STEW PROJECT FINAL REPORT

YMEP QUARTZ FOCUSED REGIONAL PROJECT #18- 025

PROSPECTING AND SOIL GEOCHEMISTRY

NTS 105N/12

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Field Work Performed June 28 to July 3, 2018

STEW project area was burnt in 2017

EXECUTIVE SUMMARY

Six days of prospecting and soil sampling were conducted by two workers in a remote area of central Yukon, between Pleasant Creek and Stewart River. The area had been burnt by wildfire the previous summer, and it was thought that this would result in better rock exposure along a 9km long ridge in a previously bushy area below treeline. The target was orogenic gold in quartz veins, or possible Tombstone type gold deposits hosted by the Hyland Group in an underexplored but geologically favourable area. It was assumed that any gold veins would have accessory arsenic and/ or base metals, and that favourable quartz veins would have some visible alteration, textures or metallic accessory mineralization to aid prospecting. It was also assumed that significant gold mineralization would be reflected by accessory arsenic, lead, zinc or copper in soils. A portable XRF tool was used to test soil samples and rock samples in the field.

The prospecting trip was not successful in locating mineralized veins or soil geochemical anomalies. Many quartz veins were located and examined, with no elevated mineralization and very few favourable textures. The concept of prospecting areas burnt the previous year was considered to be successful, as thousands of boulders and outcrops were obviously much better exposed than they would have been prior to the fire. Most areas were very easy to traverse and navigate with little or no underbrush.

PREVIOUS WORK AND REGIONAL GEOLOGY

The project area lies immediately southwest of the Robert Service thrust, and is totally underlain by Hyland Group metasediments except for a small inlier of younger limestone found at the far southwestern end of the area examined. The Yusezyu formation of the Hyland Group is the host for the currently active Plateau orogenic gold project located about 20km south of the prospecting area (Sack et. al., 2018), and also the 3 Aces project located near the Nahanni Range road (Dessureau, 2017). The formation comprises sandstone, grit, psammite, metaconglomerate, chloritic metasiltstone; includes carbonaceous phyllite or graphitic slate near the base and grey limestone or marble lenses near the top (Algae Lake formation), where not mapped separately.

At both the Plateau and 3 Aces projects gold is associated with visible silicification, sericitic bleaching and anomalous arsenic and pyrite mineralization. Mineralized zones extend for multiple kilometers. Gold can be spectacularly coarse-grained at these projects.

The best target for orogenic gold veins within the Yusezyu package is thicker, harder bands which provide competency contrast with weaker units. The harder unit dilates during deformation to allow longer, wider vein formation. A metaconglomerate unit and it's contacts are the setting for the best gold veins at Three Aces, while the most important setting at Plateau is a psammite unit comprising light grey to pale green, interbedded fine to coarse-grained sandstone and quartz pebble conglomerate.

A second target in the STEW area was Tombstone aged intrusive-related gold. The End Of The Rainbow project lies a few kilometers north of the prospecting area, where polymetallic mineralization is related to small intrusive bodies (Berdahl, 2004). It was considered possible that similar dykes might also be found on the south side of the major Robert Service regional thrust fault, while the Rainbow is located north of the fault.

The project area is considered to be underexplored. There are no assessment report footprints overlying the project area. Regional government geological mapping has only been conducted at 1:250,000 scale (Roots, 2003). A traverse was conducted along the project ridge during this mapping, as a few structural measurement are shown on the map. A government airborne magnetic survey was conducted in 1968, which is considered to be relatively low resolution. This data was recently reprocessed, which greatly improves the usefulness of the information (Aurora Geosciences Ltd. and Bruce, 2017). Regional geochemical surveys were conducted in the area, however the samples were collected on lower slopes that are underlain by thick glacial sediments and therefore unlikely to reflect local bedrock. Four RGS sample sites drain the target area, these samples are predictably low in gold, base metal and pathfinder elements. There has not been any surficial mapping surveys conducted in the area by government.

2018 EXPLORATION

The author and prospecting partner Max Mikhailytchev arrived at the project area on June 28, and left on July 3 via Fireweed Helicopters Long Ranger flown by Norm Smith. A campsite was selected central to the target ridge based on the presence of a suitable helicopter landing site (UTM 568520, 7047470). Four full days of work were conducted, with minor exploration work done the first and last days. Weather was mixed, with rain showers and some thunder and lightning each day.

