

March - Email Submissions

Subject	The Effects of Fracking on our Agriculture and Food Systems in NS
To	HFRReview
Cc	premier@gov.ns.ca; keith@irvingmla.ca
Sent	Monday, March 31, 2014 4:39 PM

To the NS Hydraulic Fracturing review panel:

Based on my research done on fracking in the Maritimes and across North America, I would like to express my concerns about the impacts of fracking in Nova Scotia.

As a farmer, filmmaker, and award-winning food blogger, I have written about the connection between healthy food systems and fracking before. Nova Scotia is an agricultural province and we cannot risk the impacts hydraulic fracking could have on our land and on our food. Farmers need clean air, clean water, and clean soil in order to produce healthy foods to sustain a healthy population.

I hope that in your review process, you will consider the peer-reviewed report produced by Michelle Bamberger, an Ithaca veterinarian, and Robert Oswald, a professor of molecular medicine at Cornell's College of Veterinary Medicine. Their eye-opening report shows a link between fracking and illness in livestock destined for human consumption. The authors compiled case studies of 24 farmers in 6 shale-gas states whose livestock experienced neurological, reproductive, and acute gastrointestinal problems after exposure to tracking chemicals in the water or the air. Many of the animals exposed to these chemicals have died. It is worrisome to think that humans would not only be exposed to the same toxic chemicals (which are too numerous to list here, and some of which are company trade secret and therefore undisclosed) but we would also potentially be consuming the meat of animals exposed to toxic chemicals.

The following is an excerpt from an article by [Elizabeth Royte published in "The Nation"](#):

"In Louisiana, seventeen cows died after an hour's exposure to spilled fracking fluid. (Most likely cause of death: respiratory failure.) In north central Pennsylvania, 140 cattle were exposed to fracking wastewater when an impoundment was breached. Approximately seventy cows died; the remainder produced eleven calves, of which only three survived. In western Pennsylvania, an overflowing waste pit sent fracking chemicals into a pond and a pasture where pregnant cows grazed: half their calves were born dead. The following year's animal births were sexually skewed, with ten females and two males, instead of the usual 50-50 or 60-40 split.

In addition to the cases documented by Bamberger, hair testing of sick cattle that grazed around well pads in New Mexico found petroleum residues in fifty-four of fifty-six animals. In North Dakota, wind-borne fly ash, which is used to solidify the waste from drilling holes and contains heavy metals, settled over a farm: one cow, which either inhaled or ingested the caustic dust, died, and a stock pond was contaminated with arsenic at double the accepted level for drinking water.

Cattle that die on the farm don't make it into the nation's food system. (Though they're often rendered to make animal feed for chickens and pigs—yet another cause for concern.) But herd mates that appear healthy, despite being exposed to the same compounds, do: farmers aren't required to prove their livestock are free of fracking contaminants before middlemen purchase them. Bamberger and Oswald consider these animals sentinels for human health. "They're outdoors all day long, so they're constantly exposed to air, soil and groundwater, with no break to go to work or the supermarket," Bamberger says. "And they have more frequent reproductive cycles, so we can see toxic effects much sooner than with humans."

Fracking a single well requires up to 7 million gallons of water, plus an additional 400,000 gallons of additives, including lubricants, biocides, scale and rust inhibitors, solvents, foaming and defoaming agents, emulsifiers and de-emulsifiers, stabilizers and breakers. About 70 percent of the liquid that goes down a borehole eventually comes up—now further tainted with such deep-earth compounds as sodium, chloride, bromide, arsenic, barium, uranium, radium and radon. (These substances occur naturally, but many of them can cause illness if ingested or inhaled over time.) This super-salty “produced” water, or brine, can be stored on-site for reuse. Depending on state regulations, it can also be held in plastic-lined pits until it evaporates, is injected back into the earth, or gets hauled to municipal wastewater treatment plants, which aren’t designed to neutralize or sequester fracking chemicals (in other words, they’re discharged with effluent into nearby streams).

At almost every stage of developing and operating an oil or gas well, chemicals and compounds can be introduced into the environment. Radioactive material above background levels has been detected in air, soil and water at or near gas-drilling sites. Volatile organic compounds—including benzene, toluene, ethylene and xylene—waft from flares, engines, compressors, pipelines, flanges, open tanks, spills and ponds. (The good news: VOCs don’t accumulate in animals or plants. The bad news: inhalation exposure is linked to cancer and organ damage.)

Underground, petrochemicals can migrate along fissures through abandoned or orphaned wells or leaky well casings (the oil and gas industry estimates that 60 percent of wells will leak over a thirty-year period). Brine can spill from holding ponds or pipelines. It can be spread, legally in some places, on roadways to control dust and melt ice. Truck drivers have also been known to illegally dump this liquid in creeks or fields, where animals can drink it or lick it from their fur.

Although energy companies don’t make a habit of telling potential lease signers about the environmental risks they might face, the Securities and Exchange Commission requires them to inform potential investors. In a 2008 filing, Cabot Industries cited “well site blowouts, cratering and explosions; equipment failures; uncontrolled flows of natural gas, oil or well fluids; fires; formations with abnormal pressures; pollution and other environmental risks.” In 2011, oil companies in North Dakota reported more than 1,000 accidental releases of oil, drilling wastewater or other fluids, with many more releases likely unreported. Between 2008 and 2011, drilling companies in Pennsylvania reported 2,392 violations of law that posed a direct threat to the environment and safety of communities."

I sincerely hope that the panel will carefully consider the dire consequences on communities and eco-systems, that it will consider such peer-reviewed and science-based reports as mentioned above, that it will consider everything covered in David Suzuki's devastating documentary, Shattered Ground.

As a final note, we must in all this consider the interests of the First Nations of this land, the Mi'kmaq people, whose rights have been blatantly disregarded in New-Brunswick in a shameful display of coercion by the Alward government. There is a strong movement building across all cultures and all people of the Maritime provinces and if fracking takes place in Nova Scotia without the consent of the people of this province, you can be assured that there will be even more violent protests than what we saw in Elsipogtog. Because people in the maritimes have finally begun to realize that money cannot buy health, money cannot buy clean water, clean air, and our long-term health as a province is more important than any of the economic benefits we will ever see from fracking.

For these reasons among so many others, I implore you not to permit fracking or any measures that will facilitate fracking in the future in the province of Nova Scotia.

Sincerely,

Aube Giroux

www.kitchenvignettes.blogspot.com

Saveur Magazine Best Food Blog Award 2012 | James Beard Award Finalist 2014

Now on PBS: <http://www.pbs.org/food/kitchen-vignettes/>

Subject	Fracking input
To	HFRReview
Sent	Monday, March 31, 2014 3:01 PM

To the NS Hydraulic Fracturing review panel:

I am an organic farmer on the North Shore of Nova Scotia, an area where fracking potential is being explored.

I am deeply concerned about the impact fracking would have on my ability to farm, and also on the environmental and social health of my community.

I have a lot more to write, but time is short and I agree with the points made by my friends Ben Sichel and Kat Kitching, so I will copy their letter below.

Thank you,
Hillary

We are writing to let you know that we have major concerns about fracking, based on our research done on fracking in the Maritimes and across North America.

Among other concerns, we note issues with the use of enormous quantities of freshwater in the fracking process, and the subsequent transporting and processing of waste water - we followed the Halifax Media Co-op's investigation into the treatment of water from fracking test-sites, as well as waste water from NB and NL, with some concern over the past few years - issues of concern include uncertainty about what treatment is needed (salinity vs. radioactivity), whether there is a public and/or environmental danger in transporting the water, and the patterns of rather worrisome lack of communication between the companies involved and the NS department of the environment.

Here is one of several excellent pieces featured from the Halifax Media Co-op:

<http://halifax.mediacoop.ca/story/continuing-saga-missing-fracking-wastes/14286>

We also suggest you view this compelling info-graphic that highlights issues of water use and pollution: <http://www.dangersoffracking.com/>

Furthermore, we have witnessed the recent situation in Elsipogtog, NB, where Indigenous Mi'kmaq rights were blatantly disregarded in the process of seismic testing for potential future fracking operations. Canada has released hundreds of pages of reports on the situation of Aboriginal people in Canada, notably the report from the Royal Commission on Aboriginal Peoples (1996) which outlines clearly the systemic restitution that must precede any sort of meaningful reconciliation between Native and non-Native people in Canada. Land has been illegally appropriated for over two centuries, and Mi'kmaq people now have access to and control over a fraction of their original territories. Settler Canadians like us have profited, and continue to profit, from these illegal land appropriations.

We bring this up in order to note how wholly corporate "rights" subsume Aboriginal rights, regardless of legality and constitutionality, particularly when fossil fuel exploration is involved. In Nova Scotia there have already been Mi'kmaq-led protests against fracking, and as we reflect upon the events in Elsipogtog, we are troubled to think of the ways in which the Canadian and Nova Scotia government might "crack down" on similar future protests in this province, should fracking be allowed to occur, and what this might mean for any future potential to achieve trusting and just relationships between Mi'kmaq people and settler-Nova Scotians. We are also, of course, deeply concerned about the direct impacts that these invasive and environmentally polluting resource extraction activities will have on the health and integrity of Mi'kmaq communities across the province.

From what we have seen of fracking activities in other parts of this continent, there are no half-measures; there is no going back. Once damage is done, and once Indigenous lands are violated, the effects are permanent.

For these reasons among others, we ask that you not permit fracking or any steps toward fracking in the province of Nova Scotia.

