0.01	<4.29	<0.00	763.07
HM16JV013	D17JN21a289	0.02	<0.10	27.01	0.01	0.11	<32.04	0.03	571.51	<0.28	2.03	465,000.00	<0.00	0	<1.70	<0.03	<0.27	<0.00	<4.28	<0.00	266.04
HM16JV013	D17JN21a291	0.2	<0.12	99.65	0.02	0.59	<38.06	<0.04	1,397.56	<0.18	4.43	465,000.00	<0.00	0	<1.78	0.48	<0.30	0.01	<4.28	<0.00	380.43
HM16JV013	D17JN21a306	2.35	11.4	55.77	0.13	6.51	<56.03	<0.02	482.92	<0.31	13.22	465,000.00	0.03	0.01	<1.83	8.42	0.42	<0.00	<4.95	<0.00	346.7
HM16JV013	D17JN21a288	<0.00	<0.11	7.53	<0.00	0	<42.22	<0.02	13.81	<0.31	0.43	465,000.00	<0.00	<0.00	<2.02	<0.04	<0.41	<0.01	<4.72	<0.00	315.02
HM16JV013	D17JN21a305	0.12	1.51	6.98	0.03	0.41	<79.19	<0.04	328.24	<0.33	1.38	465,000.00	<0.01	<0.00	<2.33	10.48	<0.51	<0.00	<5.99	<0.00	203.25
HM16JV013	D17JN21a282	0.98	18.67	346.61	0.11	1.05	<47.94	<0.03	1,016.26	0.46	13.43	465,000.00	<0.00	1.38	<2.72	21.5	0.56	<0.00	<6.98	<0.00	872.65
HM16JV013	D17JN21a293	2.34	0.36	240.95	0.02	3.33	<55.68	<0.04	1,385.39	0.69	2.51	465,000.00	<0.01	<0.00	<3.15	1.45	<0.55	<0.00	<6.45	<0.00	135.87
HM16JV013	D17JN21a290	1.79	1.48	20.28	0.14	2.73	<55.59	<0.03	3,203.65	<0.40	661.1	465,000.00	<0.01	<0.00	<3.16	1.88	<0.48	<0.00	<8.33	<0.00	166.51
HM16JV013	D17JN21a292	1.87	0.48	97.77	0.33	12.56	<86.39	<0.08	660.45	<0.40	211.32	465,000.00	<0.01	<0.00	<3.53	0.8	<0.61	<0.00	14.63	<0.00	395.55
HM16JV013	D17JN21a310	0.17	<0.29	4.13	<0.00	0.08	<68.00	<0.04	39.1	<0.50	14.5	465,000.00	0.05	<0.00	<3.53	<0.08	<0.63	<0.00	<8.42	<0.00	321.91
HM16JV013	D17JN21a286	1.16	<0.24	73.11	0.12	1.63	<110.35	<0.09	512.66	<0.62	964.32	465,000.00	<0.00	<0.00	<3.88	<0.08	<0.90	<0.00	<11.03	<0.00	256.87
HM16JV013	D17JN21a283	<0.01	<0.28	23.83	<0.01	0.27	<112.26	<0.04	430.91	<0.74	0.99	465,000.00	<0.00	<0.00	<4.50	<0.10	<0.80	<0.00	<14.51	<0.00	182.08
HM16JV013	D17JN21a285	4.61	2.57	610.75	0.03	0.56	<129.70	<0.07	1,760.94	<0.81	8.62	465,000.00	<0.02	<0.01	<4.75	<0.13	<0.80	<0.00	<12.58	<0.00	1,178.27
HM16JV014	D17JN21a231	1.26	<0.14	509.3	0.44	17.55	<36.77	1.84	21.54	<0.22	9,788.20	465,000.00	0.01	<0.00	4.19	15.57	0.77	0.56	20.47	<0.00	850.81
HM16JV014	D17JN21a241	0.06	406.3	109.43	0.02	5.63	4,990.24	<0.01	40.44	4.63	1.37	465,000.00	2.57	3.15	17.74	5.57	2.67	0.07	90.52	9.12	141.77
HM16JV014	D17JN21a222	<0.00	<0.09	32.08	0	<0.00	<31.36	<0.03	60.6	<0.27	0.07	465,000.00	<0.00	<0.00	<1.35	0.12	<0.28	0	<3.50	0	329.15
HM16JV014	D17JN21a219	<0.00	<0.08	91.76	0.02	<0.00	<29.15	0.01	3,329.08	<0.22	0.07	465,000.00	<0.01	<0.00	<1.36	<0.06	<0.25	0.01	<3.96	<0.00	700.83

*All elements in ppm

Appendix V: Hemlo district pyrite mineral chemistry collected by LA-ICP-MS

Sample	Source Filename	Ag107	Al27	As75	Au197	Bi209	Ca43	Cd111	Co59	Cr53	Cu65	Fe57	Gd157	Hf178	K39	Mg24	Mn55	Mo95	Na23	Nb93	Ni60
HM16JV014	D17JN21a221	<0.00	<0.14	66.9	0	0	<29.03	<0.01	122.42	<0.21	<0.05	465,000.00	<0.01	<0.00	<1.41	<0.02	<0.25	<0.00	<3.37	<0.00	319.81
HM16JV014	D17JN21a236	0.07	<0.11	178.88	0.02	2.77	<32.11	<0.01	32.71	<0.21	8.85	465,000.00	<0.01	<0.00	<1.47	<0.04	<0.26	1.04	<4.24	<0.00	250.28
HM16JV014	D17JN21a242	<0.00	<0.10	11.43	<0.00	<0.00	<26.56	<0.01	85.54	<0.22	<0.06	465,000.00	<0.00	<0.00	<1.52	<0.03	<0.22	<0.00	<3.24	0	65.26
HM16JV014	D17JN21a247	0.01	<0.10	18.19	<0.00	0.06	<29.71	<0.03	132.2	<0.23	0.07	465,000.00	<0.00	<0.00	<1.52	<0.04	<0.26	<0.00	<4.38	<0.00	74.49
HM16JV014	D17JN21a234	0.01	<0.08	393.33	0.01	0.96	<34.23	0.03	18.54	<0.18	0.77	465,000.00	<0.00	0	<1.54	<0.03	<0.22	0.23	<3.47	<0.00	395.64
HM16JV014	D17JN21a248	0.01	<0.09	27.21	<0.00	<0.00	<31.88	<0.01	250.52	0.21	0.06	465,000.00	<0.00	<0.00	<1.63	<0.04	<0.23	0	<4.20	<0.00	309.87
HM16JV014	D17JN21a238	0.03	0.13	540.2	0.01	2.1	<50.27	<0.02	41.74	<0.25	0.4	465,000.00	<0.00	0	<1.64	<0.02	<0.26	<0.00	<3.96	<0.00	224.29
HM16JV014	D17JN21a232	<0.00	<0.10	193.34	<0.00	<0.00	<33.42	<0.01	54.5	<0.24	<0.08	465,000.00	<0.00	<0.00	<1.68	<0.03	<0.31	0	<3.99	<0.00	364.83
HM16JV014	D17JN21a218	<0.00	<0.11	40.04	<0.00	0.04	<27.84	0.04	92.09	<0.23	0.16	465,000.00	<0.00	<0.00	<1.70	<0.03	<0.28	<0.00	<3.87	<0.00	210.69
HM16JV014	D17JN21a229	<0.01	<0.08	21.65	<0.00	<0.00	<25.05	<0.01	26.6	<0.16	<0.07	465,000.00	<0.00	<0.00	<1.71	<0.02	<0.25	<0.00	<3.83	<0.00	193.58
HM16JV014	D17JN21a244	<0.01	0.24	24.96	<0.00	0.01	<34.54	<0.02	60.93	<0.23	<0.06	465,000.00	<0.00	0	<1.77	0.17	<0.24	0.01	<3.67	<0.00	284.36
HM16JV014	D17JN21a237	<0.00	<0.10	686.05	0.02	0	<51.81	<0.02	16.67	<0.23	<0.05	465,000.00	<0.00	<0.00	<1.79	0.3	<0.32	0.01	<4.00	<0.00	1,079.48
HM16JV014	D17JN21a233	2.32	<0.09	305.61	0.54	11.8	<28.38	0.34	29.31	<0.20	1,102.62	465,000.00	<0.00	<0.00	<1.80	<0.04	<0.28	0.7	<4.08	<0.00	391.85
HM16JV014	D17JN21a245	<0.01	0.21	18.39	<0.00	0.02	<41.31	<0.01	19.29	<0.28	0.14	465,000.00	<0.00	<0.00	<2.06	<0.04	<0.34	<0.00	<5.13	<0.00	102.25
HM16JV014	D17JN21a220	0.08	0.64	68.48	0.03	4.56	771	<0.02	2,062.78	<0.36	1.55	465,000.00	<0.01	<0.00	<2.42	0.58	13.67	<0.01	<6.35	<0.00	70.59
HM16JV014	D17JN21a235	1.17	<0.20	716.65	0.2	226.47	<56.85	<0.05	61.7	<0.43	137.56	465,000.00	<0.01	<0.00	<2.49	<0.07	<0.43	0.52	19.83	<0.00	1,177.83
HM16JV014	D17JN21a246	0.11	1.37	18.73	0.01	0.25	<50.68	<0.04	89.16	<0.35	0.25	465,000.00	<0.00	<0.00	<2.56	0.15	<0.46	<0.00	<6.71	<0.00	123.19
HM16JV014	D17JN21a230	5.3	<0.21	285.87	0.6	14.8	84.39	1.3	7.71	<0.33	1,482.42	465,000.00	<0.00	0.24	<2.71	0.26	<0.45	0.84	21.18	<0.00	433.06
HM16JV014	D17JN21a243	<0.01	0.28	16.28	<0.00	0.06	89.14	<0.05	98.79	<0.48	<0.14	465,000.00	<0.01	0.02	<3.96	<0.08	<0.51	<0.00	<7.99	<0.00	105.04
HM16JV015	D17JN21a495	3.06	83.31	197.18	0.02	0.7	236.08	0.21	608.84	1,122.32	503.19	465,000.00	6.11	0.03	5.07	51.14	79.42	0.77	22.25	0	1,911.92
HM16JV015	D17JN21a502	0.68	70.95	72.3	<0.01	0.03	137.94	<0.03	264.21	1.29	90.47	465,000.00	1.17	<0.00	50.75	44.64	1.27	0.1	17.43	<0.00	1,301.03
HM16JV015	D17JN21a497	3.22	364.83	33.83	0.09	7	488.55	0.39	385.2	8.97	480.7	465,000.00	2.45	0.47	183.51	317.76	28.19	1.16	60.34	0.01	799.45
HM16JV015	D17JN21a494	0.05	<0.09	36.06	<0.00	0.01	<32.27	<0.03	9,988.50	<0.22	0.48	465,000.00	<0.00	<0.00	<1.40	<0.04	<0.29	0.01	<4.04	<0.00	291.26
HM16JV015	D17JN21a496	0.02	<0.13	0.71	0	0.09	<33.76	<0.02	342.32	<0.26	0.73	465,000.00	<0.00	<0.00	<1.40	<0.04	<0.26	<0.00	<3.99	<0.00	560.57
HM16JV015	D17JN21a481	0.16	<0.09	2.31	<0.00	0.28	<29.09	<0.04	37.68	<0.22	3.08	465,000.00	<0.00	<0.00	<1.42	<0.04	<0.25	<0.00	<3.23	<0.00	1,040.80
HM16JV015	D17JN21a490	0.81	0.41	117.55	0.01	0.25	168.56	<0.02	855.77	<0.23	0.41	465,000.00	0.07	<0.00	<1.50	11.9	<0.27	0.14	5.58	<0.00	343.46
HM16JV015	D17JN21a491	0.45	<0.12	86.2	<0.00	0.02	34.75	<0.03	977.42	<0.24	0.17	465,000.00	<0.00	<0.00	<1.50	5.28	<0.26	0.05	6.87	<0.00	320.57
HM16JV015	D17JN21a492	0.18	<0.15	54.46	0	0.58	<31.02	<0.02	684.87	<0.25	0.45	465,000.00	<0.00	<0.00	<1.64	0.04	<0.29	<0.00	<3.92	<0.00	706.12
HM16JV015	D17JN21a485	0.02	0.17	11.47	<0.00	0.35	<32.42	0.02	77.7	<0.17	1.41	465,000.00	0.04	0.52	<1.68	0.08	<0.26	0.95	<3.58	<0.00	1,393.18
HM16JV015	D17JN21a488	2.34	0.34	353.82	0.04	3.47	<59.38	<0.03	1,314.34	<0.30	118.73	465,000.00	<0.00	<0.00	<1.69	0.95	<0.31	<0.00	<3.86	<0.00	956.32
HM16JV015	D17JN21a503	2.65	0.33	19.16	<0.00	4.73	<54.34	0.05	21,144.05	<0.43	0.18	465,000.00	<0.00	<0.00	<1.89	<0.06	<0.37	<0.00	<4.28	<0.00	193.88
HM16JV015	D17JN21a493	0.01	<0.12	0.98	<0.00	0.01	<43.09	<0.03	882.39	<0.29	<0.07	465,000.00	<0.00	<0.00	<1.94	<0.04	<0.36	<0.00	<5.14	<0.00	1,385.51
HM16JV015	D17JN21a487	0.03	0.34	64.78	<0.00	2.09	<49.42	0.05	735.25	<0.26	0.99	465,000.00	<0.00	<0.00	<1.96	<0.04	<0.31	<0.00	<4.43	0	177.8
HM16JV015	D17JN21a483	9.47	1.46	8.43	0.02	1.38	<43.25	0.54	3,572.29	0.34	1,953.22	465,000.00	<0.00	0.01	<2.12	0.59	0.58	0.03	<4.21	<0.00	493.18
HM16JV015	D17JN21a500	0.09	<0.16	3.91	0.06	0.71	<39.33	<0.02	1,078.17	<0.32	0.72	465,000.00	<0.01	0.01	<2.12	<0.05	<0.36	<0.00	<6.12	<0.00	893.08
HM16JV015	D17JN21a506	0.58	<0.18	189.66	0.01	0.44	<55.18	0.06	1,593.88	<0.37	346.17	465,000.00	<0.01	0.02	<2.32	<0.07	<0.41	<0.00	<5.81	<0.00	3,027.02
HM16JV015	D17JN21a507	0.75	0.91	7.28	0.01	0.64	<56.66	0.16	123.33	0.34	40.5	465,000.00	0.03	<0.00	<2.43	0.09	<0.35	0.09	<5.81	<0.00	1,730.33
HM16JV015	D17JN21a509	1.37	<0.22	35.05	0.06	4.18	<74.44	<0.04	206.58	0.71	13.36	465,000.00	0.04	<0.00	<2.65	3.08	<0.58	<0.01	<8.23	<0.00	1,156.70
HM16JV015	D17JN21a504	0.01	0.78	4.73	0.01	0.19	<64.54	<0.03	39.34	0.69	<0.11	465,000.00	<0.00	<0.00	<2.74	0.68	<0.52	<0.00	<5.83	<0.00	1,406.29
HM16JV015	D17JN21a508	0.01	<0.22	0.86	<0.00	0.12	85.47	<0.03	355.75	<0.35	<0.13	465,000.00	<0.00	<0.00	<2.75	<0.07	<0.48	<0.00	<7.43	<0.00	1,417.70
HM16JV015	D17JN21a482	0.14	1.11	66.9	0.01	0.12	70.37	<0.07	1,228.23	<0.35	13.55	465,000.00	<0.01	<0.01	<2.83	1.43	<0.45	<0.00	<6.18	<0.00	1,030.64
HM16JV015	D17JN21a498	0.43	0.32	9.24	<0.00	0.07	<60.96	<0.03	10,654.45	<0.44	14.06	465,000.00	0.15	<0.00	<2.91	<0.05	<0.54	<0.01	<7.93	<0.00	480.97
HM16JV015	D17JN21a489	0.24	<0.22	17.87	<0.00	0.08	<79.36	<0.03	481.12	<0.48	7.73	465,000.00	<0.00	<0.00	<2.93	0.91	<0.49	<0.01	<5.88	<0.00	687.48
HM16JV015	D17JN21a499	0.41	0.51	1.39	<0.00	0.03	385.29	<0.06	75.46	<0.74	63.54	465,000.00	<0.01	<0.01	<5.80	2.57	<0.92	<0.01	<14.86	<0.00	565.91
HM16JV015	D17JN21a486	6.46	6.18	144.27	0.34	10.08	<155.83	<0.11	6,498.24	<0.83	20.68	465,000.00	0.25	<0.01	<8.55	1.68	<1.16	<0.00	<17.32	<0.00	835.01
HM16JV015	D17JN21a505	<0.01	<0.67	19.61	0.05	0.59	<190.61	<0.04	133.33	<1.55	0.44	465,000.00	<0.00	0.1	<9.29	<0.25	<1.82	<0.00	<22.21	<0.00	2,116.94
HM16JV026	D17JN21a518	<0.01	<0.13	7.69	<0.00	0.01	<47.23	<0.02	354.65	<0.40	<0.07	465,000.00	<0.00	<0.00	3.57	<0.05	<0.40	<0.01	<4.53	<0.00	265.22
HM16JV026	D17JN21a524	<0.00	<0.12	26	<0.00	0.01	<41.62	<0.05	4,708.38	<0.16	0.1	465,000.00	<0.00	0.01	<1.38	<0.04	<0.29	0	<3.68	<0.00	55.56
HM16JV026	D17JN21a523	<0.00	<0.13	40.25	<0.00	0.01	<40.82	<0.04	8,539.67	<0.16	0.25	465,000.00	<0.00	<0.00	<1.42	0.14	<0.30	0.01	<4.02	<0.00	53.72
HM16JV026	D17JN21a528	<0.00	<0.14	50.93	<0.00	<0.00	<39.21	<0.02	9,000.76	<0.27	0.16	465,000.00	<0.00	<0.00	<1.44	0.17	<0.30	<0.00	<3.89	<0.00	45.24

*All elements in ppm

Appendix V: Hemlo district pyrite mineral chemistry collected by LA-ICP-MS

Sample	Source Filename	Ag107	Al27	As75	Au197	Bi209	Ca43	Cd111	Co59	Cr53	Cu65	Fe57	Gd157	Hf178	K39	Mg24	Mn55	Mo95	Na23	Nb93	Ni60
HM16JV026	D17JN21a517	0.12	<0.10	16.07	<0.00	1.5	64.85	0.01	1,555.23	<0.31	20.91	465,000.00	0.01	<0.00	<1.49	0.39	0.67	<0.00	<3.69	<0.00	509.74
HM16JV026	D17JN21a532	<0.00	<0.13	91.43	<0.00	<0.00	<28.70	0.01	13,207.51	<0.26	0.12	465,000.00	<0.00	0	<1.49	0.05	<0.29	<0.00	<3.67	<0.00	40.52
HM16JV026	D17JN21a526	<0.00	<0.14	31.77	<0.00	<0.00	<37.21	<0.03	5,200.84	<0.21	0.11	465,000.00	0.01	<0.00	<1.55	0.12	<0.28	<0.00	<3.47	<0.00	53.65
HM16JV026	D17JN21a529	0.01	<0.12	11.81	<0.00	0	<27.59	<0.01	872.23	<0.27	0.13	465,000.00	0.02	<0.00	<1.57	0.39	<0.33	0.01	<3.82	0	19.18
HM16JV026	D17JN21a543	0	<0.10	7.4	<0.00	<0.00	<28.07	<0.01	276.29	<0.20	0.09	465,000.00	0.01	<0.00	<1.60	0.14	<0.34	0.02	<4.70	<0.00	226.92
HM16JV026	D17JN21a525	<0.00	<0.14	8.88	0	0.01	<39.09	<0.03	373.64	<0.18	0.16	465,000.00	<0.00	<0.00	<1.67	<0.04	<0.34	<0.00	<3.65	<0.00	17.61
HM16JV026	D17JN21a545	<0.01	<0.11	26.8	<0.00	<0.00	<48.78	0.01	3,283.50	<0.24	0.07	465,000.00	0	<0.00	<1.68	<0.04	<0.31	<0.00	<4.11	<0.00	81.24
HM16JV026	D17JN21a537	0.01	<0.14	24.07	<0.00	0.38	<27.30	<0.02	3,792.21	0.78	0.15	465,000.00	<0.00	0.1	<1.68	0.13	<0.27	0.02	<3.74	5.26	128.72
HM16JV026	D17JN21a533	0	<0.14	25.49	<0.01	0.01	<35.97	<0.01	4,852.42	<0.29	0.37	465,000.00	<0.00	0.01	<1.69	<0.05	<0.31	<0.00	<4.53	0.01	72.18
HM16JV026	D17JN21a541	0.01	<0.09	33.53	<0.00	0	<29.95	<0.01	3,542.10	<0.31	0.28	465,000.00	<0.00	<0.00	<1.71	0.18	<0.27	0.01	<3.76	<0.00	137.75
HM16JV026	D17JN21a539	0	<0.14	90.51	<0.00	<0.00	<33.62	<0.01	15,031.32	<0.29	0.27	465,000.00	<0.00	<0.00	<1.71	<0.07	<0.33	<0.00	<4.19	0.01	237.08
HM16JV026	D17JN21a521	<0.00	<0.15	12.58	0	0.03	<29.04	<0.03	72.41	<0.23	0.32	465,000.00	0	0	<1.71	<0.04	<0.29	<0.00	<4.20	<0.00	282.42
HM16JV026	D17JN21a522	<0.00	<0.14	12.93	<0.00	<0.00	<40.04	<0.02	1,771.24	<0.20	0.31	465,000.00	<0.00	<0.00	<1.73	<0.05	<0.34	0.01	<3.80	<0.00	200.72
HM16JV026	D17JN21a527	<0.01	0.26	84.16	<0.00	0.13	<59.78	<0.03	11,310.81	<0.28	0.08	465,000.00	0.02	<0.00	<1.75	<0.11	<0.31	<0.00	<4.34	0	36.25
HM16JV026	D17JN21a538	0.01	<0.14	24	<0.00	0.03	<28.02	<0.02	3,372.37	<0.26	0.12	465,000.00	0.01	<0.00	<1.76	<0.03	<0.29	<0.00	<4.27	<0.00	1,058.99
HM16JV026	D17JN21a530	0.02	<0.13	17.5	<0.00	0.29	<46.71	<0.01	2,878.57	<0.27	0.39	465,000.00	0.01	<0.00	<1.93	0.1	<0.38	0	<4.19	0	159.05
HM16JV026	D17JN21a520	3.69	<0.18	9.79	0.05	2.63	<39.43	1.05	36.05	<0.28	964.62	465,000.00	0.01	0	<1.93	<0.06	<0.35	<0.01	<5.59	<0.00	465.58
HM16JV026	D17JN21a544	29.03	<0.15	9.18	2.42	9.73	<59.61	1.66	817.17	<0.37	1,942.69	465,000.00	<0.00	<0.00	<2.18	<0.04	<0.53	<0.00	<6.68	<0.00	326
HM16JV026	D17JN21a546	<0.01	<0.17	0.65	<0.00	0.15	<67.85	<0.01	2,261.28	<0.25	1.23	465,000.00	<0.00	<0.00	<2.27	<0.06	<0.36	<0.00	<6.01	<0.00	1,269.66
HM16JV026	D17JN21a540	0.02	<0.23	18.35	0.02	1.02	<77.37	<0.04	253.31	<0.53	0.62	465,000.00	<0.00	<0.00	<3.59	0.27	<0.62	<0.00	<8.38	<0.00	3,057.71
HM16JV026	D17JN21a542	0.04	<0.20	14.16	<0.00	0.01	<53.60	<0.02	8.54	<0.57	0.37	465,000.00	<0.00	<0.00	<3.86	0.08	<0.63	<0.00	<8.54	<0.00	2,155.07
HM16JV026	D17JN21a531	<0.00	<0.33	10.17	<0.00	<0.01	<94.67	<0.02	1,105.07	<0.53	<0.16	465,000.00	<0.00	<0.00	<4.01	<0.07	<0.69	<0.00	<8.17	<0.00	198.17
HM16JV031	D16JN20a232	0.18	<0.20	<0.56	<0.00	2.1	104.84	<0.07	255.53	<0.28	0.34	465,000.00	<0.00	<0.00	<1.78	<0.05	<0.26	<0.00	12.7	<0.00	117.39
HM16JV031	D16JN20a248	2.14	0.47	4	<0.01	54.79	<90.11	<0.05	4,186.70	<0.61	6.79	465,000.00	<0.02	<0.00	<4.17	<0.10	<0.69	<0.00	20.78	<0.00	9.88
HM16JV031	D16JN20a249	0.04	<0.10	1.05	<0.00	0.17	<31.00	<0.02	126.67	<0.20	0.11	465,000.00	<0.00	0	<1.62	<0.05	<0.24	<0.00	<2.63	0	336.82
HM16JV031	D16JN20a248	0.03	<0.12	1.17	0	0.06	<34.55	0.02	4,177.66	<0.23	0.23	465,000.00	<0.01	0	<1.60	<0.04	<0.26	<0.00	<2.69	<0.00	1.81
HM16JV031	D16JN20a247	<0.01	<0.14	15.58	<0.00	0.02	<44.78	<0.02	4,900.26	<0.29	0.08	465,000.00	<0.01	<0.00	<1.67	<0.03	<0.27	<0.00	<2.86	<0.00	11.42
HM16JV031	D16JN20a231	0.01	<0.14	<0.47	<0.00	0.13	<26.72	<0.04	533.27	<0.23	0.1	465,000.00	<0.00	0	<1.38	<0.03	<0.21	0.01	<2.91	0	1,044.02
HM16JV031	D16JN20a245	0.48	<0.13	12.58	<0.00	3.06	<29.23	<0.04	2,555.08	<0.20	0.19	465,000.00	<0.00	<0.00	<1.35	<0.05	<0.23	0	<2.99	<0.00	5.46
HM16JV031	D16JN20a237	0.05	<0.16	761.08	<0.00	0.23	<50.47	<0.04	5,578.39	<0.23	0.21	465,000.00	<0.00	<0.00	<1.71	<0.05	<0.27	<0.00	<3.08	0	23.23
HM16JV031	D16JN20a252	<0.01	<0.10	1,042.45	<0.00	0.08	<33.16	0.05	1,021.01	<0.21	<0.06	465,000.00	<0.00	0	<1.65	<0.04	<0.20	<0.00	<3.13	<0.00	35.07
HM16JV031	D16JN20a238	<0.01	3.17	161.89	0	0.98	<39.48	<0.03	931.71	<0.23	<0.10	465,000.00	<0.01	<0.00	<1.87	1.8	<0.29	<0.00	<3.23	<0.00	12.79
HM16JV031	D16JN20a251	<0.01	<0.13	1,292.73	<0.00	0.06	<41.27	<0.03	1,098.97	<0.27	0.1	465,000.00	0.02	0	<1.59	0.06	<0.25	0	<3.25	<0.00	39.45
HM16JV031	D16JN20a220	0.03	<0.16	21.48	<0.00	0.17	<54.56	<0.02	5,913.83	<0.32	0.16	465,000.00	<0.00	0.02	<1.62	0.05	<0.30	<0.01	<3.30	<0.00	16.53
HM16JV031	D16JN20a230	0.89	<0.12	<0.65	<0.00	1.64	<34.04	0.02	671.41	<0.24	299.25	465,000.00	<0.01	0	<1.64	<0.03	<0.31	0.07	<3.30	<0.00	563.18
HM16JV031	D16JN20a246	0.01	<0.17	56.05	0	0.19	<40.62	<0.04	5,376.43	<0.29	0.1	465,000.00	<0.00	0.01	<1.73	0.05	<0.28	<0.00	<3.33	0	14.44
HM16JV031	D16JN20a239	1.91	<0.12	<0.50	0	0.59	<33.22	<0.03	1,287.74	0.43	<0.09	465,000.00	<0.00	0.01	<1.81	<0.03	<0.25	<0.00	<3.35	<0.00	237.87
HM16JV031	D16JN20a221	<0.01	<0.16	<0.59	0	0.42	<50.86	<0.05	42.03	<0.30	0.19	465,000.00	<0.00	<0.00	<1.56	<0.06	<0.32	0.02	<3.42	<0.00	736.02
HM16JV031	D16JN20a253	<0.01	<0.13	1,161.73	0	0.25	<36.73	<0.02	636.19	<0.24	<0.07	465,000.00	<0.00	<0.00	<1.84	<0.04	<0.26	0	<3.46	<0.00	35.07
HM16JV031	D16JN20a219	<0.01	0.31	<0.57	0	0.09	<38.88	<0.03	88.65	<0.29	0.1	465,000.00	0.01	<0.00	<1.71	<0.05	<0.25	<0.01	<3.52	<0.00	1,525.95
HM16JV031	D16JN20a242	0.75	<0.15	61.02	<0.00	0.16	<43.99	<0.02	3,580.29	<0.25	<0.07	465,000.00	<0.00	<0.00	<1.70	<0.06	<0.34	0.01	<3.65	<0.00	3.19
HM16JV031	D16JN20a241	<0.01	<0.15	30.49	<0.00	<0.00	<40.31	<0.02	5,066.54	<0.22	<0.07	465,000.00	<0.00	<0.00	<1.59	<0.05	<0.31	<0.01	<3.67	<0.00	10.55
HM16JV031	D16JN20a243	<0.02	<0.13	141.02	<0.00	<0.01	<38.15	<0.02	18.85	<0.25	<0.08	465,000.00	<0.00	<0.00	<1.77	<0.06	<0.35	<0.00	<3.77	<0.00	49.69
HM16JV031	D16JN20a250	<0.01	<0.16	754.89	<0.00	<0.00	<48.64	<0.04	51.16	<0.28	0.11	465,000.00	<0.00	<0.00	<1.94	<0.05	<0.33	<0.00	<3.78	<0.00	96.12
HM16JV031	D16JN20a240	0.02	<0.13	<0.59	<0.00	0.08	39.68	<0.03	110.2	<0.30	0.09	465,000.00	<0.00	<0.00	<1.97	0.04	<0.26	<0.01	<3.87	0	302.69
HM16JV031	D16JN20a235	0.63	<0.16	<0.60	<0.00	0.07	<48.51	<0.03	132.23	<0.24	<0.10	465,000.00	<0.00	<0.00	<1.56	<0.04	<0.32	<0.00	<3.89	0	559.38
HM16JV031	D16JN20a222	0.2	<0.17	<0.58	<0.00	10.89	<48.94	<0.06	355.91	<0.36	26.56	465,000.00	<0.00	<0.00	<1.58	<0.07	<0.31	<0.01	<3.97	0	312.5
HM16JV031	D16JN20a236	<0.01	<0.17	66.67	<0.00	<0.00	<55.24	<0.05	2,406.59	<0.28	<0.11	465,000.00	<0.00	<0.00	<1.67	<0.06	<0.31	0.01	<3.99	<0.00	28.01
HM16JV031	D16JN20a218	0.04	<0.15	<0.61	<0.00	0.02	<35.15	<0.04	474.87	<0.28	0.22	465,000.00	<0.00	0	<1.82	<0.06	<0.27	0.02	<4.01	<0.00	90.23
HM16JV031	D16JN20a244	<0.02	<0.13	<0.55	<0.00	<0.01	<42.17	<0.03	113.31	<0.28	<0.09	465,000.00	<0.00	<0.00	<1.74	<0.07	<0.36	0.02	<4.12	<0.00	99.45

*All elements in ppm

Appendix V: Hemlo district pyrite mineral chemistry collected by LA-ICP-MS

Sample	Source Filename	Ag107	Al27	As75	Au197	Bi209	Ca43	Cd111	Co59	Cr53	Cu65	Fe57	Gd157	Hf178	K39	Mg24	Mn55	Mo95	Na23	Nb93	Ni60
HM16JV031	D16JN20a229	0.02	<0.21	<0.92	<0.00	0.02	<47.27	<0.02	159.01	<0.43	<0.11	465,000.00	<0.01	<0.00	<2.40	<0.06	<0.45	<0.00	<4.52	<0.00	233.89
HM16JV031	D16JN20a233	0.14	0.34	<0.58	<0.00	0.9	<31.02	<0.05	166.22	<0.30	0.52	465,000.00	<0.00	<0.00	<1.72	0.42	<0.29	0.01	<4.53	<0.00	52.89
HM16JV031	D16JN20a234	0.4	<0.32	<1.42	<0.01	0.1	<90.94	<0.07	207.32	<0.64	<0.22	465,000.00	<0.00	<0.01	<3.52	0.18	<0.75	<0.00	<8.89	<0.00	142.73
HM16JV032	D16JN20a289	40.59	76.94	28.24	0.15	67.53	178.53	0.38	1,288.19	0.36	1,206.68	465,000.00	0.42	0.02	4.21	60.99	12.72	4.55	15.35	<0.00	436.81
HM16JV032	D16JN20a310	23.8	<0.73	13.67	0.32	27.14	<221.34	<0.10	699.46	<1.55	3,287.81	465,000.00	<0.01	<0.00	<10.84	3.12	10.29	<0.02	<18.90	<0.00	148.88
HM16JV032	D16JN20a287	43.09	<0.10	22.78	0.31	47.27	1,470.33	1.25	1,328.02	<0.16	2,844.95	465,000.00	<0.00	0.26	<1.37	21.76	37.66	0	<2.66	<0.00	105.24
HM16JV032	D16JN20a306	21.29	0.41	28.65	0.21	49.9	<41.91	0.75	487.72	<0.27	2,858.23	465,000.00	<0.00	<0.00	<1.34	0.19	11.55	0.01	<2.70	0	283.79
HM16JV032	D16JN20a294	1.61	<0.09	9.72	0.03	3.42	<25.81	<0.03	246.61	<0.21	171.38	465,000.00	<0.00	<0.00	<1.20	<0.04	<0.22	<0.00	<2.82	<0.00	236.41
HM16JV032	D16JN20a303	23.54	0.14	38.68	0.25	45.57	<31.85	0.19	1,263.27	<0.27	1,592.36	465,000.00	<0.00	0	1.25	<0.03	69.6	0.02	<2.86	<0.00	494.75
HM16JV032	D16JN20a302	31.89	<0.14	16.01	0.34	62.64	<40.62	0.67	339.2	<0.22	2,421.07	465,000.00	<0.00	<0.00	1.53	0.09	23.85	0.08	<2.86	<0.00	448.75
HM16JV032	D16JN20a312	10.33	<0.12	8.22	0.12	9.38	<38.75	0.34	687.32	<0.26	1,920.28	465,000.00	<0.00	<0.00	<1.33	<0.04	<0.25	<0.00	<2.87	<0.00	65.91
HM16JV032	D16JN20a301	14.35	2.37	36.65	0.18	40.95	<40.07	0.07	1,598.65	<0.25	618.5	465,000.00	<0.00	0.01	<1.44	3.92	21.58	0.09	<2.96	<0.00	314.36
HM16JV032	D16JN20a309	9.45	<0.11	27.63	0.1	14.95	<38.97	0.49	662.03	<0.18	1,392.33	465,000.00	0.01	0.01	<1.51	0.12	8.05	<0.00	<3.05	<0.00	472.56
HM16JV032	D16JN20a291	25.02	<0.12	33.8	0.34	47.47	41.48	0.39	951.4	<0.19	2,244.17	465,000.00	<0.00	0.01	<1.38	<0.03	27.5	0.04	<3.08	<0.00	704.19
HM16JV032	D16JN20a292	12.19	6.18	47.48	0.11	31.83	<41.51	0.16	1,605.42	0.29	575.45	465,000.00	0.01	<0.00	<1.60	6.37	17.6	0.01	<3.13	<0.00	524.06
HM16JV032	D16JN20a304	22.42	<0.14	24.58	0.36	45.18	<37.97	0.22	560.78	<0.28	1,546.16	465,000.00	<0.00	0	<1.34	0.32	19.35	0	<3.20	<0.00	907.05
HM16JV032	D16JN20a285	4.23	5.69	3.37	0.08	14.8	31.85	<0.03	96.67	0.67	35.87	465,000.00	0.03	1.76	6.73	1.65	<0.27	0.02	<3.21	1.74	61.6
HM16JV032	D16JN20a307	14.18	<0.16	41.32	0.1	36.71	<34.90	0.09	1,219.27	<0.28	1,295.83	465,000.00	<0.00	<0.00	<1.45	<0.07	35.03	0.04	<3.26	<0.00	592.05
HM16JV032	D16JN20a286	34.05	0.4	16.96	0.33	38.66	715.86	0.98	876.16	<0.26	3,492.21	465,000.00	0.02	2.11	<1.50	0.81	6.96	<0.00	<3.29	0	116.87
HM16JV032	D16JN20a308	6.87	<0.13	17.68	0.15	8.08	<36.41	0.22	105.48	0.23	1,314.47	465,000.00	<0.00	0	<1.46	<0.03	0.39	<0.01	<3.33	<0.00	308.99
HM16JV032	D16JN20a313	18.33	0.23	47.09	0.2	36.8	<52.78	25.09	6,862.52	<0.28	1,601.32	465,000.00	<0.00	<0.00	<1.76	<0.03	37.05	0.04	<3.33	<0.00	266.88
HM16JV032	D16JN20a293	22.05	34.58	34.09	0.05	36.17	610.93	0.09	879.57	<0.23	515.87	465,000.00	0.11	0	<1.58	35.87	9.05	1.48	<3.34	<0.00	509.26
HM16JV032	D16JN20a290	5.11	<0.15	31.39	0.08	17.9	<43.72	<0.03	964.85	<0.22	92.24	465,000.00	<0.00	<0.00	<1.45	0.04	7.12	<0.01	<3.36	0	354.44
HM16JV032	D16JN20a311	7.69	<0.12	6.97	0.23	9.82	<41.80	0.32	474.32	<0.36	2,004.61	465,000.00	<0.00	0.04	<1.81	<0.07	<0.32	<0.01	<3.61	<0.00	65.35
HM16JV032	D16JN20a305	23.86	<0.15	14.26	0.08	47.63	<53.38	0.13	828.72	<0.25	1,715.31	465,000.00	<0.00	<0.00	<1.80	<0.06	99.39	0.01	<3.66	<0.00	455.38
HM16JV032	D16JN20a288	<0.01	<0.18	10.7	<0.00	0.02	<49.25	<0.04	1,187.10	<0.29	2.29	465,000.00	<0.00	<0.00	<1.96	<0.06	<0.36	<0.00	<4.40	<0.00	319.39
HM16JV032	D16JN20a315	2.12	<0.21	20.14	0.08	7.13	<68.32	<0.06	1,853.91	<0.29	402.35	465,000.00	<0.01	<0.00	<2.38	0.14	<0.50	<0.00	<5.32	<0.00	62.44
HM16JV032	D16JN20a314	5.58	<0.28	52.73	0.07	14.33	<83.61	0.08	6,055.05	<0.52	3,083.07	465,000.00	<0.01	<0.00	<3.44	6.33	1.57	<0.00	<6.71	<0.00	226.38
HM16JV034	D17JN21a040	1.23	<0.11	604.01	<0.00	0.32	162.2	0.1	1,211.44	0.29	19.94	465,000.00	<0.00	<0.00	2.45	82.19	<0.34	0	4.2	<0.00	354.95
HM16JV034	D17JN21a038	<0.00	<0.10	80.8	<0.00	<0.00	<40.40	<0.01	10.07	<0.27	0.14	465,000.00	<0.00	<0.00	<1.31	<0.03	<0.29	<0.00	<3.25	<0.00	1,460.58
HM16JV034	D17JN21a049	<0.00	<0.08	91.17	<0.00	<0.00	<45.31	<0.03	9,775.51	<0.23	<0.05	465,000.00	<0.00	<0.00	<1.33	0.03	<0.26	<0.00	<3.02	0	44.02
HM16JV034	D17JN21a039	<0.00	<0.11	75.57	0	<0.00	<31.53	<0.01	9.8	<0.28	0.16	465,000.00	<0.00	<0.00	<1.34	<0.03	<0.35	0.01	<3.29	<0.00	1,382.23
HM16JV034	D17JN21a060	3.48	1.88	319.59	<0.00	2.81	257.15	0.41	4,462.69	<0.28	59.83	465,000.00	<0.00	<0.00	<1.48	163.35	0.85	0.04	6	<0.00	98.94
HM16JV034	D17JN21a050	<0.01	<0.08	33.8	<0.00	<0.00	<37.62	<0.04	2,797.95	<0.22	<0.06	465,000.00	<0.00	<0.00	<1.49	<0.03	0.28	<0.00	<3.07	0	89.94
HM16JV034	D17JN21a042	<0.01	0.24	84.76	<0.00	0	<32.37	<0.01	9,714.53	<0.23	0.09	465,000.00	0	0	<1.50	0.04	<0.27	<0.01	<3.11	<0.00	42.31
HM16JV034	D17JN21a052	<0.00	<0.09	40.11	<0.00	0.01	<34.08	<0.02	15.36	<0.32	0.09	465,000.00	<0.00	0.01	<1.52	<0.02	<0.28	<0.00	<3.66	<0.00	251.39
HM16JV034	D17JN21a056	<0.00	<0.13	55.35	0	0	<28.04	<0.02	4,066.48	<0.27	0.53	465,000.00	0.02	<0.00	<1.52	<0.02	<0.27	0.01	<4.18	<0.00	63.35
HM16JV034	D17JN21a057	1.35	<0.13	333.06	0.04	1.01	<28.01	<0.02	42.2	<0.28	139.52	465,000.00	<0.00	<0.00	<1.58	<0.02	<0.29	<0.00	<3.62	<0.00	1,000.01
HM16JV034	D17JN21a058	<0.01	<0.12	714.8	0.01	0.42	<37.53	<0.02	134.16	<0.23	0.24	465,000.00	<0.00	<0.00	<1.72	<0.02	<0.31	<0.00	<3.57	0	2,129.03
HM16JV034	D17JN21a061	<0.00	<0.14	53.29	<0.00	<0.00	<40.84	<0.02	1,633.06	<0.23	0.09	465,000.00	<0.00	0	<1.75	<0.05	<0.31	<0.00	<3.66	<0.00	190.78
HM16JV034	D17JN21a062	0.27	<0.16	479.01	<0.00	<0.00	<42.22	<0.02	6,169.38	<0.19	1.1	465,000.00	<0.00	0	<1.75	7.25	<0.29	<0.00	<4.01	<0.00	265.44
HM16JV034	D17JN21a063	1.77	<0.16	193.21	0	1.5	<43.88	0.09	633.12	<0.23	274.55	465,000.00	<0.00	<0.00	<1.76	13.05	<0.32	<0.00	<4.00	<0.00	324.7
HM16JV034	D17JN21a051	0.1	<0.10	56.66	0	3.21	<43.39	<0.03	4.32	<0.30	4.68	465,000.00	0.01	<0.00	<1.82	0.43	0.39	<0.00	<4.01	0	432.9
HM16JV034	D17JN21a055	<0.01	0.14	46.77	0	<0.00	<35.08	<0.02	2,174.33	<0.22	<0.05	465,000.00	<0.00	<0.00	<1.83	0.04	<0.27	<0.00	<4.28	<0.00	179.98
HM16JV034	D17JN21a059	<0.01	<0.12	81.95	<0.00	<0.00	<42.07	<0.02	2,301.34	<0.29	0.18	465,000.00	<0.00	0	<1.83	<0.02	<0.31	<0.00	<3.56	0	274.32
HM16JV034	D17JN21a054	0.02	<0.13	45.59	0	0.34	<38.61	<0.02	2,574.73	<0.26	1.89	465,000.00	0	<0.00	<2.04	<0.03	<0.31	<0.01	<4.20	<0.00	103.47
HM16JV034	D17JN21a041	0.26	0.41	73.53	0.01	5.54	<47.95	<0.02	6.06	<0.41	9.62	465,000.00	<0.00	<0.00	<2.49	<0.04	<0.52	<0.01	<6.16	<0.00	228.39
HM16JV034	D17JN21a053	13.53	<0.26	63.11	2.07	33.31	<74.11	0.99	223.81	<0.68	39,518.70	465,000.00	<0.01	0.01	<3.63	<0.04	<0.71	<0.02	<8.35	<0.00	522.51
HM16JV045	D16JN20a034	<0.02	<0.12	13.61	<0.00	<0.00	<33.26	<0.04	69.64	<0.23	0.85	465,000.00	<0.00	<0.00	<1.53	0.04	<0.22	<0.00	<2.26	0	84.39
HM16JV045	D16JN20a008	<0.01	<0.17	16.5	0	<0.01	<36.30	<0.05	776.86	<0.31	0.29	465,000.00	0	0	<1.77	<0.04	<0.23	0.01	<2.65	<0.00	226.13

