

INVENTUS

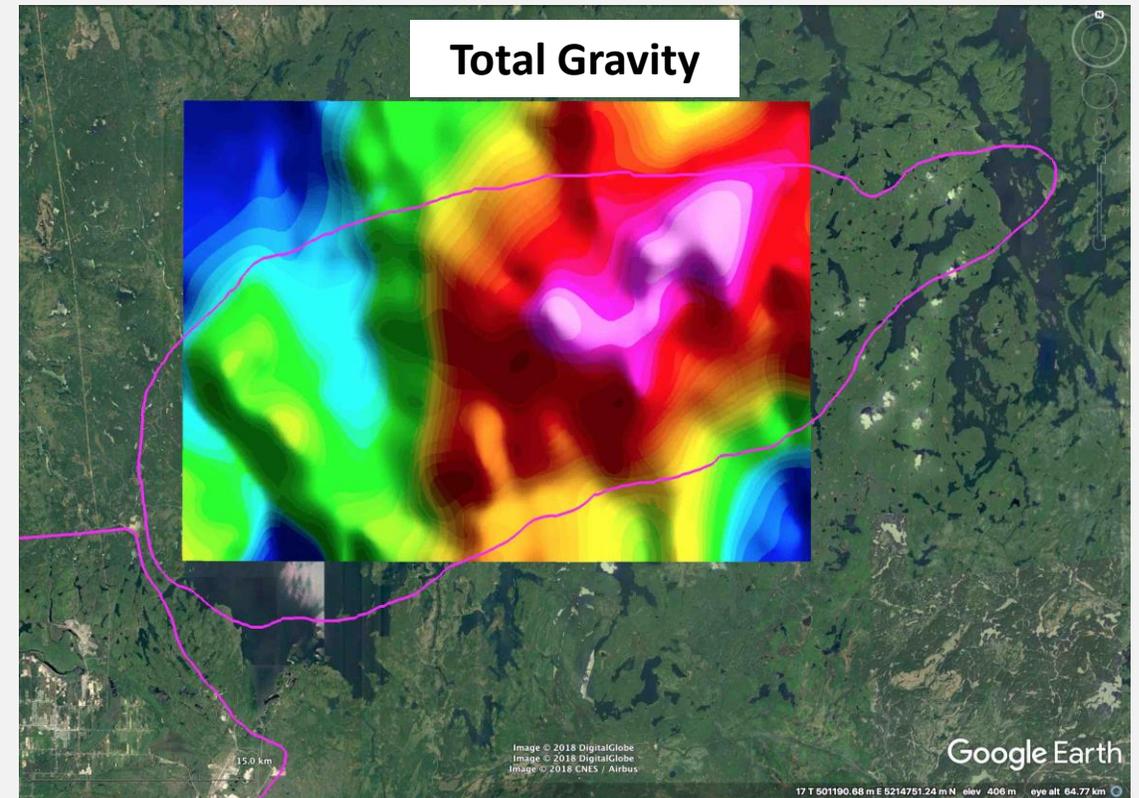
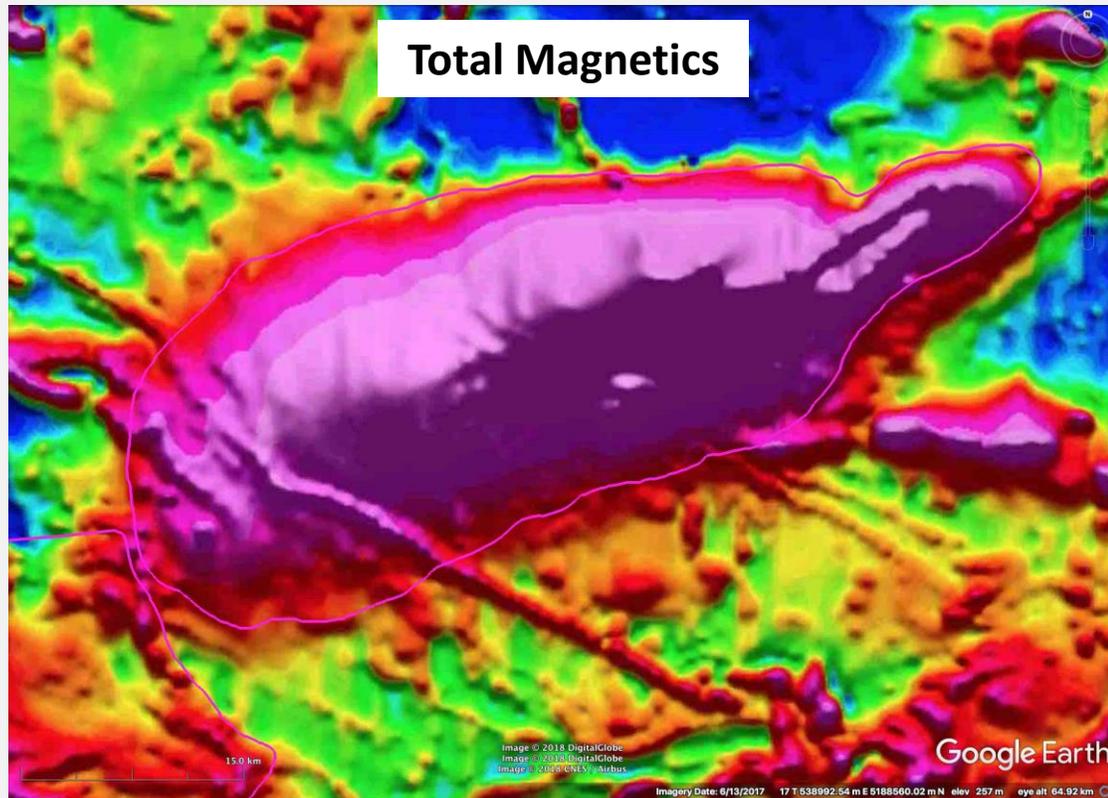
Inventus Mining

An Introduction to the Sudbury 2.0 Property and
Recent Advances on the Pardo Project

Sudbury Prospectors and Developers Association
Oct. 16th 2018

What is the Temagami Anomaly?

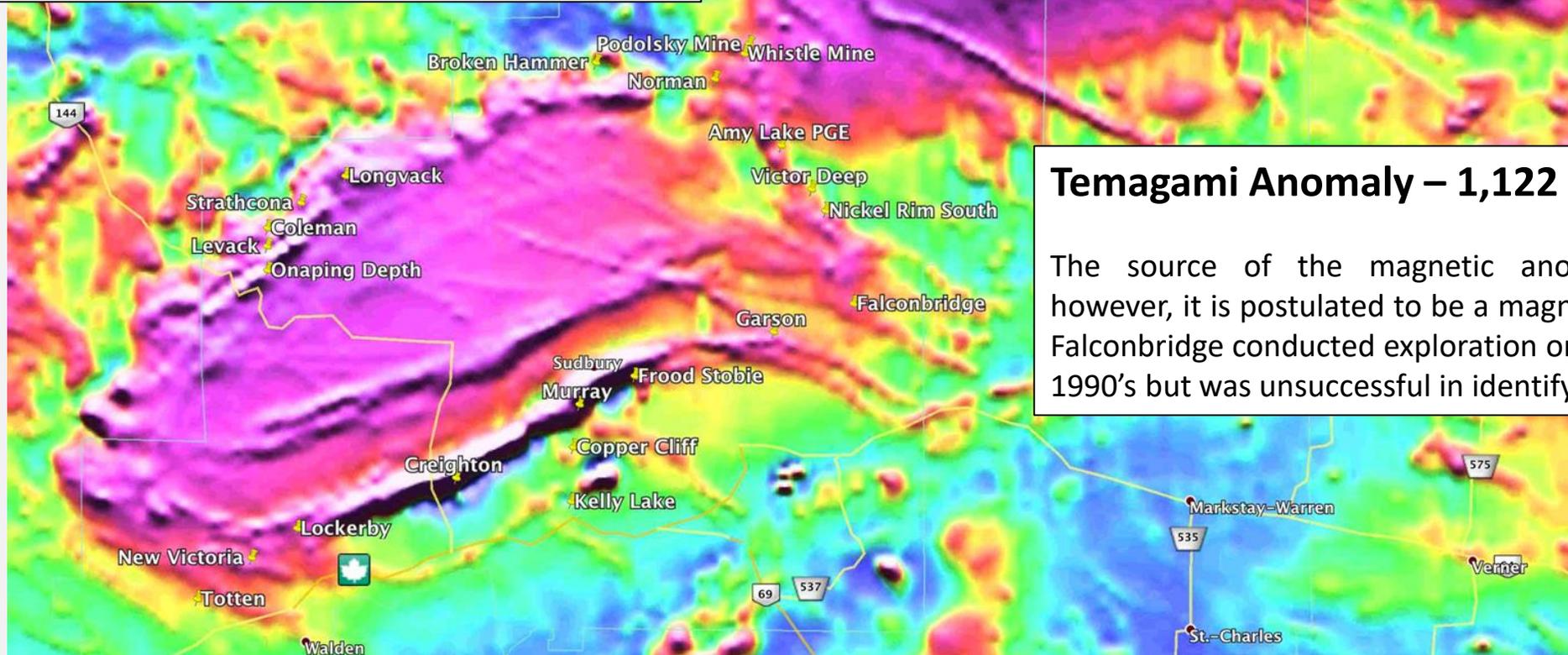
The Temagami Anomaly is one of the **largest positive magnetic anomalies in North America and has never been explained**. It coincides with a gravity anomaly suggesting the dense magnetic rocks could be a **mafic intrusive**, known to host magmatic Ni-Cu-PGE mineralization around the world. Additionally, the Temagami Anomaly has a **similar size, shape and magnetic intensity as the Sudbury Basin**, one of the richest magmatic Ni-Cu-PGE mining camps in the world.



So how much is another Sudbury Worth \$\$?

Sudbury Igneous Complex (SIC) – 1,435 km²

The total ore mined up to 2008 in Sudbury was approximately **1.7 billion tonnes** with 40 b/lbs of nickel, 36 b/lbs of copper, 70 m/oz. of platinum, palladium and gold and 283 m/oz. of silver. At today's commodity prices, total historic production and current known reserves in Sudbury represent a **1 trillion dollar value**.



Temagami Anomaly – 1,122 km²

The source of the magnetic anomaly is unknown, however, it is postulated to be a magnetic mafic intrusion. Falconbridge conducted exploration on the anomaly in the 1990's but was unsuccessful in identifying the the source.

Introduction to the Sudbury 2.0 Property

1. Geology above the Temagami Anomaly
2. History of Exploration on the anomaly
3. What initiated exploration interest by Inventus
4. What evidence do we have for a mafic intrusive?
5. Does the mafic intrusive come to surface?
6. A model for emplacement
7. What Inventus has accomplished
8. Exploration going forward

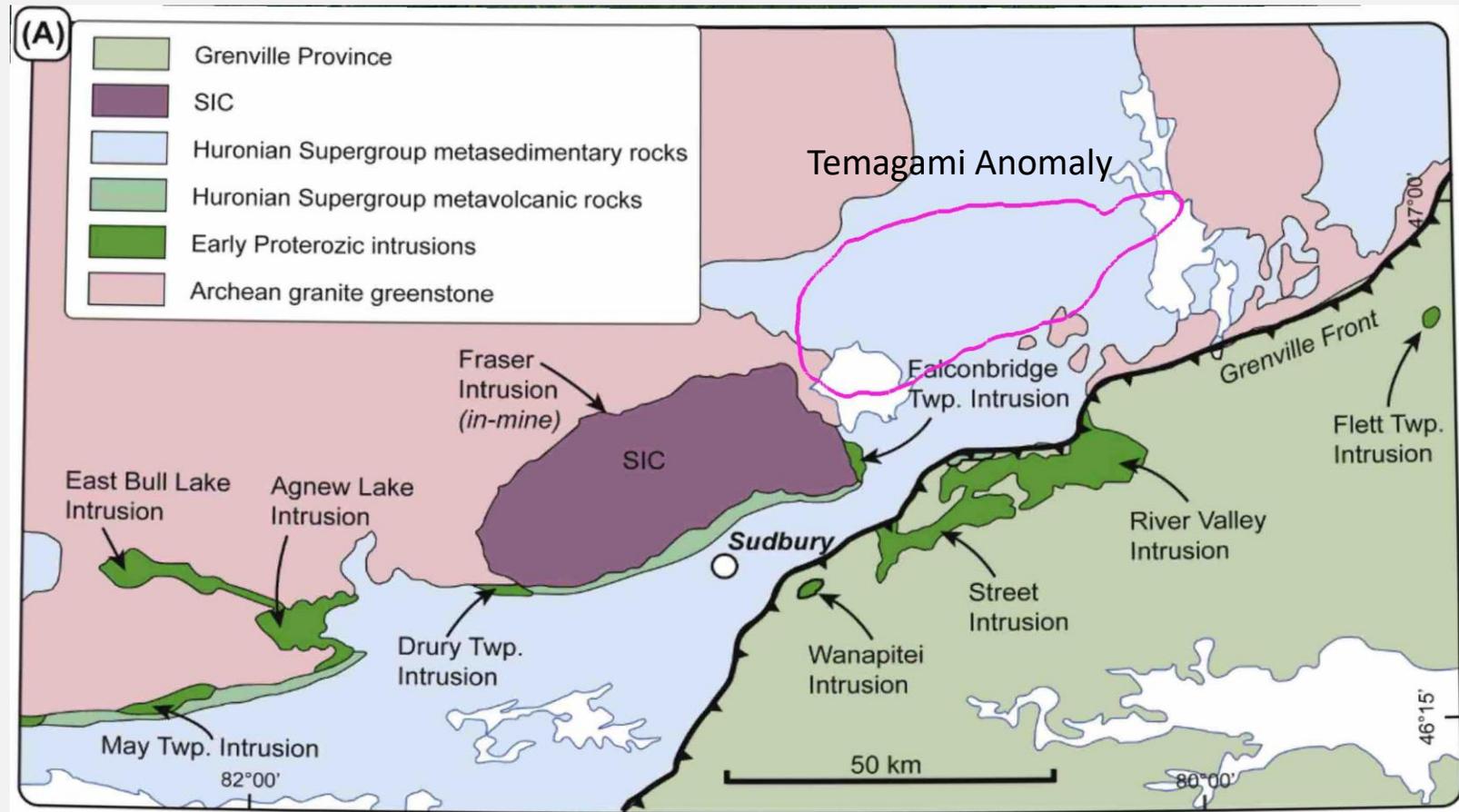
Geology of the Sudbury 2.0 Property

The Temagami Anomaly is situated under rocks of the Huronian Supergroup, a 2.45 to 2.2 Ga sedimentary basin.

The Huronian sediments are sitting on meta-sedimentary and meta-volcanic rocks of the archean, likely an extension of the ~2.7 Ga Temagami greenstone belt

Within the Huronian sedimentary sequence are rocks of the Nipissing Diabase, a 2.2 Ga intrusion of dykes and sills and the 1.24 Ga Sudbury Olivine Diabase Dyke swarm.

Situated to the west of the Temagami Anomaly is the Sudbury basin, a 1.85 Ga suite of mafic rocks recognized as a melt sheet formed from a meteorite impact.



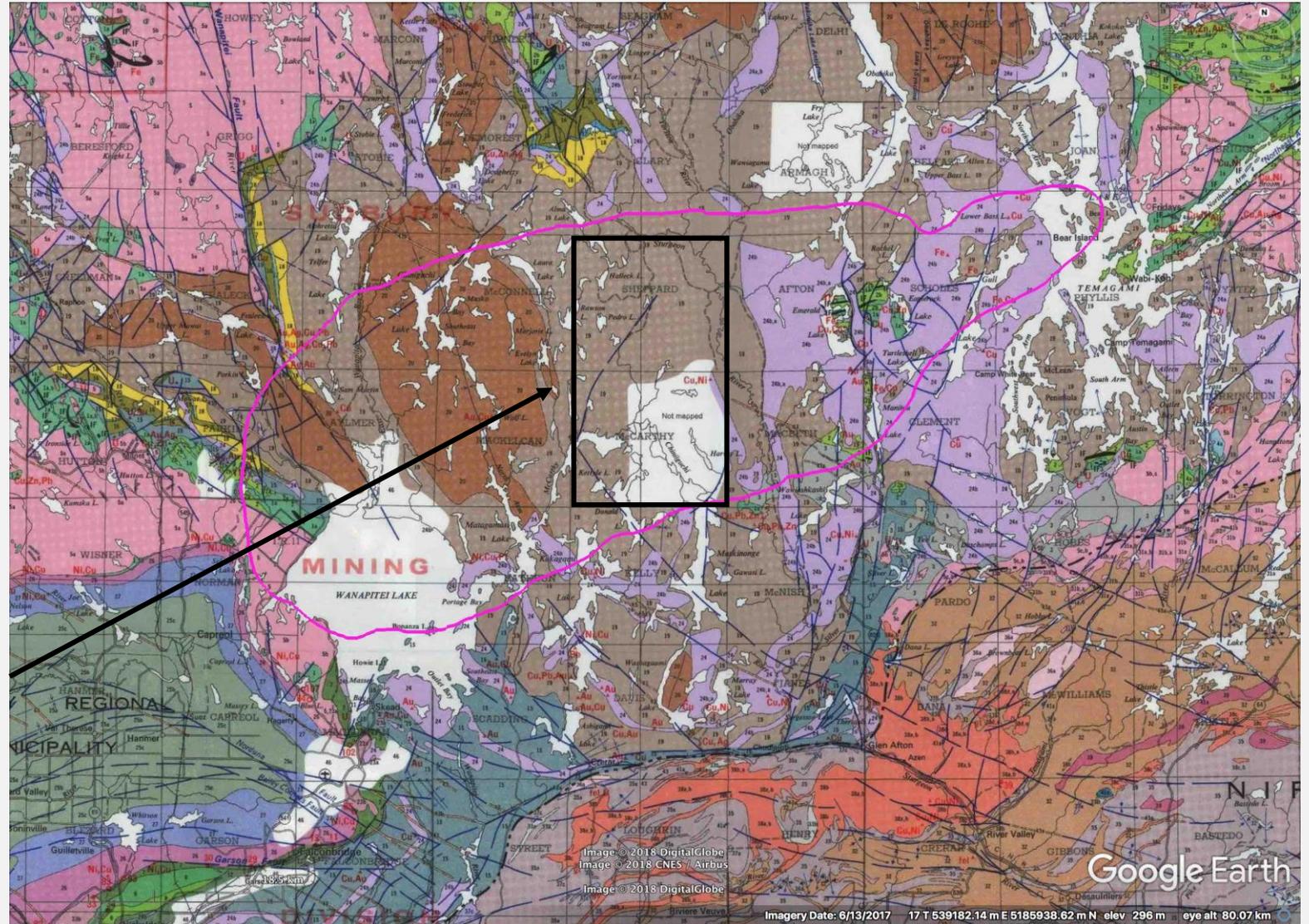
Modified from Lightfoot, 2017

Geology of the Sudbury 2.0 Property in more detail

The Temagami Anomaly is below or within the Lorrain and Gowganda fm. sediments and Nipissing Diabase Intrusion