Sincerely,
Katherine Kitching and Ben Sichel
Halifax

Subject	Hydraulic fracturing in NS
To	HFReview; tim.houston@mail.com
Sent	Monday, March 31, 2014 1:15 PM

12 Moodie Cove Road
RR2, Trenton, NS B0K 1X0

March 31, 2014

Dr. David Wheeler
Cape Breton University
By E-mail: hfreview@cbu.ca

Dear Dr. Wheeler:

Re. Fracking in Nova Scotia

I would like to add my name to the growing list of people in Nova Scotia concerned about the potential effects of hydraulic fracturing in shale gas beds in our province. I am assailed by the odours and toxic particulates emanating from the nearby Northern Pulp mill and its associated Boat Harbour effluent treatment plant. Apart from the existing and longstanding effects of airborne waste from these facilities on the health and wellbeing of people in Pictou County, I believe there must also be deleterious effects from these sources on our surface water quality, marine water quality, terrestrial, aquatic, and marine organisms, and groundwater, yet there has not been a study of the health of the Pictou County residents from such potential causes. Nor do I believe that there has been sufficient study and public discussion of the potential effects of fracking on the province's groundwater, surface water, subsurface bedrock stability, air quality and public safety or of the potential benefits (if any) to the public, and I do not believe that the people of Pictou County in particular and Nova Scotia in general should be subjected to another reportedly harmful industry. No doubt, exploration and development companies would be likely to make windfall profits from the few years of development and production in each affected region, and the provincial government coffers will be enriched for a short time, but to what end? Where will most or all of the gas produced go – as in the case of our offshore gas plays, to the U.S., no doubt? How much more damage can our fragile environment take from industry?

I hope that you and your panel will heed the commitment expressed by the Liberal Party during the last election to prohibit fracking until and unless it can be proved that no harm will befall our natural resources and environment and our residents. I do not believe that you and your panel can possibly conclude that fracking can be safe or beneficial to the Nova Scotia population and environment.

With my best wishes for good guidance in your research, conclusions and recommendations,
Yours sincerely,

J. Callum Thomson, M.A.

Callum Thomson
RR2, Trenton, NS B0K 1X0, Canada

Tel (902) 752-4349

E-mail: jmthomso@gmail.com

Subject	The Most Import Thing...
To	HFReview
Sent	Monday, March 31, 2014 12:10 PM

...is Clean Water.

Dear NS,

Please ban fracking. I beg this of all policy makers because no amount of risk is worth taking against our last remaining clean drinking water. I've been continuously educating myself on the current and future state of our country, oceans, and planet over the past decade. Have you? I'm afraid to have children because of the horrifying future we've created for them, and so my husband and I have decided not to have a family. I've lost faith in governments to make sane decisions regarding our lives and our futures. It can't be about money anymore. We've gone beyond the tipping point; that is clear. Nature doesn't need us, but we need healthy, diverse ecosystems to survive. Please, please ban fracking. The people are getting desperate. Enough is enough. Ground water is finite and we're destroying it fast. If you have children or grand children, please think about them and the future you are giving or taking away from them.

Best,

Daina Scarola

Subject	Submission for Fracking Review
To	HFReview
Cc	mmacdonald@navnet.net ; premier@gov.ns.ca
Sent	Monday, March 31, 2014 10:34 AM

To the NS Hydraulic Fracturing review panel:

I am writing to let you know that I am in favor of continuing the Nova Scotia fracking moritorium on fracking based on my experience as a geologist and research done on fracking in the Maritimes and across North America.

The most clear and present danger of fracking is the consumption and pollution of great volumes of freshwater, 1 to 8 million gallons per frack. The waste water is polluted with a chemical cocktail of fluids to adjust its density, and other physical qualities according to the types of rock and fluid in the

particular formation. As you know, many aquifers have been irreversibly polluted by fracking across North America. The treatment, transport and disposal of waste fracking fluids is another difficult is. Large volumes of toxic and carcinogenic elements are added to fracking fluids to adjust the physical properties of the fluids to each site to be fractured.

In terms of power politics, oil companies are strictly focused on the bottom line. They constantly push the regulatory envelope. The provincial government would have to dedicate scarce or human and technical resources to policing and enforce regulations on fracking operations to keep oil companies operating safely. Recall the BP oil spill in the Gulf of Mexico. Oil companies do not keep their subcontractors within regulations and governments cannot.

Another danger is well expressed by Kat Kitching and Ben Sichel, quoted below.

Furthermore, we have witnessed the recent situation in Elsipogtog, NB, where Indigenous Mi'kmaq rights were blatantly disregarded in the process of seismic testing for potential future fracking operations. Canada has released hundreds of pages of reports on the situation of Aboriginal people in Canada, notably the report from the Royal Commission on Aboriginal Peoples (1996) which outlines clearly the systemic restitution that must precede any sort of meaningful reconciliation between Native and non-Native people in Canada. Land has been illegally appropriated for over two centuries, and Mi'kmaq people now have access to and control over a fraction of their original territories. Settler Canadians like us have profited, and continue to profit, from these illegal land appropriations.

We bring this up in order to note how wholly corporate "rights" subsume Aboriginal rights, regardless of legality and constitutionality, particularly when fossil fuel exploration is involved. In Nova Scotia there have already been Mi'kmaq-led protests against fracking, and as we reflect upon the events in Elsipogtog, we are troubled to think of the ways in which the Canadian and Nova Scotia government might "crack down" on similar future protests in this province, should fracking be allowed to occur, and what this might mean for any future potential to achieve trusting and just relationships between Mi'kmaq people and settler-Nova Scotians. We are also, of course, deeply concerned about the direct impacts that these invasive and environmentally polluting resource extraction activities will have on the health and integrity of Mi'kmaq communities across the province.

From what we have seen of fracking activities in other parts of this continent, there are no half-measures; there is no going back. Once damage is done, and once Indigenous lands are violated, the effects are permanent.

For these reasons among others, I ask that you not permit fracking or any steps toward fracking in the province of Nova Scotia.

Sincerely,
Patricia Brennan-Alpert

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Patricia Brennan-Alpert

902-453-2429
2699 Northwood Terrace
Halifax, NS, Canada. B3K 3S9

Subject	Letter to the Wheeler Commission
To	HFReview
Sent	Monday, March 31, 2014 10:07 AM

Dear Committee Members,

In the last couple of days the IPCC released its new report suggesting that human-induced climate change catastrophe (due to excessive burning of fossil fuels) has an even shorter timeline than they had predicted a few years ago. Climate engineers are now thinking seriously about releasing sulphur particles into space to limit the impact of the sun on global warming! So, to undertake in Nova Scotia a program (hydraulic fracking) that inevitably will release a lot more greenhouse gas (in the form of burning of produced shale gas in industry, households etc), and will thus further impact our chances of meeting our legislated Provincial targets for reduced CO2 emissions (The LNG plant, just passed will already seriously limit our chances of meeting these targets). I think hydraulic fracturing is a bad idea for Nova Scotia at the present time and I have outlined below some of my reasons for arriving at this conclusion:

Critics of hydraulic fracturing often take aim at the use of toxic fracking fluids, contamination of groundwater, and release of greenhouse gases, all of which are serious concerns, in my opinion, but let me instead begin by stressing the damage to the local environment. Each well site requires a large concrete pad around it, as well as one or more roads leading up to it. Over the life of each well, the site is frequented by as many as a thousand heavy trucks delivering cement, fracking fluid and equipment, or removing products. This overuse of local roads not only at the site but at those leading to it, will be very costly in terms of maintenance and repair. Has this been properly factored in? Have local indigenous people been consulted over the inevitable disruption of their lands?

How does the Province stand to gain financially from hydraulic fracturing? Fracking companies are notorious for demanding a 2 year Royalty "holiday" that allows them to skim off all the profits for the first two years. The problem with this arrangement is that most of the gas (up to 75% usually) is removed during this period leaving only about 25% available for royalties afterwards. This diminishes over the typically short life of the well. Thus royalties are usually small but road costs can be large and clean-ups even costlier. Take for example, the clean-up that is due to occur at Kennetcook, NS following the leakage of radioactive fracking fluid waste from holding ponds this winter. This fluid waste should have been cleaned up a couple of years ago but wasn't, because it turned out to be radioactive with NORMs. So, what now? Has this been safely dealt with? I doubt it and when it is at what cost to taxpayers? Also what happened to the fracking fluid waste delivered for disposal to Debert, NS, from New Brunswick before Randy Delorey brought in a bill to ban it? The original idea was to dump that waste into the sewer system in Debert, which would have taken it out into the Bay of Fundy. How ridiculous! Several companies in the USA use radioactive tracers, such as Cobalt -60 and Lanthanum-140,

to determine injection profiles and location of fractures, making even the fluid going into the well radioactive. American Rivers Organization says "We have already experienced instances of surface and groundwater pollution, air pollution, soil contamination, habitat fragmentation and erosion from exhausting gas from shale using fracking, where proper safeguards were not in place or followed". It is clear that Nova Scotia's record already is far from adequate and we have barely even begun this process! Please rethink the economics of fracking, as well as the extensive environmental clean-up that seems inevitable at present.

It is claimed that hydraulic fracking will reduce our carbon footprint because it will reduce the use of coal burning in generators. It is also claimed that release of greenhouse gases is minimal. Have you taken into account the large quantities of cement that are used to case each well and fill it in when closed? Cement is a very large net producer of carbon dioxide in its manufacture. The quantities of cement used must be very large? Secondly, at many fracking sites, excess gas (methane) is flared (burned off) releasing more carbon dioxide into the atmosphere. Also some methane is always lost to the atmosphere unintentionally during drilling procedures. This amount may be relatively small but given that methane is at least 21x more potent as a greenhouse gas than carbon dioxide, fracking may be a much larger net producer of greenhouse gases than is currently claimed. If I remember correctly, Nova Scotia has passed legislation to ensure that greenhouse gas emissions will be 15% lower than 2010 levels by 2020. What is the hope of this if projects like hydraulic fracturing are approved, to say nothing of the new LNG plant in Nova Scotia.

