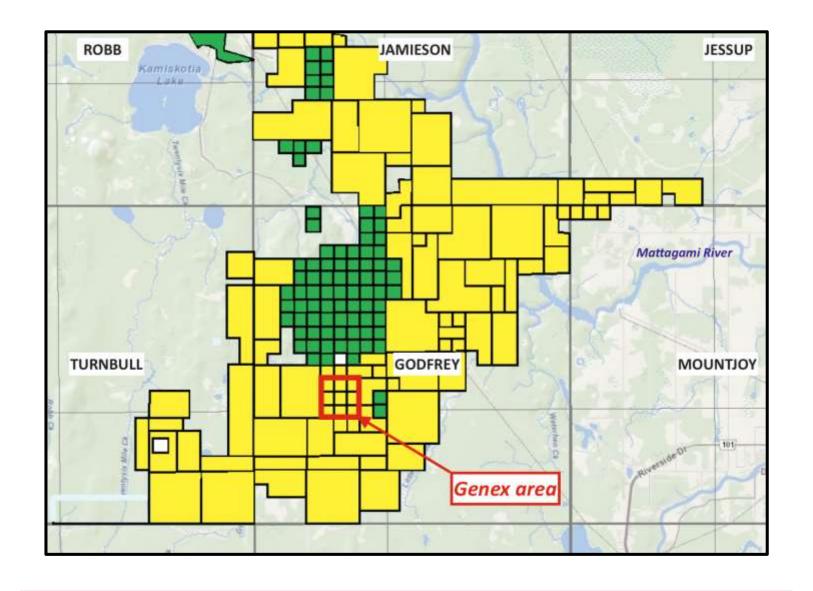




Location of main Genex exploration area – 20 km west of Timmins (accessed via paved Hwy 101 and Kamiskotia Rd, then 5 km dirt road)



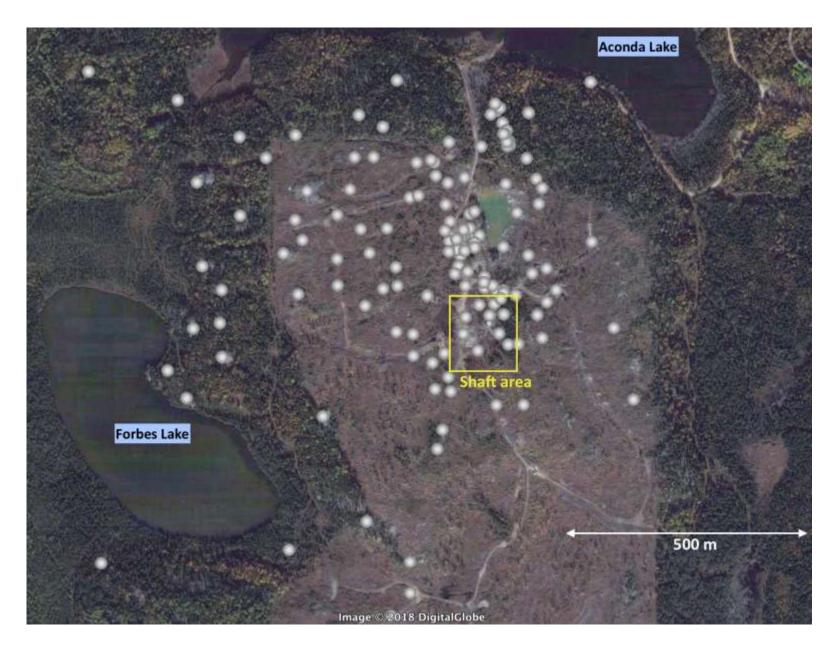
Location of Genex exploration area within IEP claim block



Inclined aerial view of Genex exploration area



Location of drill holes in Genex exploration area



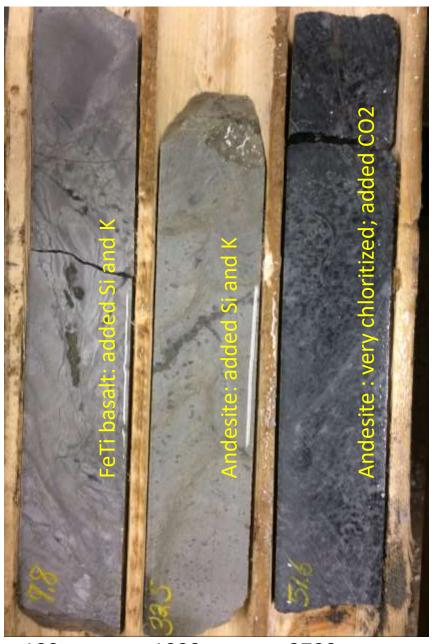
Location of outcrop samples in Genex exploration area

IG-17-14

Lithogeochemical data sets were used to define chemostratigraphic units and degree of alteration

#### Data sets (1985-2017)

Falconbridge drill holes: 928 samples
Falconbridge outcrops: 30 samples
S. Hocker MSc outcrops: 134 samples
S. Hocker MSc drill holes: 50 samples
PALL and IEP drill holes: 124 samples



Zn content:

