



Overview of Water Use in Copper Mining and Processing

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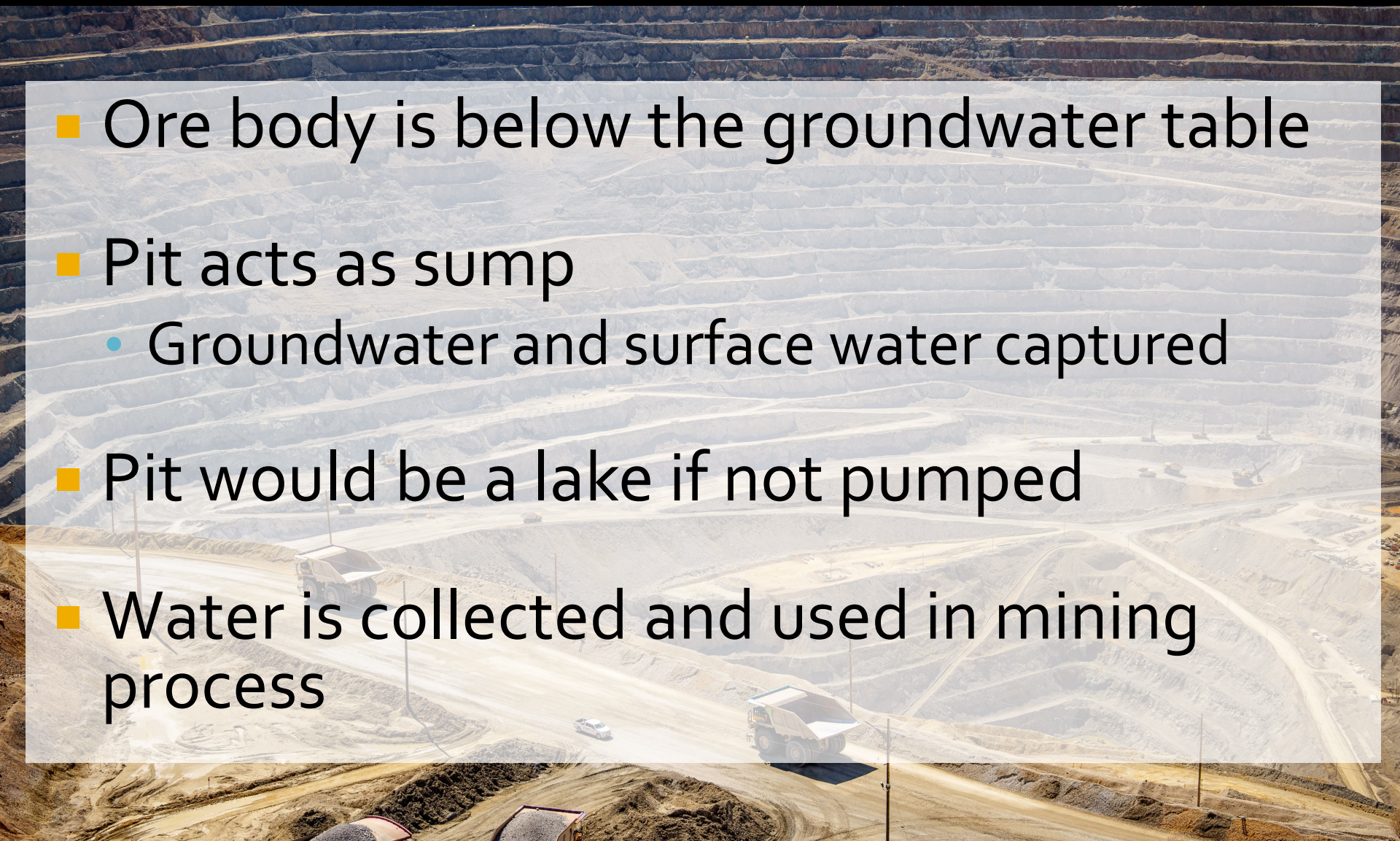
Water Uses in Open Pit Mining

- Pit dewatering
- Operations
 - Dust suppression
- Ore Processing
 - Flotation
 - Leaching