Finally let's get back to the fracking fluid of which 10-15 million litres is used at each well. 1-2% of this fluid is composed of a variety of chemicals, not only benign ones like detergents and acids but carcinogenic ones like toluene, benzene and xylene. Although 98-99% of fracking fluid is water, of some sort, the other 1-2% amounts to a whopping 200,000 litres of chemicals, used at most well sites. Besides radioactive tracers that also may be used in this fluid, as mentioned above, the fracking fluid that returns to the surface as fracking waste can amount to anything between 15% and 75% of the original amount. Usually it is about 35% or about 5 million litres of fluid. This must be stored in holding ponds until it can be disposed of properly. The situation at Kennetcook was unexpected in that the company was not equipped to deal with the radioactive waste that was pumped into the holding pond and so it sat exposed for two years or so. Now it is a potential disaster as it has leaked out of the pond this winter. Besides 'NORMs' getting into the fracking waste we can also expect a range of other toxic substances to dissolve in the fluid underground, including arsenic, chromium, sulphur, copper (toxic to fish and other wildlife) etc. Are the proper waste management procedures in place to deal with these other toxic substances?

In summary, I feel that hydraulic fracturing is a bad idea for Nova Scotians: 1. Until the Province stands to gain a significant amount of money from royalties to pay for damages that are bound to ensue; 2. Until acceptable safe practices can be legislated that regulate the chemicals used, as well as the type of water used (ie not drinking water, stream or river water); 3. Until a proper plan is in place to deal with NORMs in the fracking fluid, which is bound to occur in Nova Scotia. Even then is it really worth it when much greener alternatives to fossil fuel use already exist, including solar (Germany and USA), wind (Denmark and everywhere), geothermal (Iceland and should be Canada); hydro (many). As much of the world moves away from burning fossil fuels towards the greener alternatives, Nova Scotia has an unprecedented opportunity to create jobs in the 'green sector', as well as reduce our greenhouse gas emissions closer to targets. In a 2013 report by Mark Z. Jacobson of Stanford University, he has calculated that New York can achieve complete conversion to green energy (such as wind, solar, hydroelectric or geothermal energy) right now. Why can't we too do this in Nova Scotia? It may be

challenging at first but new technologies are coming on line all the time (eg tidal power) and it will create many jobs in the green sector that we should support actively.

Sincerely

John Buckland-Nicks
Senior Research Professor

Subject	Ban Hydraulic Fracturing
To	HFReview
Sent	Monday, March 31, 2014 10:01 AM

To Whom it May Concern,
For the future of our children and the planet we all live on, please ban hydraulic fracturing in Nova Scotia. If we find a way in the future to extract this resource without environmental harm, it will still be there under the ground. It won't go bad by waiting.
Thank you,
Paul Hannon
5553 Black street
Halifax, NS B3K 1P8

Subject	Hydraulic Fracking Review Submission
To	MLA Halifax Needham- Maureen MacDonald; HFReview; megan.leslie@parl.gc.ca
Sent	Sunday, March 30, 2014 3:12 PM

Dear Margo MacGregor, Maureen MacDonald and Megan Leslie,

Hello -
I am writing to you in hopes of having my voice heard;
I love this province of Nova Scotia; my home by choice - and what I love about it is the wild, clean and vibrant environment around us.
It is an important part of our culture here - and the health and prosperity of the people.
That includes, very importantly: Water - ground water fills our drinking-water wells and keeps us healthy.
Lakes, streams and rivers that run through, across, and over this beautiful province- help to create our identity.
We swim, eat fish, and farm with this water.
The water here not only contributes to our health and well-being, but to tourism, fisheries and life itself.
I grew up in Toronto. We just walked along the lake there - but we didn't *touch* it. We didn't play in it, we couldn't swim - we didn't fish in it.

It's no fun living next to industry and pollution. If there was anything missing from my childhood, it was nature -I've found it here - and it's so important to protect it.

Please accept these key points below as my support for an outright entire ban on hydraulic fracking in Nova Scotia.

Our province needs to turn instead to renewable sources of energy, such as solar, wind, tidal, biomass and geothermal heat pumps.

www.davidsuzuki.org/issues/climate-change/science/energy/overview

*** Waste of clean water resources** - Fracking uses a huge amount of water, depleting local lakes and groundwater resources that are relied upon by entire communities. If water is trucked in, it is a wasteful use of fossil fuels to power the vast amount of tanker trucks needed.

www.sourcewatch.org/index.php?title=Fracking_and_water_consumption

*** Toxic waste water is left behind**, with no answer as to how to dispose of it safely. We have an important example of this, close to home in Kennetcook. The Triangle Petroleum fracking that was done way back in 2007 (8 years ago!) has left behind toxic brine pools - that simply sit on the soil, protected only by plastic sheets.

Even though Triangle is supposed to be taking care of them, the local community group East Hants Fracking Opposition Group has found leaks that would have gone unnoticed. This toxic water is the result of only 2 fracked wells...8 years ago...if fracking is permitted, the problem will increase by leaps and bounds.

I have a friend who owns a home in Kennetcook and relies on his groundwater well for drinking. He has been living there for 15 years. It concerns me that a company can come and rape the land and then leave - putting the health of the community at great risk.

I too own a home in Nova Scotia and rely on well-water.

Putting the wealth of a gas company over the right to healthy drinking water and breathable air for residents is not acceptable.

www.ecologyaction.ca/files/images-documents/file/Coastal/fracking/Out%20of%20Control%20-%20Full%20Report.pdf

www.nofrac.com

www.facebook.com/EastHantsFrackingOppositionGroup

*** Fracked gas is not natural gas - and it is not clean** - It contributes to a huge amount of greenhouse gas emissions - methane gas leaks into the atmosphere from abandoned fracking wells. The wells may only viable for a relatively short time...but the methane will continue to contaminate the air for years to come. Fracking has been shown to be close to coal in regards to greenhouse gas emissions.

www.zo.utexas.edu/courses/THOC/Fracking.pdf

*** The fracking of today is a more harmful process than the fracking of 40 years ago.**

The "slickwater" used has more toxins and even radioactive components.

The drilling used to be vertical. Now it goes deeper and then horizontally, in all directions. This gives a much greater possibility of contaminating groundwater with methane gas, as leaks in the wells are hard to regulate. When methane gas escapes into the groundwater, it can poison our drinking water and as shown in the documentary Gasland, can actually result in rural tap water lighting on fire.

Even after the well is used up and the gas company stops profiting, the wells can continue to leak methane into the groundwater and the air.

www.imdb.com/title/tt1558250/
www.twinside.org.sg/title2/resurgence/2013/276-277/eco2.htm

*** Many examples of environmental degradation and health problems from fracking** - in both the US and Canada.

People are speaking out:

Kennetcook NS www.cbc.ca/news/canada/nova-scotia/leaking-fracking-waste-still-worries-kennetcook-crowd-1.2562020

Lake Ainslie, Cape Breton NS - thechronicleherald.ca/opinion/126777-environmental-justice-for-lake-ainslie

www.facebook.com/protectlakeainslie

Elgin and Penobsquis, NB <http://nbmediacoop.org/wp-content/uploads/2009/08/Sept2010-Page1.pdf>

Rosebud, Alberta - <http://www.cbc.ca/news/canada/calgary/alberta-woman-loses-round-in-anti-fracking-lawsuit-1.1931764>

Horn River, BC www.canadians.org/fr/node/7944

www.canadians.org/fr/node/10585

This article explains in depth many of the terrible impacts of hydraulic fracking.

www.canadians.org/sites/default/files/publications/fracking_2.pdf

Thank you for taking the time for this review.

I am a member of the Ecology Action Centre in Halifax, a rural home owner with a groundwater well, and a very concerned citizen and voter.

Please, talk to our Government and tell them to ban fracking in Nova Scotia.

Eleanor Kure

3276 Agricola St

Halifax NS

B3K 4H5

eleanoronthego@gmail.com

[902 404-8206](tel:9024048206)

Subject	Hydraulic Fracking Review Submission Letter
To	HFReview
Cc	Andre Bourgeois; margaretmillermla@bellaliant.net
Sent	Sunday, March 30, 2014 2:20 PM

Sunday, March 30, 2014

Re: *Hydraulic Fracking Review 2014 Nova Scotia*

Delivery: by email

cc: Margaret Miller, MLA – Hants East

Hello;

I am writing with respect to the Hydraulic Fracking Review as it relates directly to my own community and home.

I am a 17 year resident of, and home owner in, *Gore, Nova Scotia (East Hants)*.

It is both my place of residence and my place of work. I operate a home based business here.

I was born and raised in Nova Scotia.

I, perhaps more than most; have keen sense and appreciation for the natural beauty of this province, what it has to offer and it's potential for the future.

I rarely protest or make much of 'a fuss'; I tend to be a private person and try to mind my own business I suppose.

My home is on a dug well which has never run dry even in the hottest and driest of summers.

The well water is clean, fresh and needs only have sediment filtered as it is pumped into the home, prior to being used for household cleaning, washing, drinking and cooking.

A brook, *Bartlett's Brook* in fact, runs diagonally across my property 12 months of the year.

This brook is home to trout and other fishes, frogs and many other creatures that are important to our fragile eco-system.

Various birds and other wild animals often visit the property to fish from the brook.

