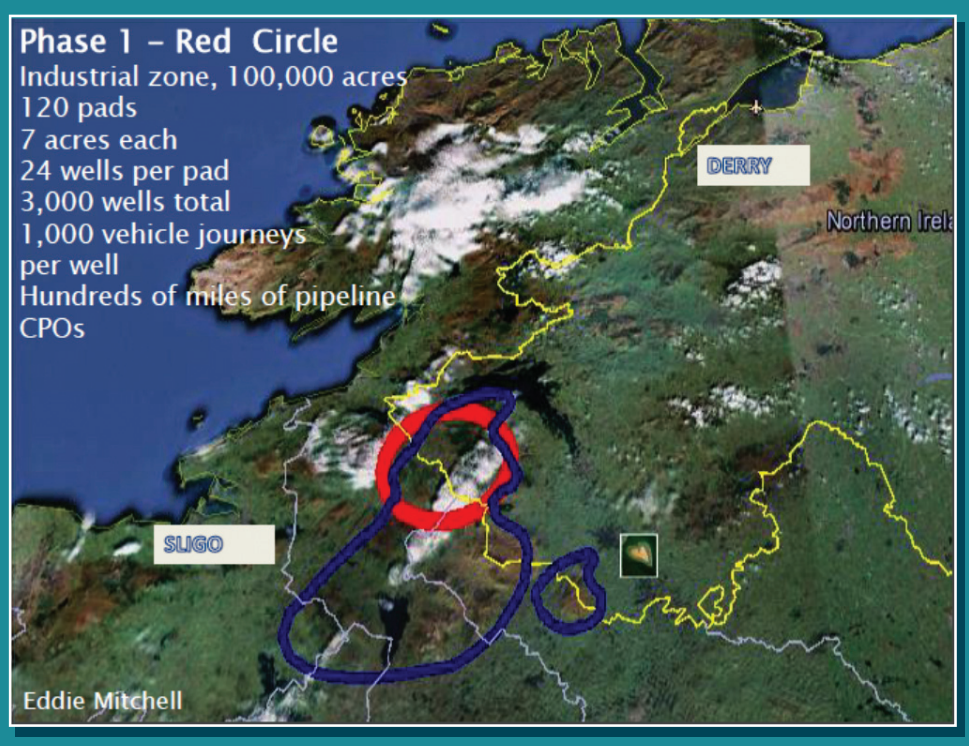
IMPACTS ON WATER

SPILLAGES	LEAKS	WASTE WATER
• Of wastes, chemicals or frack fluids	• Of gases or fluids	• Huge volumes
• Into Lakes, streams or wells	• From wells into aquifiers	• No acceptable disposal route
• Northwest fracking area is in Shannon & Erne basins	• Caused mainly by poor well casings	• Flowback ponds flood, tanks corrode



ACI wish to acknowledge the assistance and support received from Dr. Aedín McLoughlin, Eddie Mitchell and Sergii Marynkovskyi M.Eng., Good Energies Alliance Ireland.

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Bob Seward MSc 2013.

Angling Council Ireland

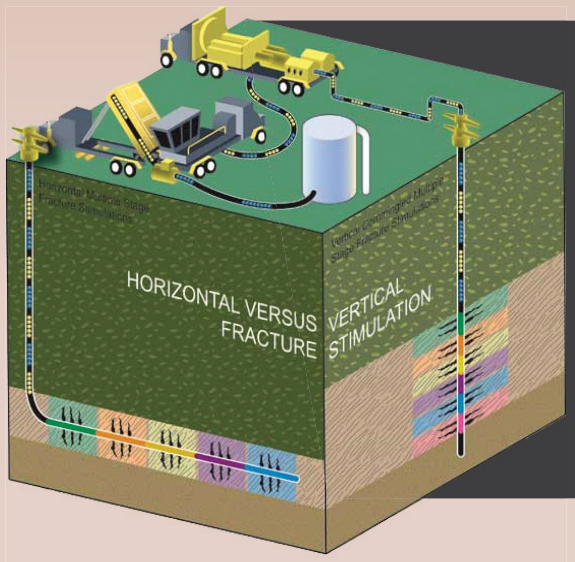
Fracking in Ireland

The process and the potential risks to our water

Modern pad being fracked

Terms used, Conventional and Unconventional Fracking

Conventional fracking process generally involves a small number of wells and vertical bores.
Unconventional fracking involves huge numbers of wells in a vast area with horizontal drilling for up to 2 miles from each well site following the direction of the shale layer.



Conventional vertical fracking used since 1940s and **modern horizontal fracking**, widely used in shale gas extraction since 2005 using a different mix of chemicals, deeper and horizontal drills, and millions of gallons of water per well. (Scale equivalent to small grocery store vs large supermarket)

The whole life cycle of modern shale gas extraction includes:

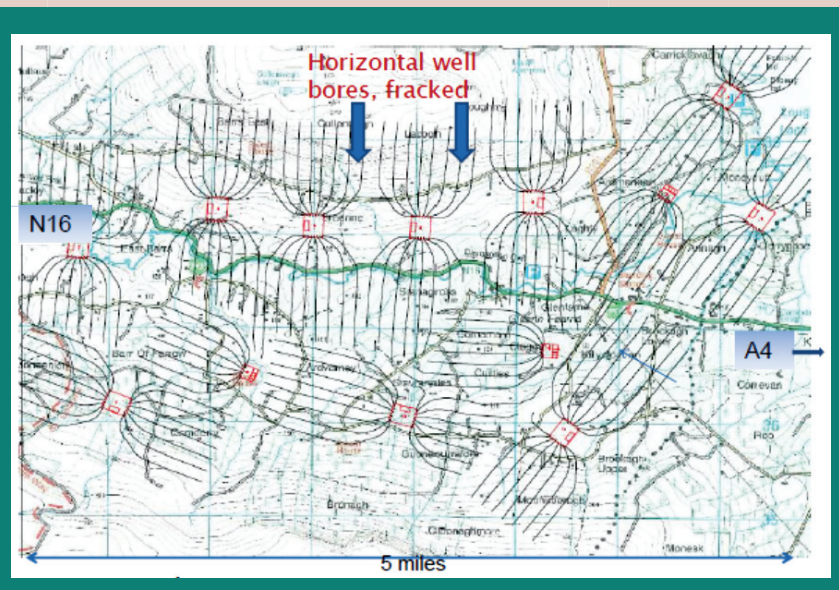
- construction of 7-acre pads (mining sites) with up to 32 wells on each
- drilling vertically, then horizontally a mile or more underground
- hydraulic fracturing pumping millions of gallons of slickwater frack fluids with chemicals and silica sand at high pressures
- flowback of fluids and gases
- treatment of waste fluids
- gas extraction, compression and refining, and transport.

The associated risks are drastically increased when you consider the heavy industrialisation involved in moving materials on and off site during this unconventional fracking process.

The risks to water sources are far greater now for Ireland

- As the number of wells and the volume of waste increase, the probability of accidental release of hazardous materials into the air, surface water and ground water increases.
- Cumulative effects on air and water from these and from purposeful emissions into the atmosphere (e.g. flaring) and releases into groundwater are unknown.
- Increased pollution and burning of natural gas, including methane, ethylene, propane and butane increase emissions of greenhouse gases.

WHAT HAPPENS UNDERGROUND



Drawn to scale

RISKS TO AIR AND WATER