Archean aged banded iron formation and metavolcanics are likely from the Temagami Greenstone Belt in the east

Sheppard and McCarthy townships were never mapped by the Ontario Geological Survey



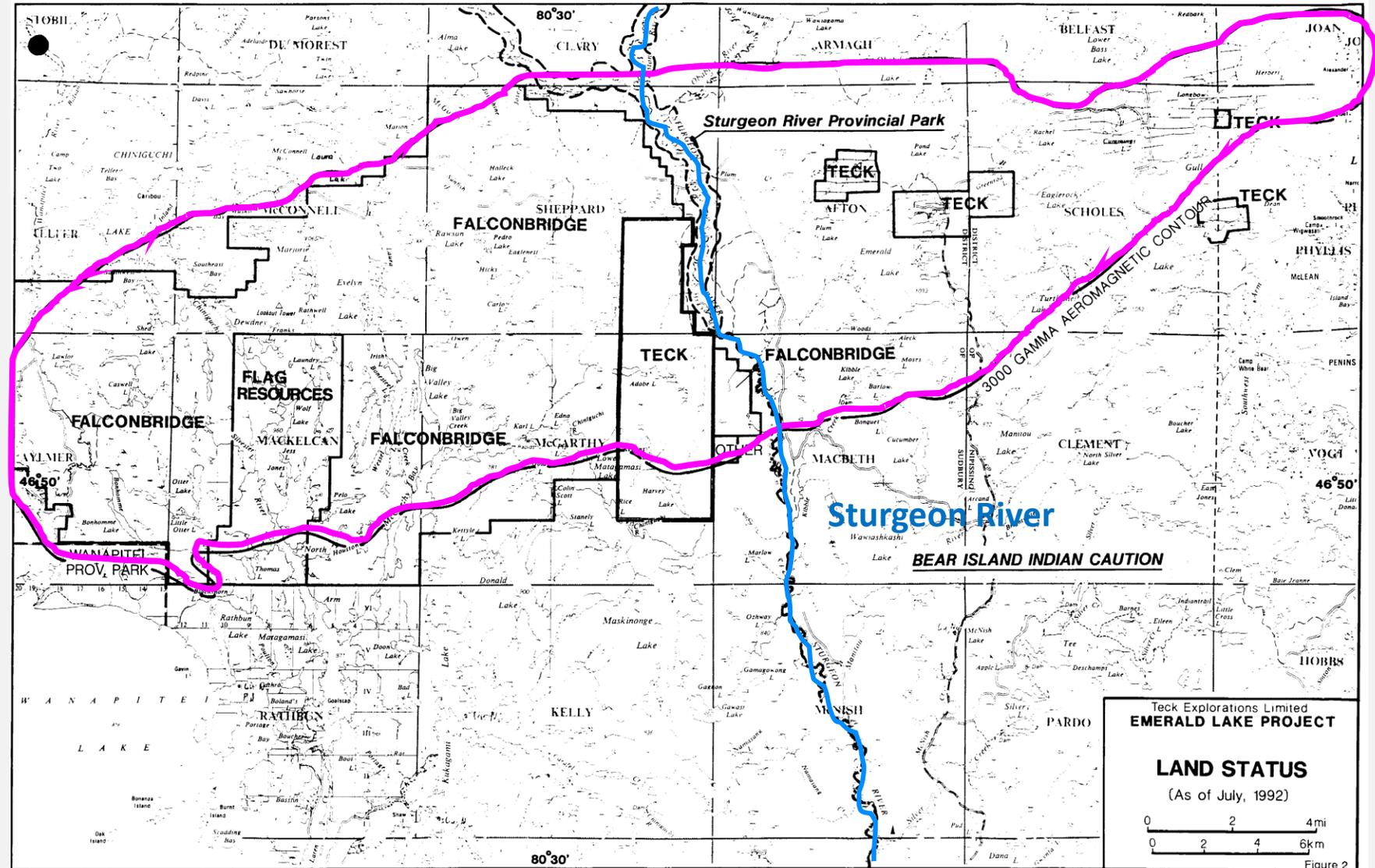
OGS, Sudbury-Cobalt Compilation Map Sheet M2361

History of Exploration – Falconbridge Ltd. & Flag Resources

In 1991 Falconbridge staked the entire Temagami Anomaly.

During this time the Bear Island Indian Caution prevented anyone from staking claims east of the Sturgeon River.

The only other company in the area was Flag Resources, who was exploring hydrothermal Cu-Au breccia mineralization



History of exploration – Falconbridge Ltd.

- Falconbridge Ltd. staked the entire Temagami Anomaly in 1991 and termed it the “Mirage Project” due to its similarities to the Sudbury Basin
- Falconbridge conducted a:
 - Seismic survey
 - Magnetotelluric Survey
 - Detailed airborne magnetic survey
 - Drilled 1 hole, M-SH-02, that was plagued with problems and ended up deviating 800 metres laterally from surface and was then abandoned
 - Borehole EM survey
 - The Anomaly was never explained
 - In 1999 Wallbridge drilled a 1,200 metre hole into the Temagami Anomaly as part of a deal with Falconbridge to fulfil a contract. The hole ended in Nipissing Diabase
 - Falconbridge eventually let the claims go in the mid 2000’s

Falconbridge Ltd. Seismic Survey

The seismic survey was interpreted to have reflectors illustrating an intrusion into the Huronian Sediments

Falconbridge planned their drill hole into the intrusion based on the information from to seismic survey

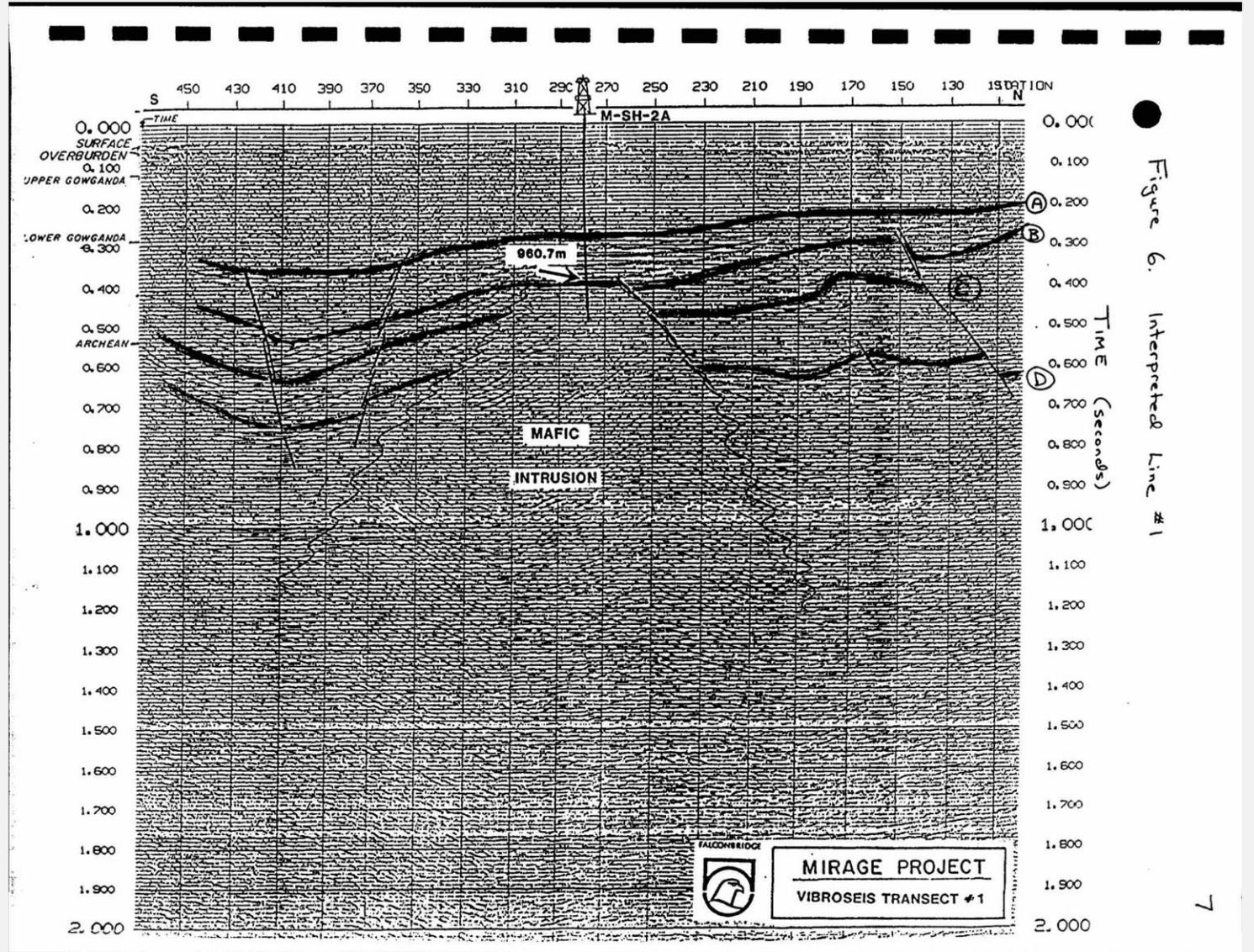
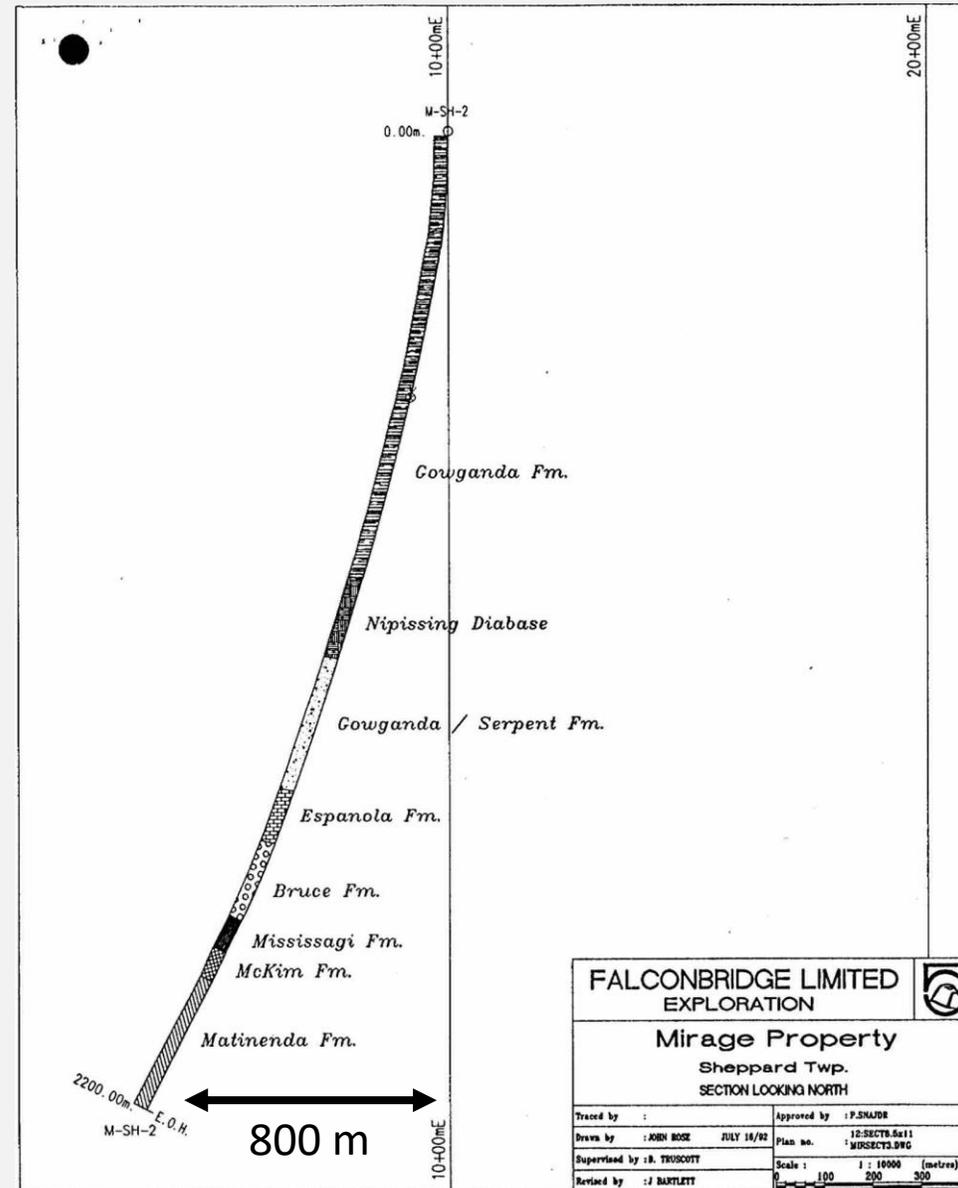


Figure 6. Interpreted Line #1

Falconbridge Ltd. Drill Hole M-SH-02

The drill hole went to 2,200 meters and deviated 800 metres from the collar before it was abandoned

The magnetic anomaly and seismic reflectors were never explained



History of exploration – Flag Resources

- Flag Resources conducted exploration on their claims from 1984 to 2011.
- They focused on hydrothermal Cu-Au mineralization around Wolf Lake hosted in albitized and brecciated quartzite
 - The company had many high grade (> 1 opt) Au drill intercepts at their Wolf Lake and Cobalt Hill areas
 - They flew an airborne magnetic survey over their property and discovered a large magnetic anomaly occurring under Wolf Lake that was trending towards the east
 - Flag Resources also determined that Au, Cu \pm Ni, Co, Ag and PGE values in the brecciated quartzite and sulphide veins
 - It was postulated the immobile Ni, Pt and Pd values were from an underlying mafic intrusive source
 - In the late 1990's and 2000's Flag Resources began looking for the source of their mineralization, however, at that time the company was falling apart and no serious exploration effort was accomplished

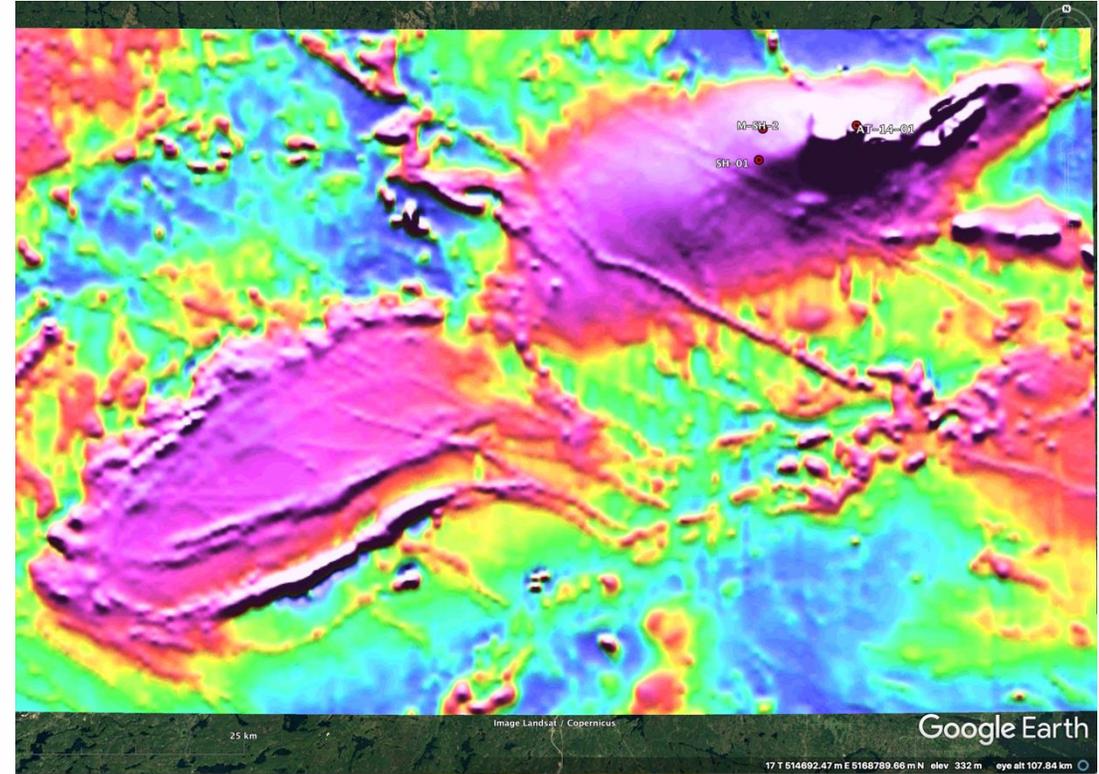
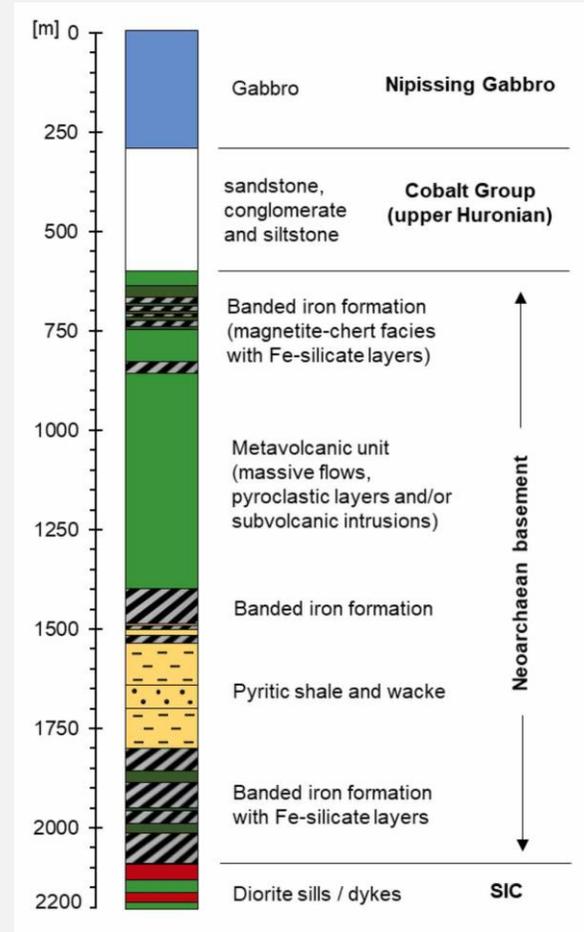
Evidence of a Mafic Intrusive – Inventus Interest

- Falconbridge Ltd. **failed** to find physical evidence of an intrusion that could explain the Temagami Anomaly
- In 2014 Canadian Continental Exploration, an affiliate company of Inventus, drilled a 2.2 km hole into the peak of the Temagami Anomaly and intersected a interesting mafic intrusive
- The mafic intrusive was then examined by Andy Bite, an established geologist who spent much of this career working on the Sudbury Igneous Complex, and were thought to resemble quartz diorite offset dykes of the SIC
- A MSc. research program was then initiated to characterize these mafic rocks

SIC equivalent quartz diorite in drill hole AT-14-01

Significant Break-through

- Hole AT-14-01 drilled into the peak of the Temagami Anomaly intersected a ~100 metre thick unit of quartz diorite at 2,100 metres.
- Rare earth element (REE) analysis of this quartz diorite indicated it has similar geochemistry to quartz diorite offset dykes of the SIC
- Sm-Nd isotope analysis indicates a 2.7 Ga protolith age, the same as the source rocks for the SIC.