*All elements in ppm

Appendix V: Hemlo district pyrite mineral chemistry collected by LA-ICP-MS

Sample	Source Filename	Ag107	Al27	As75	Au197	Bi209	Ca43	Cd111	Co59	Cr53	Cu65	Fe57	Gd157	Hf178	K39	Mg24	Mn55	Mo95	Na23	Nb93	Ni60
HM16JV045	D16JN20a009	<0.02	<0.19	9.84	0.01	<0.01	<44.52	<0.07	175.62	<0.33	<0.12	465,000.00	<0.00	<0.00	<1.74	0.07	<0.29	<0.00	<2.70	<0.00	92.65
HM16JV045	D16JN20a030	<0.01	<0.14	19.05	0	0.01	<42.88	<0.04	564.23	<0.25	0.98	465,000.00	<0.00	<0.00	<1.53	<0.04	<0.23	<0.00	<2.72	<0.00	133.79
HM16JV045	D16JN20a028	<0.02	<0.15	10.02	0	0.02	<36.58	<0.04	106.49	<0.27	0.44	465,000.00	<0.00	<0.00	<1.71	<0.03	0.3	0	<2.84	0	150.32
HM16JV045	D16JN20a037	<0.02	<0.13	24.64	<0.00	0.09	<36.73	<0.03	368.34	0.27	1.13	465,000.00	<0.00	0	<1.40	0.08	<0.24	<0.00	<2.87	<0.00	168.94
HM16JV045	D16JN20a011	<0.02	<0.19	28.5	<0.00	0.01	<57.76	<0.06	649.94	<0.36	0.52	465,000.00	<0.00	0.01	<1.69	<0.05	<0.24	<0.01	<2.90	0	262.88
HM16JV045	D16JN20a010	<0.02	<0.21	11.57	<0.00	<0.01	<49.61	<0.07	152.12	<0.34	<0.11	465,000.00	<0.00	<0.00	<1.83	0.11	<0.31	<0.01	<2.90	0	177.48
HM16JV045	D16JN20a007	<0.01	<0.20	13.2	<0.00	<0.01	<38.99	<0.04	216.47	<0.32	<0.11	465,000.00	<0.00	<0.00	<1.78	<0.04	<0.24	<0.01	<2.97	<0.00	256.42
HM16JV045	D16JN20a012	<0.02	<0.18	12.9	<0.00	<0.01	<52.52	<0.05	204.45	<0.35	0.13	465,000.00	<0.00	<0.00	<1.29	<0.05	<0.21	<0.00	<3.01	<0.00	198.92
HM16JV045	D16JN20a033	<0.02	<0.18	10.8	<0.00	<0.01	<38.13	<0.03	221.57	<0.35	0.4	465,000.00	<0.00	<0.00	<1.96	<0.04	<0.28	<0.01	<3.02	<0.00	101.6
HM16JV045	D16JN20a018	<0.02	<0.15	18.58	0	<0.01	<51.43	<0.04	157.64	<0.38	<0.12	465,000.00	<0.00	<0.00	<2.05	<0.06	<0.27	<0.01	<3.06	<0.00	140.96
HM16JV045	D16JN20a027	<0.01	<0.16	8.93	0	0.01	52.78	<0.05	47.35	<0.27	0.49	465,000.00	<0.00	0	<1.71	0.05	<0.27	<0.00	<3.16	<0.00	138.36
HM16JV045	D16JN20a032	<0.02	<0.20	7.83	<0.00	0.06	<45.66	<0.03	82.98	<0.33	0.33	465,000.00	<0.00	<0.00	<1.95	<0.05	<0.31	<0.00	<3.28	<0.00	193.86
HM16JV045	D16JN20a013	<0.02	<0.16	142.41	0	<0.01	<36.92	<0.05	484.58	<0.33	<0.09	465,000.00	0	<0.00	<1.63	<0.04	<0.24	<0.00	<3.34	0	479.6
HM16JV045	D16JN20a017	<0.02	<0.16	24.71	<0.00	<0.01	<56.86	0.05	1,331.14	<0.35	<0.11	465,000.00	<0.00	<0.00	<1.82	<0.06	<0.30	<0.00	<3.44	<0.00	88.09
HM16JV045	D16JN20a026	<0.01	<0.16	24	<0.00	<0.01	<47.78	<0.04	96.24	<0.33	0.22	465,000.00	0.01	<0.00	<1.56	<0.06	<0.27	<0.00	<3.48	0	181.19
HM16JV045	D16JN20a014	<0.02	<0.15	21.73	<0.00	0.15	<47.50	<0.05	1,081.69	<0.36	0.11	465,000.00	0	<0.00	<1.85	0.69	<0.27	<0.00	<3.51	<0.00	535.03
HM16JV045	D16JN20a016	<0.01	<0.18	15.2	0.01	<0.01	<57.51	<0.05	292.57	<0.33	0.19	465,000.00	0.01	<0.00	<1.56	0.05	<0.33	<0.00	<3.67	0	234.67
HM16JV045	D16JN20a031	0.09	<0.19	14.57	0.01	1.24	77.08	<0.06	223.61	<0.37	1.05	465,000.00	<0.00	<0.00	<2.12	1.23	1.07	<0.01	<3.83	<0.00	305.37
HM16JV045	D16JN20a015	<0.02	<0.20	25.1	<0.00	<0.01	<64.90	<0.05	91.01	<0.42	0.42	465,000.00	<0.00	<0.00	<1.90	<0.04	<0.35	<0.00	<3.84	<0.00	163.44
HM16JV045	D16JN20a019	<0.02	<0.22	28	<0.01	0.03	<71.83	<0.07	1,229.49	<0.48	<0.16	465,000.00	<0.00	0.01	<2.41	<0.08	<0.39	<0.02	<3.85	<0.00	125.92
HM16JV045	D16JN20a036	<0.03	<0.24	22.68	<0.00	0.06	<62.71	0.09	409.95	<0.53	0.43	465,000.00	0.01	<0.00	<2.59	<0.07	<0.43	<0.01	<4.19	<0.00	213.22
HM16JV045	D16JN20a029	0.04	<0.23	12.97	<0.00	0.22	346.18	<0.06	181.46	<0.41	1.02	465,000.00	0.11	<0.00	<2.61	0.13	<0.36	<0.01	<4.41	<0.00	111.09
HM16JV045	D16JN20a034	<0.04	0.29	15.4	<0.01	<0.01	<75.90	<0.08	53.9	<0.53	0.63	465,000.00	<0.00	<0.00	<3.50	<0.08	<0.50	<0.01	<5.17	<0.00	224.81
HM16JV045	D16JN20a035	<0.05	<0.48	20.63	<0.01	1.16	<128.83	<0.17	562.42	<0.98	<0.30	465,000.00	<0.02	0.02	<5.73	0.17	<0.84	<0.02	<7.85	<0.00	278.95
HM16JV050	D17JN21a104	0.06	53.43	56.88	0.01	0.6	<47.07	<0.02	2,386.38	<0.27	0.84	465,000.00	<0.00	<0.00	4.02	3.08	<0.32	<0.01	39.28	<0.00	913.44
HM16JV050	D17JN21a101	<0.01	<0.12	91.43	0.02	<0.00	<35.37	<0.02	2,533.50	<0.23	2.52	465,000.00	<0.00	<0.00	<1.36	0.08	<0.26	0.01	<3.20	<0.00	293.26
HM16JV050	D17JN21a097	0.69	0.12	23.75	0.01	1.31	<29.68	0.03	3,605.20	<0.22	1.4	465,000.00	0.01	<0.00	<1.49	0.1	<0.25	<0.00	<3.40	<0.00	264.22
HM16JV050	D17JN21a124	0.18	<0.09	33.78	0.05	2.56	<42.21	<0.02	652.59	0.3	1.22	465,000.00	<0.00	0.01	<1.49	<0.02	<0.27	0	<3.30	<0.00	1,691.62
HM16JV050	D17JN21a100	<0.01	<0.13	25.23	<0.00	<0.00	<32.73	<0.01	2,991.96	<0.28	<0.07	465,000.00	<0.00	<0.00	<1.60	<0.02	<0.31	0.01	<3.53	<0.00	894.31
HM16JV050	D17JN21a122	0.5	26.62	38.29	0.1	7.83	<27.47	0.02	723.14	<0.31	38.66	465,000.00	<0.00	0	<1.62	0.26	<0.23	0.01	24.4	<0.00	1,541.60
HM16JV050	D17JN21a096	<0.01	<0.13	11.99	<0.00	<0.00	<32.67	<0.02	212.19	<0.30	<0.05	465,000.00	<0.00	<0.00	<1.63	<0.03	<0.25	0.01	<3.55	<0.00	768.23
HM16JV050	D17JN21a106	0.01	<0.13	5.14	<0.00	0	<45.48	<0.03	5,142.08	<0.27	0.06	465,000.00	<0.00	0	<1.66	<0.03	<0.27	<0.00	<4.16	<0.00	100.17
HM16JV050	D17JN21a099	<0.01	<0.12	38.06	<0.00	<0.00	<31.59	<0.01	994.41	0.47	<0.07	465,000.00	<0.00	<0.00	<1.67	0.02	<0.30	0.01	<3.81	<0.00	1,004.98
HM16JV050	D17JN21a121	0.33	<0.12	86.45	0.06	5.55	<33.22	0.08	1,100.84	<0.22	373.25	465,000.00	<0.00	<0.00	<1.75	<0.04	<0.25	0.01	<3.86	<0.00	1,463.18
HM16JV050	D17JN21a098	<0.01	<0.13	12.83	<0.00	<0.00	41.71	<0.01	312.72	<0.28	<0.05	465,000.00	<0.00	0	<1.75	<0.04	<0.31	<0.00	<3.88	<0.00	640.22
HM16JV050	D17JN21a110	0.23	<0.11	8.66	0.05	0.54	<43.70	<0.03	3,295.66	<0.32	4.57	465,000.00	<0.00	<0.00	<1.83	0.07	<0.29	<0.00	<4.44	<0.00	322.53
HM16JV050	D17JN21a095	<0.00	<0.17	38.88	<0.00	<0.00	<45.14	0.03	155.64	<0.38	0.13	465,000.00	<0.01	<0.00	<1.84	<0.04	<0.30	<0.00	<3.65	<0.00	605.9
HM16JV050	D17JN21a112	0.11	<0.15	51.56	<0.00	0.33	<47.40	0.06	5,676.95	<0.42	0.69	465,000.00	<0.00	<0.00	<1.97	0.71	<0.40	<0.00	<4.92	<0.00	939.28
HM16JV050	D17JN21a108	<0.01	0.44	13.35	<0.00	0.01	<51.68	<0.03	1,278.42	<0.38	0.07	465,000.00	0	<0.00	<1.98	<0.04	<0.30	<0.00	<4.49	0	710.78
HM16JV050	D17JN21a105	<0.01	<0.15	2.7	0.01	0.11	<44.79	<0.02	1,267.66	<0.30	0.11	465,000.00	<0.00	<0.00	<1.99	0.07	<0.30	<0.01	<3.91	<0.00	440.39
HM16JV050	D17JN21a109	0.01	0.68	12.23	<0.00	0.16	<48.21	<0.02	2,302.06	<0.33	0.2	465,000.00	<0.00	0.01	<2.16	0.82	<0.32	<0.00	<4.93	<0.00	632.25
HM16JV050	D17JN21a113	0.01	<0.16	15.28	<0.00	0.02	<64.83	<0.01	2,720.51	<0.41	0.11	465,000.00	<0.00	<0.00	<2.16	<0.04	<0.44	<0.01	<6.60	<0.00	49.16
HM16JV050	D17JN21a107	0.01	<0.18	6.42	<0.00	0.06	<63.59	<0.04	3,428.44	<0.42	0.08	465,000.00	<0.00	0.02	<2.26	0.06	<0.36	<0.00	<6.34	<0.00	223.03
HM16JV050	D17JN21a114	0.52	<0.16	63.49	0.05	3.27	<56.22	0.08	529.5	<0.41	0.1	465,000.00	<0.00	<0.00	<2.34	<0.04	<0.37	<0.01	<6.57	<0.00	701.94
HM16JV050	D17JN21a123	0.28	<0.19	128.33	0.06	1.57	<56.18	<0.03	1,358.74	<0.53	0.86	465,000.00	<0.00	0.02	<2.40	<0.07	<0.39	<0.01	<5.55	<0.00	577.08
HM16JV050	D17JN21a103	<0.01	<0.16	30.72	<0.00	0.05	<54.38	<0.02	2,164.01	<0.36	<0.09	465,000.00	<0.01	<0.00	<2.46	<0.06	<0.39	<0.01	<5.62	<0.00	1,098.28
HM16JV050	D17JN21a125	0.48	7.73	51.08	0.07	14.46	<144.70	<0.10	1,859.04	<0.87	7.63	465,000.00	<0.00	<0.00	<4.90	<0.10	<0.90	<0.01	<13.23	<0.00	1,211.91
HM16JV060	D16JN20a075	<0.02	<0.13	4.9	<0.00	<0.01	<33.93	<0.03	426.25	<0.32	0.14	465,000.00	0	0	<1.65	<0.05	<0.26	<0.00	<3.01	<0.00	232.51
HM16JV060	D16JN20a094	<0.02	<0.16	8.22	0	<0.00	<36.64	<0.04	254.37	<0.25	0.18	465,000.00	<0.00	<0.00	<1.58	0.05	<0.25	<0.00	<3.08	<0.00	303.31
HM16JV060	D16JN20a087	0.9	<0.21	9.32	0.03	0.82	<37.21	<0.02	205.2	<0.20	0.4	465,000.00	0.01	<0.00	<1.56	<0.03	<0.26	0.01	<3.10	0	339.8

*All elements in ppm

Appendix V: Hemlo district pyrite mineral chemistry collected by LA-ICP-MS

Sample	Source Filename	Ag107	Al27	As75	Au197	Bi209	Ca43	Cd111	Co59	Cr53	Cu65	Fe57	Gd157	Hf178	K39	Mg24	Mn55	Mo95	Na23	Nb93	Ni60
HM16JV060	D16JN20a073	<0.02	<0.16	9.75	<0.00	0.01	<35.78	<0.04	819.18	<0.28	0.42	465,000.00	<0.00	0	<1.61	<0.04	<0.29	<0.00	<3.10	<0.00	413.94
HM16JV060	D16JN20a076	<0.02	<0.18	10.41	<0.00	<0.01	<45.02	<0.03	525.93	<0.37	0.33	465,000.00	0	0	<1.98	0.08	<0.31	0.01	<3.20	<0.00	699.85
HM16JV060	D16JN20a090	<0.02	<0.17	14.35	<0.00	<0.01	<45.76	<0.03	2,348.49	<0.30	0.24	465,000.00	<0.00	<0.00	<1.79	0.07	<0.27	<0.00	<3.39	0	830.88
HM16JV060	D16JN20a089	<0.02	<0.18	3.83	<0.01	<0.01	<43.26	<0.04	81.05	<0.28	<0.11	465,000.00	0	<0.00	<2.00	<0.05	<0.34	<0.00	<3.40	0	109.74
HM16JV060	D16JN20a072	<0.02	<0.19	6.55	<0.00	<0.01	<41.21	<0.03	128.3	<0.27	0.3	465,000.00	0	<0.00	<1.60	0.13	<0.28	<0.00	<3.51	<0.00	594.7
HM16JV060	D16JN20a086	<0.02	<0.25	16.96	<0.00	<0.01	<46.93	<0.03	375.54	0.3	<0.09	465,000.00	<0.00	<0.00	<1.61	<0.04	<0.24	<0.00	<3.55	<0.00	277.83
HM16JV060	D16JN20a092	<0.02	<0.15	36.41	<0.00	<0.01	<36.70	<0.04	8,750.30	<0.29	0.21	465,000.00	<0.01	0	<1.69	<0.05	<0.30	<0.00	<3.66	0	394.9
HM16JV060	D16JN20a088	<0.02	0.25	5.81	0	<0.01	<42.64	<0.03	127.72	0.31	<0.13	465,000.00	<0.00	<0.00	<1.85	<0.04	<0.35	<0.01	<3.68	<0.00	207.01
HM16JV060	D16JN20a074	<0.02	<0.15	7.45	0	<0.01	<38.33	<0.05	478.42	<0.33	0.31	465,000.00	<0.00	<0.00	<1.71	0.1	<0.32	<0.00	<3.70	<0.00	583.9
HM16JV060	D16JN20a091	<0.02	<0.14	11.1	<0.00	<0.01	<44.34	<0.03	2,129.49	<0.30	0.21	465,000.00	<0.00	<0.00	<1.77	<0.07	<0.26	<0.00	<3.70	<0.00	584.11
HM16JV060	D16JN20a093	<0.02	<0.20	6.87	<0.00	<0.01	<40.32	<0.05	299.96	<0.36	<0.14	465,000.00	<0.01	<0.00	<1.66	<0.06	<0.35	<0.00	<3.84	<0.00	324
HM16JV060	D16JN20a095	<0.02	<0.19	25.64	<0.00	<0.01	<44.42	<0.05	5,941.46	<0.30	0.33	465,000.00	<0.00	<0.00	<1.93	<0.05	<0.27	<0.00	<4.00	<0.00	321.38
HM16JV060	D16JN20a097	<0.01	<0.19	7.38	0	0.02	<41.69	<0.03	265.26	<0.26	0.14	465,000.00	<0.01	0.01	<1.75	<0.08	<0.29	<0.01	<4.01	<0.00	820.34
HM16JV060	D16JN20a099	<0.01	<0.16	11.04	0	<0.01	<42.62	<0.03	536.51	<0.27	0.16	465,000.00	<0.00	<0.01	<1.78	<0.08	<0.32	<0.00	<4.05	<0.00	853.89
HM16JV060	D16JN20a071	<0.01	<0.20	11.87	<0.00	<0.01	<42.49	<0.04	662.08	<0.28	0.18	465,000.00	<0.01	<0.00	<1.38	0.08	<0.28	<0.00	<4.07	0	529.83
HM16JV060	D16JN20a085	<0.01	<0.19	4.95	<0.00	0.01	<63.75	<0.03	391.67	<0.38	<0.11	465,000.00	<0.01	<0.00	<2.00	<0.05	<0.29	<0.00	<4.08	<0.00	139.02
HM16JV060	D16JN20a078	<0.02	0.3	3.76	<0.00	<0.01	<57.26	<0.03	345.5	<0.36	0.2	465,000.00	<0.00	0.08	<2.01	<0.04	<0.38	<0.00	<4.09	<0.00	216.04
HM16JV060	D16JN20a069	1.31	<0.15	10.22	0.01	0.1	125.85	<0.06	518.58	<0.23	3.1	465,000.00	0.01	<0.00	<1.68	1.91	<0.24	0.05	<4.10	<0.00	551.41
HM16JV060	D16JN20a098	<0.01	<0.19	5.08	0	<0.01	<43.52	<0.03	626.91	<0.26	<0.11	465,000.00	<0.01	<0.00	<1.84	<0.08	<0.26	<0.01	<4.27	<0.00	335.77
HM16JV060	D16JN20a077	0.25	<0.22	12.11	0.02	0.57	<56.07	<0.04	457.68	<0.46	1.28	465,000.00	<0.00	<0.00	<2.30	0.57	<0.39	<0.00	<4.27	<0.00	1,139.09
HM16JV060	D16JN20a070	<0.01	<0.18	10.95	<0.00	<0.01	<35.63	<0.05	326.87	<0.27	<0.11	465,000.00	<0.01	<0.00	<1.48	<0.05	<0.26	<0.00	<4.47	<0.00	762.21
HM16JV060	D16JN20a096	<0.02	<0.23	10.09	<0.00	<0.01	<52.12	<0.05	1,834.04	<0.40	0.36	465,000.00	<0.00	0.02	<2.35	0.27	<0.40	<0.00	<5.00	<0.00	643.66
HM16JV060	D16JN20a093	<0.04	<0.34	5.56	<0.00	0.1	<68.22	<0.09	235.7	<0.60	<0.23	465,000.00	<0.01	0.09	<2.80	<0.09	<0.59	0.02	<6.46	<0.00	341.62
HM16JV062	D16JN20a320	<0.01	<0.13	7.66	<0.00	0.03	<38.59	<0.02	0.43	<0.35	0.26	465,000.00	<0.00	<0.00	<1.58	<0.03	<0.24	0.01	<2.76	<0.00	269.8
HM16JV062	D16JN20a340	<0.01	<0.14	5.64	<0.00	0.04	<33.92	<0.02	168.79	<0.25	<0.05	465,000.00	<0.00	0.01	<1.42	<0.03	<0.27	<0.01	<2.96	<0.00	456.33
HM16JV062	D16JN20a342	<0.01	<0.11	71.28	<0.00	0.14	<31.03	<0.01	81.42	<0.17	0.06	465,000.00	<0.00	<0.00	<1.10	<0.03	<0.25	0	<3.00	<0.00	554.19
HM16JV062	D16JN20a318	<0.01	<0.16	7.36	0.01	2	<40.91	<0.03	0.63	<0.26	0.64	465,000.00	<0.00	0	<1.81	<0.06	<0.30	<0.00	<3.01	<0.00	214.25
HM16JV062	D16JN20a321	<0.01	<0.14	14.48	0	<0.00	<45.12	<0.02	0.23	<0.31	0.08	465,000.00	<0.00	<0.00	<1.89	<0.03	<0.26	<0.00	<3.07	<0.00	1,159.89
HM16JV062	D16JN20a330	0.02	0.15	5.67	<0.00	0.3	<48.72	<0.03	491.47	<0.27	0.25	465,000.00	<0.00	0.01	<1.68	<0.05	<0.26	0.01	<3.19	<0.00	107.13
HM16JV062	D16JN20a319	0.07	<0.17	6.74	0.02	5.38	<42.91	<0.03	29.58	<0.32	0.97	465,000.00	0	0	<1.89	<0.05	<0.29	<0.00	<3.21	<0.00	282.04
HM16JV062	D16JN20a343	0.64	<0.15	22.84	0.02	13.26	<43.03	0.08	2,652.14	<0.25	142.11	465,000.00	0	0.05	<1.47	0.07	<0.37	2.18	<3.22	0.01	588.07
HM16JV062	D16JN20a329	<0.01	<0.11	3.22	<0.00	<0.00	<52.54	<0.03	655.32	<0.27	<0.06	465,000.00	<0.00	<0.00	<1.57	0.08	<0.24	<0.00	<3.24	<0.00	383.53
HM16JV062	D16JN20a323	0.12	<0.15	17	0	3.94	<40.01	<0.03	156.43	<0.29	5.01	465,000.00	<0.01	0	<1.82	0.09	<0.29	<0.00	<3.30	<0.00	160.51
HM16JV062	D16JN20a327	<0.01	1.24	48.89	<0.00	0.12	<34.97	<0.04	67.67	<0.24	0.1	465,000.00	<0.00	<0.00	1.9	<0.03	<0.31	<0.00	<3.40	0	591.09
HM16JV062	D16JN20a339	<0.01	<0.16	6.57	<0.00	0.07	<41.22	<0.02	1,609.87	<0.31	0.12	465,000.00	0	0.01	<1.76	0.07	<0.33	<0.00	<3.53	<0.00	188.79
HM16JV062	D16JN20a328	4.63	14.37	8.54	<0.00	1.49	<50.66	<0.03	27.23	<0.32	79.55	465,000.00	0.15	0	167.9	0.83	0.65	0.14	<3.63	<0.00	65.22
HM16JV062	D16JN20a346	<0.01	<0.14	5.41	0	0.1	<49.87	<0.03	61.74	<0.35	0.75	465,000.00	<0.01	<0.00	<2.16	0.07	<0.28	<0.01	<3.64	<0.00	512.92
HM16JV062	D16JN20a324	<0.01	<0.16	3.15	<0.00	0.08	<46.51	<0.03	330.14	<0.31	0.36	465,000.00	<0.01	<0.00	<2.04	0.07	<0.31	<0.00	<3.70	<0.00	118.25
HM16JV062	D16JN20a341	<0.01	0.46	26.85	<0.00	0.6	<43.22	<0.03	13,673.35	<0.20	0.08	465,000.00	<0.00	0.09	<1.52	0.28	<0.32	<0.01	<3.92	0	56.99
HM16JV062	D16JN20a325	<0.01	<0.16	11.25	<0.00	<0.00	<48.14	<0.04	3.75	<0.33	<0.08	465,000.00	<0.00	<0.00	<1.93	<0.04	<0.32	0.01	<3.94	<0.00	1,062.58
HM16JV062	D16JN20a337	0.02	<0.13	18.15	0.01	0.15	<45.41	<0.03	3,628.09	<0.24	0.21	465,000.00	<0.01	<0.00	<2.02	<0.04	<0.30	0	<3.99	<0.00	155.76
HM16JV062	D16JN20a326	<0.01	<0.14	9	<0.00	0.03	<39.09	<0.05	632.08	<0.26	0.14	465,000.00	0	0	<2.00	<0.05	<0.37	<0.00	<4.09	<0.00	40.85
HM16JV062	D16JN20a322	<0.01	<0.22	7.91	<0.00	0.34	<61.34	<0.03	214.91	<0.39	0.23	465,000.00	<0.01	<0.00	<2.54	<0.06	<0.38	<0.01	<4.43	<0.00	208.89
HM16JV062	D16JN20a317	<0.02	0.28	10.58	<0.00	<0.01	<53.37	0.07	1.2	<0.37	<0.12	465,000.00	<0.01	<0.00	<2.37	<0.07	<0.44	<0.01	<5.02	<0.00	861.14
HM16JV062	D16JN20a338	0.02	14.23	9.25	<0.00	3.33	<62.37	<0.03	367.28	<0.33	0.41	465,000.00	<0.01	<0.00	<2.71	10.73	<0.44	<0.00	<5.25	<0.00	26.39
HM16JV062	D16JN20a344	0.01	<0.35	6.44	<0.01	0.11	159.32	<0.06	2.52	<0.52	2.84	465,000.00	<0.01	<0.00	<3.57	<0.12	<0.84	<0.00	<8.27	<0.00	561.65
HM16JV062	D16JN20a345	<0.02	<0.40	16.67	<0.00	0.41	<137.05	<0.06	146.69	<0.92	<0.23	465,000.00	<0.01	0.05	<5.92	0.37	<0.89	<0.02	<9.75	<0.00	431.06
HM16JV064	D17JN21a434	0.1	76.54	54.14	<0.00	1.6	<42.92	<0.01	274.71	<0.25	1.43	465,000.00	<0.01	<0.00	21.04	31.45	1.09	0	<3.77	0	20.72
HM16JV064	D17JN21a424	<0.00	<0.09	10.36	<0.00	0	<25.67	<0.01	38.79	<0.20	<0.06	465,000.00	<0.00	<0.00	<1.31	<0.05	<0.23	<0.00	<3.02	0	531.2
HM16JV064	D17JN21a431	0.01	<0.09	0.9	<0.00	<0.00	<40.64	<0.01	12.85	<0.29	0.51	465,000.00	<0.00	<0.00	<1.58	<0.02	<0.31	<0.00	<4.39	<0.00	145.61

*All elements in ppm

Appendix V: Hemlo district pyrite mineral chemistry collected by LA-ICP-MS

Sample	Source Filename	Ag107	Al27	As75	Au197	Bi209	Ca43	Cd111	Co59	Cr53	Cu65	Fe57	Gd157	Hf178	K39	Mg24	Mn55	Mo95	Na23	Nb93	Ni60
HM16JV064	D17JN21a436	0.01	0.16	2.65	0	0.06	<27.93	<0.03	6,664.05	0.33	0.42	465,000.00	<0.00	0	<1.90	<0.07	<0.34	<0.00	<4.64	<0.00	273.46
HM16JV064	D17JN21a430	0.84	18.82	210.41	0.07	4.77	<38.52	<0.02	404.28	<0.25	7.4	465,000.00	<0.00	0.48	<1.92	1.05	<0.29	<0.00	<4.78	0.01	187.74
HM16JV064	D17JN21a449	0.6	<1.42	533.42	<0.04	6.31	<385.25	<0.21	41.71	3.19	9	465,000.00	<0.01	<0.01	<17.10	<0.30	<3.35	<0.01	<39.89	<0.00	20.76
HM16JV064	D17JN21a433	0.87	49.15	21.27	<0.00	0.18	48.85	0.11	358.88	1.55	2.37	465,000.00	<0.01	<0.00	<2.10	48.69	0.75	0.07	<5.04	<0.00	379.12
HM16JV064	D17JN21a429	0.08	1.49	19.27	<0.00	0.22	56.09	<0.01	38.53	0.41	1.02	465,000.00	<0.00	<0.00	<2.19	0.56	<0.27	<0.00	<5.05	0.01	165.02
HM16JV064	D17JN21a437	<0.00	<0.18	14.46	0	0.02	<34.94	<0.04	156.21	<0.30	0.17	465,000.00	<0.01	<0.00	<2.80	0.21	<0.45	<0.00	<6.49	<0.00	637.54
HM16JV064	D17JN21a447	0.07	9.38	58.46	0.01	0.55	<67.20	<0.03	470.01	<0.43	1.24	465,000.00	0.09	<0.00	<2.85	0.29	0.69	<0.01	<7.23	<0.00	220.34
HM16JV064	D17JN21a445	0.13	<0.19	16.76	<0.00	0.82	<53.99	0.19	82.43	<0.40	28.54	465,000.00	<0.00	<0.01	<3.01	12.86	<0.52	<0.00	<7.93	<0.00	212.71
HM16JV064	D17JN21a428	0.11	2.31	7.17	<0.01	1.45	<78.13	<0.04	250.22	<0.59	1.36	465,000.00	<0.00	0.69	<3.93	2.49	<0.76	<0.00	<11.58	0.03	390.21
HM16JV064	D17JN21a435	0.05	<0.31	1.69	0.04	0.19	<107.01	<0.04	7,414.56	<0.63	<0.19	465,000.00	<0.00	0.57	<4.22	<0.14	<0.80	<0.00	<10.18	<0.00	16.89
HM16JV064	D17JN21a438	0.1	3.82	134.4	<0.00	0.82	<79.48	<0.04	39.95	<0.57	2.5	465,000.00	<0.01	<0.00	<5.00	1.2	<0.78	<0.01	<12.69	<0.00	4.99
HM16JV064	D17JN21a446	0.18	31.57	22.07	0.03	1.84	<102.09	<0.06	191.15	<0.71	1.63	465,000.00	<0.00	0.64	<5.15	11	<0.93	<0.01	<13.24	<0.00	91.28
HM16JV064	D17JN21a426	<0.02	15.19	77.5	<0.01	2.08	<207.27	<0.08	177.64	<1.27	<0.36	465,000.00	<0.02	<0.00	<7.92	20.53	<1.64	<0.02	<21.42	<0.00	623.16
HM16JV069	D17JN21a067	0.39	<0.11	11.87	<0.00	0.01	145.56	0.41	613.76	0.86	1,283.06	465,000.00	<0.00	0	2.17	8.79	10.17	0.22	95.06	<0.00	1,473.60
HM16JV069	D17JN21a065	0.77	<0.10	3.36	<0.00	0.86	<36.75	0.12	88.7	<0.30	349.44	465,000.00	<0.01	<0.00	<1.28	<0.02	<0.26	0.02	<3.66	<0.00	1,538.48
HM16JV069	D17JN21a070	<0.00	0.45	<0.41	<0.00	<0.00	<39.82	<0.01	497.95	<0.26	0.06	465,000.00	<0.00	<0.00	<1.43	0.08	<0.29	<0.00	<3.82	<0.00	217.52
HM16JV069	D17JN21a064	<0.01	<0.09	52.17	0	0.06	<37.06	<0.01	1,360.86	<0.28	0.14	465,000.00	0.01	<0.00	<1.43	<0.05	<0.28	<0.00	<3.22	<0.00	2,441.13
HM16JV069	D17JN21a094	0.01	<0.14	130.15	0	0.11	<29.71	<0.03	4,995.96	0.26	<0.07	465,000.00	<0.01	<0.00	<1.45	<0.02	<0.22	<0.00	<3.07	<0.00	1,833.73
HM16JV069	D17JN21a071	<0.00	0.61	<0.41	<0.00	<0.00	<39.00	<0.01	494.47	<0.26	<0.06	465,000.00	<0.00	<0.00	<1.46	<0.04	<0.26	<0.00	<3.69	0	300.08
HM16JV069	D17JN21a069	<0.00	0.22	<0.39	<0.00	<0.00	<29.26	0.02	160.08	<0.22	0.12	465,000.00	<0.00	<0.00	<1.47	<0.04	<0.28	<0.00	<3.76	<0.00	451.25
HM16JV069	D17JN21a074	0.02	<0.12	<0.48	<0.00	0.26	<35.17	<0.03	2,324.37	<0.24	1.3	465,000.00	<0.00	<0.00	<1.54	0.09	<0.31	<0.00	<3.38	<0.00	372.71
HM16JV069	D17JN21a075	0.02	4.57	343.87	<0.00	0.16	<39.19	<0.02	13,920.90	<0.25	0.85	465,000.00	<0.00	<0.00	<1.55	<0.04	<0.27	0	<3.20	0	2,896.42
HM16JV069	D17JN21a072	<0.01	<0.14	<0.41	<0.00	<0.00	<41.47	0.02	521.68	<0.21	<0.05	465,000.00	<0.00	<0.00	<1.57	<0.02	<0.26	<0.01	<3.42	<0.00	342.45
HM16JV069	D17JN21a073	0.03	<0.12	<0.46	0	0.14	<44.16	<0.02	108.89	<0.22	0.46	465,000.00	<0.00	<0.00	<1.65	0.04	<0.31	<0.01	<3.32	<0.00	367.19
HM16JV069	D17JN21a092	<0.01	<0.13	83.67	<0.00	0.03	<33.20	<0.01	1,157.94	<0.34	<0.06	465,000.00	<0.00	0.01	<1.70	<0.03	<0.29	0.01	<4.19	<0.00	3,462.92
HM16JV069	D17JN21a093	<0.01	0.3	21.17	<0.00	0.15	<31.20	<0.03	8,682.75	<0.27	0.17	465,000.00	<0.00	<0.00	<1.75	0.16	<0.29	<0.00	<4.05	<0.00	685.75
HM16JV069	D17JN21a077	0.03	8.03	4.13	<0.00	0.68	<30.07	<0.01	40.23	<0.24	1.69	465,000.00	<0.00	<0.00	<1.81	<0.03	<0.26	<0.01	<3.40	<0.00	1,628.06
HM16JV069	D17JN21a068	<0.00	<0.14	<0.46	<0.00	<0.00	<34.93	0.05	202.89	<0.26	<0.07	465,000.00	<0.00	<0.00	<1.88	<0.04	0.37	<0.00	<4.72	<0.00	358.25
HM16JV069	D17JN21a087	<0.01	0.19	33.76	<0.00	<0.00	<48.76	<0.02	1,124.60	<0.35	0.5	465,000.00	<0.00	<0.00	<1.89	<0.03	<0.29	<0.00	<4.14	<0.00	1,962.70
HM16JV069	D17JN21a066	<0.01	<0.14	134.16	0	0.06	<42.85	<0.02	18,827.33	<0.36	0.13	465,000.00	<0.00	<0.00	<1.90	<0.03	<0.38	0.04	<4.72	0	1,398.07
HM16JV069	D17JN21a090	<0.00	0.16	183.24	<0.00	0.03	<33.84	<0.02	7,941.52	<0.28	0.13	465,000.00	<0.00	<0.00	<1.93	<0.02	<0.27	<0.01	<4.30	<0.00	1,766.22
HM16JV069	D17JN21a085	0.05	1.54	6.21	0	0	<49.42	<0.02	140.57	<0.27	6.32	465,000.00	0.01	0.01	<1.95	0.45	<0.40	0.01	<5.23	<0.00	2,982.09
HM16JV069	D17JN21a091	0.18	1.48	1.51	<0.00	1.45	<35.29	0.04	13,795.64	<0.38	29.78	465,000.00	<0.00	0.01	<2.19	0.74	<0.30	0.02	9.61	<0.00	306.57
HM16JV069	D17JN21a089	<0.01	0.63	0.71	<0.00	0.01	<53.95	0.03	841.43	<0.39	0.47	465,000.00	<0.01	<0.00	<2.25	0.05	<0.40	<0.01	<5.43	<0.00	826.9
HM16JV069	D17JN21a088	0.07	1.8	3.12	0.01	0.43	<53.60	<0.03	27,986.72	<0.53	2.65	465,000.00	<0.00	0.01	<2.29	<0.05	<0.42	0.01	<5.70	<0.00	278.46
HM16JV069	D17JN21a086	0.03	0.84	5.27	<0.00	0.31	<62.80	<0.03	35.87	<0.31	5.76	465,000.00	<0.00	<0.00	<2.37	<0.04	<0.40	<0.00	<5.73	<0.00	1,636.74
HM16JV069	D17JN21a078	0.21	<0.18	7.83	<0.00	1.17	<43.49	0.03	79.01	<0.31	14.62	465,000.00	<0.00	0.01	<2.91	<0.05	<0.39	0.02	<5.69	<0.00	1,960.80
HM16JV069	D17JN21a076	0.04	2.5	4.43	<0.00	3.96	<155.86	<0.04	24,989.87	<1.11	11.99	465,000.00	<0.00	0.57	<6.58	<0.11	<1.17	2.7	18.81	<0.00	239.68
HM16JV076	D17JN21a207	1.28	<0.22	40.42	0.04	1.38	560.54	0.03	43.82	<0.47	10.74	465,000.00	<0.00	<0.00	3.45	164.36	0.81	0.02	74.62	<0.00	6
HM16JV076	D17JN21a206	2.01	9.42	99.37	0.08	1.23	<79.66	0.19	52.07	<0.70	19.37	465,000.00	<0.00	<0.00	6.98	0.32	<0.66	<0.00	<8.53	<0.00	6.66
HM16JV076	D17JN21a204	0.05	57.4	24.8	<0.00	0.07	<30.91	<0.03	16.17	<0.27	1.61	465,000.00	<0.00	<0.00	73.7	<0.02	<0.27	<0.00	<3.69	<0.00	1.29
HM16JV076	D17JN21a199	0.65	78.27	46.55	0.03	0.45	<39.66	<0.01	104.6	<0.24	4.01	465,000.00	<0.00	<0.00	107.05	<0.03	<0.31	<0.00	<4.18	<0.00	18.97
HM16JV076	D17JN21a194	0.04	0.54	20.34	<0.00	0.07	<46.63	<0.01	16.01	<0.24	0.7	465,000.00	<0.00	<0.00	<1.48	0.66	0.41	<0.00	<4.36	<0.00	1.96
HM16JV076	D17JN21a211	0.09	<0.13	8.41	0	0.05	<46.99	0.02	6.03	<0.21	0.42	465,000.00	0	<0.00	<1.59	0.05	<0.32	<0.00	<3.73	<0.00	1.98
HM16JV076	D17JN21a195	1.47	<0.12	50.46	0.04	2.72	<42.07	<0.01	75.7	<0.22	5.91	465,000.00	<0.00	<0.00	<1.64	<0.05	<0.30	<0.00	<4.46	<0.00	15.89
HM16JV076	D17JN21a203	6.61	<0.13	45.4	0.18	2.39	<34.69	<0.03	78.92	<0.35	10.74	465,000.00	<0.00	<0.00	<1.65	<0.04	<0.34	<0.00	<4.99	<0.00	7.14
HM16JV076	D17JN21a213	<0.00	<0.12	57.37	<0.00	<0.00	<39.32	<0.02	33.99	0.4	16.27	465,000.00	<0.00	<0.00	<1.68	<0.03	<0.29	0.01	<3.93	<0.00	12.96
HM16JV076	D17JN21a208	<0.01	<0.13	4.72	0	0	<31.84	<0.01	235.19	<0.32	0.06	465,000.00	<0.00	<0.00	<1.69	<0.05	<0.27	0.01	<4.04	0	11.47
HM16JV076	D17JN21a212	<0.00	<0.13	13.02	<0.00	0.01	<50.34	<0.02	11.75	<0.21	4.22	465,000.00	0	0	<1.71	<0.03	<0.31	<0.00	<3.85	0	4.47
HM16JV076	D17JN21a217	0.02	0.51	5.11	<0.00	<0.00	<34.96	<0.03	2.16	<0.25	0.33	465,000.00	<0.00	<0.00	<1.74	0.18	<0.30	<0.00	<4.18	<0.00	2.56

*All elements in ppm

Appendix V: Hemlo district pyrite mineral chemistry collected by LA-ICP-MS

Sample	Source Filename	Ag107	Al27	As75	Au197	Bi209	Ca43	Cd111	Co59	Cr53	Cu65	Fe57	Gd157	Hf178	K39	Mg24	Mn55	Mo95	Na23	Nb93	Ni60
HM16JV076	D17JN21a202	6.42	52.89	980.44	0.25	21.47	<37.65	<0.03	437.26	<0.30	94.87	465,000.00	<0.00	<0.00	<1.75	69.27	1.87	<0.00	<4.57	<0.00	23.4
HM16JV076	D17JN21a215	3.38	0.93	160.68	0.03	0.17	<44.73	<0.01	213.45	<0.36	4.23	465,000.00	<0.00	<0.00	<1.77	0.07	<0.33	<0.01	<3.87	0	92.6
HM16JV076	D17JN21a210	<0.01	0.15	6.52	<0.00	<0.00	<37.54	<0.01	89.97	<0.23	<0.05	465,000.00	<0.00	0	<1.80	0.08	<0.30	<0.00	<3.97	<0.00	16.52
HM16JV076	D17JN21a193	0.01	<0.16	29.82	<0.00	<0.00	<42.27	<0.02	129.34	<0.38	6.47	465,000.00	0.01	<0.00	<1.87	0.59	<0.38	<0.00	<5.19	<0.00	34.38
HM16JV076	D17JN21a216	<0.01	0.49	94.23	0	<0.00	<44.96	<0.02	177.41	<0.33	12.51	465,000.00	0.01	<0.00	<1.90	0.28	<0.35	<0.00	<4.83	<0.00	77.3
HM16JV076	D17JN21a209	<0.01	<0.14	38.72	<0.00	0.09	<45.45	<0.02	7.56	<0.31	2.15	465,000.00	<0.01	<0.00	<2.26	<0.07	<0.38	<0.00	<5.59	<0.00	2.18
HM16JV076	D17JN21a196	0.73	<0.16	146.56	0.07	2.35	<44.36	<0.01	115.94	<0.38	9.76	465,000.00	<0.01	<0.00	<2.48	<0.07	<0.40	<0.00	<6.46	<0.00	22.02
HM16JV076	D17JN21a200	0.68	<0.17	13.17	0.02	0.11	<56.71	<0.03	67.97	<0.32	1.78	465,000.00	<0.00	<0.00	<2.71	<0.07	<0.49	0.01	<6.95	<0.00	6.52
HM16JV076	D17JN21a197	0.84	<0.29	48.84	0.02	0.36	<80.03	<0.03	185.55	<0.80	5.63	465,000.00	<0.01	<0.00	<5.65	<0.10	<0.86	<0.00	<11.01	<0.00	23.6
HM16JV076	D17JN21a201	1.49	3.56	6.11	<0.00	2.67	199.94	<0.11	282.13	<0.81	0.67	465,000.00	0.4	<0.00	<6.68	63.89	1.35	0.16	22.18	<0.00	9.97
HM16JV076	D17JN21a214	<0.02	<0.48	<2.00	<0.01	0.14	<176.73	0.17	0.37	<1.42	1.13	465,000.00	<0.01	<0.01	<6.85	<0.25	<1.49	<0.02	<17.60	0.03	0.34
HM16JV076	D17JN21a205	0.38	27.83	4.48	<0.00	0.1	170.86	<0.08	24.72	<1.16	1.92	465,000.00	<0.00	<0.00	<7.04	5.7	<0.95	<0.01	<12.84	<0.00	7.42
HM16JV086	D17JN21a388	<0.00	0.24	14.9	<0.00	<0.00	<47.78	<0.01	210.93	<0.21	0.27	465,000.00	<0.00	<0.00	2.19	0.12	<0.31	<0.01	<3.74	<0.00	212.21
HM16JV086	D17JN21a378	<0.01	1.45	23.84	<0.00	<0.00	<42.15	<0.04	959.09	0.32	0.26	465,000.00	0.03	<0.00	3.26	0.15	<0.38	<0.01	<5.42	<0.00	1,075.60
HM16JV086	D17JN21a380	<0.00	<0.09	21.44	<0.00	<0.00	<28.74	<0.01	800.08	<0.21	0.14	465,000.00	<0.00	<0.00	<1.29	0.03	<0.25	<0.00	<4.05	<0.00	27.3
HM16JV086	D17JN21a389	0.01	<0.08	30.61	<0.00	0.03	<36.07	<0.01	380.45	<0.19	0.13	465,000.00	<0.00	<0.00	<1.33	0.23	<0.21	<0.00	<3.36	<0.00	803.41
HM16JV086	D17JN21a381	<0.00	<0.08	6.09	0.01	<0.00	<29.88	0.04	2,196.16	<0.24	<0.05	465,000.00	0.01	<0.00	<1.38	<0.03	<0.25	<0.00	<3.87	<0.00	107.56
HM16JV086	D17JN21a374	<0.01	0.11	1.09	0	0.05	<36.19	0.03	1,827.74	<0.19	0.12	465,000.00	<0.00	0	<1.54	0.2	<0.24	<0.00	<4.21	<0.00	59.61
HM16JV086	D17JN21a377	<0.00	0.12	38.11	<0.00	<0.00	<28.43	<0.02	4,191.00	<0.22	<0.05	465,000.00	<0.00	0.01	<1.57	0.08	<0.24	<0.00	<3.92	<0.00	951.4
HM16JV086	D17JN21a382	<0.00	<0.09	7.7	<0.00	0	<28.91	<0.02	6,334.55	<0.25	<0.07	465,000.00	<0.00	<0.00	<1.59	0.75	<0.28	<0.00	<3.67	<0.00	35.09
HM16JV086	D17JN21a385	0.21	<0.11	42.88	0	0.04	<24.98	<0.01	1,300.30	<0.26	0.27	465,000.00	<0.00	<0.00	<1.63	<0.03	<0.29	<0.00	<4.48	<0.00	792.6
HM16JV086	D17JN21a373	0.01	<0.12	0.55	<0.00	0.01	<28.46	<0.02	547.95	<0.23	0.22	465,000.00	<0.00	<0.00	<1.64	1.09	<0.32	<0.00	<4.26	<0.00	117.26
HM16JV086	D17JN21a384	0.28	<0.11	1.04	<0.00	0	<28.23	<0.02	1,219.33	<0.30	0.56	465,000.00	<0.00	<0.00	<1.69	0.32	2.16	<0.00	<3.95	<0.00	67.74
HM16JV086	D17JN21a386	0.01	<0.12	0.47	<0.00	0.01	<30.43	<0.02	339.89	0.24	0.09	465,000.00	<0.00	0.01	<1.70	<0.04	<0.29	<0.00	<4.09	<0.00	77.99
HM16JV086	D17JN21a391	7.48	<0.11	32.05	0.54	1.73	108.46	11.7	185.69	<0.23	1,244.37	465,000.00	<0.00	<0.00	<1.81	0.2	9.78	<0.00	<3.62	<0.00	674.18
HM16JV086	D17JN21a387	<0.00	<0.21	<0.47	<0.00	0.01	<42.54	0.03	642.07	<0.23	0.36	465,000.00	<0.00	<0.00	<1.96	0.12	5.84	<0.01	<4.42	<0.00	134.13
HM16JV086	D17JN21a379	<0.01	<0.16	23.63	<0.00	<0.00	48.92	<0.03	149.39	<0.25	<0.07	465,000.00	<0.00	<0.00	<2.05	<0.06	0.39	<0.01	<5.90	<0.00	275.48
HM16JV086	D17JN21a375	0.01	<0.14	17.45	<0.00	0.02	<66.36	0.06	1,118.82	<0.38	0.9	465,000.00	<0.01	0.11	<2.13	<0.05	1.02	<0.00	<6.43	<0.00	1,146.44
HM16JV086	D17JN21a376	<0.00	0.22	13.36	<0.00	<0.00	<77.39	<0.02	452.99	<0.58	<0.10	465,000.00	<0.01	<0.00	<3.17	<0.06	<0.46	<0.01	32.63	<0.00	979.88
HM16JV086	D17JN21a392	0.4	3.37	98.16	<0.00	0.03	<75.60	<0.03	4,812.13	<0.65	4.46	465,000.00	<0.00	<0.00	<3.27	<0.14	<0.68	<0.01	<8.98	<0.00	322.9
HM16JV086	D17JN21a390	1.64	0.31	50.07	<0.01	<0.00	<69.08	<0.04	3,587.47	<0.41	5.93	465,000.00	<0.00	<0.00	<3.92	<0.09	<0.58	<0.00	<8.86	<0.00	24.91
HM16JV092	D16JN20a183	<0.02	<0.45	7.23	<0.01	<0.01	<106.03	<0.09	273.47	<0.66	0.53	465,000.00	<0.00	<0.00	<4.33	<0.09	<0.77	<0.01	<10.49	<0.00	436.11
HM16JV092	D16JN20a165	7.09	0.39	0.95	0.03	3.22	<28.82	<0.04	82.96	<0.24	3,667.69	465,000.00	<0.00	0	<1.20	2.04	<0.24	<0.00	<2.59	<0.00	134.2
HM16JV092	D16JN20a178	2.8	0.21	1.24	0.01	0.5	<33.65	0.19	64.17	<0.26	846.45	465,000.00	0.01	<0.00	<1.31	0.47	0.34	0.03	<2.86	<0.00	278.54
HM16JV092	D16JN20a184	<0.01	<0.12	<0.43	<0.00	<0.00	<38.31	<0.03	0.02	<0.25	<0.08	465,000.00	0.01	<0.00	<1.62	<0.04	<0.23	<0.00	<2.98	<0.00	124.5
HM16JV092	D16JN20a162	<0.01	<0.13	8.75	<0.00	<0.00	<48.90	<0.03	47.61	<0.28	0.35	465,000.00	<0.00	<0.00	<1.64	0.15	<0.21	<0.00	<3.07	<0.00	379.15
HM16JV092	D16JN20a173	<0.01	<0.17	<0.54	<0.00	<0.00	<41.71	<0.04	80.41	<0.24	0.24	465,000.00	<0.00	<0.00	<1.53	0.06	<0.26	<0.01	<3.26	<0.00	89.12
HM16JV092	D16JN20a170	<0.01	0.18	1.62	<0.00	<0.00	<33.96	<0.02	93.84	<0.20	<0.09	465,000.00	0.01	0.01	<1.44	<0.05	<0.23	<0.00	<3.35	0	90.38
HM16JV092	D16JN20a186	0.88	0.16	2.24	<0.00	0.64	<37.60	<0.04	223.6	<0.27	91.8	465,000.00	0	<0.00	<1.53	0.15	<0.27	<0.00	<3.45	0	164.83
HM16JV092	D16JN20a181	1.02	<0.17	2.24	<0.00	0.22	<49.52	0.22	92.69	<0.33	126.42	465,000.00	<0.01	<0.00	<1.68	<0.05	<0.31	0	<3.56	<0.00	100.94
HM16JV092	D16JN20a174	<0.01	<0.17	<0.59	<0.00	<0.00	<45.41	<0.04	27.53	<0.26	0.4	465,000.00	0	<0.00	<1.65	<0.04	<0.27	<0.01	<3.62	<0.00	122.47
HM16JV092	D16JN20a163	<0.01	<0.16	1.12	<0.00	<0.01	<48.81	<0.05	1.87	<0.31	0.25	465,000.00	0.02	0	<2.03	<0.06	<0.25	0.01	<3.62	<0.00	424.64
HM16JV092	D16JN20a177	<0.01	<0.17	<0.63	<0.00	<0.00	<44.19	<0.03	5.02	<0.39	0.1	465,000.00	0.01	<0.00	<1.88	<0.05	<0.29	<0.00	<3.75	<0.00	131.59
HM16JV092	D16JN20a172	<0.01	<0.16	<0.66	<0.00	<0.00	<52.39	<0.03	64.18	<0.35	0.41	465,000.00	<0.00	<0.00	<1.66	<0.05	<0.32	<0.01	<3.83	<0.00	156.62
HM16JV092	D16JN20a185	0.07	<0.16	3.43	0	0.06	<43.27	<0.05	386.6	<0.35	1.95	465,000.00	<0.00	0	<2.01	0.13	<0.30	<0.00	<3.91	<0.00	853.88
HM16JV092	D16JN20a166	<0.01	<0.17	<0.68	<0.00	<0.01	<37.44	<0.07	12,048.47	<0.33	<0.11	465,000.00	0.01	<0.00	<1.70	<0.09	<0.34	<0.01	<3.93	0.01	12.03
HM16JV092	D16JN20a179	0.89	<0.18	0.84	<0.00	0.2	<42.19	<0.02	4.09	<0.24	1,724.02	465,000.00	<0.00	<0.00	<1.63	2.46	0.5	<0.00	<3.94	<0.00	1,310.65
HM16JV092	D16JN20a175	<0.01	<0.14	<0.62	<0.00	<0.00	<39.02	<0.04	32.51	<0.29	0.14	465,000.00	<0.00	0	<1.48	<0.09	<0.31	<0.01	<3.98	<0.00	200.56
HM16JV092	D16JN20a180	<0.01	<0.18	1.7	<0.00	0.05	<50.50	<0.03	80.66	<0.33	0.46	465,000.00	<0.01	<0.00	<2.01	<0.06	<0.32	<0.00	<4.06	<0.00	209.04
HM16JV092	D16JN20a176	<0.01	<0.15	<0.62	<0.00	<0.00	<38.43	<0.04	4.99	<0.32	0.09	465,000.00	<0.00	<0.00	<1.55	<0.09	<0.31	<0.00	<4.12	0	447.97