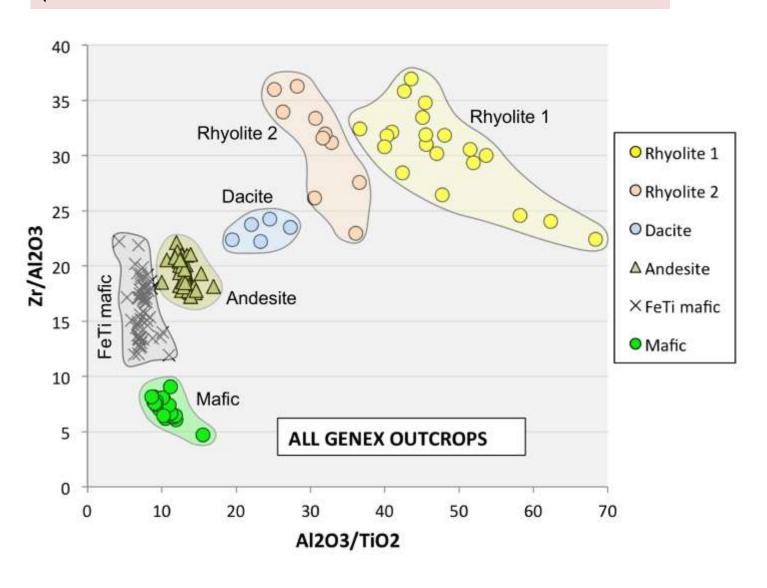
100 ppm

1000 ppm

2700 ppm

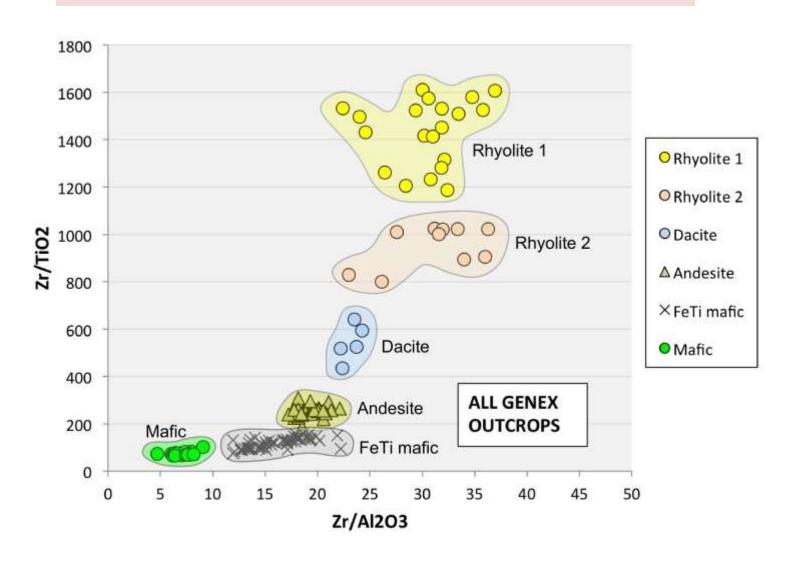
#### Main chemical units at Genex based on 172 outcrop samples

(use of immobile-element ratios removes effects of alteration



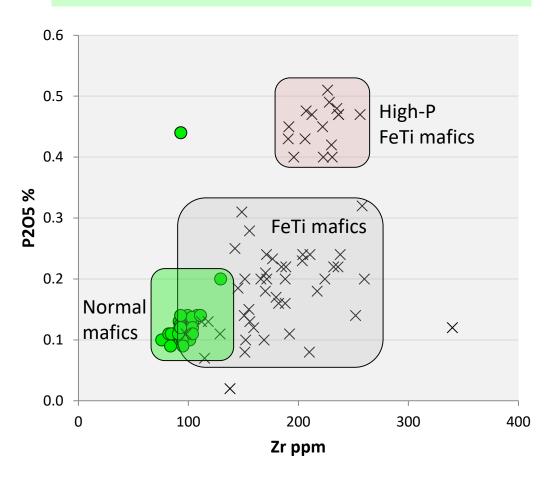
#### Main chemical units at Genex based on 172 outcrop samples

(use of immobile-element ratios removes effects of alteration



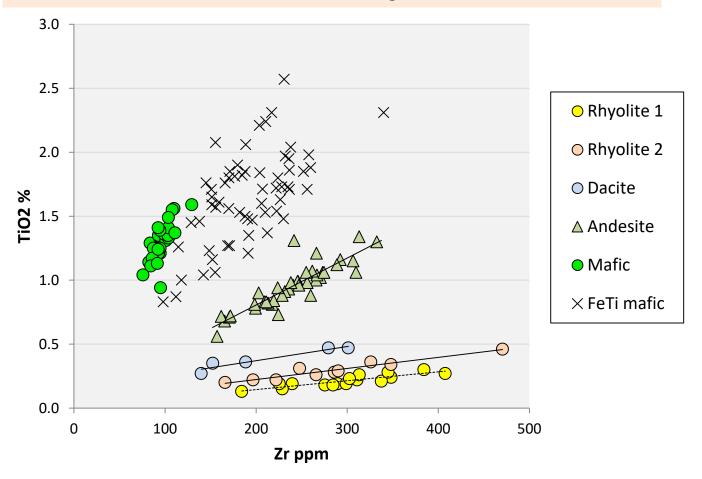
#### Mafic volcanic outcrops at Genex can be divided into:

- (i) FeTi mafics of mainly transitional affinity including normal and high-P subtypes
- (ii) Normal mafics of mainly tholeiitic affinity



#### Genex outcrops: main volcanic groups and alteration lines

The rhyolite 1, rhyolite 2, dacite and andesite groups all show near-linear alteration Ti-Zr trends due to mass changes in the mobile elements



In the FeTi mafic and normal mafic groups, Ti-Zr trends are partly due to alteration and partly to primary fractionation