The water from this brook, and the high water table on the property in general, feed massive sugar maple trees which offer maple sap for maple syrup every spring, as well as both wild and domestic apple trees on the property.

Suffice to say, the naturally occurring fresh clean water, above and below the ground, on my property is of paramount importance to me, to my home and to the ecosystem in the area. (of which I consider myself to be a small part)

The brook runs to the Kennetcook River, which in turn runs to the Minas Basin and finally the Bay of Fundy and the Atlantic Ocean.

What is in, or goes into, this brook and in the water it contains, is also by natural course in all of those bodies of water eventually.

I am surrounded by farms and farmlands growing crops, including: corn, blueberries and grains while also maintaining livestock; primarily dairy cattle.

Hydraulic fracking requires very large amounts of water; depleting local lakes, ponds, rivers and brooks as well as other groundwater sources which entire populations use and need daily.

Even if additional waters are transported in from other locations - it is still a wasteful use of fossil fuels to provide the transportation of this 'other' water.

Additionally, when and where fracking takes place; toxic waste water remains – sometimes for years. Nearby (10 km) Kennetcook, is a current example of this.

Nova Scotia should seek to develop more renewable and far less intrusive sources of energy, such as: solar power, wind turbines, tidal options, biomass and geothermal heat pumps and more.

It is important that all aspects and levels of government and industry in Nova Scotia, *take a long term view* and move with confidence and a clear conscience to ban hydraulic fracking in Nova Scotia.

I would like it to be noted that my support is heavily on the side of and behind the efforts for an outright entire ban on all hydraulic fracking in Nova Scotia.

Any vote I cast or support I offer politically, economically or otherwise at any level, now and later, will reflect that.

Thank you for including my opinion and point of view on this important topic and passing it along to the various parties involved.

Sincerely;

Mr. Andre Bourgeois
1436 Highway 202
Gore - Kennetcook, NS
B0N 1P0 Canada
E: Andre.Instinct@eastlink.ca
C: 902-791-1532

Subject	Hydraulic Fracturing
To	HFReview
Sent	Saturday, March 29, 2014 9:47 PM

Hello,

I must agree with the selection of individuals for the panel of the review of hydraulic fracturing. Although even if the right people are chosen I fear that big money or business may taint truth and mind. Living in a province with an already declining population I believe that hydraulic fracturing or "fracking" will turn more individuals away to seek somewhere else to be. With fracking not only proven to lower property value but also involve substantial amounts of noise pollution to interfere with the quaint and calm way of life. I gave thought into the winter we had and how it greatly damaged our roads. I could only imagine the condition they would be in if hundreds or even thousands of more trucks travelled on them to supply water to the wells.

With the rapid increase in renewable energy sources fracking is not something that seems feasible in the long term. There are more green methods to obtain natural gas including the collection of biogas through the decomposition of organic matter. Companies like Bullfrog Power are in the best interest of the citizens growing the availability of these renewable technologies.

I'm sure you have been pressured the most with the chance of polluting the aquifer and air surrounding the wells. Over fifty percent of Nova Scotians rely on ground water sources and it is not something that should be risked. With confirmed cases of contamination related to oil and gas drilling in the states we need to learn from their mistakes and stop them before they happen.

With some towns in Texas, New York and California already successfully banned or placed a memorandum on fracking we should understand that it is too much of a risk for a small short term economic gain, if there is any at all.

We must do what is in the best interest of Nova Scotians. I do hope you make the correct decision and put a ban on hydraulic fracturing for good and for all.

Thank you much for your time.

Erin.

<http://www.savecoloradofromfracking.org/harm/propertyvalues.html>

<http://www.dchlaw.com/noiseandairpollution>

<http://m.novanewsnow.com/Opinion/Editorials/2014-03-17/article-3652820/Nova-Scotias-government-must-take-action-to-make-roads-safer/1>
<https://www.bullfrogpower.com/13releases/zooshare.cfm>
<http://usnews.nbcnews.com/news/2014/01/05/22190011-oil-and-gas-drilling-pollutes-well-water-states-confirm?lite>
<http://grist.org/article/carson-city-frack-ban/>
<http://america.aljazeera.com/articles/2014/2/28/l-a-city-councilplacesmoratoriumonfracking.html>

Subject	Re Draft Report Structure
To	HFReview
Cc	Stephen McNeil; Allan MacMaster; Randy Delorey
Sent	Saturday, March 29, 2014 11:57 AM

Dear Dr. Wheeler ,

I have concerns about your latest document, the “DRS” (Draft Report Structure) .

The issue to be addressed is the impact of developing a shale gas industry in Nova Scotia ,yet that question appears to only be addressed in the economic assessment, as covered in points 4 and 5 , and to some extent 9 ,of the DRS.

Point 8 is inappropriate . Well bore integrity is a central issue but would surely be addressed by DRS points 6, 7, 9, and 10.

Points 6 , 7 , and 10, 11 and 12 , appear restrict themselves to Hydraulic fracturing .This is the same problem that repeatedly flaws the “Primer” . Since there is no economic benefit from hydraulic fracturing, in the absence of creating a shale gas industry, the panel should address the issue, the environmental and economic impacts of developing a shale gas industry . Issues raised by the specifics of hydraulic fracturing should be addressed within the context of an examination of developing a shale gas industry, not as the Primer does, of examining hydraulic fracturing with no context at all.The Primer fails to mention most of the activities necessary of developing a shale gas industry .

I am concerned by the use of the phrase “externalities of hydraulic fracturing” in point 5 .Does this refer to externalities of hydraulic fracturing , which are integral to development of a shale gas industry ?

At the risk of being reductionist, I suggest the Panel begin by listing every stage of developing a shale gas industry , from seismic testing to market, with accompanying costs, benefits, and risks, for each stage. In the absence of that I don’t see how you can logically proceed .

I am also extremely concerned to see another document from the Expert Panel reflecting an industrial bias.I appreciate that members of the expert panel may have not been studying the issue for long enough to recognize the bias that the documents reflect, and I am not accusing the Panel of bias .

The Expert Panel has yet to give any indication of how the feedback to draft documents and other submissions will proceed, beyond the deadline dates for submissions

Yours very truly ,

Geoffrey May
Margaree Harbour
Nova Scotia

Link to DRS

<http://www.cbu.ca/sites/cbu.ca/files/docs/hfstudy/Draft%20Report%20Structure%20-%20For%20Public%20Release.pdf>

Subject	fracking panel submission
To	HFRReview
Sent	Wednesday, March 26, 2014 8:07 PM

To the Wheeler Fracking Panel:

I am against the lifting of the moratorium on the practice of fracking in NS for several reasons but I will only argue 2 reasons in this submission.

1. Trucking. There will be an inordinate amount of truck (18-wheeler) traffic on secondary roads (which are already in terrible shape).

This is from a New York State Department of Environmental Conservation document:

While the trucking for site preparation, rig, equipment, materials and supplies is similar for horizontal drilling to what was anticipated in 1992, the water requirement of high volume hydraulic fracturing could lead to significantly more truck traffic than was discussed in the GEIS. It is estimated that each horizontal well will need between one to three million gallons or more of water for stimulation. Estimates of truck trips per well are as follows:

Drill Pad and Road Construction Equipment 10 - 45 Truckloads

Drilling Rig 30 Truckloads

Drilling Fluid and Materials 25 - 50 Truckloads

Drilling Equipment (casing, drill pipe, etc.) 25 - 50 Truckloads

Completion Rig 15 Truckloads

Completion Fluid and Materials 10 - 20 Truckloads

Completion Equipment (pipe, wellhead) 5 Truckloads

Hydraulic Fracture Equipment (pump trucks, tanks) 150 - 200 Truckloads

Hydraulic Fracture Water 400 - 600 Tanker Trucks

Hydraulic Fracture Sand Trucks 20 - 25 Trucks

Flow Back Water Removal 200 - 300 Truckloads

That works out to a

Total = 895 to 1,350 truckloads per well

As can be seen, trucking of hydraulic fracture equipment, water, sand and flow back removal is over 80% of the total. This trucking will take place in weeks-long periods before and after the hydraulic fracture.

83 NTC, pp. 22-23 Draft SGEIS 9/30/2009, Page 6-139

Not only will there be undue wear and tear on secondary roads. The amount of diesel fuel burned to transport the truck loads is obscene. An 18-wheeler gets about 4-5 MPG fuel mileage consumption (I asked several truck drivers). That's about 47-59 litres/100km or 1.7-2.1 km/litre. In turn, that's 42,000-80,000 litres of diesel fuel per well assuming a truck drives 100km per trip (average round trip to get in and out of Hants County). Then multiple that by the number of wells and that's a lot of diesel emissions into the air.

2. Industrial Footprint.

Two of the industries we have in Kings County are Michelin and agriculture. Michelin is a significant industry but relatively speaking has a small footprint and it not superimposed on the agricultural areas of the county. In Hants county, fracking would have an enormous footprint and would be almost directly superimposed over the farmland of Hants County.

Thanks for your interest.

Sincerely

Paul Cameron
Arnold Rd
Grafton
Kings County, NS

Subject	Hydraulic Fracturing
To	HFReview
Sent	Monday, March 24, 2014 12:01 PM

Dr. Wheeler,

I write to you on the 25th anniversary of the EXON Valdez oil spill in a pristine part of Alaska. The effects of this event still linger, and in fact, will not heal in our life time, if at all. I am a seasonal resident and property owner in Malagash, Nova Scotia. I purchased this property ten years ago with the intention of spending my retirement summers gazing at the Northumberland Strait, walking along the beautiful natural beach at Blue Sea Beach Provincial Park, and living a life that ceased to exist in most parts of coastal United States.

