



Mining and Petroleum exploration and development activities are vital to the provincial economy, generating significant economic wealth each year and employing thousands of British Columbians. These sectors employ a wide range of field and laboratory scientists, engineers, trade and administrative staff and in addition, generate spin-offs for many local businesses.



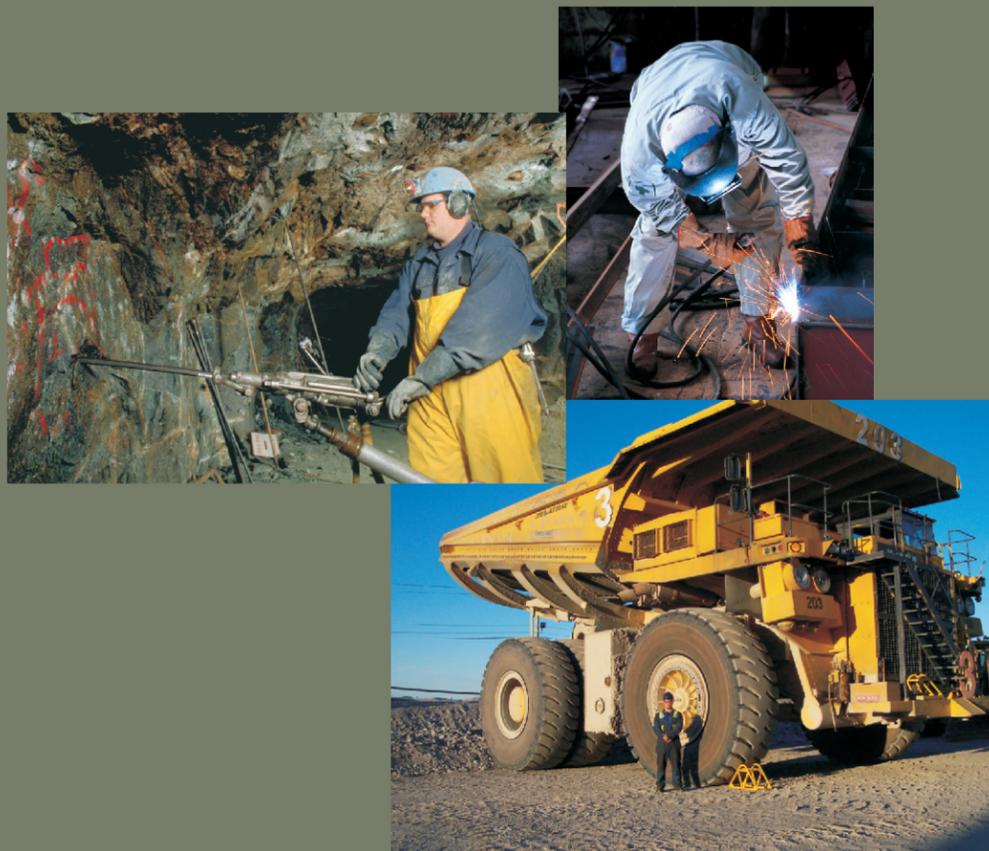
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Geoscience for Pine Beetle: Economic Diversification through Public Geoscience Programs



Developing energy and mineral resources offers one of the best options for diversifying and sustaining regional economies, and providing new employment opportunities.



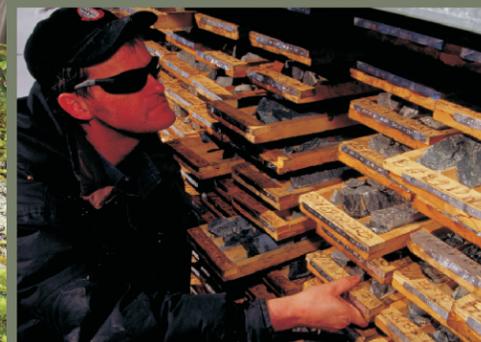
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Natural Resources Canada, the BC Ministry of Energy, Mines and Petroleum Resources and Geoscience BC have joined forces to provide the high-resolution geological, geochemical and geophysical databases and technologies capable of imaging beneath the sediments and volcanic rocks.



Central BC is currently experiencing the most severe Mountain Pine Beetle (MPB) outbreak in North American history. The BC Ministry of Forests and Range estimates that, as of 2007, the cumulative area of provincial crown forest affected by the MPB was about 13.5 million hectares (or about four times the size of Vancouver Island).



