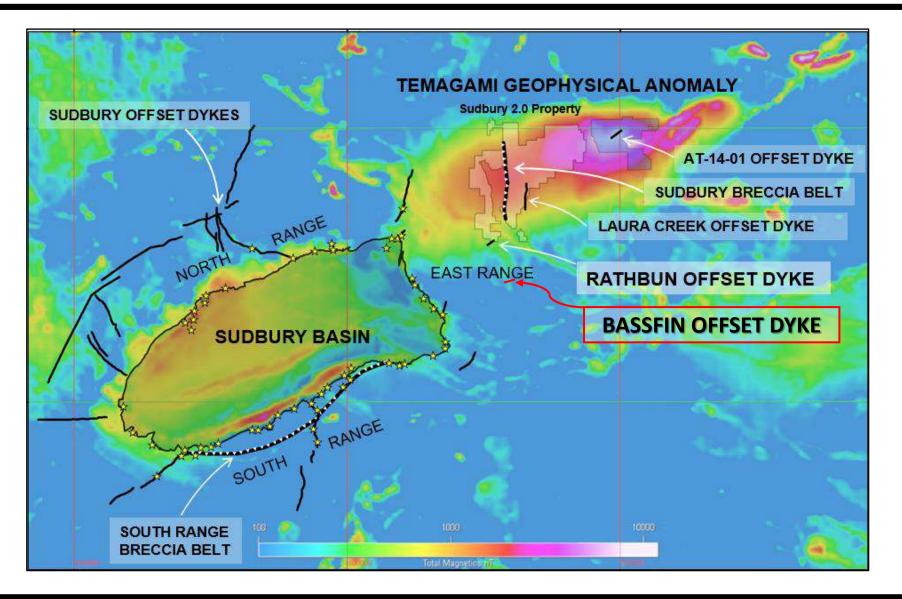
# THE BASSFIN OFFSET DYKE

# INVENTUS





Further proof of Sudbury-type ore potential in the East Range of the SIC.

### LOCATION & ACCESS

# INVENTUS

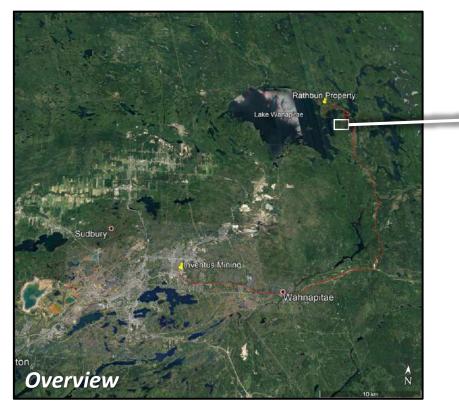
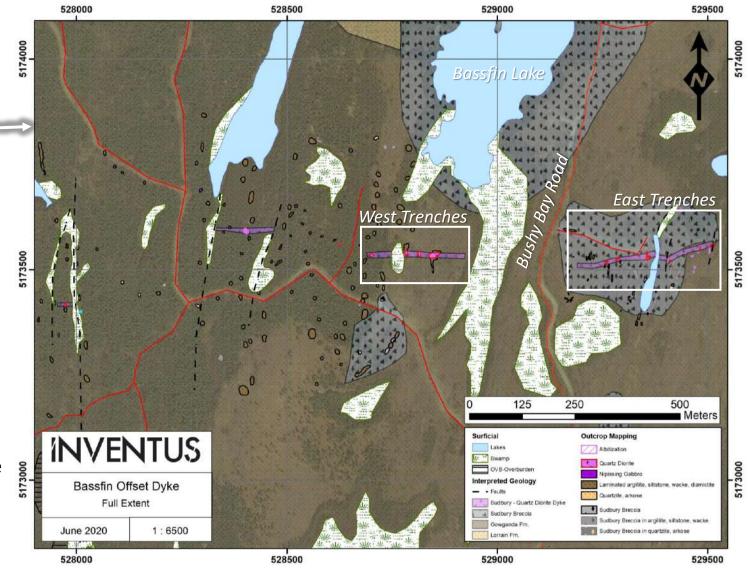


Image from Google Earth.