*All elements in ppm

Appendix V: Hemlo district pyrite mineral chemistry collected by LA-ICP-MS

Sample	Source Filename	Ag107	Al27	As75	Au197	Bi209	Ca43	Cd111	Co59	Cr53	Cu65	Fe57	Gd157	Hf178	K39	Mg24	Mn55	Mo95	Na23	Nb93	Ni60
HM16JV092	D16JN20a168	<0.01	<0.14	2.22	<0.00	<0.00	<55.38	0.06	217.13	<0.40	0.76	465,000.00	<0.00	<0.00	<1.95	<0.07	<0.30	<0.00	<4.16	<0.00	178.57
HM16JV092	D16JN20a169	0.03	<0.14	<0.58	<0.00	0.01	<47.63	<0.03	24.19	<0.27	10.1	465,000.00	0	<0.00	<1.67	<0.07	<0.30	<0.01	<4.20	<0.00	51.03
HM16JV092	D16JN20a164	296.05	<0.18	<0.67	0.2	8.92	<57.73	20.95	10.97	<0.37	40,454.19	465,000.00	0.01	<0.00	<2.17	<0.07	4.69	0.1	<4.37	<0.00	109.02
HM16JV092	D16JN20a167	<0.02	<0.19	4.02	<0.00	<0.01	<56.82	<0.06	332.92	<0.46	0.33	465,000.00	<0.01	0.01	<2.13	0.09	<0.34	<0.00	<4.61	<0.00	261.36
HM16JV092	D16JN20a182	0.96	<0.22	1.05	<0.00	0.42	<57.36	0.06	3,886.67	<0.34	45.84	465,000.00	0.02	<0.00	<1.84	<0.06	<0.35	<0.00	<4.93	<0.00	169.06
HM16JV092	D16JN20a170	<0.02	<0.28	<0.87	0	<0.01	<65.33	<0.04	2.72	<0.39	0.19	465,000.00	0.03	<0.00	<2.76	<0.09	<0.44	<0.01	<6.37	<0.00	121.15
HM16JV092	D16JN20a171	0.13	<0.35	1.67	<0.00	<0.01	<93.10	<0.05	80.86	<0.69	154.52	465,000.00	<0.00	<0.00	<3.39	<0.12	<0.56	<0.01	<7.45	0.01	492.44
HM16JV098	D16JN20a157	1.58	0.59	167.54	0	12.06	<33.83	<0.04	47.99	<0.21	22.49	465,000.00	<0.01	<0.00	<1.36	0.23	0.78	0	3.12	<0.00	2.72
HM16JV098	D16JN20a141	0.18	17.99	214	0	5.32	<38.56	<0.05	320.45	<0.24	1.78	465,000.00	<0.01	0.14	<1.57	<0.04	<0.26	<0.00	10.33	<0.00	103.15
HM16JV098	D16JN20a138	0.16	89.18	95.66	0.01	1.24	<68.46	<0.05	265.32	<0.45	1.06	465,000.00	<0.00	0.01	<3.64	<0.09	<0.48	0.02	79.81	<0.00	82.94
HM16JV098	D16JN20a147	<0.01	<0.18	10.14	<0.00	<0.01	<37.12	<0.03	647.99	<0.24	0.75	465,000.00	0.01	<0.00	<1.78	<0.04	<0.26	<0.00	<3.38	<0.00	432.4
HM16JV098	D16JN20a158	0.02	<0.14	758.45	0.01	2.47	<43.97	<0.03	248.26	<0.32	2.67	465,000.00	<0.01	<0.00	<1.50	<0.04	<0.30	<0.00	<3.49	<0.00	97.53
HM16JV098	D16JN20a150	0.05	<0.13	173.41	0.01	2.09	45.03	<0.04	9.14	<0.25	1.59	465,000.00	<0.00	0.06	<1.66	0.2	3.6	<0.00	<3.65	0.03	17.31
HM16JV098	D16JN20a134	0.15	2.84	858.93	<0.00	0.24	<53.09	<0.05	57.39	<0.31	2.09	465,000.00	<0.00	<0.00	<1.88	<0.05	<0.29	<0.01	<3.83	0.25	10.08
HM16JV098	D16JN20a161	1.91	0.24	97.41	0.02	10.98	<52.20	<0.04	616.61	<0.31	81.34	465,000.00	0	0	<1.83	0.13	<0.26	<0.00	<4.28	<0.00	1,604.84
HM16JV098	D16JN20a142	0.14	3.66	56.07	<0.00	0.41	<51.16	<0.05	308.73	<0.31	13.4	465,000.00	<0.00	18.28	<1.79	0.86	<0.33	<0.00	<4.39	0.03	68.67
HM16JV098	D16JN20a140	0.03	<0.22	284.79	0	0.14	<51.93	<0.05	17.84	<0.36	0.49	465,000.00	<0.02	<0.00	<2.15	0.14	<0.38	<0.00	<4.42	<0.00	10.57
HM16JV098	D16JN20a141	<0.02	4.05	135.92	0.01	0.86	<69.68	<0.09	31.3	<0.44	0.25	465,000.00	0.05	0.01	<2.84	<0.08	<0.46	<0.00	<6.04	<0.00	12.14
HM16JV098	D16JN20a143	0.14	3.44	359.87	0.03	3.94	<72.77	<0.11	0.27	<0.47	3.32	465,000.00	<0.00	<0.00	<3.31	0.42	<0.52	<0.01	<6.07	0.03	10.67
HM16JV104	D16JN20a544	1.44	<0.12	610.54	0.01	3.11	<34.16	0.04	17,691.68	<0.22	518.18	465,000.00	<0.00	<0.00	3.11	<0.05	<0.22	<0.00	9.17	<0.00	443.91
HM16JV104	D16JN20a532	0.47	20.96	17.95	<0.00	11.9	<62.97	<0.02	2,446.56	<0.55	1.46	465,000.00	<0.00	<0.00	<2.92	4.45	<0.48	<0.00	13.91	<0.00	2,248.37
HM16JV104	D16JN20a529	<0.03	6.39	43.06	<0.01	0.27	<144.92	<0.08	1,982.51	1.24	<0.34	465,000.00	<0.01	<0.00	<8.30	<0.24	<1.49	<0.03	<17.13	<0.00	1,940.32
HM16JV104	D16JN20a543	0.11	<0.09	20.17	0.01	0.68	<33.62	<0.02	413.37	<0.23	66.34	465,000.00	<0.00	0.01	<1.40	0.11	0.64	<0.00	<3.20	<0.00	1,201.00
HM16JV104	D16JN20a541	0.03	<0.12	38.09	<0.00	0.17	<49.34	0.03	6,046.79	<0.31	14.25	465,000.00	<0.01	<0.00	<1.70	0.08	<0.28	0.01	<3.80	0	330.78
HM16JV104	D16JN20a536	<0.01	<0.13	140.04	<0.00	0.05	<38.18	<0.01	5,061.94	<0.20	0.75	465,000.00	<0.00	<0.00	<1.73	<0.03	<0.24	<0.00	<3.85	<0.00	493.46
HM16JV104	D16JN20a545	0.4	0.51	211.63	0.01	2.18	<35.33	0.02	514.44	<0.20	206.53	465,000.00	<0.00	<0.00	<1.79	1.1	<0.22	0.01	<3.95	0	1,487.95
HM16JV104	D16JN20a528	7.34	<0.20	98.53	0.31	7.62	<49.12	0.02	5,615.50	<0.28	44.61	465,000.00	<0.00	<0.00	<1.81	<0.07	<0.34	<0.00	<4.21	<0.00	1,091.95
HM16JV104	D16JN20a534	<0.00	<0.15	35.18	<0.00	<0.00	<54.03	<0.02	2,042.79	<0.18	0.09	465,000.00	<0.00	<0.00	<1.80	1.2	<0.26	<0.02	<4.25	<0.00	577.92
HM16JV104	D16JN20a527	0.04	<0.17	55.64	<0.00	0.84	74	<0.02	1,565.86	<0.22	20.57	465,000.00	0.01	<0.00	<1.47	0.18	0.79	0.01	<4.32	<0.00	1,898.22
HM16JV104	D16JN20a530	0.04	<0.19	24.72	<0.00	1.68	417.37	<0.02	806.36	<0.22	0.32	465,000.00	0.01	<0.00	<1.88	3.32	3.87	<0.01	<4.35	<0.00	1,110.03
HM16JV104	D16JN20a542	9.02	<0.13	6.41	0.03	5.64	<48.41	0.34	27.08	<0.30	2,691.16	465,000.00	<0.01	<0.00	<2.00	<0.07	0.37	<0.01	<4.40	<0.00	1,333.56
HM16JV104	D16JN20a533	0.01	<0.17	20.85	0	0.11	<55.12	0.02	7,493.20	<0.28	0.44	465,000.00	<0.00	<0.00	<2.18	0.11	<0.28	0.01	<4.61	<0.00	877.82
HM16JV104	D16JN20a525	12.62	<0.15	1.69	0.03	13.96	<39.07	0.11	6.07	<0.25	3.91	465,000.00	<0.01	<0.00	<1.86	<0.03	<0.31	0.01	<5.03	0.01	4,206.78
HM16JV104	D16JN20a540	0.88	<0.15	11.19	0.02	2.85	<55.96	0.02	128.68	<0.43	6,838.64	465,000.00	<0.00	<0.00	<1.69	<0.06	0.88	0.01	<5.05	0	605.87
HM16JV104	D16JN20a538	3.79	<0.19	336.86	0	2.13	<56.10	0.72	1,819.04	<0.23	788.86	465,000.00	<0.00	<0.00	<1.90	<0.05	<0.30	<0.00	<5.12	0	2,471.59
HM16JV104	D16JN20a524	0.01	<0.17	66.92	<0.00	<0.00	<49.90	<0.02	701.54	<0.29	0.13	465,000.00	<0.00	<0.00	<1.78	<0.04	<0.33	<0.00	<5.19	<0.00	4,842.31
HM16JV104	D16JN20a523	0.01	<0.17	53.44	<0.00	0.26	<55.84	0.03	15,850.21	<0.32	0.16	465,000.00	<0.00	<0.00	<1.84	0.61	<0.35	0.04	<5.30	<0.00	690.7
HM16JV104	D16JN20a535	0.01	0.4	158.33	0	0.4	<65.23	<0.02	1,297.65	<0.33	0.22	465,000.00	0.01	<0.00	<2.52	0.76	<0.36	<0.01	<5.34	0.01	2,888.84
HM16JV104	D16JN20a539	0.08	<0.19	12.3	<0.00	1.03	<53.46	<0.02	532.27	<0.36	0.26	465,000.00	<0.00	<0.00	<2.09	<0.05	<0.34	<0.00	<5.59	<0.00	1,720.88
HM16JV104	D16JN20a537	0.06	<0.22	51.27	0	1.66	<59.05	<0.02	815.73	0.31	0.89	465,000.00	<0.00	<0.00	<2.09	<0.04	<0.37	0.01	<6.01	0	3,212.59
HM16JV104	D16JN20a546	<0.01	<0.19	22.9	<0.00	0.02	<71.51	<0.02	874.42	<0.39	<0.12	465,000.00	<0.01	0.02	<2.83	<0.04	0.62	<0.00	<6.76	<0.00	1,693.76
HM16JV104	D16JN20a522	0.02	0.3	38.26	<0.00	0.37	<52.89	<0.02	1,697.81	<0.26	0.11	465,000.00	<0.00	0.12	<2.39	0.25	<0.42	<0.01	<6.77	<0.00	1,555.53
HM16JV111	D16JN20a066	0.34	65.72	15.68	0	3.44	85.4	<0.04	17.91	<0.30	3.85	465,000.00	0.13	1.31	12.48	10.68	0.95	<0.00	11.78	0.1	283.41
HM16JV111	D16JN20a056	1.59	5.94	15.39	<0.00	2.64	161.11	<0.08	213.12	<0.89	2.37	465,000.00	<0.00	<0.01	27.86	23.07	4.95	0.18	14.53	<0.00	111.6
HM16JV111	D16JN20a054	12.51	<0.28	8.94	0.38	9.01	<72.34	<0.06	177.32	0.63	207.74	465,000.00	<0.00	<0.00	4.79	0.12	<0.39	<0.00	17.51	<0.00	283.44
HM16JV111	D16JN20a058	0.13	5.33	13.01	<0.01	2.26	358.47	<0.12	18.32	1.85	0.78	465,000.00	0.19	0.05	<5.43	<0.12	<0.89	<0.01	<10.31	0.35	139.05
HM16JV111	D16JN20a058	1.45	<0.51	7.57	<0.01	3.51	<101.13	<0.13	34.8	<0.98	1.64	465,000.00	<0.00	<0.01	<5.10	<0.12	<1.04	<0.01	<10.39	<0.00	38.78
HM16JV111	D16JN20a053	<0.07	1.45	11.73	<0.01	0.42	<181.08	<0.24	93.22	<1.29	0.92	465,000.00	<0.01	0.31	<6.98	2.64	<1.22	<0.02	<14.71	<0.00	83.26
HM16JV111	D16JN20a060	1.59	9.21	54.46	0.11	9.91	271.93	<0.26	232.03	<1.35	6.31	465,000.00	<0.01	0.4	<8.11	12.27	<1.53	<0.03	<14.72	<0.00	205.58
HM16JV111	D16JN20a067	0.02	<0.15	18.08	<0.00	0.04	<47.09	<0.04	512.84	<0.24	<0.11	465,000.00	<0.00	0.04	<1.74	<0.04	<0.29	0	<3.04	<0.00	770.23

*All elements in ppm

Appendix V: Hemlo district pyrite mineral chemistry collected by LA-ICP-MS

Sample	Source Filename	Ag107	Al27	As75	Au197	Bi209	Ca43	Cd111	Co59	Cr53	Cu65	Fe57	Gd157	Hf178	K39	Mg24	Mn55	Mo95	Na23	Nb93	Ni60
HM16JV111	D16JN20a049	<0.02	<0.18	9.44	<0.00	<0.01	<36.43	<0.02	47.16	<0.33	0.11	465,000.00	<0.00	0	<1.31	<0.05	<0.28	<0.01	<3.13	<0.00	172.25
HM16JV111	D16JN20a060	0.74	<0.15	12.64	<0.00	1.04	<45.17	0.09	304.14	<0.29	1.77	465,000.00	<0.00	0.01	<1.74	<0.03	<0.32	<0.01	<3.18	<0.00	147.31
HM16JV111	D16JN20a050	<0.01	<0.19	9.45	0.01	<0.01	<45.87	<0.04	223.94	<0.30	0.19	465,000.00	<0.00	<0.00	<1.60	<0.05	<0.29	<0.01	<3.22	0	104.19
HM16JV111	D16JN20a040	<0.02	<0.19	6.76	<0.00	0.01	<47.89	<0.04	15.62	<0.34	0.43	465,000.00	<0.00	<0.00	<1.94	<0.05	<0.28	<0.01	<3.31	<0.00	156.49
HM16JV111	D16JN20a039	0.05	<0.20	11.25	<0.00	0.01	<44.43	<0.05	768.58	<0.34	<0.11	465,000.00	<0.00	0	<1.79	<0.05	<0.29	<0.01	<3.35	0	236.9
HM16JV111	D16JN20a057	<0.01	<0.15	9.32	<0.00	0.04	<39.14	<0.04	35.41	<0.33	<0.09	465,000.00	<0.00	0.03	<1.71	<0.03	<0.27	<0.01	<3.36	<0.00	118.13
HM16JV111	D16JN20a042	0.06	<0.21	23.15	<0.00	0.05	<41.43	<0.06	7.49	<0.36	0.35	465,000.00	<0.01	<0.00	<2.17	<0.05	<0.32	<0.00	<3.51	<0.00	1,308.13
HM16JV111	D16JN20a063	<0.01	<0.18	11.74	<0.00	0.01	<48.33	<0.05	484.74	<0.27	<0.11	465,000.00	<0.00	<0.00	<1.57	<0.06	<0.29	<0.00	<3.56	0	44.67
HM16JV111	D16JN20a065	0.02	<0.17	10.03	<0.00	0.01	<42.28	<0.03	102.31	<0.23	0.18	465,000.00	<0.00	0	<1.55	<0.06	<0.27	<0.00	<3.62	<0.00	92.57
HM16JV111	D16JN20a059	<0.02	<0.20	13.07	0	<0.01	<43.37	<0.05	15.33	<0.29	<0.12	465,000.00	<0.00	<0.00	<1.97	<0.06	<0.36	<0.01	<4.07	0	215.18
HM16JV111	D16JN20a051	0.06	<0.27	8.63	<0.00	0.07	75.08	<0.06	159.59	<0.42	1.31	465,000.00	<0.01	<0.00	<2.13	<0.07	<0.39	<0.01	<4.50	<0.00	30.75
HM16JV111	D16JN20a062	<0.02	<0.27	4.1	<0.00	<0.01	<71.06	0.13	14.68	<0.36	<0.15	465,000.00	<0.00	0.04	<2.57	<0.07	<0.42	<0.01	<5.35	<0.00	66.03
HM16JV111	D16JN20a064	<0.02	10.2	10.42	<0.01	0.19	<79.37	<0.05	168.21	0.54	0.29	465,000.00	0.81	0.02	<2.58	<0.10	0.54	<0.01	<5.80	0.34	85.12
HM16JV111	D16JN20a038	<0.02	<0.28	21.76	<0.00	0.03	<63.63	<0.04	580.5	<0.51	0.35	465,000.00	<0.00	<0.00	<2.67	0.26	<0.43	<0.00	<6.31	<0.00	248.5
HM16JV111	D16JN20a068	<0.02	<0.27	12.64	<0.00	<0.01	<72.29	0.15	21.2	<0.44	0.18	465,000.00	<0.01	0.07	<3.17	<0.06	<0.44	<0.01	<6.41	<0.00	306.85
HM16JV111	D16JN20a061	<0.03	<0.37	11.63	<0.00	0.04	<101.56	<0.10	1,779.85	<0.67	0.44	465,000.00	<0.00	<0.00	<3.97	<0.07	<0.78	<0.01	<7.31	<0.00	106.29
HM16JV111	D16JN20a055	0.12	<0.41	13.19	<0.00	0.37	<92.88	<0.06	131.5	<0.54	2.32	465,000.00	<0.00	<0.01	<3.36	<0.10	<0.67	<0.00	<7.50	<0.00	50.56
HM16JV111	D16JN20a052	0.05	8.54	16.55	<0.00	0.76	<98.37	<0.08	339.17	<0.58	<0.17	465,000.00	<0.01	0.04	4.74	1.27	<0.56	<0.01	<8.14	<0.00	381.29
HM16JV138	D17JN21a451	<0.00	<0.07	18	0	0	<33.14	<0.02	1,572.96	<0.18	0.07	465,000.00	<0.00	<0.00	<1.35	<0.06	<0.25	<0.00	<3.26	<0.00	72.78
HM16JV138	D17JN21a460	0	0.09	8.03	<0.00	0.02	<23.33	<0.01	1,933.06	<0.24	0.35	465,000.00	<0.00	0	<1.37	<0.02	<0.26	0.01	<3.67	0	61.96
HM16JV138	D17JN21a464	4.9	<0.11	92.58	0.04	31.71	<37.44	0.18	293.55	<0.15	97.47	465,000.00	<0.00	<0.00	<1.38	<0.05	<0.25	<0.00	<3.29	0	338.06
HM16JV138	D17JN21a458	0.01	<0.11	1.35	0	0.16	<34.64	<0.01	23.87	<0.23	0.48	465,000.00	0.01	<0.00	<1.43	<0.03	<0.26	<0.00	<3.10	<0.00	1,714.63
HM16JV138	D17JN21a465	<0.00	<0.11	9.84	<0.00	0.03	<32.81	<0.03	1,986.26	<0.14	0.07	465,000.00	<0.00	<0.00	<1.46	<0.05	<0.29	0	<3.97	<0.00	27.33
HM16JV138	D17JN21a471	0.01	<0.09	7.38	<0.00	0.32	<34.95	0.04	1,478.63	0.21	<0.06	465,000.00	<0.00	<0.00	<1.51	0.04	<0.26	<0.00	<3.63	<0.00	493.64
HM16JV138	D17JN21a469	<0.00	<0.15	1.87	<0.00	0.98	<39.77	<0.01	59.71	<0.34	0.11	465,000.00	<0.00	<0.00	<1.55	<0.03	<0.26	<0.00	5.25	<0.00	722.9
HM16JV138	D17JN21a463	0.02	0.15	20.36	0.01	0.15	<38.83	<0.04	571.41	<0.21	0.34	465,000.00	<0.00	<0.00	<1.57	<0.05	<0.28	<0.00	<4.28	0	306.29
HM16JV138	D17JN21a466	<0.00	<0.09	0.56	<0.00	0	<25.94	<0.02	31.98	<0.15	<0.05	465,000.00	<0.00	<0.00	<1.58	0.05	<0.27	0.01	<3.82	0	94.12
HM16JV138	D17JN21a456	0.01	0.12	14.8	0	0.68	<33.84	0.03	298.99	<0.25	1.94	465,000.00	<0.00	<0.00	<1.64	0.04	<0.26	0.13	<3.86	<0.00	1,238.52
HM16JV138	D17JN21a452	0	<0.11	204.58	<0.00	0.02	<40.30	<0.03	4,229.87	<0.27	<0.06	465,000.00	<0.00	<0.00	<1.64	<0.06	<0.32	0.03	<4.09	<0.00	403.91
HM16JV138	D17JN21a461	<0.00	<0.09	4.39	<0.00	0.02	<28.44	0.02	334.03	<0.24	<0.06	465,000.00	<0.00	<0.00	<1.65	0.06	<0.27	<0.00	<3.68	<0.00	431.33
HM16JV138	D17JN21a459	0.01	<0.13	17.89	<0.00	0.03	<38.62	0.02	3,846.51	0.34	<0.05	465,000.00	<0.00	<0.00	<1.67	<0.04	<0.31	<0.01	<4.09	<0.00	597.42
HM16JV138	D17JN21a457	0.08	2.21	3.16	0.01	9.04	<33.96	0.01	10,789.96	<0.22	9	465,000.00	<0.00	<0.00	<1.68	0.17	<0.27	<0.01	<3.85	<0.00	95.84
HM16JV138	D17JN21a450	0.01	0.34	29.88	0.01	4.77	33.76	<0.02	132.5	<0.23	0.64	465,000.00	<0.00	0.01	<1.69	<0.05	<0.30	<0.00	<3.64	<0.00	148.21
HM16JV138	D17JN21a473	0.01	<0.12	15.77	<0.00	0.11	<43.19	<0.03	2,006.02	<0.24	0.29	465,000.00	0.03	<0.00	<1.87	<0.07	<0.33	<0.00	<4.26	0	554.4
HM16JV138	D17JN21a462	0.38	<0.14	6.6	<0.00	2.98	<40.35	<0.04	32.21	0.43	29.04	465,000.00	<0.00	<0.00	<1.91	<0.04	<0.32	<0.00	<4.81	<0.00	547.59
HM16JV138	D17JN21a454	<0.00	<0.13	9.78	0.01	<0.00	<59.21	<0.02	791.31	<0.34	0.29	465,000.00	<0.00	<0.00	<2.07	<0.05	<0.33	<0.00	<5.59	<0.00	168.27
HM16JV138	D17JN21a455	<0.00	0.27	19.72	<0.00	0.05	<52.37	<0.02	73.33	<0.43	<0.09	465,000.00	<0.00	<0.00	<2.13	<0.05	<0.37	<0.00	<5.41	<0.00	523.77
HM16JV138	D17JN21a474	0.7	0.53	20.54	<0.00	13.17	<56.23	<0.04	2,214.04	<0.40	2.16	465,000.00	0.03	0.01	<2.65	<0.05	<0.49	0.02	<6.60	<0.00	3,014.03
HM16JV138	D17JN21a467	0.02	0.36	<0.65	<0.00	0.23	<64.46	<0.01	5.37	<0.35	0.68	465,000.00	0.06	<0.00	<2.94	<0.11	<0.53	0.18	<6.93	<0.00	529.56
HM16JV138	D17JN21a453	<0.01	<0.34	12.8	<0.00	1.87	<106.37	<0.05	246.69	<0.60	0.53	465,000.00	<0.00	<0.01	<4.08	2.29	38.28	<0.01	<11.15	0.05	812.73
HM16JV138	D17JN21a468	<0.01	0.37	25.14	0.01	0.14	<111.98	<0.03	121.92	0.89	<0.15	465,000.00	<0.00	<0.00	<4.83	0.36	<0.69	<0.00	<11.16	<0.00	697.19
HM16JV139	D16JN20a499	0.17	<0.16	9.53	<0.00	0.07	<46.90	<0.02	2,242.68	<0.31	0.16	465,000.00	<0.00	0.09	<2.59	0.21	<0.31	0.06	7.49	<0.00	525.23
HM16JV139	D16JN20a520	<0.02	<0.35	<1.45	<0.00	0.01	<132.00	<0.06	4,990.30	<0.75	<0.24	465,000.00	<0.00	<0.00	6.29	<0.15	<0.82	<0.00	<10.62	<0.00	178.14
HM16JV139	D16JN20a503	<0.01	<0.14	10.5	<0.00	<0.00	<33.56	<0.01	429.07	<0.26	0.06	465,000.00	<0.00	<0.00	<1.39	<0.05	<0.28	<0.00	<3.58	<0.00	751.29
HM16JV139	D16JN20a519	<0.01	0.19	0.8	<0.00	<0.00	<41.71	0.03	103.14	<0.21	<0.07	465,000.00	<0.00	<0.00	<1.82	0.13	<0.28	0.02	<3.63	<0.00	166.01
HM16JV139	D16JN20a504	<0.01	0.46	9.16	<0.00	<0.00	<50.12	<0.01	365.6	<0.27	0.19	465,000.00	0	<0.00	<1.58	0.66	<0.26	<0.00	<3.65	<0.00	663.11
HM16JV139	D16JN20a518	0.01	0.19	5.44	0.01	<0.00	<46.71	0.06	418.66	<0.24	<0.07	465,000.00	<0.00	<0.00	<1.78	<0.04	<0.26	0	<3.76	0	548.46
HM16JV139	D16JN20a521	32.41	<0.14	10.48	0.21	0.49	<41.90	<0.02	317.32	<0.19	0.8	465,000.00	<0.00	<0.00	<1.63	<0.05	<0.29	<0.00	<4.23	<0.00	2,403.70
HM16JV139	D16JN20a501	0.13	4.28	2.77	0.01	0.56	<44.99	<0.02	931.35	<0.18	0.34	465,000.00	<0.00	0	<1.71	<0.03	0.34	0.01	<4.23	<0.00	962.09
HM16JV139	D16JN20a517	0.01	0.6	2.58	<0.00	0.01	<58.99	<0.02	650.35	<0.35	0.15	465,000.00	<0.00	0.01	<1.95	0.83	<0.28	0	<4.23	0.01	945.72

*All elements in ppm

Appendix V: Hemlo district pyrite mineral chemistry collected by LA-ICP-MS

Sample	Source Filename	Ag107	Al27	As75	Au197	Bi209	Ca43	Cd111	Co59	Cr53	Cu65	Fe57	Gd157	Hf178	K39	Mg24	Mn55	Mo95	Na23	Nb93	Ni60
HM16JV139	D16JN20a500	1.97	6.08	17.86	0.02	0.18	<35.98	<0.02	594.8	<0.18	1.74	465,000.00	<0.00	<0.00	<1.65	<0.04	<0.22	<0.00	<4.26	<0.00	915.98
HM16JV139	D16JN20a502	<0.01	<0.17	11.03	<0.00	0.01	<40.36	<0.01	527.48	<0.21	0.11	465,000.00	<0.00	0	<1.69	<0.06	<0.30	<0.00	<4.52	<0.00	1,220.61
HM16JV139	D16JN20a506	<0.01	<0.12	1.64	<0.01	0.01	<53.23	<0.02	251.38	<0.27	0.26	465,000.00	<0.00	0	<1.91	<0.06	<0.31	<0.00	<4.73	<0.00	132.09
HM16JV139	D16JN20a505	<0.01	<0.13	1.92	<0.00	<0.00	<64.49	<0.02	519.67	<0.23	0.13	465,000.00	<0.00	<0.00	<2.00	<0.04	<0.31	<0.00	<5.03	<0.00	355.22
HM16JV139	D16JN20a497	<0.00	15.06	30.71	<0.00	0	<46.57	<0.02	1,265.74	<0.31	0.35	465,000.00	<0.00	<0.00	<1.99	0.94	<0.28	<0.00	<5.11	<0.00	2,152.58
HM16JV139	D16JN20a507	<0.01	<0.14	1.92	<0.00	<0.00	<56.59	<0.04	452.76	<0.30	0.12	465,000.00	<0.00	<0.00	<2.17	<0.11	<0.33	<0.00	<5.22	<0.00	184.46
HM16JV139	D16JN20a498	0.3	<0.19	34.19	<0.00	0.09	<49.26	<0.02	1,967.06	<0.28	0.79	465,000.00	<0.00	0.02	<2.34	0.15	<0.27	<0.00	<5.22	<0.00	1,843.23
HM16JV139	D16JN20a510	<0.01	0.67	1.58	<0.00	<0.00	<52.28	<0.01	118.89	<0.26	0.12	465,000.00	<0.00	0	<1.82	<0.04	<0.31	<0.00	<5.61	<0.00	348.23
HM16JV139	D16JN20a508	<0.01	<0.15	38.01	<0.00	<0.00	63.09	<0.05	1,532.21	<0.28	<0.07	465,000.00	<0.00	<0.00	<2.26	<0.07	<0.36	<0.00	<5.89	<0.00	1,513.20
HM16JV139	D16JN20a509	0.03	8.04	32.32	<0.00	<0.00	<50.71	0.03	1,756.49	0.37	0.09	465,000.00	<0.00	<0.00	<2.06	<0.03	<0.32	<0.00	<5.96	<0.00	1,800.68
HM16JV139	D16JN20a496	0.02	<0.22	<0.82	<0.00	0.04	<63.10	<0.03	1,027.27	0.58	0.47	465,000.00	<0.00	<0.00	<3.02	<0.12	<0.45	<0.00	<6.52	<0.00	1,877.98
HM16JV147	D16JN20a350	0.45	0.13	104.68	<0.00	0.92	135.47	<0.02	12.06	<0.20	24.55	465,000.00	0.03	<0.00	<1.56	2.17	0.66	0.1	5.42	<0.00	34.19
HM16JV147	D16JN20a377	0.04	8.24	2,915.71	<0.00	0.54	<58.79	0.08	2,509.83	<0.41	<0.12	465,000.00	<0.00	0.01	<2.36	2.29	0.49	<0.01	10.11	<0.00	555.81
HM16JV147	D16JN20a373	1.05	<0.21	168.02	0.03	0.12	148.71	0.06	185.55	<0.30	1.23	465,000.00	<0.01	<0.00	<2.21	9.07	<0.35	0.01	11.12	<0.00	251.71
HM16JV147	D16JN20a357	0.06	61.09	3,068.81	0.03	3.13	<50.20	0.05	4,017.75	<0.23	0.4	465,000.00	0	0	<1.77	<0.04	<0.30	0	26.09	<0.00	482.56
HM16JV147	D16JN20a351	47.66	33.28	142	0.18	173.47	723.06	2.29	12,635.61	0.52	343.71	465,000.00	0.66	0.23	13.65	14.81	6.17	1.38	40.4	0.01	364.31
HM16JV147	D16JN20a348	1.79	329.33	63.53	0.04	26.13	77.28	0.04	2,353.36	2.34	1.41	465,000.00	<0.00	0.11	109.79	78.52	1.97	<0.00	84.99	0.01	267.82
HM16JV147	D16JN20a360	<0.01	4.08	2,217.37	<0.00	0.14	58.73	0.03	33.86	<0.28	0.21	465,000.00	0.03	<0.00	<1.45	0.11	<0.29	<0.00	<3.20	0.08	788.48
HM16JV147	D16JN20a376	0.03	<0.12	3,168.00	<0.00	0.06	<41.76	<0.03	6,239.64	<0.35	<0.08	465,000.00	<0.00	0.01	<1.60	0.11	<0.30	<0.01	<3.24	<0.00	333.16
HM16JV147	D16JN20a365	0.2	<0.10	1,391.54	0.03	1.14	<32.31	<0.02	24,935.82	<0.18	3.95	465,000.00	<0.00	<0.00	<1.33	<0.03	<0.23	0.01	<3.27	<0.00	65.85
HM16JV147	D16JN20a359	<0.01	<0.13	2,348.33	<0.00	0.02	<36.15	<0.02	184.59	<0.22	<0.06	465,000.00	<0.00	0.04	<1.46	<0.04	<0.29	<0.00	<3.37	<0.00	419.91
HM16JV147	D16JN20a375	<0.01	<0.11	1,029.52	<0.00	<0.00	<37.54	<0.02	1,433.53	<0.32	0.08	465,000.00	<0.00	0.01	<1.80	0.63	<0.27	<0.00	<3.39	<0.00	330.77
HM16JV147	D16JN20a354	0.1	<0.15	629	<0.00	1.92	<40.60	<0.02	528.9	<0.28	12.57	465,000.00	<0.00	<0.00	<1.83	0.09	<0.28	<0.01	<3.50	<0.00	1,272.39
HM16JV147	D16JN20a352	0.03	<0.18	1,046.56	<0.00	<0.00	57.19	<0.03	1,079.96	<0.27	0.19	465,000.00	<0.00	<0.00	<1.46	0.08	<0.30	<0.00	<3.54	<0.00	797.18
HM16JV147	D16JN20a353	<0.01	<0.18	24.3	<0.00	0.01	<40.79	<0.02	338.28	<0.35	0.27	465,000.00	<0.00	<0.00	<1.82	<0.06	<0.31	<0.00	<3.60	<0.00	129.25
HM16JV147	D16JN20a355	0.51	0.55	666.25	0.1	21.46	<32.68	<0.01	904.94	<0.17	105.45	465,000.00	<0.00	<0.00	<1.59	0.39	<0.27	<0.01	<3.63	<0.00	1,451.02
HM16JV147	D16JN20a349	<0.01	<0.17	262.88	<0.00	0.01	<49.25	<0.03	1,204.28	<0.29	<0.09	465,000.00	<0.00	0.01	<1.96	<0.07	<0.39	<0.00	<3.66	0	107
HM16JV147	D16JN20a374	<0.01	<0.15	1,174.95	<0.00	0.12	<48.85	<0.02	1,321.54	<0.27	0.07	465,000.00	<0.00	<0.00	<1.99	0.08	<0.28	<0.00	<3.72	<0.00	101.82
HM16JV147	D16JN20a347	0.16	23.74	189.54	0	1.67	<47.99	0.05	5,418.82	<0.27	19.02	465,000.00	0.05	8.25	13.5	16.13	0.68	0.16	<3.77	0.01	217.38
HM16JV147	D16JN20a361	0.03	0.17	1,790.68	0.03	0.06	<49.49	<0.02	10,761.97	<0.31	0.11	465,000.00	<0.00	<0.00	<1.59	<0.04	<0.31	0.06	<3.78	<0.00	214.83
HM16JV147	D16JN20a364	5.65	0.65	3,153.86	0.07	20.61	<44.94	0.07	14,475.39	<0.25	2.77	465,000.00	<0.00	<0.00	<1.70	0.27	<0.27	0.04	<3.98	<0.00	310.38
HM16JV147	D16JN20a356	<0.01	2.9	2,749.01	0.03	0.15	<47.72	<0.02	758.85	<0.23	0.18	465,000.00	<0.00	<0.00	<1.95	<0.05	<0.36	<0.01	<4.42	<0.00	572.94
HM16JV147	D16JN20a362	<0.01	0.4	852.51	<0.00	0.2	<67.74	<0.02	360.72	<0.42	0.12	465,000.00	<0.01	<0.00	<2.46	<0.07	<0.42	<0.00	<4.73	0	469.57
HM16JV147	D16JN20a366	<0.02	0.94	3,818.41	<0.00	0.13	<67.01	<0.03	2,097.79	<0.45	<0.13	465,000.00	<0.00	<0.01	<2.48	0.07	<0.54	<0.01	<5.99	<0.00	258.47
HM16JV147	D16JN20a363	<0.01	<0.29	76.38	0.02	0.05	<92.59	<0.03	78.92	<0.55	<0.14	465,000.00	<0.01	<0.01	<3.39	<0.11	<0.57	<0.01	<7.58	<0.00	459.75
HM16JV149	D17JN21a410	6.96	174.3	3.55	0.02	16.67	1,141.79	0.22	583.46	3.86	4,662.14	465,000.00	0.25	0.1	2.89	94.69	5.43	0.67	24.23	4.63	2,829.55
HM16JV149	D17JN21a409	0.07	11.13	5.27	<0.00	1.63	<38.48	0.06	838.74	<0.45	0.69	465,000.00	<0.00	<0.01	11.16	8.49	<0.46	<0.00	<6.35	0.09	1,836.28
HM16JV149	D17JN21a395	0.04	270.67	16.54	0	1.11	69.49	<0.01	770.21	61.05	3.66	465,000.00	0.01	12.03	13.64	12.51	3.16	0.02	<3.79	0.15	1,232.66
HM16JV149	D17JN21a421	0.86	17.15	2.17	<0.00	4.26	<91.78	<0.04	9.9	6.32	5.68	465,000.00	<0.00	<0.00	13.67	23.99	1.12	<0.01	<8.63	<0.00	841.43
HM16JV149	D17JN21a413	5.26	14.88	15.78	<0.01	11.77	<132.05	0.5	1,164.55	<0.89	4.81	465,000.00	<0.00	<0.00	13.95	10.39	<1.17	<0.00	<11.33	<0.00	3,409.03
HM16JV149	D17JN21a422	0.22	192.99	14.56	0	6.48	484.21	<0.02	28.09	10.03	3.93	465,000.00	0.01	0	14.89	56.41	2.1	0.01	21.5	0.66	1,010.45
HM16JV149	D17JN21a420	0.16	223.29	6.53	0.01	8	76.97	0.01	294.89	0.9	31.13	465,000.00	0.06	0.53	40.69	80.39	9.99	3.66	39.84	0.44	989.84
HM16JV149	D17JN21a412	0.48	811.55	9.98	0.01	9.55	81.21	1.99	5,113.07	1.44	81.31	465,000.00	0.01	13.62	50.26	218.45	8.89	0.01	273.34	0.01	1,130.43
HM16JV149	D17JN21a399	1.29	196.48	6.1	0.01	1.04	200.18	0.18	2,394.23	20.67	312.26	465,000.00	1.32	2.21	105.66	87.99	5.03	0.01	<3.85	0.04	173.9
HM16JV149	D17JN21a400	4.17	586.96	21.46	0.01	22.86	130.41	0.15	1,227.16	240.87	1,843.54	465,000.00	0.47	27.57	160.6	219.72	10.47	1.25	94.61	0.13	1,471.25
HM16JV149	D17JN21a417	8.43	55.47	6.3	<0.00	9.53	1,448.21	<0.02	1,319.23	0.8	28.95	465,000.00	0.27	5.81	<1.29	67.88	3.1	1.63	<3.89	0.05	633.85
HM16JV149	D17JN21a416	0.4	1.44	16.29	<0.00	3.67	<47.39	<0.02	177.92	0.4	18.26	465,000.00	0.02	<0.00	<2.01	0.13	0.49	0.02	<5.03	<0.00	2,512.34
HM16JV149	D17JN21a414	5.22	<0.12	0.71	0.02	8.55	<53.19	1.27	15.28	<0.32	2,516.98	465,000.00	<0.00	<0.00	<2.20	0.23	<0.41	0.02	<5.37	<0.00	6,496.87
HM16JV149	D17JN21a396	<0.00	0.42	7.15	<0.00	0.21	<48.33	<0.01	276.76	<0.24	<0.09	465,000.00	<0.00	<0.00	<2.63	0.16	<0.43	<0.00	<5.70	<0.00	229.05
HM16JV149	D17JN21a393	<0.01	1.73	8.71	<0.00	6.69	<63.18	<0.04	164.01	1	2.62	465,000.00	<0.00	<0.00	<2.71	1.48	<0.66	<0.01	<7.59	0.02	261.16

*All elements in ppm

Appendix V: Hemlo district pyrite mineral chemistry collected by LA-ICP-MS

Sample	Source Filename	Ag107	Al27	As75	Au197	Bi209	Ca43	Cd111	Co59	Cr53	Cu65	Fe57	Gd157	Hf178	K39	Mg24	Mn55	Mo95	Na23	Nb93	Ni60
HM16JV149	D17JN21a397	1.01	4.15	2.22	<0.00	3.44	<63.97	<0.02	4	<0.38	203.47	465,000.00	0.33	11.95	<3.11	0.35	<0.48	0.05	<6.83	0.05	2,285.44
HM16JV149	D17JN21a411	<0.01	<0.18	27.24	<0.00	0.43	<88.35	0.16	1,139.81	0.7	411.65	465,000.00	<0.00	<0.00	<3.12	<0.06	<0.52	<0.00	<8.47	<0.00	2,324.18
HM16JV149	D17JN21a418	0.22	1.55	7.98	<0.00	1.25	<89.98	<0.03	9,274.18	<0.63	<0.16	465,000.00	<0.00	<0.00	<3.87	<0.06	<0.66	<0.01	<8.24	<0.00	108.19
HM16JV149	D17JN21a415	3.23	<0.31	<1.00	<0.01	5.82	<90.28	0.43	67.72	<0.53	1,101.50	465,000.00	<0.00	<0.00	<4.12	0.18	<0.62	<0.00	<9.24	<0.00	3,024.87
HM16JV149	D17JN21a423	1.52	<0.38	3.94	<0.01	2.63	<96.48	<0.06	2,421.14	2.77	0.37	465,000.00	<0.01	<0.01	<5.22	0.32	<0.90	<0.02	<12.79	<0.00	480.4
HM16JV149	D17JN21a394	0.04	41.01	9.43	<0.01	4.66	<119.58	<0.06	3,411.17	<0.73	0.32	465,000.00	<0.00	<0.00	<6.61	78.42	<1.02	<0.01	<13.96	<0.00	791.1
HM16JV153	D16JN20a420	0.01	<0.15	124.92	<0.00	0.13	<33.22	<0.02	296.31	<0.30	0.11	465,000.00	0.02	1.15	<1.74	3.24	<0.28	<0.01	4.18	<0.00	196.95
HM16JV153	D16JN20a419	0.05	17.1	157.25	0.08	1.49	270.03	<0.03	668.86	<0.28	0.19	465,000.00	<0.00	<0.00	<1.92	290.78	4.16	<0.01	8.04	<0.00	625.94
HM16JV153	D16JN20a432	1.78	41.54	3.85	0.05	0.85	<43.89	0.08	12.6	7.07	1,465.17	465,000.00	0.02	0.6	16.97	23.81	3.02	0.03	25.45	7.76	318.44
HM16JV153	D16JN20a409	0.1	88.84	10.46	0.1	1.62	<40.09	<0.01	127.59	0.29	4.29	465,000.00	0.1	15.87	38.72	40.08	0.75	0.02	72.82	0.01	387.13
HM16JV153	D16JN20a426	<0.03	84.82	841.4	<0.00	0.28	<172.72	<0.07	219.7	2.49	<0.22	465,000.00	<0.00	<0.00	45.04	81.98	<1.03	0.03	<17.16	0.01	758.36
HM16JV153	D16JN20a414	<0.01	0.16	905.5	<0.00	<0.00	<36.11	<0.02	370.48	<0.19	<0.07	465,000.00	<0.00	<0.00	<1.64	<0.04	<0.25	<0.00	<3.13	<0.00	926.91
HM16JV153	D16JN20a422	1.24	3.14	729.23	1.53	1.99	<43.07	<0.01	166.35	<0.25	0.43	465,000.00	0.01	0.07	<1.78	2.36	<0.23	<0.00	<3.17	0.01	437.82
HM16JV153	D16JN20a421	2.32	<0.14	812.39	0.23	1.35	7,843.23	0.06	1,722.65	<0.23	3.11	465,000.00	0.18	4.55	<1.77	131.84	83.12	<0.00	<3.68	0	210.21
HM16JV153	D16JN20a423	0.01	<0.20	349.14	<0.00	<0.00	<54.87	<0.02	352.74	<0.32	0.11	465,000.00	0.01	<0.00	<2.12	<0.05	<0.34	0.01	<4.07	<0.00	279.31
HM16JV153	D16JN20a413	0.09	0.3	443.84	0.26	0.37	<40.59	<0.03	566.8	<0.32	0.22	465,000.00	<0.00	0.52	<2.07	0.21	7.63	<0.00	<4.08	0.03	191.22
HM16JV153	D16JN20a418	<0.01	<0.14	166.23	0	0.12	<46.86	<0.03	598.76	0.38	<0.06	465,000.00	<0.01	0.2	<1.74	0.08	<0.23	0.01	<4.31	<0.00	246.4
HM16JV153	D16JN20a427	<0.01	<0.12	335.35	<0.00	<0.00	<38.96	0.01	33.07	<0.21	<0.07	465,000.00	<0.00	<0.00	<1.44	<0.05	<0.25	<0.00	<4.35	0	56.25
HM16JV153	D16JN20a416	<0.01	3.43	302.89	0	0.09	<47.89	<0.02	815.07	<0.35	0.14	465,000.00	<0.00	<0.00	16	3.94	<0.33	<0.01	<4.90	<0.00	128.31
HM16JV153	D16JN20a425	<0.01	<0.13	558	0	0.1	<55.79	<0.02	61.92	<0.32	<0.07	465,000.00	<0.00	0.78	<1.77	0.1	<0.38	<0.00	<4.90	0.01	611.34
HM16JV153	D16JN20a417	<0.01	<0.13	266.05	0	0.01	<42.25	<0.03	217	0.38	<0.08	465,000.00	<0.01	0.04	<2.04	<0.07	<0.29	<0.00	<5.06	<0.00	203.48
HM16JV153	D16JN20a431	<0.01	<0.15	210.46	<0.00	0.02	<37.72	<0.02	552.87	<0.28	0.11	465,000.00	<0.00	0.13	<1.95	<0.05	<0.33	<0.01	<5.17	<0.00	899.73
HM16JV153	D16JN20a415	<0.01	<0.26	175.57	<0.00	0.02	76.29	<0.03	309.94	<0.40	<0.11	465,000.00	<0.00	0.16	<2.78	<0.09	<0.39	<0.01	<5.37	<0.00	129.37
HM16JV153	D16JN20a411	<0.01	<0.18	737.4	<0.00	0.01	<55.06	<0.02	105.55	<0.23	<0.09	465,000.00	<0.00	<0.00	<1.93	<0.05	<0.31	<0.01	<5.47	<0.00	552.43
HM16JV153	D16JN20a428	0.12	125.25	103.63	0.06	1.16	47.34	<0.01	639.9	7.83	0.48	465,000.00	0.14	3.5	90.47	104.33	1.38	<0.00	<5.96	0.07	424.86
HM16JV153	D16JN20a424	<0.01	1.22	678.51	0.01	0.04	<74.68	<0.03	3,242.52	<0.38	<0.12	465,000.00	<0.00	0.01	<2.65	0.94	<0.56	<0.01	<6.14	<0.00	459.12
HM16JV153	D16JN20a429	0.05	<0.15	262.74	0.36	2.51	<37.80	<0.02	262.91	<0.32	0.29	465,000.00	<0.00	0.01	<2.08	<0.05	<0.34	<0.00	<6.22	<0.00	763.91
HM16JV155	D16JN20a465	1.59	4.28	97.1	0.14	18.09	<68.83	<0.03	890.14	<0.68	2.74	465,000.00	<0.00	<0.00	<4.19	1	<0.68	<0.01	<10.55	<0.00	79.94
HM16JV155	D16JN20a470	0.02	<0.12	57.18	<0.00	0.01	<36.85	<0.01	777.59	0.38	<0.07	465,000.00	<0.00	0	<1.42	<0.05	<0.25	<0.00	<3.25	<0.00	102.52
HM16JV155	D16JN20a494	<0.00	<0.13	42.48	0	<0.00	<38.02	<0.02	100.29	<0.22	0.08	465,000.00	<0.01	<0.00	<1.48	0.03	<0.25	0	<3.78	<0.00	123.03
HM16JV155	D16JN20a495	<0.01	<0.12	44.04	<0.00	0.06	<47.05	0.03	341.81	<0.22	<0.07	465,000.00	<0.01	0.29	<1.66	<0.06	<0.26	<0.00	<4.05	<0.00	277.29
HM16JV155	D16JN20a491	<0.01	<0.21	147.2	<0.00	<0.00	<45.84	<0.02	3,662.23	<0.25	<0.09	465,000.00	<0.01	0	<1.81	<0.04	<0.29	<0.00	<4.42	<0.00	104.79
HM16JV155	D16JN20a481	0.02	0.19	90.34	0	0.38	<51.75	0.03	314.51	<0.28	0.15	465,000.00	0	0	<1.94	<0.07	<0.34	<0.01	<4.48	0	83.57
HM16JV155	D16JN20a486	<0.01	<0.15	77.85	<0.00	<0.00	<42.09	<0.04	408.44	<0.21	<0.08	465,000.00	<0.00	<0.00	<1.69	0.08	<0.31	<0.01	<4.58	<0.00	75.91
HM16JV155	D16JN20a484	<0.01	<0.15	72.6	<0.00	<0.00	<41.18	<0.03	79.66	<0.31	<0.08	465,000.00	0	<0.01	<2.06	0.05	<0.33	<0.00	<4.73	<0.00	163.91
HM16JV155	D16JN20a485	0.01	<0.17	121.32	<0.00	0.1	<50.11	<0.04	1,610.90	<0.24	0.11	465,000.00	<0.00	<0.00	<2.15	<0.05	<0.33	<0.01	<4.81	<0.00	83.39
HM16JV155	D16JN20a492	<0.01	<0.17	54.13	0	0.02	<57.25	<0.03	203.7	<0.26	0.11	465,000.00	0.01	0.17	<1.89	<0.03	<0.36	<0.00	<4.85	<0.00	305.59
HM16JV155	D16JN20a468	<0.00	0.34	95.71	<0.00	0.02	<37.41	<0.02	29.78	<0.26	<0.09	465,000.00	<0.00	0	<2.06	0.15	<0.33	<0.00	<4.95	0	430.2
HM16JV155	D16JN20a487	<0.01	<0.16	79.62	<0.00	0.02	<40.46	<0.02	705.43	<0.22	0.12	465,000.00	0	<0.00	<1.96	<0.05	<0.32	0.01	<5.00	<0.00	58.79
HM16JV155	D16JN20a473	<0.00	<0.17	72.75	<0.00	<0.00	<65.41	<0.03	400.31	<0.31	0.16	465,000.00	<0.00	<0.00	<2.10	<0.03	<0.35	<0.00	<5.08	<0.00	345.02
HM16JV155	D16JN20a466	<0.01	<0.13	55.63	<0.00	0.01	<33.41	<0.01	187.73	<0.34	0.23	465,000.00	<0.00	<0.00	<2.07	<0.07	<0.34	<0.00	<5.21	<0.00	99.1
HM16JV155	D16JN20a483	<0.01	0.23	92.29	<0.00	<0.00	<53.36	<0.03	787.88	<0.33	<0.09	465,000.00	0	<0.00	<2.14	<0.03	<0.36	0.01	<5.40	<0.00	54.49
HM16JV155	D16JN20a472	0.01	<0.14	76.93	<0.00	0.05	<56.84	<0.02	241.73	<0.24	<0.09	465,000.00	<0.00	<0.00	<2.01	<0.06	<0.35	<0.00	<5.59	<0.00	204.2
HM16JV155	D16JN20a490	0.01	<0.24	41.17	0.04	0.07	<45.52	<0.03	200.74	<0.26	0.11	465,000.00	<0.00	<0.00	<2.55	<0.08	<0.40	<0.00	<5.72	<0.00	243.06
HM16JV155	D16JN20a474	<0.01	<0.18	83.32	<0.00	<0.00	<68.83	<0.05	255.27	<0.46	<0.13	465,000.00	<0.00	<0.00	<2.39	0.04	<0.39	<0.00	<5.83	<0.00	150.81
HM16JV155	D16JN20a482	0.01	<0.18	96.64	0	0.02	<82.89	0.03	950.74	0.37	0.13	465,000.00	<0.00	0	<2.73	<0.06	<0.46	<0.01	<6.55	<0.00	66.97
HM16JV155	D16JN20a471	0.01	15.46	110.38	0.01	0.38	<63.73	<0.02	909.96	<0.25	0.12	465,000.00	<0.00	0.06	7.77	13.79	<0.38	<0.01	<6.85	<0.00	51.62
HM16JV155	D16JN20a488	<0.01	<0.21	91.21	0	0.17	<57.95	<0.01	462.94	<0.37	0.19	465,000.00	<0.00	0.04	<2.68	0.4	<0.40	<0.01	<6.90	<0.00	139.96
HM16JV155	D16JN20a469	<0.02	1	79.84	0.02	0.06	<75.30	<0.03	518.86	<0.35	<0.19	465,000.00	<0.00	<0.01	<3.66	0.95	<0.62	<0.00	<7.14	<0.00	100.62
HM16JV155	D16JN20a467	<0.01	<0.21	88.53	<0.00	0.15	<53.63	0.23	1,318.76	<0.44	<0.14	465,000.00	<0.00	<0.00	<3.12	1.35	<0.53	<0.00	<7.58	<0.00	70.07