# Lithochem-based identification of outcrops at Genex



Rhyolite 1



Rhyolite 2



Dacite



Andesite

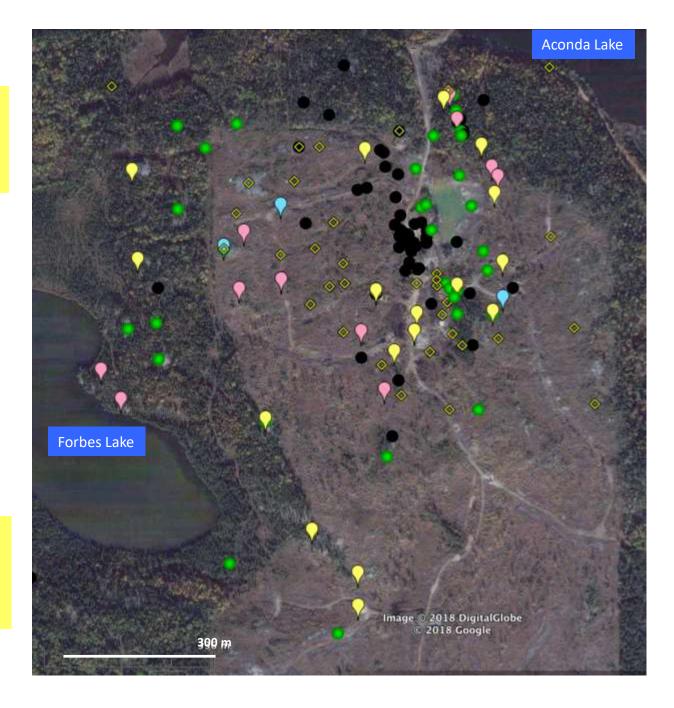


Mafic

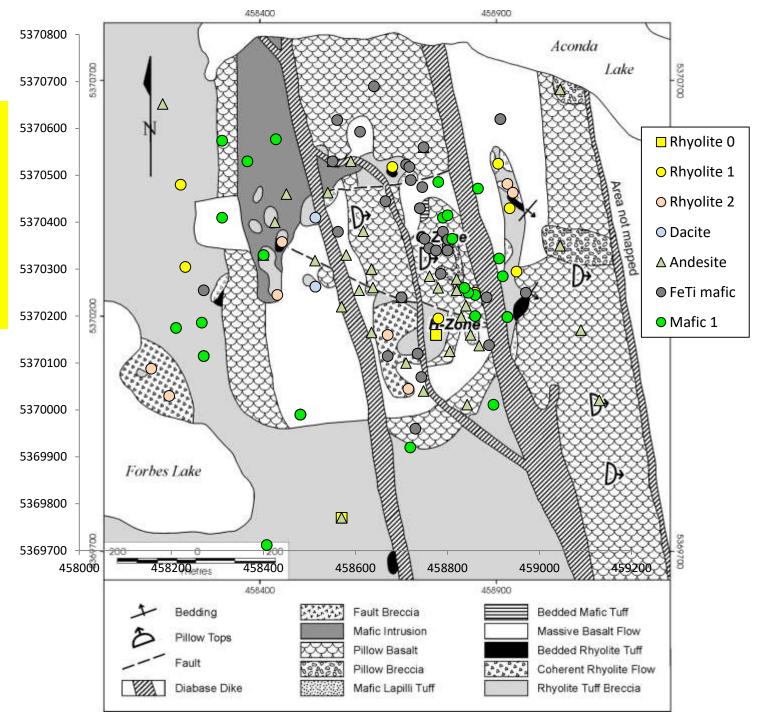


FeTi mafic

Complex distribution of rock types suggests faulting and/or folding have affected the area



Litho-based identification of outcrop samples, overlain on Hocker (2005) map.
Results indicate that some revision of map units is required.



#### **ISHIKAWA INDEX**

(degree of alteration)

