Module 1

EXPLORING ROCKS AND MINERALS

What are rocks and minerals?

Minerals

- Inorganic substances
  = not made from
  plants and animals

- Found on the Earth's
  surface and
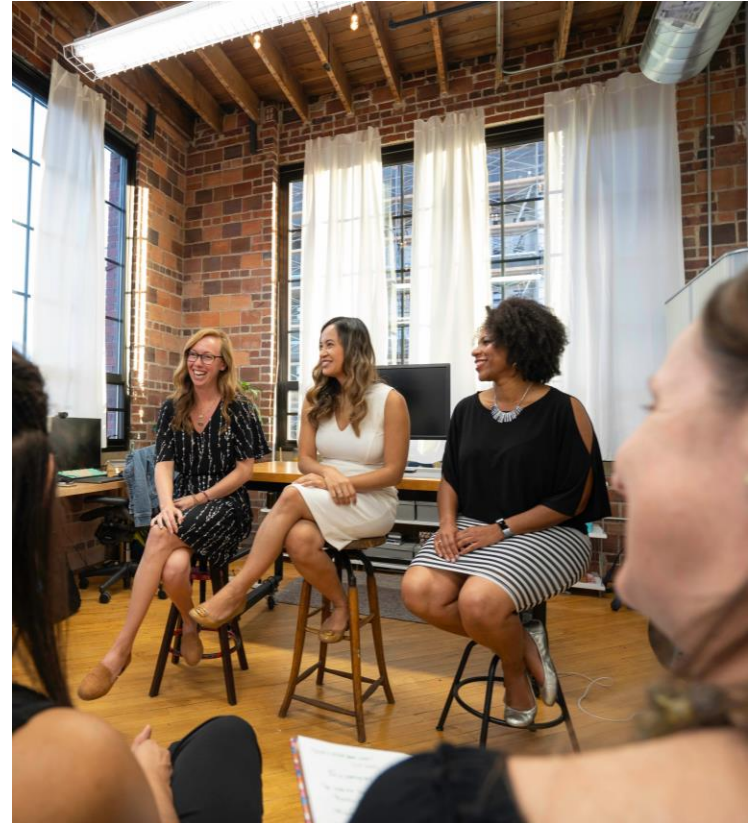 underground

Rocks

- 2 or more types of minerals

How Do We Find Minerals?

EXPLORE!!

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Community Approval

- "Social License to Operate"

- Honest conversation

- Donations/volunteering

- Job creation

- Community events

Indigenous Consultation

- Legal obligation

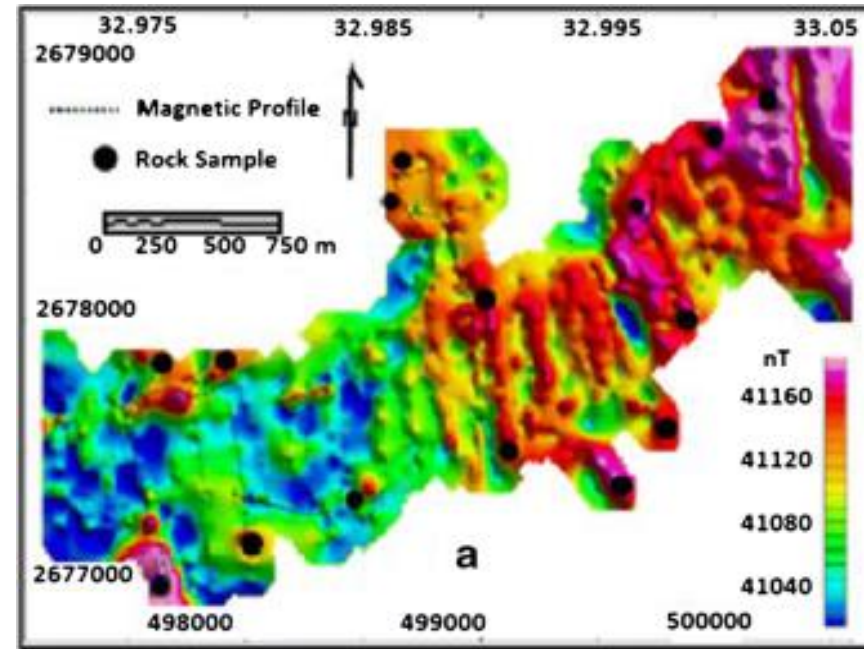- Facilitation of Indigenous participation

Exploration Phase of Mining

- A property is explored using **surveys** by **geologists**

Surveys

- **Geophysical surveys:** Uses technology to see into the ground. This can include ground penetrating radar, magnetic & gravity surveys, seismic, and others.

