I. Introduction

The first tracks for the Blackwater project, and other enigmatic occurrences in the region, are Late Cretaceous Kasalka Group volcanics (Kim et al., 2014; Logue, 2015) that range in age from ~74-72 Ma. These volcanic rocks are highly prospective, however, numerous porphyry and skarn occurrences and gold and silver deposit bedrock show the possibility of a district-scale play. This project is a joint initiative between the University of British Columbia (UBC), Geoscience BC, and MDRLU to examine the Kasalka Group and its potential Late Cretaceous intrusive rock association. The potential existence of a district-scale porphyry type deposit in the Blackwater Camp, adjacent to a large Late Cretaceous intrusive body, was first brought to our attention in 2015 (R. Whiteaker, pers. comm., 2015). Although the age of the intrusive body was not clear, reported Kasalka Group ages range from ~87-83 Ma (Looby, 2015). Published age data from the Kasalka type section indicate ages ranging from ~87-83 Ma, with the majority of dates from whole rock and mineral K-Ar methods. In the TREK area, reported Kasalka Group ages range from ~87-83 Ma, with the majority of dates from whole rock and mineral K-Ar methods. The potential for a porphyry-type deposit is highly dependent on the quality of the intrusive body and the timing of mineralization relative to the intrusive event. The Blackwater intrusive body is possible. A recent log-based geophysical survey in the Blackwater Camp (Aeroquest Airborne Ltd., 2015) provides further age constraint to mapped stratigraphic sections shown in Figure 2. Ongoing work on the Blackwater intrusive body is required to determine its potential for a porphyry-type deposit.

II. Geological Setting & Study Area

The Interior Ranges region lies within the boundaries of the northernmost part of the Southern Margin. The region is characterized by an east-west-trending belt of volcanic rocks and associated intrusive complexes. The region is divided into two main structural domains: the Skeena Fold Belt and the Stikine Volcanic Belt. The Skeena Fold Belt is characterized by a series of folds and thrust faults that result in a series of fault blocks. The Stikine Volcanic Belt is characterized by a series of volcanic and intrusive complexes that are associated with the formation of the Skeena Arc.

III. Late Cretaceous Stratigraphy

The Upper Cretaceous volcanic rocks in the Blackwater Camp are a part of the Kasalka Group, which is characterized by a series of volcanic and intrusive bodies. The Kasalka Group is divided into three main stratigraphic units: the Kasalka Volcanics, the Bowser Lake Volcanics, and the Skeena Group. The Kasalka Volcanics are characterized by a series of volcanic units, including andesites, rhyolites, and tuffaceous rocks. The Bowser Lake Volcanics are characterized by a series of felsic and intermediate volcanic rocks, including rhyolites, andesites, and dacites. The Skeena Group is characterized by a series of volcanic and intrusive rocks, including andesites, dacites, and quartz diorites.

IV. Lithogeochemistry

The geochemical data for the Kasalka Group volcanic rocks in the Blackwater Camp show a range of compositions, from felsic to mafic. The rocks are characterized by high MgO, FeO, and Ni contents, which is typical of volcanic rocks associated with porphyry-type deposits. The rocks also show a range of Sr isotopic compositions, from high to low Sr, which is typical of volcanic rocks associated with porphyry-type deposits. The Sr isotopic compositions of the rocks are consistent with the presence of a continental crustal source.

V. Geochronology

Three age populations are identified by various dating methods: a) ~87-83 Ma for felsic volcanic rocks; b) ~74-72 Ma for mafic volcanic rocks; and c) ~50-40 Ma for quartz diorites. The age of the Kasalka Group rocks in the Blackwater Camp is consistent with the age of the Blackwater intrusive body, which is ~73 Ma. The age of the intrusive body is consistent with the age of the Kasalka Group rocks in the Blackwater Camp, which is ~73 Ma.

VI. Conclusions and Future Work

The Kasalka Group rocks are a part of the Late Cretaceous volcanic succession, which is characterized by a series of volcanic and intrusive bodies. The Kasalka Group rocks are highly prospective, and the potential for a porphyry-type deposit is highly dependent on the quality of the intrusive body and the timing of mineralization relative to the intrusive event. The Blackwater intrusive body is possible. A recent log-based geophysical survey in the Blackwater Camp (Aeroquest Airborne Ltd., 2015) provides further age constraint to mapped stratigraphic sections shown in Figure 2. Ongoing work on the Blackwater intrusive body is required to determine its potential for a porphyry-type deposit.