



**BGC**

# Oil Sands Services

Common Sense Solutions

**BGC Engineering Inc.**

Vancouver | Kamloops | Calgary | Edmonton | Toronto | Halifax | Fredericton | Denver | Santiago

**[bgcengineering.com](http://bgcengineering.com)**

## Oil Sands Services

Growth in the oil sands market has been unprecedented, placing enormous demands on technical resources across North America. BGC's experts have been integrally involved in oil sands geotechnique, tailings, hydrology and closure for over 20 years. Leveraging our comprehensive mining experience and leading applied earth science expertise, we provide innovative, practical solutions for challenging oil sands projects.

### Geotechnical Designs & Services

BGC is an industry leader in geotechnical designs for oil sands infrastructure. We combine our geotechnical expertise with a strong understanding of oil sands geology, mining practices and hydrogeology to provide superior designs for:

In-pit dykes

Waste dumps

Tailings facilities

Pit walls

Embankments and retaining walls

Foundations

Geosynthetic-reinforced soil structures

BGC is recognized for our specialized understanding of the impacts of geology and groundwater on engineered structures. As such, we are capable of carrying out a broad spectrum of geotechnical services for oil sands development, including site selection for dams, seismic hazard and geohazard assessments, borrow source assessments, and instrumentation design and monitoring. We also perform dam safety reviews, risk assessments, and a wide variety of construction and operation related services. In addition, BGC provides in-house index and advanced geotechnical testing laboratory services.

### Tailings

Tailings management continues to be one of the most difficult environmental challenges for the oil sands mining sector. The experts at BGC have extensive experience working with a broad spectrum of tailings technologies employed by oil sands operators, and we are well versed in the processes used to transform tailings into reclaimed land.

BGC has expertise in the design, construction and operations of tailings dams and tailings storage facilities. Our services range from tailings deposition planning to the evaluation of tailings technologies from the laboratory bench to full-scale commercial applications. We are experts in soft tailings stabilization and capping, as well as tailings consolidation and trafficability of soft tailings.

### Water Management & Hydrology

Maintaining good water quality and site-wide water balance are among the most important challenges facing the oil sands sector. BGC's experienced water resource professionals understand the importance of incorporating the full hydrological cycle in meeting these challenges. We provide comprehensive surface and groundwater services, including hydrological and flood risk assessments, hydrotechnical design, hydrogeological investigations and in situ testing, and operation and closure designs that address water balance and water quality. We also have full in-house applied groundwater flow and transport modeling capacity.

### Closure Landform Design

The oil sands mining industry is committed to the sustainable and environmentally secure closure of mines. Mining disturbance from oil sands operations results in significant land impacts requiring comprehensive planning and management for effective closure. BGC recognizes that successful reclamation requires an integrated mine design and plan throughout the entire life cycle of the project. Our integrated services incorporate the mine plan, as well as the geotechnical, geoenvironmental, hydrogeological and hydrological aspects of the site, to allow for practical and progressive reclamation of mine facilities and structures.

Moreover, BGC is an industry leader in the development and implementation of oil sands closure planning and landform design, a multidisciplinary approach to the design and construction of landscapes. Effective closure planning involves creating useful and accurate plans that meet regulatory requirements and provide for robust decision making by mine operators. Landform design consists of setting clear and achievable landscape goals, and incorporating a wide variety of tools and approaches to realize these goals over time in a logical and constructible method. By incorporating disciplines such as soils, vegetation and wildlife into our integrated services, BGC helps to provide the best opportunity for constructed landforms and landscapes to perform successfully.