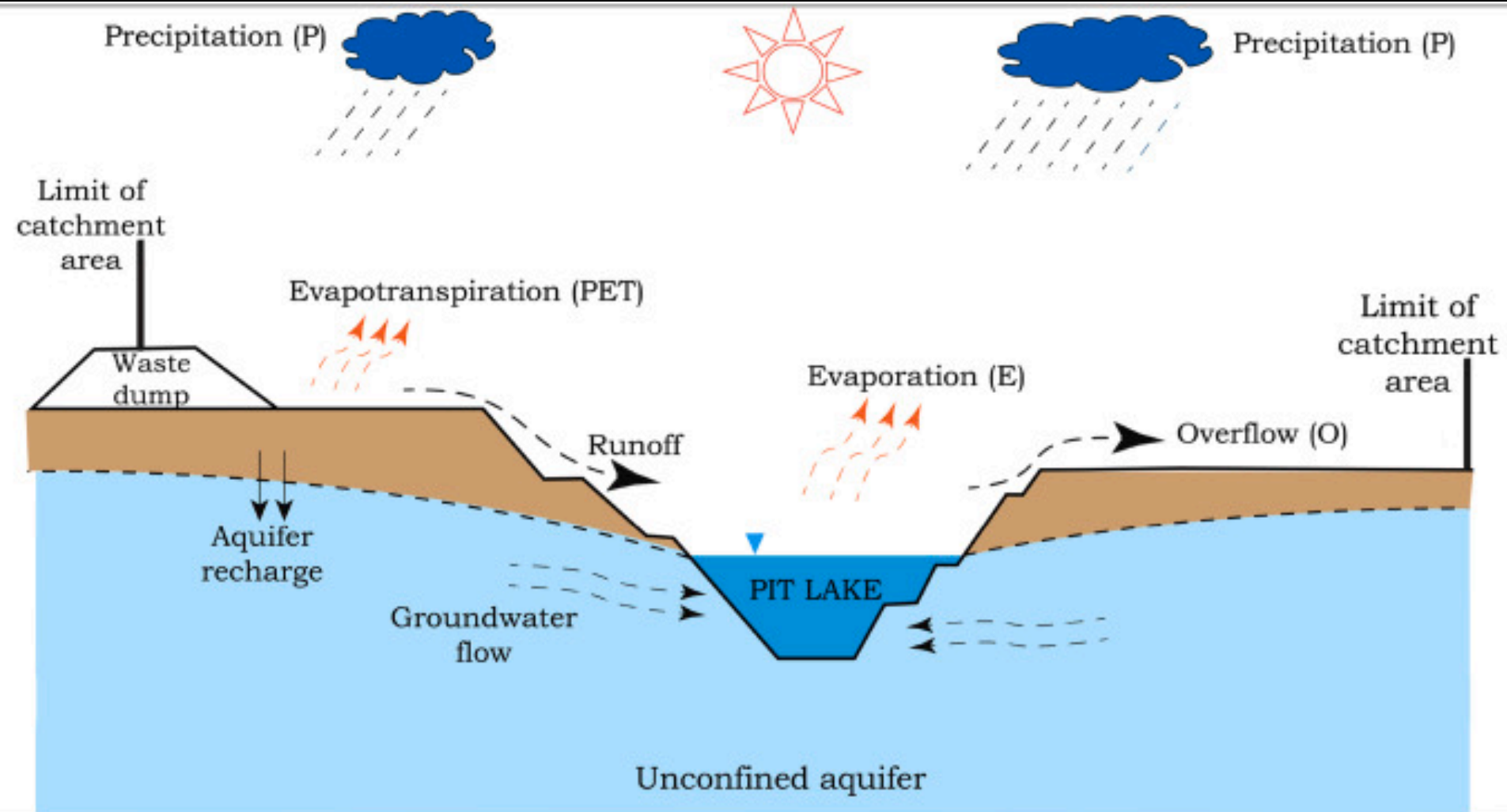


Pit Dewatering

- Ore body is below the groundwater table
- Pit acts as sump
 - Groundwater and surface water captured
- Pit would be a lake if not pumped
- Water is collected and used in mining process