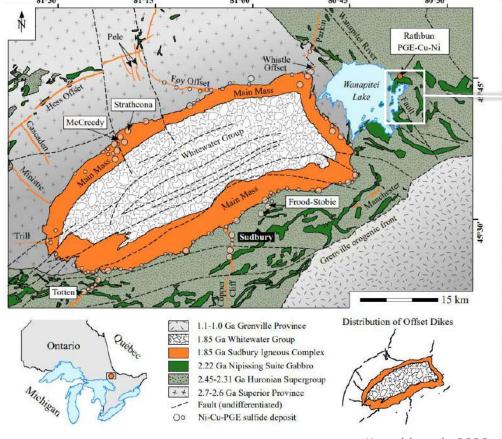
- The Bassfin Offset dyke is located east of Wanapitae Lake, along the East and West sides of Bushy Bay Road.
- Recent logging (late 2000's) in the area allows for easy site access.



# **GEOLOGY - REGIONAL**

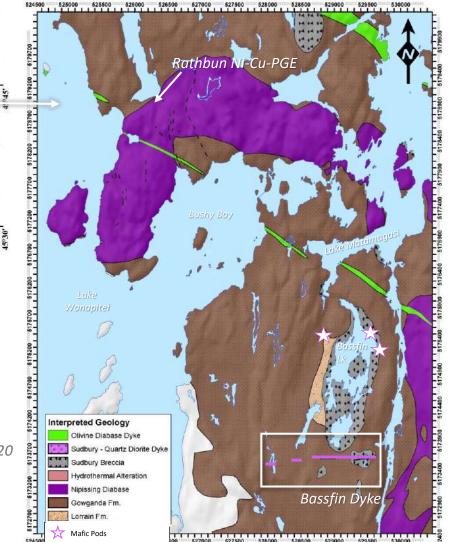
# INVENTUS

- Occurrence is located 15 km NE of the 1.85 Ga Sudbury Basin.
- Local geology of the property consists of 2.45-2.31 Ga siliclastic rocks of the Huronian Supergroup
- The Huronian Sediments in the area have been brecciated along a N-S Sudbury Breccia structure.
- To the north of the dyke, along the east and west shores of Bassfin Lake, three large pods of exotic mafic rock have been mapped within the Sudbury Breccia.



Kawohl et al., 2020

• Three other Sudbury quartz diorite (QD) dykes have been mapped recently in the East Range, Rathbun, Laura Creek Dyke and AT-14-01.

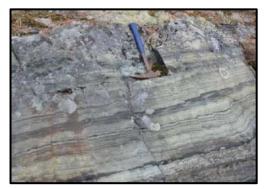


Inventus Mining, 2020

# GEOLOGY – LOCAL

# INVENTUS

#### Gowganda Formation<sup>-</sup>

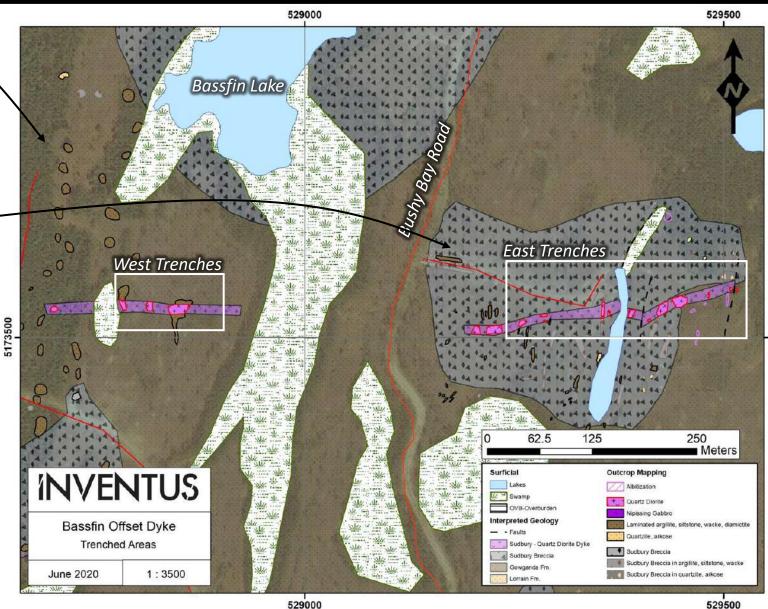


Rhythmically banded to massive argillites, wackes, siltstones, mudstones and occasional diamictites. Regionally metamorphosed to lower greenschist facies.