I retired from service in the U.S. Government in 2011 primarily working for the U.S. Department of Agriculture. The past two summers have provided me with just what I expected from my little piece of wonder in an area that remains pristine. I feel safe eating seafood. I have wonderful fresh water from my well. I am a regular at the Farmer's Market in nearby Tatamagouche, and feel fortunate to partake of the superb organic produce grown by my neighbors.

I fear for the future of both my investment in Canada, and the quality of life around the North Shore of Nova Scotia. My fear stems from the process known as Hydraulic Fracturing. I believe that this process is not environmentally neutral and will greatly deteriorate the land, sea and air in Malagash and the surrounding area. I base my beliefs upon the following:

- Vast quantities of water used in this process
- Proprietary (and as such unnamed) chemicals used in the extraction process
- Undetermined disposal of the waste water and chemicals used in the extraction
- Contamination of the groundwater thus rendering my well and those of my neighbors unusable
- Construction of new roads, increase in large truck traffic, large dead zones where the process occurs
- Unknown future impact of this process upon multiple aspects of life in the North Shore of Nova Scotia

The short-sighted gain that may be garnered from extraction of gas reminds me greatly of the search for, extraction of, and transport of oil. I am quite sure that residents of Alaska, or the Gulf of Mexico, or any of the areas that experience spills, accidents, or long term degradation of quality of life were told of these risks before the events unfolded. The focus is always on the economic gain that will accompany the process. It is true that large corporations stand to make significant sums from all facets of extraction of natural gas. However, residents are not the largest benefactors of these profits. The vision of the companies that work in the hydraulic fracturing process is neither to enhance the life of local residents, or protect the environment, it is to extract natural gas as cheaply as possible and sell it for a large profit. I regret if I sound rather anti-capitalistic in my remarks, but I believe it important to make this clear.

Finally, regarding the economic gains for a community engaged in large scale resource extraction, it is a temporary event. The gas will become depleted, the jobs and companies will move on, and communities are left with environmental clean-up, and a puzzlement of where did all of the money go? Perhaps things that occurred before the extraction such as tourism, sustainable agriculture and fishing, and selective forestry weren't so bad. They are long term commitment endeavors that build and sustain communities. They are not industries that come and leave.

Dr. Wheeler, I have hope that you will make your recommendation based upon factual evidence, but also upon the will of the residents living in the contested area. I, personally, will

have little choice but to sell my century farm house and fifty acres should exploration, extraction and transportation of natural gas occur on the North Shore of Nova Scotia. I would consider that a tragedy.

Thank-you very much for your efforts on this and for reading my rather personal feelings.

Sincerely,

aul W. Silverio

23 McInnis Rd

Malagash, NS

ws3@comcast.net

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Subject	Fracking on the North Shore of Nova Scotia
To	HFRReview
Sent	Sunday, March 23, 2014 3:00 PM

As a Canadian who has chosen to live on the North Shore of Nova Scotia, I STRONGLY oppose any and all efforts to open this northern shore to any and all fracking explorations. My husband and I chose this pristine and beautiful place to live nine years ago. We have heard news of the possibility of fracking and I find it gravely concerning for several reasons.

No matter how carefully a company claims to drill, there are no guarantees that disturbing the areas under the earth would not release foreign matter into the water supply for humans and wildlife. I have major environmental concerns about the chemicals being used and the waste from the fracking process.

Infrastructure usage is another concern. Our roads and bridges are already stressed by salt and lumber trucks. Adding more equipment would extend that damage.

When news of fracking comes to an area, property values decrease. No matter what people are told about how safe it is, they do not want to live in places where this is being done. While our area of Nova Scotia is attempting to attract new people and keep our young, we do not need fracking.

Rather than rape the earth of its resources, alternate forms of energy need to be explored and developed. The northern shore should not be at the mercy of corporations interested only in their profits from gas and oil. It is more than time for governments, corporations and individuals to act responsibly and become less dependent upon fossil fuels.

No fracking on the North Shore of Nova Scotia!
Mary Maron
North Shore Resident

Subject	Comments on fracking in Nova Scotia
To	HFReview
Sent	Sunday, March 23, 2014 7:59 AM

To: Expert Panel on Hydraulic Fracturing in Nova Scotia

From: John Sollows,
399 Wyman Road,
Sand Beach, N.S.,
B5A 5G4.

Phone: 742-2802

Date: March 23/14

I am attaching some personal comments on the future of fracking in Nova Scotia.

From a local environmental viewpoint, there are plenty of reasons to approach fracking very carefully, and I know you are hearing plenty of them.

However, I think the most important arguments against hasty development of fossil fuels may be the too-easily-ignored ethical ones. The likely consequences of atmospheric greenhouse gas buildup for future generations, and the effects climate change has begun to have on vulnerable, distant populations seems to get wilfully ignored by those who produce and consume the most fossil fuel resources. However, the political importance of these concerns is very limited, so these arguments don't get the consideration they deserve. We should be very ashamed of ourselves.

Time for this Old Testament prophet to shut up for now. Hope my comments are helpful. You may hear more from me, later.

Subject	Independent Hydraulic Fracturing Review
To	HFReview
Sent	Tuesday, March 18, 2014 12:15 PM

Wheeler Commission - A Plea for a Ban on Fracking

Nova Scotia is in the enviable position of being very nearly an island. We have a unique opportunity to showcase, celebrate and re-define what it is to be ecologically, geographically, economically, socially, and ethically progressive.

I have read the final scope of the Wheeler Commission and I laud the aims of the commission. The scientific evidence against hydraulic fracturing is staggering and I am certain that the commission will have received many submissions calling for a serious examination of the vast number of studies indicating the damage and destruction caused as a result of hydraulic fracturing.

There is overwhelming evidence that fracking has led to the devastation of the natural environment, the contamination of water, reduced air quality and air pollution, serious/irreversible effects on health and that it exacerbates the global climate crisis.

We know that toxic chemicals are used in all stages of fracking - drilling, tracking, pressure stations, further we don't know the extent of the chemicals used for these are considered proprietary trade secrets. It means that all the evidence that hopes to examine the effects of hydraulic fracturing is by its very nature incomplete. We do know that there are significant risks to our vulnerable populations from the chemicals used in fracking that we do know about, in particular children, those with less developed immune systems, the elderly, and the poor.

While it is true that hydraulic fracturing has been used for decades, the new standard of multi-stage, high pressure horizontal fracking is one developed over the last decade which uses more water and chemicals than the older version of fracking.

We need to be concerned about greenhouse gas emissions, wastewater management (and in the case of Nova Scotia's Kennetcook and Debert wastewater mismanagement), water contamination, underground migration of fracking fluid, cement casing failures, earthquakes, the release of radon in addition to radioactive uranium which exists in some of the blocks that are under consideration for fracking. We know that there is no safe way in which to dispose of frack wastewater.

Fracking uses unsustainable amounts of water, anywhere from 10 million to 200 million litres of water. WHERE will this water come from? Nova Scotia is woefully unprepared - the province doesn't even have its water mapped, we don't know the flow of our rivers, we don't know the spring/summer/fall water levels in our rivers. I plead that Nova Scotia protect water as a human right and not allow fracking.

Then there is sand - thousands of pounds of sand are required for fracking. WHERE will the sand come from? Will it come from our beaches?

We are only beginning to understand how much we don't know about the effects of high pressure horizontal fracking....a few questions include...

What do we know about the nature of heavy metals locked up by microbes deep in the subsurface of the earth?

What will happen to the earth's subsurface as it is contaminated?

What microbes and bacteria will be released as a result of fracking? What effect might this have on our health?

How will we deal with radioactive elements in wastewater?

Have the costs to our health been assessed? Shall we sacrifice our people and the health of our communities for the benefit of industry?

What damage will be done to our transportation infrastructure given the vastly increased heavy truck travel involved in the industry?

How do you regulate an industry when you cannot yet know what all the problems are, particularly in industry in which information is undisclosed?

There are studies on the short term impacts of horizontal hydraulic fracking - we have still to learn about the long term impacts and very importantly, the cumulative effects are unknown. How can we know that hydraulic fracturing will definitely not harm Nova Scotia? What risks are we willing to take?

There is no turning back the clock on a decision of this magnitude. The only manner in which we can hold to the promise that the government of Nova Scotia will undertake to "definitely NOT harm" is to call for a permanent ban on horizontal hydraulic fracturing.

We have an opportunity to showcase a province where the well being of its citizens directs government policy.

Ban fracking.

With desperate hope that this province will lead us into a sustainable future,

Deb Plestid
302 Ferguson Road
Tatamagouche Nova Scotia
B0K 1V0
1-902-657-2552

Subject	Fracking
To	HFReview
Sent	Monday, March 17, 2014 6:06 PM

Hello,

I am concerned that Fracking might be done in Nova Scotia. At present, with the information that I have about Fracking, I say No to fracking here. I would love if we could make a stand that could serve as an example to other provinces, and help turn around Canada's tarnished reputation in regards to natural resources, and protecting our water and air.

Best wishes,

Emma FitzGerald

M.Arch., B.E.D., B.F.A.

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Subject	HFPrimer
To	HFReview
Sent	Monday, March 17, 2014 3:21 PM

Dear committee

I am submitting the following comments with the hope that they will help sway you towards recommending a ban on Fracking in Nova Scotia.

In a province surrounded by sea water, the fresh water available must be diligently protected. As you look around the province now, there are areas with difficulties in accessing fresh water. We should not risk loosing any of our current fresh water supply either through uncontrolled fractures which allow the leaching of chemicals into the aquifers or through the after-fracking waste disposal. I am sure you have received submissions talking about the water usage in the fracking process, but just incase you are still not convinced of the damage that could be done to this valuable resource of clean fresh water, please see the study completed by ceres.org titled: Hydraulic Fracturing & Water Stress: Water Demand by the Numbers.

