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Hyperspectral Core Imaging: Advanced Modern Exploration Techniques at the Toiyabe Exploration Project

David Browning, Steve Koehler, Savannah Reyes
Westward Gold, Vancouver, BC, Canada

The Toiyabe Gold Exploration project is located approximately 120 kilometers southwest of Elko, NV in Lander County, Nevada. The project hosts an exposed carbonate window consisting of the Devonian Horse Canyon and Wenban Formations. Exploration in the area dates to the 1960's with various drill programs focusing on shallow gold mineralization (primarily <180m). More recent drilling has identified a deeper zone of gold mineralization between 200-300m from surface associated with thrust faults and other compressional structures.

In 2021, approximately 3,050m of drill core and 11,900m of RC chips from previous drill campaigns were imaged using hyperspectral Visible-Near Infrared (VNIR), Shortwave Infrared (SWIR), and Longwave Infrared (LWIR) cameras. The data were processed to create individual mineral presence, mineral chemistry, and mineral texture images of the historic drill samples. The results of the imaging revealed important alteration patterns and textures related to large-scale alteration and structural features associated with the deeper zone of mineralization. Silicification, decalcification, and argillization are present with varying degrees of strength within drill intercepts of anomalous gold and the associated thrust fault, as well also occurring as haloes surrounding the mineralizing structure.

Hyperspectral core imaging has been used to quantify the degree of alteration across the previous drilling to identify series of alteration types associated with mineralizing structures. Using this "spectral fingerprint" as a vector for mineralization has led to the identification of additional areas of interest across the property that were not adequately drill tested. The application of this emerging analytical technique is aiding the refinement of existing drill targets from previous exploration efforts and the creation of new step-out targets that will be tested in the 2022 exploration campaign.