A report prepared for Carolina Rush Corporation & OceanaGold Corporation

FURTHER COMMENTS ON GEOLOGY AND PORPHYRY COPPER EXPLORATION AT BREWER, SOUTH CAROLINA

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June 2026

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EXECUTIVE SUMMARY

- The core from the three recently completed deep drill holes was reviewed to assess its implications for a possible porphyry copper deposit at Brewer.

- The results of the drilling have confirmed the tilted porphyry copper model proposed previously.

- Rotation by ~70° to the southeast restores the currently shallowly inclined system to its original upright position.

- Evidence observed in the core from hole B26C038 shows that Brewer is a gold-rich porphyry copper system, albeit currently of unknown grade.

- The suspicion that Brewer is a porphyry molybdenum system can now be abandoned.

- The minor porphyry intrusions cutting the alteration zone are genetically unrelated to the Brewer system.

- The advanced argillic lithocap has a former original depth extent of ~1600 m, suggesting that a proximal transition to sericitic (white mica) and then deeper potassic alteration should be anticipated.

- The potassic zone should contain an early porphyry intrusion with which the highest copper and gold values are most likely to be associated.

- Two additional vertical or steeply inclined drill holes are recommended close to the property boundary farther to the northwest and west-northwest, respectively.

- The proposed holes would have the specific aim of intersecting this early porphyry and testing its copper and gold potential.

INTRODUCTION

At the invitation of Layton Croft, the writer carried out a three-day field review of the Brewer project in South Carolina on behalf of Carolina Rush Corporation and earn-in partner OceanaGold Corporation, with a specific focus on porphyry copper potential. The work comprised box-by-box inspection of the core from three deep holes (B26C-037, 038, and 039) drilled in 2026.

This report provides further evidence for a porphyry copper center at Brewer by validating and refining the tilted geology and alteration model developed previously (July 2024). The core inspection was conducted jointly with Patrick Quigley of Carolina Rush and Nick Fitzpatrick of OceanaGold who, along with Layton Croft, are thanked for assistance and wide-ranging discussions.

GEOLOGIC BACKGROUND

The Brewer open-pit mine exploited gold associated with supergene-oxidized pyrite-chalcocite-enargite mineralization. This high-sulfidation sulfide assemblage is concentrated in the quartz-topaz core of an extensive advanced argillic lithocap dominated by pyrite-bearing quartz-pyrophyllite-kaolinite alteration.

In the shallow parts of the Brewer system, the lithocap is developed at the expense of a highly silicic breccia interpreted as a phreatomagmatic diatreme. The breccia contains a multitude of previously silicified clasts along with cuspate juvenile fragments that are invariably more pyritic than the enclosing matrix. The southeastern part of the diatreme is overlain by lacustrine sedimentary rocks, the Tanyard sequence, that is believed to be the erosional remnant of a maar crater fill.

Much of the lithocap was little affected by ductile deformation during collisional tectonism because of its highly silicic nature. In contrast, the host volcanic succession, subjected to chlorite-sericite (white mica) alteration, acquired a pervasive foliation. The Tanyard sequence also escaped the effects of ductile deformation, presumably because it was buttressed by the subjacent silicic diatreme breccia.

NEW GEOLOGIC OBSERVATIONS

General features

Information provided by the deep drill holes, particularly B26C-037 and 038, extends the shallowly inclined Brewer system to deeper levels and farther northwest (Fig. 1). The system appears to flatten northwestward where its apparent inclination is only 10–20°. Clearly, a porphyry system cannot be formed at such shallow angles, thereby requiring post-mineral tilting from a former upright position to its current attitude (Fig. 2).

Hole B26C-038 crossed the entire porphyry system, from side to side, as shown by the presence of chlorite-sericite alteration both above and below the currently shallowly inclined lithocap (Fig. 1). Interpretation of this alteration as a halo gains additional support from its distal geochemical signature: >500 ppm Mn along with many >100 ppm Zn values (Figs. 1 and 2).