Geochemistry of Quartz Diorite in AT-14-01 Compared to the Quartz Diorite Offset Dykes of the SIC

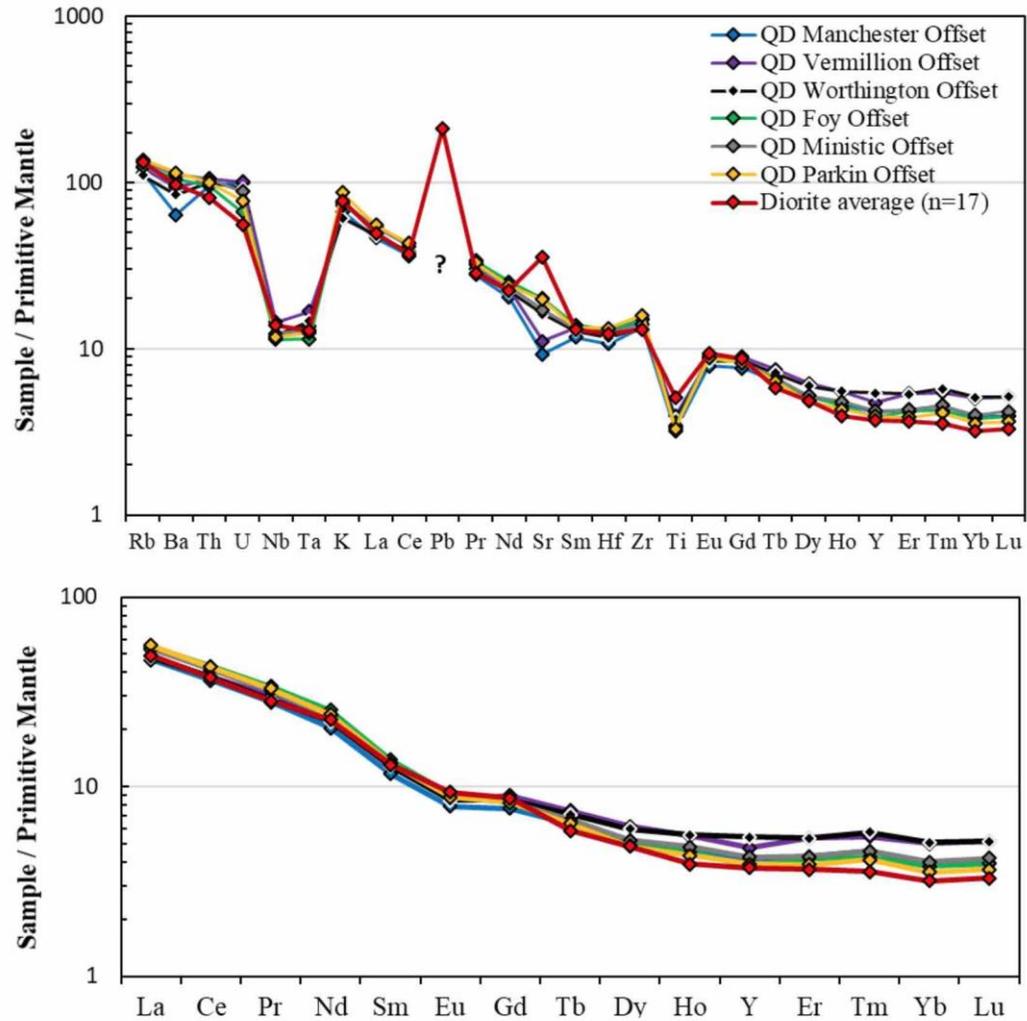
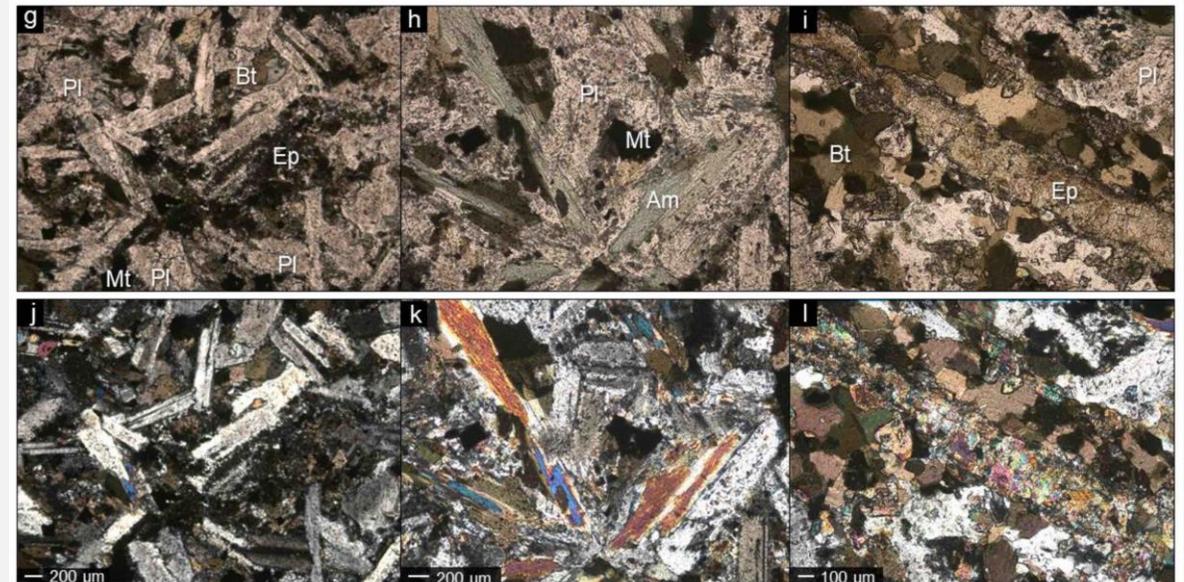


Figure 13: Primitive mantle-normalized trace element diagram showing the average composition of the diorite in AT-14-01 (shown in red) and the average composition of other quartz-diorite offset dykes (Lightfoot 2016).

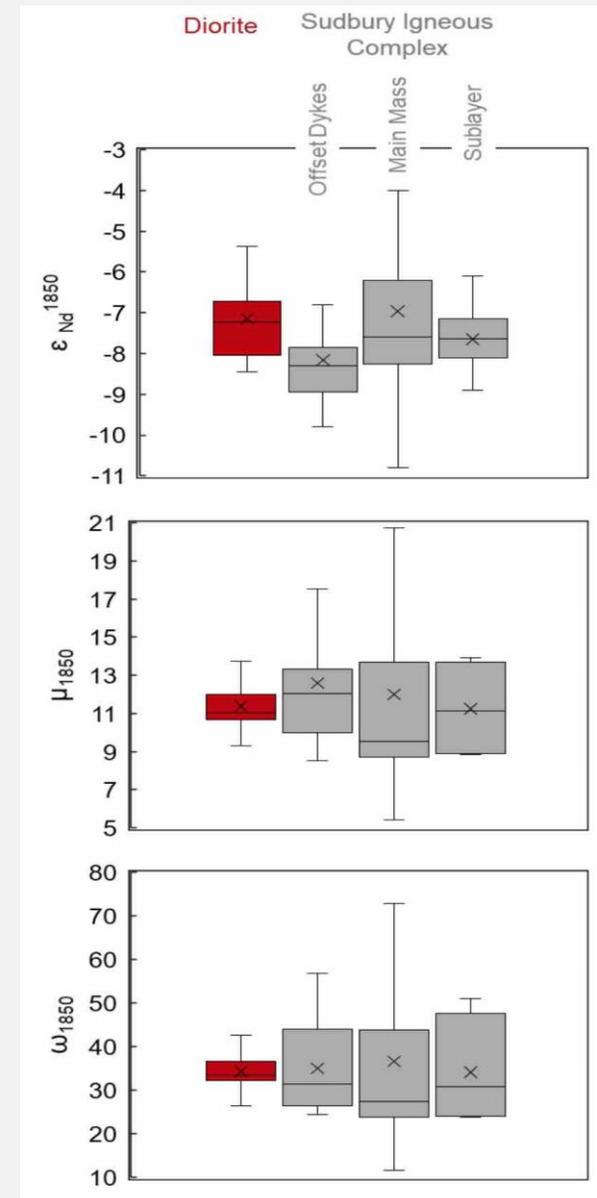
The least altered mafic rocks where the Nipissing diabase at the top of the hole and the quartz diorite at the bottom of the hole. The quartz diorite in AT-14-01 was geochemically and petrographically similar to quartz diorite offset dykes around the SIC



Radiogenic Isotopic features of the quartz diorite in AT-14-01

- The quartz diorite in AT-14-01 was found to share the same isotopic features as samples from the SIC
 1. highly radiogenic and negative $\epsilon_{\text{Nd}1850}$ values
 2. model ages of, on average, 2.75 Ga, which is in perfect agreement with existing data for the SIC
 3. The same Sm/Nd and U/Th/Pb ratios
- It was found that the Nd and Pb isotopes provided the most convincing argument that the diorite in drill hole AT-14-01 is the product of an impact-related melt, possibly a unrecognized offset dyke
- In layman's terms no mantle source, just crustal contamination from an impact related melt sheet

Radiogenic isotope composition of the diorite in drill core AT-14-01 compared to those of the Sudbury Igneous Complex displayed as whisker plots for ϵ_{Nd} , uraniumogenic Pb (μ) and thorogenic Pb (ω) isotope ratios at 1850 Ma. Whole rock Nd isotope data from Faggart et al. (1985) and Prevec et al. (2000); Pb-isotope data on whole rock and feldspar separates from Dickin et al. (1996), Dickin et al. (1999), Darling et al. (2010a,b) and McNamara et al. (2017)

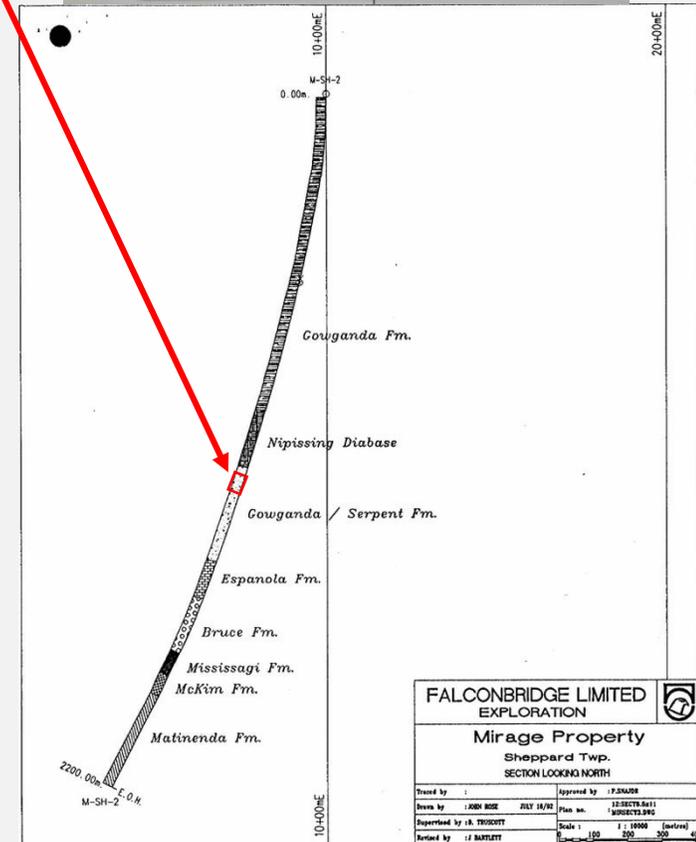
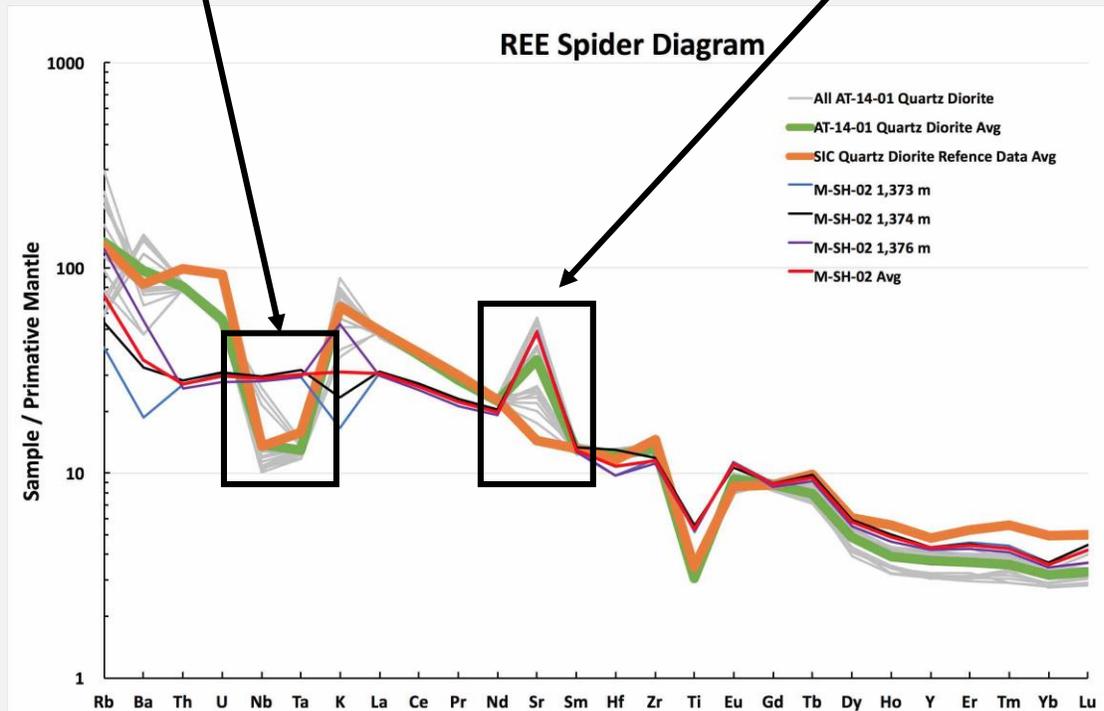
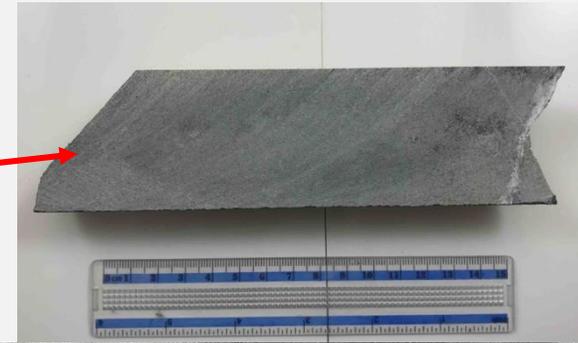


Scientific paper submitted to
Precambrian Research Journal

Kawohl, A., Frimmel, H.E., Bite, A., Whymark, W., Debaille, V., 2018. **Very Distant Sudbury Impact Dykes Revealed by Drilling the Temagami Geophysical Anomaly.**

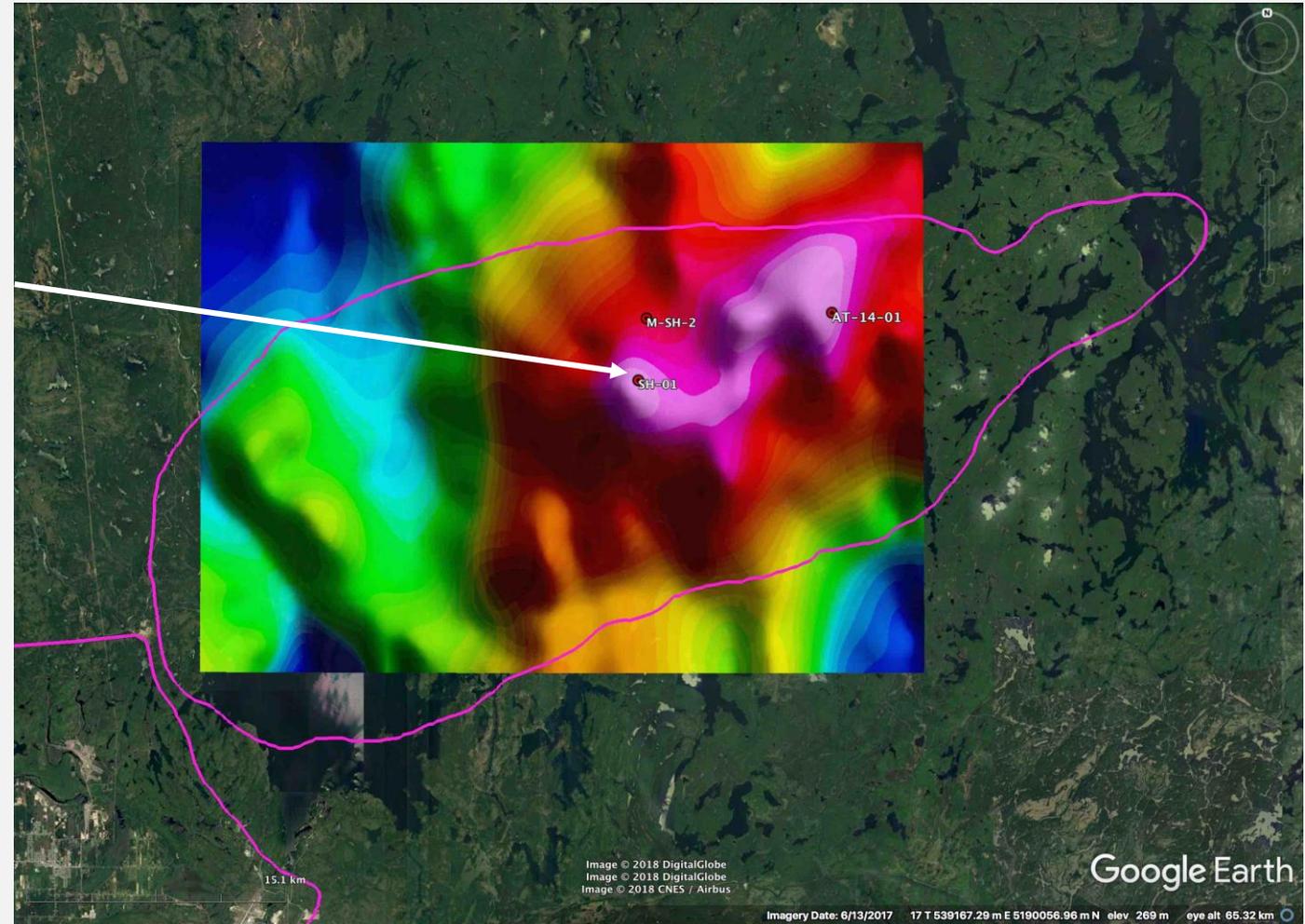
Evidence of an Intrusion Discovery in the Falconbridge Drill Hole

- In the summer of this year Inventus obtained the old Falconbridge drill hole M-SH-02
- **Discovery! Slightly magnetic mafic intrusion from 1,371 to 1,379 metres**
- Preliminary geochemistry is similar to the quartz diorite in AT-14-01 and the reference data for the SIC quartz diorite offset dykes
- Niobium-tantalum depleted anomaly? Positive Strontium anomaly? – work in progress



Wallbridge Drill Hole SH-01

- After conducting an MT survey and reinterpreting their magnetic and gravity data, Falconbridge wanted to drill at a different location than their first hole
- Wallbridge in 1999, drilled a 1,200 metre hole for Falconbridge to fulfill a contract on a JV property (Stobie east)
- Inventus acquired the hole from Wallbridge this summer
- The hole was found to end in Nipissing diabase, however, the bottom of the hole is becoming magnetic
- Could possibly be recrystallized from another intrusion or extension of the mafic intrusive at ~1,370 m in the Falconbridge hole?

