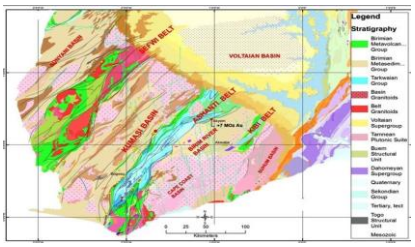

GEOLOGICAL AND EXPLORATION REPORT – (PHASE I)

GOLD MINING PROJECT

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BRIEF BACKGROUND OF THE AUTHOR

Dr Kofi Adomako-Ansah is an exploration geologist and currently a Senior Lecturer of Economic Geology, Geochemistry, Mineralogy and Petrology at the University of Mines and Technology (UMaT), Tarkwa, Ghana since 2019. He is a professional member of the Ghana Institute of Geoscientists, the Society of Economic Geologists, the Society of Geology Applied to Mineral Deposits and the Society of Resource Geology. Prior to his appointment at UMaT, he was a Post-doctoral Research Fellow (year 2012-2015) and Assistant Professor (year 2016-2018) at Akita University, Japan.

His scientific domain is in the mineral resources and the geological and geochemical processes that control ore metallogeny, igneous and metamorphic petrogenesis and tectonics. His primary research focus is on precious and base metal deposits in diverse geological environments including orogenic, epithermal, magmatic, volcanogenic and seafloor ore deposits.

Within the past twelve years, he has conducted extensive research in Japan, Sweden, South Africa, and Ghana by applying geology and geochemistry to mineral exploration targeting and resource/ore genetic modelling. He is currently conducting gold exploration projects in the Sefwi volcanic belt and Ashanti volcanic belt of Ghana.

WHERE THE DATA FOR THIS REPORT WAS ANALYZED

The two concessions visited were christened the Diaso area concession and the Nyinahin area concession. The data analysis reported herein was conducted at the University of Mines and Technology (UMaT) and the SGS commercial laboratory, both located in Tarkwa.

On the field at the Diaso area and Nyinahin area, rock samples were broken from outcrops and exposures in artisanal miners' pits using a geological hammer. Part of soil sample at Nyinahin was panned and the occurrence of gold was confirmed by naked eye observation of gold flakes ("gold dust") at the bottom of the pan.

At SGS, the rock samples were pulverised to less than 75 microns and subjected to the fire assay method, using the SGS code FAA 505 for gold analyses only.

At UMaT, ore mineralogical analysis of the rock samples was conducted using the powerful LEICA DM 2700 Polarizing microscope in reflective mode operation to determine any occurrences of sulphides and associated gold minerals.

Synthetization and evaluation of the data for the report was conducted both in the field visit and at UMaT, after all the field and laboratory results have been collated.

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1.0 INTRODUCTION

This geologic report provides information on the gold exploration analysis that was carried out by the author (geologist) on February 2020 on two of the project sites; the Diaso concession and the Nyinahin concession.

Since this was not a robust grid-based survey, samples' collection was targeted at only outcrops and artisanal pit walls or adits encountered in the concessions. The twenty-six samples collected do not cover the whole areas of the concessions, and therefore delineation and ore reserve estimations could not be done. However, in the current work, the gold concentrations obtained in the geochemical data sets for the two concessions indicate which of the two concessions is likely to be the better target for immediate consideration for a robust grid-based soil geochemical exploration program to identify gold-rich potential areas within the concessions.

2.0 OBJECTIVES

The objectives of this reconnaissance exploration on the concessions were to allow the geologist to:

1. Assess the terrain and randomly collect hard rock samples from outcrops and alluvial pit walls/adits for gold analysis.
2. To evaluate the preliminary results from the analysis and roughly state the gold mineralization potential of the two concessions.
3. To advice, based on points (1) and (2), which concession (or both) should be considered for immediate further exploration works.