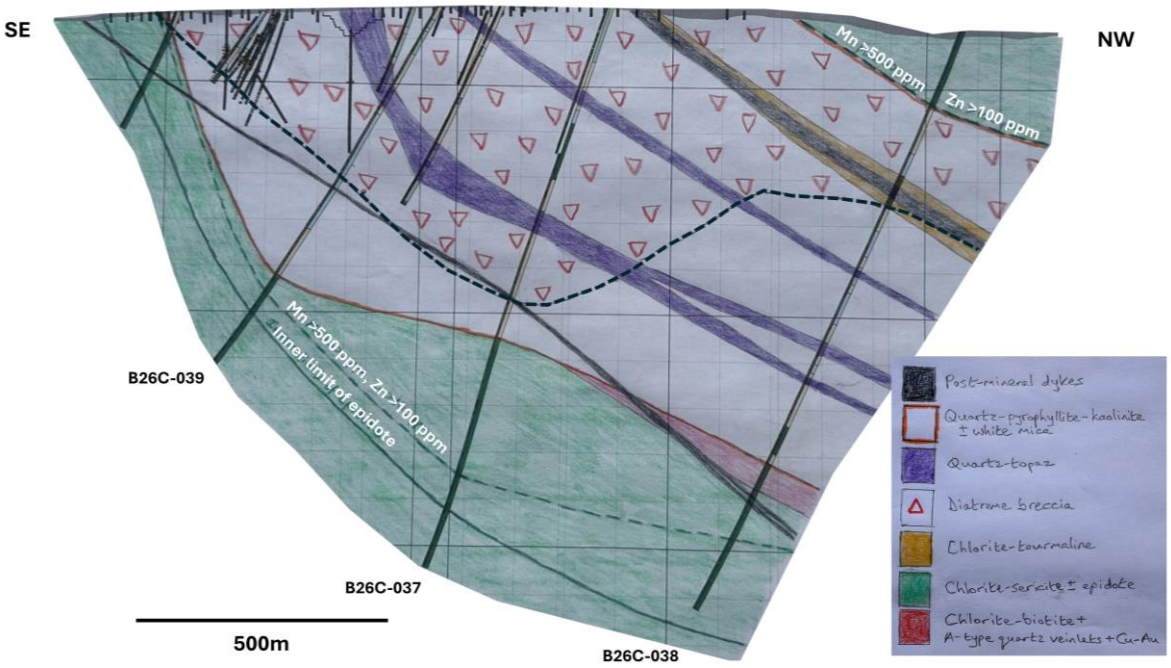


Fig. 1 Selected geologic features of Brewer porphyry system

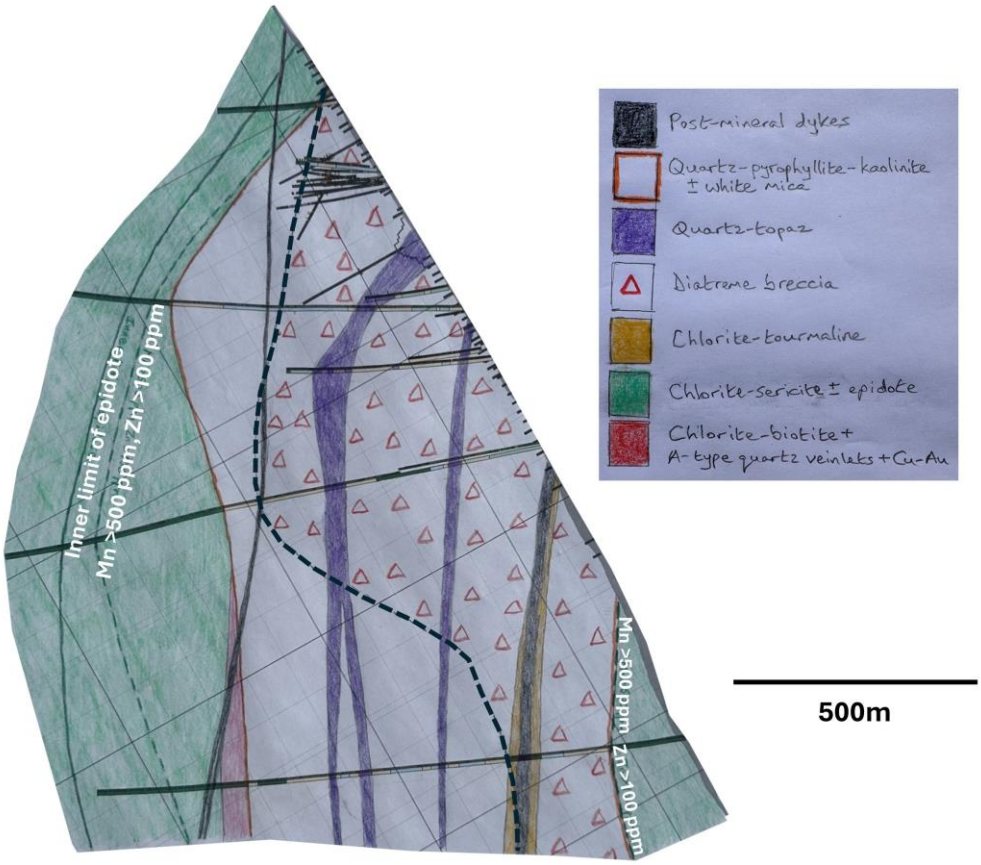


Fig. 2 Brewer porphyry system restored to its former upright position

Geology and alteration

The contact between the diatreme breccia and its host volcanic rocks, mainly felsic in composition but including several mafic intercalations, is not everywhere easy to define.

However, there is a clear northwestward decrease in its volume (Fig. 1), which translates into a downward narrowing once the system is restored to its former vertical position (Fig. 2).

The advanced argillic lithocap, dominated by the quartz-pyrophyllite-kaolinite assemblage but also including intervals with sericite (white mica) > pyrophyllite, maintains its width northwestward (Fig. 1) and downward (Fig. 2). However, the presence of several sericite > pyrophyllite intervals in the core from B26C-038 suggests that the temperature and pH of the magmatic fluids responsible may have been increasing northwestward/downward.

The quartz-topaz zones display remarkable continuity over ~1400 m (Figs. 1 and 2), strongly suggesting that that they were localized by steep faults prior to the tilting. They only contain copper-gold mineralization near the present surface, suggesting that metal precipitation may have been in response to upward-declining fluid temperature.

The chlorite-sericite halo to the system, along with its distal manganese-zinc signature, was noted above. Downward in three holes, epidote is added to the chlorite and subordinate sericite to define a propylitic halo (Figs. 1 and 2). It is suspected that epidote will also prove to be present in greater amounts above the lithocap as the volcanic sequence thickens further to the northwest (Fig. 1).

Distinctive alteration-mineralization types

Hole B26C-038 cut two previously undocumented alteration-mineralization types. The most important, intersected form 1026–1072 m and colored red in Figures 1 and 2, is hosted by a foliated mafic volcanic unit and defined by the presence of partially chloritized phlogopitic biotite, buckled and transposed A-type quartz veinlets, and chalcopyrite + gold (Fig. 3). The chalcopyrite occurs as sparsely disseminated grains in the quartz veinlets, with pyrite essentially absent. The 60-m core interval averages 700 ppm Cu and 0.24 g/t Au. There is also 300–400 (and up to 470) ppm copper in overlying feldspar-phyric andesite, much of it apparently as thin, black, high-sulfidation rims on pyrite grains.