*All elements in ppm

Appendix V: Hemlo district pyrite mineral chemistry collected by LA-ICP-MS

Sample	Source Filename	Ag107	Al27	As75	Au197	Bi209	Ca43	Cd111	Co59	Cr53	Cu65	Fe57	Gd157	Hf178	K39	Mg24	Mn55	Mo95	Na23	Nb93	Ni60
HM16JV155	D16JN20a493	<0.01	<0.36	80.04	<0.00	0.01	<74.66	<0.07	206.77	<0.51	<0.12	465,000.00	<0.00	<0.00	<3.81	0.14	<0.72	<0.00	<8.48	<0.00	141.45
HM16JV157	D16JN20a460	155.92	190.76	266.58	22.17	12.5	<29.92	0.07	1,958.69	0.47	161.88	465,000.00	0	0.1	108.82	162.56	1.05	0.69	6.15	0.13	62.01
HM16JV157	D16JN20a462	1.14	16.19	264.93	0.06	0.44	91.3	<0.02	670.83	0.32	3.07	465,000.00	0.02	0	<1.91	21.81	3.12	2.01	7.94	0.03	68.37
HM16JV157	D16JN20a464	44.8	420.59	849.61	17.36	16.05	99.13	0.14	333.2	16.7	787.29	465,000.00	0.71	0.04	11.12	515.46	14.95	16.86	11.93	2.49	296.43
HM16JV157	D16JN20a451	3.63	38.56	137.89	0.18	11.07	321.13	<0.02	387.49	1.33	10.53	465,000.00	0.72	3.49	12.42	52.39	4.3	9.13	17.88	0.4	234.13
HM16JV157	D16JN20a463	2.23	42.05	133.62	2.57	1.05	220.61	0.04	268.47	0.32	4.99	465,000.00	0.04	0.06	27.24	33.59	2.52	0.24	20.93	0.23	270.89
HM16JV157	D16JN20a438	0.21	<0.13	126.63	0.02	1.97	<35.49	<0.01	603.22	<0.22	1.12	465,000.00	<0.00	0	<1.63	11.77	2.52	0.48	<3.67	<0.00	98.48
HM16JV157	D16JN20a455	<0.01	<0.13	113.99	<0.00	<0.00	<40.60	0.02	81.48	<0.27	<0.10	465,000.00	<0.00	<0.00	<1.60	<0.06	<0.26	<0.01	<3.85	0.01	90.35
HM16JV157	D16JN20a446	<0.01	0.48	164.88	<0.00	0.02	<46.58	0.02	1,470.86	<0.22	<0.07	465,000.00	<0.00	0	<1.80	0.7	<0.28	<0.00	<4.27	<0.00	55.87
HM16JV157	D16JN20a448	<0.01	<0.14	94.95	0	<0.00	<53.56	<0.02	402.97	<0.27	0.36	465,000.00	<0.00	0	<1.77	<0.03	<0.32	<0.00	<4.37	<0.00	333.49
HM16JV157	D16JN20a452	0.04	2.87	73.29	0.03	0.11	<35.03	<0.01	321.27	<0.31	0.34	465,000.00	<0.00	0.25	3.16	1.77	0.3	<0.01	<4.43	0.07	318.62
HM16JV157	D16JN20a457	<0.01	<0.18	118.94	<0.00	<0.00	<51.96	0.04	378.41	0.29	0.15	465,000.00	<0.00	<0.00	<1.72	0.14	<0.30	<0.01	<4.56	0	232.81
HM16JV157	D16JN20a456	<0.01	<0.17	141.99	<0.00	<0.00	<50.58	<0.02	740.7	<0.34	<0.11	465,000.00	0.01	0	<1.93	0.08	<0.31	<0.01	<4.60	<0.00	110.89
HM16JV157	D16JN20a450	0.06	<0.15	121.89	0.01	0.53	<46.54	<0.02	529.88	0.28	0.61	465,000.00	<0.00	<0.00	<1.71	0.12	<0.33	<0.01	<4.71	<0.00	1,418.74
HM16JV157	D16JN20a461	0.01	<0.15	172.28	<0.00	0.01	<42.70	<0.02	1,076.13	<0.27	0.21	465,000.00	<0.00	<0.00	<2.04	<0.06	<0.34	<0.00	<4.75	<0.00	48.06
HM16JV157	D16JN20a436	<0.01	<0.13	189.08	0	<0.00	<46.77	<0.03	422.57	<0.27	0.23	465,000.00	<0.00	<0.00	<1.80	<0.03	<0.37	<0.00	<4.84	<0.00	732.07
HM16JV157	D16JN20a449	0.04	0.84	102.78	0.03	0.2	<54.20	<0.02	541.5	0.64	0.58	465,000.00	0.08	0.25	<2.00	0.35	<0.41	0.23	<4.87	0.26	461.12
HM16JV157	D16JN20a459	<0.01	<0.16	130.64	<0.00	0	<41.18	<0.02	59.43	<0.25	<0.11	465,000.00	0.01	0.01	<2.26	<0.05	<0.31	<0.00	<5.03	<0.00	103.7
HM16JV157	D16JN20a447	0.09	<0.17	170.36	0.01	0.12	<49.70	<0.03	813.14	<0.29	0.41	465,000.00	<0.00	<0.00	<1.91	<0.04	<0.32	<0.00	<5.09	<0.00	104.4
HM16JV157	D16JN20a434	<0.01	<0.15	134.27	<0.00	<0.00	<48.88	<0.02	338.27	0.28	0.23	465,000.00	<0.00	<0.00	<1.78	<0.06	<0.30	0	<5.23	<0.00	109.67
HM16JV157	D16JN20a435	<0.01	<0.14	136.46	<0.00	<0.00	<48.09	<0.02	238.81	<0.22	0.25	465,000.00	<0.00	<0.00	<2.01	0.06	<0.36	<0.00	<5.29	<0.00	181.78
HM16JV157	D16JN20a437	0.01	<0.15	140.53	<0.00	0.03	<51.33	<0.02	757.51	<0.32	<0.10	465,000.00	0.01	<0.00	<2.05	<0.04	<0.36	<0.00	<5.35	0	206.85
HM16JV157	D16JN20a453	1.39	140.57	1,811.65	1.68	5.06	<42.27	0.03	129.58	30.53	10.86	465,000.00	0.13	0.3	121.72	187.41	1.62	0.02	<5.37	12.66	246.49
HM16JV157	D16JN20a445	0.06	0.28	100.75	0.05	0.02	<55.57	<0.03	318.53	<0.34	0.36	465,000.00	<0.01	0.01	<2.54	0.44	<0.37	0.32	<5.53	0.01	398.31
HM16JV157	D16JN20a454	0.75	4.13	53.33	0.07	4.18	<60.45	<0.02	262.52	0.35	3.36	465,000.00	<0.00	<0.00	<2.04	10.37	<0.36	0.81	<5.81	0.03	254.34
HM16JV157	D16JN20a458	0.06	<0.21	111.39	0.55	0.09	<55.76	<0.03	219.78	<0.28	0.49	465,000.00	<0.00	0.09	<2.09	<0.05	0.39	<0.00	<5.96	<0.00	65.18
HM16JV164	D17JN21a142	0.07	32.34	4.73	<0.00	0.48	<46.88	<0.02	3.02	<0.24	4.73	465,000.00	<0.00	<0.00	3.16	20.39	0.83	<0.00	8.82	<0.00	44.5
HM16JV164	D17JN21a149	5.49	812.49	2.93	0.01	51.88	<38.72	0.23	337.36	0.89	2,215.52	465,000.00	0.17	<0.00	13.51	53.79	23.58	<0.00	126.22	0	1,605.09
HM16JV164	D17JN21a136	11.71	43.67	<1.03	0.03	1.29	<75.61	<0.04	11.55	<0.53	47.83	465,000.00	<0.00	<0.00	36.41	2.03	<0.62	<0.01	37.11	<0.00	81.8
HM16JV164	D17JN21a131	0.91	261.78	14.88	<0.00	1.51	93.5	<0.03	427.81	0.93	8.47	465,000.00	0.1	0.04	54.13	1.72	0.81	<0.00	33.63	0	555.15
HM16JV164	D17JN21a126	0.22	0.5	31.07	<0.00	0.03	<32.07	0.07	5,002.34	<0.28	37.12	465,000.00	<0.00	<0.00	<1.46	0.19	0.43	<0.01	<3.70	<0.00	246.97
HM16JV164	D17JN21a127	5.29	9.45	29.07	<0.00	0.15	<43.54	<0.02	4,869.23	0.37	142.79	465,000.00	0.04	<0.00	<1.93	0.24	0.75	<0.01	16.61	<0.00	172.78
HM16JV164	D17JN21a134	2.25	0.28	0.65	<0.00	0.35	<63.22	<0.02	990.17	<0.35	14.17	465,000.00	<0.00	<0.00	<2.10	1.18	<0.36	<0.00	<4.95	<0.00	1,195.41
HM16JV164	D17JN21a148	0.02	1.22	<0.51	<0.00	0.27	<45.13	<0.03	285.14	<0.29	81.93	465,000.00	<0.00	<0.00	<2.10	<0.05	<0.30	<0.00	<3.85	<0.00	761.47
HM16JV164	D17JN21a130	<0.01	<0.20	27.11	<0.00	0.66	<58.39	<0.03	3,786.20	<0.33	0.2	465,000.00	<0.00	<0.01	<2.21	4.36	<0.40	<0.00	<4.47	<0.00	213.49
HM16JV164	D17JN21a150	<0.01	4.74	31.77	<0.00	0.25	<71.95	0.03	1,511.87	<0.45	0.77	465,000.00	<0.00	<0.00	<2.51	0.42	<0.47	0.03	<6.53	<0.00	1,002.11
HM16JV164	D17JN21a138	<0.01	<0.20	<0.64	0.01	<0.00	<61.76	0.05	257.37	<0.38	0.26	465,000.00	<0.00	<0.00	<3.15	<0.05	<0.42	<0.00	<5.48	0.01	236.06
HM16JV164	D17JN21a137	0.02	9.16	2.45	<0.00	0.04	628.77	<0.03	4,318.68	1.02	0.36	465,000.00	<0.00	<0.00	<4.29	227.07	10.4	<0.01	8.06	<0.00	239.66
HM16JV164	D17JN21a135	<0.02	5.68	<1.64	<0.00	<0.01	<115.73	<0.05	697.68	<0.89	1.54	465,000.00	<0.00	<0.00	<5.04	<0.08	<0.95	<0.01	<8.32	<0.00	3,237.42
HM16JV171	D17JN21a366	0.1	379.2	1.71	<0.00	2.08	1,108.33	<0.02	1,188.61	1.5	0.57	465,000.00	1.06	0.31	88.39	15.05	7.85	0.02	<3.86	0.87	71.66
HM16JV171	D17JN21a362	0.07	282.56	1.62	0	2.42	53.23	<0.03	1,011.64	1.09	0.62	465,000.00	0	15.73	143.57	123.29	6.79	<0.00	49.81	0.01	70.75
HM16JV171	D17JN21a342	<0.00	<0.11	0.8	<0.00	0.02	<30.48	<0.02	1,188.38	<0.22	0.16	465,000.00	<0.01	<0.00	<1.19	<0.02	<0.27	<0.00	<3.73	<0.00	49.01
HM16JV171	D17JN21a343	<0.00	<0.14	0.54	<0.00	<0.00	<33.49	<0.02	685.15	<0.18	<0.06	465,000.00	0.01	<0.00	<1.23	<0.03	<0.24	<0.00	<3.14	<0.00	24.73
HM16JV171	D17JN21a357	7.97	<0.09	6.28	0.08	12.61	<26.73	0.45	27.24	<0.17	2,536.02	465,000.00	0.02	<0.00	<1.37	<0.04	<0.26	0.02	<3.78	<0.00	1,893.52
HM16JV171	D17JN21a345	<0.01	<0.16	1.26	<0.00	0.01	<41.84	<0.01	1,253.99	<0.19	<0.06	465,000.00	<0.00	<0.00	<1.46	<0.04	<0.30	0.01	<5.17	0.01	73
HM16JV171	D17JN21a346	0.07	0.68	1.34	0	0.03	<40.20	0.02	1,013.68	<0.24	0.1	465,000.00	0.02	<0.00	<1.51	0.07	<0.29	<0.00	<5.20	<0.00	63.67
HM16JV171	D17JN21a352	0.95	<0.11	17.91	0.04	8.88	<29.83	0.06	499.55	0.36	4.14	465,000.00	<0.00	0	<1.55	<0.05	<0.28	<0.00	<3.58	<0.00	425.6
HM16JV171	D17JN21a354	0.07	<0.15	1.72	0	0.12	<32.35	<0.03	400.92	<0.20	0.23	465,000.00	<0.01	<0.00	<1.56	2.34	<0.30	0.04	<3.74	<0.00	816.15
HM16JV171	D17JN21a350	0	<0.12	3.08	<0.00	0.02	<42.58	<0.02	176.24	<0.25	<0.06	465,000.00	<0.00	<0.00	<1.57	<0.04	<0.27	0.01	<3.74	<0.00	255.72
HM16JV171	D17JN21a364	0.1	1.01	5.03	0.01	0.26	<45.28	<0.02	3,036.39	0.31	0.67	465,000.00	<0.00	<0.00	<1.61	2.01	<0.32	2.57	<4.62	<0.00	61.67

*All elements in ppm

Appendix V: Hemlo district pyrite mineral chemistry collected by LA-ICP-MS

Sample	Source Filename	Ag107	Al27	As75	Au197	Bi209	Ca43	Cd111	Co59	Cr53	Cu65	Fe57	Gd157	Hf178	K39	Mg24	Mn55	Mo95	Na23	Nb93	Ni60
HM16JV171	D17JN21a347	<0.00	<0.11	1.74	<0.00	0.04	<34.84	<0.01	680.18	0.38	0.06	465,000.00	<0.00	<0.00	<1.67	<0.04	<0.26	<0.00	<3.92	<0.00	80.34
HM16JV171	D17JN21a344	<0.01	<0.16	1.76	<0.00	0	<50.05	0.02	1,773.12	<0.22	<0.06	465,000.00	<0.00	<0.00	<1.68	<0.03	<0.31	<0.00	<4.15	<0.00	42.99
HM16JV171	D17JN21a353	0.98	0.22	7.45	0.05	1.54	<38.15	0.06	1,094.95	<0.24	548.38	465,000.00	0.01	<0.00	<1.69	2.45	<0.35	<0.00	<4.84	<0.00	478.89
HM16JV171	D17JN21a348	0.02	<0.13	8.79	0	0.03	47.24	0.05	1,029.79	<0.27	0.17	465,000.00	<0.01	0.01	<1.73	<0.04	<0.29	<0.01	<4.21	<0.00	94.61
HM16JV171	D17JN21a355	4.89	<0.10	4.54	0.03	12.61	65.79	<0.03	684.29	<0.23	623.19	465,000.00	<0.01	<0.00	<1.79	0.04	<0.30	0.01	<3.91	<0.00	108.89
HM16JV171	D17JN21a363	<0.00	0.28	1.94	<0.00	0.06	<37.03	<0.02	992.77	0.62	<0.10	465,000.00	<0.00	<0.00	<2.06	<0.06	<0.38	<0.00	<5.49	<0.00	889.18
HM16JV171	D17JN21a356	0.38	0.76	26.3	<0.00	1.61	271.4	<0.02	528.92	<0.33	5.54	465,000.00	<0.01	0.02	<2.27	1.76	1.01	0	<5.79	0	300.5
HM16JV171	D17JN21a359	<0.00	<0.24	2.07	<0.00	0.03	<60.77	0.05	454.63	<0.35	<0.10	465,000.00	<0.01	0.01	<2.66	<0.08	<0.44	<0.00	<6.07	<0.00	559.73
HM16JV171	D17JN21a349	0.05	<0.28	3.8	<0.00	0.04	<92.24	<0.08	364.18	<0.56	<0.15	465,000.00	<0.01	0.07	<3.56	<0.07	<0.78	0.06	<9.77	<0.00	114.66
HM16JV171	D17JN21a365	0.1	<0.23	1.79	<0.00	0.78	<107.70	0.09	1,321.72	<0.64	1.8	465,000.00	<0.00	<0.00	<3.62	<0.12	<0.78	<0.01	<11.17	<0.00	46.92
HM16JV171	D17JN21a358	2.35	4.62	5.63	<0.00	3.67	<71.91	<0.06	479.11	0.51	237.37	465,000.00	<0.01	<0.00	<3.79	<0.10	<0.73	0.11	<9.40	<0.00	453.16
HM16JV171	D17JN21a361	1.5	<0.44	48.13	0.03	2.93	301.52	<0.07	2,168.55	<0.66	4.12	465,000.00	<0.00	<0.00	<4.96	<0.20	<0.99	<0.01	<13.86	<0.00	930.19
HM16JV171	D17JN21a360	1.68	<0.63	14	0.02	6.86	<143.25	0.12	3,603.91	<0.74	22.5	465,000.00	<0.01	<0.00	<5.35	0.66	<0.95	<0.00	<13.40	<0.00	430.18
HM16JV185	D16JN20a279	28.14	0.12	66.09	<0.00	0.05	469.7	<0.02	3,555.53	<0.30	443.7	465,000.00	0.1	0.01	1.77	123.99	14.51	0.03	10.51	<0.00	1,075.50
HM16JV185	D16JN20a284	21.81	37.57	64.45	<0.01	0.06	315.35	0.26	1,211.64	0.44	687.65	465,000.00	0.11	<0.00	8.76	87.12	18.08	0.04	26.63	<0.00	482.9
HM16JV185	D16JN20a276	21.92	<0.11	2.32	<0.00	<0.00	1,504.00	0.11	178.71	<0.22	1,814.80	465,000.00	0.07	<0.00	12.05	419.25	25.39	0.08	73.88	<0.00	66.5
HM16JV185	D16JN20a273	42.89	76.14	6.11	<0.01	0.9	1,933.29	0.29	1,725.13	5.24	1,180.30	465,000.00	0.9	0.09	6.63	229.2	47.7	0.14	<11.33	1.12	542.69
HM16JV185	D16JN20a266	<0.01	<0.13	1.36	<0.00	0.1	73.94	<0.04	611.75	<0.30	0.13	465,000.00	0.02	<0.00	<1.75	0.06	0.71	<0.00	<3.11	<0.00	25.83
HM16JV185	D16JN20a271	<0.01	<0.14	19.13	<0.00	<0.00	<56.34	0.02	67.39	<0.20	0.2	465,000.00	0.01	<0.00	<1.45	0.05	<0.23	<0.00	<3.21	<0.00	42.7
HM16JV185	D16JN20a258	<0.01	0.16	20.88	<0.00	<0.00	<48.30	<0.03	179.54	<0.31	<0.08	465,000.00	<0.00	<0.00	<1.62	0.05	<0.28	<0.01	<3.24	<0.00	192.59
HM16JV185	D16JN20a272	0.49	<0.12	3.84	<0.00	0.63	<51.33	<0.02	605.19	<0.28	0.52	465,000.00	<0.00	<0.00	<1.61	<0.03	<0.25	<0.01	<3.46	<0.00	24.96
HM16JV185	D16JN20a277	<0.01	<0.18	1.99	<0.00	<0.00	<59.93	<0.02	546.19	<0.28	0.12	465,000.00	<0.01	<0.00	<1.88	<0.04	<0.30	<0.00	<3.52	<0.00	198.36
HM16JV185	D16JN20a275	0.01	<0.13	0.98	<0.00	<0.00	<37.26	<0.02	79.88	<0.28	<0.06	465,000.00	<0.00	<0.00	<1.66	<0.05	<0.27	<0.00	<3.65	<0.00	45.61
HM16JV185	D16JN20a256	0.17	<0.13	7.66	0.01	0.13	57.19	<0.04	210.09	<0.29	<0.08	465,000.00	<0.01	<0.00	<1.77	0.05	0.4	<0.01	<3.67	<0.00	298.51
HM16JV185	D16JN20a254	0.28	<0.14	3.91	<0.00	0.33	<45.22	<0.03	1,048.68	<0.27	0.24	465,000.00	0	0.01	<1.91	<0.03	<0.35	<0.00	<3.69	<0.00	56.24
HM16JV185	D16JN20a269	0.11	<0.18	1.97	<0.00	<0.01	<38.99	<0.03	979.46	0.33	0.16	465,000.00	<0.00	<0.00	<1.71	0.06	<0.28	<0.00	<3.74	<0.00	50.27
HM16JV185	D16JN20a257	0.03	<0.14	64.74	<0.00	<0.00	<46.35	<0.05	2,300.44	<0.35	0.11	465,000.00	<0.01	<0.00	<1.77	<0.03	<0.34	<0.02	<3.83	<0.00	184.27
HM16JV185	D16JN20a281	<0.01	<0.13	32.86	<0.00	0	<56.44	<0.03	1,341.19	<0.32	0.28	465,000.00	<0.00	<0.00	<1.67	0.09	<0.33	0	<3.85	<0.00	248.21
HM16JV185	D16JN20a255	0.04	<0.14	6.84	<0.00	<0.01	<53.90	<0.03	847.32	<0.28	0.5	465,000.00	<0.00	0	<2.04	0.05	<0.38	<0.00	<3.97	<0.00	109.03
HM16JV185	D16JN20a270	<0.01	<0.20	57.02	<0.00	0.02	<60.41	<0.02	3,371.71	0.28	<0.11	465,000.00	<0.00	0.01	<1.83	0.11	<0.30	0.01	<4.29	<0.00	1,445.86
HM16JV185	D16JN20a280	<0.01	<0.15	1.35	<0.00	<0.01	<65.02	<0.04	154.41	<0.43	0.96	465,000.00	<0.00	<0.00	<2.15	<0.08	<0.39	0.01	<4.46	<0.00	116.58
HM16JV185	D16JN20a278	0.94	0.31	10.01	0.02	0.1	<69.08	0.02	8,054.88	<0.35	12	465,000.00	<0.00	<0.00	<2.02	<0.05	<0.35	<0.01	<4.48	<0.00	436.55
HM16JV185	D16JN20a265	0.6	<0.20	33.32	<0.00	0.01	<62.43	<0.05	602.85	<0.42	10.13	465,000.00	<0.00	<0.00	<2.29	0.69	<0.37	<0.01	<4.48	<0.00	93.72
HM16JV185	D16JN20a268	<0.01	<0.19	1.49	<0.00	<0.01	<61.94	<0.05	42.07	<0.37	0.1	465,000.00	<0.01	<0.00	<2.33	<0.10	<0.38	0.01	<4.59	<0.00	44.57
HM16JV185	D16JN20a267	<0.02	<0.19	6.91	<0.01	<0.00	83.7	<0.06	67.61	<0.44	0.12	465,000.00	0.01	<0.00	<2.66	<0.09	<0.41	<0.00	<5.08	<0.00	60.67
HM16JV185	D16JN20a282	<0.01	<0.16	3.97	<0.00	<0.01	<57.83	<0.03	475.95	<0.47	0.11	465,000.00	<0.00	<0.00	<2.29	<0.05	<0.44	<0.00	<5.41	<0.00	38.18
HM16JV185	D16JN20a283	<0.02	0.38	88.55	<0.01	0.07	<77.88	<0.06	2,578.09	<0.65	0.14	465,000.00	0.13	<0.00	<3.50	<0.09	<0.52	<0.00	<6.12	0.05	1,175.58
HM16JV185	D16JN20a274	<0.01	0.81	13.61	<0.00	0.01	<60.11	<0.10	1,429.80	<0.45	0.12	465,000.00	<0.00	0.33	<2.78	<0.09	<0.42	<0.00	<6.44	0.03	531.88
HM16JV185	D16JN20a273	2.78	1.9	1.5	<0.00	0.23	<93.91	<0.12	257.82	1.23	2.6	465,000.00	<0.00	<0.00	8.34	2.57	1.4	<0.01	<8.30	<0.00	384.97
HM16JV197	D17JN21a173	<0.00	<0.09	237.3	0	<0.00	<33.55	<0.01	62.5	<0.25	0.16	465,000.00	<0.00	<0.00	<1.27	<0.03	<0.23	<0.00	<3.53	<0.00	308.34
HM16JV197	D17JN21a174	<0.01	0.22	322.91	<0.00	<0.00	<39.59	<0.03	51.7	<0.23	0.1	465,000.00	<0.00	<0.00	<1.38	<0.04	<0.24	<0.00	<3.89	<0.00	492.66
HM16JV197	D17JN21a175	0.07	<0.10	2,462.99	0.02	1.05	<32.98	<0.03	3.92	<0.24	2.38	465,000.00	<0.00	<0.00	<1.47	<0.05	<0.23	<0.00	<3.86	<0.00	561.89
HM16JV197	D17JN21a176	<0.01	<0.11	3,998.72	<0.00	<0.00	<34.31	0.02	2.12	<0.29	0.21	465,000.00	0.01	<0.00	<1.49	<0.04	<0.27	<0.00	<3.99	<0.00	523.65
HM16JV197	D17JN21a185	<0.00	<0.12	531.83	<0.00	<0.00	<36.51	<0.01	154.9	<0.27	0.14	465,000.00	<0.00	<0.00	<1.52	0.05	<0.28	<0.00	<4.05	<0.00	798.89
HM16JV197	D17JN21a186	0	<0.11	4,822.16	<0.00	<0.00	<43.35	<0.01	535.11	<0.25	0.61	465,000.00	<0.00	<0.00	<1.53	0.04	<0.28	0	<3.89	0	760.76
HM16JV197	D17JN21a181	<0.00	<0.13	247.43	<0.00	0	<44.30	<0.03	200	<0.19	0.06	465,000.00	<0.00	<0.00	<1.59	<0.04	<0.29	<0.01	<3.18	<0.00	207.45
HM16JV197	D17JN21a169	<0.00	<0.09	208.42	<0.00	<0.00	<28.45	<0.01	86.62	<0.28	0.16	465,000.00	0.01	<0.00	<1.63	<0.03	<0.24	0.01	<3.73	<0.00	298.5
HM16JV197	D17JN21a180	0.21	<0.10	2,394.51	0.02	2.04	<42.16	<0.03	61.14	<0.22	4.18	465,000.00	<0.00	<0.00	<1.63	<0.04	<0.29	<0.01	<3.92	<0.00	405.49
HM16JV197	D17JN21a182	0.01	<0.14	356.78	<0.00	0.06	<46.25	<0.01	61.88	<0.27	0.15	465,000.00	<0.00	<0.00	<1.63	<0.04	<0.31	0	<3.52	<0.00	548.21
HM16JV197	D17JN21a177	<0.01	<0.12	2,828.86	<0.00	<0.00	<38.96	0.02	659.71	<0.29	0.23	465,000.00	<0.00	<0.00	<1.65	<0.05	<0.27	<0.00	<4.06	<0.00	1,372.30

*All elements in ppm

Appendix V: Hemlo district pyrite mineral chemistry collected by LA-ICP-MS

Sample	Source Filename	Ag107	Al27	As75	Au197	Bi209	Ca43	Cd111	Co59	Cr53	Cu65	Fe57	Gd157	Hf178	K39	Mg24	Mn55	Mo95	Na23	Nb93	Ni60
HM16JV197	D17JN21a164	0.01	<0.11	196.69	<0.00	0.05	<34.47	0.02	33.62	<0.31	0.2	465,000.00	<0.00	0.01	<1.67	<0.02	<0.30	<0.01	<3.89	<0.00	208.05
HM16JV197	D17JN21a171	<0.01	<0.12	208.21	0	<0.00	<47.06	<0.02	121.79	<0.29	0.11	465,000.00	<0.00	<0.00	<1.67	<0.03	<0.28	<0.00	<4.00	<0.00	344.67
HM16JV197	D17JN21a184	0.24	<0.09	3,151.37	0.01	0.78	<30.43	0.03	39.53	<0.29	47.72	465,000.00	<0.00	<0.00	<1.68	<0.03	<0.26	0	<3.60	<0.00	413.3
HM16JV197	D17JN21a170	<0.01	<0.10	194.07	0	<0.00	<43.44	<0.01	70.58	<0.34	0.09	465,000.00	0	<0.00	<1.68	0.07	<0.27	<0.00	<3.89	<0.00	247.21
HM16JV197	D17JN21a172	<0.00	<0.12	148.79	0	<0.00	<36.88	<0.01	172.94	<0.32	0.19	465,000.00	<0.00	<0.00	<1.69	<0.04	<0.28	<0.00	<4.21	<0.00	397.41
HM16JV197	D17JN21a165	<0.00	<0.10	171.58	<0.00	<0.00	<38.19	0.02	59.26	<0.24	0.12	465,000.00	0	<0.00	<1.77	<0.02	<0.28	<0.01	<3.53	<0.00	301.52
HM16JV197	D17JN21a183	<0.01	<0.10	394.21	<0.00	0.01	<37.57	<0.01	140.97	<0.32	0.2	465,000.00	<0.00	<0.00	<1.78	0.04	<0.30	<0.00	<3.56	0	1,032.45
HM16JV197	D17JN21a161	<0.01	<0.12	1,039.57	<0.00	<0.00	<37.97	<0.02	365.94	<0.24	0.67	465,000.00	<0.00	0	<1.78	<0.05	<0.27	<0.00	<4.42	<0.00	1,112.27
HM16JV197	D17JN21a166	0.15	<0.08	140.57	<0.00	0.51	<39.14	0.04	154.29	<0.28	3.12	465,000.00	<0.00	<0.00	<1.79	0.02	<0.26	<0.00	<3.13	<0.00	252.8
HM16JV197	D17JN21a168	<0.01	<0.13	174.44	<0.00	<0.00	<38.40	<0.02	68.36	<0.20	0.13	465,000.00	<0.00	<0.00	<1.79	<0.06	<0.25	<0.00	<3.94	<0.00	393.31
HM16JV197	D17JN21a157	<0.01	<0.12	304.98	<0.00	0.01	<46.04	<0.02	1,189.79	<0.33	0.25	465,000.00	<0.00	<0.00	<1.81	<0.02	<0.33	<0.00	<4.17	<0.00	110.15
HM16JV197	D17JN21a158	<0.01	1	150.03	<0.00	0.01	<38.98	<0.01	472.11	<0.33	0.14	465,000.00	<0.00	0	<1.82	1.32	<0.32	<0.00	<4.98	<0.00	171.05
HM16JV197	D17JN21a160	<0.01	<0.10	202.56	0	<0.00	<40.38	0.06	707.01	<0.24	1.48	465,000.00	0	<0.00	<1.84	<0.02	<0.27	0.01	<3.58	<0.00	1,127.30
HM16JV197	D17JN21a179	0.03	<0.13	250.04	<0.00	0.05	<45.38	<0.02	370.5	<0.26	0.85	465,000.00	<0.00	<0.00	<1.86	0.05	<0.30	<0.00	<4.87	<0.00	193.84
HM16JV197	D17JN21a178	<0.00	<0.12	116.25	<0.00	<0.00	<40.84	<0.01	910.23	<0.24	0.19	465,000.00	<0.00	<0.00	<1.87	<0.05	<0.26	<0.00	<4.36	<0.00	163.52
HM16JV197	D17JN21a163	<0.00	<0.12	1,530.46	<0.00	<0.00	<38.27	<0.02	469.02	<0.33	0.42	465,000.00	<0.00	<0.00	<2.01	<0.03	<0.29	<0.00	<4.01	0	1,197.87
HM16JV197	D17JN21a159	<0.01	0.44	1,319.93	<0.00	<0.00	<38.77	<0.02	171.28	<0.33	0.1	465,000.00	<0.00	<0.00	<2.13	0.68	<0.34	<0.00	<4.59	<0.00	555.71
HM16JV197	D17JN21a167	0.02	<0.15	290.7	<0.00	0.01	<49.54	<0.02	82.71	<0.32	1.95	465,000.00	<0.00	<0.00	<2.20	<0.06	<0.32	<0.00	<4.08	<0.00	408.42
HM16JV197	D17JN21a162	<0.01	<0.16	2,505.28	<0.00	0.01	67.57	0.02	100.89	<0.28	0.28	465,000.00	<0.00	<0.00	<2.32	<0.06	<0.31	<0.01	<4.74	0	897.43
HM16JV199	D16JN20a105	2.32	11.72	68.3	0.11	0.88	143.47	<0.04	131.02	<0.32	27.7	465,000.00	<0.00	0	3.63	4.38	11.78	0.37	3.74	0	301.61
HM16JV199	D16JN20a126	0.02	<0.14	141.31	0	0.01	<35.27	<0.03	41.81	<0.25	<0.09	465,000.00	<0.00	<0.00	<1.48	<0.04	<0.26	<0.00	4.54	<0.00	244.81
HM16JV199	D16JN20a106	2.12	195.62	11.89	0.73	0.43	76.36	<0.03	66.41	<0.27	0.46	465,000.00	0.2	23.15	64.67	60.29	0.74	0.01	67.69	0.04	96.51
HM16JV199	D16JN20a128	85.27	<0.16	35.4	99.34	11.89	<43.28	0.03	37.32	<0.25	89.74	465,000.00	<0.00	<0.00	<1.36	<0.03	4.36	0.2	<2.42	<0.00	316.87
HM16JV199	D16JN20a102	<0.01	<0.12	7.95	0	<0.01	<35.58	<0.03	32.14	<0.20	<0.09	465,000.00	<0.00	<0.00	<1.41	<0.03	<0.22	<0.01	<2.50	<0.00	55.79
HM16JV199	D16JN20a127	<0.01	<0.14	120.39	<0.00	<0.01	<38.80	<0.02	2.94	<0.30	<0.07	465,000.00	0.02	<0.00	<1.48	<0.04	<0.25	0	<2.85	<0.00	61.93
HM16JV199	D16JN20a103	0.01	<0.13	758.62	<0.00	<0.01	<41.27	<0.04	217.5	<0.20	<0.10	465,000.00	<0.01	<0.00	<1.58	<0.03	<0.24	<0.01	<2.92	<0.00	604.99
HM16JV199	D16JN20a113	0.08	<0.12	51.61	<0.00	0.05	<34.24	<0.04	15.04	<0.33	<0.09	465,000.00	<0.00	<0.00	<1.39	0.07	<0.25	<0.01	<2.93	<0.00	109.89
HM16JV199	D16JN20a112	0.61	<0.14	183.44	0.59	2.05	<42.22	<0.03	336.55	<0.27	0.27	465,000.00	<0.00	<0.00	<1.44	<0.04	<0.27	<0.01	<2.97	0	55.1
HM16JV199	D16JN20a124	<0.01	<0.15	186.04	<0.00	0.01	<38.08	<0.03	231.39	<0.31	0.16	465,000.00	<0.00	<0.00	<1.51	<0.04	<0.27	<0.00	<3.02	<0.00	149.68
HM16JV199	D16JN20a123	0.79	8.54	109.63	1.24	1.01	<33.21	<0.04	416.52	<0.31	0.5	465,000.00	0	<0.00	7.26	8.55	<0.29	<0.00	<3.10	0	56.12
HM16JV199	D16JN20a125	0.02	<0.14	20.68	0.01	0.01	<38.76	0.03	15.36	<0.23	<0.09	465,000.00	0.02	<0.00	<1.25	0.06	<0.24	<0.00	<3.10	<0.00	324.66
HM16JV199	D16JN20a114	0.01	<0.15	184.37	<0.00	<0.01	<34.78	<0.03	808.63	<0.29	<0.09	465,000.00	<0.00	<0.00	<1.40	<0.03	<0.24	<0.00	<3.14	<0.00	56.33
HM16JV199	D16JN20a122	<0.01	<0.13	101.5	<0.00	0.01	<31.12	<0.03	566.1	<0.23	<0.09	465,000.00	<0.00	<0.00	<1.50	<0.04	<0.23	<0.00	<3.20	<0.00	53.41
HM16JV199	D16JN20a101	0.04	<0.15	129.83	0.01	0.01	<38.70	<0.03	380.65	<0.28	0.18	465,000.00	<0.00	<0.00	<1.72	0.08	<0.24	<0.00	<3.26	<0.00	198.42
HM16JV199	D16JN20a110	<0.01	48.41	36.57	<0.00	<0.01	<31.58	<0.03	84.28	0.22	<0.09	465,000.00	<0.00	0	<1.33	0.13	<0.24	0	<3.30	<0.00	129.19
HM16JV199	D16JN20a104	<0.01	0.81	50.29	<0.00	<0.01	<41.64	<0.04	138.81	<0.29	<0.11	465,000.00	<0.01	0	<1.56	0.47	<0.29	<0.00	<3.37	0.01	509.95
HM16JV199	D16JN20a130	<0.02	0.2	94.74	<0.00	0.01	<47.35	0.05	113.16	<0.24	<0.10	465,000.00	<0.01	<0.00	<1.66	<0.06	<0.25	<0.00	<3.37	<0.00	265.25
HM16JV199	D16JN20a108	<0.01	<0.15	147.27	0.01	0.02	<32.20	0.03	564.69	0.23	<0.11	465,000.00	<0.01	<0.00	<1.20	<0.05	<0.20	0	<3.48	<0.00	143.99
HM16JV199	D16JN20a100	<0.01	<0.15	1,528.72	<0.00	<0.01	<38.44	<0.04	145.76	<0.27	0.11	465,000.00	<0.00	<0.00	<1.54	<0.05	<0.27	<0.00	<3.51	<0.00	781.06
HM16JV199	D16JN20a129	1.65	0.26	61.68	0.37	0.94	<55.36	<0.04	41.69	0.39	4.02	465,000.00	<0.01	<0.00	<2.03	<0.04	<0.34	<0.00	<4.04	<0.00	583.38
HM16JV199	D16JN20a121	757.82	<0.18	149.83	32.77	179.08	<40.72	<0.03	34.86	<0.26	10.39	465,000.00	0	<0.00	<1.86	<0.05	<0.29	<0.00	<4.12	<0.00	125.06
HM16JV199	D16JN20a109	42.79	14.33	210.87	26.49	6.57	<35.97	<0.03	892.78	<0.21	3.79	465,000.00	<0.01	<0.00	13.28	9.47	0.42	0.02	<4.34	<0.00	266.47
HM16JV199	D16JN20a107	0.02	<0.17	20.19	<0.00	<0.01	<44.16	<0.03	96.26	<0.28	<0.10	465,000.00	0.02	<0.00	<1.68	<0.06	<0.25	<0.00	<4.39	<0.00	666.08
HM16JV203	D17JN21a276	<0.01	<0.14	51.19	<0.00	<0.00	<47.99	<0.02	4.25	<0.32	<0.05	465,000.00	<0.00	0	<1.40	<0.05	<0.30	<0.00	<3.90	<0.00	193.94
HM16JV203	D17JN21a272	<0.00	<0.09	29.15	<0.00	0.03	<40.00	<0.02	394.26	<0.27	0.3	465,000.00	<0.00	<0.00	<1.42	<0.02	<0.29	<0.00	<4.01	<0.00	23.24
HM16JV203	D17JN21a277	<0.01	<0.13	33.48	<0.00	<0.00	<33.51	<0.01	7.13	<0.28	0.07	465,000.00	<0.00	<0.00	<1.43	<0.04	<0.28	0.01	<3.90	<0.00	3.93
HM16JV203	D17JN21a255	0.63	0.26	17.7	0.16	0.08	<38.57	<0.01	67.99	<0.25	1.48	465,000.00	<0.02	<0.00	<1.48	0.21	<0.25	0.01	<3.16	0	166.56
HM16JV203	D17JN21a278	<0.00	<0.09	40.68	<0.00	<0.00	<25.79	<0.01	306.06	<0.22	0.1	465,000.00	<0.00	<0.00	<1.49	<0.03	<0.26	<0.00	<3.80	<0.00	14.08
HM16JV203	D17JN21a250	<0.00	<0.13	26.13	0	0.01	<31.12	<0.01	55.2	<0.27	<0.07	465,000.00	<0.00	<0.01	<1.50	0.02	<0.25	<0.00	<4.51	0	17.35
HM16JV203	D17JN21a257	<0.00	<0.11	22.94	<0.00	<0.00	<27.40	<0.02	58.7	<0.27	<0.05	465,000.00	<0.00	<0.00	<1.51	<0.04	<0.29	0	<3.63	<0.00	24.57

*All elements in ppm

Appendix V: Hemlo district pyrite mineral chemistry collected by LA-ICP-MS

Sample	Source Filename	Ag107	Al27	As75	Au197	Bi209	Ca43	Cd111	Co59	Cr53	Cu65	Fe57	Gd157	Hf178	K39	Mg24	Mn55	Mo95	Na23	Nb93	Ni60
HM16JV203	D17JN21a251	<0.00	<0.09	34.88	<0.00	0	<43.85	<0.02	452.74	<0.32	0.21	465,000.00	<0.00	0	<1.56	<0.03	<0.28	0.02	<4.47	<0.00	155.71
HM16JV203	D17JN21a254	0.04	<0.10	32.82	0.01	0.32	<41.79	<0.01	63.86	<0.24	0.49	465,000.00	<0.01	<0.00	<1.56	0.03	<0.31	<0.00	<3.82	<0.00	28.71
HM16JV203	D17JN21a266	0.02	<0.09	49.82	0	0.02	<43.81	<0.02	29.52	<0.24	0.27	465,000.00	0	<0.00	<1.57	<0.05	<0.24	<0.00	<3.76	0	53.3
HM16JV203	D17JN21a273	<0.00	<0.10	44.08	<0.00	0.17	<45.29	<0.02	17.71	<0.26	0.16	465,000.00	<0.01	<0.00	<1.60	0.07	<0.28	<0.00	<4.10	0	34.56
HM16JV203	D17JN21a265	<0.00	<0.11	50.51	<0.00	0	<28.93	<0.03	18.74	<0.24	<0.05	465,000.00	<0.00	<0.00	<1.61	<0.04	<0.27	<0.00	<3.86	0	51.75
HM16JV203	D17JN21a269	1.29	<0.10	24.73	0.51	0.38	<43.40	<0.02	1.08	0.25	0.26	465,000.00	<0.00	<0.00	<1.64	0.85	9.13	0.02	<4.22	0	43.41
HM16JV203	D17JN21a271	0.02	0.23	45.64	<0.00	0.07	<41.73	0.04	0.2	<0.30	0.97	465,000.00	<0.00	<0.00	<1.66	<0.03	<0.37	<0.00	<4.48	<0.00	143.42
HM16JV203	D17JN21a268	0.02	<0.11	64.57	0.01	0.16	<32.89	<0.01	31.51	<0.26	0.08	465,000.00	<0.00	<0.00	<1.67	<0.04	<0.29	<0.00	<4.04	0	75.1
HM16JV203	D17JN21a267	25.32	<0.11	97.57	2.13	1.57	<49.04	0.93	10.81	<0.28	10,730.42	465,000.00	<0.00	<0.00	<1.72	<0.05	5.11	<0.00	<3.97	0	461.37
HM16JV203	D17JN21a249	<0.01	<0.13	38.98	<0.00	0	<30.65	0.01	63.83	<0.17	<0.06	465,000.00	0	<0.01	<1.72	0.06	<0.22	<0.00	<4.13	<0.00	42.98
HM16JV203	D17JN21a253	<0.00	<0.08	29.12	<0.00	0.01	<33.38	<0.01	14.92	<0.18	0.09	465,000.00	<0.01	<0.00	<1.77	0.09	<0.29	<0.00	<3.64	<0.00	39.85
HM16JV203	D17JN21a256	0.07	<0.11	29.89	0	0.02	<28.19	<0.02	0.44	<0.25	0.19	465,000.00	<0.01	<0.00	<1.78	<0.02	<0.29	<0.00	<3.81	0.01	27.77
HM16JV203	D17JN21a274	0.01	<0.12	38.51	0	0.11	<33.62	<0.01	4.44	<0.25	0.1	465,000.00	<0.01	<0.00	<1.78	0.08	<0.27	<0.00	<4.56	<0.00	14.23
HM16JV203	D17JN21a279	<0.00	<0.10	63.34	<0.00	<0.00	<28.18	<0.01	1.12	<0.29	0.1	465,000.00	<0.00	<0.00	<1.79	<0.04	<0.28	<0.00	<4.19	<0.00	993.67
HM16JV203	D17JN21a258	0.01	<0.16	20.62	<0.00	<0.00	<36.72	0.02	33.64	<0.31	<0.05	465,000.00	<0.00	<0.00	<1.82	<0.05	<0.31	<0.00	<3.81	<0.00	44.85
HM16JV203	D17JN21a252	<0.00	<0.09	32.22	<0.00	0	<44.71	<0.01	4.02	<0.23	0.3	465,000.00	0.02	<0.00	<1.87	0.11	<0.27	<0.00	<3.58	<0.00	68.37
HM16JV203	D17JN21a275	<0.01	<0.14	72.24	<0.00	<0.00	<46.24	<0.03	36.7	<0.33	1.89	465,000.00	<0.00	<0.00	<1.88	<0.06	<0.32	<0.00	<5.23	<0.00	953.61
HM16JV203	D17JN21a270	<0.01	0.19	60.53	<0.00	0	<61.59	<0.02	1,383.45	<0.32	<0.08	465,000.00	0.01	0.01	<2.15	0.13	<0.40	<0.00	<5.60	<0.00	21.29
HM16JV208	D17JN21a008	<0.02	<0.10	31.95	0.01	0.02	<43.12	<0.02	657.48	<0.24	0.13	465,000.00	<0.00	<0.00	1.9	<0.03	<0.29	<0.00	<3.22	<0.00	218.3
HM16JV208	D17JN21a018	1.69	940.52	38.48	0.11	1.75	116.96	0.18	848.74	<0.24	429.41	465,000.00	<0.00	2.59	5.65	0.14	<0.27	0.58	570.77	<0.00	1,356.16
HM16JV208	D17JN21a021	<0.01	<0.10	48.3	<0.00	0	<28.99	<0.01	1,340.34	<0.23	0.08	465,000.00	<0.00	<0.00	<1.24	<0.03	<0.23	<0.00	<2.54	0	546.89
HM16JV208	D17JN21a014	<0.00	<0.11	63.88	<0.00	0	<45.65	<0.03	334.61	<0.28	0.06	465,000.00	0.01	0	<1.34	<0.04	<0.26	<0.00	<3.00	<0.00	460.11
HM16JV208	D17JN21a037	<0.01	<0.11	67.16	<0.00	<0.00	<36.99	<0.01	549.46	<0.23	<0.06	465,000.00	0.01	0	<1.36	0.33	<0.27	<0.00	<3.60	<0.00	269.47
HM16JV208	D17JN21a030	<0.00	<0.09	78.69	<0.00	<0.00	<39.08	<0.01	723.25	<0.26	<0.05	465,000.00	<0.00	<0.00	<1.38	<0.03	<0.27	0.01	<3.27	0	959.05
HM16JV208	D17JN21a015	0.01	<0.11	58.04	0	<0.00	<42.21	<0.03	1,345.57	<0.29	<0.07	465,000.00	0.02	<0.00	<1.40	<0.04	<0.29	<0.01	<3.78	<0.00	808.21
HM16JV208	D17JN21a020	0.03	<0.11	23.39	0	0.02	<34.16	<0.01	257.35	<0.24	1.3	465,000.00	<0.00	<0.00	<1.43	<0.03	<0.26	<0.01	<2.45	<0.00	235.14
HM16JV208	D17JN21a033	0.02	<0.07	53.81	0.01	<0.00	<31.24	<0.02	632.8	<0.23	0.08	465,000.00	<0.01	<0.00	<1.44	<0.03	<0.21	0	<2.87	<0.00	425.78
HM16JV208	D17JN21a028	<0.01	<0.10	55.68	<0.00	<0.00	<30.58	<0.02	482.18	<0.25	0.16	465,000.00	<0.00	<0.00	<1.46	<0.02	0.28	<0.00	<2.61	<0.00	1,019.69
HM16JV208	D17JN21a012	<0.01	<0.12	67.89	<0.00	<0.00	<29.61	0.03	595.81	<0.26	0.05	465,000.00	<0.00	0	<1.46	<0.02	<0.23	<0.01	<2.99	<0.00	303.41
HM16JV208	D17JN21a011	0.82	<0.12	61.46	0.28	0.18	<32.24	<0.02	1,315.98	<0.27	77.92	465,000.00	0	<0.00	<1.48	0.06	<0.22	0.51	<3.29	<0.00	334.74
HM16JV208	D17JN21a017	<0.01	<0.12	10.02	<0.00	<0.00	<45.51	0.07	65.42	<0.27	0.06	465,000.00	<0.00	<0.00	<1.48	<0.02	<0.27	0.02	<3.43	<0.00	18.94
HM16JV208	D17JN21a007	<0.01	<0.09	199.03	<0.00	0	<44.45	<0.01	1,878.47	0.31	0.15	465,000.00	<0.00	0	<1.49	0.04	<0.29	<0.01	<3.04	<0.00	1,991.53
HM16JV208	D17JN21a019	<0.01	<0.10	45.51	<0.00	0.01	<30.12	0.05	2,039.27	<0.25	0.08	465,000.00	<0.00	<0.00	<1.50	0.1	<0.26	<0.00	<2.54	<0.00	224.45
HM16JV208	D17JN21a029	<0.01	<0.10	36.8	<0.00	<0.00	<36.08	<0.02	1,233.80	<0.24	<0.05	465,000.00	<0.00	<0.00	<1.50	<0.02	<0.27	0	<3.12	0	427.74
HM16JV208	D17JN21a036	<0.01	<0.11	26.21	<0.00	<0.00	<33.03	<0.02	1,259.75	<0.23	<0.06	465,000.00	<0.00	<0.00	<1.50	0.05	<0.29	<0.00	<3.77	<0.00	102.98
HM16JV208	D17JN21a031	0.17	<0.09	41.92	<0.00	0.02	<39.71	<0.02	5,230.43	<0.26	178.96	465,000.00	<0.00	<0.00	<1.52	0.08	0.39	<0.01	<3.04	<0.00	704.75
HM16JV208	D17JN21a035	0.07	<0.11	13.13	0.01	0.06	<34.48	<0.02	21.41	<0.26	0.11	465,000.00	<0.00	<0.00	<1.59	<0.03	<0.25	<0.00	<3.43	<0.00	76.95
HM16JV208	D17JN21a032	<0.01	<0.09	45.27	0	<0.00	<37.60	<0.02	654.54	<0.22	<0.05	465,000.00	<0.01	0.01	<1.64	<0.05	<0.23	<0.01	<2.83	<0.00	386.86
HM16JV208	D17JN21a013	3.94	<0.12	82.18	0.13	15.79	<43.66	<0.03	1,657.81	<0.34	4.46	465,000.00	<0.00	<0.00	<1.70	1.61	<0.30	<0.01	<3.21	<0.00	217.23
HM16JV208	D17JN21a016	<0.01	<0.11	48	<0.00	0.01	<48.66	<0.04	2,133.09	<0.36	0.18	465,000.00	<0.00	0	<1.75	<0.03	<0.31	<0.01	<4.32	<0.00	145.75
HM16JV208	D17JN21a034	3.29	0.17	800.93	3.34	4.76	2,460.73	<0.02	28,336.90	<0.43	1.79	465,000.00	<0.00	1.12	<2.33	0.09	<0.38	<0.00	<4.91	0.01	231.73
HM16JV208	D17JN21a009	0.03	<0.22	72	0.03	0.01	<59.58	<0.04	1,140.10	<0.38	0.15	465,000.00	<0.00	<0.00	<2.62	<0.03	<0.49	<0.01	<5.05	<0.00	386.52

