



Oil and Gas in British Columbia

10 Steps to Responsible Development

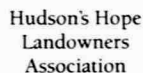
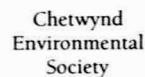
April, 2004

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West Coast Environmental Law coordinated the production of this report,
with input from the signatories below. For copies of the report, visit www.wcel.org.



Summary of Recommendations

Recommendation 1: Implement an Energy Plan for BC with more measured oil and gas development, increased conservation and efficiency measures, and aggressive promotion of renewable energy and hydrogen-based energy storage and delivery.

Recommendation 2: Create jobs by providing incentives for oil and gas companies to employ BC workers and to direct oil and gas into value-added products made in BC, and by aggressively shifting energy production into more labour-intensive renewable and energy efficiency projects.

Recommendation 3: End subsidies and royalty breaks to the oil and gas industry, and direct 25% of oil and gas revenues into a BC “heritage” fund to support a just transition to sustainable industries.

Recommendation 4: Give landowners and locals the power to say no to oil and gas development that may adversely affect them; at a minimum, provide BC citizens the same rights as Albertans to have their concerns addressed before approvals are granted.

Recommendation 5: Create an independent health and pollution body to research, strengthen, and enforce pollution and health rules in BC relating to oil and gas activity.

Recommendation 6: Recognize First Nations Treaty and Aboriginal Rights and Title through meaningful joint management, including First Nations consent over development, revenue sharing, and management of cumulative impacts.

Recommendation 7: Restore monitoring and enforcement staff to pre-2001 levels, and index increases in staff to wells drilled; implement meaningful fines for infractions; maintain oversight roles of agencies other than the Oil and Gas Commission.

Recommendation 8: Suspend coalbed methane development until comprehensive studies into well spacing and water issues are completed to the satisfaction of affected communities, and until appropriate safeguards are put in place.

Recommendation 9: Protect the integrity of BC's parks by reversing legislative changes that undermine our system of protected areas, and disallow industrial roads and development within park boundaries.

Recommendation 10: Establish binding cumulative impact thresholds in BC's oil and gas areas, and budget activity between various uses of the landscape to be conducted within those thresholds.

Introduction

According to two of the world's largest insurance companies, global warming cost the world \$78 billion in 2003, up from \$71.5 billion in 2002, and threatens to double in cost within 10 years.¹ The World Health Organization estimates that global warming kills 150,000 people a year,² and a study published in the journal *Nature* concludes that global warming could force one quarter of the planet's plant and animal species to the brink of extinction by 2050.³

In 2003 BC experienced record forest fires in addition to the ongoing record pine beetle outbreak, and so little rain fell that Vancouver drinking water supplies were reduced to about 30 days worth of consumption. The heralded \$418 million single month sale of oil and gas leases in BC's northeast in September 2003 was more than offset by the \$545 million cost of fighting the forest fires.⁴

This is the context within which BC has proposed to double production of oil and gas, the burning of which causes global warming. There is a sharp disconnect between the overwhelming international scientific consensus to quickly reduce our reliance on fossil fuels, and BC's plan to aggressively expand their production and use.

To expand fossil fuel production, the BC government is "streamlining" environmental regulations,⁵ and has laid off compliance and monitoring staff. It has given the highly profitable oil and gas industry subsidies and royalty breaks, and it has joined with industry and the Government of Alberta in opposing the Kyoto Protocol.

The impacts of oil and gas production go beyond global warming. BC's current oil and gas boom is negatively affecting the health of local citizens, First Nations rights, and the environment. Oil and gas activities result in the release of toxins that potentially harm people and wildlife. The land impacts of oil and gas development can be more extensive than logging. And unlike forestry, oil and gas development can occur on private land without the permission of the landowner.

Offshore oil and gas development, should it happen, threatens fisheries and pollutes sensitive marine ecosystems. Even after 15 years, parts of Alaska have still not recovered from the *Exxon Valdez* spill. Moreover, if the projected offshore BC reserves do exist and are burned, it would result in another 6 billion tonnes of carbon dioxide being released into the atmosphere.

Despite their negative impacts, oil and gas are still a part of today's economy. Impacts of production must be mitigated to limit the extensive damage that is affecting lands and people in BC. This report concentrates on the impacts of land-based oil and gas development, rather than offshore impacts, and presents a ten-point mitigation plan. Adoption of each of these ten points is essential for BC to be on a path toward responsible development.

1

Properly Define Energy Security

BC's 2002 Energy Plan recognizes the need for energy security, yet does not achieve it. The Plan states that the "development of abundant energy resources was instrumental in establishing our resource-based economy and high standard of living."⁶ But, the Plan then goes on to focus almost exclusively on accelerating energy supply, ignoring the need to plan for BC's energy demand within the context of North American demand over the long term.