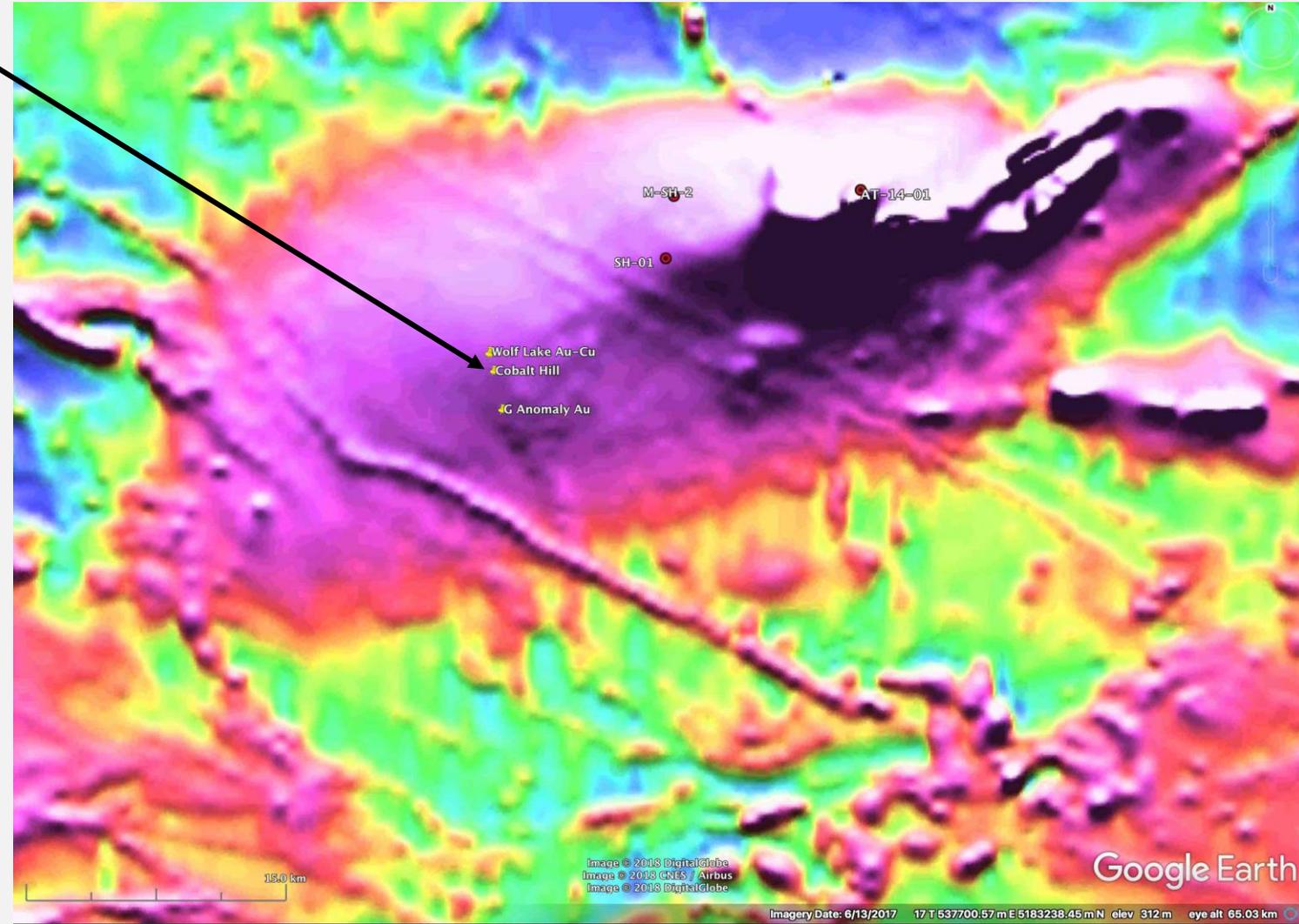


More Evidence for an Intrusion!

SIC-type sulfide inclusions at Cobalt Hill

Scientific paper by Eva Schandl in 2004 suggested a possible SIC origin for the mineralization around Cobalt Hill

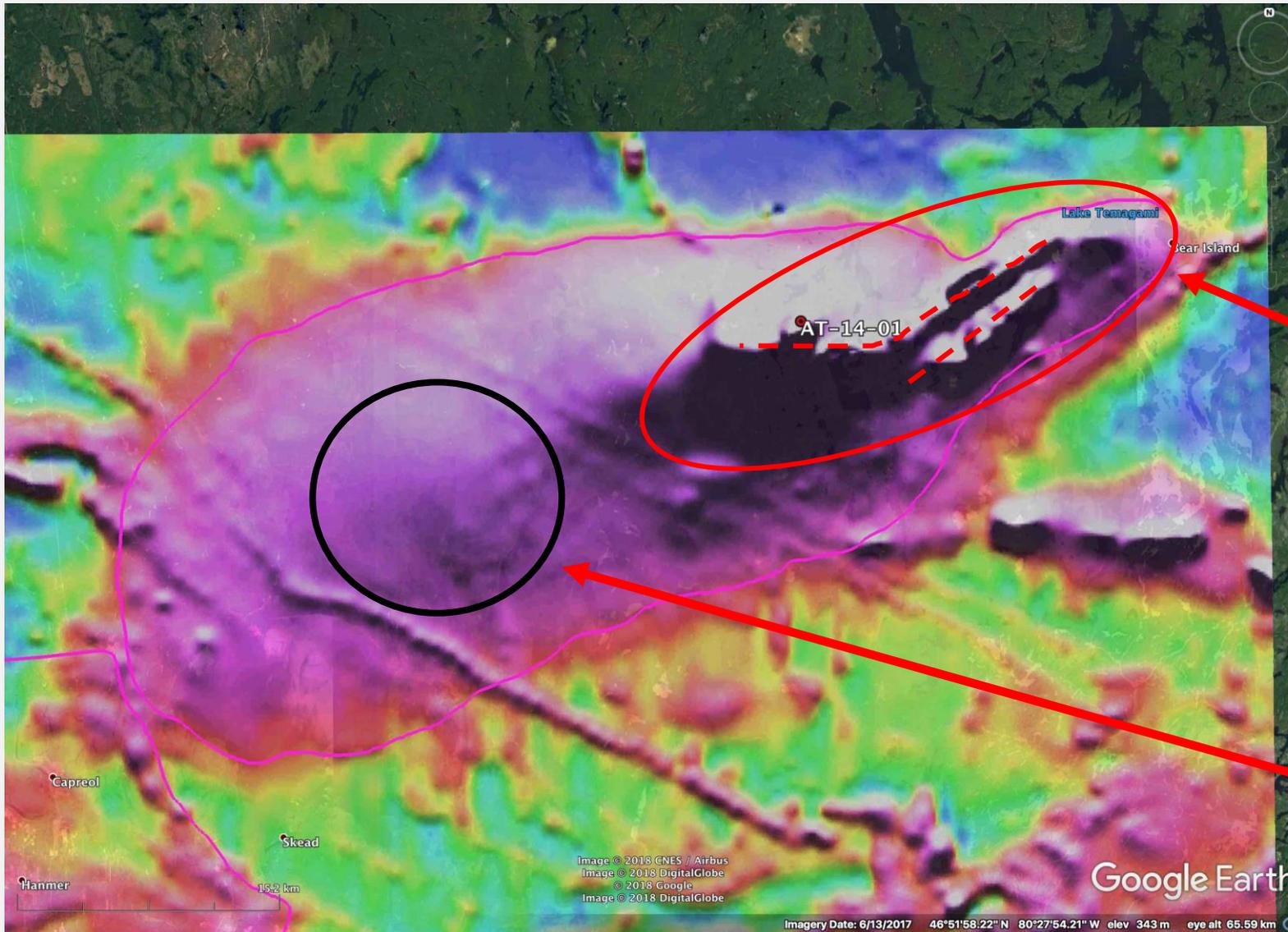
“The relative proximity of Cobalt Hill to the SIC, the ubiquitous presence of small Sudbury-type sulfide inclusions in pyrite in the Cobalt Hill quartz veins, the comparable salinity and homogenization temperature of fluid inclusions in these veins to those of metal-rich fluids of the SIC, and the presence of chromium muscovite (fuchsite), imply a spatial relationship of the veins to Sudbury-type base metals and to a Cr-rich mafic or ultramafic intrusion at depth.”



Does the Mafic Intrusive come to Surface?

- No one has made a serious effort to look for evidence of an mafic intrusive at surface
- Ontario Geological Survey maps indicate widespread Huronian sediments
- Sheppard and McCarthy Township, which are located in the center of the anomaly were never mapped by the Ontario Geological Survey

Peak Temagami Anomaly Theory



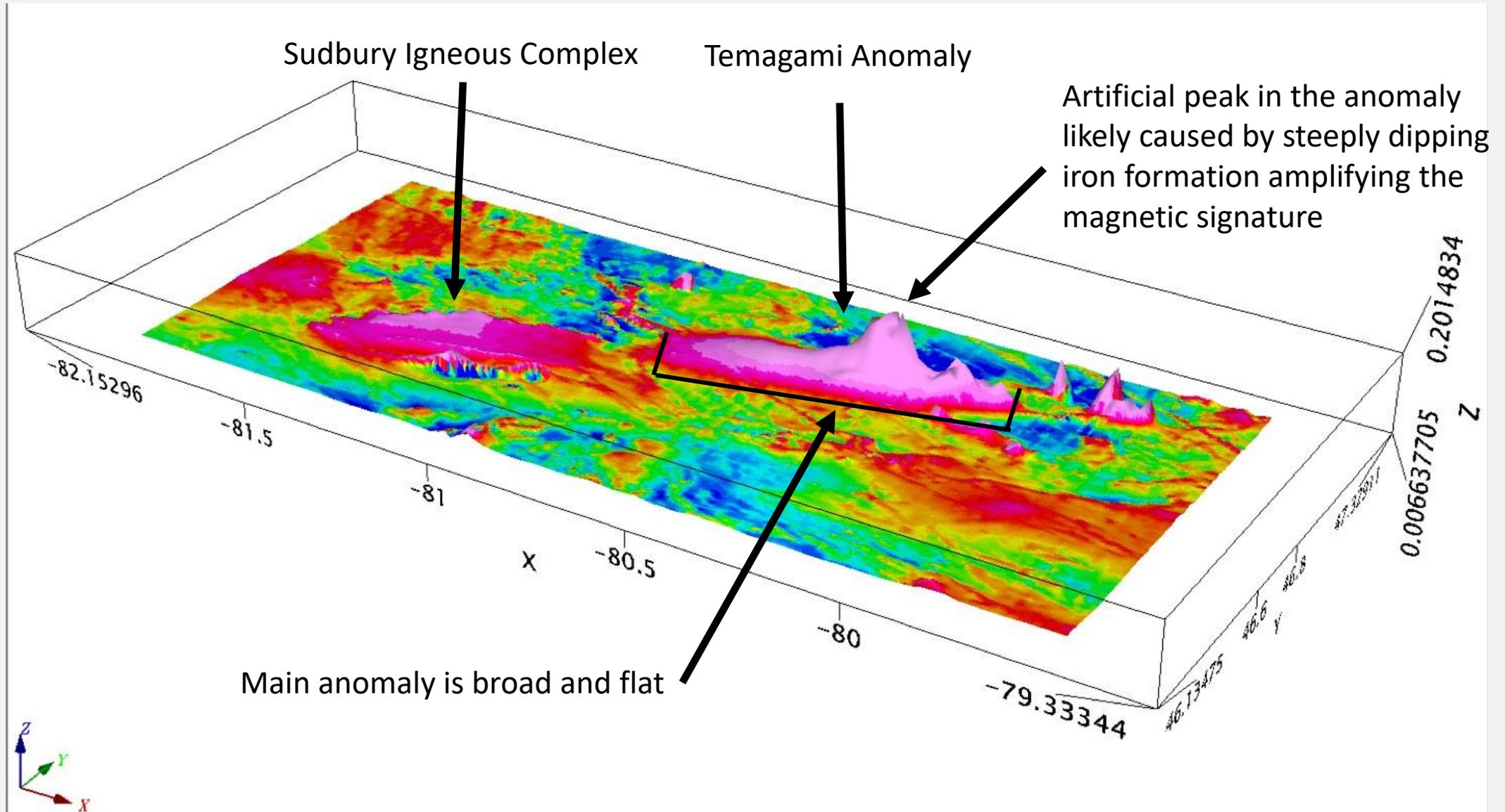
Falconbridge thought the anomaly would be closest to surface at the peak of magnetic intensity on the east side of the anomaly. They also didn't own claims in that area because of the land caution at the time

The high magnetic intensity in this area is likely amplified by the Temagami Iron Formation, which was intersected in hole AT-14-01.

This suggests that hole AT-14-01, which intersected quartz diorite at 2,100 metres and drilled on the peak of the anomaly may not be where the intrusion is closest to surface

Perhaps on the west end!?