3.0 PROJECT AREAS

3.1 Concession One: Diaso area

The reconnaissance license covers an area of 13.19 km^2 and lies within the Amenfi East District of the Western Region of Ghana. It is bounded by the latitudes 6º00" N and 6º02" N and the longitudes 2º09" W and 2º13" W. The area is drained by the Ankobra River and its tributaries of Tonton and Dintori. The Tonton Forest Reserve lies to the east of the concession. The major commercial town nearby is Diaso. The area has a long history of alluvial gold mining and at the time of visit, many artisanal small-scale mining activities are still ongoing. However, the hard rock potential of the area is yet to be known.

Previous soil geochemical grid mapping surveys have been conducted by Menart GeoVentures Ent. and they identified some gold anomalous trends in the soils.

3.2 CONCESSION TWO: NYINAHIN AREA

Based on previous reconnaissance license obtained, the Nyinahin concession covers an area of 93.25 km2, in the Ashanti Region. It is bounded by the latitudes 06º 39' 30" N and 06º 33' 35"N; and the longitudes 02º 10' 00" W and 02º 06' 00" W. However, for the objective of this field visit, only the areas containing pits and adits that have been previously dug by artisanal miners within the Nyinahin township (GPS location: 06º 36' 00"N, 02º 07' 00"W) were investigated and sampled.

4.0 ACCESSIBILITY, CLIMATE, AND PHYSIOGRAPHY

4.1 Diaso area

Relief of the concession shows a low and gentle undulating topography, and is characterized by gentle slopes into valleys. High grounds rise to up to 160 m asl whiles the low grounds average around 100 msl. The three perennial rivers that drain the area are the Ankobra, Tonton and Dintori. River Ankobra is the largest among the three rivers. The area falls within the tropical rain forest belt and therefore enjoys the humid tropical climate. Average annual precipitation is 1800 mm. Temperatures range between 23 and 28 ºC in the rainy season (April to September) but can reach 30-35 ºC in the dry season (October to March).

The high tropical conditions have caused intense chemical weathering of the rocks, producing soils that can reach a depth of about 6m, as evidenced in road-cuts within the concession.

5.0 GEOLOGY

5.1 Regional Geology

The concessions are located in Southwest Ghana. The geology of southwest Ghana is dominated by the Proterozoic Birimian Supergroup sedimentary and volcanic rocks, Tarkwaian Group sedimentary rocks, and various granitoid intrusions.

The Birimian Supergroup rocks are characterized by northeast-striking mafic metavolcanic belts separated from intervening metasedimentary basins by major faults. The concessions are located in one of the Basins known as the Kumasi Basin. Tarkwaian sedimentary rocks are generally confined to Birimian volcanic belts where they occur as either fault-bounded slices or as unconformity-bound sedimentary rocks. Proterozoic rocks have undergone two discrete orogenic cycles. An earlier Eburnian I orogeny is associated with the eruption of the Birimian metavolcanic rocks and the intrusion of Belt type granitoids and associated metamorphism between ca. 2,200 and 2,150 Ma. Regional northwest-southeast extension and formation of the Tarkwaian sedimentary basins followed the Eburnian I orogeny, between ca. 2,150 and 2,116 Ma. A later Eburnian II orogeny involved deformation, metamorphism of Birimian and Tarkwaian rocks, and intrusion of Basin type felsic intrusions between 2,116 and 2,088 Ma. Following emplacement of the bedrock geology in Proterozoic time, the Birimian rocks underwent erosion, mostly at tropical latitudes resulting in a lack of glaciation and extensive in place leaching. This resulted in extensive saprolite and laterite development and generally gentle topography. Hence, the bedrock geology of Ghana is obscured from the top by a) ubiquitous tropical vegetation, b) metres thick laterite soil, with or without a duracrust/ferricrete layer, c) a mixed saprolite soil zone, d) saprolite, and c) oxidized bedrock. In places where shear zones or veins are present in the saprolite/laterite layers, they are often eroded/collapsed in place creating a much shallower “pseudo-dip”.

5.2 LOCAL GEOLOGY

5.2.1 Diaso Area

Concession 1, is underlain by steeply dipping phyllitic rocks, black carbonaceous phyllites, and metatuffs. During the field survey, only outcrops of the purple to orange brown to black phyllitic rocks were encountered. It was reported (that localized igneous rocks of basaltic composition are also found in the area but these rocks were not encountered during the visit in this time.