Strong

85-100

Moderate (



62-84

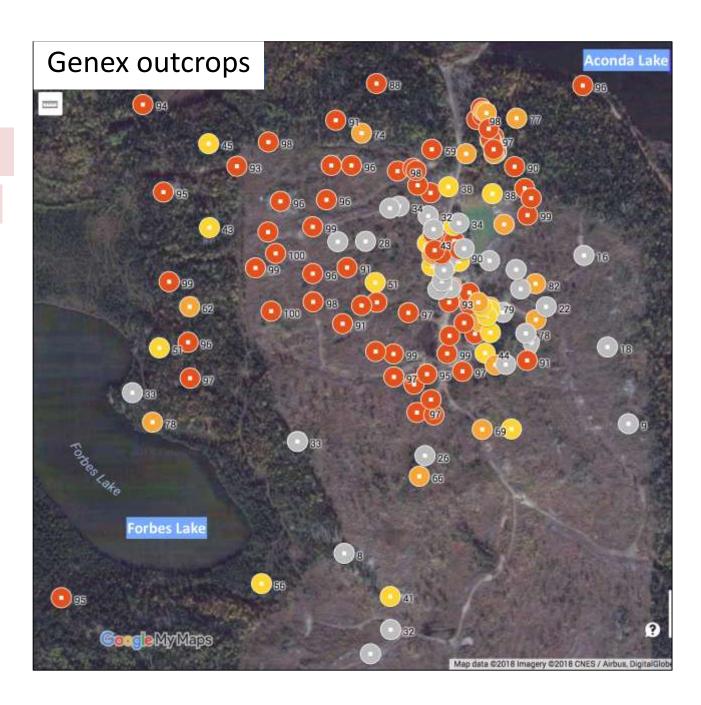
Mild

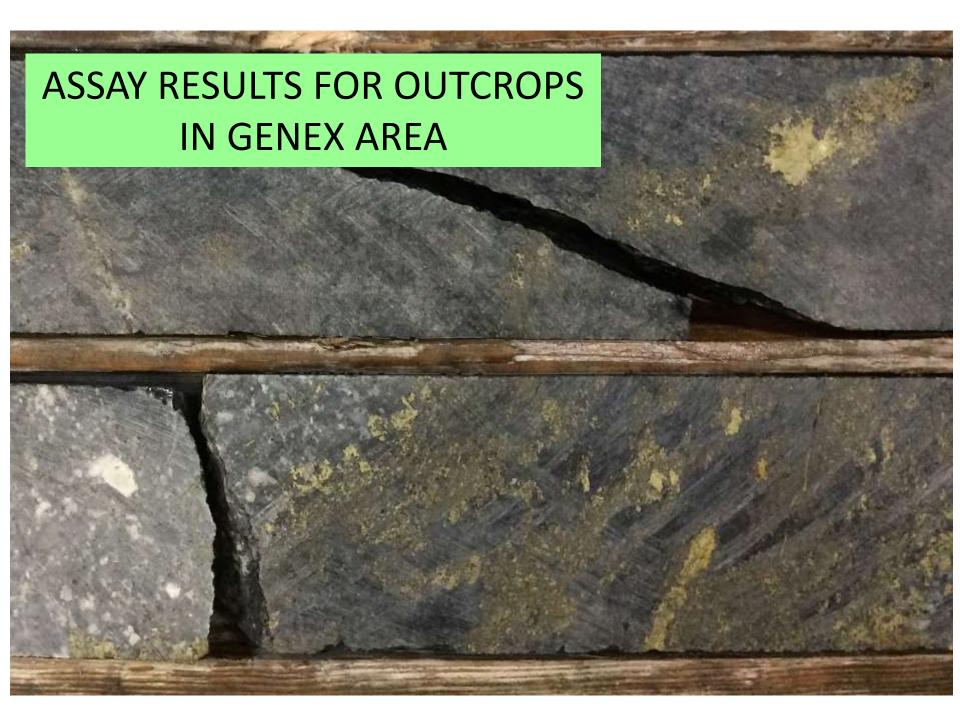
38-59

Weak

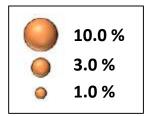


8-37



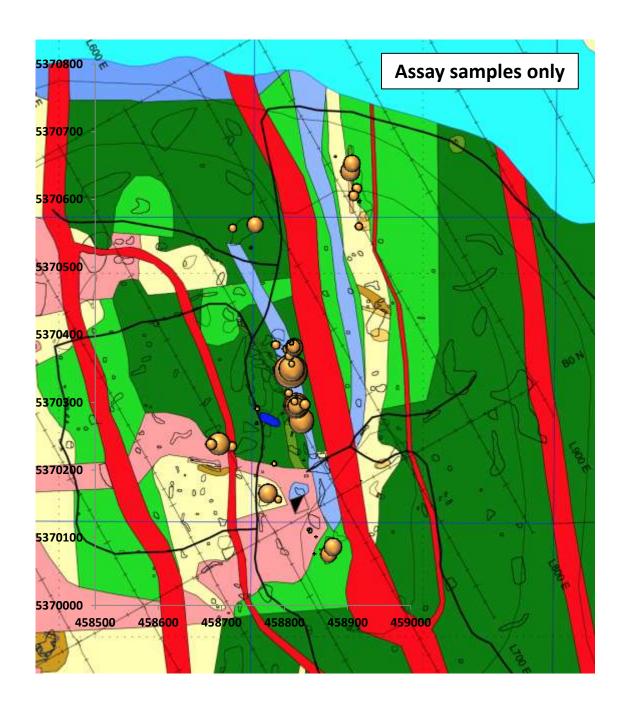


### **Copper in Genex outcrop samples**

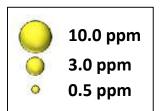


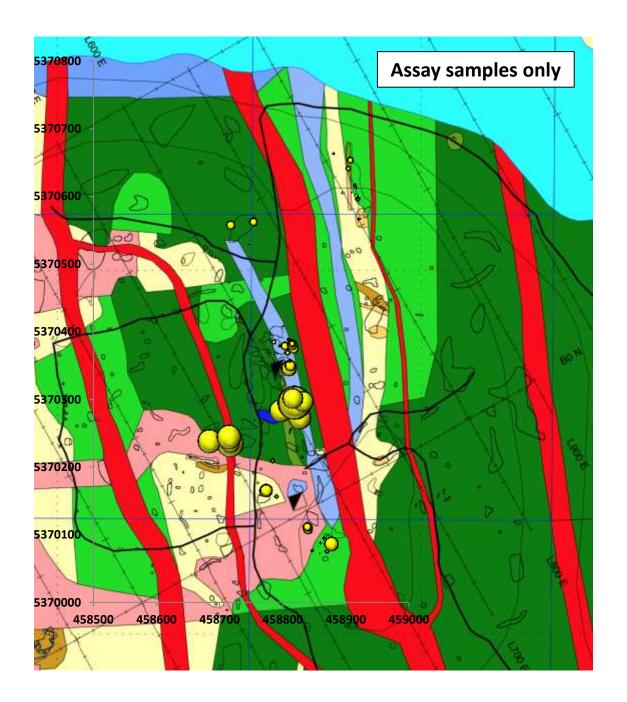
#### Proterozoic



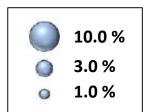


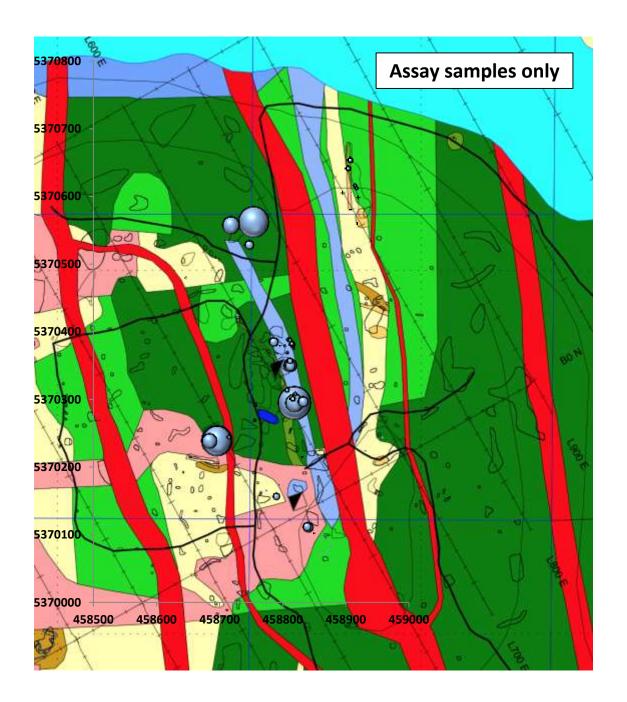
## Gold in Genex outcrop samples



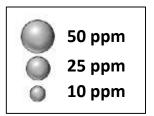


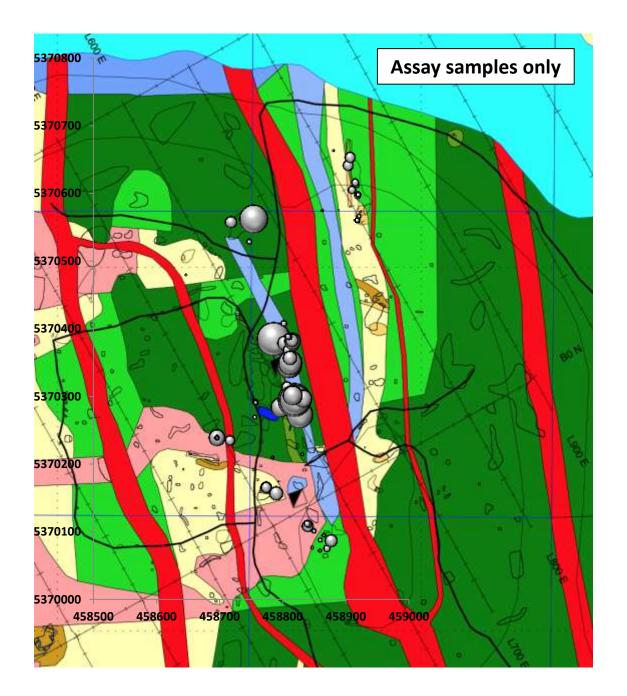
## Zinc in Genex outcrop samples

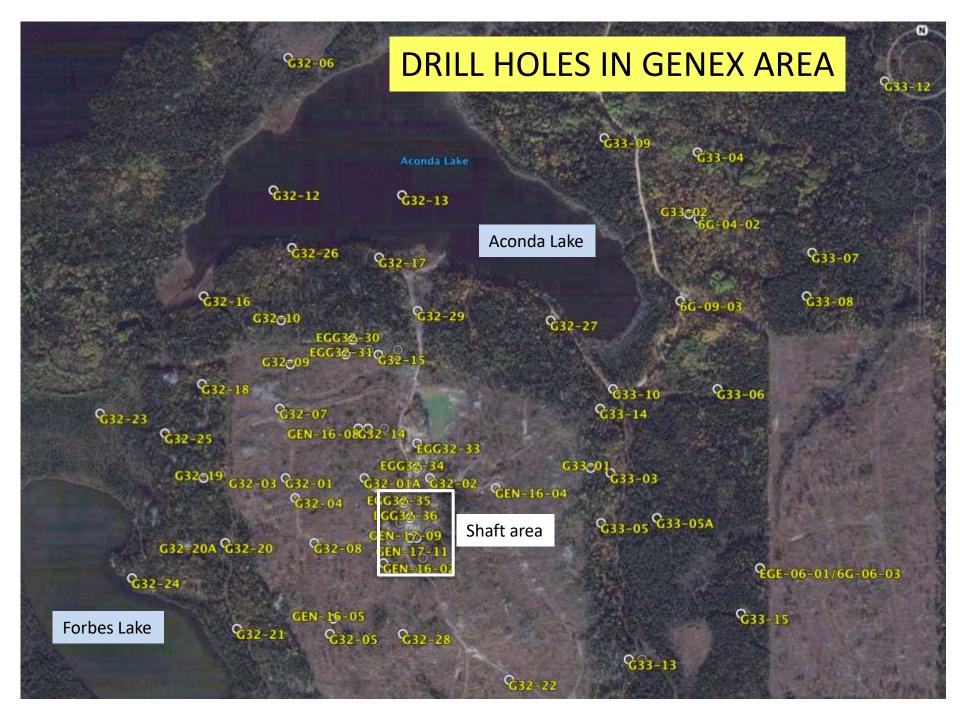