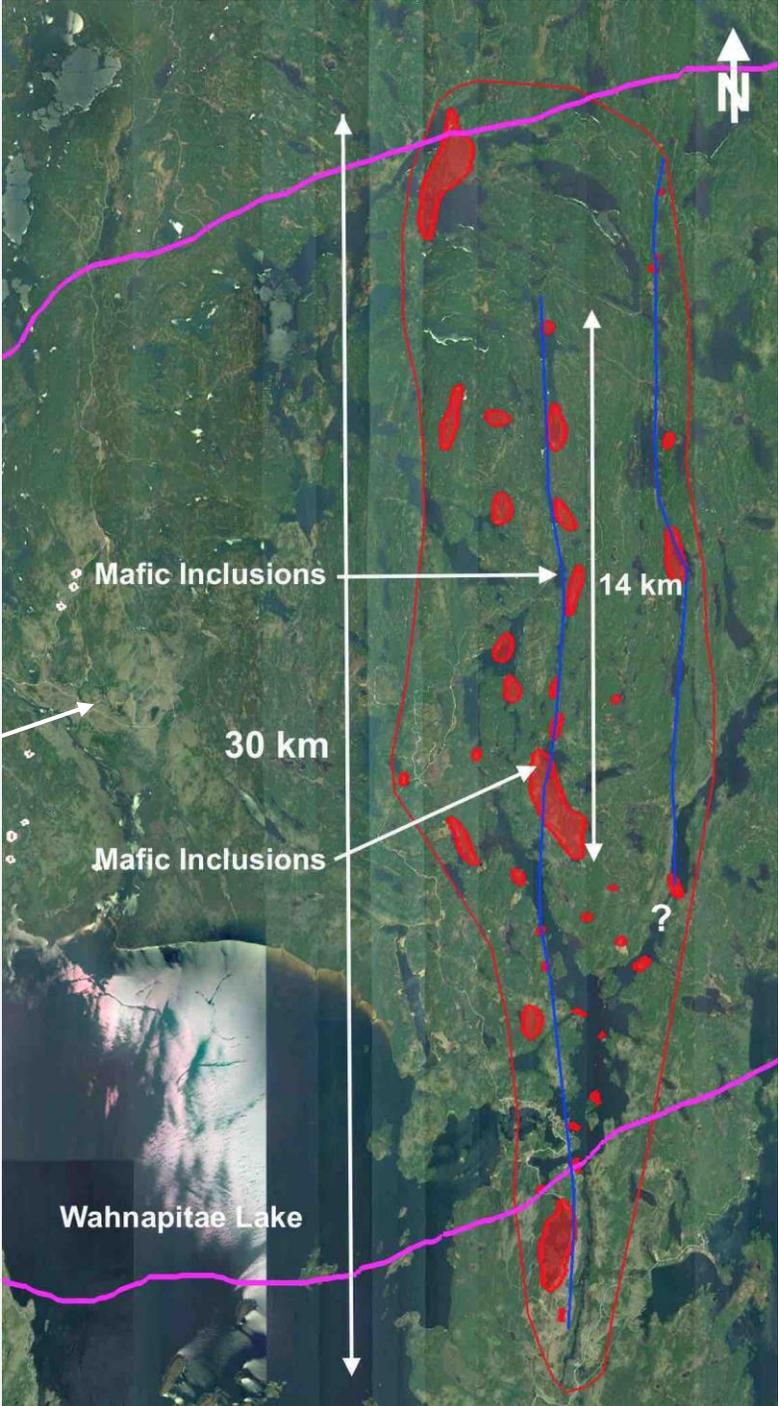
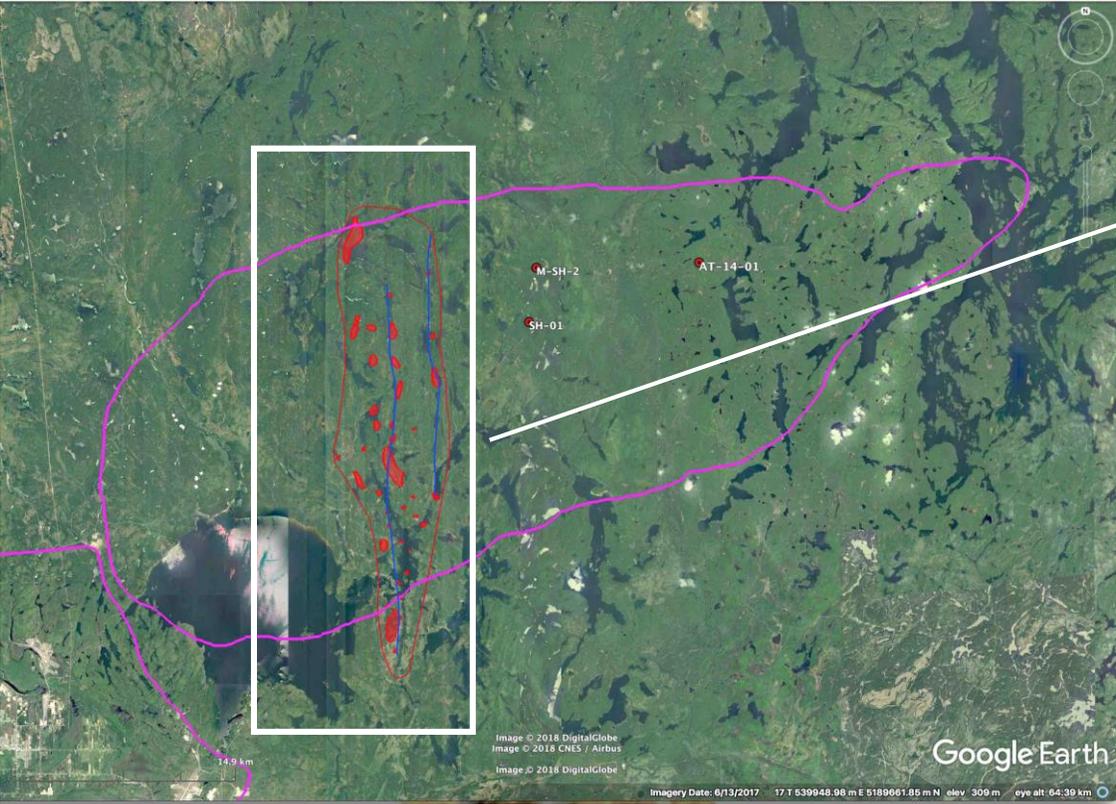
3D Magnetic Map Looking North West



Inventus begins Field Prospecting and Mapping
looking for evidence of a mafic intrusive at surface

30 km Sudbury Breccia Belt Identified

- Flow banded breccia matrix
- Rounded breccia clasts, up to 20 metres in diameter
- Breccia continuous for over 14 km, and could be over 30 km
- Varies from 10's to 100's of metres wide
- This breccia type is unique to the SIC



Field Evidence at Island Lake

Sudbury breccia with mafic inclusions



Flow banded matrix



Field Evidence at Laundry Lake

Magnetic mafic inclusion within Sudbury Breccia



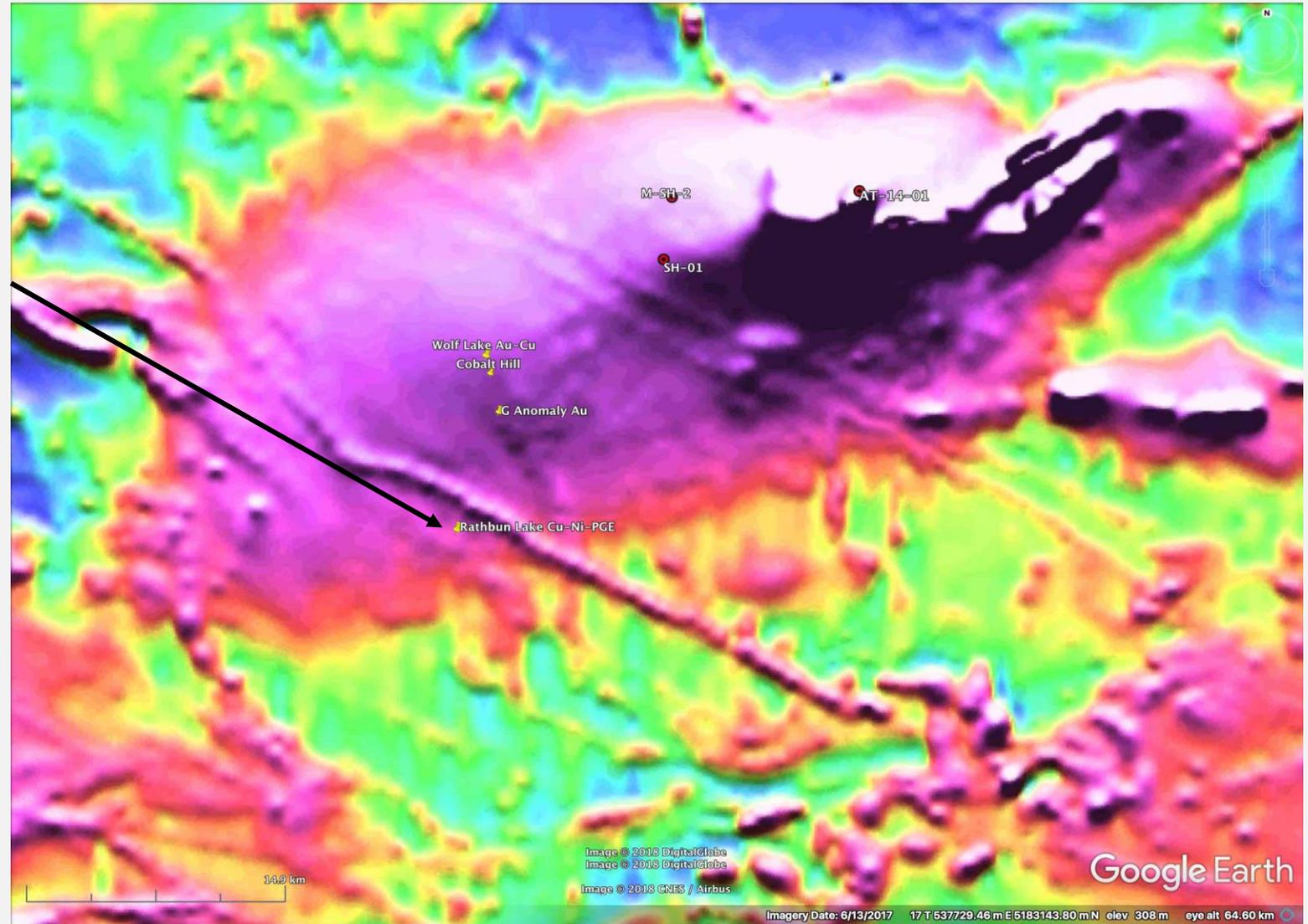
Magnetic mafic inclusion with intrusive contact with albitized Huronian on one side and in contact with Sudbury Breccia on the other



← Same mafic rock confirmed by petrographic and geochemical analysis →

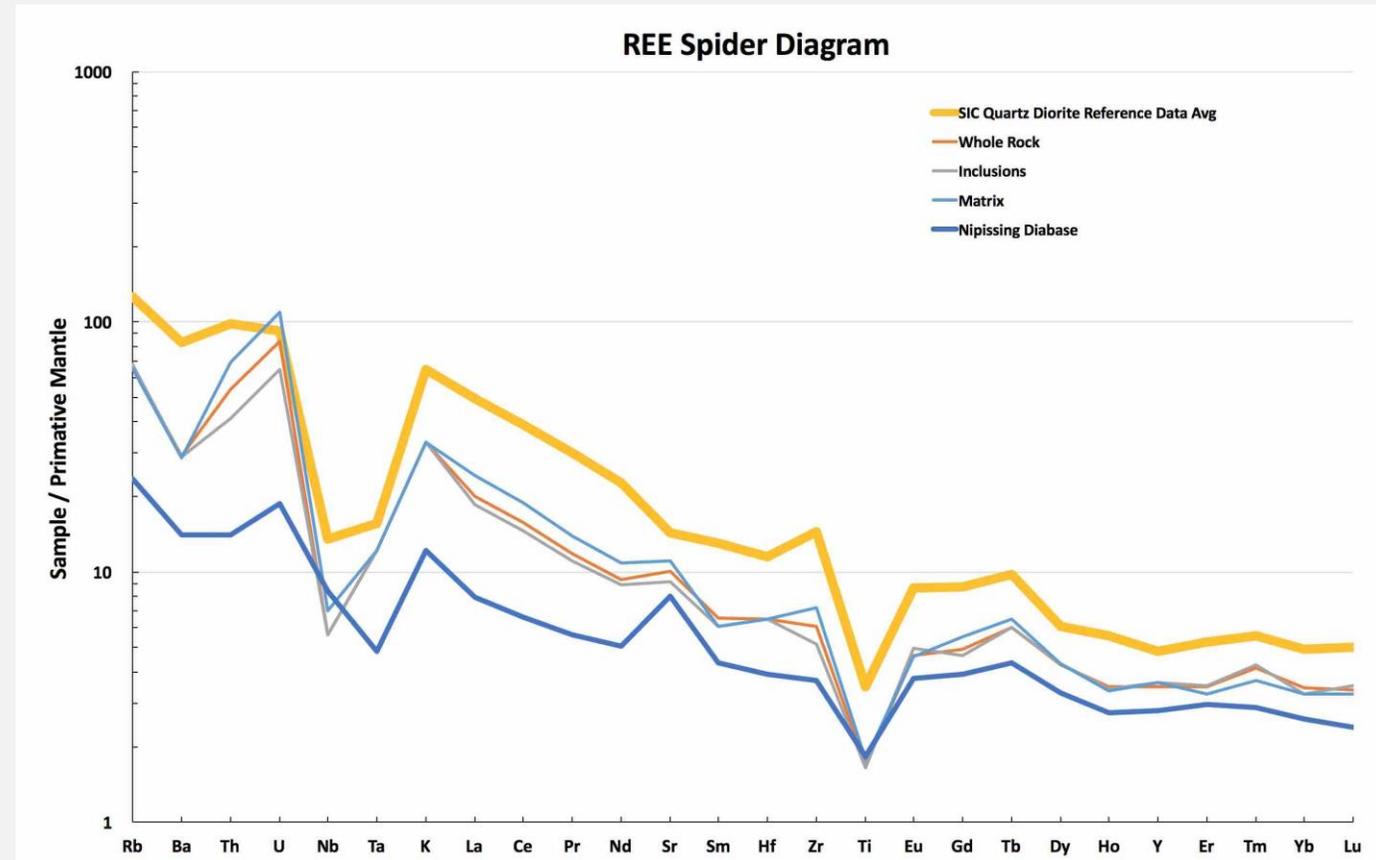
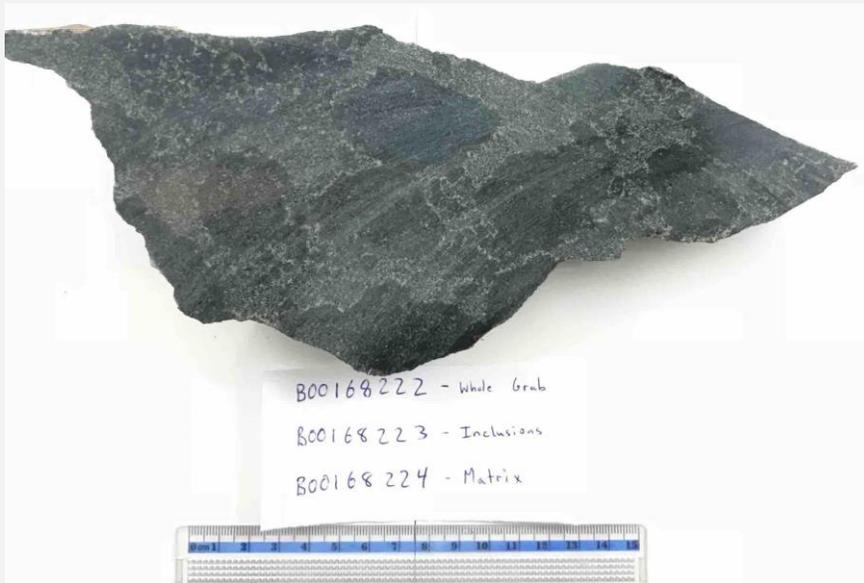
Rathbun Lake Ni-Cu-PGE Mineralization

- The Rathbun Lake showing is a high grade Platinum-Palladium showing on the east side of Wahapitae Lake.
- A small shaft was sunk some time in the late 1800's shortly after the discovery of the SIC.
- The Rathbun Lake showing was determined to be a hydrothermal deposit occurring at the contact between Gowganda Fm. sediments and the Nipissing Diabase



Rathbun Lake Ni-Cu-PGE Mineralization

- Re-visiting the area this summer resulted in the discovery of an inclusion bearing melt
- Sampling of the inclusions separately from the matrix demonstrated a separation between the REE trends
- Suggests that the clasts could be Nipissing Diabase and the matrix SIC quartz diorite melt
- Additional work on this area is in progress



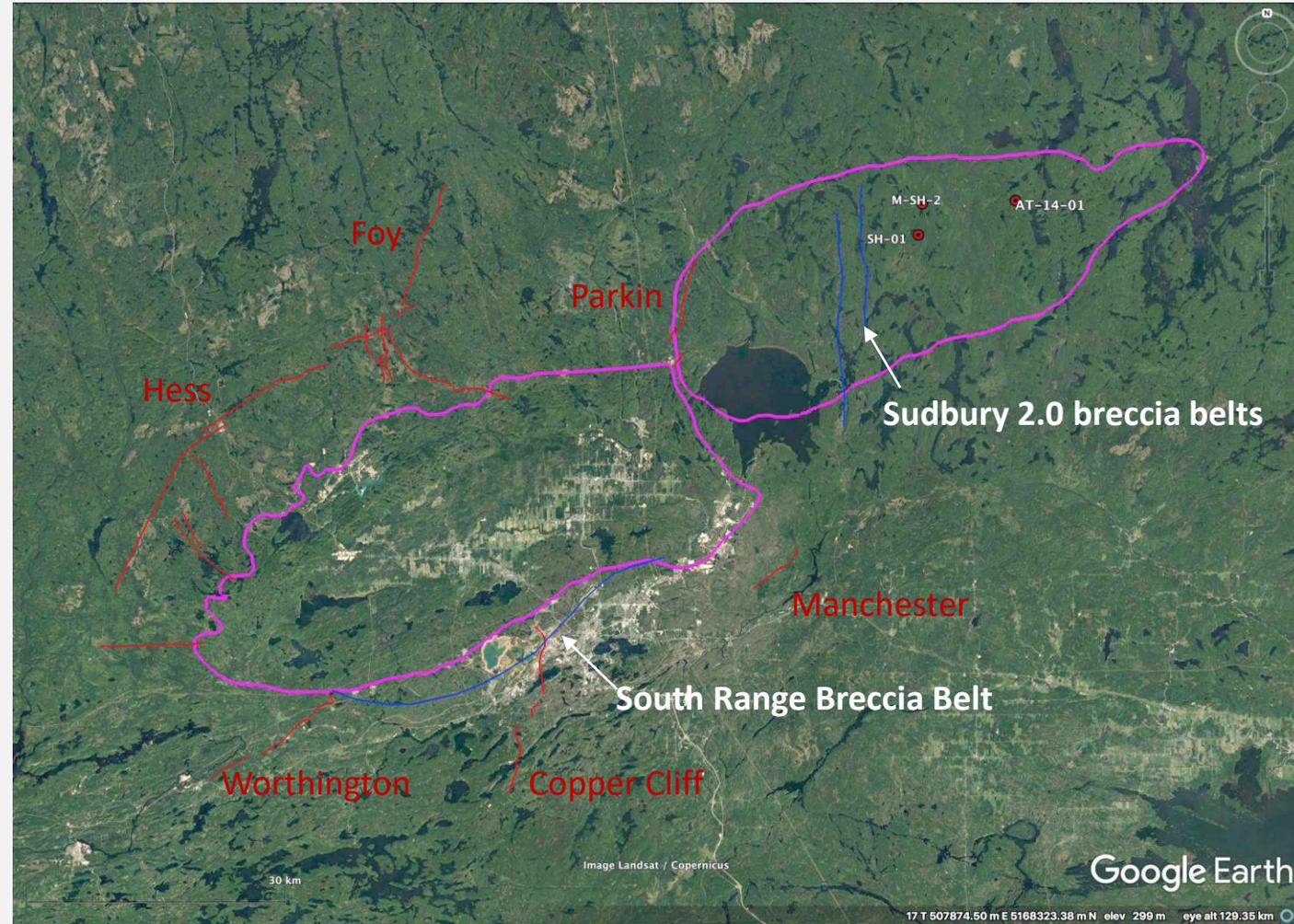
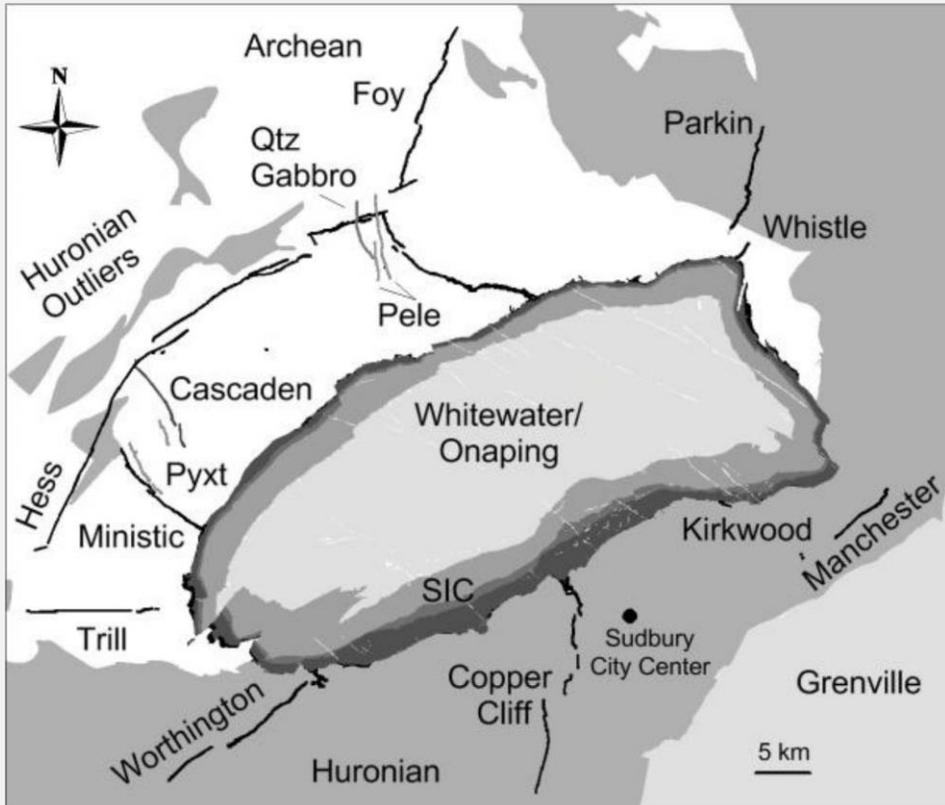
Evidence of a Mafic Intrusive at Surface