5.2.2 Nyinahin Area

Concession 2 is underlain by steeply dipping phyllitic to carbonaceous metasedimentary rocks. Gold mineralization in the hard rocks is considered to be associated with quartz veins that crosscut rock units.

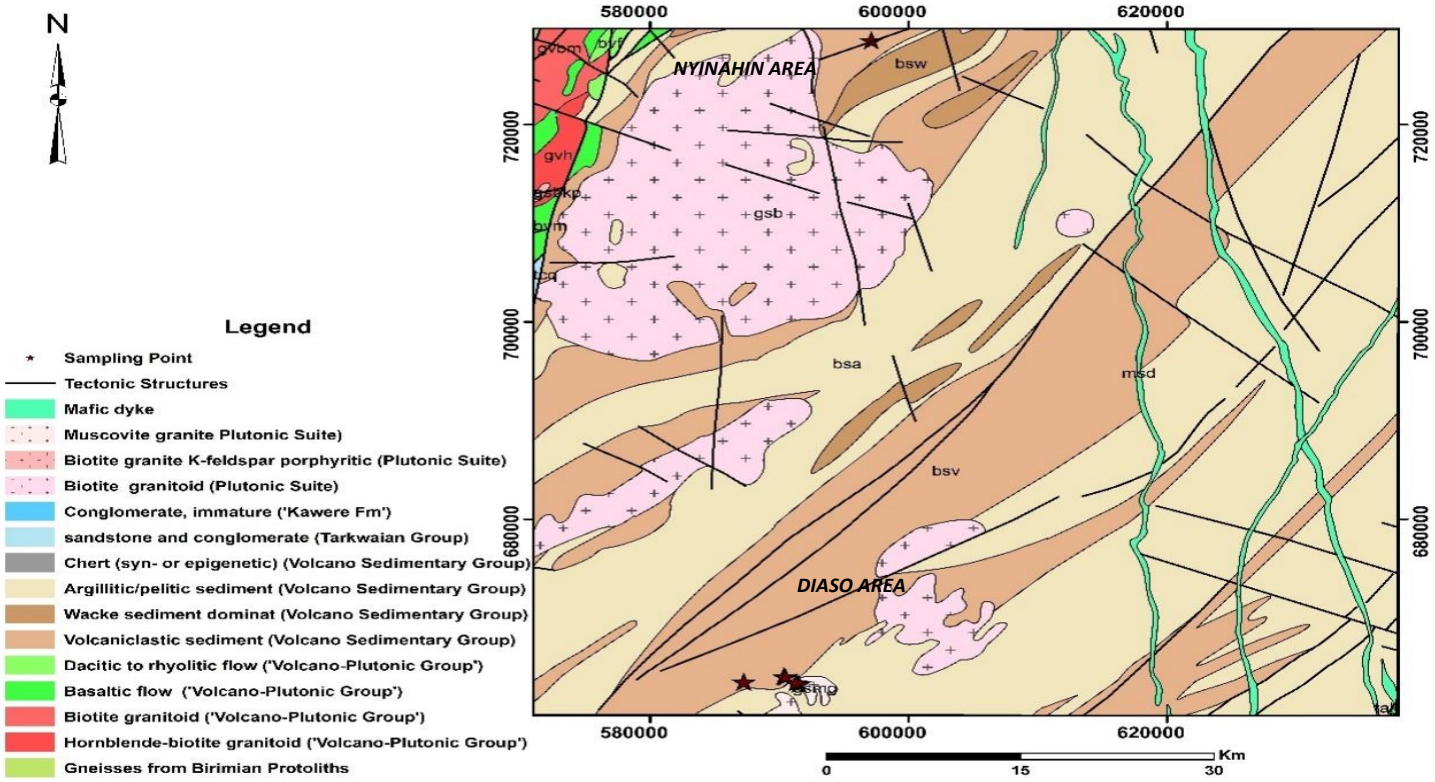

Figure 1. Geological Map of Ghana showing location of concessions and samples.