Although weakly mineralized, this copper-gold interval is clearly of porphyry type and part of a potassic alteration zone developed in a host-rock unit. It is of critical importance because it shows that porphyry copper-gold mineralization exists at Brewer and, furthermore, that Brewer is a gold-rich system. Importantly, Brewer is not a porphyry molybdenum system despite the fact that B- and banded-type quartz-molybdenite veinlets are present locally. Copper-gold mineralization, like that intercepted in B26C-038, has no place in a molybdenum (or copper-molybdenum) system.

The second unusual alteration interval, containing mainly pyrite and only trace chalcopyrite, is confined to another mafic unit from 328–362 m and 394–407 m. The alteration, colored yellow in Figures 1 and 2, comprises chlorite and suspected tourmaline, the latter (mis)identified by SWIR as ottrelite. The two altered intervals are separated by a composite porphyry sill, giving the initial impression of being an alteration halo; however, it is not. Lesser amounts of probable tourmaline continue for at least 100 m into the underlying felsic volcanic rocks.

The chloritized biotite and chlorite-probable tourmaline intervals are though to have been preserved because of the high acid-buffering potential of the host mafic volcanic units. In

contrast, the intervening felsic units were readily transformed to pyrophyllite-kaolinite ± sericite because of their much-lower buffering capacity. If correct, then the volumes of these alteration types, particularly the former, would be expected to increase northwestward/downward at the expanse of advanced argillic alteration.

Ductile deformation

As noted above, the non-silicified parts of the Brewer prospect, peripheral to the advanced argillic core, underwent pervasive ductile fabric development, which clearly affected all contained minerals, including sulfides. Furthermore, it is strongly suspected that the rheological contrast between the rigid advanced argillic core and its chlorite- and sericite-bearing periphery localized low-angle thrust faults, albeit with relatively limited displacement. The overall coherence of the alteration system (Figs. 1 and 2) would effectively preclude substantial (say, >100 m) thrust offsets.