#### Sudbury Breccia

Abundant surrounding, and in contact with, the offset dyke, consisting of granular to megaclastic (10's of m), well rounded clasts of locally derived host-rock within a fine grained to recrystallized (termed meta-breccia), massive to flow-banded matrix.

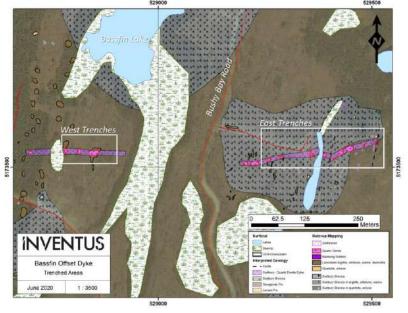




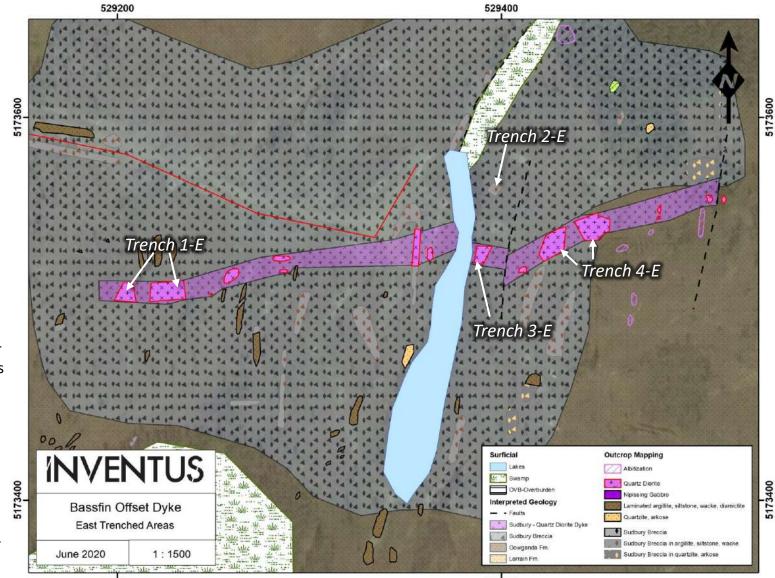
Inset boxes shown on the next slides. Inventus Mining, 2020