6.0 SAMPLE COLLECTION, PREPARATION AND ANALYSES

Based on the objective of this survey, no particular grid format was used at this time. However, all twenty-six samples collected were described and their GPS location taken. Then the samples' sites were plotted on the geological map to show their distribution on the ground surface. All the collected samples were bagged and logged.

Then, eleven samples were selected (see Table 1) and submitted to SGS commercial analytical laboratory, where they were dried, pulverised, and homogenised before being fire-assayed for gold concentrations using the SGS method code FA 505. The eleven samples constitute four from Daiso area (i.e. D-3, D-4, D-5, and D-8) and seven from Nyinahin area (i.e. samples N-3, N-5, N-5-1, N-7, N-WR, N-WR-1, and N-S).

6.1 Diaso Area

At Diaso area, hard rock grab samples were taken from outcrop surfaces and in an artisanal pit. The sampled rocks were mainly phyllites that have been partly veined by quartz. Eighteen samples were collected and labelled D-1 through D-18.

6.2 Nyinahin Area

At Nyinahin area, the quartz-veined and wallrock samples were collected from exposures in pits that were previously dug by artisanal miners. In addition, soil samples were collected in areas that were dotted with these ancient alluvial pits. Panning of the soil samples revealed flakes of gold in the headpan. Nine samples (seven hard rock samples: N-1 through N-6 and N-WR; one soil sample: N-S) were collected.

Furthermore, ore mineralogical studies of polished sections of the Nyinahin samples were carried out using the LEICA DM 2700 Polarizing microscope in reflective mode operation at the University of Mines and Technology in order to ascertain the occurrence of sulphides that might be accompanied by gold mineralization.

Table 1 *Gold values in samples that were analyzed by fire assay*

ITEM	SAMPLE	CONCESSION AREA	SAMPLE DESCRIPTION	AU (PPB)	AU (PPB) REPEAT
1	D-3	DAISO	QUARTZ-VEINED PHYLLITE	7	
2	D-4	DAISO	PHYLLITE	17	
3	D-5	DAISO	QUARTZ-VEINED PHYLLITE	11	8
4	D-8	DAISO	QUARTZ-VEINED PHYLLITE	8	
5	N-3	NYINAHIN	QUARTZ-VEINED PHYLLITIC ROCK WITH CLAYEY PATCHES	108	
6	N-5	NYINAHIN	QUARTZ-VEINED METASEDIMENTARY ROCK WITH CLAYEY PATCHES	586	
7	N-5-1 (DUPLICATE)	NYINAHIN	QUARTZ-VEINED METASEDIMENTARY ROCK WITH CLAYEY PATCHES	691	
8	N-7	NYINAHIN	QUARTZ-VEINED METASEDIMENTARY ROCK WITH CLAYEY PATCHES	509	
9	N-WR	NYINAHIN	METASEDIMENTARY WALLROCK	239	
10	N-WR-1 (DUPLICATE)	NYINAHIN	METASEDIMENTARY WALLROCK	313	
11	N-S	NYINAHIN	SOIL	224	218

7.0 QUALITY ASSURANCE AND QUALITY CONTROL MEASURES

Eleven samples (see Table 1) were chemically analyzed at this time. Two duplicate samples (N-5-1 and N-WR-1) was prepared on the field and submitted blind to SGS. In addition, during the chemical analysis, random selection of two samples, D-3 and N-S were also re-analyzed to ensure the analytical precision of the analyzing equipment.

8.0 RESULTS AND DISCUSSION

8.1 Diaso Area

Although gold is being won by alluvial artisanal miners from the silty to gravelly layers that overly the phyllitic rocks, the laboratory results from the current reconnaissance visit shows that the phyllitic rocks and their quartz-veined materials in the Daiso area do not contain any appreciable amounts of gold (See Table 1). The smaller number of samples collected and the bias towards only outcropping phyllitic hard rocks may render the results inconclusive with respect to the gold-rich potential of this concession.

However, previous soil geochemical surveys reported by Menart GeoVentures Ent. registered appreciable trends in the gold anomalies across the entire concession.

