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by

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INTRODUCTION

Personnel from the Alaska Division of Geological & Geophysical Surveys (DGGS) conducted a reconnaissance rock sampling project from April 30 to May 4, 2012, to obtain modern, quantitative geochemical analyses to characterize select mafic–ultramafic rocks and one chalcopyrite-bearing quartz vein sample from Yellow Hill on Annette Island, in the Ketchikan Quadrangle, southeastern Alaska. Mr. Jason Pipkin and the students of his tenth-grade class at Metlakatla High School, and Mr. Rob Erbelding, teacher at Charles Leask Middle School, assisted in collecting the samples as part of the MapTEACH education–outreach program. Their efforts were coordinated with the State of Alaska's *Strategic and Critical Minerals Assessment Project*, which was initiated to evaluate Alaska's potential for these resources. Highlights of this sampling project include mafic–ultramafic rock samples with up to 0.079 ppm platinum (Pt) and 0.123 ppm palladium (Pd), and a quartz vein with 2.83 percent copper (Cu) and 0.155 ppm gold (Au).

The text, analytical data, and tables associated with this report are being released in digital format as PDF files and .csv files. Additional details about the digital data distribution files can be found in the metadata file associated with the digital version of this report, which is available from the DGGS website (http://dggs.alaska.gov/pubs/id/24975) at no charge.

DOCUMENTATION OF METHODS

SAMPLE COLLECTION

For this project, 23 rock samples were collected for geochemical analysis. Location coordinates were obtained using Garmin eTrex Legend H and Garmin GPSmap 76S handheld GPS units with a typical error of 7 m or less. Coordinates are presented in latitude and longitude in decimal degrees (based on the WGS84 Alaska datum).

SAMPLE PREPARATION

Samples were submitted to ALS Chemex, where the rock samples were logged in the tracking system, weighed, dried, and finely crushed to better than 70 percent passing through a 2 mm (Tyler 9 mesh, U.S. Std. No. 10) screen. A split of up to 250 g was taken and pulverized to better than 85 percent passing through a 75 micron (Tyler 200 mesh, U.S. Std. No. 200) screen.

ANALYTICAL METHODS

All samples were analyzed for ore-related trace elements and the full suite of rare-earth elements. In addition to the internal quality-control program at ALS Chemex, DGGS monitored analysis quality by inserting ore-geochemical-pulp standards with known compositions into the sample roster for every sample batch.

Trace-element compositions were determined using inductively coupled plasma, atomic emission spectroscopy (ICP-AES) following a four-acid digestion process. Rare-earth- and additional trace-element compositions were determined using inductively coupled plasma, mass spectroscopy (ICP-MS). ICP-MS samples were dissolved in acid following lithium borate fusion. Platinum (Pt), palladium (Pd), and gold (Au) values were obtained from a 30-gram sample using inductively coupled plasma–atomic emission spectroscopy (ICP-AES) following fire assay. The sample from the Erbelding prospect was outside the range for copper for this method, and was re-analyzed using gravimetry (ICP-AES). Detection limits for each of the reported elemental values obtained by the various methods are provided in the digital data distribution files.

ACKNOWLEDGMENTS

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