



SPECIAL REPORT

Impacts of Mining on Freshwater and Marine Ecosystems

Protection of freshwater and marine ecosystems is a real challenge when mining in a watershed. Blasting, crushing, processing and storing millions of tonnes of rock each year mean impacts are inevitable.

A mine's footprint – large open pit and millions of tonnes of mining wastes – may destroy fish habitat directly or eliminate important headwater areas, impact wetlands that provide organic matter to streams and mitigate stream flows, or fragment otherwise continuous stretches of habitat. Managing water within a mine site may also result in changes to ground water levels and stream flows as the pit or underground workings must be kept dry and any excess water pumped and released to the environment.

One of the most insidious impacts of mining is acid mine drainage – the result of freshly mined rock being exposed to atmosphere and rainwater. Sulphur compounds in rock turn into sulphuric acid, acidifying water and leaching toxic metals from the rock. If allowed to reach freshwater or marine ecosystems, this toxic drainage can do significant damage.

The Britannia Mine near Squamish and the Mount Washington Mine near Courtenay, both in BC, demonstrate the impact of acid mine drainage. In 2000, more than 25 years after the Britannia Mine closed, acid mine drainage continued to seriously impact Britannia

Creek and its estuary. Salmon kept in cages in the contaminated water did not survive longer than 2 days and free-swimming salmon avoided the area. Copper in the drainage from the wastes at the Mt. Washington Mine, which operated for only a few years in the 1960s, completely wiped out the salmon runs in the Tsolum River. After considerable effort and public expense, both sites have been rehabilitated and signs of recovery are encouraging, if incomplete.

Mine wastes must now be managed to reduce acid mine drainage and to treat effluent. Hence the kinds of dramatic impacts experienced downstream of Britannia and Mt. Washington mines are less likely.

However, monitoring by Environment Canada shows that most mines, despite complying with regulations, are impacting downstream aquatic ecosystems. Fish downstream of mines are often thinner and show signs of poor health, and there are fewer individuals and less diversity in aquatic invertebrates that fish feed on. For example, the *Vancouver Sun* recently reported that permitted pollution levels at the Endako mine in northern BC are being re-evaluated due to impacts observed in a downstream lake and streams.

Dramatic impacts to streams, rivers and coastal areas can still

happen when accidents occur – and they do occur. In 2004, operators at the Pinchi Lake mercury mine in northern BC caused a breach in a tailings dam resulting in a massive spill of mercury and heavy metal laden wastes into Pinchi Lake. In October 2013, a closed Alberta coal mine released a torrent of 670 million litres of slurry into tributaries of the Athabasca River, wiping out kilometres of fish habitat and sending a plume of waste hundreds of kilometres downstream.

Companies must now clean up the messes they make – but the rules are imperfect and financial assurances posted to ensure clean ups are done may not be sufficient for the full costs of mine closure. Infrastructure such as tailings dams and water treatment plants also represent long-term management challenges that someone has to maintain and monitor in perpetuity in order to reduce risks of spills and catastrophic impacts.

Ramsey Hart
Canada Program Coordinator
MiningWatch Canada





Whale Trivia

- ① Spy-hopping a) A whale's tail fin
- ② Fluke b) Bone in the inner ear of whales and other mammals
- ③ Pod c) A whale looking around by sticking its head out of the water
- ④ Otolith d) A social group of whales

ANSWERS: 1-c 2-a 3-d 4-b

Mining at a Glance

Mining of sulphide rocks creates highly acidic water known as Acid Mine Drainage (AMD). Sulphuric acid forms when water passes over rock exposed by the mining process. 1

- AMD increases heavy metal leaching, severely degrading water quality, and destroying habitat and aquatic life. 1
- In the USA, mining produces more heavy metals, including arsenic, cadmium, and lead, than any other industry (2008 data). 2
- Mining consumes between 7 and 10% of the global energy supply yet provides only 1% of global employment. 3
- Mines continue to affect the environment long after all related jobs have left a region. One example is Toquart Bay in nearby Barkley Sound where arsenic, cobalt and selenium contamination were found 40 years after the closure of Brynnor mine. 4

The District of Tofino, the Alberni-Clayoquot Regional District and the Tofino Chamber of Commerce all support the Tla-o-qui-aht First Nation request that the provincial government respect a mining moratorium on their territories.

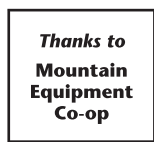
You too can help protect Clayoquot Sound:

- Sign the petition "Call for a mining moratorium on all Tla-o-qui-aht traditional territories" at: www.change.org/en-CA/petitions/call-for-a-mining-moratorium-on-all-tla-o-qui-aht-traditional-territories
- Write a letter to Minister of Energy and Mines. Use our letter writing tool at: www.focs.ca/letter/keep-tranquil-valley-wild/
- Donate to Friends of Clayoquot Sound at www.focs.ca/support



Friends of Clayoquot Sound

Reach us at:
info@focs.ca
phone: 250-725-4218
www.focs.ca



REFERENCE LIST: 1. Fair Mining Collaborative, 2013 2. US. Environmental Protection Agency, 2009 3. Earthworks and Oxfam America, 2004 4. BC Government News Release, 2013

Do you know about FANDORA?

It is a deactivated mine site located in Tranquil Valley near the heart of the Clayoquot Sound UNESCO Biosphere Reserve. Imperial Metals has an exploratory drilling permit to assess opening up a gold mine on the 44 square kilometer tenure.

The Tla-o-qui-aht First Nation, on whose territory the proposed exploration lies, have developed a Tribal Parks management plan that outlines a sustainable development alternative to mining. The Tla-o-qui-aht Nation are calling for a mining moratorium for their territories, yet inadequate consultation by government and industry has lead to a real mining threat on Tla-o-qui-aht hahoolthie (traditional territories).

Friends of Clayoquot Sound (FOCS)

was founded in 1979. We are a non-profit group dedicated to the conservation of Clayoquot Sound, Vancouver Island's last large area of oldgrowth temperate rainforest. Peaceful direct action, public education, and markets campaigns are just some of the tools we use to hold the line in Clayoquot Sound against oldgrowth logging, salmon aquaculture feedlots, and potential mining operations.