

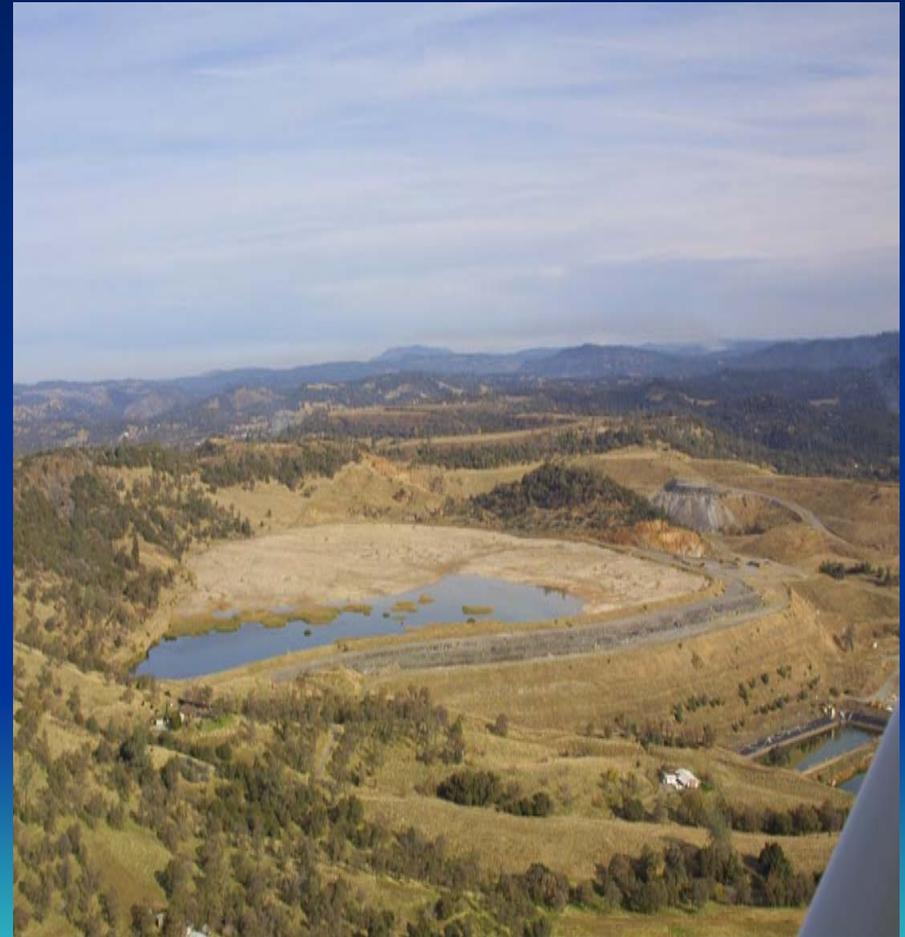
Mine Wastes

- Mill Tailings.
- Heap leached waste.
- Waste rock, Overburden.
- Waste rock and mill tailings common at abandoned mines.



Mill tailings

- Ore ground in a mill to sand size and finer.
- Characterized chemically and mineralogically.
- Often contain processing reagents.
- Discharged to impoundments, lakes, the ocean.



Heap leach waste

- Ore ranges from 13mm to >30cm.
- Often augmented with cement.
- Not as well characterized as mill tailings.
- Leached with cyanide on liners.
- Closed in-place.



Waste rock (see overburden)

- Particle size ranges greatly.
- Most voluminous waste but poorly characterized.
- Dumped as close to the mine as possible without (the company hopes) and need for containment.



Overburden

- May be “soil” that is stockpiled for reclamation.
- May be “non mineralized overburden” that is used for constructing impoundment berms, road beds, etc.
- May be “mineralized overburden” which is really identical to “mineralized waste rock”.
- Poorly characterized.



Dredge spoils

- Organic-rich, often described as “peaty”, iron sulfide rich sediment.
- Fine grained.
- Should be characterized before disturbed.



Pre mining sample sources

- Surface grab and trench samples.
- Exploration drilling samples (chips and core).
- Metallurgical testing samples (e.g., pre- and post-processing samples for milling).



Mining sample sources

- Ore control sampling during mining.
- Head and tail samples during milling.



Summary

- Testing programs result in lots of samples.
- Predictions based on early testing may change if new wastes are identified as mining proceeds.
- Predictions based on early testing may change if mineral recovery process change during mining.



Discussion

