

Hopedale Gold Project, Labrador

The story so far

- ◆ District scale gold in soil samples (up to 0.93 g/t Au) identified over a 40 km strike length of the Florence Lake Greenstone Belt with anomalies most commonly associated with contacts between ultramafic metavolcanic rocks and surrounding rocks.
- ◆ Significant gold mineralization exists over 3 km in the northeastern portion of the greenstone belt, that includes LAB grab sample of 7.8 g/t Au as well as numerous +1g/t samples from historical work, including 3.97 g/t Au over 5m in a quartz carbonate vein.
- ◆ Widespread carbonate alteration, associated with major faults, of sheared ultramafic metavolcanic rocks in association with pyrite and arsenopyrite.

Update on the Gold Potential of the Florence Lake Greenstone belt, Nain Province, Labrador

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The Hopedale Gold Project consists of 1,632 claims (458 km²) covering most of the Archean – aged Florence Lake and Hunt River Greenstone Belts that stretch over 80 km. All rocks in the area have been metamorphosed with the grade increasing from greenschist facies in the south to amphibolite facies in the north. The belts are typical of greenstone belts around the world but have been significantly underexplored for gold by comparison. Labrador Gold (LAB) is undertaking the first systematic exploration for gold in the region with initial work completed in fall 2017. LAB's initial work has focused on the Florence Lake Greenstone Belt due to the ready availability of assessment reports documenting exploration for nickel and uranium in the region.

Archean Lode Gold Exploration Model

Archean lode gold deposits share a number of characteristics useful to identify favourable geological settings. Deposits typically occur along, or close to, regional scale structures that are often of a crustal scale and appear to be responsible for introduction of fluids into the system. Along the regional structures gold mineralization tends to be concentrated at jogs or in major subsidiary faults/shear zone (splays) and/or intersections of such structures (1, 2)

Deposition of gold generally occurs late in the deformation history of the greenstone belts (D3 or D4), which is conducive

to preservation of the deposits once formed.

On the local scale, favourable settings for mineralization are often found in faults or shear zones along contacts between rocks of different competency and along thin incompetent rock units. Bends and structural intersections along such contacts provide loci for gold mineralization. The presence of chemically reactive rocks is also conducive to precipitation of gold.

Zones of widespread carbonate alteration, especially when associated with major structures, are common features of lode gold deposits. Gold within such alteration zones is generally associated with quartz veins, silicification and/or sericitization (1, 2).

Florence Lake Greenstone Belt

The Florence Lake Greenstone Belt (FLGB) occurs in the Hopedale Block of the Nain Province in eastern Labrador. It trends northeast-southwest over a distance of approximately 65 km and lies adjacent to Ugjoktok Bay in the north. Rocks making up the belt consist mainly of mafic metavolcanics and ultramafic metavolcanics rocks with lesser felsic metavolcanic and metasedimentary rocks. These rocks have been intruded by the Kanairiktok Plutonic Suite (KPS) comprised of trondjemite and tonalite. Both the FLGB and KPS have been metamorphosed to greenschist facies, with higher grade amphibolite facies seen in the northern parts of the belt. All lithologies have been cut by Proterozoic diabase and gabbro dykes (3,4,5).

Ultramafic rocks in the FLGB are typically between 1 and 25 metres wide and up to 8 km long, but in the Ugjoktok area they form a wider zone up to 1.35 km wide (possibly structurally thickened) and 6 km long. Most of the ultramafic rocks are believed to be volcanic in origin, but thicker (>300m) coarser grained peridotites associate with the komatiitic flows are thought to comprise the lava channel/lake portions of an ultramafic lava field (6).

Structure

Structure, in the form of faults, shear zones and folds are all known to play an important role in the localization of gold deposits in greenstone belts. The FLGB occurs close to the major crustal scale structure separating the Nain and Makovic Terranes marked in this area by the Kanairiktok Bay shear zone (7). Such major crustal structures are known to provide pathways for intrusions and hydrothermal fluids in many environments, and intrusive rocks of the Kanairiktok Plutonic Suite appear to have been emplaced, at least in part,

along this structure.

