Hydraulic Fracturing is no threat to drinking water in western Newfoundland

The issue of hydraulic fracturing and how it might affect drinking water is a source of public concern, largely because of a tireless campaign of misinformation on the topic by anti fracking activists and despite the fact that no credible evidence has ever been advanced to show even one instance of this well completion method affecting public drinking water.

How do the activists spread their story? There are a number of methods, but the most common is to use powerful images from the movies “Gasland” or “Gasland 2”.

In “Gasland” the most famous image is of a Colorado home owner igniting water from his tap and watching it burn. This was blamed on fracking. When investigators from the state did some due diligence, it was found that this individual’s water well penetrated several coal seams and that these were the source of the methane in his water. The most famous image in this “documentary” had nothing to do with hydraulic fracturing.

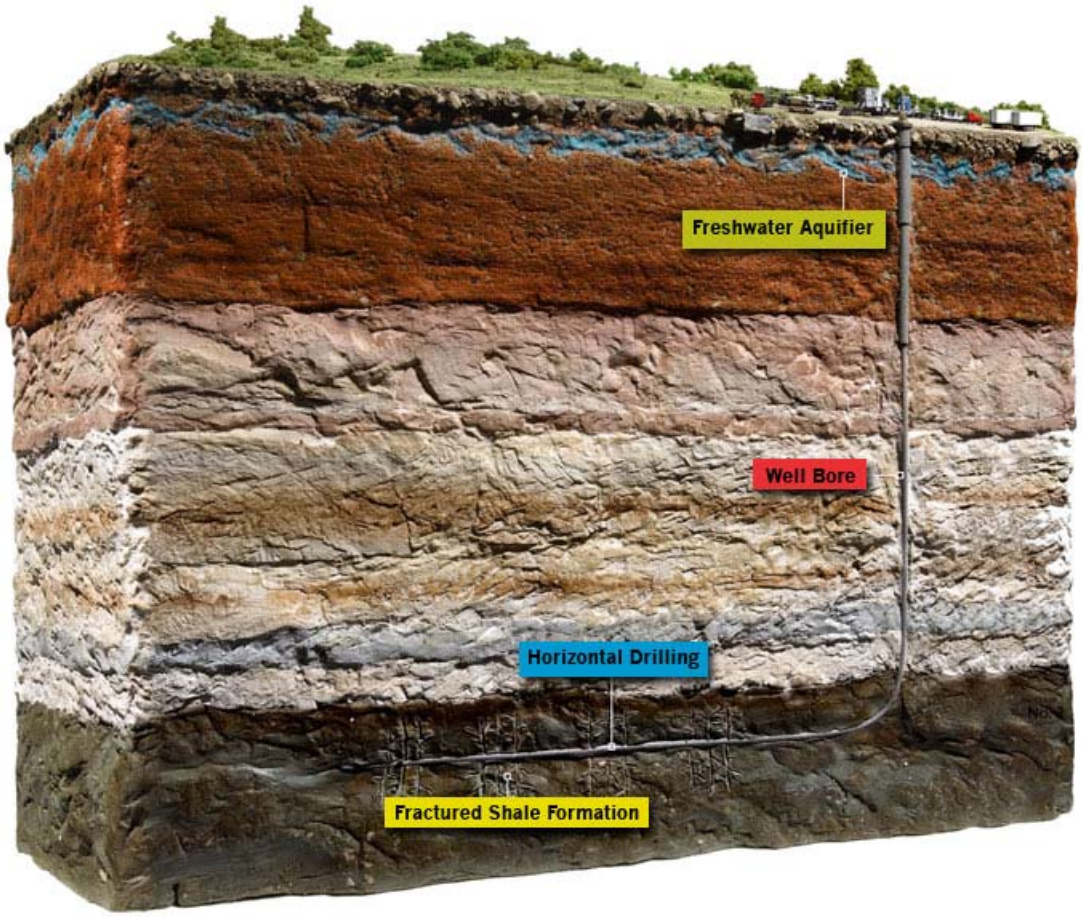
In “Gasland 2”, the misinformation was even more outrageous. The movie featured a Texas homeowner who was suing Range Resources, an oil and gas company, for contaminating his water well. The camera duly showed the man turning on his garden hose and igniting a continuous flame from it. What the camera did not show was that, as discovered in a Court of Law, the other end of the hose was connected to a gas vent. The man lost his lawsuit.

The most powerful way to misinform people is with a camera.

The reality is that, in order to affect drinking water, fluids must be transported from the oil well to the water supply. How can this happen? The hydraulically induced fractures would have to extend through solid rock to connect the oil well with the water well or with the aquifer.

The well bore itself is isolated from the surrounding rocks by several layers of steel casing and cement. The only place where the well bore can communicate with the rock formations is in the places where the final leg of casing is deliberately perforated within the target formation to access the oil.

In the Green Point Shale, this perforation of the casing would take place in the tight rocks 1 – 3 kilometers below any local aquifers. Let’s say for the sake of discussion that the oil well surface location was close to a water well drilled to a depth of 50 meters. Can the hydraulically induced fractures reach the water well? The answer is no.