*All elements in ppm

Appendix V: Hemlo district pyrite mineral chemistry collected by LA-ICP-MS

Source Filename	Pb206	Pb207	Pb208	Pt195	S34	Sb121	Se77	Si29	Sn118	Ta181	Te125	Th232	Ti49	Tl205	U238	V51	W182	Zn66	Zr90
D16JN20a402	2.78	3.27	3.19	0.01	478,393.63	<0.07	34.4	<61.36	0.08	<0.00	2.48	<0.00	2.19	<0.01	<0.00	0.02	0.01	1.75	<0.00
D16JN20a383	0.9	0.86	0.88	<0.01	679,480.38	<0.24	35.24	270.43	<0.19	<0.00	<0.37	<0.00	11.21	<0.05	<0.00	<0.03	<0.01	<1.50	<0.00
D16JN20a401	0.13	0.07	0.09	<0.00	435,688.36	<0.21	15.67	<174.67	0.46	<0.00	<0.31	<0.00	14.85	<0.04	<0.00	0.08	<0.00	<1.56	<0.01
D16JN20a382	0.03	0.06	0.02	0.01	556,847.71	<0.06	42.28	<55.38	0.12	<0.00	<0.12	<0.00	0.89	<0.01	<0.00	<0.01	<0.00	0.42	0
D16JN20a398	<0.01	0.05	<0.01	<0.00	465,629.23	<0.05	28.09	<51.28	0.11	<0.00	0.08	<0.00	1.65	<0.01	<0.00	<0.01	0	<0.38	<0.00
D16JN20a384	0.05	0.01	0.01	0	488,320.38	<0.06	24.18	<43.76	0.09	<0.00	0.28	<0.00	0.53	<0.01	<0.00	<0.01	<0.00	<0.39	<0.01
D16JN20a390	0.02	0.01	0.01	<0.00	550,242.89	<0.07	18.36	<52.07	0.13	<0.00	<0.08	<0.00	1.84	<0.01	0	0.01	<0.00	<0.40	0.26
D16JN20a394	0.03	0.03	<0.01	<0.00	471,109.88	<0.05	27.72	<55.18	0.08	<0.00	<0.08	<0.00	<0.63	<0.01	<0.00	<0.01	<0.00	<0.41	<0.00
D16JN20a385	0.61	0.45	0.47	<0.00	438,057.40	<0.07	33.1	<58.15	0.12	<0.00	0.52	0.01	0.77	<0.02	<0.00	<0.01	<0.00	<0.48	<0.01
D16JN20a395	<0.01	<0.01	<0.01	<0.00	540,570.95	<0.06	12.46	<58.18	0.1	0	<0.09	<0.00	1.72	<0.01	<0.00	<0.01	<0.00	<0.41	<0.00
D16JN20a400	0.03	0.1	0.13	0	484,453.15	<0.06	20.22	<57.03	<0.06	<0.00	<0.07	<0.00	1.02	<0.01	<0.00	<0.01	<0.00	<0.48	<0.00
D16JN20a386	0.44	0.58	0.55	<0.01	569,718.76	<0.09	53.26	<69.95	0.16	<0.00	0.13	0	1.62	<0.02	0	<0.01	<0.00	0.51	0
D16JN20a387	<0.01	<0.02	0.02	<0.01	394,132.19	<0.08	30.78	<63.99	<0.07	<0.00	<0.10	<0.00	0.76	<0.02	<0.00	<0.01	<0.00	<0.44	<0.00
D16JN20a393	<0.02	<0.01	<0.01	<0.00	565,989.07	<0.06	36.24	<52.88	0.15	<0.00	0.09	<0.00	1.44	<0.02	<0.00	<0.01	<0.00	<0.52	<0.00
D16JN20a392	0.02	<0.01	<0.01	<0.00	542,943.73	<0.07	20.17	<60.17	0.1	<0.00	<0.07	<0.00	0.75	<0.02	<0.00	<0.01	<0.00	<0.54	<0.00
D16JN20a391	<0.01	<0.01	<0.01	0.01	551,368.61	<0.07	20.39	<60.36	0.1	<0.00	0.11	<0.00	2.85	<0.01	<0.00	<0.01	<0.00	<0.42	<0.00
D16JN20a396	0.01	0.01	<0.01	<0.00	605,241.37	<0.07	24.31	<62.39	0.1	<0.00	<0.09	<0.00	1.1	<0.02	<0.00	<0.01	<0.00	<0.49	<0.00
D16JN20a380	0.03	0.02	<0.01	0.05	693,761.38	<0.09	32.07	<73.10	0.15	<0.00	<0.13	<0.00	1.22	<0.02	0	<0.02	<0.00	0.87	0.01
D16JN20a389	<0.02	<0.01	0.02	<0.01	573,179.12	<0.11	19.62	<74.24	0.22	<0.00	<0.11	0	2.8	<0.02	0.01	<0.01	<0.00	0.88	0.01
D16JN20a379	14.7	16.13	15.37	0.04	502,647.59	<0.11	33.67	<82.59	0.15	<0.00	10.16	<0.00	10.14	<0.03	<0.00	<0.02	<0.00	<0.75	<0.00
D16JN20a397	0.49	0.46	0.47	0.07	480,994.74	<0.13	<5.63	<118.13	0.17	<0.00	0.61	<0.00	<1.37	<0.03	<0.00	<0.02	<0.00	<0.89	<0.00
D16JN20a399	<0.02	<0.02	<0.02	<0.01	491,701.50	<0.11	13.33	<103.06	0.12	0	<0.14	<0.00	0.92	<0.02	<0.00	<0.01	<0.00	<0.84	<0.00
D16JN20a399	0.07	0.08	0.14	<0.01	490,589.40	<0.10	20.57	<104.54	0.1	<0.00	0.28	<0.00	2.12	<0.02	<0.00	<0.01	<0.00	<0.80	<0.00
D16JN20a388	0.06	<0.02	0.08	<0.01	505,812.38	<0.12	14.15	<92.96	0.1	<0.00	<0.16	<0.00	<0.71	<0.03	<0.00	0.02	<0.00	<0.71	<0.00
D16JN20a381	0.45	0.68	0.43	<0.01	531,972.09	<0.13	16.72	<111.91	<0.14	<0.00	0.29	<0.00	2.28	<0.03	<0.00	<0.02	<0.00	<1.04	<0.01
D17JN21a341	0.03	0.01	0.02	<0.00	545,081.64	<0.04	37.45	<57.77	0.08	<0.00	<0.06	0	1.83	<0.01	<0.00	0.01	<0.00	<0.40	0.02
D17JN21a338	<0.01	<0.01	<0.01	<0.00	524,788.52	<0.04	47.19	<43.13	0.05	<0.00	0.25	0	0.66	<0.01	<0.00	<0.01	<0.00	<0.36	<0.00
D17JN21a312	<0.01	0.03	0.01	0	570,949.52	<0.04	15.85	<54.45	0.09	<0.00	<0.06	<0.00	1.22	<0.01	<0.00	<0.01	<0.00	<0.37	0.01
D17JN21a327	<0.01	<0.01	<0.01	<0.00	541,318.40	<0.04	32.63	<50.46	0.07	<0.00	<0.09	<0.00	1.48	<0.01	<0.00	0.06	<0.00	0.44	<0.00
D17JN21a320	<0.01	<0.01	<0.01	<0.00	553,151.26	<0.04	41.2	<57.32	0.07	<0.00	0.07	<0.00	1.51	<0.01	<0.00	<0.01	<0.00	<0.40	<0.00
D17JN21a340	<0.01	<0.01	0.01	<0.01	531,171.90	<0.04	41.3	<59.24	0.1	<0.00	0.17	<0.00	1.03	<0.01	0	<0.01	<0.00	<0.37	<0.00
D17JN21a313	<0.01	0.01	<0.01	<0.00	528,152.80	<0.04	55.93	<51.46	0.11	<0.00	<0.05	<0.00	0.93	<0.01	<0.00	<0.01	0	0.43	<0.00
D17JN21a324	<0.01	<0.01	<0.01	0.01	518,044.20	<0.03	35.2	<53.46	0.08	<0.00	<0.04	0	0.85	<0.01	0	<0.01	<0.00	0.53	<0.00
D17JN21a323	0.02	<0.01	0.02	0	538,451.84	<0.04	18.94	<61.92	0.08	0	<0.07	<0.00	1.94	<0.01	<0.00	<0.01	0	<0.42	<0.00
D17JN21a311	<0.01	<0.01	<0.01	0	605,051.23	<0.04	28.3	<61.26	0.08	0	<0.07	<0.00	1.41	<0.01	<0.00	<0.01	<0.00	<0.42	0.01
D17JN21a322	<0.01	0.01	0.01	0	513,012.58	<0.04	22.91	<52.16	0.08	<0.00	<0.08	<0.00	1.82	<0.01	0	0.02	<0.00	<0.36	<0.00
D17JN21a328	0.02	0.01	0.02	<0.00	525,278.76	<0.05	61.28	<54.20	0.1	<0.00	0.17	<0.00	0.86	<0.01	<0.00	<0.01	<0.01	<0.40	<0.00
D17JN21a325	<0.01	<0.01	0.01	<0.00	560,161.51	<0.04	21.51	<54.78	0.09	0	0.07	<0.00	<0.33	<0.01	<0.00	<0.01	0	0.41	<0.00
D17JN21a314	<0.01	<0.01	<0.01	0.01	536,813.14	<0.04	69.56	<53.46	0.07	<0.00	<0.08	0	1.29	<0.01	<0.00	<0.01	0	<0.40	<0.00
D17JN21a329	0.01	<0.01	<0.01	0.01	546,737.98	<0.05	77.03	<53.00	0.08	<0.00	<0.08	<0.00	1.94	<0.01	<0.00	0.01	<0.00	<0.41	0
D17JN21a315	<0.01	0.01	<0.01	<0.00	548,039.63	<0.05	40.81	<63.29	0.13	<0.00	<0.11	<0.00	1.13	<0.01	<0.00	<0.01	0	<0.45	0.01
D17JN21a337	0.17	0.15	0.2	0.01	638,585.56	<0.05	65.21	<55.70	0.08	0	0.87	0	0.85	<0.01	<0.00	<0.01	0	<0.53	<0.00
D17JN21a319	0.02	0.02	0.03	<0.01	608,165.75	<0.06	16.95	<70.83	<0.06	<0.00	0.26	<0.00	1.33	<0.01	<0.00	<0.01	<0.00	<0.50	<0.00
D17JN21a339	0.13	0.15	0.1	<0.01	562,612.62	<0.06	33.51	<70.68	0.09	0.01	<0.14	<0.00	5.17	<0.02	0	<0.02	0.01	<0.52	0.05
D17JN21a317	<0.01	0.02	<0.01	<0.00	604,240.56	<0.05	30.56	<66.08	<0.06	0	0.2	<0.00	<0.73	<0.01	<0.00	<0.01	<0.00	<0.63	0.02
D17JN21a318	<0.02	<0.01	<0.01	<0.01	619,250.75	<0.06	53.28	<70.73	0.11	0	0.15	<0.00	1.86	0.12	<0.00	<0.01	0.01	<0.57	<0.00
D17JN21a326	<0.02	<0.01	<0.01	0.01	579,462.68	0.06	73.01	<78.17	0.08	<0.00	<0.13	<0.00	<0.53	<0.02	0.01	0.06	0.02	1.29	0.06
D17JN21a321	<0.03	<0.01	0.03	<0.00	490,943.43	<0.11	51.6	<133.67	<0.13	<0.00	<0.18	<0.00	<1.29	<0.03	<0.00	<0.02	<0.00	<0.89	<0.01
D17JN21a316	0.06	0.2	0.31	0.04	575,349.89	<0.12	23.52	<161.94	0.29	<0.00	<0.16	<0.00	4.41	<0.04	<0.00	<0.02	<0.00	<1.29	0.07
D16JN20a199	3.83	3.85	3.45	<0.01	436,073.34	0.72	6.56	<196.43	0.41	<0.00	<0.38	0	1.49	<0.05	0.17	0.06	0.02	<1.68	37.99

*All elements in ppm

Appendix V: Hemlo district pyrite mineral chemistry collected by LA-ICP-MS

Source Filename	Pb206	Pb207	Pb208	Pt195	S34	Sb121	Se77	Si29	Sn118	Ta181	Te125	Th232	Ti49	Tl205	U238	V51	W182	Zn66	Zr90
D16JN20a211	<0.11	<0.06	<0.06	<0.02	556,991.31	<0.28	<7.78	<258.42	<0.24	<0.00	<0.35	<0.00	<1.05	<0.07	<0.00	0.12	<0.01	<1.76	<0.01
D16JN20a200	<0.01	<0.01	<0.01	0.06	509,656.32	<0.07	<1.95	<54.57	0.16	<0.00	<0.07	<0.00	1.89	<0.02	<0.00	<0.01	<0.00	<0.49	<0.00
D16JN20a199	1.02	1.36	1.36	<0.00	404,902.38	<0.07	3.46	2,373.05	0.17	<0.00	<0.12	<0.00	<0.33	<0.02	<0.00	<0.01	0	<0.51	<0.00
D16JN20a195	0.03	<0.01	<0.01	<0.00	499,609.66	<0.08	2.78	<55.56	0.18	<0.00	0.11	<0.00	1.9	<0.01	<0.00	<0.01	<0.00	<0.43	<0.00
D16JN20a206	<0.01	<0.01	<0.01	<0.00	515,353.16	<0.08	<2.45	<56.62	0.14	<0.00	<0.07	<0.00	1.69	<0.02	<0.00	<0.01	0	<0.45	0.02
D16JN20a217	<0.01	<0.02	<0.01	0.17	416,586.39	<0.08	<2.37	<55.87	0.08	<0.00	<0.08	<0.00	0.77	<0.02	<0.00	<0.01	<0.00	<0.52	0.04
D16JN20a197	<0.01	<0.01	<0.01	0.02	486,500.88	<0.08	<2.13	<56.87	0.11	<0.00	<0.09	<0.00	0.76	<0.02	<0.00	<0.02	<0.00	<0.49	0
D16JN20a214	<0.01	<0.01	<0.01	0.01	534,164.30	<0.08	2.19	<46.45	0.12	<0.00	<0.08	0	0.91	<0.02	<0.00	<0.01	<0.00	<0.41	<0.00
D16JN20a213	<0.01	<0.01	<0.01	<0.00	493,915.35	<0.08	1.87	<45.34	0.15	<0.00	<0.07	<0.00	1.05	<0.01	0	<0.01	<0.00	<0.35	<0.00
D16JN20a194	0.02	0.04	<0.01	<0.00	492,906.95	<0.09	<2.50	<60.25	0.21	<0.00	<0.09	<0.00	1.68	<0.01	<0.00	0.02	<0.00	<0.45	<0.00
D16JN20a207	<0.02	<0.02	<0.01	<0.00	543,542.43	<0.08	<2.84	<65.24	0.19	<0.00	<0.11	<0.00	1.75	<0.02	0	<0.01	<0.00	<0.52	<0.00
D16JN20a196	<0.02	<0.01	<0.01	0.02	529,435.80	<0.10	<2.59	<70.62	0.15	0	<0.10	<0.00	1.4	<0.02	0	<0.01	<0.00	<0.58	<0.00
D16JN20a201	<0.02	<0.02	<0.02	0	491,795.92	<0.08	<2.69	<63.41	0.16	0	<0.08	0	1.03	<0.02	<0.00	<0.01	<0.00	<0.59	<0.00
D16JN20a216	<0.02	<0.02	<0.01	<0.00	476,060.34	<0.09	<2.93	<78.67	0.2	<0.00	0.18	<0.00	1.57	<0.02	<0.00	0.02	<0.00	<0.62	<0.00
D16JN20a215	0.02	<0.02	0.02	<0.01	475,708.58	<0.09	<2.68	<70.09	0.15	<0.00	<0.12	<0.00	1.08	<0.02	<0.00	<0.02	<0.00	<0.58	<0.00
D16JN20a208	<0.02	<0.02	<0.01	0.01	447,390.93	<0.09	<3.50	<70.92	0.13	<0.00	<0.13	<0.00	<0.57	<0.02	<0.00	<0.01	0.01	<0.55	<0.00
D16JN20a204	<0.02	<0.01	<0.01	<0.00	529,162.82	<0.10	<2.52	<68.07	0.16	<0.00	<0.12	<0.00	2.34	<0.02	<0.00	<0.01	<0.00	<0.49	0
D16JN20a209	0.02	<0.01	<0.01	<0.00	536,110.25	<0.09	<3.36	86.1	0.17	<0.00	<0.10	<0.00	1.11	<0.02	<0.00	<0.01	<0.00	<0.55	<0.00
D16JN20a202	<0.01	<0.01	<0.01	<0.00	470,401.53	<0.08	<2.33	<60.27	0.17	<0.00	<0.11	<0.00	1.37	<0.02	<0.00	<0.01	<0.00	<0.50	<0.00
D16JN20a212	<0.02	<0.01	<0.01	0.04	561,718.83	<0.10	<2.34	<60.30	0.15	<0.00	<0.12	<0.00	1.77	<0.02	<0.00	0.02	<0.00	<0.52	0.01
D16JN20a203	<0.01	<0.02	<0.01	<0.00	562,295.73	<0.09	3.38	<67.06	0.2	0	<0.13	<0.00	2.95	<0.02	<0.00	<0.01	0	<0.51	0
D16JN20a193	0.38	0.2	0.16	<0.00	451,927.81	<0.11	<3.52	<83.17	0.24	<0.00	<0.17	0	<0.42	<0.02	0.03	<0.02	<0.00	<0.62	<0.00
D16JN20a210	<0.02	0.02	<0.02	<0.00	429,070.49	<0.08	<2.90	<55.49	0.17	<0.00	0.11	0	0.7	<0.02	<0.00	<0.01	<0.00	<0.55	<0.00
D16JN20a202	<0.02	<0.02	<0.02	<0.00	497,230.62	<0.11	<3.25	<85.37	0.15	<0.00	<0.15	<0.00	1.76	<0.02	<0.00	<0.01	0.01	<0.70	0.03
D16JN20a205	<0.03	<0.02	<0.03	<0.01	582,122.97	<0.16	<4.64	<112.40	0.14	<0.00	<0.19	0	<1.17	<0.03	0.02	<0.02	<0.00	<0.86	0.12
D17JN21a284	100.2	106.83	109.43	<0.00	505,337.76	0.67	27.52	161.37	0.04	<0.00	15.68	<0.00	1	0.11	0	0.23	0	1.3	1.18
D17JN21a304	479.05	513.58	477.88	0	499,608.53	0.35	34.5	197.36	0.06	<0.00	5.59	0	0.51	0.07	0	0.33	0	1.3	1.19
D17JN21a309	2.4	2.74	2.54	<0.00	550,011.97	0.21	8.09	<45.26	0.07	<0.00	0.48	<0.00	1.52	<0.01	<0.00	0.04	0.01	13.25	<0.00
D17JN21a308	0.76	0.79	0.84	<0.01	633,450.95	0.07	6.38	<47.07	0.12	0	0.4	<0.00	1.42	<0.01	<0.00	<0.01	<0.00	3.67	0
D17JN21a301	<0.01	<0.01	<0.01	<0.00	543,142.45	<0.04	2.97	<48.25	0.1	0	<0.08	<0.00	1.31	0.01	<0.00	<0.01	<0.00	<0.33	0
D17JN21a281	4.14	5.45	5.41	<0.00	537,531.77	0.26	14.88	<50.56	0.05	<0.00	0.14	0	<0.37	0.02	<0.00	<0.01	<0.00	0.43	0.47
D17JN21a294	164.81	191.43	185.79	0	579,674.13	0.36	6.84	<44.77	0.06	<0.00	1.05	<0.00	0.65	0.16	<0.00	0.01	0	<0.36	0
D17JN21a280	20.41	24.1	18.05	0.01	492,248.42	0.21	28.69	<53.44	0.09	<0.00	19.77	<0.00	1.02	0.07	<0.00	0.03	<0.00	6.7	<0.00
D17JN21a289	0.35	0.38	0.38	<0.00	596,413.89	<0.04	4.69	<44.30	0.06	<0.00	0.17	<0.00	1.57	<0.01	<0.00	<0.01	<0.00	<0.39	0
D17JN21a291	6.44	7.75	7.01	<0.00	530,270.16	0.13	10.29	<50.46	0.07	<0.00	0.48	0	0.56	0.04	<0.00	<0.01	<0.00	<0.35	<0.00
D17JN21a306	15.48	18.03	16.65	0.02	584,158.86	0.13	5.77	<64.93	0.08	<0.00	8.15	<0.00	1.04	0.02	<0.00	0.16	0.02	<0.56	<0.00
D17JN21a288	0.37	0.76	0.51	<0.01	609,049.04	<0.06	5.12	<64.58	0.12	0	0.13	<0.00	1.8	<0.01	<0.00	<0.01	0.01	<0.53	0
D17JN21a305	3.08	4.7	3.67	<0.00	583,619.17	<0.07	5.48	<87.26	<0.07	<0.00	0.31	0.01	1.29	<0.02	<0.00	<0.01	<0.01	<0.59	<0.00
D17JN21a282	30.17	33.62	31.7	0.01	584,179.11	0.24	49.3	104.56	0.1	<0.00	2.94	0.01	<0.97	0.02	0.06	0.16	<0.00	<0.68	69.1
D17JN21a293	508.99	605.45	565.65	<0.00	453,628.17	0.12	7.96	<91.95	<0.09	<0.00	0.48	<0.00	<0.68	0.02	<0.00	<0.02	<0.00	<0.81	<0.00
D17JN21a290	17.14	18.24	15.86	0.01	627,156.85	0.3	5.59	<78.20	<0.09	<0.00	3.62	<0.00	<0.53	<0.02	<0.00	0.05	<0.00	<0.64	<0.00
D17JN21a292	17.25	19.58	19.32	<0.01	468,821.39	0.75	9.23	<118.81	0.28	0.02	7.97	<0.00	3.19	0.14	<0.00	<0.02	<0.00	1.91	<0.00
D17JN21a310	3.97	1.42	1.34	<0.00	581,104.10	<0.10	7.76	<143.92	0.21	<0.00	<0.17	<0.00	<0.88	<0.02	<0.00	0.03	<0.00	<0.91	<0.00
D17JN21a286	4.74	4.84	4.18	<0.02	511,445.64	<0.13	26.65	<157.15	<0.12	<0.00	2.28	<0.00	5.29	0.03	<0.00	<0.03	<0.00	5.36	<0.01
D17JN21a283	0.34	0.64	0.5	<0.01	559,750.26	<0.10	14.72	<156.15	<0.12	<0.00	1.09	<0.00	<1.31	<0.03	<0.00	<0.03	<0.01	1.12	0.28
D17JN21a285	6.83	7.46	8.6	<0.01	556,540.27	0.22	32.45	<170.44	0.13	<0.00	3.12	0.01	<1.61	<0.02	0.01	<0.03	<0.01	<1.24	0.47
D17JN21a231	34.9	40.04	36.99	<0.00	542,216.01	<0.04	11.34	<52.79	0.09	<0.00	9.19	0	2.63	<0.01	<0.00	<0.01	0	735.14	<0.00
D17JN21a241	7.87	7.56	5.99	0	542,915.95	0.93	3.42	3,476.58	3.02	0.5	1.42	0.34	4,979.55	<0.01	1.58	94.57	1.22	<0.41	53.57
D17JN21a222	<0.01	<0.01	0.01	0	512,306.35	<0.04	5.45	<48.49	0.13	<0.00	1.12	<0.00	1.21	<0.01	0	<0.01	<0.00	<0.40	<0.00
D17JN21a219	<0.01	<0.01	0.02	<0.00	545,201.57	<0.04	11.55	<57.37	0.1	0	24.41	<0.00	2.05	<0.01	0	<0.01	<0.00	0.49	<0.00

*All elements in ppm

Appendix V: Hemlo district pyrite mineral chemistry collected by LA-ICP-MS

Source Filename	Pb206	Pb207	Pb208	Pt195	S34	Sb121	Se77	Si29	Sn118	Ta181	Te125	Th232	Ti49	Tl205	U238	V51	W182	Zn66	Zr90
D17JN21a221	<0.01	<0.01	0.01	<0.00	489,046.59	<0.04	9.72	<50.32	0.09	<0.00	4.77	<0.00	1.7	<0.01	<0.00	<0.01	<0.00	<0.31	0.01
D17JN21a236	3.37	3.93	3.47	<0.00	532,756.76	<0.04	6.1	<52.43	0.08	<0.00	2.59	<0.00	0.88	<0.01	0	<0.01	0	0.43	0
D17JN21a242	<0.01	<0.01	<0.01	<0.00	553,210.02	<0.03	3.1	<55.04	0.1	0	0.9	<0.00	0.69	<0.01	<0.00	<0.01	<0.00	0.47	0.01
D17JN21a247	0.27	0.29	0.23	<0.00	545,914.83	<0.03	5.58	<53.58	0.11	<0.00	4.2	<0.00	1.45	<0.01	0	0.06	<0.00	<0.41	<0.00
D17JN21a234	0.85	1.04	0.99	<0.00	525,407.39	<0.04	10.29	<50.32	0.08	<0.00	10.66	<0.00	1.56	<0.01	<0.00	<0.01	<0.00	9.37	<0.00
D17JN21a248	<0.01	0.03	0.01	<0.00	539,101.57	<0.04	5.01	<56.36	0.08	<0.00	10.34	<0.00	1.28	<0.01	<0.00	<0.01	<0.00	<0.41	0.01
D17JN21a238	2.43	2.69	2.37	<0.01	530,564.99	<0.04	6.08	<57.18	0.1	<0.00	3.28	<0.00	1.52	<0.01	<0.00	0.01	<0.00	<0.35	<0.00
D17JN21a232	<0.01	<0.01	<0.01	<0.00	545,626.92	<0.03	8.29	<57.81	0.09	0	2.03	<0.00	0.51	<0.01	0	<0.01	<0.00	<0.36	<0.00
D17JN21a218	<0.01	<0.01	0.01	<0.00	541,331.60	<0.05	10.54	<60.88	0.11	<0.00	0.37	<0.00	1.43	<0.01	<0.00	<0.01	0	<0.38	<0.00
D17JN21a229	<0.01	<0.01	0.01	0.01	537,603.31	<0.04	7.3	<55.07	0.09	<0.00	<0.09	<0.00	1.8	<0.01	0	<0.01	<0.00	<0.29	0
D17JN21a244	0.02	0.03	0.02	0	546,916.74	<0.04	4.87	<48.82	0.12	<0.00	2.74	<0.00	1.97	<0.01	<0.00	<0.01	<0.00	<0.33	0.01
D17JN21a237	<0.01	0.05	<0.01	<0.01	548,551.40	<0.05	11.9	<62.96	0.07	<0.00	16.58	<0.00	2.23	<0.01	<0.00	<0.01	<0.00	0.5	<0.00
D17JN21a233	11.09	12.78	11.24	<0.00	546,344.09	<0.04	10.31	<55.14	0.09	0	7.14	<0.00	1.77	<0.01	0	<0.01	<0.00	183.34	0
D17JN21a245	<0.01	<0.01	<0.01	<0.00	577,865.22	<0.05	5.83	<60.37	0.07	0	2.55	<0.00	2.19	<0.01	<0.00	<0.01	<0.00	<0.43	0.01
D17JN21a220	1.58	1.91	1.85	<0.01	480,258.18	<0.07	12.93	832.98	<0.08	0.01	11.36	<0.00	0.81	<0.02	<0.00	0.32	<0.00	<0.50	<0.00
D17JN21a235	1,044.76	1,176.32	1,131.59	<0.00	410,999.03	10.31	13.29	<103.85	<0.12	<0.00	9.79	<0.00	0.66	<0.02	<0.00	<0.02	<0.00	26.12	<0.00
D17JN21a246	0.14	0.15	0.13	<0.00	612,086.03	<0.06	<4.12	<82.42	<0.08	<0.00	0.79	<0.00	2.17	<0.02	<0.00	<0.01	<0.00	<0.65	<0.00
D17JN21a230	457.13	529.8	507.43	<0.01	524,158.62	9.07	5.5	<80.24	0.13	<0.00	2.76	0.03	1.1	0.02	0.04	<0.01	<0.00	1,237.12	4.62
D17JN21a243	<0.02	<0.03	0.02	<0.01	632,034.96	<0.08	6.28	<128.70	0.13	<0.00	2.75	<0.00	5.29	<0.02	<0.00	0.04	<0.00	<0.81	<0.00
D17JN21a495	139.6	157.6	153.38	<0.00	247,799.75	0.2	13.62	682.09	0.11	<0.00	1.29	0.04	4.8	<0.01	0.27	243.39	0.29	18.99	0.78
D17JN21a502	7.22	6.67	7.82	<0.01	454,827.10	<0.08	26.06	255.04	<0.08	<0.00	<0.13	<0.00	0.72	<0.02	0.06	2.28	<0.00	2.66	3.01
D17JN21a497	45.25	47.78	47.81	<0.00	412,123.82	0.7	15.56	2,113.59	0.13	0.01	7.42	0.79	28.15	0.04	0.52	10.08	0.39	30.97	18.44
D17JN21a494	0.03	0.05	0.03	0.01	469,710.36	<0.03	20.18	<49.56	0.08	<0.00	0.28	<0.00	2.12	<0.01	<0.00	<0.01	0.01	<0.36	<0.00
D17JN21a496	0.23	0.23	0.22	0	484,303.55	<0.04	12.7	<54.82	0.05	<0.00	0.1	<0.00	0.84	<0.01	<0.00	<0.01	<0.00	<0.40	<0.00
D17JN21a481	0.1	0.1	0.11	<0.00	492,643.46	<0.03	41.3	<43.00	0.06	<0.00	0.27	0	1.44	<0.01	<0.00	<0.01	<0.00	0.63	<0.00
D17JN21a490	0.6	0.64	0.55	0.01	494,169.92	<0.04	2.75	415.45	0.06	<0.00	<0.10	<0.00	1.23	<0.01	<0.00	<0.01	<0.00	0.47	0.01
D17JN21a491	0.44	0.54	0.48	<0.00	503,655.14	0.06	<2.85	221.74	0.09	<0.00	0.22	<0.00	1.89	<0.01	<0.00	<0.01	<0.00	0.37	<0.00
D17JN21a492	0.66	0.84	0.8	<0.00	556,058.65	<0.03	<2.43	<48.46	0.08	0	0.2	<0.00	1.07	<0.01	<0.00	<0.01	<0.00	0.57	0
D17JN21a485	0.52	0.36	0.39	<0.01	507,231.51	<0.04	33.95	<50.61	0.13	<0.00	0.47	0.04	0.99	<0.01	0.13	0.02	<0.00	<0.42	15.67
D17JN21a488	11.19	12.16	11.96	0.04	518,627.97	<0.04	37.41	<58.90	0.09	<0.00	4.33	0	1.12	<0.01	<0.00	<0.01	<0.00	0.49	<0.00
D17JN21a503	310.68	351.45	320.59	0.01	552,785.88	<0.05	18.07	<62.85	0.08	<0.00	8.75	<0.00	3.25	<0.01	<0.00	0.02	<0.00	<0.48	<0.00
D17JN21a493	<0.01	<0.00	<0.01	0.01	485,321.25	<0.04	17.95	<51.96	<0.05	<0.00	<0.11	<0.00	1.36	<0.01	<0.00	<0.01	<0.00	<0.41	0.01
D17JN21a487	8	9.24	9.09	0	508,359.54	1.14	<2.98	3,327.74	0.07	<0.00	0.15	<0.00	1.17	<0.01	<0.00	<0.01	<0.00	0.38	0.01
D17JN21a483	17.94	22.45	21.18	0.02	492,621.93	0.18	20.17	<67.37	0.06	0.01	2.6	<0.00	1.1	<0.01	0	0.04	0.01	18.22	0.03
D17JN21a500	0.57	0.58	0.39	0.04	511,219.36	0.07	29.6	327.66	<0.06	<0.00	1.71	<0.00	1.92	<0.01	0.01	<0.01	0.01	<0.57	0.13
D17JN21a506	0.28	0.49	0.51	<0.01	506,624.16	<0.06	74.35	<87.45	<0.06	<0.00	0.11	<0.00	<0.55	<0.01	<0.00	<0.01	<0.00	1	<0.00
D17JN21a507	2.49	2.33	2.79	0.01	517,664.92	<0.06	70.65	<90.30	<0.05	0.01	1.6	<0.00	0.59	<0.01	<0.00	0.02	<0.00	1.18	<0.00
D17JN21a509	5.57	5.59	5.28	0.03	614,712.09	0.17	77.04	<94.60	<0.08	<0.00	3.6	<0.00	27.71	<0.02	<0.00	0.22	0.02	<0.80	0.04
D17JN21a504	0.07	0.25	0.1	<0.00	639,900.60	<0.07	46.44	<82.09	0.07	<0.00	2.68	<0.00	3.11	<0.02	<0.00	<0.01	<0.00	<0.65	0.29
D17JN21a508	0.28	0.18	0.2	<0.01	538,952.53	<0.06	25.73	<93.87	0.13	<0.00	0.35	0.02	1.1	<0.02	0.07	<0.01	<0.00	<0.60	0.05
D17JN21a482	0.29	1.16	0.66	0.01	545,937.75	<0.06	40.94	<86.33	<0.07	<0.00	0.65	0	1.13	<0.02	<0.00	0.04	<0.00	6.52	0.01
D17JN21a498	3.31	3.29	4.12	<0.01	464,657.33	<0.07	16.02	<99.12	0.19	<0.00	<0.14	<0.00	<0.95	0.03	0.01	0.23	0.04	1.02	<0.00
D17JN21a489	0.48	0.51	0.47	0.04	517,262.23	0.09	43.87	<102.29	<0.07	<0.00	0.24	<0.00	<0.65	<0.02	<0.00	0.02	<0.00	<0.69	<0.00
D17JN21a499	2.8	1.89	2.21	<0.01	467,783.35	<0.14	32.13	276	<0.13	<0.00	<0.45	<0.01	4.65	<0.03	<0.00	<0.02	<0.01	1.81	<0.01
D17JN21a486	25.69	29.62	29.52	<0.02	687,963.75	0.25	78.3	<216.92	<0.17	<0.01	39.8	0.04	<1.80	<0.05	<0.00	0.82	0.07	2.18	0.7
D17JN21a505	0.3	0.49	0.33	0.16	497,444.24	<0.16	58.06	<265.88	<0.17	<0.00	<0.34	<0.01	<2.00	<0.04	<0.00	<0.04	<0.00	<2.17	0.32
D17JN21a518	<0.01	<0.01	<0.00	<0.01	478,160.53	<0.04	37.76	<63.35	0.08	<0.00	<0.09	<0.00	1.98	<0.01	<0.00	<0.01	<0.00	<0.35	<0.00
D17JN21a524	0	<0.01	0.02	<0.00	551,485.71	<0.03	5.42	<47.44	0.09	<0.00	<0.05	<0.00	1.76	<0.01	0	<0.01	<0.00	0.41	<0.00
D17JN21a523	<0.01	0.01	0.01	<0.00	595,633.47	<0.04	5.3	<49.62	<0.05	0	<0.07	0	0.86	<0.01	0.02	<0.01	0	0.52	0.04
D17JN21a528	<0.01	<0.01	<0.01	0.01	631,578.89	<0.03	6.9	<61.42	0.06	<0.00	<0.10	<0.00	2.35	<0.01	<0.00	<0.01	<0.00	0.39	0

*All elements in ppm

Appendix V: Hemlo district pyrite mineral chemistry collected by LA-ICP-MS

Source Filename	Pb206	Pb207	Pb208	Pt195	S34	Sb121	Se77	Si29	Sn118	Ta181	Te125	Th232	Ti49	Tl205	U238	V51	W182	Zn66	Zr90
D17JN21a517	0.08	0.06	0.07	0	564,672.44	<0.04	9.75	<51.62	0.13	<0.00	0.64	<0.00	0.62	<0.01	0	0.01	<0.00	<0.30	0
D17JN21a532	0.01	<0.01	<0.01	<0.00	633,053.75	<0.03	6.23	<53.13	<0.05	<0.00	<0.09	<0.00	0.68	<0.01	<0.00	<0.01	<0.00	0.36	<0.00
D17JN21a526	0.02	0.01	0.01	<0.01	566,554.60	<0.03	7	<53.23	0.07	<0.00	<0.07	<0.00	1.08	<0.01	<0.00	<0.01	<0.00	<0.35	<0.00
D17JN21a529	<0.01	<0.01	<0.01	<0.00	597,931.32	<0.04	5.25	<61.47	0.1	0	<0.09	<0.00	1.32	<0.01	<0.00	<0.01	<0.00	<0.33	0
D17JN21a543	0.01	0.01	<0.01	<0.00	563,932.37	<0.04	12.38	<56.83	<0.05	<0.00	<0.08	<0.00	1.05	<0.01	<0.00	<0.01	0	<0.43	<0.00
D17JN21a525	<0.01	0.02	0.01	<0.01	574,780.90	<0.04	3.9	<56.04	0.07	<0.00	<0.08	<0.00	2.07	<0.01	<0.00	<0.01	<0.00	<0.38	0
D17JN21a545	0.01	0.01	0.02	<0.00	552,430.51	<0.04	7.53	<58.01	0.06	<0.00	<0.07	<0.00	1.74	<0.01	<0.00	<0.01	<0.00	<0.34	0.01
D17JN21a537	0.17	0.06	0.04	<0.00	569,800.32	0.03	5.06	<47.60	0.09	0.58	<0.09	0.01	149.11	<0.01	0.03	0.21	1.35	<0.40	7.2
D17JN21a533	<0.01	0.02	0.03	<0.00	554,531.38	<0.04	7.36	<60.11	0.1	0	<0.11	<0.00	1.96	<0.01	<0.00	<0.01	0	<0.31	1.52
D17JN21a541	<0.01	0.01	0.02	<0.01	503,583.85	<0.03	29.18	<52.63	0.09	<0.00	<0.06	<0.00	1.34	<0.01	<0.00	<0.00	<0.00	<0.30	<0.00
D17JN21a539	<0.01	0.01	<0.01	0.08	539,716.20	<0.03	3.1	<60.66	0.1	<0.00	<0.13	<0.00	2.16	<0.01	<0.00	<0.01	<0.00	<0.35	<0.00
D17JN21a521	<0.01	<0.01	<0.01	0	582,598.41	<0.05	9.51	<53.20	0.06	0	<0.08	<0.00	2.19	<0.01	<0.00	<0.01	<0.00	<0.40	<0.00
D17JN21a522	<0.01	<0.01	0.01	<0.00	615,951.02	<0.04	8.62	<60.06	0.12	<0.00	<0.08	<0.00	1.53	<0.01	<0.00	<0.01	<0.00	<0.40	0
D17JN21a527	0.01	<0.01	0.01	<0.01	640,652.17	<0.04	8.2	<68.81	<0.06	<0.00	<0.10	<0.00	2.12	<0.01	0	<0.01	<0.00	<0.41	0.03
D17JN21a538	0.01	0.01	<0.01	0.04	551,075.86	<0.03	11.25	<57.00	0.08	<0.00	<0.12	<0.00	1.04	<0.01	0	<0.01	<0.00	0.5	0
D17JN21a530	0.06	0.09	0.1	0.01	587,885.85	<0.05	6.61	<61.41	0.1	<0.00	<0.15	<0.00	<0.56	<0.01	<0.00	<0.01	0	0.39	<0.00
D17JN21a520	0.07	0.11	0.07	<0.00	590,220.47	<0.05	14.22	<58.12	0.15	0	0.73	<0.00	1.67	<0.01	<0.00	<0.02	<0.00	5.54	0
D17JN21a544	0.31	0.38	0.3	<0.00	527,788.59	<0.05	12.34	<91.62	0.18	<0.00	<0.10	<0.00	0.74	<0.01	<0.00	<0.01	<0.00	3.06	<0.00
D17JN21a546	0.06	0.02	<0.01	<0.00	529,284.79	<0.05	54.44	<79.50	0.16	<0.00	1	<0.00	<0.51	<0.01	<0.00	<0.01	<0.00	<0.44	<0.00
D17JN21a540	0.07	0.11	0.06	<0.01	683,437.48	<0.07	33.8	<115.34	0.13	<0.00	<0.14	0.01	2.23	<0.02	<0.00	<0.01	<0.01	<0.74	0.14
D17JN21a542	<0.02	<0.02	<0.01	<0.01	648,922.60	<0.08	11.98	<114.34	0.15	<0.00	<0.21	<0.00	1.33	<0.02	<0.00	<0.02	<0.00	<0.71	0.15
D17JN21a531	0.03	<0.03	0.03	<0.01	421,771.57	<0.08	<6.28	<118.92	<0.10	<0.00	<0.25	<0.00	<0.64	<0.03	<0.00	0.04	<0.01	<0.81	<0.00
D16JN20a232	1.12	1.37	1.39	<0.01	581,678.55	<0.09	24.94	<57.39	0.2	<0.00	1.28	0	1.22	<0.02	<0.00	<0.02	<0.00	<0.56	<0.00
D16JN20a248	13.76	15.65	15.76	<0.01	653,067.86	<0.19	7.25	<126.98	0.2	<0.00	2.53	<0.00	<1.61	0.06	<0.00	<0.04	<0.00	<1.04	<0.00
D16JN20a249	0.11	0.08	0.15	<0.00	517,713.26	<0.06	17.7	<49.80	0.16	<0.00	0.14	<0.00	1.2	<0.01	<0.00	<0.01	<0.00	<0.48	<0.00
D16JN20a248	0.02	0.03	0.04	<0.00	506,019.07	<0.07	7.89	<48.78	0.1	0	<0.08	0	2.12	0.02	<0.00	<0.01	<0.00	<0.41	<0.00
D16JN20a247	<0.01	0.02	<0.01	<0.00	593,620.70	<0.08	14.41	<54.72	0.14	<0.00	<0.11	0	1.96	<0.02	<0.00	<0.01	0.01	<0.44	0
D16JN20a231	0.03	0.04	0.04	<0.00	496,838.43	<0.05	18.93	<47.53	0.15	0	0.85	<0.00	1.11	<0.01	<0.00	0.01	<0.00	<0.41	<0.00
D16JN20a245	0.39	0.57	0.54	<0.00	542,465.06	<0.06	7.61	<51.17	0.12	<0.00	0.89	<0.00	2.38	<0.01	<0.00	0.01	<0.00	<0.42	0
D16JN20a237	0.31	0.34	0.33	0.01	589,916.40	<0.09	6.28	<61.12	0.22	<0.00	<0.09	<0.00	2.15	<0.02	<0.00	<0.01	<0.00	<0.45	0.01
D16JN20a252	0.03	<0.01	<0.01	0.02	474,254.68	<0.06	6.75	<47.03	0.18	<0.00	0.18	<0.00	1.81	<0.01	<0.00	<0.01	0	0.39	<0.00
D16JN20a238	0.98	1.41	3.63	<0.00	454,025.94	<0.09	<2.68	<62.29	0.06	<0.00	<0.08	<0.00	0.87	<0.02	<0.00	0.02	<0.00	<0.52	<0.00
D16JN20a251	<0.01	0.02	0.04	0.02	554,604.49	<0.07	7.37	<52.20	0.23	<0.00	<0.06	0.01	2.15	<0.02	0	<0.01	<0.00	<0.40	<0.00
D16JN20a220	0.68	0.89	0.65	<0.01	602,938.56	0.29	9.27	<57.55	0.23	<0.00	<0.06	<0.00	1.32	<0.02	0	<0.01	<0.00	<0.60	0.7
D16JN20a230	1.75	1.91	1.7	<0.00	556,153.03	<0.06	22.84	<56.98	0.19	<0.00	0.39	<0.00	2.11	<0.02	<0.00	<0.02	0	2.26	<0.00
D16JN20a246	0.08	0.12	0.12	<0.01	587,468.42	<0.08	11.58	<57.85	0.17	<0.00	0.09	<0.00	1.54	<0.02	0	<0.02	0.01	<0.50	0.01
D16JN20a239	6.36	7.69	7.28	<0.00	512,013.48	<0.08	21	<61.35	0.2	<0.00	4.47	<0.00	1.45	0.65	<0.00	<0.01	<0.00	<0.52	<0.00
D16JN20a221	0.2	0.2	0.17	<0.01	592,459.07	<0.09	18.29	<67.23	0.22	0	<0.11	<0.00	2.19	<0.02	<0.00	<0.01	0.01	<0.63	<0.00
D16JN20a253	0.02	0.07	0.05	0.01	558,207.13	<0.07	11.34	<57.91	0.17	0	<0.07	<0.00	1.13	<0.02	<0.00	<0.01	<0.01	<0.44	<0.00
D16JN20a219	<0.01	<0.01	0.02	<0.00	566,915.47	<0.08	26.79	<53.43	0.21	<0.00	0.55	<0.00	1.64	<0.02	0	<0.01	0	<0.60	0
D16JN20a242	0.03	0.09	0.05	0.02	610,541.54	<0.08	6.71	<66.54	0.2	<0.00	0.94	<0.00	2.09	<0.02	<0.00	0.01	<0.00	<0.57	<0.00
D16JN20a241	<0.01	<0.01	<0.01	0.01	567,630.61	<0.07	8.72	<66.35	0.16	0	<0.07	<0.00	1.61	<0.02	<0.00	<0.01	<0.00	<0.60	<0.00
D16JN20a243	<0.01	<0.01	<0.01	<0.01	598,602.55	<0.10	6.85	<66.49	0.14	<0.00	<0.11	<0.00	2.04	<0.02	<0.00	<0.01	<0.01	<0.54	0.01
D16JN20a250	<0.01	0.03	<0.01	0.01	601,772.52	<0.09	10.78	<68.89	0.19	0	0.22	0	2.85	<0.02	0	<0.01	<0.00	<0.60	<0.00
D16JN20a240	0.04	0.03	0.06	<0.00	548,745.93	<0.07	21.12	<68.53	0.12	0	<0.09	<0.00	1.18	<0.02	0	<0.01	<0.00	<0.61	0
D16JN20a235	<0.02	<0.02	0.02	<0.00	565,486.69	<0.09	17.81	<52.35	0.2	<0.00	1.05	0	1.16	<0.02	0	<0.02	<0.00	<0.51	<0.00
D16JN20a222	13.88	16.39	15.64	0	598,283.54	0.15	18.4	<70.00	0.18	0	0.31	0	1.29	0.02	<0.00	<0.02	<0.00	1.27	0.02
D16JN20a236	<0.01	<0.02	<0.01	0	639,464.91	<0.10	7.97	<63.72	0.22	<0.00	<0.14	0	1.91	<0.02	<0.00	<0.01	<0.00	<0.51	<0.00
D16JN20a218	0.61	0.68	0.7	0.01	602,121.12	<0.10	27.43	<60.96	0.2	0	<0.10	0	0.57	<0.02	<0.00	0.02	<0.00	<0.61	<0.00
D16JN20a244	<0.01	0.02	0.01	<0.00	596,659.91	<0.10	18.07	<74.69	0.22	<0.00	<0.12	0	1.26	<0.02	0	<0.01	<0.00	<0.56	<0.00