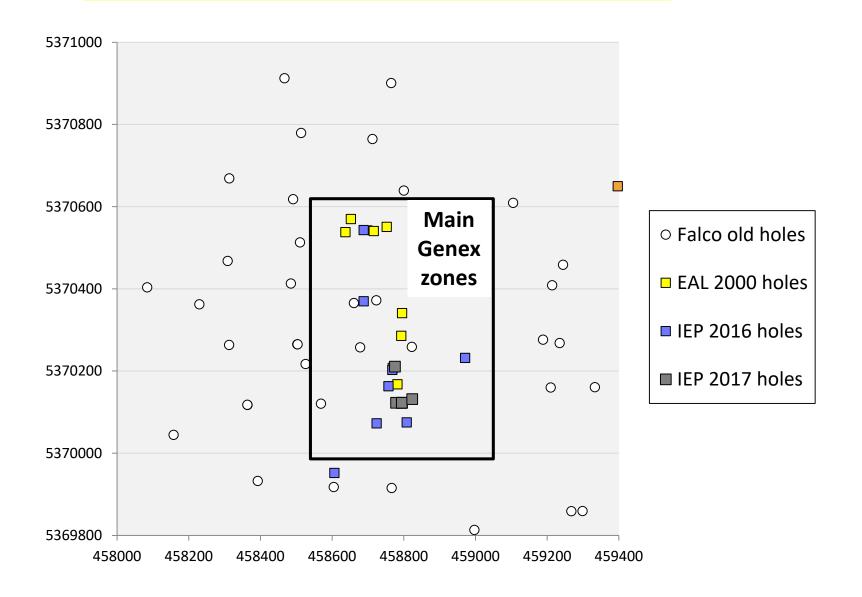
## Silver in Genex outcrop samples







#### Locations of IEP DDH collars in Genex area

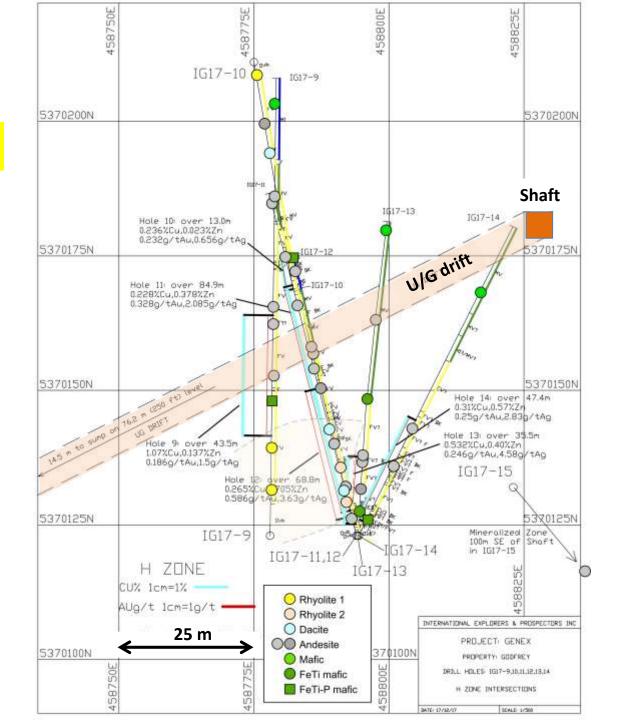


#### **GENEX H ZONE**

Surface projection of 2017 drill holes

- Rhyolite 1
- Rhyolite 2
- Dacite
- O Andesite
  - Mafic
  - FeTi mafic
  - FeTi-P mafic

Mineralized intervals are present in all lithologies

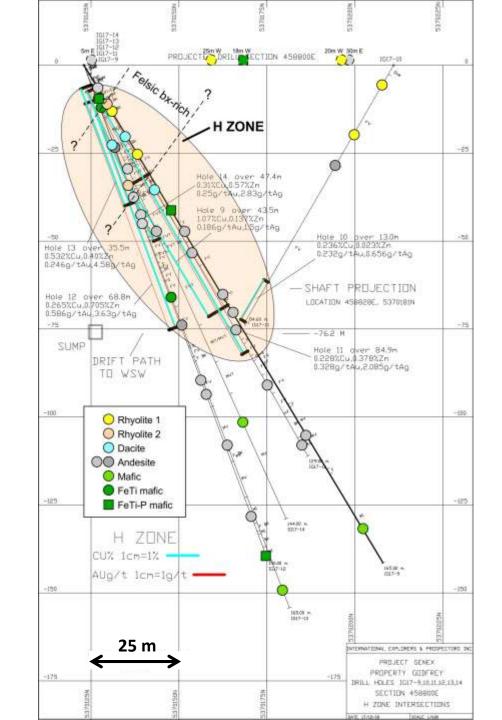


#### **GENEX H ZONE**

Vertical N-S section at 458800E (view to W)

- Rhyolite 1
- Rhyolite 2
- Dacite
- O Andesite
  - Mafic
  - FeTi mafic
  - FeTi-P mafic

