

OIL SANDS Water



our challenge

Water is required for all fossil fuel production – oil sands operations are no different. Maintaining good water quality and ensuring more efficient and limited use of fresh water is one of the most important challenges that must be met in the oil sands sector.

our actions *

Comprehensive laws and policies, independent and co-operative monitoring efforts by government, industry and stakeholder groups – as well as innovations in research and industrial practices – are constantly being improved to ensure environmental impacts are mitigated and avoided.

water use

- > All existing and approved oil sands projects withdraw less than one per cent of the average annual flow of the Athabasca River.
- > Oil sands projects recycle 80 to 95 per cent of water used.
- > Water use per barrel is comparable to other energy resources; about 2.5 barrels of fresh water per barrel of oil produced is used by mining operations and 0.5 barrels for in situ operations.
- > Fresh water use by mature oil sands mining operations continues to decrease, despite increases in production.
- > In situ operators use deep saline aquifers as an alternative to fresh water wherever possible.



THE ATHABASCA RIVER IS A SOURCE OF FRESH WATER WITHDRAWALS IN THE OIL SANDS REGION.

water management

- > The Athabasca River Water Management Framework sets mandatory limits on withdrawals that maintain flows at or near natural conditions.
- > To protect local habitats, the framework puts a weekly cap on the amount of water companies can withdraw according to the fluctuating flow of the river.
- > To protect the quality of river water, no production water can be returned to the river and is, instead, stored in tailings ponds.
- > Operators are licensed to release water from drainage of lands to creeks and tributaries in the region in preparation for oil sands mining; there is also one licensed wastewater discharge in the Athabasca River.
- > These licences are in approvals, and releases are monitored to ensure there is no significant impact on the Athabasca River downstream of the mine sites.

contaminant load study

- > A three-year comprehensive contaminant load study is underway. It is examining the effects of air emissions, land disturbance, drainage and the potential for seepages or spills.
 - The overall goal is to address the potential impacts of oil sands operations on the transport and accumulation of contaminants in the region's waterways.



DEPOSITIONAL SEDIMENT CORES ARE COLLECTED FROM THE UPPER ATHABASCA RIVER TO BETTER UNDERSTAND THE COMPOSITION OF RIVER SEDIMENT. THIS INFORMATION HELPS THE PROVINCE MANAGE THE IMPACTS OF OIL SANDS DEVELOPMENT.

current monitoring

- > Alberta has monitored water quality in the oil sands region since the early 1970s.
- > Today, water monitoring has expanded to include staff who monitor, approve and ensure compliance of projects as well as consultants and multi-stakeholder groups that continuously assess water quality.
- > The Alberta government monitors in a number of ways:
 - continually monitoring the Athabasca River and its tributaries at 11 sites throughout the oil sands region
 - auditing the monitoring data that oil sands operators are legally required to provide
 - participating in the Regional Aquatics Monitoring Program – more than 100 water quality stations in the region
 - evaluating current contaminant load concentrations and comparing to historic conditions
- > The Athabasca River has always had measurable levels of naturally-occurring contaminants. This is because bitumen from exposed oil sands along the river banks seeps naturally into the surface water as it cuts through the landscape.
- > Monitoring stations downstream of mine sites show industrial contribution cannot be detected against historically consistent readings of naturally occurring compounds in the Athabasca River.

monitoring in the future

- > Twelve independent experts have been chosen to help create a world-class environmental monitoring system for Alberta.
- > The panel's primary scope is to make recommendations on the development of a water monitoring system for the lower Athabasca River.
- > The panel will also make recommendations on how the system can be expanded to the air, land, and biodiversity in the region, as well as how the system can be further expanded across the entire province.
- > A first-rate monitoring system requires appropriate governance and validation, credible data analysis from a science authority, transparent reporting via an information portal, and an exceptional physical monitoring network. The panel will focus on all of these aspects.
- > The panel will report back to the Minister of Environment by June 2011.