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CCPA-BC Submission to the Scientific Hydraulic Fracturing Review Panel

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From the limited correspondence I have received from the Ministry of Energy, Mines and Petroleum Resources, I understand that the Panel has asked me to be here today because of my work as a public policy researcher and in particular because of recent research that I have done on “water storage” issues in northeast British Columbia.

I will speak to you about my research conclusions and do my best to situate that work in terms of the specific things that you as panel members have been called upon to do.

Before doing so, however, I want to note that last November the organization I work for (Canadian Centre for Policy Alternatives) joined with First Nations’ associations, public educators, public health associations, environmental and non-governmental organizations to call on the provincial government to launch a full public inquiry into all aspects of hydraulic fracturing or fracking and natural gas extraction in British Columbia. The 17 organizations in total reiterated that call a month later.

We maintained then that the provincial government’s anticipated instructions to this Panel would result in a process that was far too narrow in scope and that would not address the numerous, well-documented impacts that fracking and natural gas extraction have had on the environment more generally and water resources more specifically. We also flagged our concerns about the impact of fracking and gas extraction on air quality, our climate, human health and safety, and Indigenous Peoples and communities.

We reiterated those concerns again early this spring when the provincial government announced the appointment of this Panel. We also expressed serious reservations at that time that at least one high-ranking civil servant with the Ministry of Energy, Mines and

Petroleum Resources had shared in advance key details on what this panel would, and would not, focus on with Canada's preeminent oil and gas industry lobby organization – the Canadian Association of Petroleum Producers.

It is important that the record show that the tens of thousands of British Columbians who are members and supporters of the 17 organizations I refer to, remain deeply concerned about the numerous, interconnected problems associated with fracking and natural gas extraction in our province. They believe a full public inquiry is the bare minimum needed to begin to address those problems, and they are disappointed at the government's rejection of such an inquiry as the vehicle to address those issues.

Having said that, I will do my best to confine my remarks to the research that you specifically asked me to address, as well as additional research that touches on your mandate. I will also try my best to relate my comments and recommendations to your mandate.

You have been asked to provide the Province with findings and advice on:

- 1) What role hydraulic fracturing has in induced seismicity in northeast BC.
- 2) What impacts hydraulic fracturing has on water quantity and quality.

More specifically, you have been asked to address the following two questions:

- 1) Does BC's regulatory framework adequately manage for potential risks or impacts to safety and the environment that may result from the practice of hydraulic fracturing?
- 2) How could BC's regulatory framework be improved to better manage safety risks, risk of induced seismicity and potential impacts on water?

I will confine my comments to the public policy research work I have done that touches on these topics. I will begin by presenting evidence of a rapid run-up in the construction of unregulated or unlicensed dams in northeast British Columbia, and how the majority of those dams were built without the proper authorizations first being obtained.

A large network of unauthorized dams

There are now at least 92 dams that were built in northeast BC without the companies that built them first obtaining the required licences and authorizations. The provincial energy industry regulator, the Oil and Gas Commission (OGC), allowed the majority of those structures to be built on its watch and now has responsibility for retroactively bringing 51 of those structures into compliance with water laws and dam safety regulations.

Roughly half of the 51 structures that the OGC allowed to be built on its watch fully qualified as dams under the old *Water Act* and were required to conform to the rules and regulations then in place. The most important of those regulations was that companies could

not build dams without first having applied for and obtained water licences. Only after water licences had been obtained were companies to take the next step of submitting dam construction plans and specifications to provincial dam safety officials for review and approval.¹

This is an important point because when the initial research I did on this topic was nearing publication in May 2017, Progress Energy, a company responsible for building the lion's share of the unauthorized dams, tried to suggest that it was only because of passage of the new *Water Sustainability Act* that the company had been forced, retroactively, to apply for water licences. This, quite frankly, was a red herring. The dams were built prior to the new *Act* being passed, and many of them were purposely built to trap water from surface water sources such as streams. The *Water Act* clearly required anyone seeking to divert water from such sources to first apply for and be granted water licences. There was also a clear requirement, given the size of the dams that Progress Energy and other companies built, to submit plans to build such structures to the relevant provincial agency. That did not happen either.

