

## **Revisiting the Buffalo Hills Kimberlites**

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Since its first kimberlite discovery in 1997 the Buffalo Hills Joint Venture has amassed a significant historic database. Of the 38 kimberlites discovered between 1997-2004, 32 were discovered in the first 24 months. Due in part to their rapid discovery rate, only six kimberlites have had more than ten tonnes of material tested for commercial diamond potential, with results ranging from 0.1 to 55 carats per hundred tonnes.

The Buffalo Head Hills (BHH) kimberlites comprise the third largest district of diamond-bearing kimberlites in Canada. The BHH kimberlites are atypical when compared to other diamond-bearing districts in Canada. They are emplaced through post-Archean lithosphere, confirmed by the near absence of harzburgitic G10 pyrope. The older, 85Ma kimberlites were emplaced coevally with deposition of marine strata whereas the younger 60Ma group erupted onto erosional surfaces in a terrestrial setting. Modeling based on detailed drilling suggests that some of the 85Ma kimberlites collectively define larger complexes. Erosion since emplacement has greatly influenced their level of preservation prior to being buried under thick glacial cover. Consequently their geophysical expressions are widely variable, making further exploration difficult.