Under the North American Free Trade Agreement, North American oil and gas demand trumps BC's oil and gas demand. Canadian governments cannot prioritize Canadian oil and gas needs, nor can Canada reduce oil and gas exports to the US without proportionally reducing Canadian oil and gas consumption.⁷ BC is not drilling oil and gas for British Columbians; we are drilling for North Americans. About 57% of BC's natural gas is currently exported.⁸

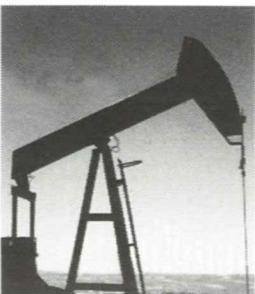
While these policies may be uncontroversial in times of energy abundance, such is no longer the case. Conventional North American gas supplies are "peaking," or at the point where demand exceeds available supply.⁹ Mainstream oil and gas journals are debating how far behind the world oil supply peak is, with some estimates indicating that it will occur before 2010.¹⁰

The imprudent outcome of BC's current Energy Plan is to drill as much as possible as fast as possible for immediate use. Increasing exports from BC in a time of increasing scarcity will actually undermine energy security for BC. Not only will it more rapidly deplete BC's relatively small oil and gas reserves,¹¹ it will also help lock Canada into exporting a greater portion of production to the US.

If energy security is to be achieved, BC must situate planning for scarce fossil fuel resources within the context of North American demand over the long term.

A responsible Energy Plan would entail more measured oil and gas development, coupled with energy conservation, efficiency, and aggressive switching to renewable energy and hydrogen-based energy storage and delivery. Energy conservation and efficiency measures will reduce our overall energy demand, leaving our economy and society less exposed to fossil fuel scarcity. Renewable energy and hydrogen storage are not subject to depletion, and will allow us to tackle global warming.

If energy security is to be achieved, BC must situate planning for scarce fossil fuel resources within the context of North American demand over the long term.



Recommendation 1

Implement an Energy Plan for BC with more measured oil and gas development, increased conservation and efficiency measures, and aggressive promotion of renewable energy and hydrogen-based energy storage and delivery.

2

Create Jobs from BC Resources

A jobs-poor boom from the rapid exploitation of a non-renewable energy resource is unacceptable.

BC is not only getting progressively fewer jobs out of its oil and gas sector even as production rises, it is also giving Albertans the majority of the work.

A 2003 BC government-funded study showed that despite a 39% annual growth in wells drilled, there are fewer British Columbians employed in the oil and gas sector than a decade ago. And, four out of every five jobs in the sector are currently filled by Albertans. The thousands of jobs missed out on by British Columbians translates into as much as \$1.6 billion per year in lost employment income and millions in lost income taxes.¹²

Also, BC is missing out on value added opportunities from its fossil fuels. People associate oil and gas primarily with heating homes and fueling cars, but about 90% of the organic chemicals we use, including plastics, are made from non-renewable petroleum products. Burning fossil fuels for energy not only has negative environmental impacts, it also results in fewer value added jobs being created from the resource.

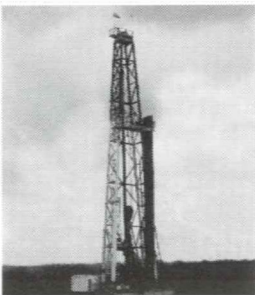
The potential jobs in energy efficiency and renewable energy industries surpass those available by using oil and gas for energy. An averaging of 30 studies found that energy efficiency investments create 35 person years of employment per million dollars invested, as opposed to seven person years from conventional energy resources.¹³ Another study shows that renewable energy generates four times as many jobs per installed megawatt than natural gas.¹⁴ In the US, the Apollo Alliance predicts that investing aggressively in clean energy and efficiency projects could create 3.3 million jobs and add US\$1.4 trillion in GDP.¹⁵

Indeed, BC is falling behind in the drive to renewable energy. While BC can point to fuel cell research in Vancouver and about a dozen small renewable energy projects,¹⁶ the wind industry in Denmark has an annual turnover of over \$3.5 billion, and Germany has 45,000 people employed in its wind sector.¹⁷ BC is tinkering with green energy and going big on fossil fuels, while others are going big on green energy to get away from fossil fuels.

A jobs-poor boom from the rapid exploitation of a non-renewable energy resource is unacceptable. The BC government must provide incentives for oil and gas companies operating in BC to employ British Columbians, incentives for value-added processing of oil and gas in BC, and implement measures to create jobs in energy efficiency and renewable energy.

Recommendation 2

Create jobs by providing incentives for oil and gas companies to employ BC workers and to direct oil and gas into value-added products made in BC, and by aggressively shifting energy production into more labour-intensive renewable and energy efficiency projects.