We now know, after the fact, that at least two of the unlicensed dams built under the OGC's watch were so large that they qualified as major projects under the provincial *Environmental Assessment Act*. One of the two dams was as high as a seven-storey apartment building. Those two dams are now under retroactive review by the provincial Environmental Assessment Office, which is soon expected to rule on Progress Energy's retroactive application to have the two dams exempt from a formal provincial environmental assessment.

This massive build-out of dams, all of which fully qualified as regulated structures, in addition to the huge increase in unlicensed water withdrawals and water impoundments, occurred on the OGC's watch. Only well after the fact did the OGC begin to take significant steps to start to bring the unlicensed structures into compliance. Many of those structures, as subsequent research indicated, had serious design flaws that posed potentially serious environmental and public health and safety risks.

All of this unregulated dam-building was in direct service to the fracking industry because the water that was impounded was intended for use in fracking operations.

I would suggest to the Panel that a proliferation of unauthorized dams and unauthorized water diversions is proof of regulatory failure on the part of the OGC. At present, the energy industry in BC is the only industry in the province that can obtain rights of access to water

¹ Ben Parfitt. "Easy Water: Time bombs, fracking dams and the rush for H2O on private farmlands." Policy Note. May 29, 2018. <http://www.policynote.ca/easy-water-time-bombs-fracking-dams-and-the-rush-for-h2o-on-private-farmlands/>

from its own dedicated regulator – the OGC. In all other instances involving the assignment of water rights, it is the responsibility of the provincial Ministry of Forests, Lands, Natural Resource Operations and Rural Development to review applications and to consider the broader implications of multiple water assignments in watersheds. That ministry is also responsible for dam safety.

The OGC failed repeatedly to require companies to obtain water licences before they began diverting water. It also failed repeatedly to stop unauthorized dams from being built in violation of the *Water Act* and the provincial Dam Safety Regulation and, in two notable cases, the *Environmental Assessment Act*.

Either OGC personnel were unaware that provincial regulations were being repeatedly violated, or they were aware that water diversions and the construction of unregulated dams were occurring on its watch and did nothing about it. Neither scenario inspires confidence that the energy industry regulator is the proper entity to manage and conserve water resources on the public's behalf.

Fracking and Groundwater

In the fall of 2017, the public learned that the Oil and Gas Commission had held onto a report for four years that showed a large number of drilled and fracked gas wells in one remote operating area in northeast BC were leaking methane gas and potentially contaminating groundwater.²

Groundwater contamination is known to occur with regularity in jurisdictions where natural gas companies operate. The OGC's decision to suppress the report on grounds that it was an "internal" report only does not inspire public confidence. Public confidence is undermined even further when the OGC maintains that because the report was for internal use only, successive energy ministers were apparently not briefed on the report's findings.

A little-appreciated fact is that increased gas drilling and fracking in shale formations—typically the zone where companies operating in northeast BC now focus their efforts—actually increases the risk of groundwater contamination. In a study that examined over 41,000 conventional and unconventional oil and gas wells in Pennsylvania drilled between 2000 and 2012, a team of scientists found there was a sixfold increase in cement and/or casing issues for shale gas wells relative to conventional gas wells.³ When gas well cement

² Andrew Nikiforuk. "Despite What Politicians say, Hundreds of BC Gas Wells Leak Methane: Industry regulator withheld data from government for four years." *The Tyee*, Nov. 23, 2017.

³ Anthony Ingraffea et al, "Assessment and risk analysis of casing and cement impairment in oil and gas wells in Pennsylvania, 2000-2012." *Proceedings of the National Academy of Sciences USA*. 2014 Jul 29; 111(30): 10955-10960.

jobs are damaged or fail, elevated levels of methane are often subsequently detected in groundwater aquifers.

