

# Site Characterization



# Objectives of Characterization

- Characterization: field/laboratory tests that help define the mined environment and the potential impacts
  - Scientific and engineering studies
  - Geologic, chemical, hydrologic, biological characteristics
- Results allow you to describe
  - Nature and extent of potential impacts
  - Mitigation actions that may reduce impacts

# Characterization Overview

- How many samples?
- What is environment like before mining?
- How can we characterize site hydrogeology?
- How can we characterize geochemical conditions?
- What are the sources of uncertainty in characterization?
- What kind of characterization should be done in each phase of mining?

# Sample Quantity, Sample Frequency, Heterogeneity

- Most important phase of predictions is sample selection
- Samples must be representative of all geologic, lithologic, and alteration types
- More homogeneous materials (tailings) require fewer samples than heterogeneous materials (waste rock)
- Suggested samples/tonne
- 1 sample per 20,000 to 1,000,000 tonnes (EPA, 1994)

Mass of Each Separate Rock Type (tonnes)	Minimum Number of Samples
<10,000	3
<100,000	8
<1,000,000	26
10,000,000	80

Price and Errington, 1994