Pit Dewatering



Mining Copper Minerals

- Ore contains less than 1% copper
- Copper sulfides
 - Processed by **FLOTATION**
- Copper oxides
 - Processed by **LEACHING**

Mining Copper Minerals

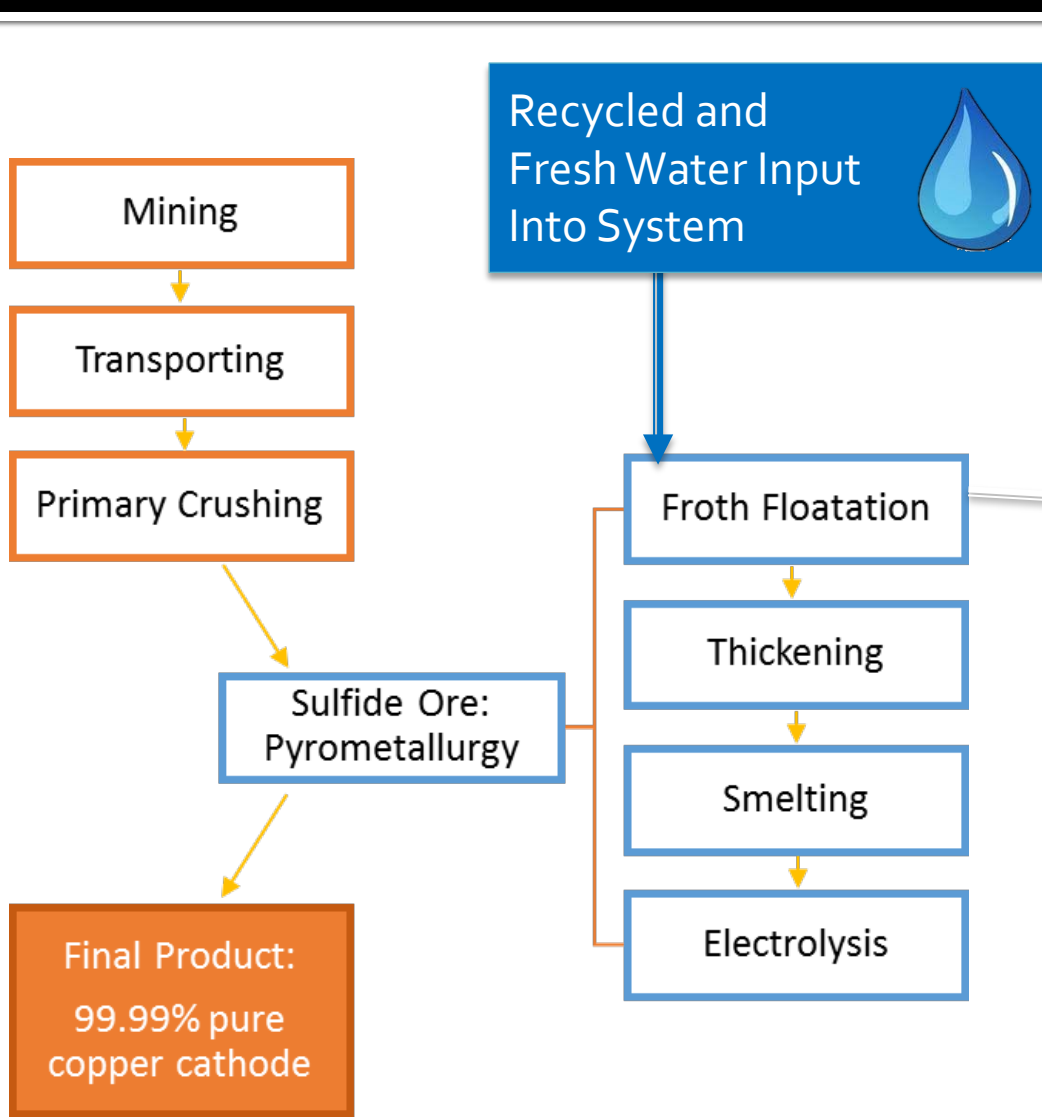


Chalcopyrite – Copper Sulfide
Processed by **FLOTATION**

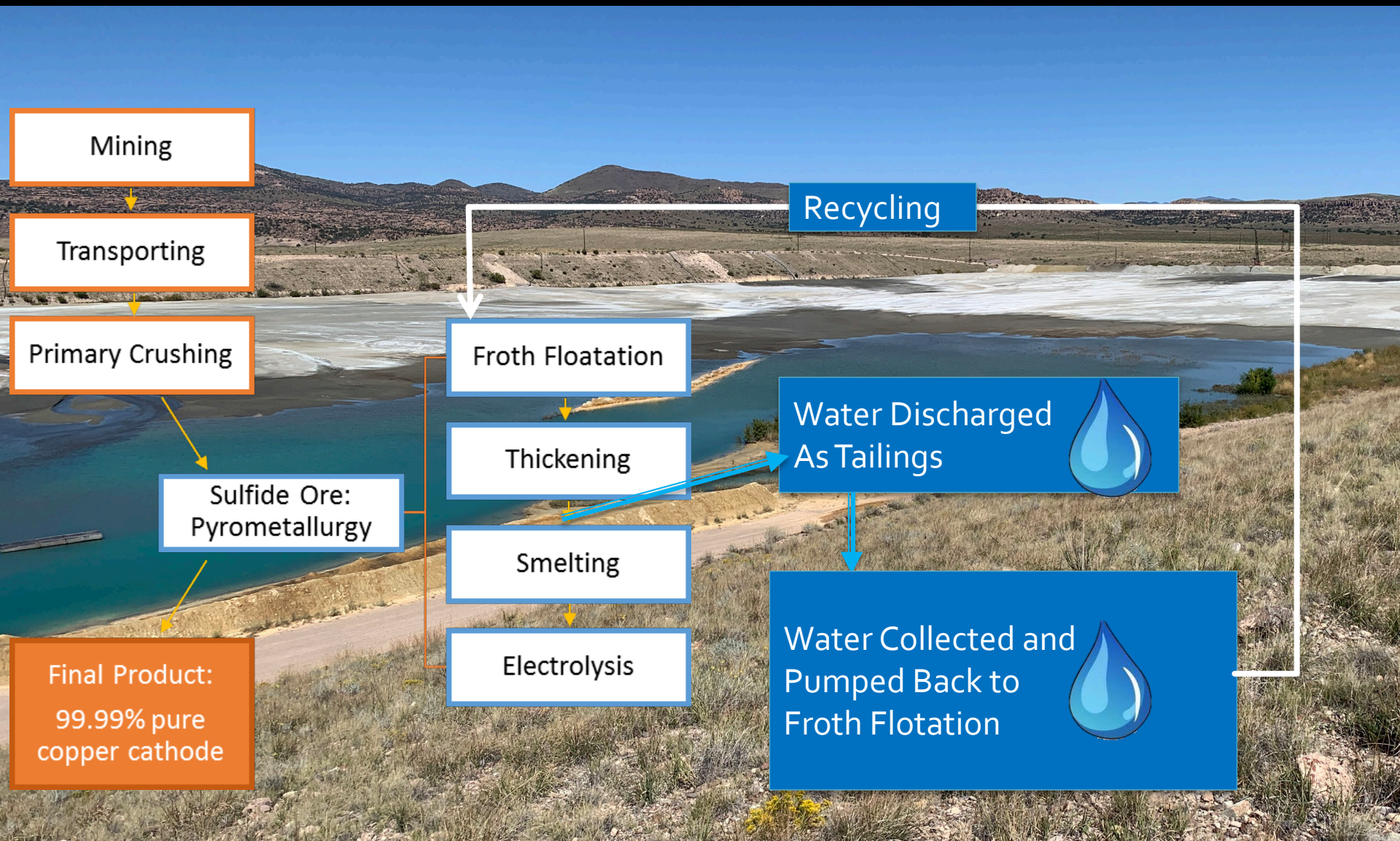


Chalcocite – Copper Oxide
Processed by **LEACHING**

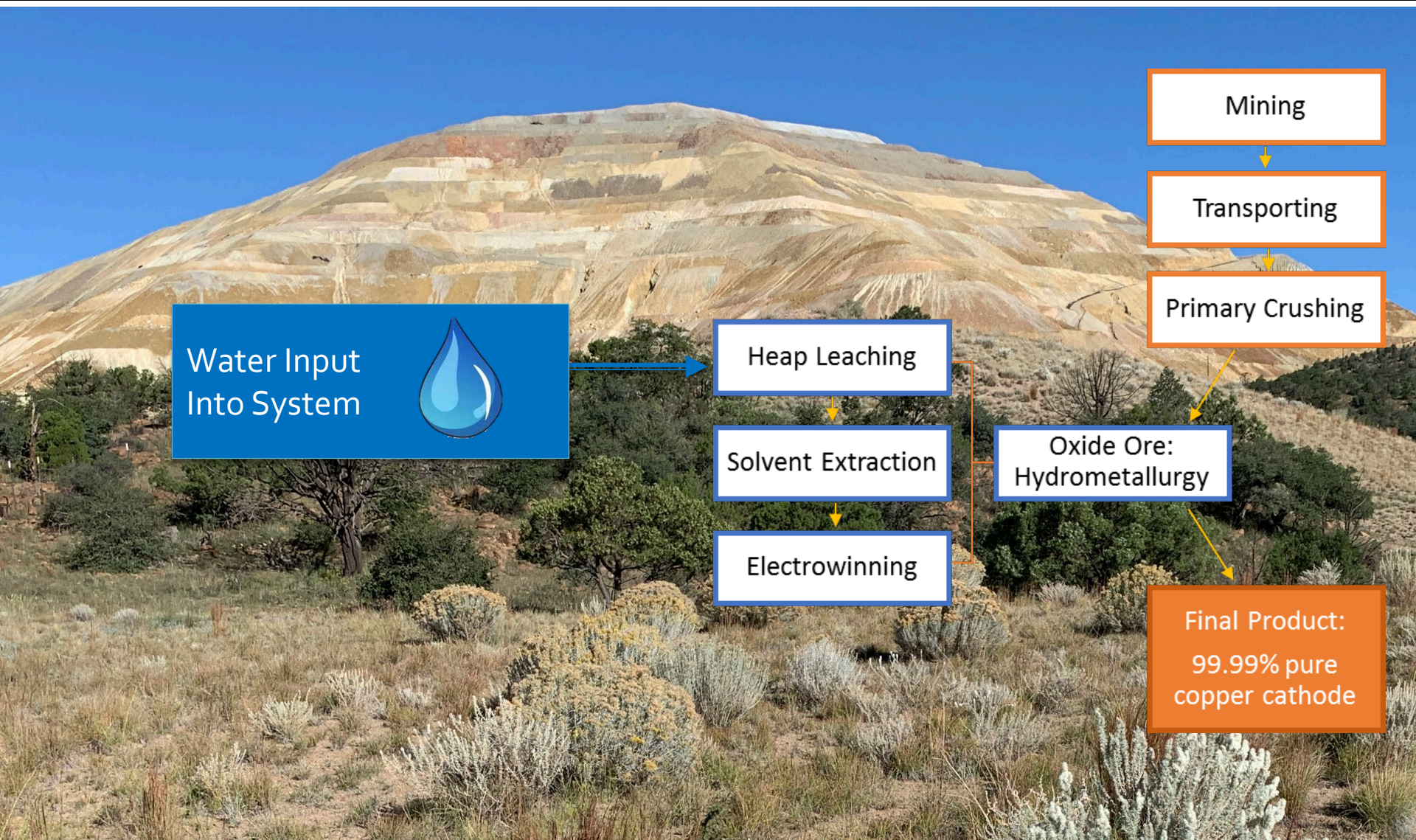