There is also the issue of climate change and it's relation to fossil fuels. As Nova Scotia led the country in waste management, we could also strive to be one of the leaders in addressing climate change. Imagine a province where every home is self powering and only hooked to the grid to feed electricity back into it. We could build a high speed rail system and stop maintaining and building roads. Imagine the disposable income that would leave in the hands of Nova Scotians. Imagine the employment that would be created.

It is time to leave the fossil fuel industry behind, protect what is left for generations to come, and move forward to a brighter, cleaner future,

Sincerely,
Brenda Daniels,
Concerned Nova Scotia resident

Subject	Fracking concerns
To	HFRReview
Sent	Monday, March 17, 2014 10:31 AM

March 17, 2014

Dear Sir/Madame,

It is with the gravest of concerns with which I am submitting this email for your review. I strongly stand against any efforts to open the Northern Shore of Nova Scotia for any and all Fracking explorations. My wife and I are not 'home grown' residents of this beautiful area. No, we are here by voluntary choice. Nearly ten (10) years ago we, being native born US citizens, made the critical life decision to move to this area. This was long after an exhaustive search for a place of residence that would offer us topographic beauty, a citizenry that was open and honest and a place in which we could conclude our professional lives. Our initial research took us far and wide of

the continent of North America and, without hesitation, we concluded that the area of Northern Nova Scotia was the most ideal and the most pristine of our options. Since obtaining Permanent Residency in 2004 we have progressed to applying for and obtaining Canadian citizenship in 2009 and have become heavily involved in community activities. All these steps that we have taken were done with the greatest of seriousness and the sincerest of hopes that this area would present to us what we had hoped. To date it certainly has.

But, now that we are hearing of potential plans to literally begin the raping of the this beautiful countryside our concerns for our future are severely in question. The concerns are quite obvious; the environmental spoiling of one of the most beautiful areas in the world, the decrease in the value of all properties, the misuse of the area's infrastructure by construction and delivery vehicles and other environmental concerns which include air quality, water quality and the literal peace and quiet that this area offers.

Please reject any and all requests to despoil our area and reinforce the relocation decision that we make ten years a valid one.

Sincerely,

Ronald Maron
14154 Route #6
Wallace, Nova Scotia B0K 1Y0

Subject	HF Primer
To	HFReview
Sent	Saturday, March 15, 2014 11:38 PM

Hello,

I am writing to you on behalf of my children about Hydraulic Fracturing. This just does not make sense to take our precious fresh water, fill it full of chemicals to inject into the ground that has the potential to contaminate our aquifers, create earthquakes, release radioactive materials, and toxins into the air, and then leave tailing ponds behind to take up our landscape that will eventually contaminate people and animals.

Nova Scotian's will not gain anything from this except for an environmental mess like it left behind a few years ago with just a couple of test wells. Greed money for the couple of top people in the companies that frack is not worth the risk!!

I have tears in my eyes when I try to explain to my young boys what greed is doing to their future. Their is no more need for dirty energy when we have solar, wind and tidal that are free to harness. I ask you please do not make the big mistake other places have and allow this to happen in our beautiful province.

Sincerely

Nicholas (9) and Rowan (6) Kucyk
Middle Sackville

Subject	RE: Stakeholder registry HF review process
To	HFReview
Sent	Friday, March 14, 2014 12:44 AM

Margo in regards to things I believe should be included in the HF review.

A. Historical progress of HF use including the use of process in Tight Sandstone formations. The German states of Lower Saxony and North Rhine Westphalia have been employing HF since 1961 apparently . Health effects and environment issues should be very pronounced in an area the size of Mainland Nova Scotia with a population of 18 million people as the North Rhine Westphalia is. NRW is one of the highest population densities of any geopolitical state in the European Union that I know of.

B. A sample list of HF chemicals and their dual uses in households would be useful. Here is an example of what I have found in regards to chemicals used in both HF and household products

- Guar Gum - used to thicken cosmetics,baked goods, toothpaste, ice cream
- Isopropanol- used also in Glass cleaner, Hair coloring , Antiperspirant
- Citric Acid - Food additives for food and beverages, Lemon Juice
- Borate Salts- Laundry detergents , Hand soaps, Comestics
- Glutaraldehyde- disinfectant and sterilization of medical and dental devices
- Ethylene Glycol- Automobile Antifreeze, Heat transfer fluid in ground source heat pumps, Deicing fluids (for automobile windshields in winter, Aircraft Wings in winter) component of indoor ice skating rink refrigeration process
- Sodium/Potassium Carbonate - Detergent , Water Softener, Soap , Ceramics, Glass, Washing Soda
- Polyacrylamide- Water Treatment, Soil Conditioner
- Sodium Chloride- Table Salt
- Acids- Swimming Pool Cleaners

Gelatin- ingredient in Jello

C. The impacts of different means of Electricity generation IE Water use , Land coverage per MgW. CO2 , NO2 , SO2 , Mercury emissions per type .

I know some of these things maybe out the mandate of the commission but risk benefits equations should be disclosed to the public. I know the general answers to the benefits vs risks and Natural Gases of all sources ,biogenic or thermogenic , seem to be the best from an ecological standpoint. Just some suggestions as I see the NOFRAC people providing input that perhaps goes unchallenged by ordinary public

thanks again Paul Taylor

Hi Paul,

Thank you for your submission to the review, I have added it to our files for consideration by the panel. I have also added you to our stakeholder list to receive update emails from time to time.

Kind regards,

-Margo

Margo MacGregor
Project Administrator

Verschuren Centre for Sustainability in
Energy & the Environment
Cape Breton University

T:[1\(902\)563-1392](tel:1(902)563-1392)

C:[1\(902\)452-4929](tel:1(902)452-4929)

Email: hfreview@cbu.ca

Website: www.cbu.ca/hfstudy

Twitter: @HFReview_CBU

From: Paul Taylor [mailto:paultaylor47@gmail.com]

Sent: Tue 3/11/2014 1:42 PM

To: HFReview

Subject: Stakeholder registry HF review process

Please mark me as an interested citizen in Dr . Wheelers Commission .

Paul Taylor

163 Cameron Avenue

New Glasgow , Nova Scotia

B2H 1T1

Ladies and Gentlemen of the Wheeler Commission .

I thank you for your service to the province to explore shale gas development in our Province. I have researched at length the history the development of unconventional natural gas.

My reason for doing this is very simple . I have a desire to know what indeed are the most efficient means of sustaining our modern lifestyles. Efficiency is a key to economic prosperity and natural gas use is common among the fastest growing economies in the world.

Electrical generations most efficient means , without Nuclear waste , is indeed the sole domain of Natural Gas.

I believe one cannot ignore the overwhelming benefits of Natural gas power generation without weighting the risks of well development or completion.

The old model of central power generating plants could be replaced via small scale distributed power supplied by Natural gas in all forms. Biogas development currently is the fastest sector of renewable energy development in the European Union.

The History of HF goes back to the late 1940s and the

State of Kansas. A long the way from that first HF well we have the two German states of North Rhine Westfalia and The Lower Saxony using HF methods to extract Natural Gas from Tight sandstone formations. Since has been occurring in two German states with the highest population densities for geopolitical regions in Western Europe since 1961. Any health effects surely must be evident after half a century of HF in a state with 18 million people occupying an area a LA and mass slightly larger then Mainland Nova Scotia ?

The only thing that is really new about HF in our time it seems is the combination of horizontal drilling combined with HF into Shale Formations.

Thanks very much Paul Taylor
A citizen wisnbing for efficiency for our economy

Subject	hydraulic fracturing summary
To	HFReview
Sent	Thursday, March 13, 2014 1:34 PM

I was at a recent ground water protection council meeting in New Orleans where the representative form the Texas Railroad Commission suggested that 96% of the completed wells in Texas last year were hydraulically fractured.

I also heard at the same conference that Oklahoma has over 100,000 water disposal wells servicing the oil and gas industry.

I spoke with ERCB staff in Alberta back in September of 2010 and he indicated his database had 427,000 hydraulic fractures in it. Approximately half of those were realted to coal bed methane. At the time CBM wells on average had 15 separate intervals perforated and fractured. The majority of those were done with nitrogen at depths between 00 and 800 meters.

Saskatchewan at the time had 1260 wells fractured the previous year (2009). They had a record of 31,239 wells which had been hydraulically fractured though their records didn't extend into the early 60's. At the time 40% of their wells in the last 4 years (2004-2007) were hydraulically fractured and they had no shale gas wells. The majority of this was probably in pursuit of tight oil plays notably the Bakken.

BC Government (OGC) at that time had a record of a total of 7,046 wells hydraulically fractured and 11,835 recorded hydraulic fractures.

I hate to use the word ubiquitous but as time goes on more and more wells will be hydraulically fractured world wide.

Scott Weldon
902-424-3234

Subject	HF Primer
To	HFReview
Sent	Wednesday, March 12, 2014 3:00 PM

The concerns I have about hydraulic fracturing:

Oil and gas are finite resources, the extraction and burning of which have many detrimental effects on the environment. The world needs to move away from these fossil fuels, and so to pursue hydraulic fracturing is a delaying diversion from developing alternative and clean energy sources. Investment in widespread conservation efforts , solar, wind, hydro need to made now so that there is a fast reduction in greenhouse gases. Research indicates that the total impact of hydraulic fracturing does not decrease greenhouse gases - even though the industry would like to indicate otherwise.

Fresh water is an increasingly precious resource, so to deliberately pollute large quantities of fresh water is not at all wise.