#### **GEOLOGY – BASSFIN EAST**

# INVENTUS



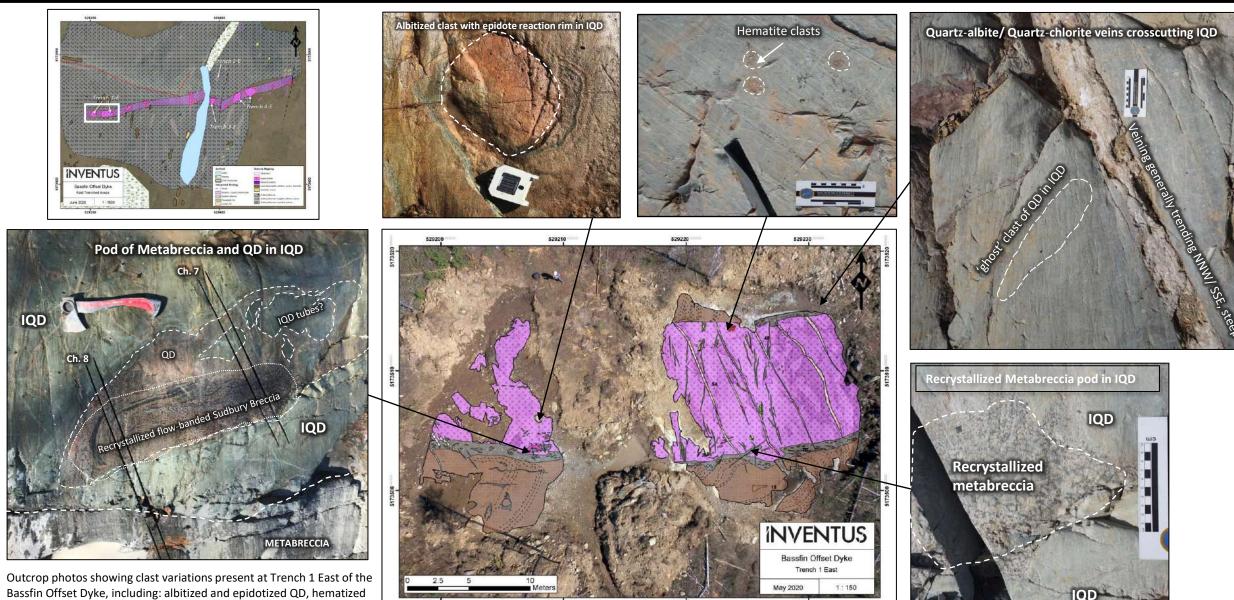
- East of Bushy Bay Road, the offset dyke is mapped ~400m along strike with variable width between 10-15m.
- The dyke is either in contact with megaclastic SUBX (Trench 4E), or variably brecciated Gowganda (Trench 1E). Metabreccia often lines dyke contacts in zones up to 1m wide, with clast alignment subparallel to the strike of the dyke. The contacts are generally steep (>70 degrees) and E-W striking.
- The QD dyke is variably clast-rich (>30% clasts) or clast poor (<30%), with predominant clast varieties as 'ghost' QD, distinctly altered (epidotized, chloritized, albitized) QD, lesser host rock varieties and meta-breccia.
- Significant quartz-carbonate-chlorite veining (up to 30cm wide) and lesser epidote, 'ladder' veining crosscut the dyke, generally N-S or NW-SE trending and steeply dipping.



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#### GEOLOGY – Trench 1 East

# **INVENTUS**



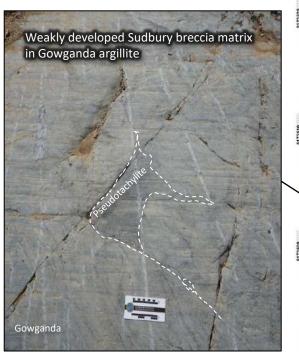
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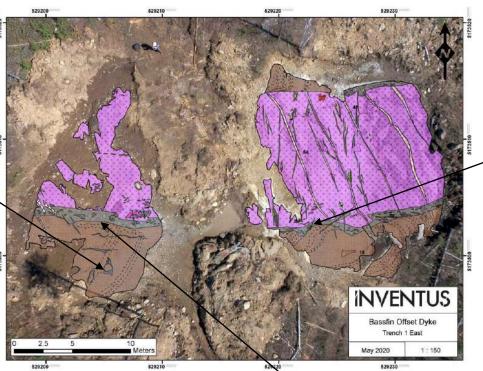
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Bassfin Offset Dyke, including: albitized and epidotized QD, hematized clasts, 'ghost' QD and pods of variable recrystallized metabreccia.

### GEOLOGY – Trench 1 East



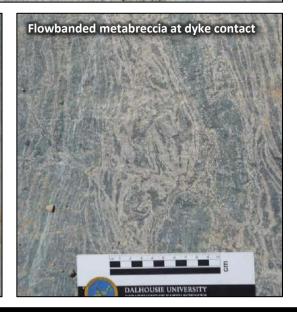


- Metabreccia occurs on both contacts of the dyke, with pebble to cobble sized, sub-angular to subrounded clasts generally aligned subparallel to the strike of the dyke.
- Metabreccia has a gradational or sharp transition into folded and weakly brecciated laminated Gowganda argillite. Gowganda bedding often folds sub-parallel to the strike of the dyke.
- QD/ recrystallized metabreccia lenses can be observed along some contact areas, suggesting pre-IQD emplacement fitting with models for other offset dykes (e.g. the Parkin/ Whistle offsets)