Natural Resources
 Canada

Ressources naturelles
 Canada



Ministry of
 Energy, Mines and
 Petroleum Resources



Geoscience for Pine Beetle: Economic Diversification through Public Geoscience Programs

Successful exploration begins with a good understanding of the geology. Investments in public geoscience are critical for economic diversification of the beetle impacted regions of BC as it reduces exploration risk and uncertainty and encourages increased investment by industry.



Regional airborne magnetic / Radiometric surveys

Sensors are sensitive to variations in the magnetic mineral concentrations of the underlying geology.

Measure the natural radioelement concentrations of the near-surface materials.

Different rock types can have characteristic magnetic and radiometric responses



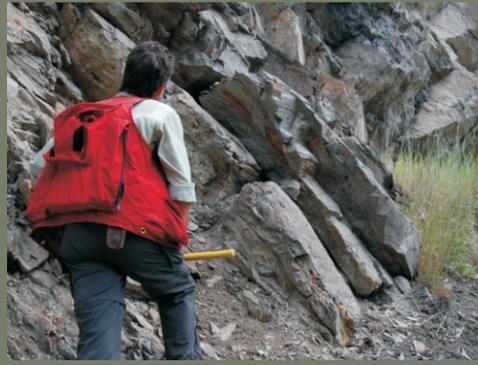
Stratigraphic Studies of Nechako Basin, British Columbia

Stratigraphic analysis of exposed sedimentary rocks improves assessment of the regions hydrocarbon reservoir potential.



Magnetotelluric Investigations

Magnetotelluric surveys provide information on the electrical conductivity of the subsurface of the Earth. The data can be modelled to provide information on the subsurface geology (e.g. igneous vs. sedimentary rocks), fluids, interconnected metallic ores, and porosity.



Regional Geology Mapping

Regional mapping provides the foundation for understanding BC's complex geology and locating subsurface resources. In the Beetle Impacted Zone, new geological mapping is increasing the understanding of geology prospective for finding minerals. This information is used by industry to make discoveries that lead to new mines.



Quaternary mapping and glacial sediment sampling

Quaternary mapping constrains the timing and direction of ice advances and retreats throughout the region and provides information on the nature, thickness and distribution of unconsolidated sediments.

Geochemical analyses of glacial sediment samples identify background and anomalous surface mineral and metal concentrations.

Airborne Electromagnetic Surveys

Airborne electromagnetic surveys map conductivity beneath the earth's surface. Electromagnetic surveys in GBC's QUEST and QUEST-West projects are mapping basement conductivity and providing an indication of where the cover of Quaternary Sediments is thinnest.



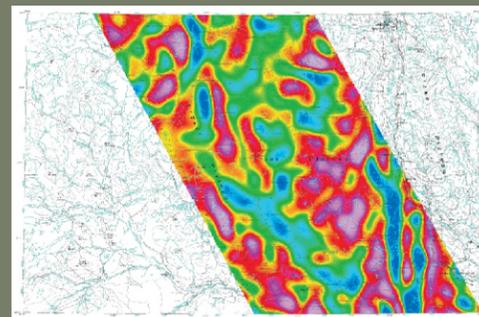
Active Seismic Surveys

Active seismic surveys use sound waves to produce images of the rock formations below the earth's surface. Vibroseis surveys create sound waves using vibrator plates mounted on the base of a series of large trucks.