There are just too many risks to the process of hydraulic fracturing. It appears to be part of the blind scramble to continue to burn fossil fuels, rather than facing up to the reality of global warming and the need to use clean energy. Society could be much more efficient in the way it uses energy, and should quickly switch to clean sources.

Sincerely
 Vivian Godfree
 1169 Pugwash River Road
 Pugwash NS BOK 1L0

Subject	Group shares fracking basics
To	mgorman@herald.ca
Cc	letters@herald.ca
Sent	Wednesday, March 12, 2014 11:28 AM

The 16 page document on "fracking basics" mentioned in your article in the March 11, 2014 Herald is a good first step in Dr. Wheeler's group's quest for the best policy recommendations for fracking in Nova Scotia.

In my item published in the November 28, 2013 Herald, I included a plea for efficiency in the execution of the Group's work:

" I ask that President Wheeler's Panel utilizes the concept of "data mining" in the study being undertaken to come up with a balanced set of recommendations. I consider Data Mining as the in depth literature search for the hard, factual data. This search needs to eliminate myths and half- truths surrounding the subject on both sides."

My plea has had no impact if I read Dr Wheeler's quote correctly in your article re "...From here, of course, as we start to commission other papers,...".

There seems to be little interest in looking into the data that currently exists. It appears Dr Wheeler and his Panel/Group are more interested in spending taxpayers money on re-creating the data/information that is currently available i.e. "commissioning other papers" - i.e. re-inventing the wheel.

In addition, Dr Wheeler is quoted in your article as saying, the papers "will be edited and re-edited on a semi continuous basis until the final report is prepared,...We like to think of it as one massive peer review process...".

In my view this is a massive "peer review process" of papers for which factual data and information currently exists and for which there was a "massive peer review process" in other legitimate jurisdictions.

The Group/Panel is a make work activity and has no interest in efficiency or value for the tax payer's dollars.

Rod Desborough
Halifax, NS

Subject	citizen comments for the record
To	HFRReview
Cc	Allan MacMaster
Sent	Tuesday, March 11, 2014 9:38 PM

Dear Hydraulic Fracturing Review Panel,

I'm writing today with my comments for your review panel. Generally my comments revolve around the world my 2 year old son will grow up in. I'm sure than many parents also share my concerns. For the record, I am opposed to the further use of hydraulic fracturing in Nova Scotia.

The first issue I have with hydraulic fracturing is that it will exacerbate climate change. Many sources claim and hydraulic fracturing will allow Canadians to use natural gas as a bridge to moving toward low-carbon sources of energy. Burning natural gas releases less carbon dioxide than other sources such as coal for the equivalent amount of energy.

But contrary to these claims there is ample evidence that hydraulic fracturing operations may release an even more dangerous greenhouse gas in methane. Without thorough and impartial study of these impacts, the climate change impacts of hydraulic fracturing operations makes them a non-starter.

Ultimately I'm skeptical that we have any desire to abandon coal and other dirty forms of energy in favour of natural gas under a scenario where we embrace hydraulic fracturing. Instead we are likely to just use hydraulic fracturing to bring online new sources of energy and lower prices for consumers of energy without phasing out other forms of energy. This has been our culture's track record and will continue to be our economic imperative. Even if we were to stop burning coal we would likely continue to ship it quietly to countries where they would be happy to burn it with the same climate change outcome.

This winter's climate change-influenced 'polar vortex' and droughts and record temperatures around the world demonstrate the results of our energy gluttony. I'm worried for my son and the world he will grow up in. I'd rather we consumed less energy (an option we never consider) and drew what little power we needed from renewables. Now that would be a world I would be happy to leave him.

My other major concern is with the very real impacts on human health (let alone other animals). Living in a rural area where hydraulic fracturing would take place, far from larger populations, I know that my health and the health of my family would be at stake.

Many critics rightly focus on the water impacts of hydraulic fracturing and the leaking tailings ponds left behind by operations. I am disgusted with the shortsighted thinking that allows these pits to exist and especially disgusted that after years many of these pits sit open near Windsor. The toxic and radioactive components of these tailings ponds preclude their use and therefore hydraulic fracturing.

But specifically as someone potentially living in the shadow of hydraulic fracturing (HF) I am concerned with the air pollution associated with HF operations. Operations release a cocktail of volatile chemicals into the air. Operators have no plan but for these to blow away and disperse. In many cases they settle in valleys often where people and livestock live causing a range of health issues when inhaled. I urge your review to speak with the renowned Dr. Theo Colborn who has studied many of these effects where people's brains and nervous systems have been damaged through exposure to these airborne toxins.

An HF operation near my home would risk my son's growth and development and has the potential to put him at a disadvantage in life. He is no different to any other child in this respect and I weep for any child whose future has been compromised by exposure to these airborne toxins.

As I write this I fear I could go on for ever. However I'll stick, much like in a high school essay, to three points against hydraulic fracturing.

My final issue with HF involves mental health. I'm not talking about the brain damage caused by many of the chemicals used in HF but rather the stress and strain on a community, on a family caused by worry. HF has the potential to divide communities between those who support and oppose its use. In rural areas where we rely on relationships to live together this can be poisonous.

And if and when an operation sets up near to one's home the worry can be overwhelming. And then imagine you lose your well, your lifeblood. What about your property values? What if you take legal action and watch the bills pile up? What if you and your spouse disagree on moving away? How closely

and obsessively will you watch your children for any sign of an impact? What if you are unable to work due to stress or exposure to chemicals? These mental health impacts at the community and family level are real and should be included in your review.

Please confirm that you received this email and if you have any further questions I am at your disposal. Thank you for your important work on this review in the public interest. I'm confident you will conduct a thorough review.

Sincerely,

Thom Oommen
2152 East Skye Glen Road
RR#2 Whycomomagh, NS
B0E3M0
(902) 945-2108

Subject	Stakeholder registry HF review process
To	HFReview
Sent	Tuesday, March 11, 2014 1:42 PM

Please mark me as an interested citizen in Dr. Wheelers Commission .

Paul Taylor
163 Cameron Avenue
New Glasgow , Nova Scotia
B2H 1T1

Ladies and Gentlemen of the Wheeler Commission .

I thank you for your service to the province to explore shale gas development in our Province. I have researched at length the history the development of unconventional natural gas.

My reason for doing this is very simple . I have a desire to know what indeed are the most efficient means of sustaining our modern lifestyles. Efficiency is a key to economic prosperity and natural gas use is common among the fastest growing economies in the world.

Electrical generations most efficient means , without Nuclear waste , is indeed the sole domain of Natural Gas.

I believe one cannot ignore the overwhelming benefits of Natural gas power generation without weighting the risks of well development or completion.

The old model of central power generating plants could be replaced via small scale distributed power supplied by Natural gas in all forms. Biogas development currently is the fastest sector of renewable energy development in the European Union.

The History of HF goes back to the late 1940s and the

State of Kansas. A long the way from that first HF well we have the two German states of North Rhine Westfalia and The Lower Saxony using HF methods to extract Natural Gas from Tight sandstone formations. Since has been occurring in two German states with the highest population densities for geopolitical regions in Western Europe since 1961. Any health effects surely must be evident after half a century of HF in a state with 18 million people occupying an area a LA and mass slightly larger than Mainland Nova Scotia ?

The only thing that is really new about HF in our time it seems is the combination of horizontal drilling combined with HF into Shale Formations.

Thanks very much Paul Taylor

A citizen wisnbing for efficiency for our economy

Subject	mess left by previous fracking
To	HFRReview
Sent	Tuesday, March 11, 2014 9:03 AM

Why don't you just review what happened to cause a pond full of poison to sit for months while people tried to figure out what to do with it after a company fracked here in NS- do that , collect all the facts on what went wrong and then share that with us - simple - we've already got a mess on our hands - pretty simple though - pump poison into the ground and where do you think its gong to go ????

Subject	Fracking Review submission
To	HFRReview
Cc	info@JoachimStroink.ca
Sent	Monday, March 10, 2014 2:10 PM

Dear Dr. Wheeler et al,

I am an environmental journalist in Halifax. I have interviewed several experts and read new academic reports concerning fracking as they emerge. As a result of these inquiries, I believe that fracking poses unnecessary risk with little benefit to Nova Scotians.

Specifically, it wastes large quantities of water, pollutes ground and drinking water, risks the health of residents through exposure to toxic chemicals, creates a large waste disposal problem, and has been linked with earthquake activity. The process has also been responsible for gas explosion blowouts and deaths. The workplace safety issue has not been satisfactorily addressed by the industry. Environmentally, many of the chemicals used in the process are considered trade secrets, so the public cannot even be made aware of them.

And all this for a process Cornell researchers have found (see the report, "Methane and the greenhouse-gas footprint of natural gas from shale formations" at www.eeb.cornell.edu/howarth/Howarth%20et%20al%20%202011.pdf) completely inefficient when it comes to producing clean energy via natural gas. According to Robert Howarth et al at Cornell, the harvesting, transport, processing and use of natural gas (fracking) leaks so much methane (a greenhouse gas that impacts climate at 72 times the rate of carbon dioxide) that you can't really call it significantly greener than coal, and it's worse than oil. That's going only on reported leakages.

As a homeowner and parent, I do not want business and government leaders gambling with land or the future of water and air quality. Until this process can be proven unequivocally safe and sustainable, it

should not occur. In short, I believe in the precautionary principle (which Canada has endorsed via numerous international protocols since 1987).

I urge the Nova Scotia Review of Hydraulic Fracturing to recommend a complete ban on the process until such time as proponent companies can prove to the satisfaction of Nova Scotia citizens that the process is safe, sustainable, and has a net positive impact on initiatives to mitigate climate change.