1. Mafic inclusions with unknown origin at surface in Sudbury Breccia
2. Hydrothermal sulphide veins that contain fuchsite, Immobile nickel and anomalous PGE's could be evidence for a mineralized mafic intrusive at depth
3. Rathbun Lake Ni-Cu-PGE showing could be related to an intrusion at depth or the SIC

Significance of this new Sudbury Breccia Belt and Mafic Inclusions

- The origin of these mafic inclusions is unknown
 - They must post date the Huronian Sediments - 2.45 to 2.2 Ga
 - They are not Nippissing Diabase - 2.2 Ga
 - They are not Sudbury Olivine Diabase Dykes - 1.24 Ga
 - Must pre date or be contemporaneous of the SIC - 1.85 Ga
- The South Range Breccia Belt, 45 km in length, is the only traceable breccia belt around the SIC and it hosts the Frood-Stobie deposit
- The South Range Breccia Belt contains mafic inclusions termed the “Frood Intrusion” which also has an unknown origin
- The Frood-Stobie has produced **375 million tonnes of ore** valued at well over **60 billion dollars** using current commodity prices

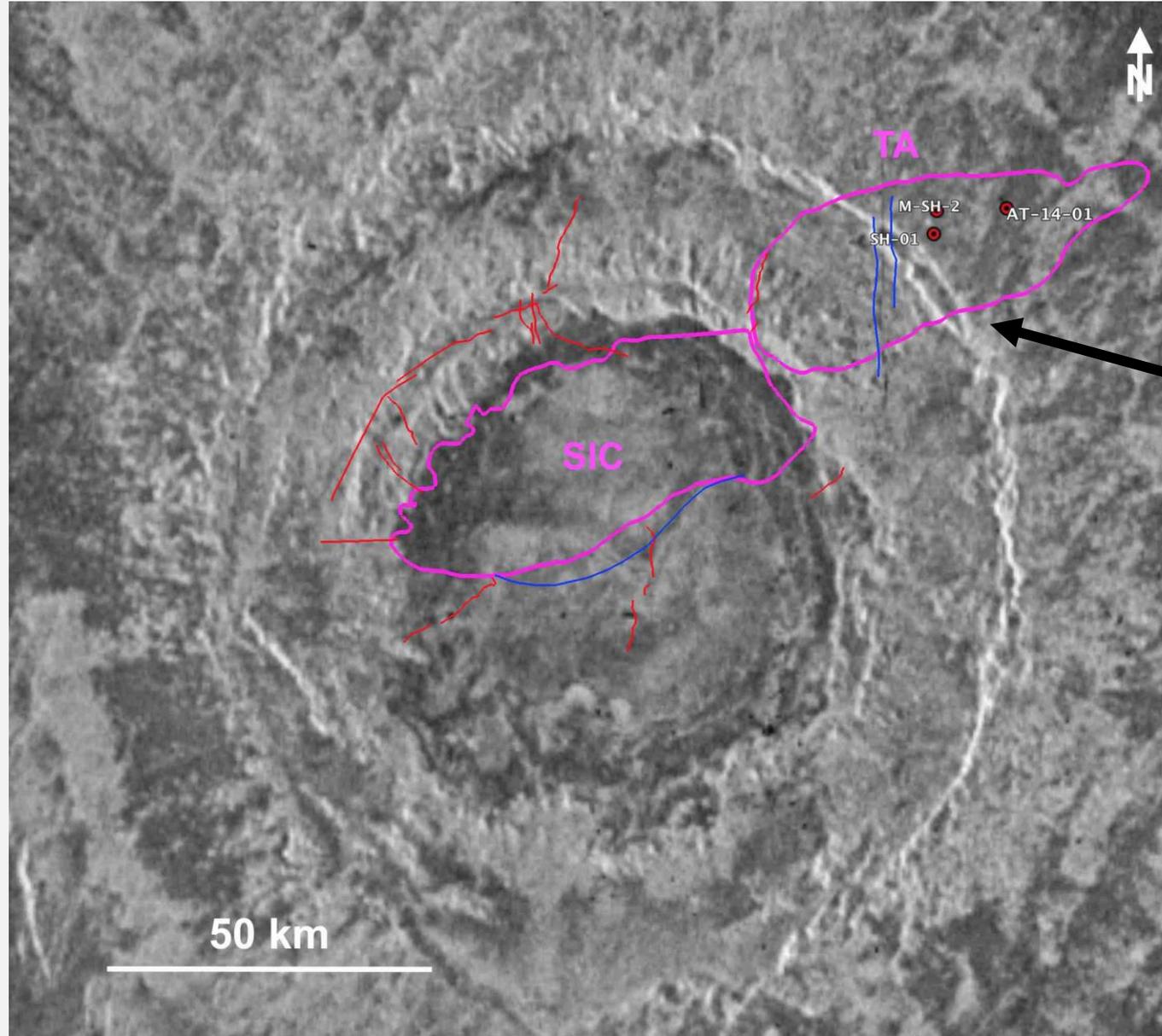
Offset Dykes and Breccia Belts around the SIC



Smith DA, Bailey JM, Pattison EF (2013) Discovery of new offset dykes and insights into the Sudbury Impact Structure. Large Meteorite Impacts, Planetary Evolution, Sudbury, Canada, Abstract 3090.

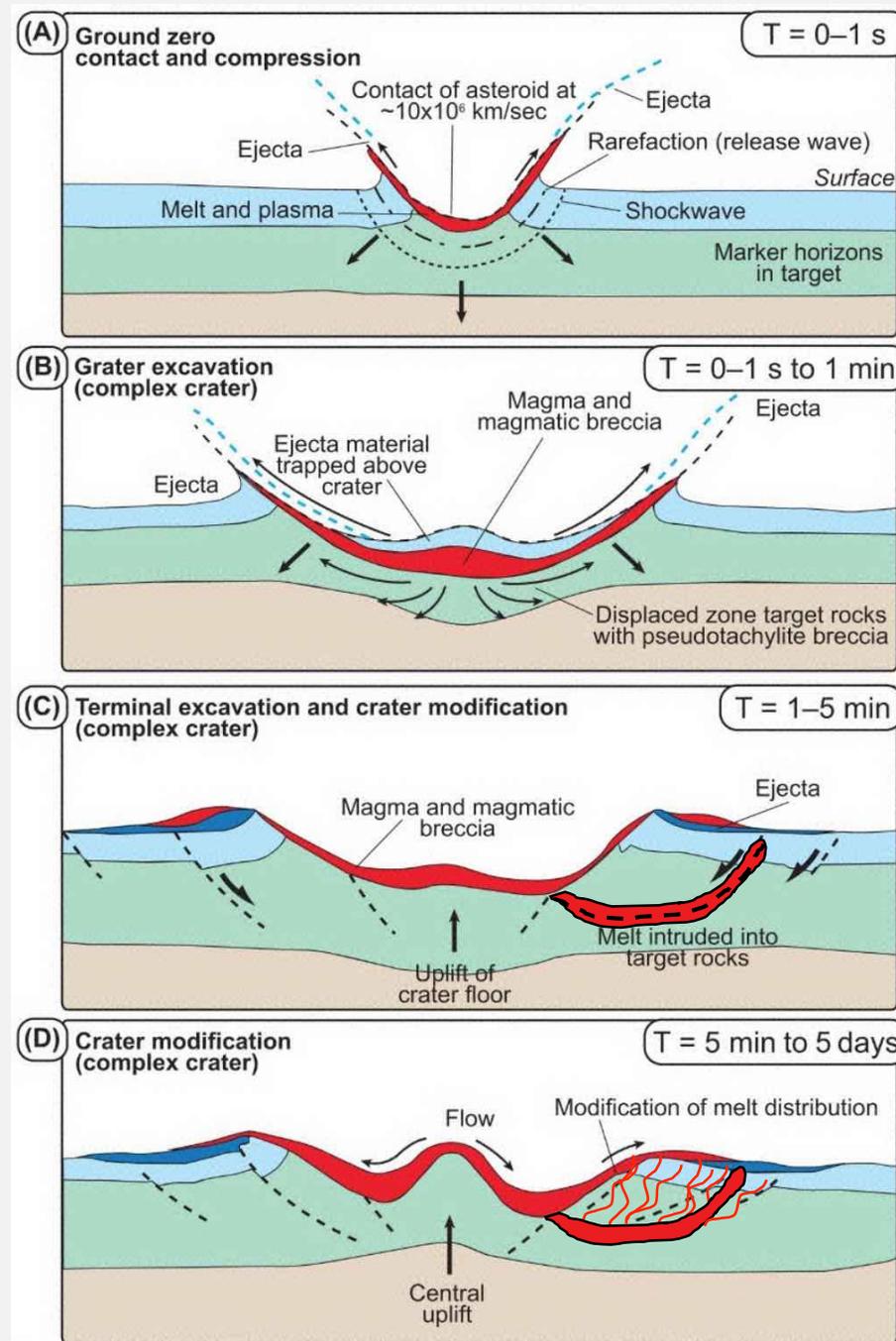
Impact with magnetic outlines of the SIC and Temagami Anomaly

Impact crater from Venus, proposed as similar impact size for the SIC Lightfoot, 2017. Modified to show the SIC and TA Magnetic outlines with SIC offset dykes and Sudbury Breccia Belts



Temagami Anomaly essentially sits under the impact crater rim

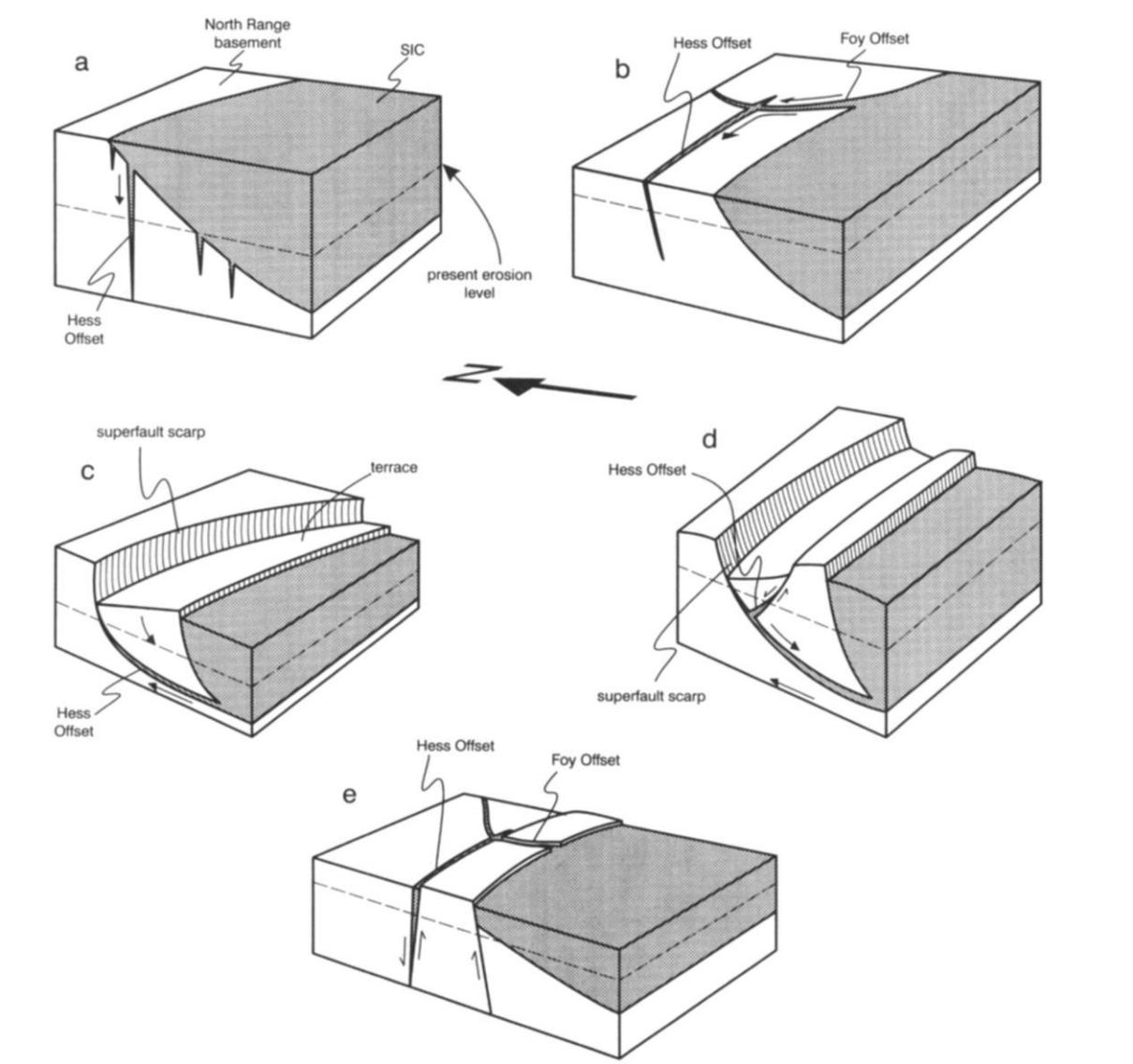
Possible theory for the Temagami Anomaly



1) SIC melt injects into a listric fault

2) Hydrothermal Cu, Au, Co mineralization brecciates the country rock above the intrusion

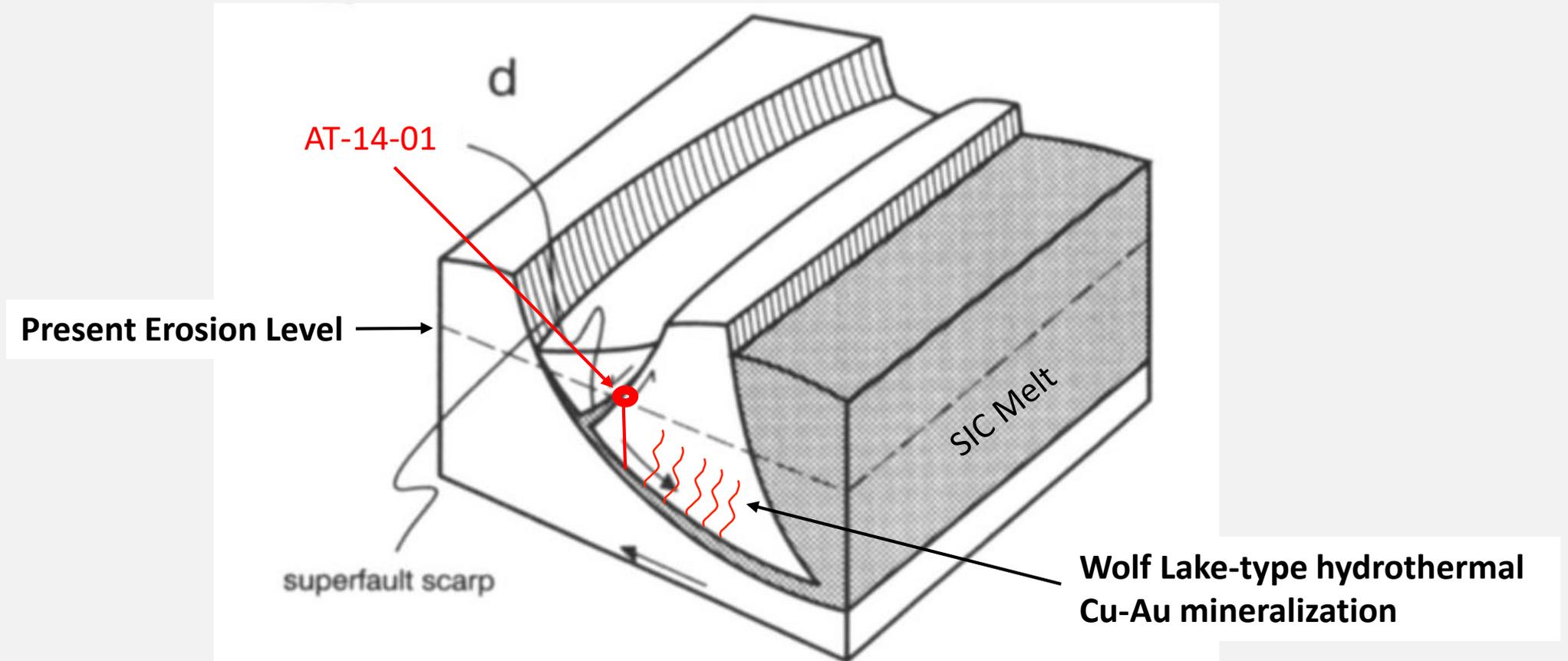
This has essentially been proposed already for the Hess Concentric Offset Dyke



Emplacement Models for the Hess Offset

Woods C.R., Spray J.G. (1998)

Emplacement Model for Quartz Diorite in AT-14-01



Modified from Woods C.R., Spray J.G. (1998)