3

End Subsidies and Fund the Transition

While BC puts all of its oil and gas revenues into current spending, other jurisdictions have recognized the finite nature fossil fuel revenues and have set aside some of them for the future.

BC has set a target of doubling oil and gas production by 2011. To encourage rapid expansion, subsidies and tax credits have been granted to the highly profitable industry. Despite campaign promises to end business subsidies,¹⁸ current subsidies to the oil and gas industry include tens of millions in industry road subsidies; a tax break on machinery; a \$50,000 royalty credit for every coal bed methane well drilled; and royalty reductions for summer drilling, “marginal” well drilling, and “deep” well drilling.¹⁹

Some argue that these subsidies are needed to develop resources that may not otherwise be economic. But, with oil and gas supplies peaking, the price of these commodities will only trend up, meaning that currently uneconomic resources will become economic in time. The subsidies are in fact political, evidenced by the goal of doubling production by 2011, a target that is arbitrary and interventionist from a market perspective. By subsidizing the profitable oil and gas industry, BC is subsidizing global warming while short-changing the public purse.²⁰

Further, while BC puts all of its oil and gas revenues into current spending, other jurisdictions have recognized the finite nature fossil fuel revenues and have set aside some of them for the future or for economic diversification. Alberta, Alaska, Norway, and even Chad are either currently building or have at one time built a fund from oil and gas revenues to do this.²¹

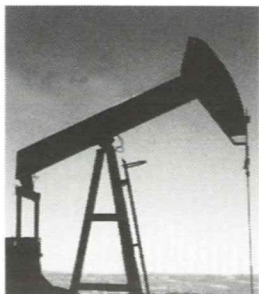
Since 1976, Alaska has placed 25% of oil and gas revenues into its Permanent Fund, which is valued at US\$27 billion. At the outset of its Heritage Fund, 30% of Alberta’s oil and gas revenues were set aside. Alberta no longer contributes, but since 1995, this fund has been valued at \$12 billion. Norway’s State Petroleum Fund stands at over \$100 billion.²²

Again, given the reality of global warming, strong measures must be taken immediately to move our economy and society away from fossil fuels while diversifying into new job-creating industries like renewable energy and hydrogen infrastructure. It is appropriate that fossil fuel revenues be explicitly earmarked to do this. Indeed, BC will need revenues from other industries once non-renewable resources begin to wind down.

The Communications, Energy and Paperworkers Union has recognized that a transition will be inevitable and has outlined ways in which workers can be protected. It calls for a “just transition” fund, retraining and relocation of workers, and preferential hiring of energy workers in new projects.²³

Recommendation 3

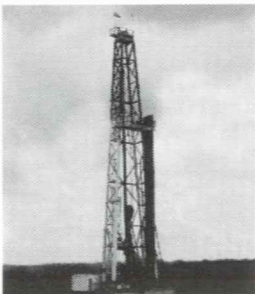
End subsidies and royalty breaks to the oil and gas industry, and direct 25% of oil and gas revenues into a BC “heritage” fund to support a just transition to sustainable industries.



4

Level the Playing Field for Landowners and Locals

There are good reasons to level the playing field between locals and the oil and gas industry by giving landowners and locals the power of consent over development.



Many are shocked to hear that an oil and gas company can drill on private property without the owner's consent. Since the turn of the last century, the Crown has retained most subsurface rights to people's property. The government can auction off rights to drill on private land without the landowner's knowledge. Some landowners learn of this only when a company representative arrives to negotiate terms of access.

In BC, citizens have almost no rights to oppose oil and gas developments that may endanger their health or livelihoods. When the Oil and Gas Commission (OGC) grants an approval, concerned residents can ask the OGC's Advisory Committee to recommend reconsideration of the approval back to the OGC. Meanwhile, drilling proceeds. So far, the Advisory Committee has entertained 10 of these requests, and in four of them recommended the decision be reconsidered. Despite this, the OGC went ahead with the original approval in every case.²⁴

If a landowner and company do not agree on the terms of surface access, the Mediation and Arbitration Board can be asked to make a ruling. The Board can specify terms of entry, including payment of rent or set amounts of compensation. A landowner can also apply to the Board for compensation for suffering or damage to land caused by a company's entry onto the land. It is rare for the Mediation and Arbitration Board to fully deny entry to a company.

In Alberta, directly affected citizens have the right to appeal proposed projects to the Alberta Energy and Utilities Board (EUB). Unlike the OGC, the EUB is a quasi-judicial entity: affected citizens have the right to a hearing where they can present evidence and cross-examine witnesses of the proponent. While the EUB also rarely denies wells, the process itself acts as incentive for industry to work more closely with those affected to address their concerns.