Mineralized zone mainly within altered felsic and andesitic rocks



#### Silica-sericite alteration: high Au-Ag-Bi

Project: Genex / Godfrey Twp., Ontario

Hole I.D: IG-17-12 Interval: 75.4m - 79.2m

Assay Value over 3.8m = 0.21% Cu, 0.93% Zn, 3.92 g/t Au, 12.3 g/t Ag



#### Litho analysis at 78.7-78.9m: Highly altered andesite:

Cu = 0.35 %, Zn = 0.14 %, Pb = 0.39 %, Au = 9.0 ppm, Ag = 59 ppm, As = 0.01 %, Bi = 3070 ppm, Sb = 7 ppm, Sn = 31 ppm,  $\Sigma$ S = 2.7 %

This sample is silica-enriched and sericitized (4.4 % K<sub>2</sub>O)

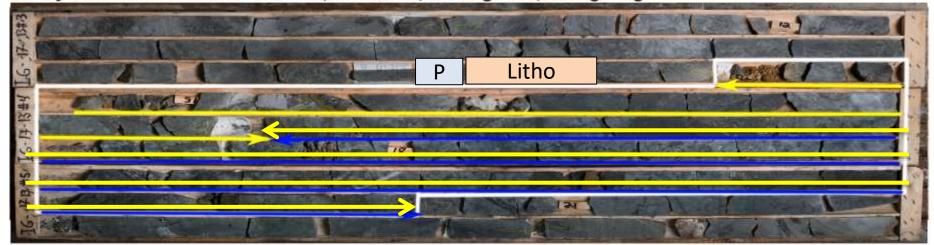
#### Chlorite-pyrite-sericite alteration: high Cu-Mo