When we say the rocks are “tight”, we mean that they are impermeable. There are not enough cracks and pores in the solid rock to allow fluids or gases to move around. Hydraulic fracturing involves perforating the well casing at target depth 1 – 3 kilometers below the surface and then using water pumps to fracture the tight rocks and push sand into the new hairline fractures to hold them open.

Once the pumps stop, the fluids then flow through the new fractures towards the oil well bore and through the well up to the surface, because the well offers an escape route from the high pressures at depth to the low pressures at the surface. The fluids never flow in the other direction.

To affect the water well, the fractures would have to extend through **more than 1 kilometer** of solid rock and touch the water well or the shallow aquifer.

Engineers design the frac jobs to keep the fractures within the target formation. They do this by controlling the pump pressure and the volume of water and sand introduced into the target formation.

Most large hydraulically induced fractures reach no more than 100 meters from the well bore. Truly massive frac jobs might propagate a fracture as much as 350 meters from the oil well bore if the engineers design it to reach that far and if that is even possible in the target formation.

In the unique geology of the Green Point Shale, it is unlikely that even the most massive possible hydraulic frac job could propagate a fracture more than 200 meters from the well bore. The Green Point Shale is part of a rock formation known as the Humber Arm Allochthon, which has been transported and subjected to multiple thrusts. The shales (and the tight siltstones and carbonates they are interbedded with) are generally not flat lying; they have been warped and twisted.

Fractures follow the path of least resistance. The picture below, taken at Black Point, shows that it would be difficult to propagate a fracture very far in this formation before running into a twist or curve that would dissipate the energy.

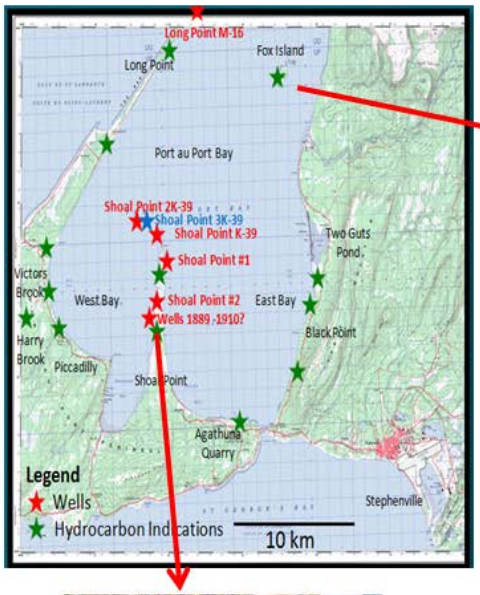
The situation in western Newfoundland is unique. Our exploration licence is under the ocean, so we will never be drilling under towns or farms or ranches, which is commonly done (and done safely) in the United States and in other parts of Canada. Unlike the example above, we will never drill an oil well with a surface location right beside a water well.

The photo below is of a Barnett shale well with the University of Texas, Arlington in the background.

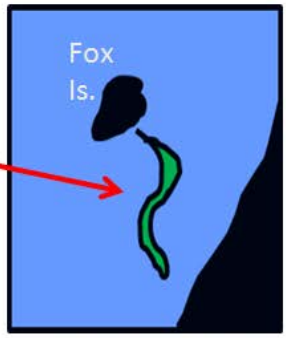
Shoal Point Energy's current operations are at the end of Shoal Point, which is approximately 8 kilometers away from the nearest communities, Boswarlos and Piccadilly Head (see satellite photo below).

It is not possible for hydraulic fracturing operations to propagate a fracture and transport fluids from an oil well to a water well through 8 kilometers of solid rock.

Oil and gas are already seeping all around Port au Port Bay, and it is likely that they have been leaking here for more than 100 million years. The seeps have been observed and reported on for more than a century. These seeps are certainly not caused by hydraulic fracturing, because nobody has ever fraced a well in the area. The seeps are caused by the fact that there is a huge accumulation of oil-bearing rocks under the bay and some of the oil rich shales come to surface (outcrop) around the bay.



Oil and Gas seeps, Oil Stained Outcrops Surrounding The Bay



Satellite Seep Identification

Gas Seep

Oil seep on Shoreline of Port au Port Bay

If we are able to produce oil from deep beneath the bay, it will have no effect on the current seepage at surface. If anything, by removing the oil at source, we will slow down the surface seepage, but the difference would not be measurable for tens of millions of years.

We have heard anecdotal evidence of hydrocarbons in some water wells around the bay, but no organized, scientific study measuring hydrocarbons in drinking water around Port au Port Bay has ever been conducted. We think this environmental baseline data should be collected and then the data points should continue to be monitored during the appraisal phase of exploration and development.

We propose a measured, careful evaluation program involving collection of baseline data, ongoing monitoring, and the drilling of up to 20 appraisal wells over several years at various locations around Port au Port Bay, using hydraulic fracturing programs designed to cause fractures reaching no more than 200 meters from the well bore.

In addition to this letter, I will be uploading a number of peer reviewed studies on the topic of hydraulic fracturing and drinking water, as well as several articles that critique some of the claims made by anti-fracking activists.

Respectfully yours,

M. Jarvis
CEO
Shoal Point Energy

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