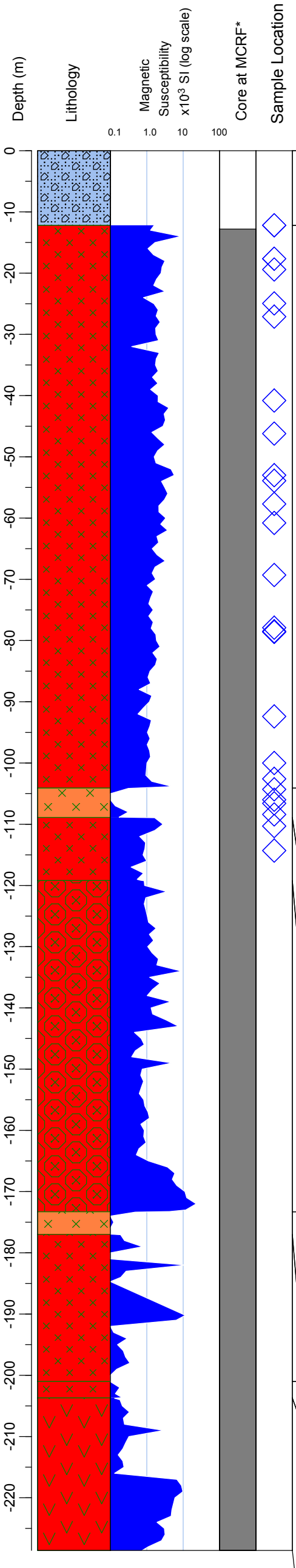
Target:	**Legend**	**Company:**	**Kennecott Canada Exploration Inc.**
Drill Hole:	98DH-LE01	Collar Azimuth:	N/A °
Location:	386200E , 6340600N	Collar Incline:	-90 °
Zone & Datum:	Z12, NAD 27	Core Diameter:	47.6 mm (NQ)
Elevation:	735 m asl	Geologist Logging:	Richard Beck
Start - End Date:	21/11/1998 - 23/11/1998	End of hole (EOH):	228.60 m



Description

OVERBURDEN: 0.00 - 12.20 m: According to the drillers reports the till encountered was that of predominantly sand with few cobbles and gravel throughout.

KIMBERLITE: 12.20 - 104.10 m: Dark grey, competent, matrix supported kimberlite containing (relic and fresh) fine-grained olivine, ilmenite, phlogopite macrocrysts (infrequent), numerous small country rock fragments and accretionary lapilli (in local sections) in an aphanitic dark grey/green serpentinized matrix. In addition, large relic olivine macrocrysts are recognised. Olivine is generally recognised in the matrix as a fine-grained constituent, however, throughout the core, below ~50 metres, large relic (carbonate replaced) olivine (9 - 25 mm) is observed in local sections. Phlogopite is rare throughout the core, however, its existence in local sections exhibits the typical light brown colour and sub-rounded shape. The crystals encountered are in the general size range of 12 x 8mm. Metallic, dark grey ilmenite is abundant throughout the entire section of kimberlite (~1 - 2%). The ilmenite size varies from (1 - 2 mm) crystals, but generally of a larger (4 - 8 mm) oval shaped conglomerate of crystals. Country rock fragments are abundant in this interval with the green fragments, the more dominant. The green xenoliths are predominantly sub-angular argillites and to a lesser degree, green marls. Few black angular mud fragments exist locally, as well as light brown shale(?) fragments. Accretionary lapilli exist in local sections throughout this unit as well rounded, black, fine to medium grained forms with the occasional lapilli form supporting a xenolith (sub-angular) nucleus. The lapilli appear to concentrated between 78.3 - 97.0 m. The lapilli forms vary from lightly packed to densely packed in local sections, the former being more dominant. This interval of dark grey/green kimberlite from 12.2 - 104.1 m is texturally and mineralogically similar throughout its length, with a few distinct and notable sections. These distinctions are described briefly below: <Link to complete description>

WEATHERED KIMBERLITE: (LIGHT GREY WEATHERED KIMBERLITE) 104.10 - 180.90 m: This interval is primarily light grey, competent kimberlite with a medium grained matrix. Relic olivine is present, but infrequent in comparison to adjacent units (<1%). Country rock xenoliths are relatively small (2 - 6 mm) in this rock unit, yet abundant (~5 - 10%). Xenoliths are commonly carbonate replaced with white, powdery remnants remaining. The interval starts as a light grey unit and diffuses into a light brown faulted, brecciated, kimberlite before ending as a moderately competent light grey unit. <Link to complete description>

