

Combined method for extracting rare and rare-earth elements from technogenic deposits involves open-pit mining to define the excavation perimeter, the sequential development of underground workings, material extraction, and its transportation. Extraction of rare and rare-earth elements is carried out from technogenic waste dump, where the zone of increased concentration of rare and rare-earth elements is preliminarily determined based on the results of three-dimensional geological and technological modeling. After the completion of open-pit mining operations, work begins on the main adit, from which mining workings are sequentially formed in the direction of zones with elevated concentrations of rare and rare-earth elements and are extended only to the boundary of the respective zone. After selective mining, these workings are always backfilled with processed technogenic rock.