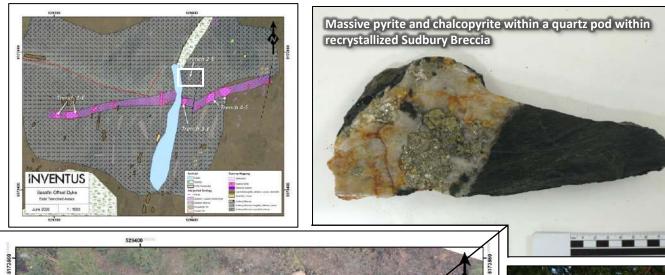




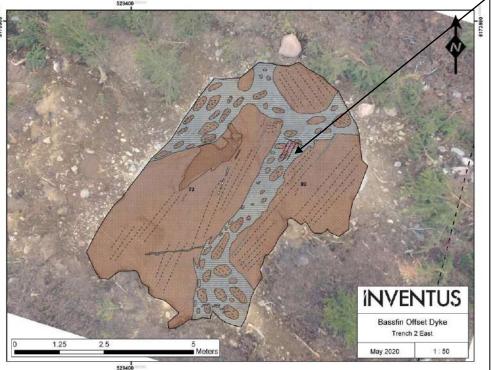




### GEOLOGY – Trench 2 East



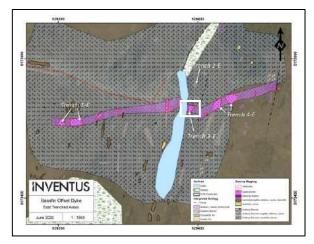
- Megaclastic Sudbury Breccia containing pebble to boulder sized clasts of locally derived country rock (Huronian) makeup much of the host rock to the dyke.
- Breccia appears unaltered on the surface, but fresh exposure shows a degree of recrystallization, likely due to the proximity of the offset dyke.
- Within the stripping, sulfide burns are caused by podiform quartz hosting pyrite and chalcopyrite, with **0.25 0.75% Cu**, anomalous Au and REE.





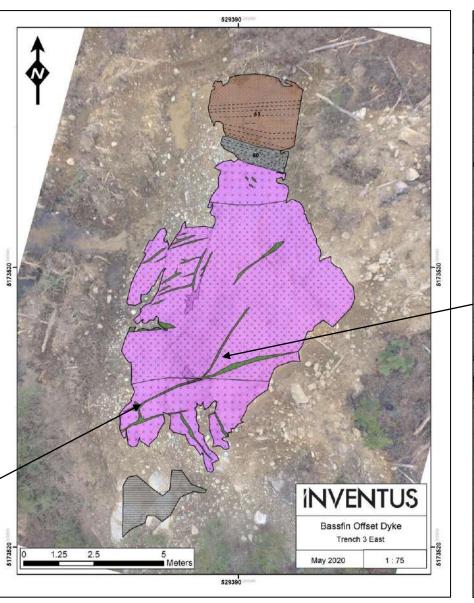


#### GEOLOGY – Trench 3 East



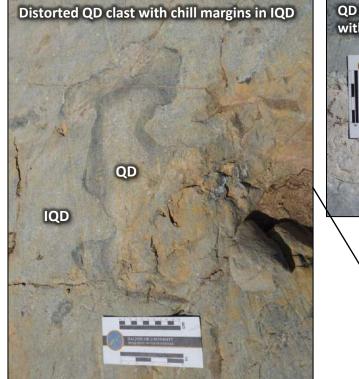
- Trench 3 East shows a consistent west-trending, steeply S dipping dyke in contact with Gowganda that folds into, and is intensely microbrecciated at, the dyke contact.
- Abundant chlorite veining and alteration is present within the dyke, as discontinuous to continuous, variable width veins and veinlets.