8.2 NYINAHIN AREA

Concession Two appears to be the most lucrative between the two because the quartz-veined metasedimentary rocks sampled in this survey revealed appreciable gold concentrations that are worth investigating further. Although sulfides were hardly seen in handspecimen or in the microscope, encouraging values ranging from 108 to 631 ppb Au registered in hard rock and soil samples (see Table 1) suggest that the Nyinahin area has a very high potential for hard rock gold mineralization.

9.0 CONCLUSION

Both concessions are hosted in the Kumasi Basin's purplish to reddish brown to black metasedimentary rocks that appear phyllitic in texture and structure. The metasedimentary rocks are also commonly quartz-veined at various sections of the rocks. However, in terms of their gold potential, the Nyinahin area (Concession Two) appears to be more enriched than the Diaso area (Concession One). More works need to be done to fully quantify this statement.

10.0 RECOMMENDATION

This is not a robust method to establish the ore reserves and the conclusions drawn in this report are based on a combination of geological observations, previous knowledge/works on the concessions and the few but informative analytical data on gold obtained from the random samples.

It is therefore necessary for detailed field surveys of soil geochemical survey based on grid mapping at systematic intervals to be carried out to identify distribution, patterns and trends of gold anomalies in order to ascertain and quantify the potential of the areas.

Given that the Nyinahin area appears to be more favorable than the Daiso area, it will be a promising venture to develop and conduct a well-designed grid soil and hard rock sampling program to fully characterise the patterns and trends of gold anomalies.

For the Daiso area, although the current visit was limited to few outcrops, Menart GeoVentures Ent. have already established anomalous gold zones based on their systematic soil geochemical survey. It is recommended, therefore, that a follow up on the previously determined anomalous areas delineated by Menart GeoVentures Ent., should be a starting point to further probe into the hard rock gold potential of this area.

11.0 PHOTOGRAPHS FROM THE FIELD VISIT

Figure 2. At Bisco Congo, Daiso area. Arrows are outcrop of quartz-veined orange-brown phyllite (arrowed). Strike and dip of outcrops were N26ºE and sub-vertical, respectively. This location is 200 m north of an ongoing mechanized excavation of alluvial gold.

Figure 3. Collected samples that have been described, bagged and labeled during the field work. All samples collected during this visit were analyzed for gold.

Figure 4. At Wassa Mampong, Daiso area. A pit dug by artisanal miners in search for alluvial gold. Rocks exposed in this pit were black (carbonaceous) phyllites with barren quartz veins occurring parallel to foliations.

Figure 5. At Wassa Mampong, Daiso area. Black to brown carbonaceous phyllitic rock (arrowed) exposed in artisanal pit mentioned in Figure 3.

Figure 6. At Ajumako village near Wassa Mampong, Daiso area. Steeply dipping outcrops (arrowed) of purple to orange-brown phyllite similar to out crops in the village at Bisco Disco (in Figure 1). Geometry (strike and dip) of structures is the same as those measured at Bisco Disco: Strike and dip, N30ºE and ~80, respectively.

Figure 7 . At Nyinahin. Dug-out pits by artisanal miners, who previously mined quartz-veined rocks in this area. Geochemical analysis of samples collected from some of these pits during the current field visit yielded appreciable gold concentrations and indicate a great potential for gold mineralization in deeper parts of this area.

Figure 8. At Nyinahin. Geologist (yellow helmet) using hand lens to observe quartz-veined rock samples from the dug-out pits by artisanal miners. Geochemical analysis of this particular rock yielded about 586 ppb Au (or 0.586 ppm Au; Table 1), which is promising.

Figure 9. At Nyinahin. Dug-out pits (arrowed) were done by artisanal miners who previously mined gold from the quartz-veined rocks underlying the concession.

Figure 10. At Nyinahin. Geologist (author) observes with a hand lens the tiny flakes of gold that have been panned out from soils. Geochemical analysis of the soils from which these gold particles were seen yielded around to 0.25 ppm Au suggesting potential for significant gold mineralization at depth beneath these soils.

Figure 11. At Nyinahin. Panning of soils in water to separate tiny flakes of gold from soil samples. Gold flakes were seen with the naked eye by the geologist (author).