Surveys

- **Mapping:** Geologists will walk the exploration property looking at exposed rock outcrops. They use both a GPS and manual drawing to map significant features.

Surveys

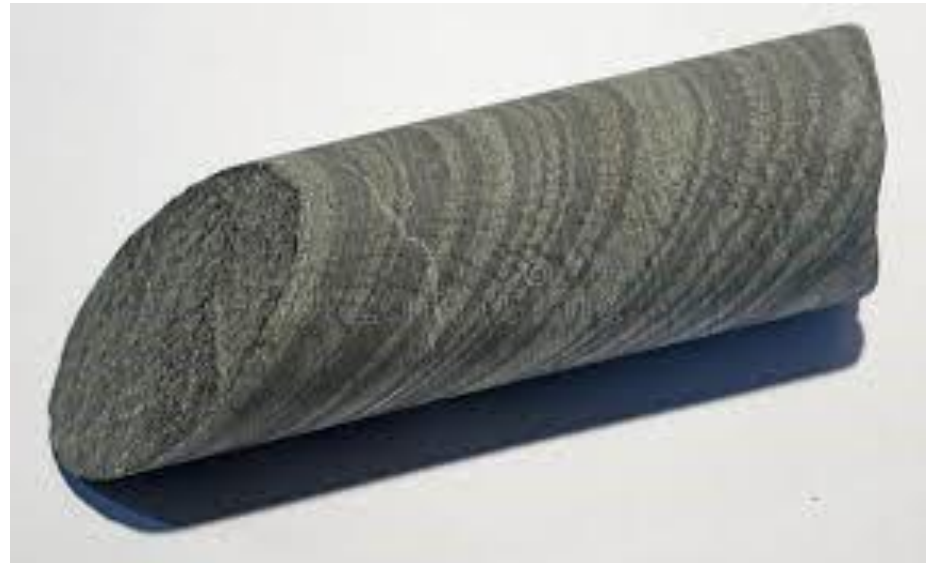- **Sampling:** Rock and soil samples are collected and sent to the lab for assay analysis.

Surveys

- **Assays:** When samples are sent for assay, they go to a lab to be processed. The results returned show the percentages of different elements present in the sample.
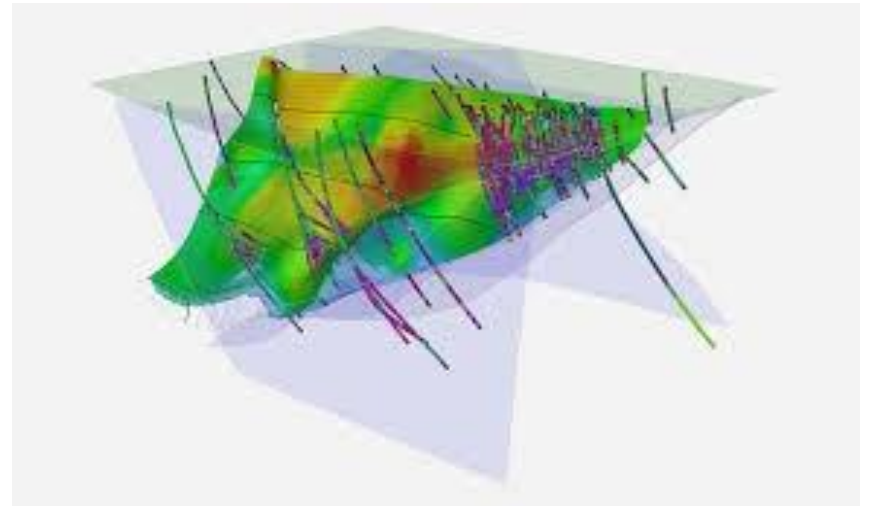
Surveys

- **Drilling:** When areas of interest have been identified using the above methods, exploration drilling will occur. Drills will target these areas and remove core (tubes of rock) from the ground. This core is then logged by geologists. Logging involves defining the attributes of the rock and estimating content of mineable minerals.

Surveys

- **3D Modelling:** Geologists will use the information from the geophysical surveys, surface sampling, assays, and drill core to estimate the size and shape of the deposit (or ore body). Often creating computer 3D visual models of the ore body itself.

Surveys

- **Final Survey Results:** All of the above information is combined to help optimize the mine design. The best design will extract the most ore (mineable material) with the least amount of waste and cost. This helps to determine whether an underground or open pit operation will be best.

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