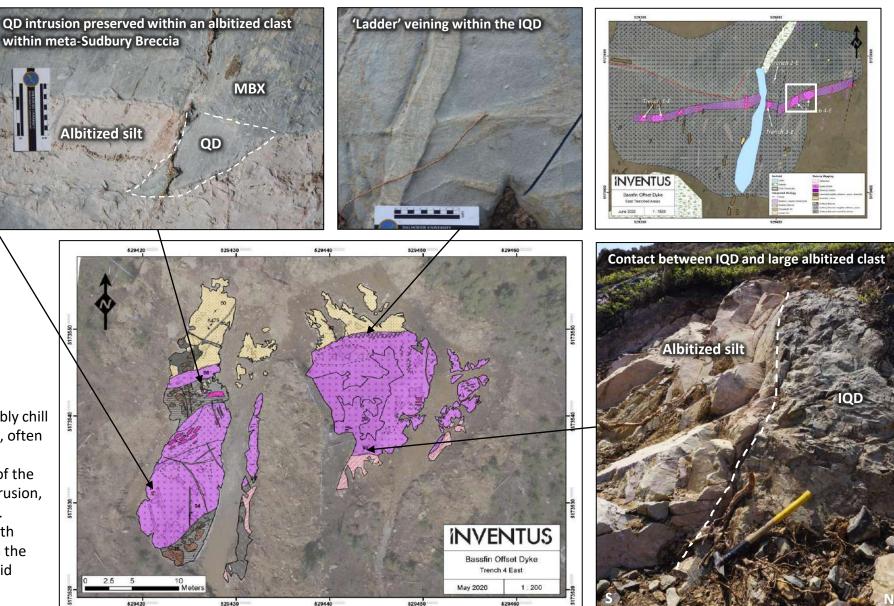




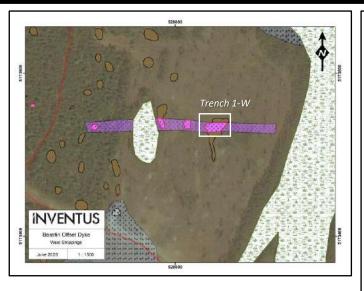
#### GEOLOGY – Trench 4 East



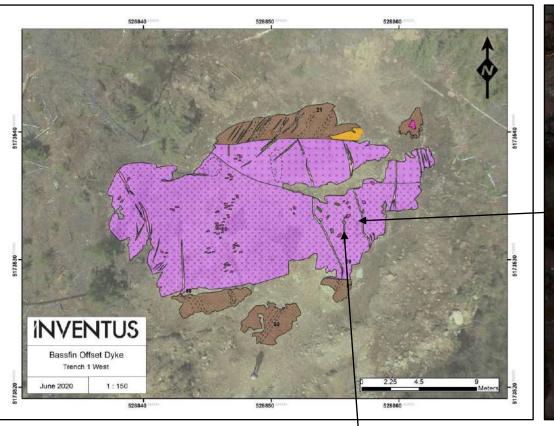
- IQD contains large, elongate to distorted, variably chill margined 'ghost' clasts of QD and metabreccia, often parallel to the strike of the dyke.
- ~1m wide E-W trending QD dyke to the north of the main dyke could either represent initial QD intrusion, or a splay of IQD from the main dyke structure.
- Abundant 'ladder' veining found along the North (footwall) contact weathers less recessive than the dyke, suggesting higher silica and a pulse of fluid along the dyke contact prior to solidification.



#### GEOLOGY – Trench 1 West

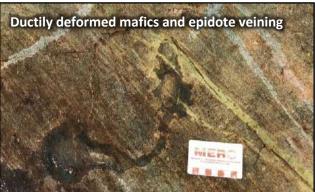


- West of Bushy Bay Road, the dyke has been mapped discontinuously over 1km towards Wanapitei Lake.
- Contacts of the dyke are E-W, sub-vertical.
- IQD contains abundant elongate to distorted, variably chill margined 'ghost' clasts of QD and metabreccia, with less abundant mafic and SUBX clasts, subparallel to the strike of the dyke.
- Clasts are variable rimmed by epidote or altered to albite and epidote – clasts show ductile deformation features.
- Less abundant quartz-albite-carbonate, epidote and chlorite veining strikes roughly 345 through the IQD, but abundant 'tension gash' quartz veining is found within the host laminated argillite.
- A unique, clast-bearing 'albite dyke' crosscuts the IQD, containing clasts of angular laminated argillite.
- Trenches 2 and 3 West contain mostly IQD with variable fine-grained disseminated pyrite and crosscutting quartz veins.