*All elements in ppm

Appendix V: Hemlo district pyrite mineral chemistry collected by LA-ICP-MS

Source Filename	Pb206	Pb207	Pb208	Pt195	S34	Sb121	Se77	Si29	Sn118	Ta181	Te125	Th232	Ti49	Tl205	U238	V51	W182	Zn66	Zr90
D16JN20a229	<0.02	<0.03	<0.02	<0.01	598,571.44	<0.10	25.55	<74.74	0.2	0	0.23	<0.00	2.72	<0.02	<0.00	<0.02	0.01	<0.69	<0.00
D16JN20a233	4.64	5.58	5.12	<0.01	621,504.97	0.88	19.22	<63.55	0.2	<0.00	0.2	<0.00	1.43	0.1	<0.00	<0.02	<0.00	<0.61	0
D16JN20a234	0.11	0.15	0.08	<0.01	512,698.19	<0.24	16.28	<122.07	<0.15	<0.00	0.26	<0.00	<1.00	<0.05	<0.00	<0.04	<0.01	<1.33	<0.00
D16JN20a289	139.05	131.65	143.51	<0.00	544,896.51	0.15	23.1	356.33	0.15	0	16.62	0.01	1.63	0.65	0.15	4.32	0.02	2.27	0.63
D16JN20a310	27.75	39.55	52.51	<0.01	593,113.03	<0.27	20.13	<365.57	<0.23	<0.00	7.83	<0.00	<2.80	<0.06	<0.00	<0.06	<0.02	<2.76	<0.00
D16JN20a287	207.44	239.22	231.3	<0.00	514,550.92	<0.05	12.66	<43.79	0.16	0	19.72	0.01	0.81	<0.01	0.03	0.02	<0.00	1.45	8.63
D16JN20a306	515.33	663	609.38	0	510,337.39	<0.06	19.77	<48.95	0.12	0	7.78	<0.00	1.85	<0.01	0	0.02	0	3.36	<0.00
D16JN20a294	13.61	17.43	19.62	0.01	508,483.63	<0.06	7.2	<50.72	0.15	<0.00	0.52	<0.00	0.93	<0.01	<0.00	<0.01	<0.00	0.82	<0.00
D16JN20a303	57.15	59.01	61.89	<0.00	454,421.83	0.08	15.4	67.33	0.1	<0.00	8.64	<0.00	1.34	0.16	<0.00	0.01	<0.00	0.7	<0.00
D16JN20a302	68.92	76.75	74.57	<0.00	546,949.92	0.07	10.71	<51.36	0.17	0	18.07	<0.00	1.31	0.02	0	0.01	0.01	2.11	0
D16JN20a312	10.81	12.56	12.1	<0.00	501,966.37	<0.06	8.55	<49.87	0.16	<0.00	2.31	<0.00	1.66	<0.01	<0.00	<0.01	<0.00	1.44	<0.00
D16JN20a301	34.06	39.93	38.01	<0.00	555,594.48	<0.06	14.16	<46.47	0.14	<0.00	9.37	<0.00	1.21	<0.02	0	0.02	<0.00	<0.41	0.01
D16JN20a309	16.17	18.55	18.26	<0.00	541,400.32	<0.05	11.69	<60.20	0.14	0	3.09	0	1.05	<0.01	<0.00	<0.01	<0.00	1.1	<0.00
D16JN20a291	49.1	52.91	53.29	<0.00	500,388.78	0.1	14.59	<53.59	0.13	<0.00	11.13	0	1.36	0.09	0	0.02	<0.00	1.33	0
D16JN20a292	59	56.33	60.17	<0.00	552,060.07	<0.06	18.32	<52.67	0.12	<0.00	5.74	0	2.07	0.3	<0.00	0.02	<0.00	1.09	0
D16JN20a304	74.13	74.53	75.88	<0.00	527,891.26	<0.06	14.62	<43.77	0.09	0	11.38	<0.00	1.39	0.09	<0.00	<0.01	<0.00	0.76	0
D16JN20a285	27.68	31.82	29.7	0	564,560.60	<0.07	48.99	206.03	0.2	0.09	2.79	0.08	100.9	<0.02	0.15	0.2	0.1	<0.51	66.61
D16JN20a307	52.75	51.82	53.75	<0.00	483,416.80	<0.06	9.39	<53.61	0.14	0	6.09	0.01	1.07	0.2	<0.00	0.03	0.01	0.51	<0.00
D16JN20a286	39.26	42.26	42.05	0.01	542,462.51	<0.06	13.68	3,385.38	0.16	<0.00	17.63	0.06	2	0.05	0.21	<0.01	0.01	2.05	75.23
D16JN20a308	14.31	16.81	15.46	<0.00	511,906.61	<0.06	9.27	<58.72	0.13	<0.00	1.57	0	1.01	<0.01	<0.00	<0.01	<0.00	0.56	<0.00
D16JN20a313	58.71	65.05	69.57	<0.00	541,381.26	<0.08	22.12	<64.52	<0.07	<0.00	9.22	<0.00	1.5	<0.02	<0.00	0.05	<0.00	3.4	<0.00
D16JN20a293	53.8	52.74	59.95	<0.00	560,569.04	0.11	14.72	104.3	0.13	<0.00	8.26	<0.00	2.47	0.19	0.04	1.47	0.01	1.31	0.04
D16JN20a290	18.47	19.3	18.81	<0.00	547,593.60	<0.07	10.28	<58.10	0.16	0	2.2	<0.00	1.81	<0.01	<0.00	<0.01	<0.00	<0.47	<0.00
D16JN20a311	10.64	13	12.27	0.01	548,371.27	<0.08	4.81	<62.87	0.16	0	2.24	0.01	0.77	<0.02	0.01	<0.01	<0.00	0.86	0.87
D16JN20a305	71.97	72.28	76.37	<0.00	459,836.78	<0.08	11.75	<57.38	0.12	<0.00	11.16	<0.00	2.08	0.15	<0.00	<0.01	<0.00	1.01	<0.00
D16JN20a288	<0.02	<0.02	<0.01	0.01	426,151.28	<0.08	<3.54	<70.61	0.12	<0.00	0.11	<0.00	1.71	<0.02	0.01	<0.02	<0.00	0.8	<0.00
D16JN20a315	8.98	10.85	9.99	<0.00	479,257.17	<0.10	<3.81	<88.89	0.11	<0.00	2.56	<0.00	<0.70	<0.02	<0.00	<0.02	<0.00	<0.58	<0.00
D16JN20a314	15.63	16.32	16.95	0.02	603,396.43	<0.10	14.99	<125.81	0.16	<0.00	2.06	<0.00	<0.71	<0.03	<0.00	0.02	<0.00	<0.84	<0.00
D17JN21a040	0.19	0.27	0.17	<0.00	452,976.54	<0.04	26.75	602.9	0.13	<0.00	<0.05	<0.00	1.55	<0.01	0	<0.01	<0.00	1.63	<0.00
D17JN21a038	<0.01	0.01	<0.01	<0.00	533,211.83	<0.05	48.46	<67.66	0.15	<0.00	<0.06	<0.00	1.21	<0.01	0	<0.01	0.01	<0.36	<0.00
D17JN21a049	<0.01	0.01	<0.01	<0.00	514,151.43	<0.05	18.97	<53.90	0.12	<0.00	<0.08	<0.00	1.62	<0.01	<0.00	<0.01	<0.00	0.36	<0.00
D17JN21a039	<0.01	0.04	<0.01	<0.00	541,031.70	<0.05	42.44	<54.67	0.1	<0.00	<0.06	0	1.03	<0.01	<0.00	0.01	<0.00	<0.36	0.01
D17JN21a060	0.62	0.57	0.69	<0.00	427,038.95	0.09	19.56	1,499.28	0.15	<0.00	0.28	<0.00	1.35	<0.01	<0.00	<0.01	0	14.76	0
D17JN21a050	0.03	<0.01	<0.01	<0.00	523,307.30	<0.05	17.74	<54.55	0.08	<0.00	<0.06	<0.00	2.42	<0.02	<0.00	0.02	<0.00	<0.39	<0.00
D17JN21a042	<0.01	<0.01	<0.01	<0.00	548,425.46	<0.05	16.28	<48.44	0.09	<0.00	<0.06	<0.00	1.19	<0.01	<0.00	<0.01	0	<0.36	<0.00
D17JN21a052	<0.02	<0.01	0.02	<0.00	503,726.75	<0.05	29.11	<50.87	0.12	<0.00	0.13	0	1.29	<0.01	<0.00	<0.01	<0.00	0.46	<0.00
D17JN21a056	<0.01	<0.01	<0.01	<0.00	523,539.04	<0.05	22.06	<61.28	0.13	<0.00	<0.14	<0.00	0.96	<0.01	<0.00	<0.01	<0.00	<0.38	<0.00
D17JN21a057	0.04	0.08	0.06	<0.00	501,567.65	<0.05	59.58	<63.17	0.18	0	0.63	<0.00	1.92	<0.01	<0.00	<0.01	<0.00	0.65	<0.00
D17JN21a058	<0.01	<0.01	0.02	0.01	545,845.31	<0.06	66.25	<61.15	0.14	<0.00	0.9	<0.00	2.12	<0.01	<0.00	<0.01	0	<0.40	<0.00
D17JN21a061	<0.01	<0.01	0.01	<0.00	539,898.86	<0.05	34.86	<59.13	0.1	<0.00	9.28	<0.00	1.67	<0.01	<0.00	<0.01	<0.00	<0.35	0
D17JN21a062	0.01	<0.01	0.02	<0.00	472,431.37	<0.05	29.36	<60.73	0.13	<0.00	13.01	<0.00	0.44	<0.01	<0.00	<0.01	0.01	0.53	<0.00
D17JN21a063	0.56	0.56	0.61	<0.00	570,416.81	<0.05	28.22	105.1	0.21	<0.00	0.26	<0.00	2	<0.01	0	<0.01	<0.00	5.91	<0.00
D17JN21a051	0.15	0.24	0.2	<0.00	535,818.75	<0.06	32.71	<66.55	0.19	0	0.57	<0.00	1.67	<0.02	<0.00	0.02	0.01	<0.45	0
D17JN21a055	0.02	0.01	<0.01	<0.00	549,764.63	<0.05	22.53	<62.09	0.16	0	0.18	0	1.12	<0.01	<0.00	<0.01	0.01	<0.43	0.01
D17JN21a059	<0.01	0.05	0.01	<0.00	558,674.21	<0.06	41.39	<56.26	0.08	<0.00	21.34	<0.00	1.36	<0.02	0	<0.01	<0.00	<0.45	0.01
D17JN21a054	<0.01	0.01	0.02	<0.00	535,476.27	<0.05	20.25	<64.55	0.14	<0.00	<0.09	<0.00	2.22	<0.01	<0.00	<0.01	<0.00	<0.47	0
D17JN21a041	2.83	3.2	3.11	<0.01	554,563.98	0.36	31.27	<81.87	0.12	<0.00	0.31	<0.00	1.37	<0.02	<0.00	<0.02	<0.01	<0.63	<0.00
D17JN21a053	1.08	1.39	1.07	<0.01	537,099.84	0.38	41.36	252.38	3.72	<0.00	4.77	0	2.3	<0.03	0	<0.02	<0.00	72.4	<0.00
D16JN20a034	0.37	0.47	0.47	<0.00	457,730.06	<0.07	10.84	<44.12	0.16	<0.00	<0.07	0	1.76	<0.01	0	<0.02	<0.00	<0.40	0
D16JN20a008	<0.02	<0.02	<0.02	<0.00	510,775.27	<0.11	36.46	<63.91	0.27	<0.00	0.61	<0.00	2.02	<0.02	0	<0.02	<0.00	<0.59	<0.00

*All elements in ppm

Appendix V: Hemlo district pyrite mineral chemistry collected by LA-ICP-MS

Source Filename	Pb206	Pb207	Pb208	Pt195	S34	Sb121	Se77	Si29	Sn118	Ta181	Te125	Th232	Ti49	Tl205	U238	V51	W182	Zn66	Zr90
D16JN20a009	<0.02	<0.03	<0.02	<0.00	567,366.14	<0.12	10.7	<62.57	0.23	<0.00	<0.14	<0.00	1.18	<0.02	<0.00	<0.02	<0.00	<0.64	0.01
D16JN20a030	<0.02	<0.02	<0.01	<0.00	497,819.12	<0.08	21.98	<65.76	0.2	0	0.44	<0.00	0.96	<0.02	<0.00	<0.01	<0.00	<0.46	<0.00
D16JN20a028	<0.02	<0.01	<0.02	<0.00	503,779.20	<0.11	12.57	<56.95	0.24	<0.00	<0.15	<0.00	0.91	<0.02	<0.00	<0.02	0	0.63	<0.00
D16JN20a037	0.06	0.09	0.06	0.01	485,225.69	<0.10	32.54	<60.04	0.17	<0.00	2.67	<0.00	1.06	<0.01	0	<0.02	<0.00	<0.45	<0.00
D16JN20a011	<0.02	0.03	<0.02	<0.01	474,524.16	<0.10	34.94	<68.46	0.15	0	1.16	<0.00	1.51	<0.02	<0.00	0.02	<0.00	<0.58	0
D16JN20a010	<0.02	<0.03	<0.02	<0.00	554,810.22	<0.12	12.19	<63.85	0.25	<0.00	<0.13	<0.00	2.68	<0.02	<0.00	<0.02	<0.00	<0.60	0
D16JN20a007	<0.02	<0.02	<0.02	<0.01	517,456.81	<0.11	13.58	<71.84	0.26	0	<0.09	0	1.61	<0.02	<0.00	<0.02	<0.00	<0.59	<0.00
D16JN20a012	0.02	<0.02	<0.02	<0.01	508,735.06	<0.10	17.07	<69.71	0.23	<0.00	<0.08	<0.00	2.25	<0.02	<0.00	<0.02	<0.00	<0.62	0
D16JN20a033	0.02	<0.02	<0.02	<0.00	507,958.38	<0.10	15.74	<53.18	0.2	<0.00	<0.09	0	0.96	<0.02	<0.00	<0.02	<0.00	<0.54	0
D16JN20a018	<0.02	0.02	0.03	<0.00	516,183.54	<0.10	19.45	<68.08	0.22	<0.00	0.26	<0.00	1.7	<0.02	<0.00	<0.02	<0.00	<0.55	0
D16JN20a027	<0.02	<0.02	<0.02	0	533,926.70	<0.12	14.97	<61.65	0.26	<0.00	<0.16	<0.00	1.92	<0.02	<0.00	<0.02	<0.00	<0.50	<0.00
D16JN20a032	<0.02	0.07	<0.02	<0.00	499,725.86	<0.12	11.57	<63.01	0.24	<0.00	<0.08	0	1.3	<0.02	0.01	<0.02	0	<0.65	<0.00
D16JN20a013	<0.02	<0.03	<0.02	<0.00	518,996.94	<0.10	24.67	<62.48	0.21	<0.00	0.41	0	0.8	<0.02	0	<0.02	0	<0.58	0.01
D16JN20a017	<0.02	0.03	<0.02	0.01	471,735.81	<0.10	21.96	<64.22	0.22	<0.00	1.65	<0.00	1.27	<0.02	0	<0.02	<0.00	<0.57	<0.00
D16JN20a026	0.03	0.02	<0.02	<0.00	530,683.98	<0.12	18.92	<64.76	0.19	0	<0.12	<0.00	1.27	<0.02	<0.00	<0.02	<0.00	<0.50	0
D16JN20a014	0.09	0.11	0.11	<0.00	490,761.34	<0.09	22.62	<63.75	0.18	<0.00	1.05	<0.00	2.47	<0.02	0	<0.02	<0.00	<0.53	<0.00
D16JN20a016	<0.02	<0.02	<0.02	<0.01	539,287.31	<0.11	15.82	<67.34	0.27	<0.00	<0.11	<0.00	1.66	<0.02	<0.00	<0.03	<0.00	<0.64	<0.00
D16JN20a031	3.38	4.15	3.01	<0.00	543,367.65	<0.14	13.8	<87.69	0.22	<0.00	<0.11	<0.00	1.72	<0.03	<0.00	<0.02	<0.00	<0.73	<0.00
D16JN20a015	<0.02	<0.02	<0.02	<0.00	489,248.17	<0.12	9.88	<82.23	0.19	<0.00	<0.17	<0.00	1.02	<0.02	0	<0.04	<0.00	0.73	<0.00
D16JN20a019	<0.02	<0.03	<0.03	<0.00	583,782.64	<0.16	27.1	<91.02	0.24	<0.00	0.89	<0.00	1.77	<0.03	0	<0.02	<0.00	<0.76	<0.00
D16JN20a036	0.08	0.07	0.1	<0.01	531,404.56	<0.16	39.13	<90.71	0.18	<0.00	0.83	<0.00	<0.88	<0.03	<0.00	<0.04	<0.00	<0.86	<0.00
D16JN20a029	0.4	0.33	0.2	<0.01	532,234.89	<0.14	10.79	<93.81	0.3	<0.00	<0.15	0	2.04	<0.03	0.03	<0.03	0	<0.68	<0.00
D16JN20a034	0.1	0.09	0.07	0.01	498,199.15	<0.16	12.08	<100.77	0.17	<0.00	<0.17	<0.00	2.02	<0.03	<0.00	<0.04	<0.00	<0.93	<0.00
D16JN20a035	5.1	6.89	6.56	<0.01	578,160.08	<0.31	21.55	<173.34	0.21	<0.00	<0.23	0.02	3.1	<0.06	0.02	<0.06	0.01	1.88	0.3
D17JN21a104	0.31	0.4	0.32	<0.00	487,773.60	<0.05	7.87	191.96	0.09	0	6.37	<0.00	<0.47	<0.01	0	0.03	<0.00	<0.39	<0.00
D17JN21a101	0.18	0.02	0.04	<0.01	435,876.17	<0.05	5.34	<52.15	0.08	<0.00	5.1	<0.00	0.5	<0.01	<0.00	<0.01	<0.00	<0.40	<0.00
D17JN21a097	4.12	3.96	3.98	0.01	485,291.33	<0.05	8.02	<56.24	0.13	<0.00	4.86	<0.00	1.09	0.02	<0.00	0.01	<0.00	0.54	0
D17JN21a124	0.8	0.95	0.98	0.05	515,988.03	<0.05	7.29	<57.86	0.13	<0.00	0.78	<0.00	0.59	<0.01	<0.00	<0.01	<0.00	<0.35	<0.00
D17JN21a100	<0.01	<0.01	<0.01	<0.01	519,643.46	<0.05	8.48	<62.92	0.09	<0.00	9.06	<0.00	1.55	<0.01	<0.00	<0.01	<0.00	<0.46	<0.00
D17JN21a122	7.42	7.19	7.87	0.03	459,815.47	<0.04	4.49	465.37	0.11	<0.00	0.89	0.03	0.7	<0.01	0.01	0.21	0	0.64	0.11
D17JN21a096	<0.01	0.02	<0.01	<0.00	465,418.97	<0.05	5.29	<51.30	0.09	0	1.73	<0.00	0.76	<0.01	<0.00	<0.01	<0.00	<0.34	<0.00
D17JN21a106	0.06	0.05	0.07	<0.00	542,986.44	<0.05	7.93	<63.57	0.1	<0.00	0.17	<0.00	1.5	<0.01	0	<0.01	<0.00	<0.37	<0.00
D17JN21a099	<0.01	<0.01	<0.01	<0.00	505,936.34	<0.05	11.99	<61.15	0.12	<0.00	8.22	<0.00	1.36	<0.01	<0.00	<0.01	0.01	<0.42	0
D17JN21a121	1.69	1.75	2.21	0.04	481,600.93	0.06	6.49	<51.77	0.09	<0.00	1.33	<0.00	<0.44	<0.01	<0.00	<0.01	<0.00	0.38	0.07
D17JN21a098	<0.02	<0.01	<0.01	<0.00	520,632.28	<0.06	7.44	<66.51	0.1	0	1.94	0	2.29	<0.01	<0.00	<0.01	0	<0.42	0
D17JN21a110	0.18	0.23	0.2	<0.00	425,957.02	<0.07	9.36	<65.56	<0.07	<0.00	1.24	<0.00	1.66	<0.01	<0.00	<0.01	0	<0.43	0.02
D17JN21a095	<0.02	<0.01	<0.01	<0.00	528,704.92	<0.06	8.41	<50.44	0.14	<0.00	10.97	<0.00	1.13	<0.01	<0.00	0.02	<0.00	<0.35	<0.00
D17JN21a112	0.2	0.18	0.22	<0.01	483,104.36	<0.07	10.1	<71.08	<0.09	<0.00	72.33	0.01	<0.78	<0.01	<0.00	<0.01	<0.00	0.52	0.01
D17JN21a108	0.03	0.04	0.03	<0.00	592,152.54	<0.05	8.57	<64.16	0.11	<0.00	8.65	<0.00	1.33	<0.01	<0.00	<0.01	<0.00	0.58	<0.00
D17JN21a105	0.05	0.04	0.02	<0.00	459,306.69	<0.06	9.57	<72.04	0.16	<0.00	<0.06	<0.00	0.89	<0.01	<0.00	<0.01	<0.00	<0.39	<0.00
D17JN21a109	0.1	0.03	0.04	<0.00	516,148.67	<0.07	14.53	<64.67	0.17	<0.00	0.43	0	0.67	<0.02	<0.00	<0.01	<0.00	<0.51	<0.00
D17JN21a113	0.07	0.03	0.07	0.01	393,833.11	<0.08	4.59	<92.84	<0.09	<0.00	9.78	<0.00	1.17	<0.02	<0.00	<0.01	<0.00	<0.70	<0.00
D17JN21a107	0.04	0.11	0.01	<0.00	566,940.15	<0.06	9.58	<85.77	<0.10	<0.00	<0.13	<0.00	2.19	<0.02	0	0.03	<0.00	0.64	0.03
D17JN21a114	1.02	1.13	1.13	0.02	388,894.80	<0.08	7.29	<86.31	<0.09	<0.00	1.93	<0.00	0.94	<0.02	<0.00	<0.01	<0.00	<0.60	<0.00
D17JN21a123	1.26	0.99	1.01	<0.01	438,428.91	<0.08	<3.98	<88.52	0.13	<0.00	1.42	<0.00	1.09	<0.02	<0.00	0.03	<0.00	<0.58	<0.00
D17JN21a103	0.11	0.09	0.1	<0.01	394,103.73	<0.06	8.8	75.51	0.13	<0.00	2.82	<0.00	1.46	<0.02	<0.00	<0.01	<0.00	<0.54	<0.00
D17JN21a125	2.24	2.08	2.17	0.03	578,551.13	<0.15	<7.77	<204.24	<0.20	<0.00	1.08	<0.00	<1.49	<0.03	<0.00	0.03	<0.01	<1.17	<0.01
D16JN20a075	<0.01	<0.01	<0.01	<0.00	469,977.30	<0.09	21.56	<54.71	0.21	0	<0.09	<0.00	0.99	<0.02	<0.00	<0.01	<0.00	<0.44	<0.00
D16JN20a094	0.03	<0.01	<0.01	<0.00	461,428.46	<0.10	22.38	<74.19	0.19	<0.00	<0.08	0	<0.41	<0.02	<0.00	<0.02	0	<0.56	<0.00
D16JN20a087	2.61	3.04	2.79	<0.00	499,605.75	<0.09	36.85	<51.90	0.13	0	0.68	<0.00	0.77	<0.02	<0.00	<0.02	<0.00	<0.48	<0.00

*All elements in ppm

Appendix V: Hemlo district pyrite mineral chemistry collected by LA-ICP-MS

Source Filename	Pb206	Pb207	Pb208	Pt195	S34	Sb121	Se77	Si29	Sn118	Ta181	Te125	Th232	Ti49	Tl205	U238	V51	W182	Zn66	Zr90
D16JN20a073	<0.02	<0.02	<0.01	0.01	519,447.49	<0.09	33.08	<66.12	0.3	0	<0.07	<0.00	1.75	<0.02	<0.00	<0.01	<0.00	<0.60	<0.00
D16JN20a076	<0.01	<0.02	<0.01	<0.00	527,265.29	<0.10	46.51	<67.29	0.23	<0.00	<0.09	<0.00	1.63	<0.02	<0.00	<0.02	<0.00	<0.57	<0.00
D16JN20a090	<0.01	<0.01	<0.01	<0.00	512,812.19	<0.10	43.04	<54.84	0.21	<0.00	<0.10	<0.00	1.99	<0.02	<0.00	<0.01	<0.00	<0.52	0
D16JN20a089	<0.02	<0.02	<0.01	<0.00	541,835.17	<0.09	25.2	<62.88	0.22	0	<0.13	<0.00	1.6	<0.02	<0.00	<0.02	<0.00	<0.55	0
D16JN20a072	<0.03	<0.02	<0.02	0	549,920.40	<0.11	26.63	<67.06	0.16	<0.00	<0.08	<0.00	2.23	<0.02	<0.00	<0.02	<0.00	<0.59	<0.00
D16JN20a086	<0.02	<0.02	<0.01	<0.01	488,388.41	<0.08	43.72	<56.09	0.22	0	<0.13	<0.00	1.46	<0.02	0	<0.02	<0.00	<0.53	<0.00
D16JN20a092	<0.01	<0.02	<0.01	0.02	531,958.21	<0.09	34.91	<67.57	0.13	0	<0.11	<0.00	1.56	<0.02	0	<0.01	0	<0.58	0
D16JN20a088	0.02	<0.02	<0.01	0.01	535,803.16	<0.11	28.99	<59.70	0.26	0	<0.09	<0.00	1.05	<0.02	<0.00	<0.02	<0.00	<0.52	0
D16JN20a074	<0.02	<0.01	<0.01	<0.01	535,804.12	<0.12	36.27	<66.70	0.26	<0.00	<0.12	<0.00	1.74	<0.02	<0.00	<0.02	<0.00	<0.57	0
D16JN20a091	<0.01	<0.02	<0.02	<0.00	504,572.87	<0.10	33.47	<61.57	0.15	<0.00	<0.09	<0.00	1.02	<0.02	<0.00	<0.01	<0.00	<0.50	0.01
D16JN20a093	<0.02	<0.02	<0.02	<0.00	486,136.16	<0.12	23.16	<81.96	0.12	<0.00	0.12	<0.00	1.78	<0.02	<0.00	<0.02	<0.00	<0.67	<0.00
D16JN20a095	<0.01	<0.02	<0.01	0.01	543,296.78	<0.10	26.68	<71.42	0.29	<0.00	0.16	<0.00	2.97	<0.02	0	<0.02	<0.00	<0.61	0.01
D16JN20a097	0.03	0.05	<0.01	<0.00	505,083.10	<0.10	27.35	<67.94	0.18	<0.00	<0.11	<0.00	1.24	<0.02	0.01	<0.02	<0.00	<0.54	0.32
D16JN20a099	<0.02	<0.01	<0.01	<0.00	503,595.91	<0.09	40.62	<70.65	0.23	<0.00	<0.10	<0.00	1.8	<0.02	<0.00	<0.02	<0.00	<0.54	<0.00
D16JN20a071	0.03	0.02	<0.02	<0.00	555,589.32	<0.11	44.49	<64.21	0.24	<0.00	<0.11	<0.00	1.62	<0.02	<0.00	<0.02	0	<0.59	<0.00
D16JN20a085	<0.02	<0.03	<0.02	<0.01	443,671.01	<0.08	38.11	<64.67	0.19	<0.00	<0.14	<0.00	0.64	<0.02	0	<0.03	0.01	<0.55	0.06
D16JN20a078	0.08	0.04	<0.01	0.01	452,273.88	<0.12	13.6	72.75	0.19	<0.00	0.17	<0.00	1.09	<0.02	<0.00	0.02	<0.00	<0.70	1.08
D16JN20a069	1.05	1.26	1.08	0	470,172.59	0.98	42.5	<59.12	0.18	<0.00	0.15	<0.00	1.42	0.69	0	<0.02	0.06	<0.49	0.02
D16JN20a098	<0.02	<0.02	<0.01	0.01	525,018.95	0.11	38.11	<67.46	0.23	0	<0.11	0	1.34	<0.02	<0.00	<0.02	<0.00	<0.56	<0.00
D16JN20a077	0.71	0.79	0.77	<0.01	521,869.38	<0.14	26.04	<88.15	0.28	<0.00	0.17	<0.00	1.04	<0.02	<0.00	<0.02	<0.00	<0.78	<0.00
D16JN20a070	<0.02	<0.02	<0.01	<0.00	541,063.77	<0.09	61.42	<70.41	0.25	<0.00	<0.11	<0.00	2.08	<0.02	0	<0.02	<0.00	<0.53	<0.00
D16JN20a096	<0.02	<0.02	<0.02	0.01	501,180.33	<0.13	27.91	<77.59	0.23	<0.00	<0.15	<0.00	2.01	<0.02	<0.00	<0.03	<0.00	<0.67	0.02
D16JN20a093	0.11	<0.03	0.04	0.01	554,054.66	<0.21	26.37	<138.31	0.21	<0.00	<0.19	0	1.92	<0.03	0.02	<0.03	<0.00	<1.13	1.98
D16JN20a320	0.01	<0.01	<0.01	<0.00	513,294.51	<0.07	28.65	<55.57	0.2	<0.00	<0.12	<0.00	1.74	<0.01	<0.00	<0.01	<0.00	0.46	0.01
D16JN20a340	0.27	0.04	<0.01	0.01	501,333.20	<0.06	16.2	<68.28	0.14	<0.00	<0.06	<0.00	0.65	<0.02	0	<0.01	<0.00	<0.46	0.19
D16JN20a342	0.02	0.04	0.02	<0.00	445,999.34	<0.06	28.21	<42.77	0.13	<0.00	0.3	<0.00	1.48	<0.01	<0.00	0.01	<0.00	0.39	<0.00
D16JN20a318	0.17	0.22	0.21	<0.00	526,986.42	<0.08	31.75	<62.63	0.18	0	0.56	<0.00	1.82	<0.02	<0.00	<0.01	0	<0.53	0
D16JN20a321	<0.01	<0.01	<0.01	0.01	532,007.33	<0.07	52.77	<60.66	0.2	<0.00	<0.10	<0.00	2.43	<0.02	<0.00	<0.01	0	0.49	<0.00
D16JN20a330	0.07	0.08	0.09	<0.00	521,565.97	<0.06	12.17	<53.60	0.15	<0.00	<0.07	0	<0.44	<0.01	0	<0.01	<0.00	<0.42	0.01
D16JN20a319	0.47	0.51	0.55	<0.00	574,910.89	<0.07	24.08	<65.74	0.16	<0.00	2.29	<0.00	2.01	<0.02	<0.00	<0.02	<0.00	<0.54	0.01
D16JN20a343	4.38	4.61	4.46	<0.00	553,765.25	<0.08	45.51	<58.80	0.18	<0.00	11.36	0	1.96	<0.02	0.02	<0.01	0	<0.49	1.59
D16JN20a329	<0.01	<0.01	<0.01	<0.01	513,168.02	<0.07	35.53	<53.51	0.11	<0.00	0.96	<0.00	0.85	<0.01	<0.00	<0.01	<0.00	<0.42	<0.00
D16JN20a323	5.47	6.07	5.78	<0.00	547,738.53	<0.07	28.74	<58.66	0.21	0	0.39	<0.00	1.75	<0.02	<0.00	<0.01	<0.00	<0.50	<0.00
D16JN20a327	<0.02	0.02	0.02	0.01	547,844.28	<0.06	27.85	<54.68	0.13	0	1.83	<0.00	1.36	<0.01	<0.00	0.01	<0.00	0.59	0
D16JN20a339	<0.01	0.02	0.01	<0.00	567,959.84	<0.07	17.22	<80.15	0.17	0	0.21	0.01	1.85	<0.02	0	0.02	<0.00	<0.57	0.36
D16JN20a328	2.31	2.74	2.61	<0.01	565,749.78	<0.08	8.45	98.03	0.2	<0.00	0.23	0	2.24	<0.01	0.05	0.14	0	1.26	0.07
D16JN20a346	<0.02	0.04	0.02	<0.01	511,016.49	<0.09	29.91	<61.64	0.12	0	<0.13	<0.00	2.36	<0.02	<0.00	<0.01	<0.00	<0.55	<0.00
D16JN20a324	0.02	0.02	0.02	<0.00	564,838.25	<0.08	22.31	<69.52	0.15	<0.00	<0.09	0	1.92	<0.02	<0.00	<0.01	<0.00	<0.62	0.01
D16JN20a341	0.19	0.09	0.08	0.01	564,232.55	<0.08	26.89	<64.31	0.17	0	0.85	0.03	2.24	<0.02	0.03	<0.01	<0.00	<0.47	3.52
D16JN20a325	<0.01	<0.02	<0.01	<0.00	575,099.59	<0.07	22.86	<86.58	0.16	<0.00	<0.07	0	1.41	<0.02	<0.00	<0.02	<0.00	<0.62	<0.00
D16JN20a337	0.06	0.07	0.07	<0.01	554,179.71	<0.08	18.41	<63.44	0.2	<0.00	0.25	<0.00	1.6	0.02	<0.00	<0.02	<0.00	<0.51	<0.00
D16JN20a326	<0.02	<0.02	<0.01	<0.00	556,932.83	<0.07	21.42	<79.04	0.18	0	<0.11	<0.00	1.3	<0.02	0	<0.01	<0.00	<0.54	0.2
D16JN20a322	0.03	0.05	<0.02	<0.01	573,623.59	<0.10	28.41	<89.17	0.21	<0.00	0.22	0	2.21	<0.02	<0.00	<0.02	<0.00	<0.65	0.02
D16JN20a317	<0.02	0.03	<0.01	<0.00	455,868.99	<0.10	39.23	<90.30	0.17	<0.00	<0.20	<0.00	1.06	<0.02	0.01	<0.02	<0.00	<0.65	<0.00
D16JN20a338	1.47	1.73	1.69	<0.01	561,735.59	<0.10	16.96	<94.48	0.25	<0.00	0.25	0	1.28	<0.03	<0.00	<0.01	<0.00	<0.71	<0.00
D16JN20a344	0.08	<0.03	0.04	<0.00	728,950.47	<0.18	40.25	<152.09	<0.13	<0.00	<0.34	<0.00	1.61	<0.04	<0.00	<0.03	<0.00	<1.30	<0.00
D16JN20a345	0.38	0.2	0.05	0.04	460,062.06	<0.21	22.67	<222.50	<0.16	<0.00	<0.42	<0.00	<1.47	<0.04	0.03	<0.04	<0.00	<1.64	0.85
D17JN21a434	6.68	8.01	7.75	<0.00	608,168.06	<0.04	42.02	143.98	0.09	<0.00	3	0	2.28	<0.01	<0.00	0.19	<0.00	0.61	0.02
D17JN21a424	<0.01	<0.00	0.01	<0.00	523,713.67	<0.03	85.87	<44.00	0.05	0	0.1	<0.00	1.15	<0.01	<0.00	<0.01	0	<0.31	0.01
D17JN21a431	0.11	0.12	0.09	<0.01	589,597.26	<0.04	48.36	<59.91	<0.04	<0.00	<0.11	<0.00	1.33	<0.01	0	0.01	0.01	<0.33	0.11

*All elements in ppm

Appendix V: Hemlo district pyrite mineral chemistry collected by LA-ICP-MS

Source Filename	Pb206	Pb207	Pb208	Pt195	S34	Sb121	Se77	Si29	Sn118	Ta181	Te125	Th232	Ti49	Tl205	U238	V51	W182	Zn66	Zr90
D17JN21a436	0.19	0.16	0.18	0.04	572,905.80	<0.05	55.02	<60.98	<0.05	<0.00	0.3	0	1.14	<0.01	<0.00	<0.00	<0.00	<0.35	28.54
D17JN21a430	12.97	15.22	14.3	<0.00	487,006.49	0.25	51.47	<61.34	<0.04	<0.00	2.85	0.01	<0.40	<0.01	0.01	0.26	<0.00	0.47	23.22
D17JN21a449	67.1	79.66	74.04	<0.03	965,599.36	1.17	189.7	<597.82	<0.49	<0.01	76.49	<0.01	<4.75	<0.07	<0.00	<0.06	<0.03	<4.17	<0.00
D17JN21a433	6.22	6.65	5.92	<0.00	517,929.14	0.09	63.41	182.29	0.14	<0.00	0.59	<0.00	0.63	<0.02	<0.00	0.51	<0.00	0.73	0.39
D17JN21a429	0.74	1.31	1.05	<0.00	420,353.90	0.12	32.88	<68.41	0.1	<0.00	1.54	<0.00	<0.24	<0.01	<0.00	<0.00	<0.00	<0.49	0.04
D17JN21a437	0.04	<0.01	<0.01	<0.01	552,505.08	<0.07	88.76	<87.27	0.07	<0.00	0.38	0	1.06	<0.01	0	<0.01	0	<0.46	0.01
D17JN21a447	4.33	4.22	5.22	<0.01	612,352.43	<0.07	54.43	<95.52	<0.07	<0.00	0.65	<0.00	2.56	<0.02	<0.00	<0.01	0.01	<0.64	<0.00
D17JN21a445	2	3.38	2.38	<0.01	622,691.47	<0.09	45.48	<124.94	<0.08	<0.00	0.5	<0.00	<0.66	<0.02	<0.00	<0.03	<0.00	<0.75	<0.00
D17JN21a428	1.61	2.15	1.97	<0.01	545,602.01	<0.09	55.61	<148.71	<0.09	<0.00	0.38	0.03	4.53	0.03	<0.00	<0.01	<0.00	<0.90	13.49
D17JN21a435	1.78	0.22	0.19	0.02	571,220.80	<0.12	36.65	<142.99	<0.11	<0.00	<0.14	<0.00	1.41	<0.03	0.13	0.02	<0.00	<0.89	27.93
D17JN21a438	2.66	2.45	2.43	<0.01	464,844.48	<0.11	27.11	<181.48	<0.11	<0.00	7.54	<0.00	<1.37	0.04	<0.00	<0.02	<0.00	<0.88	<0.00
D17JN21a446	3.83	4.04	5.32	<0.01	418,861.26	<0.10	34.26	350.95	0.13	<0.00	<0.15	<0.00	<1.17	0.02	<0.00	0.19	<0.01	<1.19	25.38
D17JN21a426	9.14	9.83	23.36	<0.03	703,717.09	<0.23	98.39	489.15	<0.20	<0.01	2.3	<0.01	<1.88	<0.05	0.02	<0.06	<0.01	<1.96	<0.01
D17JN21a067	7.25	8.64	8.3	0.01	447,159.64	<0.04	68.82	954.26	0.11	<0.00	<0.09	0	1.56	0.02	0	<0.01	0	0.53	<0.00
D17JN21a065	0.77	0.83	0.74	0	485,708.06	<0.05	109.89	<48.74	0.12	<0.00	0.12	<0.00	0.54	<0.01	<0.00	<0.01	<0.00	2.45	<0.00
D17JN21a070	<0.01	<0.01	<0.01	0.08	492,105.89	<0.05	39.04	<56.46	0.16	<0.00	<0.09	<0.00	1.45	<0.01	<0.00	0.01	0	<0.38	0
D17JN21a064	<0.02	0.04	0.03	0.01	515,653.60	<0.05	77.75	<57.04	0.13	<0.00	<0.07	<0.00	0.93	<0.01	<0.00	<0.01	<0.00	<0.36	<0.00
D17JN21a094	0.03	0.03	0.04	0.32	454,646.66	<0.04	47.15	<43.48	0.08	<0.00	0.06	<0.00	1.5	<0.01	<0.00	0.01	0	<0.30	<0.00
D17JN21a071	<0.01	<0.01	<0.01	0.11	502,877.58	<0.05	39.57	<55.82	0.11	<0.00	<0.08	<0.00	0.52	<0.01	<0.00	<0.01	<0.00	<0.36	0
D17JN21a069	<0.01	<0.01	<0.01	0.05	494,901.54	<0.05	56.94	<50.79	0.11	<0.00	<0.07	<0.00	<0.40	<0.01	<0.00	0.01	<0.00	0.48	0
D17JN21a074	0.12	0.14	0.18	0.05	471,210.50	<0.05	124.83	<54.56	<0.07	<0.00	0.27	<0.00	0.91	<0.01	0	<0.01	<0.00	0.55	0
D17JN21a075	0.07	0.14	0.12	0.27	512,794.37	<0.05	86.57	<56.28	0.12	<0.00	0.13	<0.00	1.52	<0.01	<0.00	<0.01	<0.00	<0.41	<0.00
D17JN21a072	<0.01	<0.01	<0.01	0.25	505,143.92	<0.05	40.55	<52.80	0.11	<0.00	<0.05	<0.00	1.85	<0.01	<0.00	<0.01	<0.00	<0.34	<0.00
D17JN21a073	0.08	0.07	0.05	0.25	525,953.92	<0.05	50.17	<54.20	0.11	<0.00	0.1	<0.00	0.92	<0.01	<0.00	0.02	<0.00	0.34	0.01
D17JN21a092	0.02	0.03	<0.01	0.05	499,744.09	<0.05	95.35	<61.70	0.09	<0.00	<0.09	<0.00	0.58	<0.01	<0.00	<0.01	0	<0.47	0.2
D17JN21a093	0.18	0.17	0.2	2.32	446,588.27	<0.05	42.87	<66.42	0.11	<0.00	<0.10	<0.00	2.1	<0.01	<0.00	<0.01	<0.00	<0.41	<0.00
D17JN21a077	0.39	0.41	0.31	0.02	478,007.95	<0.05	111.76	<53.83	0.11	<0.00	0.49	<0.00	0.92	<0.01	<0.00	0.02	0	<0.36	<0.00
D17JN21a068	<0.01	<0.01	<0.01	0.02	451,181.63	<0.05	47.75	<64.01	<0.06	<0.00	<0.10	0	1.58	<0.01	<0.00	<0.01	<0.00	<0.45	<0.00
D17JN21a087	0.1	0.03	0.02	0.14	514,890.60	<0.05	94.12	<59.87	0.09	<0.00	<0.09	<0.00	1.22	<0.01	<0.00	0.01	0.01	0.62	0.01
D17JN21a066	0.02	0.01	0.04	0.08	530,380.84	<0.06	61.24	<67.72	0.09	<0.00	3.98	0	<0.35	<0.01	<0.00	<0.02	<0.00	<0.45	<0.00
D17JN21a090	0.03	0.02	0.01	0.05	542,410.51	<0.06	62.13	<53.29	0.11	0	<0.12	<0.00	2.03	<0.01	<0.00	0.01	0	<0.39	0.01
D17JN21a085	1.05	1.32	1.22	0.07	579,095.95	<0.07	157.92	<71.13	0.12	0	0.31	<0.00	0.6	<0.02	<0.00	0.01	0	<0.54	0.51
D17JN21a091	1	1.21	1.39	0.8	585,546.72	<0.06	132.25	<62.62	0.11	<0.00	0.66	<0.00	3.97	<0.01	<0.00	<0.01	<0.00	<0.56	0
D17JN21a089	0.02	0.05	0.02	0.06	602,846.32	<0.08	171.47	<83.76	0.19	<0.00	0.21	0	1.75	<0.02	<0.00	<0.02	<0.00	<0.54	<0.00
D17JN21a088	0.31	0.38	0.41	1.01	651,464.04	<0.08	161	<95.89	0.14	<0.00	0.83	0	2.65	<0.02	<0.00	<0.01	<0.00	<0.57	<0.00
D17JN21a086	0.17	0.19	0.21	0.03	564,935.07	<0.08	205.5	<71.79	0.15	0	0.99	<0.00	0.83	<0.02	<0.00	<0.01	0	0.62	0.13
D17JN21a078	0.66	1.37	1.09	0.05	518,238.39	<0.07	154.34	<85.78	0.12	<0.00	1.24	<0.00	2.41	<0.02	<0.00	<0.01	<0.00	<0.57	<0.00
D17JN21a076	6.67	8.71	8.18	2.28	519,291.40	<0.14	110.93	278.42	0.17	0.04	1	<0.00	261.8	<0.04	<0.00	1.1	<0.00	<1.01	8.13
D17JN21a207	83.11	87.94	90.76	<0.01	413,861.65	0.14	86.27	1,807.35	0.12	<0.00	19.54	<0.00	1.67	<0.01	0	0.04	0.01	<0.55	0.01
D17JN21a206	37.98	44.25	46.4	<0.01	512,589.75	0.12	68.24	<140.14	0.13	<0.00	33.57	<0.00	<0.79	0.05	<0.00	<0.03	<0.01	<1.05	<0.00
D17JN21a204	1.4	1.3	1.06	<0.00	436,458.72	<0.03	52.5	187.21	0.08	<0.00	1.14	<0.00	0.94	<0.01	<0.00	<0.01	<0.00	<0.35	0
D17JN21a199	13.78	15.77	15.63	0	501,910.68	<0.04	31.09	315.88	0.12	<0.00	2.73	<0.00	1.58	0.02	<0.00	<0.01	<0.00	<0.38	<0.00
D17JN21a194	0.53	0.77	0.68	<0.00	423,723.08	<0.05	71.66	<61.10	0.08	<0.00	9.14	<0.00	0.62	<0.01	0	<0.01	<0.00	<0.38	<0.00
D17JN21a211	0.96	1.16	1.04	<0.00	528,946.70	<0.05	63.14	<57.44	0.12	0	7.17	<0.00	1.19	<0.01	<0.00	<0.00	<0.00	0.7	<0.00
D17JN21a195	28.8	25.82	27.32	<0.00	470,240.79	<0.05	90.34	<62.77	0.11	<0.00	14.82	<0.00	0.94	0.02	<0.00	<0.01	0	<0.37	<0.00
D17JN21a203	34.39	39.73	38.4	0.01	381,726.16	0.16	33.68	<66.70	0.1	<0.00	0.27	<0.00	1.03	0.17	<0.00	<0.01	<0.00	<0.42	<0.00
D17JN21a213	<0.01	<0.01	<0.01	<0.01	506,829.06	<0.04	66.58	<60.49	0.1	<0.00	2.11	<0.00	0.78	<0.01	<0.00	0.01	<0.00	<0.36	<0.00
D17JN21a208	<0.01	<0.01	0.01	<0.01	515,641.42	<0.04	9.99	<55.79	0.11	<0.00	1.39	<0.00	1.1	<0.01	0	<0.01	<0.00	<0.35	<0.00
D17JN21a212	0.02	0.05	0.04	<0.00	538,171.92	<0.05	54.72	<64.04	0.13	0	1.08	<0.00	0.96	<0.01	<0.00	0.01	<0.00	<0.41	0
D17JN21a217	<0.01	0.03	0.03	<0.00	553,752.74	<0.05	44.62	<56.07	0.17	<0.00	0.45	<0.00	1.18	<0.01	0	<0.01	<0.00	<0.48	<0.00

