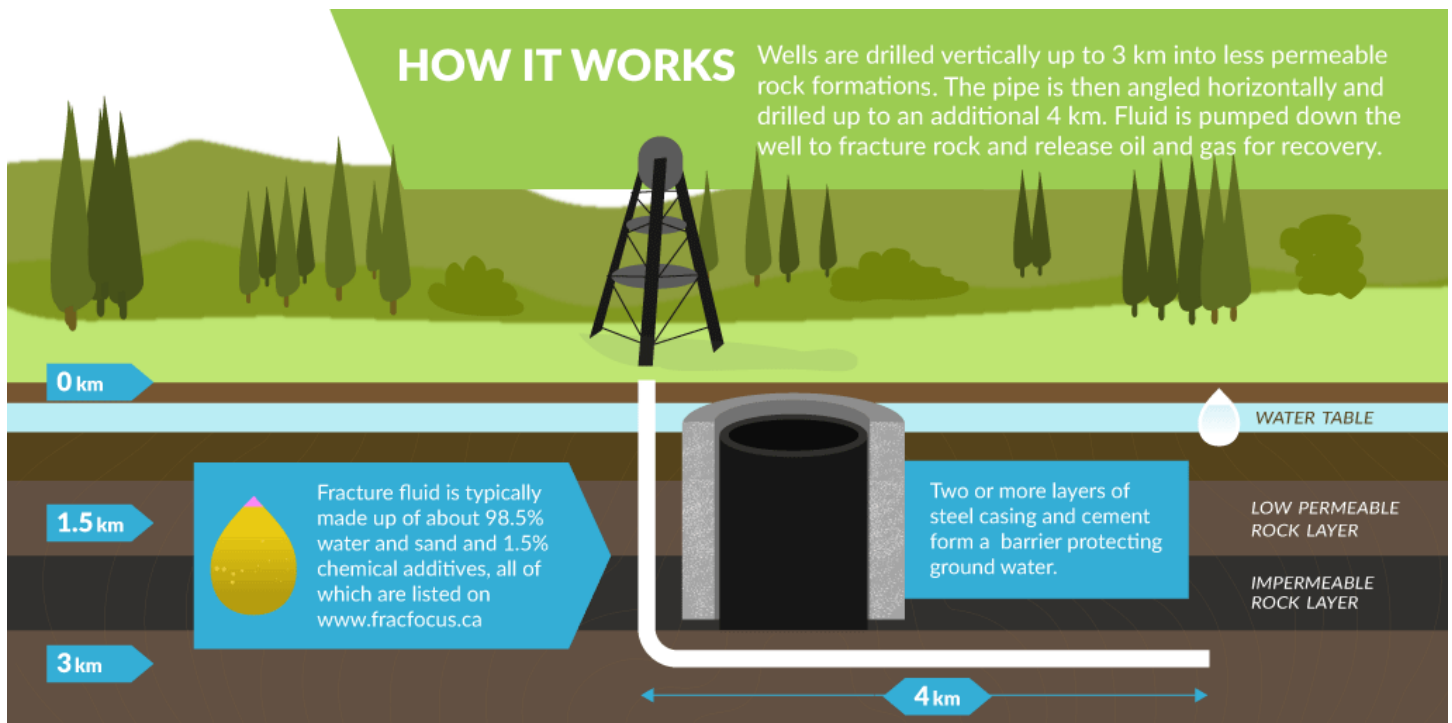


Hydraulic Fracturing

Facts and Stats

How it works

- Hydraulic fracturing is the process of pumping fluid down a well into a rock formation to create enough pressure to crack, or fracture the targeted rock layer. Sand is often used to prop open these cracks so that oil and gas can flow to the drilled well.
- Horizontal drilling techniques can increase resource recovery while reducing surface impacts because one horizontal well can access resources that would require several vertical wells.
- Today, over 80 per cent of all new oil and gas wells in Alberta utilize horizontal drilling techniques.
- Multistage hydraulic fracturing combines horizontal drilling with hydraulic fracturing at multiple intervals along the horizontal portion of the well.
- The use of hydraulic fracturing is highly regulated in Alberta. Operators must adhere to strict requirements related to water usage, storage, and disposal. Operators are required to publicly disclose information on fluids used in hydraulic fracturing on the website www.fracfocus.ca.



