# A petrographic description and comparison of Seel Cu-Au Porphyry and West Seel Cu-Au-Mo Porphyry deposits, Canada

## 1. Purpose

- This study aims to describe, characterize and compare the Seel Cu-Au Porphyry and West Seel Cu-Au-Mo deposits.
- The deposits are found adjacent to each other, but show significant differences in mineralization styles, alteration assemblages, and hostrock lithologies.



looking southeast.



## 2. Introduction

- The Seel Cu-Au and West Seel Cu-Au-Mo porphyry are located on the Ootsa Property marked with a red cross on fig. 2.
- The property is found in westcentral British Columbia and in the Tahtsa Reach region.
- The deposits lie within the Stinkine Tectono-stratigraphic terrane, near the western margin of the Intermontane Belt.

From Ebert, McDowell, Giroux (2012).

- The Seel deposits are hosted in the Smithers Formation, which is part of the Lower to Middle Jurassic Hazelton Group (fig. 3).
- The Smithers Formation consist of marine sediments and subarial pyroclastic rocks.
- The Stikine Terrane is intruded by several igneous suites where the Late Cretaceous Bulkley intrusive Suite is known in the Tahtsa Reach area and asociated with several mineral occurrences (e.g. Huckleberry Mine, Whiting Creek, Emerald Glacier and Berg).
- The Seel deposits are located on the southeast end of a southeast trending belt of porphyry deposist, which includes Huckleberry Mine 8km to the northwest.
- The porphyry mineralization style is inferred to be related to the Bulkley intrusive suite.



igure 3: The regional geology of Tathsa Reach after: MacIntyre et al. (1994), MacIntyre (2001) and Christensen et al. (2011).

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### 3. Geology and alteration pattern of Seel and West Seel









- zone.



- Cu-Au-Mo deposit.
- sedimentary unit (fig. 13 and fig. 14).



• A detailed drill program was carried out in the fieldseason 2012 with more than 40.000 metres drilled.

• Figure 4 shows the drill hole location map and the known outline of Seel Cu-Au zone and West Seel Cu-Au-Mo

• Figure 5 shows the simplified geology of the Seel Cu-Au deposit

• The Cu-Au zone is hosted in a crowded feldspar porphyry with a pyrite-chalcopyrite mineral

Figure 12. Medium-grained feldspar porphyry with 2-4mm feldspar phenoes and fine-grained disseminated pyrite. Potassic alteration



• The West Seel Cu-Au-Mo zone is hosted mainly in a medium grained weakly porphyritic intrusive rock with pyrrhotite-pyrite-chalcopyritemolybdenite mineralization (fig. 11 and fig. 12) and partially in a clastic







![](_page_0_Picture_46.jpeg)

- Figure 6. shows the alteration pattern of Seel Cu-Au deposit.
- Two alteration styles dominate the Cu-Au area (fig. 6): A potassic alteration (fig. 10), and a phyllic alteration (fig. 9) that locally are grade destuctive.

![](_page_0_Picture_49.jpeg)

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Ootsa Project cm cm

Figure 15. Medium-grained biotite-feldspar intrusive with quartz veins, byrite, chalcopyrite and molybdenite. Phyllic alteration.

Figure 14. Fine-grained siliceous sediment with disseminated pyrite and mm quartz- and Fe-carbonate veins. Potassic alteration.

- Figure 8 shows the alteration outline for West Seel.
- At depth a strongly potassic altered, medium grained, equigranular biotite intrusive phase host the mineralization in the Cu-Au-Mo zone (fig. 15 and fig. 16).

## 4. Ongoing Research

- Core logging, thin section descriptions and electron microprobe analyses will be used to determine the lithologies, describe the mineralization and alteration style and subsequently characterize the similarities and differences between the two deposits.
- Isotope dating (Rb-Sr) on biotite-plagioclase will be used to clarify the connection between the mineralization and determine if the two deposits belong to the same hydrothermal system or intrusion(s).

#### 5. Further work

- The samples and data collected in the 2012 field season will be analysed during 2013 with the methods explained above .
- Follw up work is planned for the field season 2013 and the master thesis is expected done medio december 2013.

#### 6. References

- Christensen, K., Connaghton, G. R., and Orgryzlo, P., 2011. Technical report on the Main Zone Optimization Huckleberry Mine, Prepared for Huckleberry Mines Ltd. and Imperial Metal Corporation. (p. 170).
- Ebert, S., McDowell, C., and Giroux, G., 2012. Mineral resources estimate update for the Seel Copper Gold Porphyry Deposit, Prepared for Gold Reach Resources Ltd. (p. 137).

## 7. Acknowledgement

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