Alberta also has a Farmers' Advocate under its agriculture ministry to assist farmers in dealing with the oil and gas industry. In BC, the Landowner Liaison Inspector is less independent because it is housed within the OGC.

Given the potentially devastating impacts of oil and gas development, there are good reasons to level the playing field between locals and the oil and gas industry by giving landowners and locals the power of consent over developments that could have an impact on their health or livelihoods. They would then have the leverage by which to negotiate satisfactory arrangements to address their concerns. At a minimum, BC should grant its citizens equal rights to Albertans.

Recommendation 4

Give landowners and locals the power to say no to oil and gas development that may adversely affect them; at a minimum, provide BC citizens the same rights as Albertans to have their concerns addressed before approvals are granted.

5

Address Health Impacts

Sour gas is a known neurological, respiratory and reproductive toxin. At higher concentrations it knocks people out and may kill them.

Toxic releases occur throughout the oil and gas development process, giving rise to air and water quality concerns for local people.

Under BC law, test flaring on gas wells can be done for up to 21 days to measure flow rate and pressure. One large test well can release more pollution in a week than a gas plant does in a month.²⁵ Solution gas flaring occurs on oil wells where gas is not economic enough to capture and is burned instead. A 1996 study by the Alberta Research Council found that flaring leaves 16-38% of gases intact, releasing more than 250 hazardous compounds that can increase the risk of cancer or may negatively affect reproduction.

Glycol dehydrators are often used at wellheads to remove water from gas before it goes into pipelines. But, the dehydrators also remove benzene – a known carcinogen – from the gas, and release it into the atmosphere. While there is a federal agreement to reduce emissions from these dehydrators to less than three tonnes per year per unit, there is no known safe exposure to benzene.²⁶

Perhaps most notorious though, is “sour” gas, or gas laced with hydrogen sulphide. A third of the gas wells being drilled in BC may be sour.²⁷ Sour gas is a known neurological, respiratory and reproductive toxin. At higher concentrations it knocks people out and may kill them. Low levels of exposure results in headaches, nosebleeds and vomiting. In the last two years, at least one industry worker has died from sour gas exposure, and the Workers Compensation Board has indicated that it receives 4-5 reports of worker “knockdowns” each year.²⁸ Little is known about health impacts at lower levels of exposure and little research is being done.

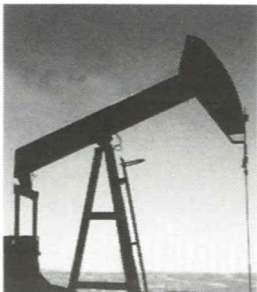
BC allows sour gas wells to be drilled as near as 100 metres from a home, and there are increasing anecdotal reports of locals complaining of adverse health impacts due to sour gas exposure.²⁹ The Blueberry River First Nation near Fort St. John has filed a lawsuit seeking damages as a result of years of exposure to sour gas.

The OGC is supposed to protect BC citizens by being an independent regulator of the industry, but this independence has been steadily eroded by legislative changes and by a corporate culture geared to facilitate rapid industry expansion. The leadership of the regulatory arm of government is now in the hands of the same Ministry responsible for promoting oil and gas development.³⁰

A truly independent body is therefore needed that has as its sole mandate the protection of health of local citizens by conducting research into health effects of oil and gas activity, and having the authority to implement measures to better protect the public health of those most affected.

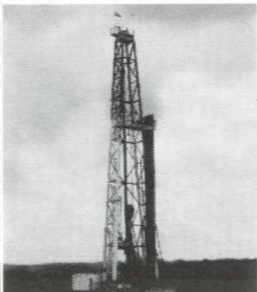
Recommendation 5

Create an independent health and pollution body to research, strengthen, and enforce pollution and health rules in BC relating to oil and gas activity.



6

Proliferation of oil and gas infrastructure on First Nation's lands has put their traditional resources under increasing pressure.



Recognize Aboriginal Title and Rights

Most of BC's lands and waters have never been ceded by First Nations, and the legal powers of the Crown exists subject to the exercise of First Nations Rights and Title, and subject to Treaties where they have been signed. Canadian constitutional law requires that Aboriginal peoples be consulted where resource development may affect their rights.

The Haida and Taku decisions of the BC Court of Appeal in 2003 confirmed the scope of this duty and the additional obligation to seek workable accommodation of First Nations cultural and economic interests. In some cases, the consultation duty extends beyond governments to companies. A failure to fulfill these obligations can result in resource permits and licenses being struck down as invalid.

In BC's northeast, an 1899 Treaty established for the Treaty 8 First Nations rights to hunting, fishing, and trapping. But proliferation of oil and gas infrastructure on their lands has put their traditional resources under increasing pressure. Other First Nations in BC will face similar pressure as this activity expands into new basins.