The suppressed groundwater report was actually prepared internally by the OGC and circulated within the agency as of December 2013. At that time, fracking companies were required by regulations under the *Oil and Gas Activities Act* to report all known “gas migration” problems to the OGC and to then “eliminate” such problems.

Stopping gas from migrating at a leaking well, however, is extremely expensive and can cost millions of dollars.

This may explain why, in 2015, the OGC expunged this requirement from the regulations. The OGC Board can change regulations and was granted such powers with passage of the *Oil and Gas Activities Act* in 2008. This very unusual arrangement is almost without precedent in the province. But that is what we have in this instance.

So to recap. A report is produced by OGC personnel. The report shows there is a significant risk of groundwater contamination at numerous gas wells. Academic literature shows increased risk of such contamination at drilled and fracked shale gas wells. The rule on the books says where there is evidence of groundwater being contaminated, companies must “eliminate” the problem. And what does the OGC do in response? It eliminates the regulatory requirement to fix the problem.

Not only is the current regulatory framework not adequately managing for potential risks, but the *Oil and Gas Activities Act* essentially allows regulations to be weakened, thus increasing the risks to our shared water resources.

As with my recommendation on surface water allocations and oversight of regulated dams, I would suggest that in order to better manage safety and environmental risks, responsibility for authorizations in groundwater zones and protection of groundwater assets should be taken away from the OGC and placed with another provincial agency.

More water at more fracking sites means more earthquakes

Recent scientific analysis of 300 fracked wells near Fox Creek, Alberta, showed that even modest injections of water in the 10,000-cubic-metre range can trigger earthquakes in geologic formations containing faults. The same study, as reported by investigative journalist and author Andrew Nikiforuk, found that the larger the volume of fluids injected underground, the greater the number of earthquakes were triggered. Nikiforuk went on to quote Gail Atkinson, one of the study authors.

“The rate of earthquake scales with the rising volume of injected fluids in sensitive areas,” said Gail Atkinson, one of the paper’s co-authors and a Univeristy of Western Ontario professor who holds a research chair in in the hazards from induced seismicity.

“The more fluid you inject, the higher the productivity of earthquakes. It is almost like a dial,” she said. “It implies that you can affect the rate of earthquakes by changing the injected volume.”⁴

A challenge for this Panel is whether findings such as this negate the possibility that there is anything even remotely close to a “safe” fracking operation.

The volume of water used in fracking operations is ratcheting up steadily in northeast BC. Between 2014 and 2015, Progress Energy, the same company responsible for building numerous unlicensed dams in the region, triggered almost 700 earthquakes in northeast BC, including a 4.6 magnitude tremor felt 180 kilometres away. The fracking operation that triggered that earthquake used 160,000 cubic metres of water, chemicals and sand over a three-week period.⁵

We now know that at least one other provincial agency has serious concerns about the impact that fracking-induced earthquakes can have on critical public infrastructure. That agency is BC Hydro, and it is concerned about the potential for induced earthquakes to damage the utility’s Peace River dams.

As a result of those concerns, BC Hydro and the OGC effectively reached a “gentlemen’s agreement” to prohibit fracking within zones near its existing Peace River dams and the Site C dam, currently in preliminary development.⁶

As part of my own research I obtained the precise geographical coordinates for the Site C construction site and the Peace Canyon dam. I plugged those coordinates into a search engine maintained by the federal government.

⁴ Andrew Nikiforuk. “Warning Bells about Fracking and Earthquakes Growing Louder: Quakes easy to trigger hard to halt, researchers find.” The Tyee. March 1, 2018.