The most obvious candidate for such a thrust fault coincides with the current upper contact of the lithocap with the chlorite-sericite halo in B26C-038 (Fig. 1), which is marked by mylonitic fabric development and overprinted cataclasite (gouge and breccia). Moreover, the juxtaposition of the lithocap with the manganese-zinc halo strongly suggests, by comparison with the base of the system, that a substantial interval of chlorite-sericite alteration may have been excised (Fig. 1).

The lower, laterally extensive feldspar-biotite porphyry sill is likely to have been emplaced along a thrust fault because where the sill bifurcates to the northwest (in the core from B26C-038), the two branches are separated by a 2-m-thick mylonite.

The suspected fault displacement would have accompanied ductile fabric development and would have taken place once the Brewer system was in the process of adopting or already in its current low-angle position. Notably, the extensive quartz-topaz ‘ribs’, thought to have been localized by originally steep brittle faults, did not undergo any post-mineral thrust displacement because of the buttressing effect of the enclosing silicic lithocap.

Porphyry sills

Two porphyry sills are present at Brewer (Fig. 1): the upper one composite in nature and comprising juxtaposed feldspar-biotite porphyry, aphanitic rhyolite, and quartz-feldspar-biotite porphyry, and the lower one feldspar-biotite porphyry exhibiting well-preserved chilled contacts. The upper feldspar-biotite porphyry is cut by a few, thin, undeformed quartz-pyrite-chalcopyrite veinlets. The lower feldspar-biotite porphyry was defined by four drill-hole intercepts over a distance of ~1600 m, with no apparent offset or disruption (Fig. 1).

The sills were originally considered as late-mineral dikes genetically related to the Brewer porphyry system. However, it is now clear that this is not the case and that the porphyries and rhyolite were emplaced as sills that post-dated the ductile deformation and, hence, cannot be related to the porphyry system (Fig. 4). Although marked on Figure 2, they were not present when the Brewer system was still upright. They were likely intruded after collisional tectonism had ceased, albeit potentially along pre-existing lithologic or thrust contacts.

EXPLORATION IMPLICATIONS

Once the current configuration of the Brewer system is rotated into its original vertical position (Fig. 2), it is clear that the advanced argillic lithocap should transition downward, which is down-dip to the northwest in its current position (Fig. 1), to first sericitic and then potassic alteration, with a concomitant increase in quartz veining and, hopefully, copper and gold grades. The 1600-m former vertical extent of the lithocap, beneath the paleosurface Tanyard maar sequence, is already approaching a world record depth! Therefore, diminution of the advanced argillic alteration should become evident within a maximum of a few hundred meters farther down dip.

The sliver of chloritized biotite alteration and contained low-order copper and gold values (Figs. 1 and 2) may be considered as a first indication of this anticipated deeper mineralization. The deeper mineralization should be centered on an early porphyry stock or dikes, having the potential to host much higher copper and gold tenors than those encountered to date. However, these tenors cannot be predicted and require drilling to be determined.

EXPLORATION RECOMMENDATIONS

Two additional deep exploration holes are recommended to further test the porphyry copper-gold potential of the Brewer system. Two holes rather than just a single hole are preferred because of the uncertainty surrounding the position of the section line (Fig. 1) vis-à-vis the actual core of the system. It remains possible that the system center is located west-northwest of the section rather than along strike farther to the northwest. If this is the case, then the sliver of chloritized biotite alteration cut by B26C-038 might represent one margin of the potassic core.

Both holes should be maximum step-outs as constrained by the property boundary because there is little chance that they could be drilled beyond the limits of the system. One hole, probably best drilled vertically, could be collared farther northwest along the projection of the Figure 1 section line and proximal to the property boundary. The other, drilled either steeply inclined or vertically, could abut the property boundary west-northwest of the section line. Vertical drilling would be satisfactory at Brewer because of the low angle of the tilted system and, hence, the impossibility of holes being confined to late- to post-mineral intrusions. Should the hole in the west-northwest quadrant cut an excessive thickness (say, >400 m) of propylitic alteration, it may be assumed that it has been collared peripherally and could be abandoned.

Either or both of these proposed holes could encounter an unforeseen problem: the post-mineral and post-ductile deformation Pageland pluton. Although mapped at surface well beyond the proposed drill sites, it is always possible that its southern contact could dip shallowly south, thereby cutting out the Brewer porphyry system at depth.



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21st June 2026

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