The Treaty 8 First Nations, unlike others, have oil and gas agreements with the BC government. But, these agreements were signed before recent court developments and do not describe how the government will accommodate their rights, nor do they address the cumulative impacts of oil and gas development on lands and resources. They do not provide for revenue sharing, nor do they provide a meaningful role in oil and gas tenure sales. This means that BC taxpayers could be on the hook for compensation to industry if the government sells leases that are subsequently struck down by the courts due to the BC government's failure to accommodate aboriginal concerns.

So, even where oil and gas agreements exist with First Nations, the legal uncertainty of these arrangements casts a shadow over oil and gas activity in BC.

The BC government has just begun to recognize the need to update agreements with First Nations. In November 2003 it agreed to "explore" revenue sharing with Treaty 8 First Nations, although it was silent about negotiating revenue sharing with other First Nations in other areas with oil and gas potential.³¹ Equitable revenue sharing is only one of several important concerns for Treaty 8 First Nations; negotiations regarding other issues are just beginning.

Recommendation 6

Recognize First Nations Treaty and Aboriginal Rights and Title through meaningful joint management, including First Nations consent over development, revenue sharing, and management of cumulative impacts.

7

Restore Monitoring and Enforcement Capacity

The government's own reviews reveal routine non-compliance, and while some problems get addressed, overall non-compliance remains.

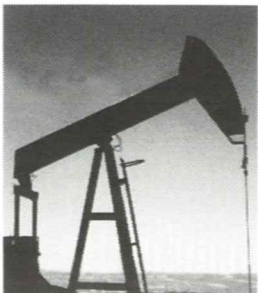
Weak BC laws governing oil and gas development are a problem, but making matters worse is non-compliance with the laws that do exist. Primary compliance responsibility lies with the OGC. The government's own reviews reveal routine non-compliance, and while some problems get addressed, overall non-compliance remains. This is particularly troublesome in light of cutbacks in compliance and monitoring staff in the BC government at a time of dramatic increases in oil and gas activity.

Oil and gas compliance reviews have been conducted for the past three years, and while the message from the government is one of improved performance, the data suggest otherwise. Each review has become progressively less comprehensive, calling into question whether they provide an adequate picture of compliance. In 2001, 540 inspections were conducted; in 2002, only 186 inspections were carried out – a 66% decrease. In 2003, the number of inspections went back up to 434, yet well sites were excluded despite repeated well site non-compliance in prior years.

In the same time frame, there has been a 25% increase in the number of wells drilled, which brings additional impacts through the associated increases in infrastructure. As a result of the 2003 review, the government issued 49 tickets, with penalties ranging from \$230 to \$575 – little more than the cost of a speeding ticket.³²

Other agencies that also oversee oil and gas activity, and that are more independent than the OGC, have seen stark cutbacks.³³ In 2002, the Ministry of Water, Land and Air Protection conservation officers and support staff in the northeast were cut by almost 50 percent. Also cut was a unique two-person conservation officer team that focused primarily on the oil and gas industry, and the seven person special waste unit.

The situation stands to get worse with the government push for all regulations to live within the "single window" of the OGC in order to ensure expedited development. The strength of monitoring and enforcement systems is based upon the checks-and-balances provided by other line agencies such as the Ministry of Water, Land and Air Protection, the Ministry of Sustainable Resource Management, the Ministry of Forests, the Workers Compensation Board, and others. Other agencies ensure that other values are being considered and taken into account as oil and gas activity occurs.³⁴



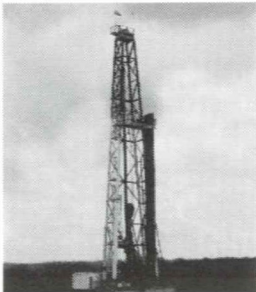
Recommendation 7

Restore monitoring and enforcement staff to pre-2001 levels, and index increases in staff to wells drilled; implement meaningful fines for infractions; maintain oversight roles of agencies other than the Oil and Gas Commission.

8

Suspend Coal Bed Methane Development

In September 2003, the Union of BC Municipalities passed a resolution calling for a moratorium on new coalbed methane leases.



Coalbed methane (CBM) is found in and around coal seams. CBM schemes have been underway for over a year on Vancouver Island, in the Kootenays, in BC's northeast, and plans are underway to expand to the south central interior near Princeton and elsewhere.

CBM development differs from conventional gas production in two key ways. First, it requires that wells be closer together, resulting in more intensive land impacts with more roads, pipelines, compressors and other equipment. Whereas conventional production usually has one well per 640 acres, in some parts of the US CBM wells are set at one every 40 acres. Current BC law does not set a limit on the spacing of CBM wells. Like other gas development, it can happen on private and Crown land.