Within the greenstone belt, it appears that ultramafic rocks, commonly intensely carbonatized, are associated with north-south to northeast-southwest trending regional faults. While Falconbridge spent several years in the early 90s exploring for nickel associated with the ultramafic rocks of the belt (8,9,10),

“Excellent potential for gold mineralization associated with fault-related carbonatized ultramafic rocks” McLean, 1993.

Gold Mineralization and Alteration

Carbonate alteration is widespread throughout the FLGB especially in the ultramafic rocks which are often completely replaced. The carbonate occurs in several forms including:

- thin (mm-scale) cross cutting calcite veinlets
- mm to cm-scale ankerite ±ferroan dolomite + calcite along foliation in schists
- larger metre scale lenses of quartz-carbonate rock in mafic schist
- extensive zones of intense carbonatization (Fe magnetite) associated with ultramafic schists (11)

“The carbonate alteration zones are of impressive size and intensity, recalling parts of the Porcupine and Larder Lake gold camps of Ontario and the Mother Lode district of California” Stewart, 1983.

Talc also occurs with carbonate in some places altering ultramafic rocks to talc-carbonate schists. Minor occurrences of fuchsite have also been noted in altered ultramafic rocks (11). The felsic metavolcanic rocks in the belt are most commonly altered to quartz-sericite schists.

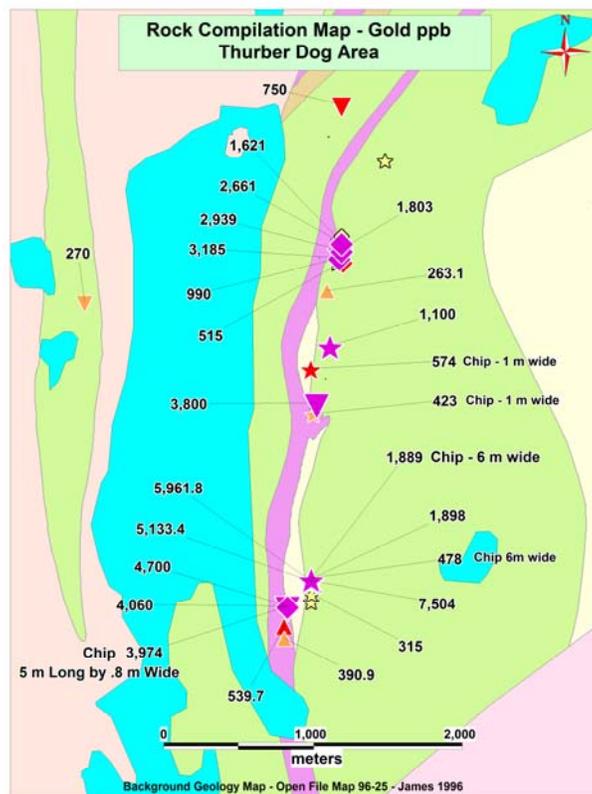


Intense carbonatization of ultramafic rocks with quartz veining

While most of the previous exploration of the FLGB was focused on nickel, many of the companies submitted their samples for multi-element assay that commonly included gold. As such, despite no significant gold exploration in the belt, there is historical data that LAB has used to complement the results of the initial exploration during 2017.

Most of the known gold occurrences occur between Busiere Lake to the west and Ujoktok Bay to the east where the initial Thurber Dog occurrences were described. Results of work during the 80s and 90s combined with LAB's data show a trend of significant gold anomalies in rocks and soils stretching over a 3km strike length. Values include up to 7.87 g/t Au in a composite grab sample from LAB's samples and 3.97 g/t Au in a 5m chip channel sample of a quartz carbonate vein with a 4.1 g/t sample from the wall rock to the vein.