Processing Ore: Flotation



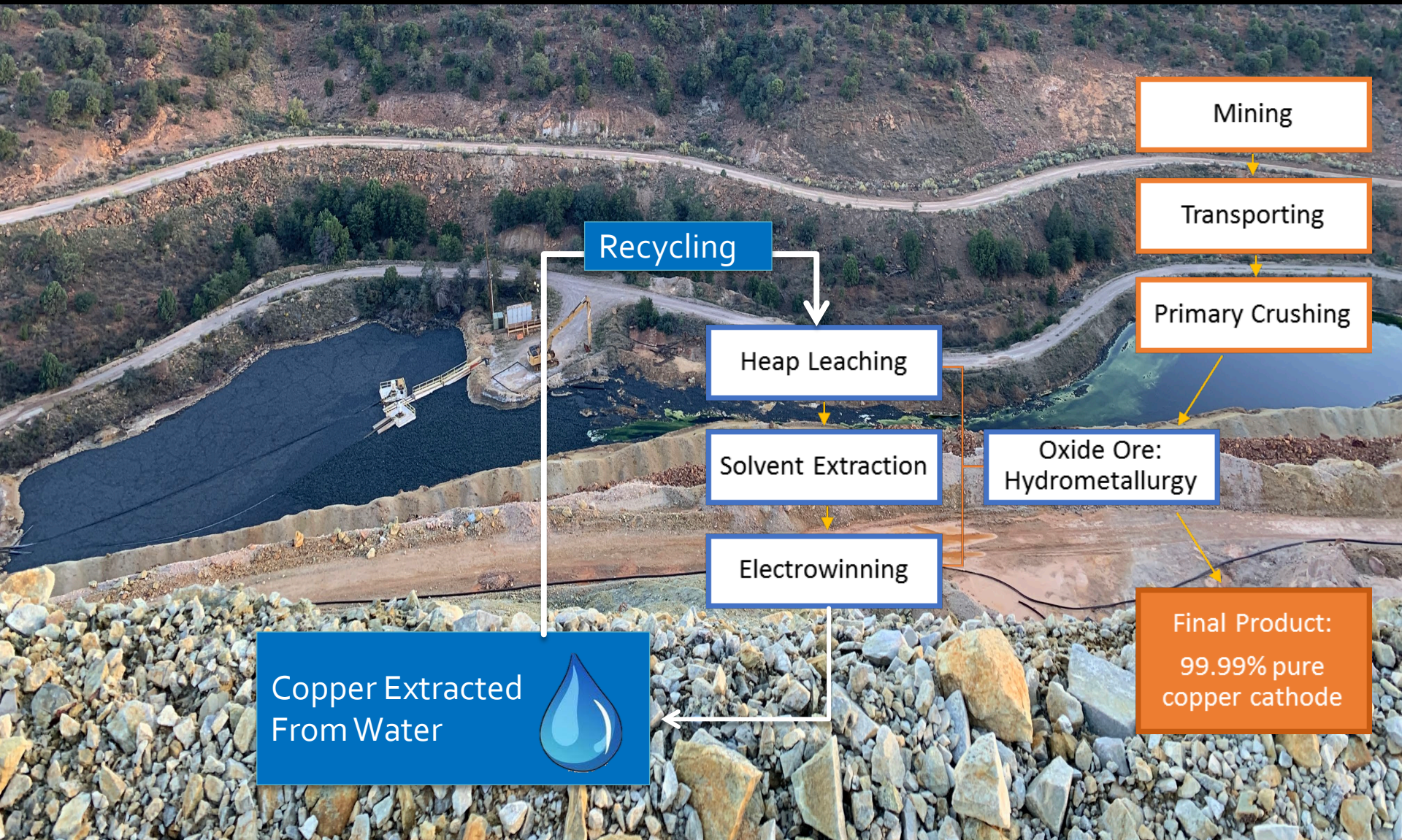
Processing Ore: Flotation



Processing Ore: Leaching



Processing Ore: Leaching



Final Copper



Copper Anodes
Processed after **FLOTATION**



Copper Cathodes
Processed after **LEACHING**

Summary

- Open pit mining:
 - Requires dewatering of the pit
 - Uses water for processing methods
 - Water intensive
 - Extensive water management and recycling