Find additional information on hydraulic fracturing in Alberta at: www.youtube.com/watch?v=A74PLdXDIWM
and at: <https://www.aer.ca/about-aer/spotlight-on/unconventional-regulatory-framework/what-is-hydraulic-fracturing>

Hydraulic Fracturing: Facts and Stats

History

- Hydraulic fracturing has been safely used in Alberta on more than 180,000 wells since the technology was introduced in the 1950s.
- More recently, the combination of horizontal drilling and multistage hydraulic fracturing has allowed the development of Alberta's oil and gas resources from areas that were not feasible in the past.
- Starting in 2010, total crude oil production in Alberta reversed the downward trend that was the norm since the early 1970s. In 2010 and 2011, light-medium crude oil production began to increase as a result of increased, mainly horizontal, drilling activity with the introduction of multistage hydraulic fracturing technology.

Safeguards

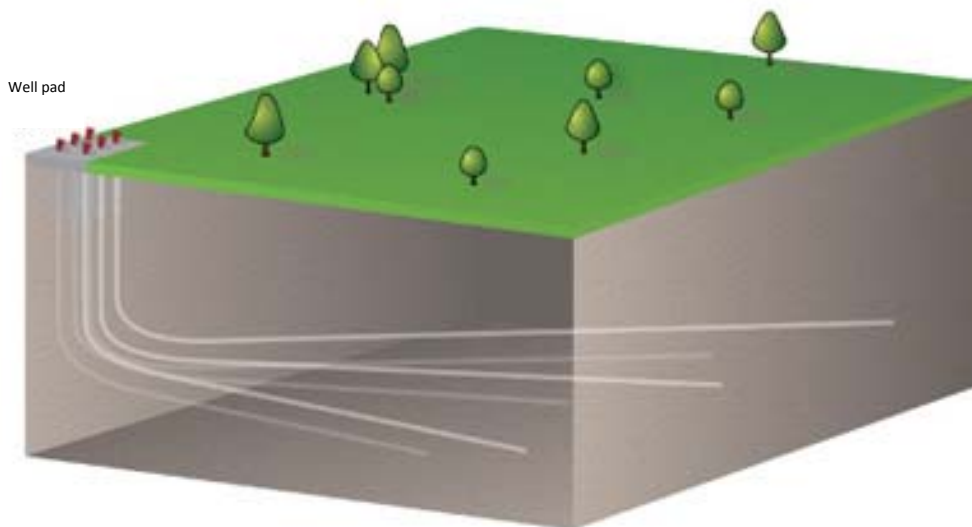
- Steel casing and cementing requirements to depths below the protected groundwater zone combined with stringent operating practices help protect groundwater.
- The use of hydraulic fracturing techniques at shallow depths is highly restricted in Alberta.

- Strict rules govern the use, storage, transportation, and disposal of fluids from hydraulic fracturing operations.
- The use of hydraulic fracturing fluids that may impact drinking water is prohibited within specific distances from groundwater. Strict rules also limit the use of hydraulic fracturing near water wells.

Benefits

- Multiple wells from one well pad help reduce surface impacts with fewer roads and pipelines required.
- Technological advancement has set the stage for future growth in Alberta's conventional oil and natural gas industries.
- Many Albertans rely directly or indirectly on the mining and oil and gas extraction industry for employment. In 2016, more than six per cent of Albertans were employed directly in the industry.

Horizontal Drilling



Graphic courtesy of the Alberta Energy Regulator