⁵ Andrew Nikiforuk. “Warning Bells about Fracking and Earthquakes Growing Louder: Quakes easy to trigger hard to halt, researchers find.” The Tyee. March 1, 2018. <https://thetyee.ca/News/2018/03/01/Warning-Bells-Fracking-Earthquakes-Louder/>

⁶ Ben Parfitt. “Hydro Officials Quietly Feared Fracking Threat to Peace River Dams: FOI reveals Crown corp’s behind-the-scenes negotiations for a buffer zone around projects.” The Tyee. August 16, 2018. <https://thetyee.ca/Opinion/2016/08/16/Fracking-Threat-Peace-River-Dams/>

I looked at the frequency of earthquakes each year for the last 25 years, configuring my search to look at earthquakes within 50 kilometres of both dams. There is a very clear, across the board increase in earthquakes in the past five years. Of the 216 earthquakes noted within the past 25 years at the Site C location, 145 of them or 67 per cent occurred within the past five years. In the case of the Peace Canyon dam site, the increase is even more dramatic. Of the 166 earthquakes to occur during that 25-year period, 150 of them or 90 per cent occurred in the past five years. “Most” of those increases, according to communication with professor Atkinson, are likely to be attributable to increased oil and gas industry activities.

My question to the Panel is this:

BC Hydro has effectively pressed for frack-free exclusion zones to protect its dams. A precedent of sorts has been set because of its concerns. Where also might exclusion zones or outright bans on the use of such brute-force technology make sense? Near schools and highways? Near private homes and drinking water wells? Near bridges and geologically unstable slopes? Near unauthorized, poorly built fracking dams themselves?

Not only should a list be developed where fracking operations are prohibited because of the acknowledged need to protect other public resources, but the Province should have to justify on what grounds fracking is deemed to be “safe” to proceed.

Fracking and the UN Declaration on the Rights of Indigenous Peoples

As part of your mandate, you have been asked to carry out your duties in accordance with the Province’s adoption and implementation of the United Nations Declaration on the Rights of Indigenous Peoples.

The “free, prior and informed consent” of First Nations or Indigenous Peoples is a central theme in the Declaration. I wish to flag to the Panel that there is much to suggest that what has happened to date in the northeast has not taken place with the “free, prior and informed consent” of First Nations.

In fact, if one looks at the proliferation of unlicensed dams on Treaty 8 lands in northeast BC, there is evidence that First Nations were misled about what would occur on their traditional lands. The strongest evidence of this is the alleged “consultation” documents delivered to the Blueberry River First Nation when Progress Energy was contemplating proceeding with its Lily dam, which is the tallest known unauthorized dam built in northeast BC.

In various documents filed with the First Nation by the proponent and with the knowledge of the OGC, the dam was variously described as a “water storage site” or a “proposed

irregular shaped water storage site” or a “water storage pit.”⁷ The word ‘dam’ appeared nowhere in the written materials sent to the Blueberry River First Nation.

If the very nature of the project is misconstrued as it was in this case (a pit is a hole in the ground not a wall of earth rising above ground level to the height of a seven-storey apartment building) then the Province did not engage in meaningful consultation and the Nation involved did not come remotely close to giving its free and informed prior consent.

Such treatment of First Nations, sadly, is not unusual. In December 2017, members of the Fort Nelson First Nation successfully argued before the Supreme Court of British Columbia that the OGC had failed in its duty to consult the Nation and accommodate the Nation’s concerns about a proposed gas pipeline to be built through a portion of its territory. The Nation had expressed serious reservations about the impacts that the pipeline could have on threatened boreal caribou herds.

In her reasons for judgement, Madame Justice Gerow found much to be concerned about with the OGC’s level of consultation.

“ . . . when the Commission’s initial response to their concerns is to tell the Fort Nelson First Nation it will not discuss them, and that the Commission is satisfied that the Project will not have a material adverse effect on the ability of wildlife within the ungulate winter range to provide for the survival of boreal caribou within it, it cannot be said that the Commission was willing to engage in consultation.”⁸

An outstanding issue relating to increased gas drilling and fracking in northeast BC is the “cumulative” impact that multiple activities have already had and will increasingly have on lands and resources that have been occupied by the region’s Indigenous peoples for thousands of years. Article 29 of the UN Declaration of the Rights of Indigenous Peoples, which this Panel has been told to pay special attention to, says the following:

