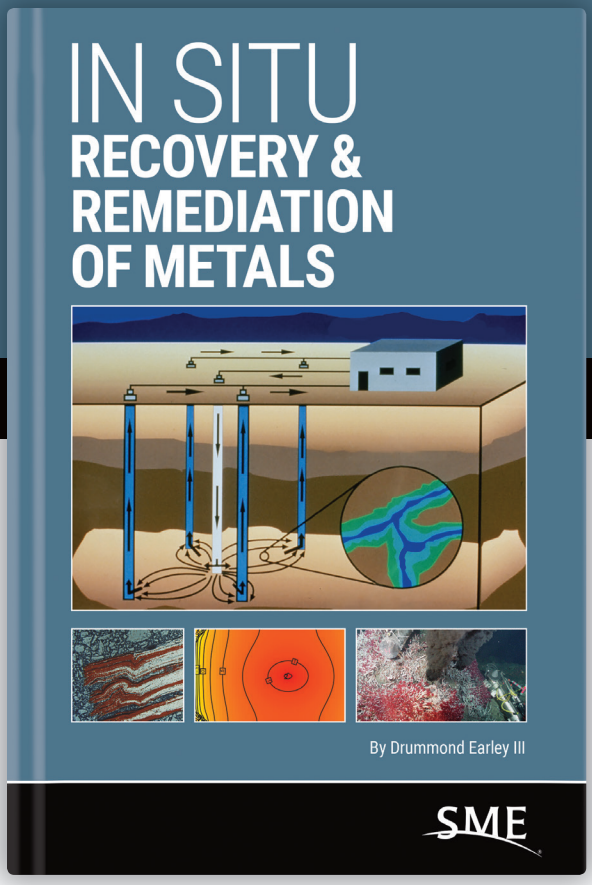

IN SITU RECOVERY & REMEDIATION OF METALS

By Drummond Earley III

2020, 168 pages, 2 lbs
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IN SITU RECOVERY & REMEDIATION OF METALS

By Drummond Earley III

Current trends in mining are driving the demand for subsurface extraction technologies with low surface impacts that protect surface and ground water. Moreover, the necessity for sustainable mineral extraction technologies has increased as regulatory restrictions and technical challenges to traditional mining grow with production from deeper and deeper remaining metal resources.

This book provides a state-of-the-art synopsis of in situ metal recovery and remediation technologies based on both research and commercial projects. In situ recovery uses fluid-based metal dissolution and recovery to extract one or more commodities from a largely intact rock mass using similar processes that create ore deposits. The fluid is circulated through ore by gravity and/or pumps using injection and recovery wells. A processing facility is usually established at the surface of the operation to extract the commodity of interest. The barren fluid is then recirculated back into the recovery circuit. In situ remediation uses similar wellfield technology and chemical processes to stabilize metal contaminants by injecting agents that form stable solids or less toxic species when combined with a contaminant. The fluid depleted in the stabilizing agent is then pumped back to the surface and regenerated.

In situ mining or recovery has been successfully applied to several commodities, including uranium, sulfur, evaporites, and copper, which have favorable chemical properties and deposit types for in situ recovery.

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