PROSPECTING AND GEOLOGY

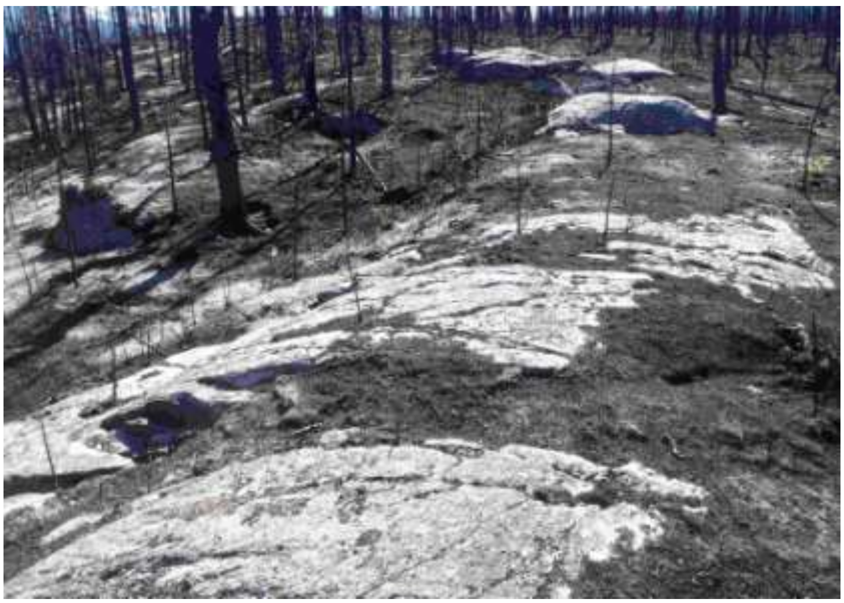
The author conducted several prospecting traverses over the 9km long target area. The area examined was mostly restricted to the main ENE – WSW trending ridge and minor spurs where bedrock and local boulders were obviously abundant. There is little rock on the slopes below the high ridges. The main ridge is not a narrow feature, with a gentle crest typically 300 to 1000m wide. Along much of the area examined both bedrock and local boulders were abundant and well exposed, with wildfire having burnt off grass, moss and buckbrush (see photos below). In a few areas one might walk across several hundred meters of thick glacial soils without seeing any bedrock or local boulders.

The bedrock in the target area was almost exclusively Yusezyu formation sandstone, grit, psammite, metaconglomerate and chloritic phyllite (metasiltstone). There was no carbonaceous metasediments or limestone noted within this formation. An outcrop of younger limestone was observed at the far southwestern edge of the area traversed, as expected from the regional map. A thick, resistant bed of stretched pebble metaconglomerate was noted cutting across the ridge at approximately 565500, 7045750. This unit is about 100m wide and is well exposed for several hundred meters (see photos below). This prominent ridge was prospected thoroughly, as it was considered to have the best potential for having a persistent mineralized vein. However, no veins of interest were located within this unit.

Quartz veins were very common in the project area in both outcrop and boulders, however no significant mineralization was observed in the dozens of veins examined closely and hundreds more scanned visually on traverse. The veins observed all appeared to be of metamorphic origin, white with minor glassy grey areas, occasional vugs and crystals, with irregular geometry, usually less than 20cm width (1 to 5cm most common), and often discontinuous when exposed over several meters.

A few grains of pyrite were seen in veins and host rocks, a few rusty pits after pyrite, and local limonitic stain was fairly common (see photos below). Some of these veins were tested by portable XRF, with very weak metal values at best (Table 1.). None of the veins was sufficiently mineralized to be worthy of laboratory analysis.

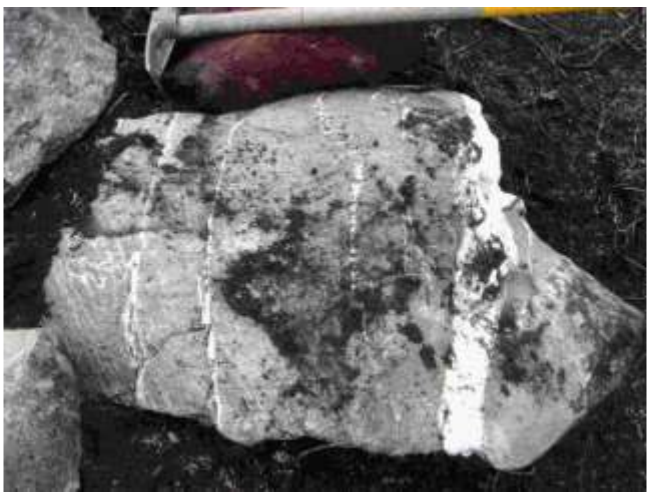
Gold-bearing quartz veins might be plain white quartz, but are far more likely to show banding, colour variation, brecciation, coxcomb texture and accessory minerals such as pyrite, arsenopyrite, sphalerite or tourmaline. The host rock selvedge of a gold-bearing vein is likely to be sericitic bleached, or carbonate altered or pyritic. None of these favourable visual indicators were observed at the STEW project.