Second, CBM is held in coal seams by large quantities of water which must first be pumped out to release the gas. This produced water can be saline, and may contain heavy metals. Surface disposal of such water has proven damaging to surface vegetation and crops in the US. Discharge into streams could damage water quality. Re-injection may be the most environmentally benign option but can only occur where the geology permits it.

Fresh water supplies can also be contaminated by CBM production. "Fracking" materials used to force open larger openings to let gas out can contain "benzene, polycyclic aromatic hydrocarbons, ethylbenzene, toluene, xylenes, naphthalene, methanol, sodium hydroxide, and MTBE."³⁵ While companies try to remove fracking agents, 20-30% of the materials may remain in the ground, and could remain even after flushing.³⁶ This contamination is such a concern that US courts have ruled that fracking materials be regulated under the US *Safe Water Drinking Act*.

The impacts of removing large quantities of groundwater are not well understood. Many rural residents depend on local aquifers for drinking and irrigation, and face potential problems should aquifers be depleted. This water also prevents methane from flowing, and there are incidents of the groundwater removal allowing methane to migrate underground to local people's water wells and basements, creating health and safety hazards.

In September 2003, the Union of BC Municipalities passed a resolution calling for a moratorium on new CBM leases until local people have been better consulted and adequate safeguards put in place. This resolution should be heeded.

Recommendation 8

Suspend coalbed methane development until comprehensive studies into well spacing and water issues are completed to the satisfaction of affected communities, and until appropriate safeguards are put in place.

9

Protect BC's Parks and Wildlife

In its rush for oil and gas development, the BC government is sacrificing the parks and protected areas that British Columbians now enjoy.

Over the past decade, BC has made good strides in its protected areas network, but because endangered and threatened species continue to decline, more work is needed to safeguard species, as well as to ensure that enough representative ecosystems are protected. Unfortunately, in its rush for oil and gas development, the BC government is sacrificing the parks and protected areas that British Columbians now enjoy.

The 2003 *Parks and Protected Areas Statutes Amendment Act* amended the boundaries of the Graham-Laurier Park to legalize an access road for oil and gas, despite the existence of a consensus agreement at the regional land use table that it not be allowed. By the summer of 2004, the BC government wants to establish a formal process whereby industry can apply to have lands removed from parks "in the public interest" in order to access oil and gas deposits.³⁷

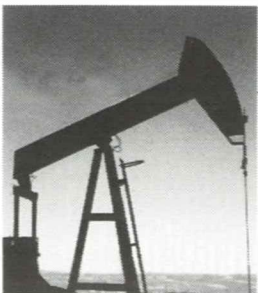
Each linear mile of road disrupts a minimum of about four adjacent acres of habitat.³⁸ Roads can be one of the most damaging developments in parks. Predators such as wolves quickly learn that prey species such as moose use roads because they are easy to move along, disrupting predator-prey relations. Other species like grizzly bears need large uninterrupted wilderness, while others, such as the pileated woodpecker, avoid 'edge' forests. Roadkill can take a major toll on high traffic roads, and stream crossings required for roads harm streams and fish.

The 2003 legislation also allows drilling under parks and protected areas. While directional drilling can prevent activity on land within the park, these changes open the door to parks becoming isolated islands of wilderness, as they are surrounded by industrial activity. Drilling brings toxic sump pits and other infrastructure, which cumulatively could affect species migration. Buffer zones around parks should be considered to protect key ecological functions.

The government is also diminishing protection for the Muskwa-Kechika Management Area in northern BC, an internationally significant conservation area that contains 50 intact watersheds and 16 million acres of wilderness. The 1998 *Muskwa-Kechika Management Act* resulted from a broad consensus, including industry, guide-outfitters, some First Nations, municipal government and conservation groups. Changes include cuts to funding for the management area, and easing planning requirements to allow oil and gas development before scientific studies are complete. These changes are undermining the area's governance framework and threatening the integrity of this pristine region.

Recommendation 9

Protect the integrity of BC's parks by reversing legislative changes that undermine our system of protected areas, and disallow industrial roads and development within park boundaries.



10

Implement Cumulative Impact Management

BC is only beginning to come to terms with impacts on timber from the oil and gas industry.

One oil well does not seem to have a big impact. But each well brings with it seismic lines, access roads, pipelines, batteries, compressor stations, industrial waste disposal sites, and more. In 2003 there were 1,100 wells drilled in BC, and 1,300 more are planned for 2004,³⁹ taking the total number of wells drilled in BC to over 15,000, all with associated infrastructure.