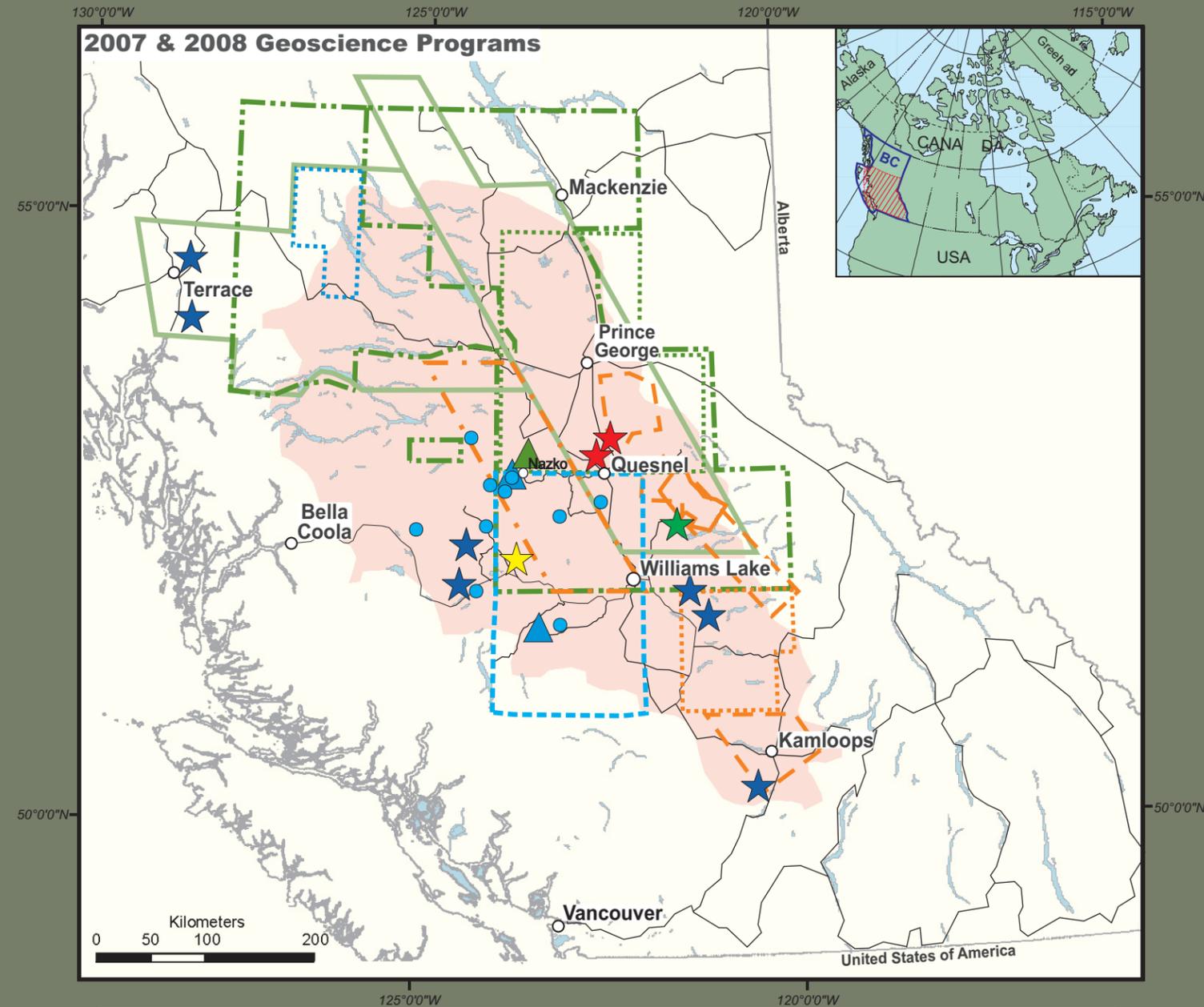
Passive Seismic Surveys

A Passive Seismic survey uses seismic energy from distant earthquakes. This seismic energy approaches "from below" and will provide new constraints on the sediments and crust beneath the volcanic cover.



Gravity Survey

Gravity surveys map variations in rock density at depth. The GSC and GBC are using these surveys to map the distribution of prospective rocks in the Nechako Basin and the QUEST and QUEST-West project areas, respectively.



Geological Survey of Canada (GSC)

- · — · — Airborne Gravity Survey
- · — · — Airborne Magnetic-Radiometric Surveys
- · — EM Survey
- · · · · Till Sampling and Surficial Mapping

Ministry of Energy Mines and Petroleum Resources (MEMPR)

- ★ Regional Mapping
- ★ Mineral Deposits Study
- ★ Till Sampling and Surficial Geology
- ★ Geochemical Surveys

Geoscience BC (GBC)

- Airborne Gravity and EM Surveys
- · · · · Surficial Mapping and Till Sampling
- · · · · Drainage Sediment Geochemical Surveys and Re-analyses
- ▲ Vibroseis Seismic Surveys

Joint GSC, MEMPR, GBC

- · · · · Till Sample Re-analyses (GBC, MEMPR, GSC)
- · · · · Stratigraphic Studies (GBC, GSC)
- Passive Seismic Surveys (GBC, GSC)
- ▲ Magnetotelluric Investigations (GSC, GBC, MEMPR)

* Some projects completed in collaboration with Universities