Project: Genex / Godfrey Twp., Ontario

Hole I.D: IG-17-13

Interval: 14.7m - 20.8m

Assay Value over 6.1m = 2.01% Cu, 0.32% Zn, 0.601 g/t Au, 16.1 g/t Ag



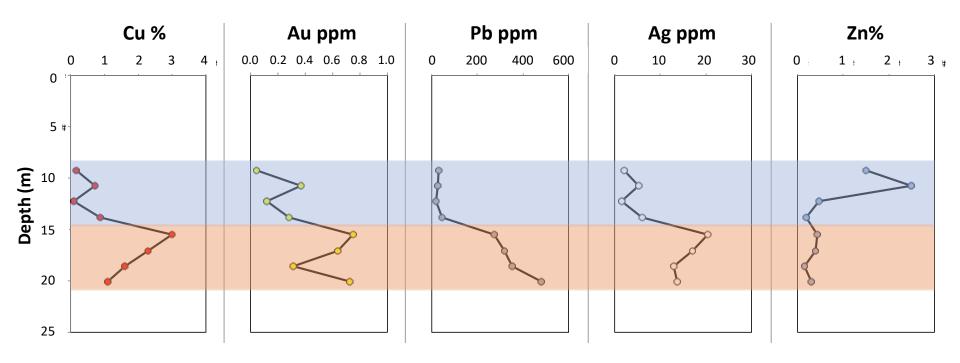
#### Litho analysis at 14.2-14.4m: Highly altered FeTi basalt:

Cu = 1.60 %, Zn = 0.18 %, Pb = 0.01 %, Au = 0.31 ppm, Ag = 9.8 ppm, As = 0.40 %, Bi = 24 ppm, Sb = 8 ppm, Mo = 239 ppm, Sn = 38 ppm,  $\Sigma$ S > 10 %

This sample is very silica-leached and chloritized-sericitized (5.1 % K<sub>2</sub>O)

#### Drillhole IG-17-13: downhole metals trends

(plotted points are mid-points of 1.5 m assay intervals)



Zn zone

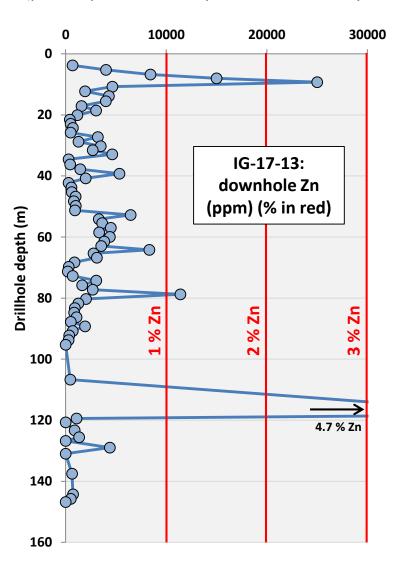
8.5-14.7 m: 6.2 m at 0.48 % Cu, 1.13 % Zn, 0.21 g/t Au, 3.8 g/t Ag

Cu zone

14.7-20.8 m: 6.1 m at **2.01 % Cu**, 0.32 % Zn, 0.60 g/t Au, 16.1 g/t Ag

### Drillhole IG-17-13: downhole Zn trend

(plotted points are mid-points of 1.5 m assay intervals)

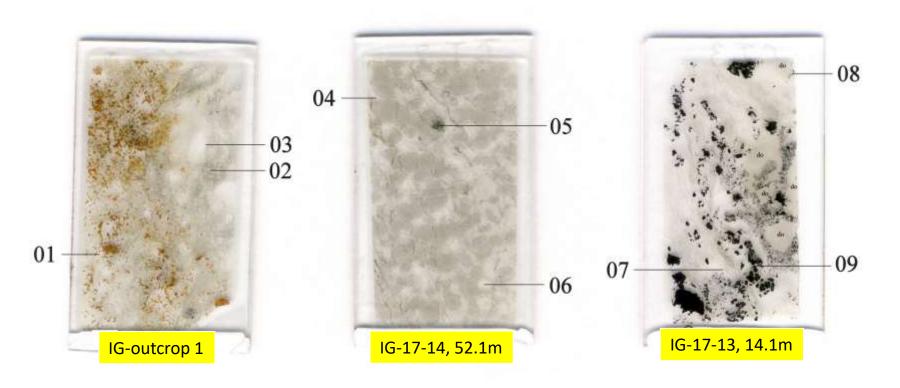


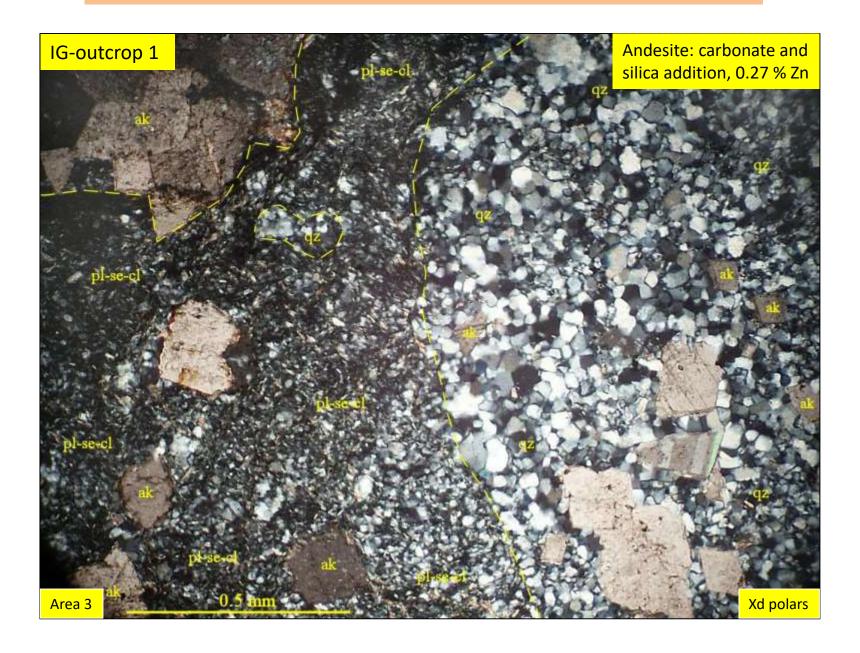
#### Genex host rocks – thin section offcuts