With appreciation,

Chris Benjamin, MES (York), B.Comm. (Dalhousie)
Halifax, NS

Subject	Re: Nova Scotia Hydraulic Fracturing Review
To	HFReview
Sent	Monday, March 10, 2014 10:50 AM

After reading the minutes it seems a big priority of the Panel to influence the First Nations to accept fracking.

Isn't safe drinking water and the conservation of our water of the utmost importance?
What about earth quakes and the toxic wastewater disposal?
The evidence of the devastation to life that fracking causes is already available.
Just watch Jox Fox's Gasland to view first hand the damages this causes to people's lives.
When the risk of such dangers I don't understand why fracking is even being considered.
Fossil fuels are old energy sources causing harm to our planet, people, and wildlife.
The knowledge and capability of new energy sources are available now.
If monies were directed to support the development of solar, wind, and tidal to name a few, it would eliminate the need to continue poisoning our environment with these toxic energy sources.

Thank you for your time,

Jennifer McNish

Subject	fracking review
To	HFReview
Sent	Monday, March 10, 2014 10:10 AM

Wheeler Committee on fracking

There is no doubt that the development of the shale gas industry is driven by the industry itself, not our need to exploit that resource.

The overall result to Nova Scotia will be negative, with the possible destruction of a productive rural lifestyle.

The fact does remain that energy use will continue and that we will need some non renewable energy supplies for years to come. Here is the sticking point, we don't need that gas now or for the foreseeable future, perhaps the technology will improve so extraction can be done safely.

The better road for Nova Scotia to follow is to develop it's more abundant energy sources such as wind ,tidal , ocean and solar. I know many people promote these systems now and that progress is slow, but this can be done and done well and at a profit.

Please stay away from fracking, just look how long it took to clean up the tar ponds and who paid the price.

Mike Cranmer
River John, Nova Scotia

Subject	Fracking
To	HFReview
Sent	Saturday, March 08, 2014 1:08 PM

To Whom It May Concern,

I write to make a submission to the Fracking Review Panel. I am a concerned citizen. I do not believe fracking should be permitted in Nova Scotia because:

- Fracking requires millions of litres of water from our lakes and rivers. Our fresh water is a precious resource and should not be wasted on fracking.
- Fracking introduces tons of toxic chemicals, many undisclosed, into the ground which can pollute our drinking water – many have known and serious health and environmental impacts. To allow the use of these chemical anywhere near our drinking water reserves is unacceptable.
- Fracking produces millions of litres of wastewater and we have no safe way of disposing of it.

Fracking cannot be done safely. Industry “best practices” are not necessarily safe practices. There is no valid evidence that fracking can be carried out without serious risk to the environment, health, climate or rural sustainability. It is too risky to permit fracking in Nova Scotia.

I want my government to weigh all the risks and the benefits of fracking in our province, using solid, independent information based on science.

I want my government to commit to a 10 year legislated moratorium, or a ban, on hydraulic fracturing for unconventional oil and gas in Nova Scotia.

Thank you for your consideration.

Sincerely,

Janet Barlow
wonder@senseofwonderee.ca
(902) 717-4408
6084 Shirley St.
Halifax, NS B3H 2M8

Subject	Fracking
To	HFRReview
Sent	Wednesday, March 05, 2014 5:10 PM

Dear Sirs,

As your review nears its completion, it is becoming abundantly clear that this province and our Political Over-Lords are preparing to lift the moratorium on hydraulic fracking. This process has become one of the most contentious environmental issues the global population has yet to face. Countries world wide have issued moratoriums or out-right bans on this destructive and at the very least, questionable practice.

It is one of the most important environmental issues ever to face Nova Scotia, yet I have not read any notices from Government or your group of academics informing Nova Scotians that the deadline for submissions is March 31, 2014. Obviously, in your rigour to communicate, you simply forgot to follow through on this protocol. I know this will be corrected at once, since the final hour is drawing near.

I will not insult you by listing the countries and cities of the world who have banned this process of hydraulic fracking. It is obvious that a team of your esteem will be well aware of the list. However, and interestingly enough, on March 1st of this year, the City of Los Angeles became the largest city in the USA to place a complete ban on hydraulic fracking following an unanimous vote. Of course, Los Angeles is only the tip of the iceberg --- cities world-wide have done the same.

My ancestors and their friends moved to Nova Scotia in 1760. We claimed the uplands and lowlands, rivers, tributaries, river deltas and marshes the Acadians had been forced to abandon during the Expulsion of 1755 --- of course, by their political over-lords. The Acadians lived on these lands for well over 100 years in harmony with the Mi'kmaq whom, as you well know, lived in this paradise for thousands of years before first contact.

Last evening I was reading an historical work entitled, "A Chapter In THE History Of The Township Of Onslow" by Israel Longworth, written sometime in the early 1880s. He had presented it at a public reading to an assembled group in the Truro area, and in the closing minutes of the evening he ended on a quote from a Matthew Arnold who was a founding father of Onslow, and as far as Longworth was concerned, the quote related to everything of importance in the history of Onslow --- "The harvest gathered in the fields of the past is to be brought home for the use of the present."

These people did not do what they did to see it ruined by Big Oil and Government. Nova Scotians deserve, at the very least, a referendum on this most serious of environmental issues. That is what other enlightened parts of the world afford their citizens, however, a recommendation from your group of an outright ban will do.

Thanking you in my concern,

Daniel Archibald

Subject	CBU Fracking Review Committee
To	HFRReview
Sent	Monday, March 03, 2014 11:10 AM

Hello Fracking Review Committee

We are deeply concerned about the desire to have Shale-Fracking activity in Nova Scotia. With a home in what was the 'Lake Ainslie' Block we became engaged in the citizen movement that successfully encouraged Inverness County to pass it's Anti-Fracking Bi-Law.

From the initial public meeting with Petro-Worth it was very apparent that they had very little respect for the community that would be affected by their activity. Concern increased when the provincial government at that time offered the use of Inverness and Mabou community water to assist in their activity. The more we learned about the process of shale gas development, the more concerned we became.

The scale of this type industrialization of Nova Scotia is massively invasive and disruptive to the way of life that we hold most dear and why we choose to stay and live in Nova Scotia.

I could argue long about why Fracking is inappropriate as a long term energy solution for our future. I encourage you to watch this 2012 Canadian documentary titled "The Sacred Spirit of Water". This documentary very openly discusses the concerns as is being faced by the 1st Nations in Alberta but is very relevant to all of us across Canada where shale gas development is being considered. Here is the link: <http://topdocumentaryfilms.com/sacred-spirit-water/>

It is also our very deep belief that our energy economic ills in Nova Scotia could be largely addressed if the political will were there to take the lead and go way out in front and invest in Solar, particular solar hot water heating as Halifax is investing in with it's Solar City program, <http://www.halifax.ca/solarcity/> .

We feel confident that investing province wide in renewables rather than fossil fuels would increase activity in manufacturing, trades, research and development in all areas of renewable energy that could be applied provincially but yet small scale program. Beyond homeowner scale solar hot water conversion I see every flat roof in this province as mini-power plant waiting to be tapped into.

The time of investing in the extraction industries is over. Global warming and climate change are upon us in very real and tangible ways. It's long over due to provide direct benefits to individual homeowners, rather than the multi-nationals, while at the same time reducing our carbon footprint, greenhouse gases and reliance on carbon based energy while supporting the maximum number of Nova Scotia residents in their attempts to mitigate their dependance on fossil fuels .

Just for the record we do not think that the Muskrat Falls Hydro project is an wise use of limited Nova Scotia dollars as well it is very destructive in its construction to a large eco-system in Labrador.

Let's be leaders in Nova Scotia not followers.

Thank you for you consideration.

Jennyfer Brickenden and Scott Macmillan

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Subject	anti fracking 2.march 2014
To	HFReview
Sent	Sunday, March 02, 2014 10:16 AM

To the Wheeler commission,

we live at the North Shore of N.S. and farmed here since 1978.

We chose this area because of the beautiful surroundings, clean water and the quiet, rural community. Malagash now is one of the hot points for fracking. One reason we got our well water extensively tested and found out that it was excellent quality and was way below any recommended levels including Methane. We are afraid that fracking would change all that to the worst. So in case of fracking if anything happen to the water quality we have the proof who is responsible. A lot of people along the North Shore chose that way of action.

In rural Nova Scotia the roads are in bad condition, at the best of time. Here in Malagash some are almost not passible now. The heavy equipment's related to fracking would damage roads beyond repair. The damage and cost in the aftermath of fracking would be substantial to the Province and will out way the financial benefits .(roads, water, tailing ponds, health of workers and surrounding population.

For all these reasons we recommend to the board to abandon Hydraulic Fracturing in Nova Scotia.

With best regards
Margit and Bernd Lassen
123 Hickey Branch Rd.
Malagash, N.S.
phone 902-257-2669

Subject	Fracking in Nova Scotia
To	HFReview
Sent	Saturday, March 01, 2014 10:25 AM

Dear Dr. Wheeler

As citizens of this lovely province, we are deeply concerned about the possibility of hydraulic fracturing being permitted in Nova Scotia, and would like to add our voice to the growing numbers of people who do not want to see a type of industry that has apparently caused so many problems in other areas.

As owners of a small undeveloped property that is home to deer, foxes, coyotes, porcupines, skunks, squirrels, mice, the odd bear, and a variety of soft and hardwoods, we sincerely hope the province will decide the issue on the side of nature, not this particular industry which could be so harmful for our environment.

Thank you for your attention.

Brian and Alexandra Moore