*All elements in ppm

Appendix V: Hemlo district pyrite mineral chemistry collected by LA-ICP-MS

Source Filename	Pb206	Pb207	Pb208	Pt195	S34	Sb121	Se77	Si29	Sn118	Ta181	Te125	Th232	Ti49	Tl205	U238	V51	W182	Zn66	Zr90
D17JN21a202	209.78	268.44	247.61	0.01	488,518.30	0.2	61.31	96.01	0.12	<0.00	5.01	<0.00	0.53	0.04	<0.00	0.04	<0.00	1.06	<0.00
D17JN21a215	7.05	7.66	7.4	<0.00	566,808.01	<0.06	141.2	<56.85	0.12	<0.00	40.13	<0.00	1.17	0.02	<0.00	<0.01	<0.00	0.58	0.01
D17JN21a210	<0.01	<0.01	<0.01	<0.00	517,013.43	<0.04	93.21	<56.07	0.1	<0.00	9.99	0	0.36	<0.01	0	<0.01	0	<0.43	0
D17JN21a193	0.3	0.41	0.39	<0.00	590,651.01	<0.06	62.17	<74.56	0.12	<0.00	1.26	<0.00	0.71	<0.01	<0.00	<0.02	<0.00	<0.50	<0.00
D17JN21a216	0.05	0.06	0.05	<0.00	575,524.49	<0.06	57.18	<67.78	0.12	<0.00	3.9	<0.00	0.93	<0.01	<0.00	<0.01	0	<0.54	<0.00
D17JN21a209	1.28	0.71	0.44	<0.00	546,460.75	<0.06	37.78	<73.05	0.13	<0.00	0.76	0	0.52	0.01	<0.00	<0.01	<0.00	<0.53	0.02
D17JN21a196	16.95	20.51	19.79	0.01	497,151.23	0.17	38.47	<84.19	0.15	<0.00	0.49	<0.00	2.68	0.06	<0.00	<0.01	<0.00	<0.53	<0.00
D17JN21a200	5	6.31	6.86	<0.00	513,813.06	<0.06	31.01	<96.79	0.08	<0.00	3.48	<0.00	1.53	0.04	<0.00	<0.01	<0.00	<0.68	<0.00
D17JN21a197	7.31	7.85	6.83	<0.01	531,297.70	<0.15	22.12	<164.55	0.24	<0.00	<0.21	<0.00	<1.35	0.06	<0.00	<0.02	0.02	<1.08	<0.00
D17JN21a201	37.21	36.03	38.51	0.04	438,980.36	<0.17	<10.34	909.13	<0.23	<0.00	<0.44	<0.00	<1.28	<0.04	0.15	4.43	<0.01	<1.78	0.27
D17JN21a214	0.08	0.29	0.12	<0.02	566,068.77	<0.18	66.97	<239.51	<0.20	<0.00	1.18	<0.01	11.03	<0.06	<0.00	<0.04	<0.00	<1.56	<0.00
D17JN21a205	5.56	6.84	6.32	0.04	434,110.39	0.17	46.25	<188.13	<0.17	<0.00	2.89	<0.00	199.09	<0.03	<0.00	1.35	<0.00	<1.46	0.06
D17JN21a388	0.02	0.06	<0.01	<0.00	572,636.85	<0.04	6.58	<69.67	<0.04	<0.00	<0.07	<0.00	1.89	<0.01	<0.00	<0.01	<0.00	<0.39	0.01
D17JN21a378	<0.01	0.05	<0.01	<0.01	512,162.98	<0.06	7.14	<78.23	<0.06	<0.00	<0.11	<0.00	0.99	<0.01	<0.00	0.2	<0.00	<0.47	<0.00
D17JN21a380	0.01	<0.01	<0.01	<0.00	552,779.38	<0.03	18.73	<52.21	0.07	<0.00	0.1	<0.00	0.82	<0.01	<0.00	0.01	<0.00	0.6	0
D17JN21a389	<0.01	<0.01	0.01	<0.00	479,022.32	<0.03	14.06	<48.92	0.06	<0.00	0.27	0	0.97	<0.01	<0.00	<0.01	<0.00	0.31	0.01
D17JN21a381	<0.01	0.01	<0.01	0	513,388.19	<0.03	23.08	<51.87	0.07	<0.00	<0.12	<0.00	1.14	<0.01	<0.00	<0.01	<0.00	0.51	<0.00
D17JN21a374	0.02	0.08	0.05	0.01	515,694.51	<0.04	9.47	<48.33	0.08	<0.00	0.47	<0.00	<0.40	<0.01	<0.00	<0.01	<0.00	<0.33	0
D17JN21a377	<0.01	<0.01	<0.01	0.01	502,918.26	<0.03	8.73	<50.89	0.07	<0.00	<0.06	<0.00	1.86	<0.01	<0.00	0.02	<0.00	<0.30	<0.00
D17JN21a382	0.02	<0.01	<0.00	<0.00	476,652.58	<0.04	16.36	<48.27	0.07	<0.00	<0.11	<0.00	0.82	<0.01	0	<0.01	<0.00	<0.35	<0.00
D17JN21a385	0.02	0.01	0.11	<0.00	490,166.96	<0.04	35.62	<56.15	0.06	<0.00	2.28	<0.00	0.7	<0.01	<0.00	0.02	<0.00	1.58	<0.00
D17JN21a373	0.02	0.06	<0.01	<0.00	588,165.79	<0.04	14.45	<55.04	<0.05	0	<0.09	<0.00	1.7	<0.01	<0.00	<0.02	0	0.51	<0.00
D17JN21a384	<0.01	<0.01	<0.01	<0.00	553,761.51	<0.05	12.7	<58.36	0.1	0	<0.13	<0.00	1.59	<0.01	<0.00	<0.01	<0.00	<0.35	0.02
D17JN21a386	0.01	0.04	0.01	<0.00	491,048.02	<0.04	7.1	<53.48	0.14	<0.00	<0.09	0.01	0.91	<0.01	<0.00	<0.01	<0.00	<0.39	0.05
D17JN21a391	1.53	1.7	1.82	0.01	501,989.08	0.05	13.98	<46.09	0.29	<0.00	4	<0.00	<0.37	<0.01	0	<0.01	<0.00	620.3	0.18
D17JN21a387	0.02	0.05	<0.01	<0.00	557,921.85	<0.04	12.76	<69.49	0.06	0	<0.05	<0.00	2.2	<0.01	<0.00	<0.01	<0.00	<0.47	<0.00
D17JN21a379	0.02	<0.01	<0.01	<0.01	492,080.12	<0.05	12.6	<76.38	<0.06	0	0.39	<0.00	0.64	<0.01	<0.00	<0.01	<0.00	0.63	<0.00
D17JN21a375	0.12	<0.01	<0.01	<0.01	488,086.13	<0.06	18.66	<79.34	0.1	<0.00	0.11	<0.00	2.25	<0.02	0.01	<0.01	<0.00	<0.45	2.29
D17JN21a376	0.03	0.01	<0.01	<0.01	556,009.08	<0.06	16.55	<112.03	<0.08	<0.00	<0.13	<0.00	<0.69	<0.02	<0.00	<0.02	<0.00	1	<0.00
D17JN21a392	0.14	0.25	0.22	<0.01	489,090.39	<0.09	11.83	131.3	0.13	<0.00	0.27	0.07	<0.99	<0.03	<0.00	0.23	<0.00	<0.74	0.2
D17JN21a390	<0.02	<0.03	<0.02	<0.01	563,782.64	<0.08	37.59	168.05	<0.10	<0.00	<0.19	<0.00	<0.67	<0.03	<0.00	<0.02	0.01	1.06	0.05
D16JN20a183	<0.04	<0.05	<0.03	<0.01	508,675.19	<0.23	24.56	<151.41	0.28	<0.00	0.46	<0.00	3.21	<0.05	<0.00	<0.04	<0.00	<1.22	<0.01
D16JN20a165	20.27	21.76	22.17	0	474,332.61	<0.07	17.39	<58.15	0.12	<0.00	3.64	0	1.61	0.15	<0.00	<0.01	<0.00	<0.41	<0.00
D16JN20a178	2.03	1.91	1.98	<0.00	495,837.80	<0.08	23.45	138.74	0.19	<0.00	2.64	<0.00	1.15	<0.01	<0.00	<0.01	<0.00	27.92	<0.00
D16JN20a184	<0.01	<0.01	<0.01	<0.00	494,667.80	<0.08	22.88	<56.05	0.16	0	<0.07	<0.00	0.77	<0.02	<0.00	<0.01	<0.00	<0.42	0
D16JN20a162	<0.02	<0.02	0.02	0.02	498,692.25	<0.08	29.3	<63.75	0.25	<0.00	<0.10	<0.00	1.15	<0.02	<0.00	<0.01	<0.00	<0.48	<0.00
D16JN20a173	<0.01	<0.02	<0.01	0.04	504,605.01	<0.07	12.53	<61.57	0.22	<0.00	<0.08	<0.00	2	<0.02	<0.00	<0.01	<0.00	<0.45	<0.00
D16JN20a170	0.02	<0.01	0.03	<0.00	469,427.33	<0.07	15.38	<49.75	0.1	<0.00	<0.08	<0.00	1.48	<0.01	<0.00	<0.01	0	<0.43	<0.00
D16JN20a186	2.11	2.39	2.37	<0.00	511,975.52	<0.08	30.68	<52.86	0.18	0	1.96	<0.00	1.49	<0.02	0	0.02	<0.00	<0.54	<0.00
D16JN20a181	0.58	0.48	0.67	0	597,193.16	<0.10	41.51	<60.55	0.19	<0.00	0.57	<0.00	2.12	<0.02	<0.00	<0.01	0.01	7.99	<0.00
D16JN20a174	<0.01	<0.02	<0.01	<0.00	563,122.04	<0.09	18.51	<65.62	0.19	<0.00	0.11	<0.00	2.23	<0.02	<0.00	<0.01	0	<0.52	<0.00
D16JN20a163	<0.02	<0.02	<0.01	0.01	530,531.06	<0.09	32.73	<70.32	0.18	0	<0.11	<0.00	0.85	<0.02	<0.00	<0.01	0.01	<0.58	0
D16JN20a177	0.02	<0.01	<0.01	<0.01	568,438.99	<0.11	24.68	<68.57	0.21	<0.00	<0.10	<0.00	1.47	<0.02	<0.00	<0.01	<0.00	<0.55	<0.00
D16JN20a172	0.02	<0.02	<0.01	0.31	567,351.44	<0.09	20.36	<64.00	0.13	<0.00	0.44	0	2.71	<0.02	<0.00	<0.01	<0.00	<0.59	<0.00
D16JN20a185	0.18	0.17	0.14	<0.00	542,672.16	<0.10	30.86	<70.84	0.22	<0.00	<0.06	<0.00	1.65	<0.02	<0.00	<0.02	<0.00	<0.60	<0.00
D16JN20a166	<0.02	<0.02	<0.02	<0.01	563,584.03	<0.09	36.48	<85.68	0.19	0	<0.10	0	1.07	<0.02	0	<0.02	0.01	<0.53	<0.00
D16JN20a179	2.65	2.91	2.39	0.01	438,940.09	<0.10	28.3	<61.63	0.18	<0.00	0.69	<0.00	1.14	<0.02	<0.00	<0.01	<0.00	2.07	<0.00
D16JN20a175	<0.01	<0.02	<0.01	0	517,982.04	<0.10	20.86	<65.24	0.16	<0.00	0.13	0	2.13	<0.02	<0.00	<0.01	<0.00	0.58	<0.00
D16JN20a180	0.18	0.13	0.13	<0.00	560,068.40	<0.12	41.61	<64.34	0.2	<0.00	0.54	0	3	<0.02	0	<0.01	0	<0.62	0.01
D16JN20a176	0.02	<0.02	<0.01	<0.00	510,862.03	<0.10	33.79	<62.19	0.12	<0.00	<0.08	<0.00	2.88	<0.02	<0.00	<0.01	<0.00	<0.53	0

*All elements in ppm

Appendix V: Hemlo district pyrite mineral chemistry collected by LA-ICP-MS

Source Filename	Pb206	Pb207	Pb208	Pt195	S34	Sb121	Se77	Si29	Sn118	Ta181	Te125	Th232	Ti49	Tl205	U238	V51	W182	Zn66	Zr90
D16JN20a168	<0.02	0.02	<0.02	<0.00	564,814.78	<0.09	21.42	<65.34	0.21	0	0.13	<0.00	1.1	<0.02	<0.00	<0.02	<0.00	<0.57	<0.00
D16JN20a169	0.14	0.13	0.18	0	534,153.91	<0.09	27.22	<61.18	0.14	<0.00	<0.09	<0.00	1.38	<0.02	<0.00	<0.02	0	<0.52	0
D16JN20a164	17.64	21.23	20.07	<0.00	579,536.74	<0.11	42.08	<83.63	0.3	<0.00	4.52	<0.00	3.27	<0.02	<0.00	<0.01	<0.00	767.96	<0.00
D16JN20a167	<0.02	0.03	<0.02	<0.01	543,967.53	<0.11	28.23	<77.80	0.19	<0.00	<0.15	0	1.04	<0.02	0	<0.02	<0.00	<0.63	0.08
D16JN20a182	1.86	1.71	1.57	1.35	484,842.60	<0.10	17.8	<71.62	0.13	0.01	0.82	<0.00	<0.71	<0.02	<0.00	<0.02	<0.00	3.94	<0.00
D16JN20a170	<0.02	<0.02	<0.02	<0.01	479,463.81	<0.13	21.17	<95.67	0.14	<0.00	<0.16	<0.00	1.68	<0.03	<0.00	<0.03	0	<0.82	<0.00
D16JN20a171	0.63	0.41	0.43	0.02	669,226.65	<0.16	47.79	<120.63	0.22	<0.00	<0.17	<0.00	2.72	<0.04	0	<0.03	<0.00	<1.26	0.01
D16JN20a157	3.62	3.74	3.77	<0.00	461,377.22	0.09	3.4	101.18	0.16	0	1.77	0	1.46	<0.02	<0.00	0.02	<0.00	<0.47	0
D16JN20a141	18.61	22.48	21.08	<0.01	473,028.37	0.52	18.26	118.04	0.2	<0.00	0.26	0.01	0.69	<0.02	0.02	<0.01	0	<0.52	3.37
D16JN20a138	1.66	1.55	1.6	<0.01	473,037.00	<0.16	22.24	579.29	0.16	<0.00	1.42	<0.00	2.72	<0.03	<0.00	<0.02	<0.00	<0.84	0.27
D16JN20a147	0.01	0.03	0.03	<0.00	457,786.04	<0.09	8.23	<55.57	0.16	<0.00	<0.10	<0.00	2.14	<0.02	<0.00	<0.01	<0.00	<0.55	<0.00
D16JN20a158	10.8	12.09	11.71	<0.00	440,085.85	0.37	3.79	<65.19	0.21	<0.00	0.17	<0.00	0.62	<0.02	<0.00	0.02	<0.00	<0.61	0.01
D16JN20a150	11.16	13.19	12.2	0	493,776.33	0.46	3.63	<54.30	0.2	0.01	<0.09	0	3.98	<0.02	0.01	0.02	0.01	<0.47	2.49
D16JN20a134	15.68	18.74	16.87	<0.00	457,729.69	1.39	4.05	<75.12	0.21	0.02	<0.16	<0.00	16.33	<0.02	<0.00	0.03	0.04	<0.52	0.27
D16JN20a161	4.93	5.68	5.45	<0.00	524,770.53	<0.11	31.76	<65.29	0.26	0	2.4	<0.00	<0.47	<0.02	<0.00	0.01	<0.00	0.67	<0.00
D16JN20a142	7.76	5.08	4.15	0.04	461,180.79	0.21	6.15	233.6	0.14	0.01	0.54	0.43	2.04	<0.02	1.51	0.03	<0.00	1.18	699.24
D16JN20a140	0.18	0.24	0.1	<0.00	520,098.76	<0.12	37.45	<88.38	0.22	0	4.45	<0.00	1.98	<0.02	<0.00	<0.02	<0.00	<0.71	0.02
D16JN20a141	2.12	2.69	1.91	<0.01	537,964.45	<0.15	4.28	<118.03	0.26	<0.00	<0.19	<0.00	<0.78	<0.03	<0.00	<0.02	0	1	<0.00
D16JN20a143	43.67	48.02	46.29	0.02	396,040.47	3.14	<4.09	<102.42	<0.11	<0.00	0.49	0.02	<0.67	0.04	0.01	0.06	<0.00	<0.91	0.29
D16JN20a544	1.85	2.25	2.02	<0.00	499,245.38	<0.05	70.07	<50.55	0.11	<0.00	0.8	<0.00	0.88	<0.01	<0.00	<0.01	<0.00	<0.38	<0.00
D16JN20a532	7.88	9.09	8.56	<0.00	402,408.93	<0.10	58.31	<103.61	0.09	<0.00	11.46	<0.00	8.64	<0.03	0.01	<0.01	<0.00	<0.78	<0.00
D16JN20a529	0.26	0.11	0.17	<0.00	483,875.17	<0.21	48.69	<298.87	0.17	<0.00	<0.27	<0.00	<2.08	<0.04	<0.00	<0.04	<0.01	<1.99	<0.00
D16JN20a543	2.27	1.62	1.53	0.01	456,014.18	<0.05	31.43	<52.12	0.08	<0.00	0.32	0	0.91	<0.01	<0.00	<0.01	<0.00	<0.32	<0.00
D16JN20a541	0.18	0.23	0.2	0.07	506,747.96	<0.05	50.05	<65.69	0.14	<0.00	<0.11	<0.00	0.99	<0.01	<0.00	<0.01	<0.00	0.47	0
D16JN20a536	0.02	0.01	0.03	0.02	492,305.03	<0.06	34.93	<57.12	0.09	<0.00	<0.07	<0.00	0.92	<0.01	<0.00	<0.01	<0.00	<0.39	<0.00
D16JN20a545	1.05	1.01	1.02	0.01	455,075.87	<0.05	56.4	<48.87	0.11	<0.00	0.65	<0.00	0.37	<0.01	<0.00	<0.01	<0.00	1.93	0
D16JN20a528	28.11	36.09	32.57	0.09	453,650.19	<0.07	126.75	<62.50	0.08	<0.00	6.26	<0.00	0.61	<0.01	<0.00	<0.01	<0.00	<0.53	0.01
D16JN20a534	0.01	<0.01	<0.01	0.06	471,399.31	<0.06	37.55	<63.61	0.13	<0.00	<0.08	<0.00	1.55	<0.01	<0.00	0.04	<0.00	<0.42	<0.00
D16JN20a527	0.24	0.37	0.34	0.02	462,950.52	<0.05	64.86	<48.23	0.12	<0.00	1.82	<0.00	1.28	<0.01	<0.00	0.01	<0.00	<0.40	<0.00
D16JN20a530	0.46	0.45	0.46	0.04	523,346.15	<0.07	29.7	<64.39	0.17	<0.00	2.39	<0.00	1.28	<0.01	<0.00	0.01	0	<0.44	0
D16JN20a542	6.18	7.88	7.05	<0.00	405,914.39	<0.06	45.88	<73.33	0.1	0	1.33	<0.00	<0.42	<0.02	<0.00	<0.01	<0.01	24.42	<0.00
D16JN20a533	0.07	0.1	0.08	0.07	460,415.32	<0.06	28.48	<68.46	0.15	<0.00	0.59	<0.00	2.73	<0.02	<0.00	<0.01	<0.00	<0.54	<0.00
D16JN20a525	125.8	148.78	141.99	<0.00	462,736.47	<0.06	94.97	<60.31	0.19	<0.00	0.5	<0.00	2.17	0.05	<0.00	<0.01	<0.00	<0.35	<0.00
D16JN20a540	4.31	5.52	5.3	<0.00	549,229.12	<0.06	48.41	<71.83	0.16	<0.00	1.02	<0.00	1.52	<0.02	<0.00	<0.01	<0.00	9.47	<0.00
D16JN20a538	1.37	1.58	1.62	0.02	532,010.42	<0.07	98.44	<75.52	0.21	<0.00	0.25	<0.00	0.86	<0.01	<0.00	<0.01	<0.00	38.16	0
D16JN20a524	0.03	0.03	<0.01	0.09	473,464.57	<0.05	12.53	<64.47	0.13	<0.00	<0.07	<0.00	<0.31	<0.01	<0.00	<0.01	0	0.37	0.01
D16JN20a523	0.03	0.03	0.02	0.07	430,834.07	<0.06	25.19	<77.78	0.1	<0.00	0.55	<0.00	1.09	<0.01	<0.00	<0.01	<0.00	<0.44	0.04
D16JN20a535	0.1	0.11	0.14	0.01	554,564.75	<0.08	51.92	<92.67	0.11	<0.00	2.32	<0.00	3.28	<0.02	<0.00	0.05	<0.00	<0.51	0.01
D16JN20a539	0.25	0.3	0.23	0.02	463,448.31	<0.06	63.39	<80.22	<0.06	<0.00	0.63	<0.00	0.94	<0.02	<0.00	<0.01	<0.00	<0.49	<0.00
D16JN20a537	0.56	0.71	0.61	0.05	501,519.14	<0.09	80.94	<82.16	0.13	<0.00	0.84	<0.00	1.49	<0.02	<0.00	0.01	<0.00	<0.53	<0.00
D16JN20a546	<0.01	0.03	0.03	<0.00	432,347.46	<0.09	31.31	<88.91	<0.07	<0.00	<0.15	<0.00	2.77	<0.02	<0.00	<0.02	<0.00	<0.74	<0.00
D16JN20a522	0.17	0.16	0.1	0.03	515,480.43	<0.08	23.22	<100.51	0.14	<0.00	0.21	<0.00	<0.64	<0.02	<0.00	<0.01	<0.00	<0.55	6.31
D16JN20a066	13.1	14.5	13.07	<0.00	482,530.29	0.3	12.58	204.82	0.2	0.02	0.17	1.26	82.62	0.03	0.51	1.01	0.04	<0.81	51.3
D16JN20a056	6.37	8.1	7.56	0.02	526,177.80	<0.26	10.45	682.03	0.2	<0.00	1.01	<0.00	1.59	<0.05	<0.00	<0.03	<0.00	1.59	0.03
D16JN20a054	30.38	34.49	33.3	0.01	528,285.51	0.17	30.17	<94.74	0.61	<0.00	13.27	<0.00	<0.73	0.05	<0.00	<0.02	<0.00	2.93	<0.00
D16JN20a058	3.89	3.94	3.9	<0.02	598,709.93	<0.22	22.58	<182.92	0.56	0.03	<0.26	0.04	175.19	0.05	0.06	0.54	<0.01	<1.52	0.22
D16JN20a058	15.06	18.46	18.31	<0.02	494,698.63	<0.25	<6.62	<174.64	<0.20	<0.00	<0.28	<0.00	<1.36	0.12	<0.00	<0.05	<0.01	<1.78	<0.00
D16JN20a053	1.81	1.04	1.22	<0.02	671,303.08	<0.40	13.35	<240.42	0.43	<0.00	<0.64	<0.01	10.42	<0.08	0.08	<0.10	<0.00	<2.37	2.77
D16JN20a060	19.63	27.4	23.2	0.07	539,368.09	<0.40	14.24	<295.49	0.49	<0.00	0.97	0.18	26.82	0.13	0.04	0.44	<0.00	<2.51	13.07
D16JN20a067	0.03	0.07	0.08	<0.00	514,724.52	<0.09	9.93	<61.41	0.15	<0.00	0.17	<0.00	1.25	<0.02	0.01	<0.02	0.01	<0.52	1.09

*All elements in ppm

Appendix V: Hemlo district pyrite mineral chemistry collected by LA-ICP-MS

Source Filename	Pb206	Pb207	Pb208	Pt195	S34	Sb121	Se77	Si29	Sn118	Ta181	Te125	Th232	Ti49	Tl205	U238	V51	W182	Zn66	Zr90
D16JN20a049	<0.02	<0.02	<0.02	<0.00	492,135.59	<0.10	16.57	<53.74	0.22	<0.00	0.16	<0.00	0.79	<0.02	<0.00	<0.02	<0.00	<0.54	0.01
D16JN20a060	2.37	2.59	2.47	<0.00	438,436.88	<0.09	10.61	<63.54	0.15	0	0.4	0	1.3	<0.02	0	<0.01	<0.00	<0.53	0.11
D16JN20a050	<0.02	<0.02	<0.02	<0.00	543,383.55	<0.10	13.44	<63.79	0.19	<0.00	<0.12	<0.00	0.76	<0.02	<0.00	<0.02	<0.00	<0.63	<0.00
D16JN20a040	0.2	0.23	0.28	<0.01	518,602.59	<0.13	9.46	<74.24	0.3	<0.00	<0.16	0	1.79	0.04	0	<0.02	0	<0.57	0.01
D16JN20a039	0.03	0.03	<0.02	<0.00	528,619.70	<0.13	18.34	<73.21	0.27	<0.00	<0.17	0	1.72	<0.02	<0.00	<0.02	<0.00	<0.62	0.01
D16JN20a057	0.06	0.05	<0.01	<0.00	462,020.04	<0.09	5.58	<70.08	0.16	<0.00	<0.10	0	1.03	<0.01	0.01	<0.01	0	<0.47	0.6
D16JN20a042	<0.02	<0.02	<0.02	0.01	446,151.09	<0.12	34.69	<81.17	0.17	<0.00	0.17	<0.00	2.04	<0.02	<0.00	<0.02	<0.00	<0.65	0.01
D16JN20a063	<0.02	<0.02	<0.02	<0.00	524,139.09	<0.11	7.13	<70.51	0.19	<0.00	<0.11	<0.00	1.02	<0.02	<0.00	<0.01	<0.00	0.58	<0.00
D16JN20a065	0.09	0.21	0.11	<0.01	520,879.77	<0.09	9.83	<61.07	0.29	<0.00	<0.09	0	1.49	<0.02	0.01	<0.01	<0.00	<0.60	0.39
D16JN20a059	<0.02	<0.02	<0.01	<0.01	548,125.87	<0.08	24.32	<67.49	0.21	0	0.12	<0.00	1.74	<0.02	<0.00	<0.01	<0.00	<0.61	<0.00
D16JN20a051	1.26	1.75	1.5	<0.01	564,750.07	<0.14	6.87	<90.37	0.14	0	<0.22	<0.00	0.94	<0.03	<0.00	<0.02	<0.00	<0.90	<0.00
D16JN20a062	<0.03	<0.03	<0.02	<0.00	450,759.58	<0.18	8.05	<97.01	<0.10	<0.00	0.22	0.01	<0.82	<0.03	0.01	<0.03	0.01	<0.87	0.69
D16JN20a064	0.17	0.07	0.07	<0.01	515,824.72	<0.14	24.11	135.78	0.25	0.02	0.18	0.01	121.35	<0.03	0.07	0.44	0.01	<0.78	0.8
D16JN20a038	0.2	0.06	0.19	<0.00	602,275.20	<0.19	16.96	<125.16	0.11	<0.00	0.29	<0.00	<0.93	0.07	0	<0.02	<0.00	<1.00	0.09
D16JN20a068	<0.03	<0.03	<0.02	<0.00	440,663.28	<0.15	15.6	<100.20	0.19	<0.00	0.29	<0.00	<0.95	<0.03	<0.00	<0.03	<0.00	<0.93	0.55
D16JN20a061	<0.04	0.05	<0.03	<0.01	396,257.86	<0.26	9.61	<132.84	<0.17	<0.00	0.6	<0.00	<1.09	<0.05	<0.00	<0.05	<0.00	<1.42	<0.00
D16JN20a055	1.14	1.05	1.28	<0.01	454,006.84	<0.23	12.09	<134.71	0.23	<0.00	0.75	<0.00	6.22	<0.04	<0.00	<0.03	<0.00	<1.24	0.14
D16JN20a052	0.32	0.09	0.13	<0.01	559,943.16	<0.19	13.22	164.79	0.22	<0.00	<0.37	0.08	<0.84	0.04	0.07	<0.04	<0.00	<1.21	3.29
D17JN21a451	<0.01	0.01	<0.01	<0.00	522,938.93	<0.03	3.77	<53.37	0.1	<0.00	<0.06	0	1.54	<0.01	0	<0.01	<0.00	<0.33	0
D17JN21a460	0.03	0.01	0.03	0	526,372.37	<0.03	<2.08	<47.66	0.05	<0.00	0.3	<0.00	0.65	<0.01	0	<0.01	<0.00	0.49	0
D17JN21a464	191.11	225.09	206.57	<0.00	559,270.72	<0.04	12.93	<43.57	0.13	<0.00	6.55	<0.00	1.58	<0.01	<0.00	0.01	<0.00	0.77	<0.00
D17JN21a458	0.04	0.05	0.06	<0.00	490,924.15	<0.03	15.26	<50.16	0.09	0	<0.10	0	0.63	<0.01	<0.00	<0.01	0.01	0.38	<0.00
D17JN21a465	0.01	0.02	0.02	0	588,904.15	<0.04	3.98	<46.56	0.09	<0.00	0.17	<0.00	0.9	<0.01	<0.00	<0.01	<0.00	<0.35	<0.00
D17JN21a471	0.03	0.03	0.05	<0.00	527,551.54	<0.04	10	<44.13	0.05	<0.00	0.62	0	2.19	<0.01	<0.00	<0.01	0	0.43	0
D17JN21a469	0.36	0.44	0.4	<0.00	477,744.14	<0.04	16.08	<53.59	<0.04	<0.00	<0.07	<0.00	1.43	<0.01	<0.00	<0.01	<0.00	0.37	<0.00
D17JN21a463	0.04	0.1	0.07	0.02	549,459.53	<0.04	16.65	<63.33	0.07	<0.00	0.35	<0.00	1.98	<0.01	<0.00	<0.01	<0.00	0.52	<0.00
D17JN21a466	<0.01	0.01	0.02	<0.00	542,036.57	<0.04	4.92	<50.60	0.07	<0.00	0.11	0	1.61	<0.01	<0.00	<0.01	0	0.34	<0.00
D17JN21a456	0.22	0.45	0.34	<0.01	566,619.27	<0.04	26.02	<47.77	0.08	<0.00	0.71	0	1.55	<0.01	<0.00	<0.00	0	<0.36	<0.00
D17JN21a452	<0.01	0.02	<0.01	<0.00	565,785.29	<0.04	26.27	<64.68	0.12	<0.00	0.79	<0.00	1.06	<0.01	<0.00	<0.01	<0.00	<0.42	<0.00
D17JN21a461	<0.01	0.01	<0.01	0	574,111.64	<0.03	11.21	<55.41	0.08	<0.00	0.38	0	2.04	<0.01	<0.00	<0.01	<0.00	<0.34	<0.00
D17JN21a459	0.02	0.01	0.01	<0.00	517,359.10	<0.04	18.07	<54.86	0.07	0	1.07	<0.00	1.68	<0.01	<0.00	<0.01	0.01	0.61	<0.00
D17JN21a457	7.28	8.88	8.51	0.02	556,328.51	0.04	9.88	<56.22	0.06	<0.00	2.26	0	0.97	<0.01	<0.00	<0.01	<0.00	<0.34	<0.00
D17JN21a450	3.56	4.1	4.12	<0.00	478,700.12	0.08	<2.60	478.52	0.12	0	0.36	<0.00	0.69	<0.01	<0.00	<0.01	0	<0.39	<0.00
D17JN21a473	0.04	0.02	0.01	0.01	613,761.80	<0.04	23.71	<63.32	0.07	<0.00	0.81	<0.00	1.43	<0.01	0	0.02	<0.00	0.58	<0.00
D17JN21a462	12.11	6.55	7.53	<0.00	524,705.54	<0.04	14.4	<76.60	0.07	<0.00	0.76	<0.00	1.56	<0.01	<0.00	<0.01	0.01	<0.42	<0.00
D17JN21a454	<0.01	<0.01	<0.01	<0.00	528,358.32	<0.05	<3.28	<67.27	<0.06	<0.00	0.15	<0.00	<0.53	<0.01	<0.00	<0.01	<0.00	<0.50	<0.00
D17JN21a455	<0.01	<0.01	<0.01	<0.01	528,101.38	<0.06	14.46	<70.63	0.08	<0.00	0.37	<0.00	<0.41	<0.01	<0.00	<0.01	<0.00	<0.59	<0.00
D17JN21a474	42.9	54.21	50	0.03	651,861.73	<0.07	29.48	<83.81	<0.07	<0.00	12.68	0	1.2	<0.01	<0.00	0.22	<0.00	0.71	0.03
D17JN21a467	1.33	1.69	1.77	<0.00	439,862.67	<0.06	10.2	<93.50	0.35	<0.00	0.19	<0.00	<0.69	<0.01	0.03	0.05	<0.00	6.11	<0.00
D17JN21a453	0.79	0.59	2.34	<0.00	605,819.98	<0.11	9.94	<136.73	0.13	<0.00	<0.25	<0.00	126.36	<0.02	<0.00	0.06	0.03	0.91	<0.00
D17JN21a468	0.03	0.07	0.05	<0.01	675,376.87	<0.10	11.14	<150.38	<0.10	0.01	<0.21	<0.00	<1.14	<0.02	<0.00	<0.02	<0.00	<1.12	<0.00
D16JN20a499	0.17	0.15	0.12	<0.00	490,668.74	<0.07	22.68	<79.95	0.08	<0.00	0.08	0	0.81	0.08	<0.00	<0.01	<0.00	<0.61	1.47
D16JN20a520	<0.03	<0.03	0.37	<0.01	465,221.90	<0.16	18.92	<156.30	<0.13	<0.00	<0.17	0.01	<1.31	<0.04	<0.00	<0.02	<0.01	<1.17	<0.00
D16JN20a503	<0.01	0.02	0.01	<0.00	466,612.79	<0.05	4.83	<54.24	0.13	<0.00	<0.08	<0.00	1.48	<0.01	<0.00	<0.01	<0.00	<0.38	<0.00
D16JN20a519	0.06	0.03	0.03	<0.00	431,248.76	<0.05	<2.58	<58.88	0.11	<0.00	<0.10	<0.00	0.67	<0.01	0	<0.01	<0.00	<0.35	0.01
D16JN20a504	<0.01	0.01	<0.01	<0.00	481,088.22	<0.05	4.6	<52.27	0.1	<0.00	<0.07	<0.00	1.11	<0.01	0	0.02	<0.00	<0.37	0.02
D16JN20a518	0.08	0.06	0.08	<0.00	470,663.59	<0.05	8.99	<60.38	0.07	0	<0.10	0	1.17	<0.01	<0.00	<0.01	0	<0.32	0
D16JN20a521	1.7	2.18	2.03	0	471,567.07	<0.05	70.03	<57.38	0.12	0	27.07	<0.00	1.33	0.01	0	<0.01	<0.00	<0.38	<0.00
D16JN20a501	0.69	0.86	0.73	<0.00	466,700.43	<0.06	30.72	<68.80	0.16	<0.00	5.38	0	1.96	<0.01	<0.00	0.16	0	<0.39	0.01
D16JN20a517	0.12	0.19	0.15	<0.00	514,762.44	<0.06	<2.82	<67.74	0.09	<0.00	0.08	0	6.5	<0.01	0	0.03	0.01	<0.40	0.01

*All elements in ppm

Appendix V: Hemlo district pyrite mineral chemistry collected by LA-ICP-MS

Source Filename	Pb206	Pb207	Pb208	Pt195	S34	Sb121	Se77	Si29	Sn118	Ta181	Te125	Th232	Ti49	Tl205	U238	V51	W182	Zn66	Zr90
D16JN20a500	3.66	3.67	3.56	<0.00	473,170.69	<0.05	32.26	<61.58	0.09	<0.00	1.91	<0.00	1.73	<0.01	0.01	<0.01	<0.00	<0.42	0.02
D16JN20a502	0.02	0.04	0.05	<0.00	485,438.62	<0.06	4.56	<70.94	0.16	<0.00	0.12	0	1.27	<0.01	<0.00	<0.01	<0.00	0.45	<0.00
D16JN20a506	0.11	0.07	0.12	<0.00	519,378.19	<0.05	<3.09	<52.37	0.14	<0.00	0.13	<0.00	1.05	<0.02	<0.00	<0.01	<0.00	<0.40	0.05
D16JN20a505	<0.01	0.06	0.01	<0.00	506,720.92	<0.06	<3.62	<61.56	0.12	<0.00	<0.12	<0.00	0.94	<0.01	0	<0.01	<0.00	<0.41	<0.00
D16JN20a497	<0.01	<0.01	0.02	<0.00	455,183.94	<0.07	66.56	<63.13	0.09	<0.00	<0.11	<0.00	1.02	<0.02	<0.00	0.04	<0.00	<0.52	<0.00
D16JN20a507	0.02	<0.01	0.01	<0.00	410,932.40	<0.06	<3.24	<67.15	<0.06	<0.00	<0.07	<0.00	2.58	<0.02	<0.00	0.05	<0.00	<0.50	<0.00
D16JN20a498	0.27	0.27	0.32	0.02	497,718.56	<0.06	74.34	<72.71	0.15	<0.00	0.44	0	2.32	<0.02	0	<0.01	<0.00	<0.56	0.55
D16JN20a510	0.06	0.06	0.06	<0.00	541,376.45	<0.06	<3.25	<62.50	0.14	<0.00	<0.07	<0.00	1.86	<0.02	<0.00	<0.01	<0.00	0.57	<0.00
D16JN20a508	<0.01	<0.01	0.01	<0.00	446,012.78	<0.07	79.1	<77.36	0.13	<0.00	<0.09	<0.00	1.51	<0.02	<0.00	<0.01	<0.00	<0.58	<0.00
D16JN20a509	<0.01	0.04	<0.01	<0.00	445,868.49	<0.07	76.54	<74.49	0.12	<0.00	0.14	<0.00	0.82	<0.02	0	0.02	<0.00	<0.57	0.28
D16JN20a496	0.13	0.07	0.11	<0.01	378,403.21	<0.12	15.67	<105.61	<0.11	<0.00	2.47	<0.00	1.4	<0.03	<0.00	0.09	<0.00	<0.71	<0.00
D16JN20a350	0.97	1.2	1.05	<0.00	485,960.67	0.12	13.56	164.79	0.09	<0.00	<0.08	<0.00	1.7	<0.01	0	0.49	0.01	0.48	<0.00
D16JN20a377	0.16	0.34	0.33	<0.00	545,621.03	<0.09	23.17	<76.58	0.11	<0.00	0.41	0	1.13	<0.02	<0.00	<0.02	<0.01	0.68	<0.00
D16JN20a373	0.09	0.06	0.08	<0.00	430,432.11	<0.09	23.78	367.93	0.14	<0.00	<0.12	<0.00	0.87	<0.02	<0.00	0.02	<0.00	<0.55	0.02
D16JN20a357	1.56	1.62	1.62	0.09	524,335.74	0.06	33.9	162.05	0.15	<0.00	1.75	0	1.17	<0.02	<0.00	<0.02	<0.00	0.52	0
D16JN20a351	178.37	220.9	199.32	<0.00	540,163.60	1.7	31.9	1,149.94	0.17	<0.00	59.46	0.31	3.25	<0.02	0.05	7.38	0.12	2.09	9.25
D16JN20a348	20.36	24.18	21.72	<0.00	561,397.47	0.32	43.72	632.1	0.17	0	45.05	0	17.38	<0.01	0.03	0.24	<0.00	0.87	4.11
D16JN20a360	0.15	0.21	0.17	0	496,068.62	<0.05	26.66	62.66	0.07	0.02	0.41	<0.00	56.44	<0.01	0	0.16	0.01	0.57	0.01
D16JN20a376	<0.01	0.07	0.03	0.02	509,809.70	<0.07	20.57	<60.40	0.09	<0.00	1.4	<0.00	1.57	<0.01	0	<0.01	<0.00	<0.48	<0.00
D16JN20a365	0.69	0.68	0.76	0.39	540,403.85	<0.06	26.54	<44.42	0.11	<0.00	9.14	<0.00	1.34	<0.01	0	0.01	0	<0.40	0
D16JN20a359	0.13	0.06	0.07	<0.00	501,471.38	<0.05	24.85	<51.23	0.12	<0.00	<0.07	<0.00	1.11	<0.01	0.01	<0.01	<0.00	<0.39	1.17
D16JN20a375	0.12	0.01	<0.01	<0.00	542,302.20	<0.07	23.62	<58.37	0.11	<0.00	<0.10	<0.00	0.97	<0.01	<0.00	<0.01	<0.00	<0.51	0.47
D16JN20a354	0.7	0.82	1.04	0.01	506,767.83	<0.07	36.54	<57.85	0.13	<0.00	0.87	<0.00	2.08	<0.02	<0.00	0.03	<0.00	0.55	<0.00
D16JN20a352	0.02	0.01	0.01	0.03	554,867.24	<0.07	31.67	<59.45	0.15	<0.00	<0.09	<0.00	1.74	<0.02	<0.00	0.02	0	<0.45	<0.00
D16JN20a353	<0.01	<0.01	0.05	0.01	564,794.39	<0.08	20.35	<65.92	0.1	<0.00	<0.08	<0.00	1.56	<0.02	<0.00	<0.01	<0.00	<0.50	<0.00
D16JN20a355	8.28	9.2	8.82	0.02	517,469.30	0.09	35.04	<45.00	0.14	<0.00	10.23	<0.00	1.37	<0.01	<0.00	0.02	<0.00	<0.45	<0.00
D16JN20a349	<0.01	<0.02	<0.01	<0.01	598,368.41	<0.09	22.22	<72.17	0.2	<0.00	<0.11	<0.00	1.66	<0.02	0	<0.02	0	<0.56	0
D16JN20a374	0.04	0.05	0.03	<0.00	542,236.56	<0.07	19.34	<58.71	0.18	<0.00	0.43	<0.00	1.92	<0.02	0	<0.01	<0.00	<0.46	<0.00
D16JN20a347	4.74	1.64	0.95	<0.01	579,898.86	0.12	30.07	103.03	0.17	0	1.31	0.06	4.95	<0.02	2.1	0.47	0.03	0.86	287.95
D16JN20a361	0.03	0.04	0.04	<0.00	519,388.37	<0.08	22.55	<63.12	0.12	<0.00	<0.07	<0.00	1.8	<0.02	0	<0.01	<0.00	<0.48	0.96
D16JN20a364	26.15	33.79	30.05	0.12	565,482.03	0.21	40.48	<49.19	0.19	<0.00	10.55	<0.00	2.31	<0.02	0	<0.01	<0.00	<0.43	<0.00
D16JN20a356	0.17	0.19	0.17	0	568,093.45	<0.06	34.21	<57.63	0.2	<0.00	0.8	<0.00	2.2	<0.02	<0.00	<0.01	0	0.62	0.01
D16JN20a362	0.2	0.04	0.09	<0.00	558,898.01	<0.11	25.91	<91.24	0.13	<0.00	0.89	0	2.29	<0.03	<0.00	<0.02	0	<0.65	<0.00
D16JN20a366	0.14	0.09	0.08	<0.00	550,210.92	<0.13	29.31	<103.94	<0.10	<0.00	<0.16	<0.00	<0.97	<0.02	<0.00	<0.02	<0.00	<0.96	<0.00
D16JN20a363	0.21	<0.01	0.1	<0.00	385,869.50	<0.12	27.62	<116.05	<0.09	<0.00	0.54	<0.00	<0.72	<0.03	<0.00	0.03	<0.00	<0.84	<0.01
D17JN21a410	80.5	88.42	88.06	<0.00	551,963.49	0.23	32.97	2,121.58	0.56	0.34	10.47	0.06	1,103.95	0.03	1.24	7.88	0.15	56.47	6.91
D17JN21a409	3.94	4.79	4.85	<0.00	588,607.09	<0.06	28.07	<81.69	0.12	<0.00	7.03	0.01	12.03	<0.02	<0.00	0.59	0.07	4.2	<0.00
D17JN21a395	9.75	3.03	1.9	0.01	550,306.50	<0.03	30.01	415.41	0.07	0.01	2.46	0.06	97.55	<0.01	2.97	0.79	0.03	0.46	471
D17JN21a421	4.35	6.44	5.49	<0.02	434,273.73	0.19	20.2	<135.74	0.21	<0.00	1.7	<0.00	1.11	<0.03	<0.00	0.19	<0.00	<1.17	<0.00
D17JN21a413	11.37	11.32	11.29	<0.00	565,304.41	<0.15	63.77	<188.43	0.2	<0.00	21.88	<0.00	<1.91	<0.03	<0.00	1.37	<0.01	<1.39	<0.00
D17JN21a422	27.24	30.83	31.29	<0.00	564,553.02	0.16	58.04	478.41	0.12	0.02	4.24	<0.00	359.76	<0.01	0.08	2.5	0.1	1.13	0.23
D17JN21a420	22.88	24.92	23.48	0.01	570,812.37	0.1	30.75	393.32	0.1	0.03	5.91	0.08	213.41	0.01	1.75	4.06	0.03	9.02	18.96
D17JN21a412	45.99	45.13	43.39	0.01	558,318.20	0.12	22.35	1,913.49	0.1	0.01	38.62	0.11	7.37	0.03	3.29	0.45	0.02	72.46	527.21
D17JN21a399	7.5	6.18	5.54	0.05	566,628.25	0.06	13.76	367.02	0.06	0	2.35	0.38	16.73	<0.01	0.74	0.64	0.01	13.4	74.97
D17JN21a400	88.42	84.91	73.05	0.01	529,849.34	0.34	31.56	1,300.13	0.11	0.01	16.67	0.07	18.22	0.06	8.18	13.71	0.03	27.91	1,079.40
D17JN21a417	124.42	129.15	122.91	0	536,347.49	0.11	19.44	185.12	0.16	0	4.33	0.01	10.12	<0.01	1.47	2.8	0.02	1.6	197.41
D17JN21a416	95.34	120.42	113.95	<0.00	554,745.68	<0.06	32.75	<70.66	0.09	0.01	2.17	<0.00	6.78	<0.01	<0.00	0.22	<0.00	<0.50	<0.00
D17JN21a414	337.56	344.11	341.31	0.01	581,795.13	0.12	53.54	<73.73	0.1	<0.00	2.42	<0.00	1.21	0.03	0	<0.01	0.01	71.98	0.07
D17JN21a396	0.59	0.66	0.63	<0.00	545,773.88	<0.06	7.79	<80.32	<0.06	<0.00	0.23	<0.00	5.74	<0.01	<0.00	0.07	<0.00	<0.55	<0.00
D17JN21a393	20.8	24.68	24.83	<0.01	434,981.10	0.2	18.23	<93.61	<0.09	<0.00	12.15	<0.00	6.76	<0.02	<0.00	0.02	<0.00	<0.76	<0.00

*All elements in ppm

Appendix V: Hemlo district pyrite mineral chemistry collected by LA-ICP-MS

Source Filename	Pb206	Pb207	Pb208	Pt195	S34	Sb121	Se77	Si29	Sn118	Ta181	Te125	Th232	Ti49	Tl205	U238	V51	W182	Zn66	Zr90
D17JN21a397	13.26	5.73	4.48	<0.01	558,560.96	<0.07	33.75	307.26	0.19	0.02	6.49	0.1	10.38	0.02	3.89	0.2	<0.00	3.63	551.21
D17JN21a411	0.22	0.45	0.37	<0.01	451,037.86	<0.07	27.48	<107.02	<0.10	<0.00	3.27	<0.00	<0.69	<0.02	<0.00	<0.01	<0.00	7.14	<0.00
D17JN21a418	11.25	1.87	1.9	<0.00	451,242.11	<0.09	18.27	<111.85	<0.09	<0.00	0.44	<0.00	3.64	<0.02	<0.00	<0.02	<0.00	<0.79	0.9
D17JN21a415	83.81	95.31	93.45	<0.01	564,789.64	<0.11	37.79	<134.63	0.15	<0.00	1.8	<0.00	<1.05	0.04	<0.00	<0.02	<0.00	13.32	<0.00
D17JN21a423	3.37	3.16	2.63	<0.01	492,582.43	0.21	15.11	<164.80	<0.19	<0.00	2.58	<0.00	4.72	<0.05	<0.00	0.07	<0.01	1.42	<0.00
D17JN21a394	5.19	6.03	5.39	0.12	696,296.42	<0.11	31.34	337.07	0.33	<0.00	1.78	<0.00	1.83	<0.03	<0.00	0.19	<0.01	1.23	<0.02
D16JN20a420	0.33	0.18	0.1	<0.01	513,435.79	<0.07	10.01	<59.64	0.12	0	0.1	0.02	1.99	0.02	0.13	0.01	<0.00	<0.41	38.79
D16JN20a419	0.71	0.81	0.73	<0.01	440,695.53	0.08	5.59	4,685.16	0.11	0	0.76	<0.00	2.43	<0.02	0	0.26	<0.00	0.82	<0.00
D16JN20a432	6.69	6.6	6.74	0.01	545,709.28	1.9	25.87	160.46	0.81	0.13	3.43	0.1	1,921.27	0.03	0.16	3.69	31.28	3.99	16.9
D16JN20a409	5.89	3.76	3.39	<0.00	466,599.53	0.22	13.4	700.1	0.09	0.01	8.06	0.38	8.01	<0.02	1.33	0.09	0.03	0.49	616.93
D16JN20a426	1.34	1.86	1.53	0.01	713,735.85	<0.20	24.68	352.18	0.4	<0.00	1.15	<0.00	16.84	<0.05	<0.00	0.41	<0.00	<1.67	<0.00
D16JN20a414	0.01	<0.01	<0.01	0	478,273.58	<0.06	11.15	<53.25	0.08	<0.00	0.66	0	1.02	<0.02	0	<0.01	<0.00	0.44	<0.00
D16JN20a422	1.29	1.59	1.4	0.03	471,297.55	0.07	6.15	<57.53	0.14	<0.00	5.66	0.02	1.38	<0.01	0.02	0.03	<0.00	<0.39	1.78
D16JN20a421	6.43	2.93	2.55	<0.01	516,264.44	0.25	9.86	65.5	0.14	0	4.79	0.11	1.34	<0.01	0.93	<0.01	0.03	0.69	167.22
D16JN20a423	<0.01	<0.01	<0.01	<0.00	569,081.19	<0.08	14.16	<68.61	0.13	<0.00	0.13	<0.00	1.09	<0.02	<0.00	<0.01	<0.00	<0.49	<0.00
D16JN20a413	1.15	0.97	1.2	0	537,884.76	0.22	22.51	<66.56	0.11	0	0.9	0.08	94.16	<0.02	0.09	0.01	0.06	<0.47	20.17
D16JN20a418	0.25	0.1	0.09	0	451,203.26	<0.06	5.17	<63.81	0.1	<0.00	<0.09	0.02	1.63	<0.02	0.11	<0.01	<0.00	0.4	7.86
D16JN20a427	<0.01	<0.01	<0.01	<0.00	477,075.41	<0.06	7.51	<50.96	0.09	<0.00	<0.07	0	0.46	<0.01	0	0.01	<0.00	0.4	<0.00
D16JN20a416	0.25	0.26	0.3	<0.00	480,038.20	<0.07	17.74	<59.41	0.08	<0.00	0.4	<0.00	1.53	<0.02	<0.00	<0.01	<0.00	<0.56	<0.00
D16JN20a425	0.78	0.19	0.15	<0.00	442,213.23	<0.06	20.34	<57.23	<0.06	<0.00	0.56	0.04	1.31	<0.02	0.2	0.02	<0.00	<0.61	36.12
D16JN20a417	0.04	0.02	0.02	<0.00	570,546.36	<0.06	8.63	<63.72	0.16	<0.00	<0.13	0	1.57	<0.02	<0.00	<0.01	<0.00	<0.44	1.32
D16JN20a431	0.1	0.02	0.02	<0.01	571,235.95	<0.08	7.4	<70.27	0.14	0	<0.12	0	1.02	<0.02	0.03	<0.02	<0.00	<0.47	5.85
D16JN20a415	0.03	<0.02	<0.02	<0.00	392,870.06	<0.09	<3.73	<80.28	<0.08	<0.00	0.13	<0.00	3.05	<0.02	0.01	<0.01	<0.00	<0.74	4.58
D16JN20a411	<0.01	0.03	0.01	<0.00	456,180.24	<0.07	13.46	<50.97	0.08	<0.00	0.12	<0.00	0.79	<0.02	<0.00	0.01	0.01	<0.48	<0.00
D16JN20a428	5.47	5.04	4.23	<0.00	432,845.16	0.56	10.78	368.29	0.14	0.01	6.24	0.61	27.61	<0.02	1.09	0.07	0.11	0.81	118.93
D16JN20a424	0.12	0.18	0.15	<0.01	614,368.72	<0.10	29.45	<90.98	0.1	<0.00	1.02	<0.00	2.36	<0.02	0.01	0.02	<0.01	<0.78	0.09
D16JN20a429	0.73	0.81	0.86	0.01	489,429.18	<0.07	7.48	<63.02	0.18	<0.00	4.34	0	1.74	<0.02	0	0.02	<0.00	<0.60	0.14
D16JN20a465	7.45	8.26	7.75	0.01	546,761.96	0.17	7.03	<139.72	0.31	<0.00	13.69	<0.00	3.54	<0.03	0.01	<0.02	0.01	<1.02	0.64
D16JN20a470	0.02	0.01	0.01	<0.00	440,684.50	<0.06	4.98	<53.11	0.12	<0.00	0.09	<0.00	1.42	<0.01	0	0.01	<0.00	0.4	0
D16JN20a494	<0.01	<0.00	<0.00	0	451,240.26	<0.05	13.27	<52.62	0.11	0	<0.09	<0.00	0.97	<0.01	<0.00	<0.01	0	<0.40	0.03
D16JN20a495	0.08	0.02	0.02	<0.00	447,837.80	<0.06	8.59	<59.94	0.13	<0.00	<0.09	0.02	1.47	<0.01	0.02	<0.01	0.01	<0.43	20.87
D16JN20a491	<0.01	<0.01	<0.01	0.01	493,835.76	<0.05	4.22	<68.84	0.16	<0.00	<0.12	0	1.25	<0.01	<0.00	<0.01	<0.00	0.45	<0.00
D16JN20a481	0.07	0.05	0.08	<0.00	548,668.72	<0.06	4.19	<70.99	0.17	<0.00	0.57	<0.00	1.26	<0.01	0	<0.01	<0.00	<0.56	<0.00
D16JN20a486	0.01	<0.01	<0.01	<0.00	509,850.46	<0.07	4.69	<71.10	0.13	<0.00	0.13	<0.00	1.41	<0.01	<0.00	0.01	<0.00	<0.55	<0.00
D16JN20a484	<0.01	<0.01	<0.01	<0.00	490,708.86	<0.06	4.93	<61.11	0.13	<0.00	<0.14	<0.00	<0.35	<0.02	<0.00	<0.01	0	<0.46	<0.00
D16JN20a485	0.02	0.03	0.03	<0.00	545,107.21	<0.07	4.67	<67.33	0.18	0	<0.13	<0.00	1.07	<0.02	<0.00	<0.01	<0.00	<0.49	<0.00
D16JN20a492	0.05	0.01	0.01	<0.00	531,777.66	<0.07	10.56	<79.17	0.18	0	<0.10	0.01	1.26	<0.02	0.01	0.02	0.01	<0.46	4.53
D16JN20a468	0.02	<0.01	0.01	<0.00	477,026.91	<0.08	8.81	<73.62	0.17	<0.00	<0.06	<0.00	1.58	<0.01	<0.00	<0.01	<0.00	<0.49	<0.00
D16JN20a487	<0.01	<0.01	0.01	0.01	521,605.11	<0.08	4.56	<75.92	0.18	0	0.28	0	<0.49	<0.02	<0.00	<0.01	0	<0.52	<0.00
D16JN20a473	<0.01	<0.01	<0.01	<0.00	503,053.64	<0.07	5.87	<64.02	0.14	<0.00	<0.08	<0.00	0.74	<0.01	<0.00	<0.01	0	<0.46	0
D16JN20a466	0.01	0.02	0.01	<0.00	515,851.08	<0.08	11.39	<69.93	0.23	<0.00	0.18	<0.00	0.74	<0.01	0	<0.01	0	<0.51	0.01
D16JN20a483	<0.01	<0.01	<0.01	<0.00	506,203.65	<0.06	6.13	<64.06	0.13	<0.00	<0.12	<0.00	0.93	<0.02	0	<0.01	0	<0.48	<0.00
D16JN20a472	0.02	0.02	0.03	0.01	489,494.41	<0.07	<3.08	<66.21	0.13	<0.00	<0.06	<0.00	1.17	<0.01	0	<0.01	<0.00	0.65	0
D16JN20a490	<0.01	<0.01	<0.01	0	476,365.73	<0.07	7.45	<88.62	0.12	<0.00	0.42	<0.00	0.95	<0.02	<0.00	<0.01	<0.00	<0.49	0.01
D16JN20a474	<0.01	<0.01	<0.01	<0.00	534,880.86	<0.08	<3.57	<89.95	0.17	<0.00	0.16	<0.00	2.15	<0.02	0	0.02	0	<0.62	<0.00
D16JN20a482	<0.01	<0.01	<0.01	0	565,363.42	<0.08	<3.89	<94.19	0.17	<0.00	<0.14	<0.00	2.27	<0.02	<0.00	<0.01	0.01	<0.67	<0.00
D16JN20a471	0.23	0.15	0.17	<0.00	485,867.37	<0.11	4.95	<95.67	0.15	<0.00	0.14	0.03	0.46	<0.02	0.01	0.09	<0.00	<0.59	2.31
D16JN20a488	0.07	0.05	0.12	<0.00	544,105.82	<0.11	5.11	<91.49	0.15	<0.00	<0.16	0	2.39	<0.02	0	<0.01	0.11	<0.60	0.64
D16JN20a469	0.07	0.03	0.04	0.05	433,757.98	<0.13	<5.80	<129.44	0.17	<0.00	0.34	<0.00	1.79	<0.03	<0.00	<0.01	<0.00	<0.99	<0.00
D16JN20a467	0.01	<0.01	0.04	<0.00	489,521.29	<0.11	<4.27	<113.56	0.1	<0.00	0.45	<0.00	<0.90	<0.02	<0.00	0.02	<0.00	<0.74	<0.00