KIMBERLITE: (DARK GREY KIMBERLITE) 108.90 - 119.20 m: Dark grey, competent hard, kimberlite. This unit is a very densely packed kimberlite made up of a fine-grained matrix and few country rock xenoliths. Ilmenite remains present throughout core (~1%), but olivine is not as abundant (< 1%) as a fine-grained constituent within the matrix. Fragments are infrequent and consist predominantly of angular black muds and dark green marls (subangular). Accretionary lapilli forms are recognised near the end of the interval. These lapilli are generally 4 to 6 mm in size, well rounded with a fine-grained kimberlitic matrix consisting of olivine and carbonate, and in a few instances, the core of the lapilli is that of a sub-angular green marl. <Link to complete description>

LAPILLI RICH KIMBERLITE: 119.20 - 173.30 m: This dark grey/green serpentinized unit is identical to that of the 12.19 - 104.1 m interval. The rock unit comprises previously recognised matrix supported components. The separation of fragment rich zones to zones of infrequent fragments is identical to the top of the hole. Grain size, percentages of various constituents, bitumen in fractures, etc. is the same as previously described. However, this unit is different in that it hosts numerous accretionary lapilli (~20 - 25%) in a fine-grained, black matrix supported kimberlite. In certain sections the lapilli is clast supported (4 - 9 mm) as the core has a botryoidal appearance. The lapilli are generally well rounded, black, fine to medium grained and of various sizes throughout. Within their matrix, fine grained white carbonate is observed alternating with black fine-grained and, in turn, housing small (generally green) xenoliths as a nucleus, thus giving the lapilli a "cored" appearance. This kimberlite is also host to few (<0.5%) deep red country rock fragments that had initially been identified as being garnet. <Link to complete description>

WEATHERED KIMBERLITE: (LIGHT BROWN WEATHERED KIMBERLITE) 173.30 - 177.00 m: Light brown, weathered, moderately competent kimberlite. Ochreous colouring is present as a result of altered sulphides (pyrite and chalcopyrite observed along fracture surfaces) and abundant bitumen along fractures and as small vugs throughout the core. Abundant veining in this unit of core, both quartz and carbonate veining, the latter more dominant. Fine-grained relic olivine is observed. Country rock fragments are infrequent, but few angular black mud xenoliths and sub-angular light blue (argillites?) are present. The majority of the fragments have reaction haloes. The interval appears devoid of phlogopite and ilmenite. This unit of core has clean, sharp contacts with adjacent layers of grey kimberlite. <Link to complete description>

KIMBERLITE: (LIGHT GREY KIMBERLITE) 177.00 - 201.00 m: This unit is similar to the overlying interval, however, this light grey, competent kimberlite is a much harder rock. <Link to complete description>

KIMBERLITE: 201.00 - 203.70 m: This zone is identical to that of the 104.9 - 106.8 m sub-interval previously described. <Link to complete description>

KIMBERLITE TUFF: (LIGHT GREY KIMBERLITE TUFF) 203.70 - 228.60 m: Light grey, competent hard kimberlite tuff with a fine-grained matrix. Country rock fragments are abundant throughout, but relatively small in comparison to previous units (1 - 3 mm). Olivine is dominant throughout this interval, as it appears widespread as small (~1 mm) carbonate replaced, white grains (5 - 10%). This "peppered" effect of the olivine in light grey matrix disappears when the core becomes dark grey at 218.1 m. The olivine remains as a dominant mineral of the, now grey/green, serpentinized core, however, it is no longer carbonate replaced to the extent of the overlying light grey unit. Ilmenite is present throughout (~1%). Phlogopite occurs rarely. Country rock fragments are abundant, as mentioned, with the most dominant being the angular "mud chips". These "mud chips" are approximately 1 - 3 mm in size and comprise about 2% of the matrix. In certain sections these "mud chips" appear to align themselves, thus, suggesting flow direction within the kimberlite. Other fragments populating this rock unit, but to a lesser degree are green and white marl and argillite and even fewer pink quartzite clasts. The deep red coloured clasts previously recognised appear again in the later portions of this kimberlite interval i.e. 218.1 - 228.6 m, thus suggesting that these clasts appear only in the darker grey segments of the kimberlite, therefore, they may very well exist elsewhere, but weathered alteration is disguising their deep red colour. <Link to complete description>

* Shaded area denotes core is available at Mineral Core Research Facility at Alberta Geological Survey

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