Seismic lines typically involve clearing five metre wide swaths of land several kilometers in length. Along the lines, dynamite charges are set off to identify geological structures where oil or gas may be found. In an 80 square kilometer area, there can be 2,000 kilometres of disturbance. In 2003, an estimated 21,700 kilometres of seismic lines were cut in BC, bringing the estimated total length of seismic lines in BC to 110,400 kilometres, the equivalent of crossing Canada over 20 times.⁴⁰ There are lighter touch seismic testing methods such as hand cutting and heli-seismic, but these are not mandated in BC.

The cumulative impacts reduce habitat for wildlife, eventually diminishing hunting opportunities for everyone, and affecting the exercise of traditional Aboriginal activities in particular. An Alberta study concludes that cumulative impacts will reduce the habitat for woodland caribou in the study area from 43% to 6% of the land base within 100 years.⁴¹

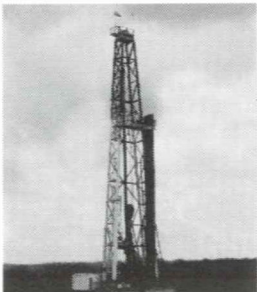
Cumulative impacts also mean negative economic impacts on the forest industry. In 1998, Alberta-Pacific, Alberta's largest forest company, said that it faced timber shortages because of cumulative impacts.⁴²

BC is only beginning to come to terms with impacts on timber. For example, in the March 2003 rationale for the Fort St. John Timber Supply Area, the Chief Forester admits that the "assumptions applied in the analysis have likely underestimated the impact to the timber supply in the Fort St. John from the oil and gas industry."⁴³ In other words, the rate of cut for forestry set by the government is too high because of oil and gas activities.

BC must develop a system to plan and manage for the impacts of multiple industries on the same landbase over time. Maximum impact thresholds must be established for resource extraction, other human uses, and ecological requirements for lands and wildlife, allocating acceptable levels of activity so that overall impacts on the land do not exceed the thresholds. Cumulative impact management is an emerging response to this challenge that the government must implement.

Recommendation 10

Establish binding cumulative impact thresholds in BC's oil and gas areas, and budget activity between various uses of the landscape to be conducted within those thresholds.