*All elements in ppm

Appendix V: Hemlo district pyrite mineral chemistry collected by LA-ICP-MS

Source Filename	Pb206	Pb207	Pb208	Pt195	S34	Sb121	Se77	Si29	Sn118	Ta181	Te125	Th232	Ti49	Tl205	U238	V51	W182	Zn66	Zr90
D16JN20a493	<0.01	<0.01	0.04	<0.00	503,731.37	<0.18	<6.18	<146.75	0.16	<0.00	<0.20	<0.00	<0.94	<0.03	<0.00	<0.03	<0.00	<1.04	<0.00
D16JN20a460	6.08	6.83	6.65	<0.00	455,487.65	0.3	13.6	199.9	0.13	0	142.45	0.05	39.85	<0.01	0.02	0.55	0.57	0.98	2.7
D16JN20a462	0.3	0.32	0.31	<0.01	510,104.88	0.3	11.69	1,772.30	0.1	0.01	1.21	0.01	10.8	<0.01	0.01	1.12	0.55	3.1	0.12
D16JN20a464	35.8	42.6	42.05	<0.00	455,247.46	4.76	8.25	720.06	1.13	0.19	51.52	0.2	1,809.71	0.03	0.06	12.4	22.4	7.35	0.38
D16JN20a451	10.8	11.29	11.17	0	506,573.07	0.68	36.89	348.93	0.22	0.03	8.02	1.07	296.17	0.02	0.54	2.12	3.65	1.56	107.55
D16JN20a463	0.79	0.73	0.91	<0.01	453,071.17	0.83	27.85	130.64	0.19	0.28	6.27	0.22	33.42	<0.01	0.03	1.04	1.04	2.71	0.51
D16JN20a438	0.67	0.87	0.88	0	449,189.38	0.07	21.45	152.08	0.15	<0.00	1.14	<0.00	1.55	<0.01	0	<0.01	<0.00	0.51	0.06
D16JN20a455	0.02	<0.01	0.04	<0.00	453,568.21	<0.05	14.21	<53.65	0.12	0	<0.07	<0.00	1.59	<0.01	<0.00	<0.01	<0.00	<0.42	<0.00
D16JN20a446	<0.01	0.01	0.01	0.01	492,973.56	<0.06	11.83	<78.64	0.15	<0.00	<0.12	<0.00	1.42	<0.02	<0.00	<0.01	<0.00	<0.52	0.08
D16JN20a448	0.01	<0.01	<0.01	<0.00	558,004.44	<0.07	39.37	<70.78	<0.06	<0.00	<0.09	<0.00	1.32	<0.01	<0.00	0.02	<0.00	<0.43	0.01
D16JN20a452	0.53	0.48	0.38	<0.00	505,044.85	0.11	43.15	<61.15	0.11	0.02	0.25	0.03	38.64	<0.01	0.04	0.27	0.8	<0.46	7.1
D16JN20a457	0.01	<0.01	0.04	<0.00	509,945.93	<0.08	40.22	<59.66	0.21	<0.00	0.19	<0.00	0.55	<0.02	<0.00	<0.01	<0.00	<0.60	0
D16JN20a456	<0.01	0.03	0.02	<0.00	491,630.75	<0.07	25.21	<62.44	0.19	<0.00	<0.12	<0.00	1.12	<0.02	<0.00	<0.01	<0.00	<0.49	<0.00
D16JN20a450	0.1	0.12	0.11	0.01	542,606.82	<0.07	51.52	<66.79	0.19	<0.00	1.2	<0.00	2.29	<0.01	<0.00	0.01	0	<0.48	<0.00
D16JN20a461	0.02	0.01	<0.01	0	498,361.78	<0.07	15.63	<73.11	0.11	<0.00	0.14	<0.00	1.2	<0.02	<0.00	<0.01	0	<0.55	<0.00
D16JN20a436	0.05	0.09	<0.01	0.01	495,530.54	<0.07	54.06	<76.76	0.12	<0.00	<0.11	<0.00	2.56	<0.01	<0.00	0.02	0.01	<0.51	<0.00
D16JN20a449	0.35	0.26	0.27	<0.00	543,000.58	0.24	43.25	<76.02	0.2	0.06	0.11	0.1	195.31	<0.01	0.06	0.77	3.22	<0.50	7.7
D16JN20a459	0.03	0.01	<0.01	<0.00	518,707.38	<0.07	14.79	<64.15	0.13	0	0.15	<0.00	2.56	<0.01	<0.00	<0.01	<0.00	<0.57	0
D16JN20a447	0.19	0.21	0.16	0.01	544,415.35	<0.07	24.05	<83.81	0.17	<0.00	<0.13	0	1.02	<0.02	<0.00	<0.01	<0.01	0.59	<0.00
D16JN20a434	0.03	0.05	0.01	0	505,849.91	<0.06	17.06	<67.22	0.13	0	<0.10	<0.00	0.95	<0.01	0	<0.01	0	<0.51	<0.00
D16JN20a435	<0.01	0.01	0.04	<0.00	548,058.51	<0.07	41.88	<75.12	0.14	0	0.15	<0.00	1.09	<0.01	0	<0.01	<0.00	<0.58	<0.00
D16JN20a437	<0.01	0.02	0.02	<0.00	548,183.18	<0.07	17.02	<79.79	0.19	0	<0.08	<0.00	1.05	<0.02	<0.00	<0.01	<0.00	<0.50	<0.00
D16JN20a453	7.52	8.51	8	0	501,752.33	7.13	26.46	358.14	1.77	0.45	5.22	0.25	12,696.44	<0.01	0.19	29.78	47.79	1.41	7.5
D16JN20a445	0.08	0.04	0.04	<0.00	538,703.04	<0.09	37.83	91.28	0.1	0	<0.11	0	5.43	<0.02	<0.00	0.05	0.05	<0.71	0.13
D16JN20a454	1.92	2.08	1.79	<0.00	501,338.98	0.14	36.45	<72.58	0.17	0	3.43	0	39.16	<0.02	<0.00	1.03	0.53	<0.66	0.08
D16JN20a458	0.08	0.07	0.02	<0.00	479,740.47	<0.09	17.32	<75.66	0.08	<0.00	0.68	0.03	3.74	<0.02	0.02	<0.01	<0.00	<0.76	2.2
D17JN21a142	55.81	70.37	73.58	<0.00	492,301.54	0.53	68.85	220.15	0.13	<0.00	<0.07	<0.00	1.98	0.01	<0.00	0.15	0	<0.40	0.02
D17JN21a149	18.2	20.73	19.49	0.09	497,972.34	0.33	60.59	1,407.57	0.13	0	1.58	0	1.71	0.01	0.01	3.72	0.01	23.76	0.01
D17JN21a136	13.81	14.89	14.88	<0.01	349,274.68	0.66	53.34	2,482.26	<0.12	<0.00	<0.17	<0.00	<0.74	<0.02	<0.00	<0.02	<0.00	1.47	<0.00
D17JN21a131	103.29	120.1	113.73	0.01	570,865.72	1.22	93.39	486.74	0.12	<0.00	0.26	0.15	2.32	0.1	0	0.2	<0.00	0.51	1.15
D17JN21a126	1.02	1.22	1.15	<0.00	494,379.02	<0.04	39.2	307.98	0.1	<0.00	<0.08	<0.00	1.48	<0.01	<0.00	0.23	<0.00	3.77	<0.00
D17JN21a127	2.64	2.92	2.61	0	449,804.85	<0.06	65.53	952.95	<0.06	<0.00	<0.07	0.01	2.04	<0.01	0.01	0.72	<0.00	2.24	<0.00
D17JN21a134	3.44	4.07	3.62	0.1	445,839.78	0.22	55.1	184.35	0.14	<0.00	0.76	<0.00	<0.37	0.21	<0.00	<0.02	<0.01	<0.57	<0.00
D17JN21a148	0.28	0.65	0.37	0.09	463,917.17	<0.06	58.5	75.8	0.1	<0.00	<0.06	<0.00	1.24	<0.01	<0.00	0.11	<0.00	<0.44	<0.00
D17JN21a130	0.48	0.14	0.61	<0.00	499,197.88	<0.06	36.13	<70.92	0.11	<0.00	0.25	<0.00	0.89	<0.01	<0.00	<0.02	<0.00	<0.55	<0.00
D17JN21a150	2.65	5.45	5.64	0.01	451,344.51	<0.07	56.68	<93.65	0.11	<0.00	0.52	<0.00	5.63	<0.02	<0.00	<0.02	<0.01	<0.61	<0.00
D17JN21a138	0.06	0.18	0.11	0.01	509,643.16	<0.08	63.06	<93.94	<0.10	<0.00	<0.14	<0.00	<0.56	<0.02	<0.00	<0.01	<0.00	<0.63	<0.00
D17JN21a137	1.47	1.96	1.65	<0.01	455,497.64	<0.09	92.58	735.54	0.14	<0.00	1.33	<0.00	3.26	<0.03	<0.00	0.3	<0.00	<0.74	<0.00
D17JN21a135	0.27	0.13	0.19	0.04	401,320.67	<0.10	46.62	176.13	0.34	<0.00	3.05	<0.00	<1.03	<0.02	<0.00	<0.04	<0.00	<1.31	<0.01
D17JN21a366	4.73	3.61	3.96	0.03	588,554.78	0.09	27.01	1,038.33	0.36	0.06	0.81	0.51	778.42	<0.01	0.53	4.43	0.19	0.4	10.58
D17JN21a362	3.02	2.96	2.57	0.03	633,072.64	<0.04	21.76	1,032.41	<0.06	0	3.23	0.06	28.81	0.02	0.26	0.01	0.01	0.52	506.3
D17JN21a342	0.03	0.02	0.03	0.02	564,835.93	<0.04	24.26	<46.49	0.09	<0.00	<0.07	<0.00	0.88	<0.01	<0.00	<0.01	<0.00	<0.34	<0.00
D17JN21a343	<0.01	<0.01	0.01	0.02	481,407.15	<0.04	21.79	<51.55	0.08	<0.00	<0.08	<0.00	1.25	<0.01	<0.00	<0.01	<0.00	<0.31	<0.00
D17JN21a357	9.6	10.8	10.63	<0.00	502,122.77	0.07	41.88	<49.35	0.06	0	5.17	<0.00	1.11	<0.01	<0.00	<0.01	<0.00	6.26	<0.00
D17JN21a345	<0.01	0.02	0.01	0.02	608,767.60	<0.04	27.79	<61.93	0.11	<0.00	<0.06	<0.00	0.74	<0.01	<0.00	<0.01	0	0.7	0.02
D17JN21a346	0.04	0.06	0.03	0	531,179.66	<0.04	34.3	<62.65	0.09	<0.00	<0.08	<0.00	1.95	<0.01	<0.00	<0.01	<0.00	<0.37	<0.00
D17JN21a352	6.33	7.38	6.53	0.01	582,968.72	<0.03	40.16	<54.01	0.05	<0.00	1.55	<0.00	0.66	<0.01	<0.00	<0.01	<0.00	0.56	<0.00
D17JN21a354	0.24	0.18	0.19	0.01	556,543.62	<0.05	87.48	<55.65	0.07	<0.00	0.28	<0.00	0.89	<0.01	<0.00	0.02	0.01	<0.35	<0.00
D17JN21a350	0.07	0.06	0.03	<0.00	546,002.93	<0.04	38.22	<50.50	0.06	<0.00	<0.08	<0.00	1.64	<0.01	0	<0.01	<0.00	<0.36	<0.00
D17JN21a364	0.45	0.48	0.46	<0.00	470,312.05	<0.05	41.16	<53.60	0.09	<0.00	0.82	0	<0.26	<0.01	<0.00	<0.01	<0.00	0.42	<0.00

*All elements in ppm

Appendix V: Hemlo district pyrite mineral chemistry collected by LA-ICP-MS

Source Filename	Pb206	Pb207	Pb208	Pt195	S34	Sb121	Se77	Si29	Sn118	Ta181	Te125	Th232	Ti49	Tl205	U238	V51	W182	Zn66	Zr90
D17JN21a347	0.03	0.04	0.03	0.03	590,122.84	<0.04	23.92	<50.49	0.06	0	0.13	0	1.05	<0.01	<0.00	0.01	<0.00	<0.37	0.03
D17JN21a344	<0.01	<0.01	0.03	0.02	547,436.83	<0.05	22.48	<62.11	<0.06	<0.00	<0.07	<0.00	<0.43	<0.01	<0.00	0.01	<0.00	<0.41	<0.00
D17JN21a353	1.52	1.51	1.57	<0.01	608,373.29	<0.05	45.89	<62.56	0.09	<0.00	2.18	<0.00	3.14	<0.01	<0.00	0.01	<0.00	3.36	0
D17JN21a348	0.24	0.07	0.03	0.05	491,374.30	<0.04	28.1	<54.41	<0.04	<0.00	<0.09	<0.00	<0.49	<0.01	<0.00	<0.01	0	<0.40	0.4
D17JN21a355	20.75	20.61	20.52	0	502,729.94	0.04	35.93	<62.64	0.07	<0.00	9.28	<0.00	<0.34	0.02	<0.00	<0.01	<0.00	<0.37	<0.00
D17JN21a363	0.02	0.12	0.03	<0.01	516,181.52	<0.05	44.1	<72.50	<0.06	<0.00	1.65	0	<0.56	<0.01	<0.00	<0.01	<0.00	<0.47	<0.00
D17JN21a356	3.37	3.1	3.68	<0.00	609,752.69	<0.05	43.46	<70.57	<0.06	<0.00	1.26	<0.00	2	0.02	0.01	0.13	<0.00	0.63	0.01
D17JN21a359	0.04	0.05	0.05	0.01	570,923.87	0.08	52.91	<80.05	0.13	0.01	<0.10	<0.00	<0.85	<0.02	<0.00	<0.01	<0.01	<0.60	0.06
D17JN21a349	0.79	0.58	0.49	<0.01	551,145.14	<0.09	37.36	<113.86	0.38	<0.00	<0.25	<0.00	<1.06	<0.03	<0.00	<0.03	<0.01	<0.83	0.44
D17JN21a365	0.94	1.07	1.31	<0.00	604,402.79	<0.10	27.05	<123.93	0.12	<0.00	1.14	<0.00	<0.72	<0.02	<0.00	<0.02	<0.00	0.84	0.03
D17JN21a358	8.22	12.91	8.25	<0.01	568,374.41	<0.09	26.3	135.57	0.17	<0.00	1.39	<0.00	<1.51	0.03	<0.00	0.03	<0.01	10.48	<0.00
D17JN21a361	7.42	7.73	8.42	<0.01	668,329.32	0.17	82.61	<156.75	<0.15	<0.00	3.63	<0.00	<1.96	0.06	<0.00	<0.01	<0.01	<0.95	<0.00
D17JN21a360	10.7	10.1	9.61	<0.01	645,561.10	<0.11	30.6	<173.30	<0.13	<0.00	4.44	<0.00	<1.77	<0.04	<0.00	0.06	<0.01	<1.13	<0.00
D16JN20a279	0.04	0.06	0.05	<0.00	452,277.87	<0.07	65.91	1,582.69	0.14	<0.00	<0.08	<0.00	2.01	<0.02	0	0.11	<0.00	0.59	<0.00
D16JN20a284	1.11	0.73	0.93	0.04	478,290.02	<0.12	64.74	937.41	<0.11	<0.00	0.71	0.1	<0.98	<0.03	<0.00	1.39	<0.00	0.96	0.22
D16JN20a276	0.09	0.02	0.07	<0.01	156,091.59	<0.06	41.66	4,838.76	0.21	0	<0.06	<0.00	<0.37	0.01	0.09	0.38	0	2.43	<0.00
D16JN20a273	1.73	1.42	1.66	<0.01	443,321.22	0.26	41.01	2,943.00	0.65	0.09	6.28	<0.00	1,159.85	<0.04	0.05	31.31	0.14	35.45	0.58
D16JN20a266	0.19	0.19	0.21	0.01	514,285.67	<0.07	3.81	57.44	0.25	<0.00	<0.09	0	1.02	<0.02	0	<0.01	0	0.81	<0.00
D16JN20a271	<0.01	0.02	<0.01	<0.01	503,841.40	<0.08	12.13	<59.47	0.17	<0.00	0.12	<0.00	1.66	<0.02	<0.00	<0.01	0.01	<0.48	<0.00
D16JN20a258	<0.02	<0.01	0.03	0	565,833.62	<0.07	17.84	<61.76	0.16	<0.00	<0.11	<0.00	2.04	<0.02	<0.00	<0.01	<0.00	<0.56	<0.00
D16JN20a272	0.67	0.74	0.74	0.02	542,898.45	<0.07	11.61	<66.58	0.17	<0.00	4.6	<0.00	2.47	<0.02	<0.00	<0.01	<0.00	<0.51	<0.00
D16JN20a277	<0.01	<0.01	<0.01	<0.01	579,218.88	<0.08	49.72	<68.62	0.16	<0.00	<0.11	<0.00	2.74	<0.02	<0.00	<0.01	<0.00	<0.56	0
D16JN20a275	<0.01	<0.01	<0.01	<0.00	536,252.42	<0.06	48.39	<63.74	0.1	<0.00	<0.08	<0.00	1.99	<0.02	0	<0.01	0	0.56	0.01
D16JN20a256	1.25	1.58	1.39	<0.01	488,472.55	<0.08	33.67	<72.78	0.18	<0.00	1.78	<0.00	1.33	<0.02	<0.00	<0.01	0.01	<0.53	<0.00
D16JN20a254	0.29	0.37	0.39	0.01	566,779.44	<0.08	10.83	<62.05	0.2	0	1.9	0	1.3	<0.02	<0.00	<0.01	<0.01	0.7	0.01
D16JN20a269	<0.01	0.03	<0.01	<0.01	557,065.21	<0.08	29.42	<58.50	0.12	0	0.35	<0.00	2.03	<0.02	0	<0.01	<0.00	<0.49	<0.00
D16JN20a257	<0.02	0.05	<0.01	<0.01	513,709.71	<0.08	21.11	<78.35	0.23	<0.00	<0.15	<0.00	2.49	<0.02	<0.00	<0.01	0	0.94	<0.00
D16JN20a281	0.03	<0.02	0.02	0	565,780.23	<0.08	24.86	<62.14	0.2	<0.00	<0.08	<0.00	1.92	<0.02	<0.00	<0.01	<0.00	0.44	<0.00
D16JN20a255	<0.02	<0.02	0.01	0.01	581,507.46	<0.08	19.72	<70.14	0.25	<0.00	<0.16	<0.00	2.2	<0.02	<0.00	<0.01	<0.00	<0.58	0
D16JN20a270	0.03	0.04	0.06	<0.01	516,947.66	<0.09	29.08	<68.01	0.23	<0.00	0.1	0	1.4	<0.02	<0.00	<0.02	0	<0.47	<0.00
D16JN20a280	<0.01	<0.02	0.01	<0.00	587,826.72	<0.10	49.4	<80.32	0.17	<0.00	<0.11	<0.00	0.99	<0.02	<0.00	<0.01	<0.00	<0.51	0
D16JN20a278	0.16	0.11	0.15	0.04	548,661.86	<0.10	53.27	<77.75	0.16	<0.00	3.58	0	0.82	<0.02	<0.00	<0.02	<0.00	<0.63	<0.00
D16JN20a265	0.05	<0.02	0.03	<0.00	568,504.29	<0.09	20.77	<74.85	0.16	<0.00	<0.12	<0.00	1.87	<0.02	0.01	<0.02	<0.00	<0.64	<0.00
D16JN20a268	<0.01	<0.02	<0.01	<0.00	539,652.87	<0.10	60.94	<68.61	0.18	<0.00	<0.15	0	1.28	<0.02	<0.00	0.03	0.01	<0.77	0
D16JN20a267	<0.02	<0.03	<0.01	<0.01	619,881.32	<0.10	75.05	<83.11	0.26	<0.00	<0.11	<0.00	2.06	<0.02	0.01	<0.02	<0.00	<0.78	<0.00
D16JN20a282	<0.02	<0.02	<0.01	0.03	507,893.48	<0.09	7.54	<79.47	0.12	<0.00	<0.13	<0.00	<0.49	<0.02	0.02	<0.02	<0.00	<0.67	<0.00
D16JN20a283	0.08	0.06	0.07	<0.01	492,989.78	<0.12	52.25	<123.46	0.15	0.01	<0.17	<0.00	11.84	<0.03	0.02	0.04	<0.00	<1.02	<0.00
D16JN20a274	0.1	0.08	0.1	0.03	469,135.06	<0.11	26.85	<96.32	0.15	<0.00	0.54	0.05	21.09	<0.03	0.03	0.1	0.02	0.84	14.47
D16JN20a273	0.23	0.11	0.17	0.12	467,289.58	<0.15	36.72	<134.79	0.18	<0.00	1.16	<0.00	<0.75	<0.03	<0.00	2	<0.01	<1.04	1.02
D17JN21a173	<0.01	<0.01	0.01	<0.00	456,891.88	<0.04	7.78	<47.47	0.09	<0.00	<0.07	0	0.83	<0.01	<0.00	<0.00	<0.00	<0.42	0
D17JN21a174	<0.01	<0.01	<0.01	0	510,535.94	<0.05	23.17	<46.40	0.07	<0.00	<0.07	<0.00	1.81	<0.01	<0.00	<0.01	<0.00	<0.44	<0.00
D17JN21a175	2.51	2.68	2.33	<0.00	532,190.63	0.44	10.93	<49.58	0.13	0	0.16	<0.00	1.61	<0.01	<0.00	<0.01	<0.00	<0.39	<0.00
D17JN21a176	<0.01	<0.01	<0.01	<0.00	518,614.30	<0.05	11.49	<56.22	0.07	<0.00	<0.07	<0.00	1.49	<0.01	<0.00	<0.01	<0.00	<0.33	<0.00
D17JN21a185	<0.01	<0.01	<0.01	<0.00	542,945.79	<0.04	39.89	<59.89	0.09	<0.00	<0.09	<0.00	1.28	<0.01	<0.00	<0.02	<0.00	0.42	0.01
D17JN21a186	<0.01	<0.01	0.02	0.01	553,517.67	<0.04	11.02	<54.17	0.11	0	<0.09	0	0.37	<0.01	<0.00	<0.01	<0.00	0.48	<0.00
D17JN21a181	0.01	<0.01	<0.01	<0.00	509,456.30	<0.05	14.21	<52.83	0.11	<0.00	<0.06	<0.00	1.77	<0.01	<0.00	<0.01	0	<0.32	0
D17JN21a169	<0.01	<0.01	<0.01	<0.00	484,273.44	<0.05	9.32	<53.15	0.08	<0.00	<0.06	<0.00	0.63	<0.01	0	<0.01	<0.00	<0.32	0.01
D17JN21a180	1.05	1.29	1.26	<0.00	540,354.43	0.37	9.51	<59.20	0.1	0	0.83	<0.00	1.02	<0.01	<0.00	0.01	<0.00	0.42	<0.00
D17JN21a182	0.18	0.28	0.23	<0.00	509,084.21	0.16	24.65	<55.86	0.14	<0.00	<0.05	<0.00	1.57	0.01	<0.00	<0.01	<0.00	0.43	<0.00
D17JN21a177	<0.01	<0.01	<0.01	0.01	541,485.32	<0.04	8.66	<59.07	0.06	0	<0.05	<0.00	0.87	<0.01	<0.00	<0.01	<0.00	<0.36	0.01

*All elements in ppm

Appendix V: Hemlo district pyrite mineral chemistry collected by LA-ICP-MS

Source Filename	Pb206	Pb207	Pb208	Pt195	S34	Sb121	Se77	Si29	Sn118	Ta181	Te125	Th232	Ti49	Tl205	U238	V51	W182	Zn66	Zr90
D17JN21a164	0.11	0.1	0.11	0	513,293.89	0.05	11.23	<58.70	0.07	<0.00	<0.05	<0.00	0.93	<0.01	<0.00	<0.01	<0.00	<0.43	0
D17JN21a171	<0.02	<0.01	<0.01	<0.00	515,135.50	<0.05	9.71	<57.93	0.11	<0.00	<0.06	0	1.52	<0.01	<0.00	0.01	<0.00	<0.40	0.01
D17JN21a184	4.07	5.92	4.74	<0.00	513,647.65	0.96	9.96	<54.86	0.07	<0.00	0.11	<0.00	1.49	<0.01	<0.00	<0.01	<0.00	<0.34	<0.00
D17JN21a170	<0.01	<0.01	<0.01	<0.00	529,418.34	<0.05	10.2	<54.88	0.14	0	<0.08	<0.00	1.2	<0.01	<0.00	<0.01	0	<0.38	0
D17JN21a172	<0.01	<0.01	0.01	<0.01	540,890.91	<0.05	10.1	<63.49	0.1	<0.00	<0.09	<0.00	0.81	<0.01	0	<0.01	<0.00	<0.46	<0.00
D17JN21a165	<0.01	<0.01	<0.01	<0.00	521,751.25	<0.05	8.99	<58.11	0.08	<0.00	<0.07	<0.00	1.25	<0.01	0	0.01	<0.00	<0.35	0.01
D17JN21a183	0.05	0.06	0.09	<0.00	528,926.99	<0.05	23.98	<56.57	0.11	<0.00	<0.05	<0.00	1.52	<0.01	<0.00	<0.01	<0.00	0.39	<0.00
D17JN21a161	<0.01	<0.01	<0.00	<0.00	558,488.64	<0.04	10.16	<55.39	0.11	<0.00	<0.09	<0.00	1.75	<0.01	<0.00	0.01	0	<0.36	<0.00
D17JN21a166	5.95	6.51	6.73	<0.00	505,550.84	0.25	10.89	53.27	0.08	<0.00	<0.06	<0.00	1.65	<0.01	0	<0.00	<0.00	<0.33	<0.00
D17JN21a168	<0.01	<0.01	<0.01	<0.00	509,246.25	<0.05	9.56	<60.04	0.12	<0.00	<0.06	<0.00	1.01	<0.01	0	<0.01	<0.00	<0.35	0
D17JN21a157	0.01	<0.02	<0.01	<0.00	567,223.76	<0.05	8.8	<72.56	0.18	0	<0.11	<0.00	1.45	<0.01	<0.00	<0.01	0	<0.44	0
D17JN21a158	<0.01	0.04	<0.01	<0.00	569,093.63	<0.05	13.94	<76.12	0.15	<0.00	<0.08	<0.00	0.81	<0.01	0	0.12	<0.00	0.49	<0.00
D17JN21a160	0.03	<0.01	0.02	<0.00	491,803.61	<0.04	12.42	<52.37	0.09	<0.00	<0.06	<0.00	0.85	<0.01	<0.00	<0.01	<0.00	<0.35	0
D17JN21a179	5.39	6.11	5.77	<0.00	549,795.29	1.03	7.99	<64.19	0.11	<0.00	<0.06	<0.00	1.01	<0.01	<0.00	<0.01	<0.00	<0.37	0
D17JN21a178	<0.01	<0.01	<0.01	<0.00	517,417.62	<0.04	9.17	<60.95	0.1	<0.00	<0.05	<0.00	1.22	<0.01	<0.00	<0.01	0	<0.37	0
D17JN21a163	<0.01	0.02	<0.01	<0.00	548,311.94	<0.05	9.77	<57.79	0.07	<0.00	<0.05	<0.00	1.11	<0.01	<0.00	<0.01	<0.00	<0.46	<0.00
D17JN21a159	<0.01	<0.02	<0.01	<0.01	517,672.37	<0.05	12.09	<68.09	0.15	<0.00	<0.06	<0.00	1.51	0.02	<0.00	0.02	<0.00	0.76	<0.00
D17JN21a167	0.14	0.19	0.18	<0.00	565,961.37	<0.05	12.67	<70.24	0.16	<0.00	0.12	<0.00	1.03	<0.01	<0.00	<0.01	0	<0.43	<0.00
D17JN21a162	<0.02	<0.01	0.01	<0.00	560,487.07	<0.05	11.97	<64.78	0.09	<0.00	<0.09	<0.00	1.81	<0.01	<0.00	<0.01	<0.00	<0.43	<0.00
D16JN20a105	29.94	29.34	27.98	0.01	499,474.78	1.39	39.69	134.98	0.22	0	15.53	<0.00	0.95	0.1	0.3	1.41	0.8	1.37	<0.00
D16JN20a126	0.73	0.81	0.59	<0.00	428,301.21	<0.08	24.89	<53.52	0.28	<0.00	0.13	<0.00	0.7	<0.02	0	<0.01	<0.00	<0.54	0.01
D16JN20a106	17.74	5.96	3.44	<0.01	487,490.46	<0.09	28.92	710.1	0.13	0.01	5.74	1.91	8.83	<0.01	7.24	0.81	0.01	<0.52	759.45
D16JN20a128	21.21	24.76	22.6	<0.00	449,034.21	<0.09	27.76	<51.93	0.13	<0.00	219.91	<0.00	0.81	<0.01	<0.00	<0.01	<0.00	0.88	<0.00
D16JN20a102	0.01	<0.01	<0.01	0	473,712.19	<0.09	22.3	<44.89	0.15	0	<0.08	<0.00	1.91	<0.02	<0.00	<0.01	<0.00	<0.46	<0.00
D16JN20a127	<0.01	<0.02	0.01	<0.00	473,265.58	<0.08	14.67	<53.72	0.16	<0.00	0.09	<0.00	1.19	<0.02	<0.00	<0.01	0	<0.56	<0.00
D16JN20a103	<0.02	<0.01	<0.01	<0.01	473,717.94	<0.09	24	<52.73	0.12	<0.00	<0.11	<0.00	1.36	<0.02	<0.00	<0.01	<0.00	<0.49	<0.00
D16JN20a113	0.22	0.3	0.29	<0.00	398,549.34	<0.09	23.58	<55.77	0.21	<0.00	0.67	<0.00	1.42	<0.01	<0.00	0.02	<0.00	<0.53	<0.00
D16JN20a112	0.98	1.15	1.15	<0.00	485,822.53	<0.09	69.66	<53.52	0.2	0	8.62	<0.00	0.84	<0.02	<0.00	<0.02	<0.00	<0.42	<0.00
D16JN20a124	<0.02	<0.01	0.02	0.01	480,008.27	<0.09	30.86	<46.75	0.16	<0.00	<0.09	0	0.77	<0.02	<0.00	<0.02	<0.00	<0.44	0
D16JN20a123	1.73	2.19	1.91	0.01	527,847.35	<0.09	20.67	<58.79	0.22	0	8.49	0.01	2.57	<0.02	<0.00	0.02	<0.00	<0.61	0.04
D16JN20a125	<0.02	0.02	0.01	0.01	485,256.40	<0.08	36.64	<45.97	0.17	<0.00	0.23	0	1.86	<0.01	<0.00	<0.02	<0.00	<0.38	<0.00
D16JN20a114	<0.01	<0.01	<0.01	<0.00	485,221.36	<0.09	41.19	<55.77	0.16	<0.00	<0.06	<0.00	1.23	<0.01	0	<0.01	<0.00	<0.50	<0.00
D16JN20a122	<0.01	<0.02	<0.01	<0.00	483,691.64	<0.07	10.37	<53.54	0.14	<0.00	0.19	0	1.54	<0.01	0	0.01	0	<0.49	<0.00
D16JN20a101	0.03	0.05	0.04	<0.00	449,065.91	<0.11	28.08	<59.18	0.17	0	0.23	<0.00	0.92	<0.02	0	<0.02	<0.00	<0.47	<0.00
D16JN20a110	0.02	0.01	<0.01	0.01	427,191.87	<0.08	27.17	<51.38	0.14	<0.00	<0.09	<0.00	1.03	<0.02	0	<0.01	<0.00	<0.44	0.05
D16JN20a104	0.09	0.09	0.08	<0.00	462,944.93	<0.10	54.07	<64.37	0.18	<0.00	0.49	0.01	1.63	<0.02	0	<0.02	<0.00	<0.52	0.05
D16JN20a130	0.03	0.04	<0.01	<0.00	474,571.69	<0.08	24.39	<58.04	0.22	<0.00	0.37	0	1.71	<0.02	<0.00	<0.02	0	<0.50	<0.00
D16JN20a108	0.06	0.43	0.05	<0.00	445,701.49	<0.08	21.03	<53.90	0.21	<0.00	<0.08	<0.00	1.19	<0.01	<0.00	<0.01	<0.00	0.43	<0.00
D16JN20a100	<0.02	<0.02	<0.01	<0.00	485,656.49	<0.10	58.8	<65.99	0.13	<0.00	<0.11	<0.00	<0.35	<0.02	<0.00	<0.02	0.01	<0.44	<0.00
D16JN20a129	8.61	9.92	9.54	<0.00	554,542.92	<0.12	41.25	185.31	0.31	<0.00	15.56	<0.00	2.34	<0.02	<0.00	<0.02	<0.00	<0.67	<0.00
D16JN20a121	162.09	189.53	184.02	<0.01	521,255.84	2.58	46.88	<71.91	0.15	<0.00	1,827.28	<0.00	1.28	0.03	<0.00	<0.02	0.01	<0.56	<0.00
D16JN20a109	19.32	25.66	20.5	<0.00	461,694.60	0.63	29.49	671.76	0.21	<0.00	116.1	0	1.72	0.07	0.01	0.12	0.14	<0.58	<0.00
D16JN20a107	<0.02	<0.02	<0.01	<0.01	396,956.78	<0.11	33.48	<65.82	0.15	<0.00	0.12	<0.00	1.02	<0.02	<0.00	<0.01	<0.00	<0.50	0.01
D17JN21a276	<0.01	<0.01	<0.01	<0.00	568,293.41	<0.04	9.44	<50.00	0.07	<0.00	<0.12	<0.00	1.46	<0.01	<0.00	<0.00	<0.00	<0.35	<0.00
D17JN21a272	<0.01	<0.01	<0.01	0	545,474.13	<0.04	14.38	<59.27	0.06	<0.00	<0.07	<0.00	1.44	<0.01	<0.00	<0.01	0	0.44	<0.00
D17JN21a277	<0.01	<0.01	<0.01	<0.00	548,085.99	<0.04	<2.63	<54.71	0.11	0	<0.08	<0.00	0.75	<0.01	0	<0.01	<0.00	<0.38	<0.00
D17JN21a255	0.46	0.44	0.47	<0.00	482,141.59	0.05	6.32	<47.35	0.08	0	1.48	<0.00	1.28	<0.01	0	0.01	<0.00	<0.35	0
D17JN21a278	<0.01	<0.01	<0.01	<0.00	505,172.08	<0.04	4.15	<53.65	0.09	<0.00	<0.05	<0.00	1.44	<0.01	<0.00	0.01	0	<0.43	0
D17JN21a250	<0.01	<0.01	<0.01	<0.00	504,445.33	<0.05	5.39	<54.04	0.1	0	<0.08	<0.00	0.58	<0.01	<0.00	0.02	<0.00	<0.39	<0.00
D17JN21a257	0.01	0.01	0.02	<0.00	562,508.04	<0.04	11.37	<47.44	0.13	<0.00	<0.06	<0.00	1.15	<0.01	<0.00	<0.01	<0.00	<0.36	<0.00

*All elements in ppm

Appendix V: Hemlo district pyrite mineral chemistry collected by LA-ICP-MS

Source Filename	Pb206	Pb207	Pb208	Pt195	S34	Sb121	Se77	Si29	Sn118	Ta181	Te125	Th232	Ti49	Tl205	U238	V51	W182	Zn66	Zr90
D17JN21a251	<0.01	<0.01	0.01	0.01	534,658.48	<0.04	7.21	73.15	0.07	<0.00	<0.09	<0.00	0.55	0.02	<0.00	<0.01	<0.00	<0.43	<0.00
D17JN21a254	0.76	0.79	0.81	<0.00	523,527.78	0.06	6	<58.20	0.07	<0.00	0.73	0	0.72	<0.01	<0.00	<0.01	0	<0.38	<0.00
D17JN21a266	0.27	0.32	0.26	0	545,784.89	<0.05	8.47	<54.62	0.07	<0.00	0.12	<0.00	0.97	0.02	<0.00	<0.01	<0.00	<0.39	<0.00
D17JN21a273	<0.01	<0.01	<0.01	0	584,754.15	<0.04	5.31	<60.92	0.08	<0.00	0.17	0	1.32	<0.01	<0.00	<0.01	<0.00	<0.37	<0.00
D17JN21a265	<0.01	0.02	0.01	<0.00	548,261.17	<0.04	6.86	<64.47	0.08	0	<0.08	<0.00	0.88	<0.01	<0.00	0.02	<0.00	<0.38	<0.00
D17JN21a269	0.67	0.68	0.69	0	547,352.29	<0.05	8.17	<50.01	0.09	0	1.95	<0.00	1.23	<0.01	<0.00	<0.01	0	0.42	0.23
D17JN21a271	0.06	0.1	0.06	<0.01	557,284.81	<0.05	18.96	<61.37	0.08	0	0.3	<0.00	1.69	<0.01	<0.00	<0.01	<0.00	0.85	<0.00
D17JN21a268	0.02	0.03	0.03	<0.00	525,777.10	<0.05	9.02	<55.27	0.13	<0.00	0.59	<0.00	1.46	<0.01	<0.00	<0.01	<0.00	<0.34	0
D17JN21a267	4.17	4.78	4.62	<0.00	559,266.99	0.5	18.15	<60.11	0.09	0	9.29	<0.00	1.93	<0.01	<0.00	<0.01	<0.00	24.58	0
D17JN21a249	<0.00	<0.01	<0.00	<0.00	506,501.34	<0.05	6.5	<55.19	0.08	<0.00	<0.07	<0.00	0.81	<0.01	0	<0.01	<0.00	<0.39	<0.00
D17JN21a253	<0.01	<0.01	0.01	<0.00	498,568.10	<0.04	3.15	<56.50	0.07	<0.00	<0.08	<0.00	1.2	0.01	<0.00	<0.01	<0.00	<0.31	<0.00
D17JN21a256	0.24	0.31	0.27	<0.00	562,465.24	<0.05	9.37	<53.51	0.09	<0.00	0.22	<0.00	2.11	<0.01	<0.00	<0.01	<0.00	<0.39	<0.00
D17JN21a274	3.24	4.06	4.09	<0.00	526,829.83	0.29	6.15	<54.66	0.13	0	<0.10	<0.00	2.44	0.02	<0.00	<0.01	<0.00	0.4	<0.00
D17JN21a279	<0.01	<0.00	<0.01	<0.00	554,906.84	<0.04	13.36	<52.63	0.08	0	<0.08	0	1.7	<0.01	0	<0.01	<0.00	<0.45	0
D17JN21a258	<0.01	<0.01	<0.01	<0.00	542,044.27	<0.05	6.52	<65.58	<0.06	<0.00	<0.10	<0.00	0.67	<0.01	<0.00	<0.00	<0.00	<0.43	<0.00
D17JN21a252	0.45	0.49	0.41	<0.00	538,109.94	<0.04	5.96	<56.50	0.14	<0.00	<0.07	<0.00	1.27	<0.01	0	<0.01	0	0.38	0
D17JN21a275	<0.01	<0.01	<0.01	0	573,728.91	<0.04	24.46	<59.19	0.08	<0.00	<0.13	<0.00	1.14	<0.01	<0.00	<0.01	0	<0.40	<0.00
D17JN21a270	<0.01	0.01	<0.01	<0.01	576,816.45	<0.06	6.14	<68.49	0.12	<0.00	<0.11	<0.00	1.88	<0.01	<0.00	<0.01	<0.00	<0.51	0.1
D17JN21a008	0.03	0.05	0.02	<0.00	555,582.13	<0.06	19.46	<57.34	0.09	<0.00	<0.08	<0.00	0.9	<0.01	<0.00	0.01	0	<0.33	<0.00
D17JN21a018	5.51	6.04	5.71	<0.00	484,712.32	<0.05	28.13	2,371.16	0.1	<0.00	11	0.07	1.36	<0.01	0.18	<0.01	0	8.01	38.36
D17JN21a021	<0.01	<0.01	<0.01	0	472,931.55	<0.04	27.06	<46.97	0.12	0	<0.08	0	1.65	<0.01	0	<0.01	<0.00	0.36	0.01
D17JN21a014	0.02	<0.01	<0.01	0	541,603.59	<0.06	<1.69	<51.01	0.14	0	<0.09	0	1.02	<0.01	0	<0.01	<0.00	0.48	0
D17JN21a037	<0.01	0.02	<0.01	<0.00	558,561.34	<0.05	24.47	<66.49	0.06	0	<0.05	<0.00	1.13	0.01	0	<0.01	0	<0.34	<0.00
D17JN21a030	<0.01	<0.01	<0.01	0.01	520,176.19	<0.04	28.21	<47.74	0.09	<0.00	0.14	<0.00	1.64	<0.01	<0.00	0.01	<0.00	<0.40	<0.00
D17JN21a015	0.02	<0.02	0.04	0.05	528,966.28	<0.06	25.07	<54.68	0.09	<0.00	<0.07	<0.00	0.89	<0.01	<0.00	0.02	<0.00	<0.43	<0.00
D17JN21a020	0.09	0.07	0.04	0.01	538,563.58	<0.05	<1.59	<45.90	0.1	<0.00	<0.06	<0.00	0.97	<0.01	<0.00	<0.01	<0.00	<0.32	0
D17JN21a033	<0.01	<0.01	<0.01	0	537,976.17	<0.04	6.92	<45.26	0.07	<0.00	<0.12	<0.00	0.69	<0.01	<0.00	<0.01	<0.00	<0.34	<0.00
D17JN21a028	<0.01	<0.01	<0.01	0.01	548,259.33	<0.05	22.34	54.71	0.1	<0.00	<0.07	<0.00	0.84	<0.01	0	<0.01	<0.00	<0.40	<0.00
D17JN21a012	0.02	<0.02	0.02	0.01	500,164.84	<0.05	11.49	<56.41	0.06	<0.00	<0.07	0	0.95	<0.02	<0.00	0.01	0.01	0.51	<0.00
D17JN21a011	0.66	0.61	0.56	0.01	551,012.17	<0.05	18.02	<50.53	0.07	<0.00	2.28	<0.00	1.17	<0.02	0	<0.00	0.01	<0.34	<0.00
D17JN21a017	<0.01	0.01	<0.01	<0.00	530,834.31	<0.05	24.22	<48.06	<0.06	<0.00	<0.07	<0.00	0.84	<0.01	<0.00	<0.01	<0.00	<0.40	<0.00
D17JN21a007	<0.02	0.01	<0.01	0.01	524,404.34	<0.05	41.26	<52.19	0.08	<0.00	0.2	<0.00	1	<0.01	0	0.01	0	<0.38	0.19
D17JN21a019	0.02	<0.01	<0.01	0.01	528,563.47	<0.05	12.52	<48.51	0.1	0	0.13	0	1.46	<0.01	<0.00	<0.00	<0.00	<0.31	0
D17JN21a029	<0.01	<0.01	<0.01	<0.00	541,930.89	<0.05	24.26	<51.32	0.13	<0.00	<0.07	<0.00	<0.37	<0.01	<0.00	0.01	0	0.4	<0.00
D17JN21a036	<0.01	<0.01	<0.01	0.01	518,360.56	<0.05	17.88	<57.44	0.09	<0.00	<0.04	<0.00	1.71	<0.01	<0.00	<0.01	<0.00	0.33	0
D17JN21a031	0.45	0.48	0.38	0.04	468,703.58	<0.05	56.06	<51.93	0.11	0	0.53	<0.00	0.65	<0.01	<0.00	<0.01	<0.00	0.55	<0.00
D17JN21a035	0.05	0.03	0.04	0	544,353.94	<0.05	58.21	<53.94	0.11	0	0.09	<0.00	1.23	<0.01	<0.00	<0.01	0	0.46	<0.00
D17JN21a032	<0.01	<0.01	<0.01	<0.00	561,513.83	<0.05	9.25	<54.75	0.07	<0.00	<0.07	<0.00	1.31	<0.01	0	<0.01	<0.00	<0.41	<0.00
D17JN21a013	4.14	4.21	4.14	0.03	483,031.68	<0.07	22.38	<61.97	0.07	<0.00	5.65	<0.00	1.34	<0.02	<0.00	<0.01	<0.00	<0.47	<0.00
D17JN21a016	<0.02	<0.01	<0.01	<0.00	580,960.90	<0.07	51.13	<56.43	0.13	0	0.1	<0.00	2.41	<0.01	0	<0.02	0	<0.48	0
D17JN21a034	3.02	3.21	2.98	0.08	590,567.01	<0.07	56.6	<72.07	0.14	0	16.77	0.12	1.17	<0.02	0.13	<0.02	<0.00	<0.60	33.36
D17JN21a009	0.13	0.08	0.06	0.01	597,074.99	<0.10	44.54	<87.82	0.09	<0.00	2.73	<0.00	1.15	<0.02	<0.00	0.02	<0.01	<0.49	0.1

*All elements in ppm