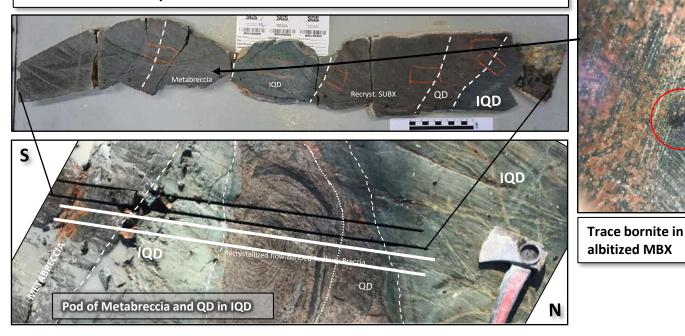


# MINERALOGY - IQD

# INVENTUS

- The IQD matrix is fine to medium grained, plagioclase rich with <7% quartz. Strong albitization and locally chloritization, epidotization, carbonate alteration of mafic minerals (orthopyroxene, horneblende). Abundant granular clasts are ubiquitous throughout, often with a granular quartz core, epidote growth radial from the core, and an outer rim of variably altered plagioclase.
- QD clasts often completely albizited and/or epidotized, often rimming each other.
- MBX is often strongly albitized, locally with hematite or K-feldspar alteration.

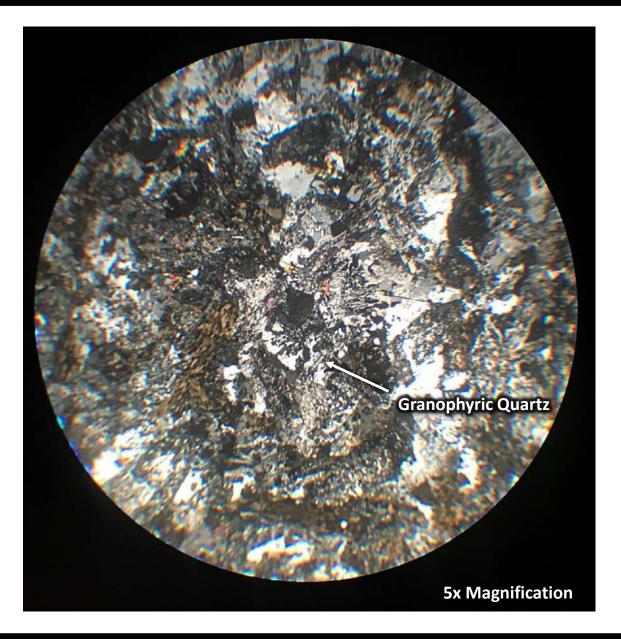
BL20-TR1E-8: Channel sample through the various phases present at the southern contact of the offset dyke.





# PETROLOGY

# INVENTUS



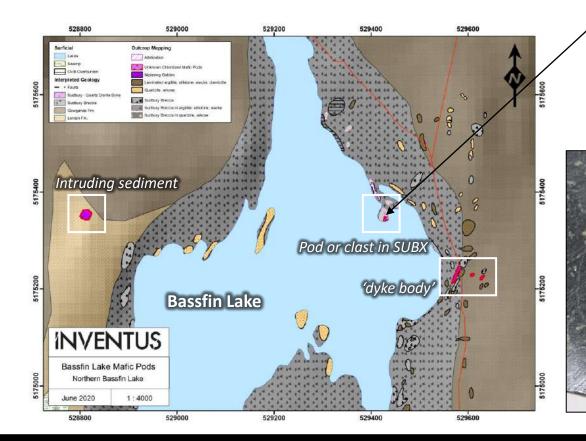
The IQD is generally mafic, equigranular, medium-grained with 35-40% hornblende and plagioclase in equal proportions. Interstitial/patch quartz (10-15%), clinopyroxene (5%), orthopyroxene (<5%) and minor amount of k-feldspar (<5%) forms the rest of the igneous assemblage. Secondary hornblende, chlorite, biotite and epidote exist as the alteration assemblage. Disseminate sulfides (mostly pyrite) and magnetite are the opaque phases in the rock, <1%.

Hornblende and plagioclase are generally lath-like are often observed as pseudomorphic remnants altered to chlorite (chloritization) and epidote (saussuritization), respectively. Uralitization (pyroxene to hornblende) is also observed, specifically with clinopyroxene. Intergrowths between plagioclase and hornblende/pyroxene are mostly equigranular and rarely sub-ophitic (only one sample). Granophyric texture in quartz and feldspar is observed but not common. Myrmetitic feldspar is also observed. Inclusions are subrounded with sharp contacts, often with a quartz cores and epidote rims further rimmed by plagioclase.