Sudbury 2.0 Project Steps Completed

1. Stake mineral claims over the Temagami Anomaly – **Complete** ✓
2. Obtain Wallbridge core (SH-01) - **Complete** ✓
3. Obtain Glencore “Falconbridge” core (M-SH-2) – **Complete** ✓
4. Obtain Glencore “Falconbridge” geophysical data– **Complete** ✓
5. First phase of prospecting and geological mapping – **Complete** ✓
6. Trenching of interesting showings – **Complete** ✓

Sudbury 2.0 Exploration Going Forward

Winter 2018-2019

- Analyze and reinterpret the Falconbridge airborne magnetic data – **In Progress**
- Conduct Petrology and geochemistry to confirm an possible SIC origin on:
 - The magnetic mafic inclusions in the Sudbury breccia – **In Progress**
 - The mafic dyke in M-SH-01 – **In Progress**
 - The inclusion bearing melt at Rathbun Lake – **In Progress**
- U-Pb dating on baddeleyite grains from the quartz diorite in drill hole AT-14-01 to prove an SIC origin – **In Progress**

Spring/Summer 2019

- Conduct phase 2 of prospecting and mapping the breccia belt looking for quartz diorite in the breccia
- Diamond drill the Sudbury Breccia with mafic inclusions at Laundry Lake that corresponds with a magnetic peak
- Deepen the Wallbridge drill hole that may yet interest the magnetic mafic intrusion

Additionally, A PhD project has been initiated to study the Sudbury breccia and mafic rocks on the property

Exploration Targets for the Sudbury 2.0 Property

1. Magmatic Cu, Ni, PGE, Au mineralization
 - Breccia hosted Frood-Stobie analog deposit
 - Mafic intrusion related to the SIC
 - Mafic intrusion non-related to the SIC
2. Hydrothermal Cu, Au, Co +/- PGE breccia mineralization from an underlying heat source that may relate to an intrusion (Wolf Lake-Cobalt Hill-type)

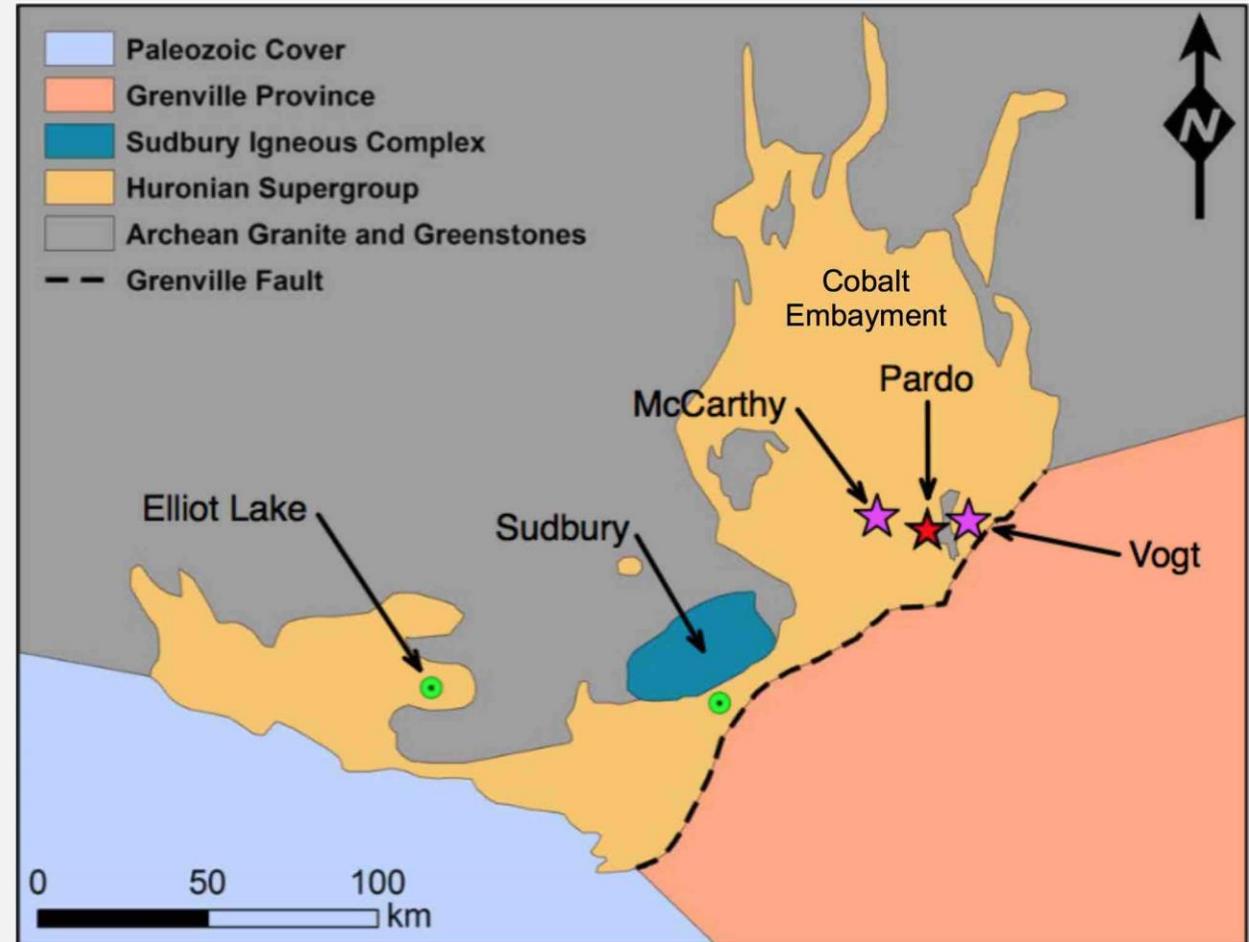
In Summary

- We have abundant evidence for an intrusion
 1. Coinciding magnetic and gravity anomalies
 2. Seismic reflectors illustrating a intrusion
 3. Physical evidence of a magnetic quartz diorite in AT-14-01 at 2.1 km
 4. Physical evidence of a mafic intrusive in M-SH-02 at 1.3 km
 5. Abundant hydrothermal Cu-Au-Co breccia mineralization with fuchsite and anomalous Ni-PGE mineralization that occurs near the Sudbury breccia belt
- We have discovered a new Sudbury Breccia belt at least 14 km in length, which could be > 30 km
- We have determined the Sudbury breccia has exotic mafic inclusions similar to the South Range Breccia Belt around the Frood-Stobie deposit, which may prove to be the source of the Temagami Anomaly

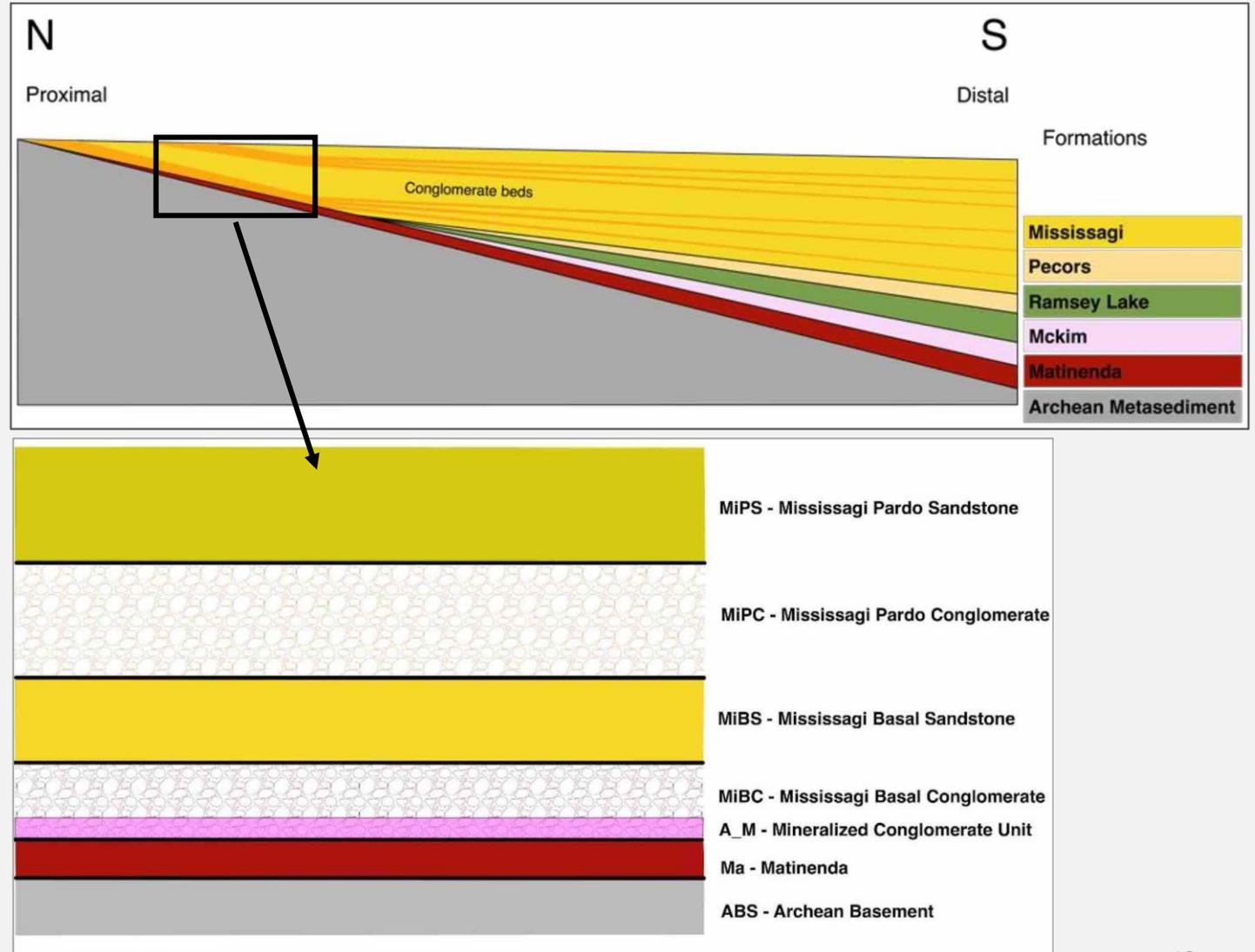
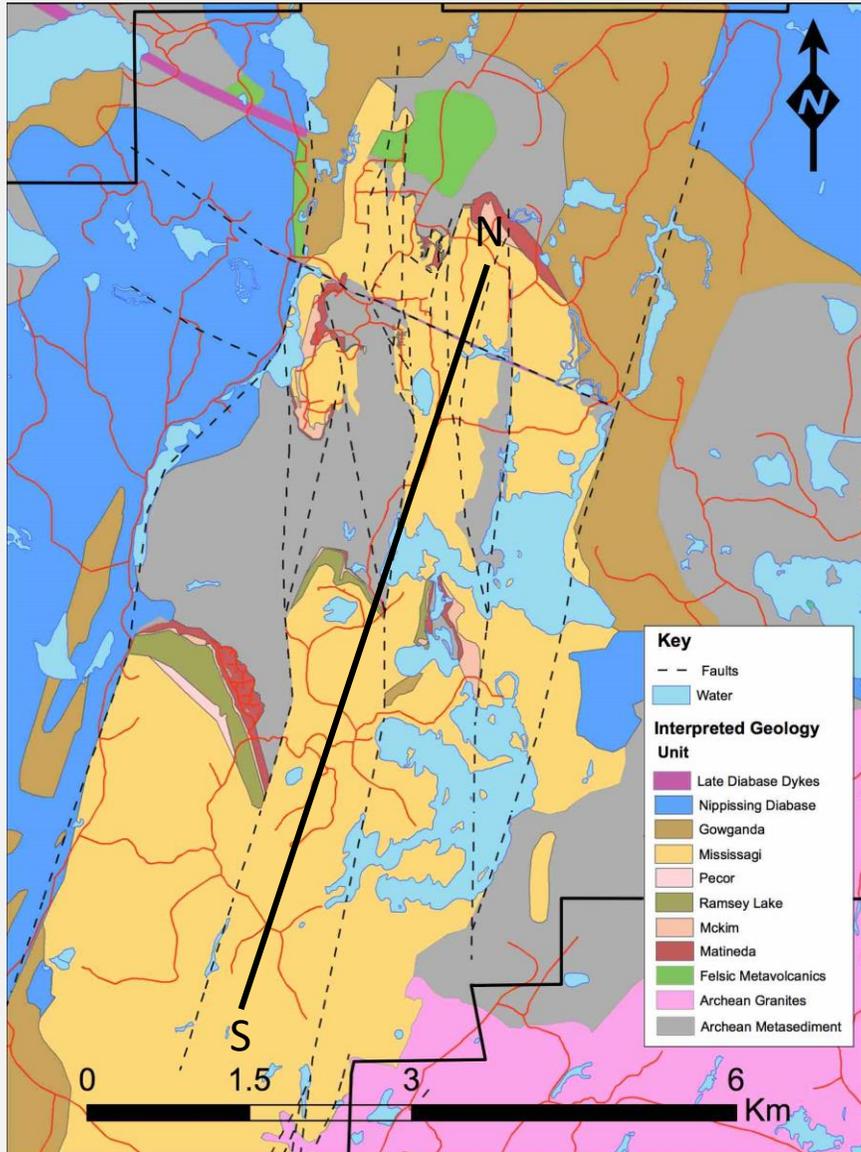
The Pardo Paleoplacer Gold Project

Pardo Project Geology – Huronian Supergroup

- The Pardo project is located 65 km northeast of Sudbury, Ontario
- The target rocks are part of the Huronian Supergroup a 2.45 to 2.2 Ga sedimentary basin fill
- The gold mineralization occurs in flat lying conglomerate reef of the Mississagi and Matinenda formations



Pardo Property Geology



Mineralized Pardo Conglomerate

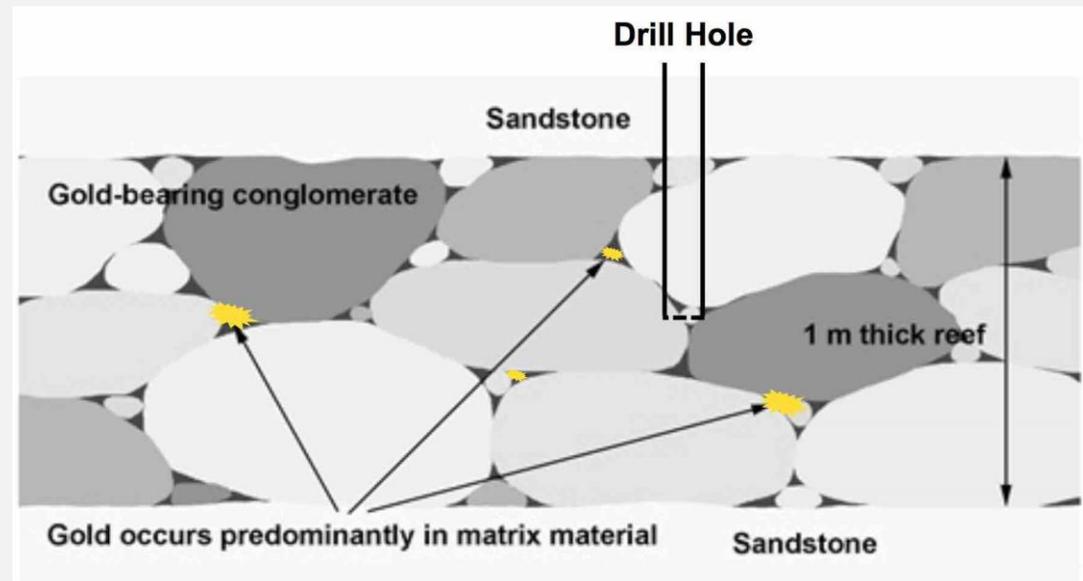


Pardo Project Overview

- The Pardo Project is North America's first paleoplacer gold deposit
- It was discovered in 2006 and acquired by Inventus, formerly Ginguro Exploration, picked up the property in 2009
- Since then Inventus has conducted geological mapping, trenching, channel sampling and a series of diamond drilling programs
- Inventus identified a gold distribution “nugget effect” problem.
- Drilling can determine extent and thickness but is only an indication of the grade

Gold occurs unevenly in the matrix as clusters of fine gold grains

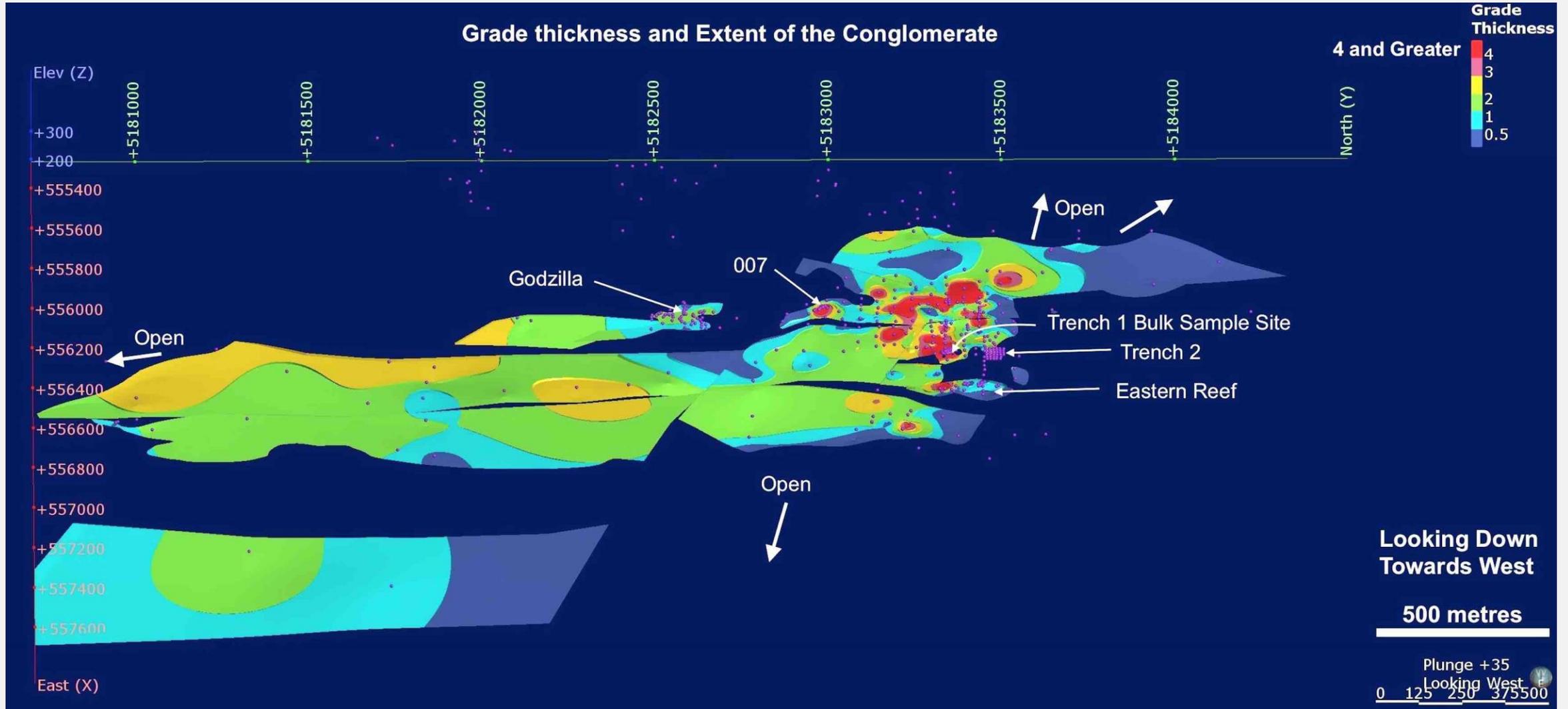
Only 10 – 30% of the conglomerate is matrix, while 70 – 90% is barren cobble and boulders