“Indigenous peoples have the right to the conservation and protection of the environment and the productive capacity of their lands and resources. States shall establish and implement assistance programmes for indigenous peoples for such conservation and protection without discrimination.”⁹

⁷ Ben Parfitt. Letter to the Environmental Assessment Office Regarding Progress Energy’s Exemption Applications regarding its Lily and Town Dams. September 20, 2017.
<https://projects.eao.gov.bc.ca/api/document/59ca7f0d0daa2600196ea5d8/fetch>

⁸ The Fort Nelson First Nation v. BC Oil and Gas Commission., 2017 BCSC 2500. December 15, 2017.

⁹ United Nations. United Nations Declaration on the Rights of Indigenous Peoples. 2007.
http://www.un.org/esa/socdev/unpfii/documents/DRIPS_en.pdf

As part of your mandate, it is incumbent upon you to address glaring failures in the consultation record to date by the OGC and energy industry proponents and to determine how Article 29 will be properly addressed.

Conclusion

In closing, I want to leave the Panel with a few suggested courses of action.

First, the oil and gas industry is treated in a very different manner than other industries are treated in this province. Thanks to having its own dedicated regulator, the industry gets all of its water authorizations from the OGC. The evidence is clear that the industry is using more and more water in its fracking operations and that the OGC has granted a large number of new water licences and has numerous other water licence applications before it.

The OGC is making these authorizations outside of the broader framework of overall water authorizations in the province, and it is making those authorizations to one industry while all other authorizations to all other users are essentially under the control of the lead line agency for the province—The Ministry of Forests, Lands, Natural Resource Operations and Rural Development. There is stark evidence that the OGC has failed in its responsibilities to allocate water resources.

Recommendation #1. All responsibilities for allocating water resources as well as regulating dams should be returned to the Ministry of Forests, Lands, Natural Resource Operations and Rural Development.

The OGC's primary responsibility is to streamline the review and approval process for oil and gas company applications. It is also tasked with monitoring and enforcing all relevant regulations, including environmental regulations. The proliferation of unlicensed dams built on the OGC's watch and the suppression of a key document pointing to groundwater contamination at numerous natural gas well sites strongly suggest that the OGC is failing to be an effective monitoring and enforcement agency.

Recommendation #2. All responsibilities to monitor and enforce oil and gas industry compliance with relevant environmental laws (including water laws) should be taken from the OGC and assigned to a separate agency with a clear and strong environmental protection mandate.

The *Oil and Gas Activities Act* gave the board of the Oil and Gas Commission extraordinary powers to change regulations, which confers on the OGC a great deal of power unmatched in almost any provincial agency.

Recommendation # 3. The Oil and Gas Activities Act should be amended to remove from the OGC's powers the ability to change or create new regulations under the Act.

With clear evidence that BC Hydro believes there are risks posed to critical public infrastructure from oil and gas drilling and fracking operations that trigger earthquakes, it is incumbent on the Province to identify the broad range of lands where fracking operations should be prohibited because of the risks they pose to human health and safety and the environment. This is especially the case with the growing body of scientific literature that points to more earthquakes being triggered as the volume of water used in fracking operations increases.

Recommendation # 4. The Panel should recommend that the Province clearly identify all areas where fracking operations will be prohibited because of human health and safety and environmental risks. The Panel should also recommend that in areas where the Province says fracking can proceed that it provide a clear explanation as to why.

The Province has stated to the Panel that it places a priority on implementation of the UN Declaration on the Rights of Indigenous Peoples. If the Province is serious about that commitment, it must acknowledge the strong objections of First Nations in northeast BC to various energy industry proposals over the years, and the “cumulative” effects that multiple developments have had on both lands and resources as well as on the health and well-being of Indigenous communities in the region.

Recommendation #5. The Panel should recommend some form of a new “co-management” model between the Province and First Nations that gives First Nations the power to anticipate future developments on their lands and to adequately conserve land, air and water resources.