Notes

- ¹ "Weather Related Natural Disasters in 2003 Cost the World Billions," United Nations Environment Program, December 10, 2003; "Insurer warns of global warming catastrophe threat," Reuters, March 3, 2004. Dollar amounts in Canadian currency.
- ² "Global warming kills 150,000 people a year, warns UN," Terry Kirby, Independent (UK), December 12, 2003.
- ³ "Mass Extinction Looms By 2050, Climate Study Finds," UN Wire, January 8, 2004.
- ⁴ "Forest fires will drain millions from BC's budget," Brent Jang, Globe and Mail, 11 September 2003.
- ⁵ See the deregulation backgrounder series at www.wcel.org.
- ⁶ "Energy For Our Future," Government of British Columbia, November, 2002.
- ⁷ NAFTA, Article 605. Mexico did not sign onto the "proportionality" clause.
- ⁸ "Annual Drilling and Production Statistics in BC, 1966-2002," BC Ministry of Energy and Mines.
- ⁹ The National Energy Board predicts deliverability from the Western Canadian Sedimentary Basin will decrease from 462 million m³/d at the end of 2002 to 448 million m³/d by the end of 2005; see http://www.neb-one.gc.ca/energy/EnergyReports/EMAGasSTDeliverabilityWCSB2003_2005_e.pdf. The US Energy Information Administration (EIA) predicts that gas imports from Canada will stay at current levels of about 3.6 trillion cubic feet per year through 2010. After that, there will be a steady decline to 2.6 trillion cubic feet by 2025. See <http://www.eia.doe.gov/oiaf/aeo/index.html>
- ¹⁰ "Industry Urged to Watch for Regular Oil Production Peaks, Depletion Signals," C.J. Campbell, *Oil and Gas Journal*, 14 July 2003.
- ¹¹ According to BC government estimates, BC's total oil reserves would only supply three years of overall US consumption, and our total gas reserves would only supply almost seven years of overall US consumption. The BC government estimates the total possible BC oil reserves – including those yet to be discovered – at 18 billion barrels, and BC's total gas reserves, including coal bed methane, at 199 trillion cubic feet. These figures do not distinguish between total reserves and recoverable reserves, which will be less.
- ¹² "Alberta big winner in B.C.'s booming oil and gas industry," Scott Simpson, *Vancouver Sun*, 18 October 2003.
- ¹³ "Comparative Analysis of Employment from Air Emissions Reduction Measures," B. Campbell, L. Dufay, and R. Mackintosh, Environment Canada, January 1997.
- ¹⁴ *New Energy for America*, The Apollo Alliance, January 2004.
- ¹⁵ *New Energy for America*.
- ¹⁶ BC has a voluntary goal of 50% of new electricity from "clean" sources, yet the Fall 2003 announcements of 'green' power purchases by BC Hydro amounted to 30 times less energy than the projected increase in natural gas production in BC over the next three years.
- ¹⁷ *Global Wind Energy Market Report*, American Wind Energy Association, 2003.
- ¹⁸ "A New Era of Prosperity," BC Liberal Party.
- ¹⁹ "Oil and Gas Development Strategy For the Heartlands, Government of British Columbia. See: http://www.em.gov.bc.ca/PublicInfo/OilGasStrategySupport_Materials/oil_and_gas_strategy_default.htm
- ²⁰ "Northern Greed," Andrew Nikiforuk, *Canadian Business*, May 5, 2003.
- ²¹ Chad is placing 10% of its oil dividends and royalties into its "Future Generations Fund." For more information, see the World Bank at www.worldbank.org
- ²² Research conducted by the Pembina Institute.
- ²³ "Energy Policy," Communications, Energy, Paperworkers Union, adopted at Convention, September 2002.
- ²⁴ BC Oil and Gas Commission.
- ²⁵ *Beyond Ecoterrorism: The Deeper Issues Affecting Alberta's Oilpatch*, Pembina Institute, Tom Marr-Laing and Chris Severson Baker, February 1999, p. 6; and Pump It Out: The Upstream Impacts of BC's Oil and Gas Industry, West Coast Environmental Law, 2003, p. 30.
- ²⁶ *Beyond Ecoterrorism*, p. 7.
- ²⁷ *America's Gas Tank: The High Cost of Canada's Oil and Gas Export Strategy*, Natural Resources Defense Council and Sierra Club of Canada, October 2002, p. 14.
- ²⁸ "Standing in Wiebo's Shadow," Shefa Siegel, unpublished, 2003.
- ²⁹ "Sour Gas: The Smell of Money," Shefa Siegel, the Tyee.ca, posted March 24, 2003.
- ³⁰ See: www.wcel.org/deregulation/bill36.pdf. The Deputy Minister of Energy is now the Chair of the OGC Board.
- ³¹ "Strategy to Accelerate Oil and Gas Development," BC Ministry of Energy and Mines press release, November 14, 2003.
- ³² "Tougher pollution penalties promised," Larry Pynn, *Vancouver Sun*, January 12, 2004.
- ³³ See section 5 of this report.
- ³⁴ A new agreement whereby the BC Agricultural Land Commission has exempted certain wells from its application process and delegated other applications to the OGC takes effect in April, 2004. See www.landcommission.gov.bc.ca.
- ³⁵ "Oil & Gas Leasing & Development Draft Supplemental Environmental Impact Statement," Bureau of Land Management, Colorado State Office, Glenwood Springs Resource Area. June, 1998, Appendix L: Hazardous Materials Summary, pp. L-1, L-4-5.
- ³⁶ "Comparison between Gel-Fracture and Water-Fracture Stimulations in the Black Warrior Basin", I.D. Palmer et al., Proceedings of the 1991 Coalbed Methane Symposium 233, 237; and "Damage to Coal Permeability During Hydraulic Fracturing," R. Puri, G.E. King, and I.D. Palmer, 1991, Society of Petroleum Engineers Proceedings from Rocky Mountain Regional Meeting and Low-Permeability Reservoirs Symposium, Denver, CO, p. 109-115, (SPE # 21813).
- ³⁷ "Bill 84 to allow park road," Larry Pynn, *Vancouver Sun*, 12 December 2003.
- ³⁸ *Pump it Out*, West Coast Environmental Law, pp. 18 – 19.
- ³⁹ "Strategy to Accelerate Oil and Gas Development," BC Ministry of Energy and Mines press release, November 14, 2003.
- ⁴⁰ The OGC advises that the actual amount of seismic activity is generally half of the proposed amounts available on the website. We have cut their estimated numbers in half to respect this; the actual amounts may be higher. See: <http://www.ogc.gov.bc.ca/coporatereports.asp?view=2>.
- ⁴¹ "Managing the Cumulative Impacts of Land Uses in the Western Canadian Sedimentary Basin: A Modelling Approach," Richard Schneider, et al., *Conservation Ecology*, Vol. 7, Issue 1, Article 8, 2003.
- ⁴² "Industry Recognizes Need For Change," Bob Weber, CP, *Edmonton Journal*, December 6, 1998.
- ⁴³ "Fort St. John Timber Supply Area Rationale for Allowable Annual Cut (AAC) Determination Effective 1 March 2003," British Columbia Ministry of Forests, Larry Pedersen, Chief Forester.



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