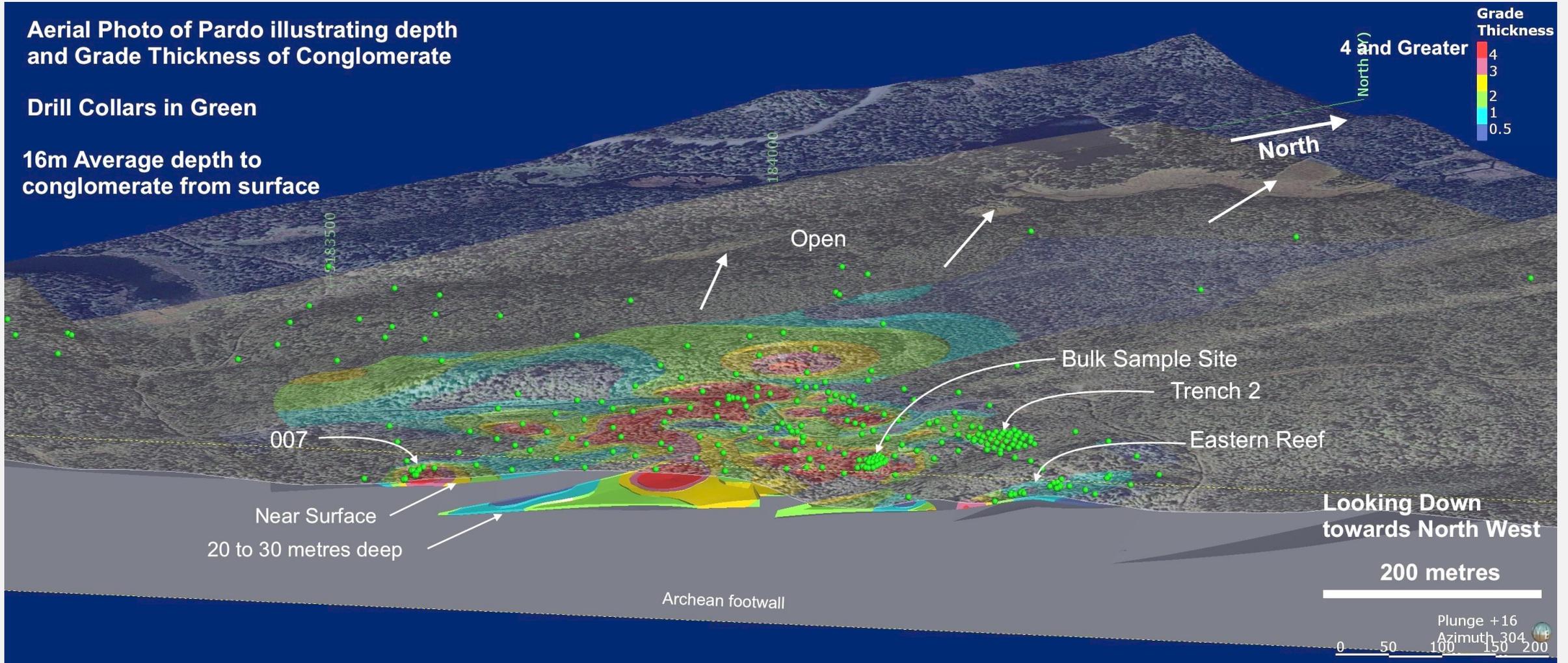
Pardo Project Recent Objectives

1. Determine continuity of the auriferous conglomerate
 - Re-logging of drill holes 2015 to 2016
 - Geological modelling 2017
 - Developing an Exploration Target Range 2017 - 2018
2. Determine the variability of the gold grade between drilling and bulk sampling
 - Close spaced drilling followed with bulk sampling
 - The trench 1 bulk sample was completed in 2017
 - Move the project to an advanced exploration stage for bulk sampling

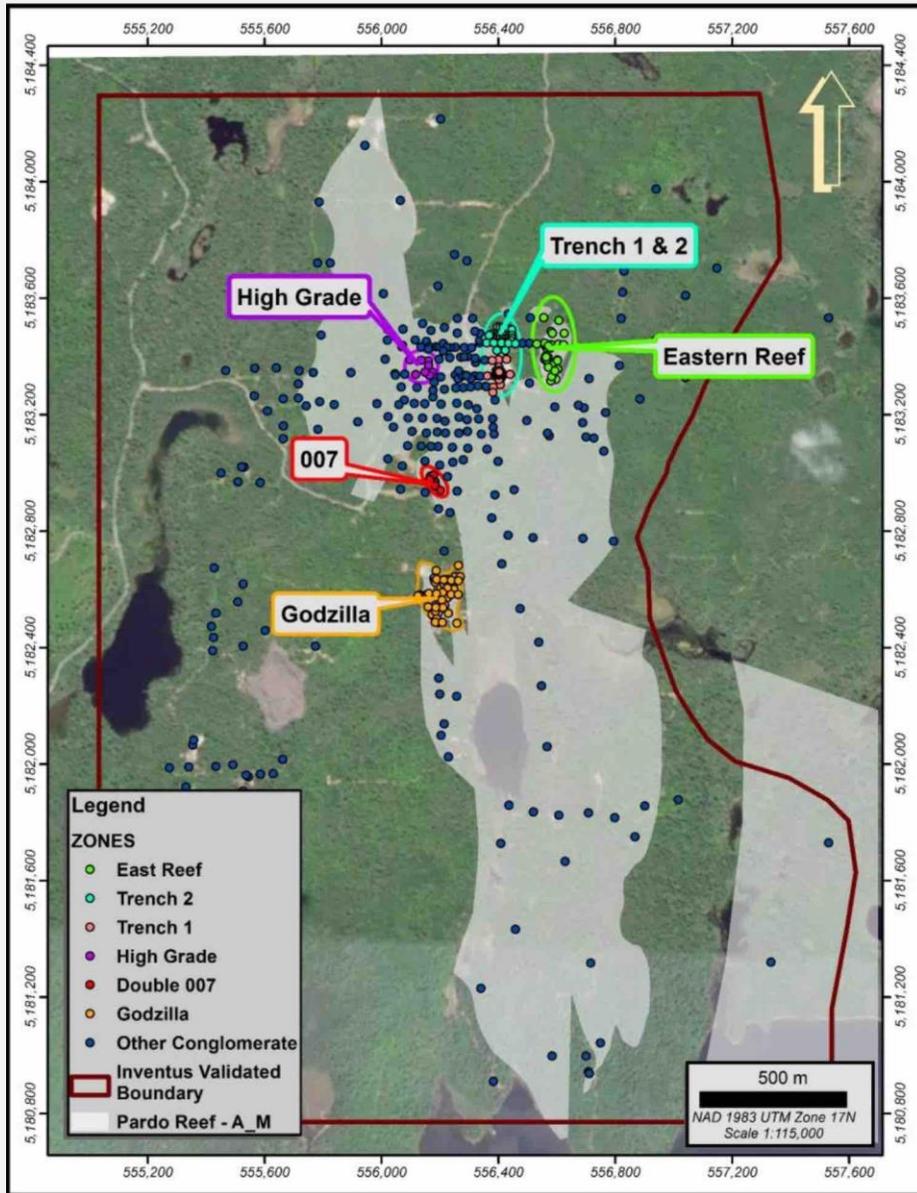
Continuity of the Auriferous Conglomerate – Modelling the Reef



Continuity of Auriferous Conglomerate – Modeling the Reef



Continuity of Auriferous Conglomerate - Exploration Target Range



In the summer for 2018 Inventus updated their 43-101 technical report on the property and included an exploration target range

Parameter	P10	P50	P90
Tonnage (t)	450,000	8,600,000	12,500,000
Gold Grade (g/t)	4.20	3.50	3.50
Metal Content (oz)	60,000	950,000	1,400,000

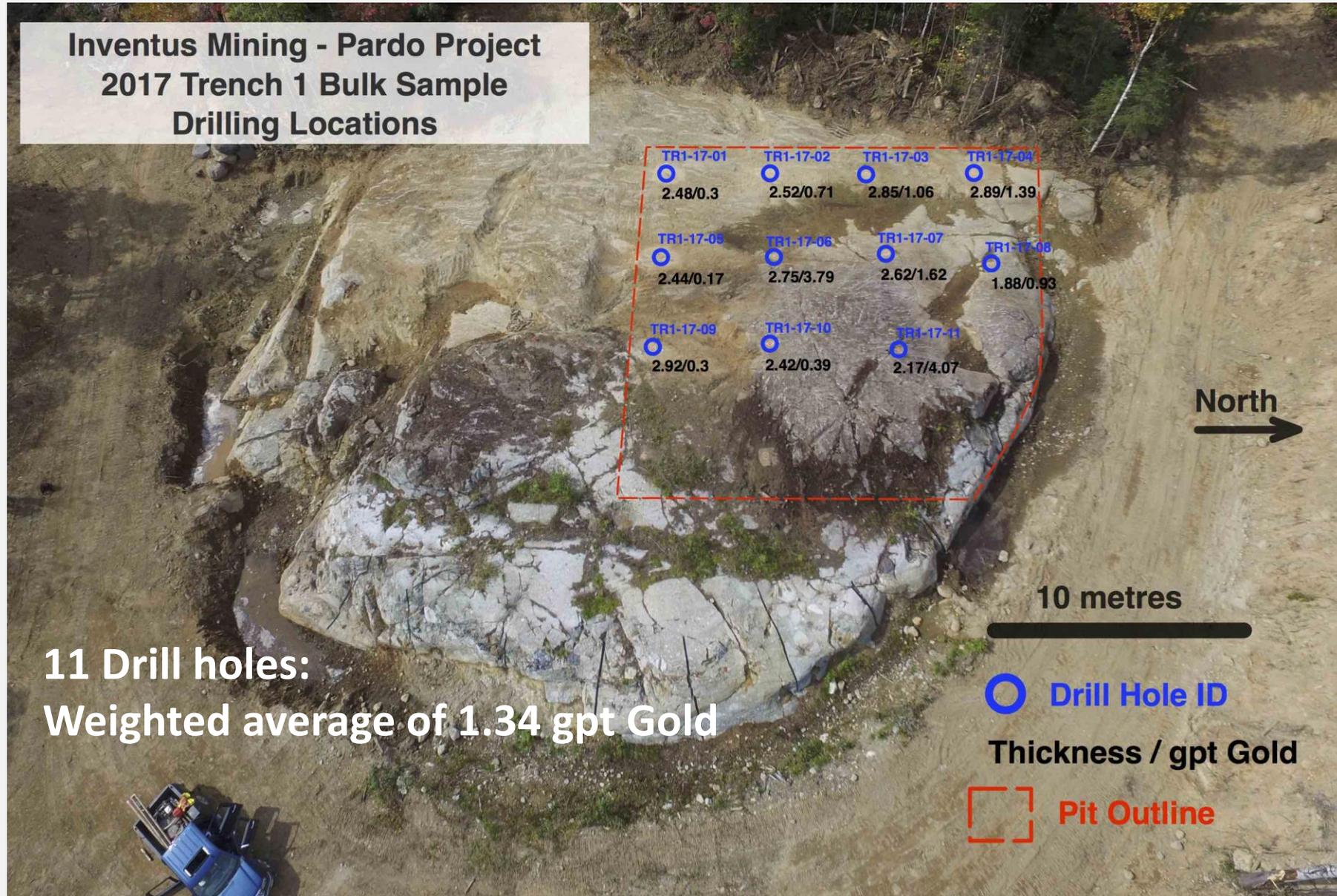
P10 – Pessimistic case where mineralization doesn't extend outside of stripped showings

P50 – Moderate case, mineralization connects between surface zones

P90 – Optimistic case, where mineralization extends to currently drilled boundaries

This is not a resource estimate!

Grade Variability - 1,000 tonne bulk sample



Grade Variability - 1,000 tonne bulk sample



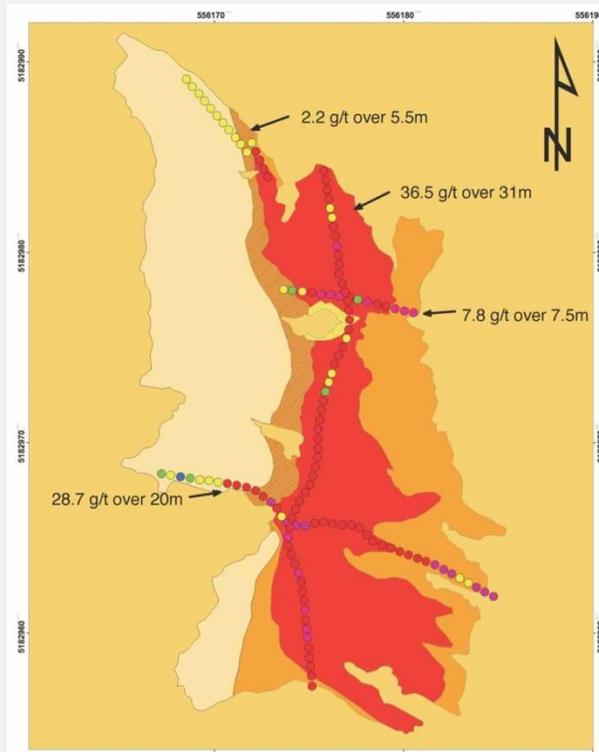
Grade Variability - 1,000 tonne bulk sample

1,000 tonne bulk sample returned 4.2 gpt Gold
>300% grade increase from drilling



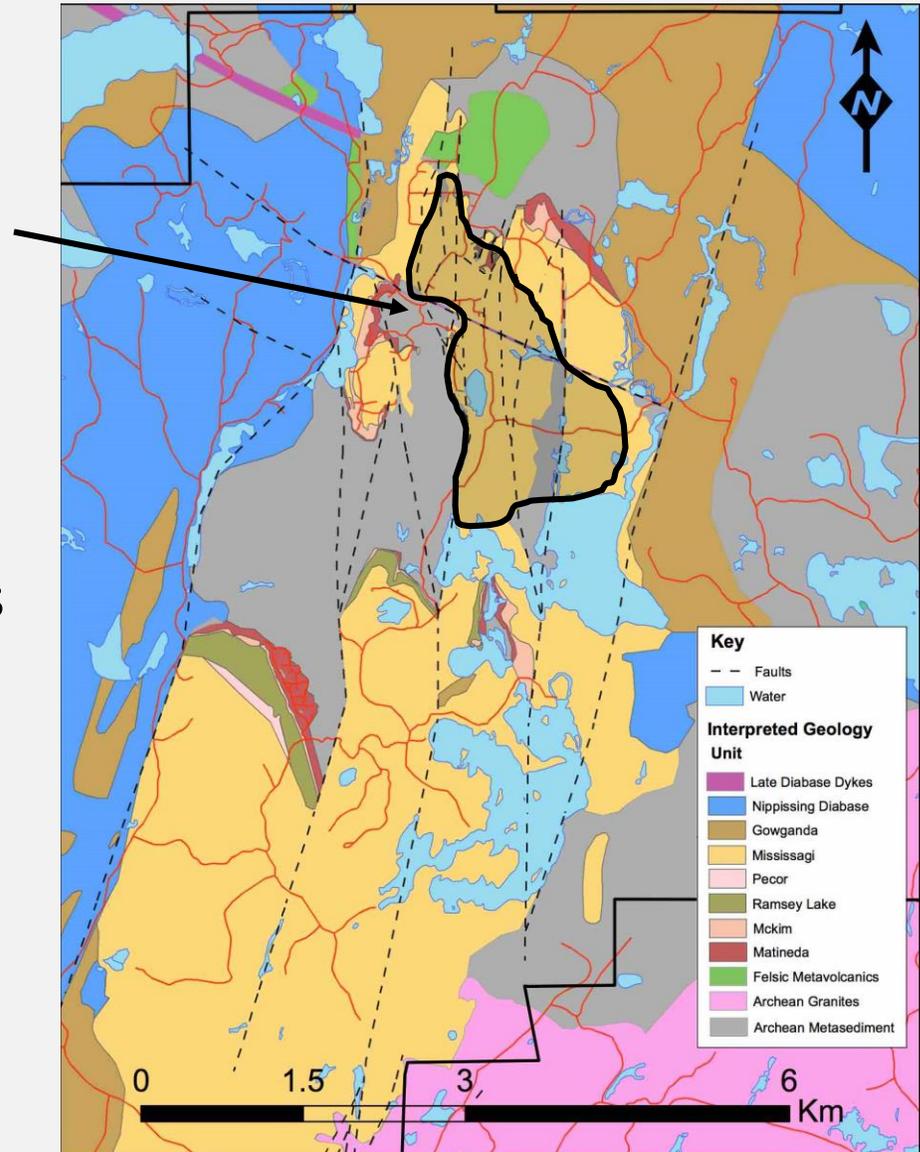
Next Steps - 007 Zone Bulk Sample ~5,000 to 10,000 tonnes

- Inventus' closure plan for a 50,000 tonne bulk sample has been completed
- We are currently drilling the 007 zone at 5 metre centres in preparation for the bulk sample
- Bulk sampling to commence late 2018 or early 2019



Pardo's Blue Sky Potential

- The exploration target range has only examined the area with the most drilling
- Continue to test ore sorting
 - Scoping study indicated 91% of gold in 35% of material
 - Significant potential to upgrade the ore
- Continue to outline the extent and thickness of the mineralized conglomerate reef with large diameter drilling
- Bulk sample for grade



INVENTUS

Thank You

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