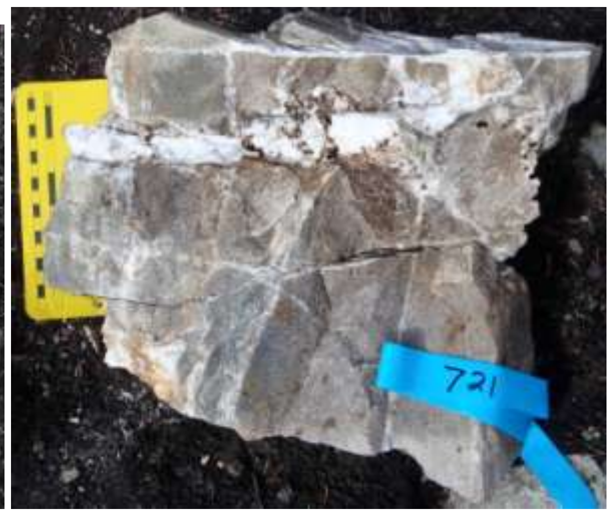


Examples of rock exposed by fire at the STEW project.

Stretched pebble conglomerate forms the thickest, most rigid rock unit.

Typical gritty phyllite outcrop.





Typical quartz veins tested by XRF at the STEW project.

SOIL GEOCHEMISTRY

Soil geochemical sampling was conducted by Max Mikhailytchev using an auger to reach as deep as possible, seeking C horizon local soils. The presence of angular pebbles was sought as an indicator of suitable depth. Glacial till was common in the area, indicated by rounded polylithic pebbles and boulders. Loess was present at about 80% of sample sites, and was typically about 10cm thick. Sample depth ranged from 20 to 80cm, with most samples collected between 40 and 60cm. Sample colours were shades of grey and brown. Soil location was recorded by GPS, and information entered onto a form in the field. Soil was placed into kraft paper bags with a sample tag inside and sample number written on the outside of the bag in felt pen. Sample sites were marked with flagging tape. Photos were taken of each sample site and of each soil sample (examples below, full photos in digital file).

Each evening the soils were analyzed with a Niton XL3t portable XRF for 30 seconds through the bag seeking As, Pb, Zn and Cu. Other anomalous elements, if any, were noted. Sample numbers 65901- 65950 and 862001- 862040 were collected, totaling 90 samples (Table 2.). XRF values were low, so only the most anomalous 15 samples were sent to Bureau Veritas Acmelabs for 36 element ICP ES/MS analysis method AQ201 (Table 3 and Appendix). No significant anomalies were detected by either XRF or ICP.

The first day of exploration, June 29, consisted of a long hike to the valley to the north to examine soils near the creek which drains the area westward. Soils in this area were boggy, or very sandy, or loess. Hard rain began at 3pm, so Max returned to camp. No soil suitable for sampling was encountered, therefore no samples collected this day.

The second day, June 30, began at the far northeastern end of the project area, with samples collected approximately every 100m heading back towards camp. The third day, July 1, began at the far southwestern end of the area, with samples collected every 100m back towards camp. The fourth day, July 2, sampling connected the lines from the two previous days in the area closer to camp. The entire 9km long ridge was sampled at about 100m spacing.

The maximum values of metals returned from soils by XRF are: Pb 56, Zn 105, Cu 85, As 31

The maximum values of metals returned from soils by ICP are: Pb 77, Zn 142, Cu 116, As 38, Ag 0.2ppm, Au 7.3ppb.

None of these are considered to be significantly anomalous. Pathfinder elements Sb, Bi, Hg, Tl & Te were all very low, often below detection.

Testing soils by XRF each evening

Auger soil sampling at STEW

Typical soil site and soil sample photos

CONCLUSIONS AND RECOMMENDATIONS

The nine kilometer ridge prospected during the STEW project seems to have very low potential to host a significant gold vein deposit. No significant soil geochemical anomalies were identified for gold, silver, base metals or pathfinder elements, and no mineralized quartz veins were encountered. No further work is recommended in this area.

The concept of prospecting in the year following a wildfire was proven worthwhile, as visibility of rock and ease of movement across the terrain was obviously enhanced.

REFERENCES

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