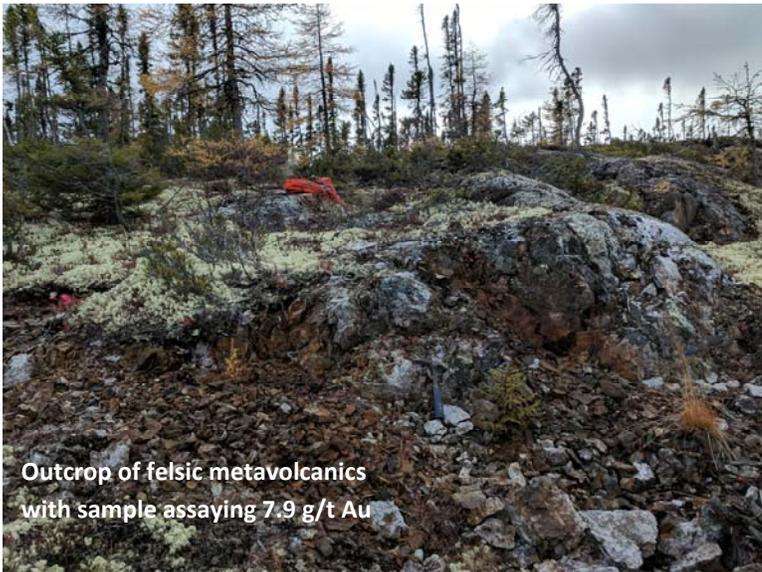
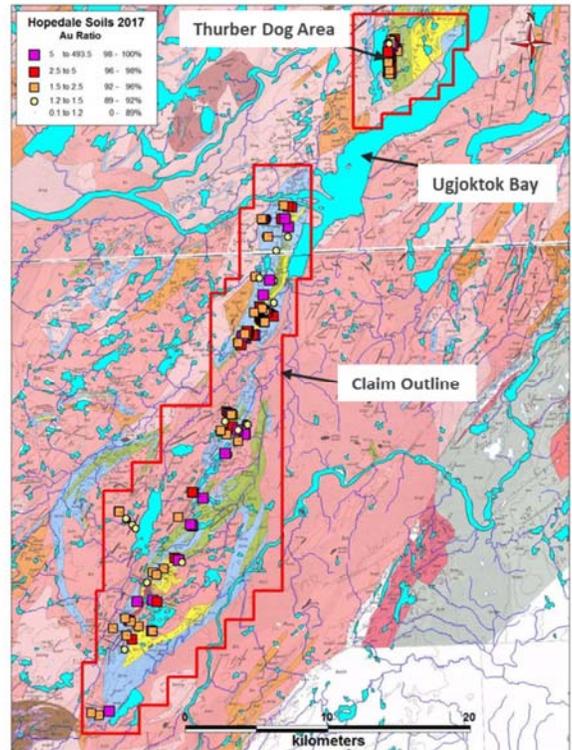
Gold is typically associated with quartz-carbonate veins in carbonatized ultramafic metavolcanic rocks accompanied by arsenopyrite and pyrite. Felsic metavolcanics rocks, commonly altered to quartz-sericite schist, that occur adjacent to the ultramafic rocks also host gold mineralization in places.



Gold anomalies over 3 km strike length in the Thurber Dog area of the FLGB.

Sample Number	Northing	Easting	Au (g/t)	Sample Description	Sample Type	Source
1583294	654642	6109972	5.83	Semi-massive arsenopyrite in quartz-carbonate vein with pyrite stringers near vein margin	Grab	LAB
1583297	654456	6109674	0.66	Talc-carbonate ultramafic schist with mm scale quartz-carbonate veinlets and 0.5 to 1% arsenopyrite	Grab	LAB
1583298	654642	6109972	7.87	Quartz-carbonate veins in mafic/ultramafic schist with 0.5% arsenopyrite and trace pyrite	Composite grab	LAB
AD110	6112204	654829	1.8	Pink-red schistose to massive ultramafic, pyrite	Grab	12
AD121	6109979	654637	7.5	Arsenopyrite	Grab	12
AD128	6111560	654763	1.1	Oxidized siliceous zone with minor pyrite,	Grab	12
AD134	6109992	654637	1.89	Arsenopyrite in quartz vein	6m chip channel	12
112916	654825	6112150	3.18	Semi-massive pyrite with arsenopyrite +/- covellite	Grab	13
112917	654840	6112200	2.94	Chloritic metavolcanic schist with associated quartz-carbonate veins containing semi-massive pyrite, arsenopyrite and bornite	Grab	13
112918	654840	6112250	2.66	Chloritic metavolcanic schist with qtz-carb veins and semi-massive py- asn: minor cov and bn	Grab	13
28761	654478	6109809	3.97	Quartz-carbonate vein in sheared, carbonatized mafic/ultramafic schist locally with arsenopyrite and minor pyrite/chalcopyrite (<5%)	5m chip channel	13
28766	654478	6109809	4.06	Wall rock sample from 28761 site; carbonatized mafic/ultramafic schist with 2% arsenopyrite	Grab	13
LB02692	654672	6112174	3.8	Rusty pyritized fault tectonized mafic, intensely carbonatized with up to 2% Py	Grab	9