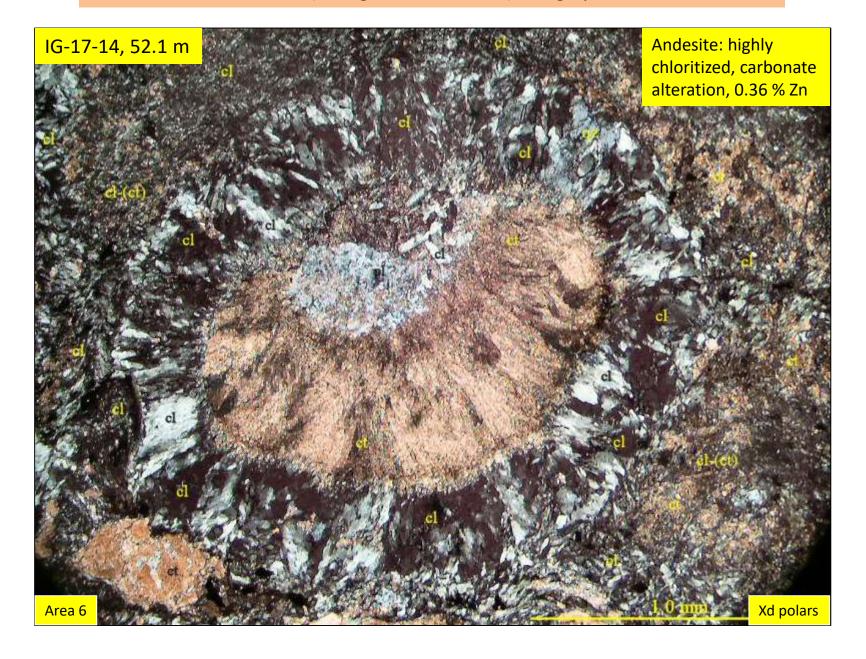
#### Genex: scans of thin sections

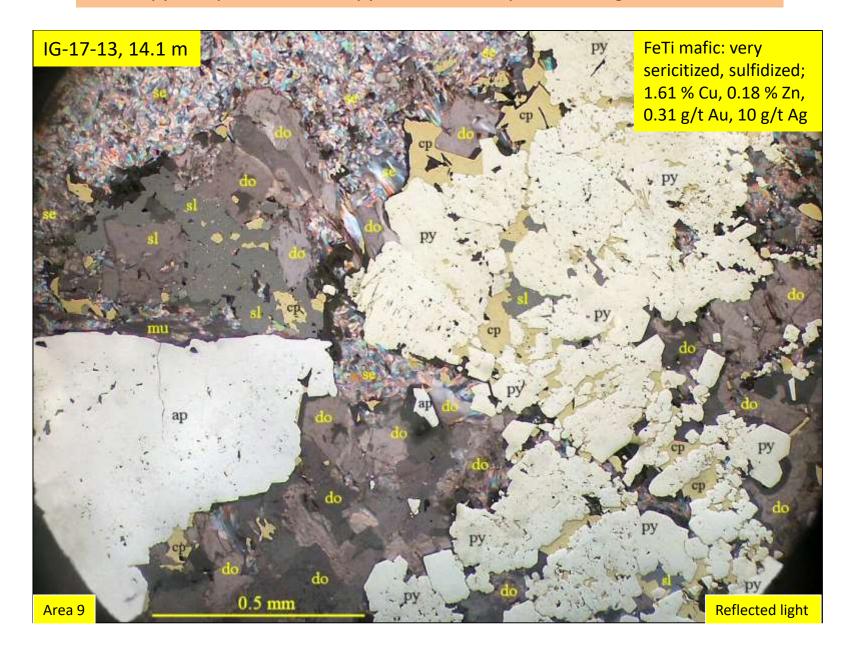
Numbers indicate locations of photomicrographs in following slides





#### Chlorite-carbonate ovoid (retrograde cordierite?) in highly chloritized andesite





#### **Genex Geological Features**

Mapping by previous companies and the OGS indicates that the local volcanic stratigraphy includes mafic, and esitic and rhyolitic rocks. The rhyolite has been dated at 2698.6  $\pm$  1.3 Ma (upper Blake River age). A few late, barren mafic dykes cross the property. Felsic intrusives lie <1 km west of Genex, but are undated.

Although the stratigraphy has been inferred to strike N-S, there is evidence for cross-cutting faults and possibly an E-W fold in the mineralized area. IEP is therefore using historic and new lithogeochemical data to better define and correlate the volcanic units, and to reassess the structural picture.

Polymetallic sulfide mineralization occurs as stringers, semi-massive patches and disseminations. It is most common in the andesitic unit, but also occurs in the mafic and felsic volcanics.

The sulfide zones have similarities to feeder zones associated with VMS deposits, but their orientation and extent have yet to be defined, apart from the main historic drift, which followed an E-W Cu-rich sulfide zone, although it is not known if this was a discordant feeder or a concordant semi-massive sulfide horizon.

#### **Genex Geological Features**

Strong alteration characterises the well mineralized zones and can extend tens of metres beyond them. Alteration zones can be dominated over metre-scale intervals by either chloritization or sericitization or carbonatization or silicification, or mixtures of these.

In addition to Cu-rich and Zn-rich zones, which can contain significant Au and Ag, new data indicate that Bi, Cd and Mo are also enriched in some samples. Much more assaying is required in order to determine the abundance and distribution of the precious and other metals, as they were not assayed for in the past. New, closely spaced, but relatively shallow drilling is required in the area of the historic workings (and beyond) in order to provide such data.

#### <u>Acknowledgements</u>

I thank Lionel Bonhomme for providing lithogeochemical data obtained by IEP during exploration drilling in 2001-2017, and Falconbridge Ltd. for access to lithogeochemical data obtained in their 1985-1993 programs. Bob Calhoun and Peter Colbert provided assistance with various aspects of field operations and sampling.