OIL SANDS MINE RECLAMATION AND CLOSURE

For more than 60 years, Barr has assisted national and international mining clients through every phase of project development—from exploration and permitting, to final closure and reclamation.

At the heart of our approach is a commitment to understanding what matters most to our clients. We listen first, then tailor teams to address complex challenges, delivering a streamlined approach to your project—one that improves efficiency, communication, and understanding of both the small details and the big picture.

Barr and the oil sands

For more than 15 years, Barr's Calgary-based team has partnered with oil sands clients to address complex tailings and water management challenges. With a project office in Fort McMurray and hundreds of completed projects across the region, we bring deep, on-the-ground experience in tailings, water, GHG/air monitoring, and more. We help clients identify the right technologies, meet regulatory requirements, and implement efficient, cost-effective strategies that drive operational performance and project success.

Global experience in the mining sector

Delivering resilient closure solutions

Barr applies a proactive, risk-informed approach to mine planning and closure, addressing potential challenges early to enhance safety and long-term resilience. Our designs adapt to evolving site conditions and regulatory requirements, delivering solutions tailored to the complexity of oil sands reclamation and closure.

We develop adaptable and sustainable closure strategies for new, active, or legacy sites. By integrating geological, regulatory, environmental, and community considerations, we support comprehensive, site-specific planning.

Our goal is to help clients achieve their closure vision while minimizing ongoing costs and liabilities. We optimize land and facility use, reduce material rehandling during the transition from operations to reclamation, and align closure plans with future land use objectives, whether for natural restoration, recreation, or industrial repurposing.

RELATED INSIGHTS

Closure planning and design for tailings storage facility ↗
Developing a sustainable mine closure vision ↗
Minnesota's mine-reclamation legacy enters exciting new chapter ↗

Mine reclamation and closure

- Baseline environmental studies and permitting assistance
- Aquatic and terrestrial reclamation and closure research and planning
- Human health and ecological risk assessments
- Multicontaminant, multimedia remediation plans
- Reclamation cost estimating and economic analyses
- Geomorphic landform design and landform evolution modelling
- Integration of closure designs with long-term land use goals
- Operational and post-closure monitoring
- Detailed engineering and design

Water management

- Aquatic ecological assessments and toxicology
- Physical limnology for pit lakes and other surface water features
- Wetlands construction, restoration, and passive water treatment systems
- Geochemical characterization and water quality forecasting
- Evaluation and design of mine-impacted water treatment systems
- Hydraulic modelling of natural streams and engineered surface water flows
- Mine water balance studies
- Hydrogeological modelling of groundwater flow and contaminant transport
- Surface water quality modelling and monitoring
- Development of water quality criteria and technology-based effluent limits

Tailings management

- Research, development, and selection of tailings treatment technologies
- Design of tailings pumping and piping systems
- Modelling and monitoring of tailings deposition performance

Tailings storage facilities and mine waste structures

- Geotechnical investigations, material characterization, and facility design
- Advanced geotechnical modelling of deformation, consolidation, seepage, stability, and liquefaction
- Dam breach analyses for tailings and water dams
- Dam safety reviews and independent technical reviews
- Engineer of record services
- Geotechnical performance monitoring
- Dam and containment system delicensing and decommissioning