While the known gold showings are concentrated in the Thurberdog area, results of LAB's soil sampling program in 2017 demonstrated the potential for gold mineralization in the remainder of the FLGB. Anomalous gold in soil samples occurs over an approximately 40 kilometre strike length along the section of the belt south of the Thurber Dog area. Gold content of the soil samples ranged from <0.5 to 938 ppb (0.93 g/tonne). Gold in the soil samples highlighted geological contacts as zones of potential enrichment. Such zones of enrichment are common along contacts between rocks of different competency such as the ultramafic metavolcanic and the mafic metavolcanic rocks and along thin incompetent units such as the ultramafic rocks. This is especially true where the rocks are associated with faults or shear zones as is believed to be the case in the FLGB (9, 14).



Outcrop of felsic metavolcanics with sample assaying 7.9 g/t Au

The strategy for successful gold exploration in the FLGB is now clear.

Finding more gold in the FLGB

The success of LAB's soil sampling program in highlighting not only gold in the Thurber Dog area of known showings, but also along specific horizons in the remainder of the belt demonstrates the effectiveness of this technique. Integration of airborne magnetics currently underway will enable further refinement of the soil anomalies allowing for a focused follow up program of soil geochemistry, mapping and sampling during 2018 with the aim of generating targets for drilling in the third quarter. It is believed that such a strategy, along with a better understanding of the geology of the belt, will lead to the discovery of more gold. It seems unlikely that the Thurber Dog area is the only region of gold enrichment and regional exploration during 2018 will be designed to locate new gold mineralization elsewhere in the belt.

Summary

LAB's work on the FLGB, including compilation and interpretation of previous work, has demonstrated the potential for Archean lode gold deposits in the belt. The FLGB shares many similarities to greenstone belts elsewhere in the world and has many characteristics believed to be important for the generation of gold deposits including:

- Regional scale faults
 - Multiple phases of deformation
 - Rock units of contrasting competency along faults and shear zones
 - Anomalous gold associated with contacts between rocks of differing competency
 - Widespread carbonate alteration with significant quartz veining
 - Presence of metasedimentary rocks, including meta-conglomerates in the Thurber Dog area.
- See table on next page for more details.

While there is more to learn about the geology of the FLGB, LAB's initial work has successfully confirmed the gold potential of the belt.

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Comparison of Gold occurrences in Florence Lake Greenstone Belt with two well-known Archean Orogenic Gold Deposits

(modified after Groves et al., 2003 15)

PROVINCE-SCALE PARAMETERS

Gold Deposits	Tectonic Setting		Crustal-Scale Faults		Complexity of Geometry		Metamorphic Grade		Felsic Porphyries/ Lamprophyres	
	Accretion	Collision/ Delamination	Present	Absent	Complex	Simple	Green.	Amph.	Common	Rare
Hollinger-McIntyre Timmins, CAN	XX		XX		XX		XX		XX	
Golden Mile Kalgoorlie, AUS	X	X	XX		XX		XX		XX	
Florence Lake Labrador, CAN	X?		XX		X		XX		?	

DEPOSIT-SCALE PARAMETERS

Gold Deposits	Major Host Rock			Major Structural Control		Granitoids		Fluid Oxidation State			Overprinting	
	m	f	s	Shears	Folds	Prox.	Dist.	Ox.	n.	Red.	Strong	Weak
Hollinger-McIntyre Timmins, CAN	X	X		XX		X	X		XX		XX	
Golden Mile Kalgoorlie, AUS	XX			XX		XX		XX			XX	
Florence Lake Labrador, CAN	XX			X?		XX			?		X?	

Certainty of interpretation: XX = very certain, X = less certain. Abbreviations: Green. = greenschist, Amph. = amphibolite, m = mafic, f = felsic, s = sedimentary, Prox. = proximal, Dist. = distal, Ox. = oxidized, n. = neutral, Red. = reduced.

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