

Retrospective Case Study of Perceived Water Well Interference by CBM Fracking

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Summary

A 2004 case study of perceived water well interference by 'stimulation' of a coal bed methane well with N₂ (9 MPa) about 1200 meters away was reviewed. Although an official complaint was never filed with the regulator, the energy company contracted an environmental consultant to review the homeowner's concerns. These reports, water well records, baseline water well testing, energy well activities in the region, and discussions with various individuals involved were reviewed.

The timeline of water well events and details surrounding the CBM well activity during and after the N₂ stimulation suggest the water well could have been affected by the stimulation. The energy well perforations were unusually shallow for the region, and similar in elevation to the domestic water well screen. The shallowest energy well perforations were cement--squeezed on two subsequent occasions to mitigate groundwater flow into the CBM well, which was abandoned about seven months after the initial stimulation.

Although the evidence suggests that the energy well stimulation may have been related to the perceived domestic water well interference, subsequent stimulation in energy wells located even closer to the rural residence (but perforated at greater depth) did not cause observed interference in a replaced domestic water well on the same property.

This case study highlights water well complaint challenges for both the energy industry and domestic well owners contributing to a lack of a 'social license to operate'. Dedicated groundwater monitoring systems are seldom used to evaluate impacts in the shallow groundwater zone. The industry deals with a large fraction of apparently invalid water well complaints. In part in an effort to minimize invalid water well complaints, they i) have not historically disclosed details about confirmed water well complaints that are appropriately addressed and ii) do not provide any notification of energy activities in a given region. The latter can prevent the timely collection of appropriate information, with subsequent the difficulties in conducting a 'post--mortem' analysis and perceived water.