Alteration assemblage chlorite and epidote are also observed within plagioclase and quartz fractures, suggesting the presence of a chloriterich fluid. Veinlets of quartz, carbonate and epidote are observed crosscutting the matrix and seem to pre-date the chloritization. Epidote and carbonate are also rarely observed within the igneous matrix.

# Northern Mafic Occurances

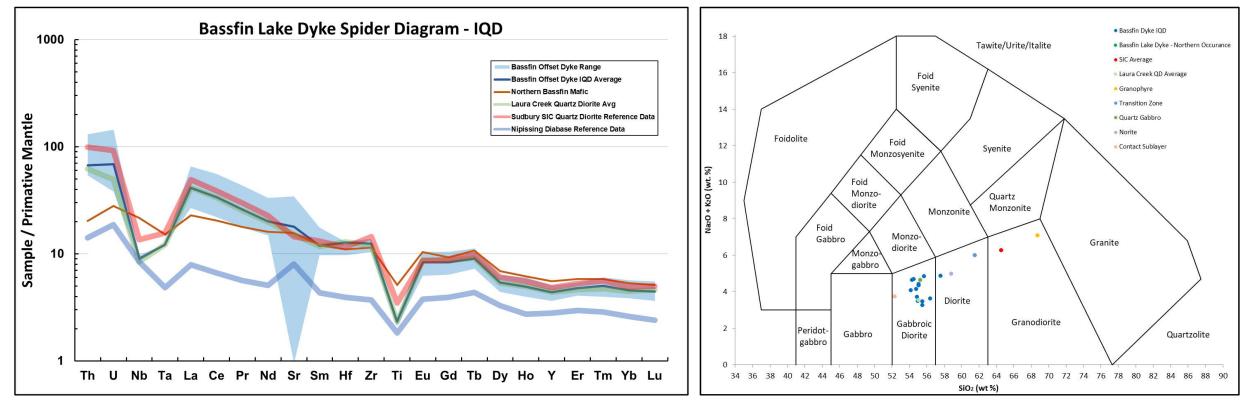
- The Northern Mafic pods exist as ~20m long bodies and pods (clasts?) within Sudbury Breccia and Gowganda at the northern end of Bassfin Lake over about 1km.
- The mafic consists of a fine-grained, almost completely chloritized and epidotized matrix with epidote 'porphyroblasts' as chlorite and epidote pseudomorphs after cumulate textured orthopyroxene and horneblende.
- No relationship between the dyke and the pods has been observed, but geochemistry suggests a relationship between the two lithologies.





# GEOCHEMISTRY

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- Total alkali and silica (TAS) shows a primarily **gabbroic diorite** composition, similar to the IQD found at Laura Creek, the mafic unit found at the north end of Bassfin Lake, and **intermediate between contact sublayer and norite of the SIC.**
- Trace element geochemistry presents a distinct geochemical signature from the Nipissing diabase found within the region, overlapping the SIC Quartz diorite except for a wide range in Sr content, likely due to significant fluid alteration (variable albitization, chloritization, epidotization, carbonate alteration) within the dyke.
- Northern Bassfin mafic pods are gabbroic diorite in composition as well but are slightly depleted in HREE with respect to IQD/ SIC and are distinct from
  Nipissing Diabase based on their trace element composition overlay with Sublayer trace element patterns is observed, suggesting a potential Sudbury
  source.

### REFERENCES

Kawohl, A., Frimmel, H. E., Bite, A., Whymark, W., and Debaille, V., 2019, Very distant Sudbury impact dykes revealed by drilling the Temagami geophysical anomaly: Precambrian Research, v. 324, p. 220–235.

Kawohl, A., Whymark, W. E., Bite, A., and Frimmel, H. E., 2020, High-Grade Magmatic Platinum Group Element-Cu (-Ni) Sulfide Mineralization Associated with the Rathbun Offset Dike of the Sudbury Igneous Complex (Ontario, Canada): Economic Geology, p. 505–525. The Qualified Person responsible for the geological technical content of this news release is Wesley Whymark, P.Geo., who has reviewed and approved the technical disclosure in this presentation on behalf of the Company.

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