

Petrochemistry 2015 :The impact of abandoned fracking sites on brownfield funding

Clifford A Lipscomb

Greenfield Advisors LLC, USA

Abstract:

When land researchers discuss brownfields, often former industrial sites (e.g., steel mills), automobile shops, salvage yards, dry cleaners, or illegal drug laboratories come to mind. Considering that the US has approximately 1.1 million oil and gas wells and considering the present state of the “fracking boom”, the subsequent question involves mind: do abandoned fracking sites qualify as brownfields under the present definition? the normal definition of a brownfield is real estate that has potential or actual contamination issues which will cause reuse or redevelopment issues. After discussing this issue, the paper examines the trends in EPA and state brownfield funding for the redevelopment and reuse of abandoned fracking sites. With numerous fracking wells being drilled, the potential demand for state and federal brownfield monies (i.e., grants) is predicted to surpass potential funding supply within the coming decades.

Our study was the primary to look at the info contained within the British Columbia Oil & Gas Commission Wellbore (OCG) Leakage Database. We found that nearly 11 per cent of all oil and gas wells had a reported leak, together releasing 14,000 cubic metres of methane per day. this is often quite double the leakage rate of 4.6 per cent in Alberta, which can have less stringent testing and reporting requirements. Our research in northeastern B.C. also found weak regulations on mandatory reporting, continued monitoring and thus the use of protective measures — oversights that represent risks for the environment.

But these structures aren't always fail-safe. Deficiencies within the design or construction of the wellbore, or weakening of the pipe or sealant over time, can connect layers that might naturally remain geologically isolated. During a deficient well, the buoyancy of the underground gas causes the fluids to be pushed towards the surface through these connections. Wellbore leakage can occur along actively producing wells or wells that are permanently abandoned after their productive life is over.

The possibility of leakage from these wells has raised environmental concerns, especially since leaky wells are likely under-reported. additionally to the discharge of greenhouse gases, which contribute to heating and global climate change , these leaking wells could contaminate groundwater and surface water with hydrocarbons, chemicals contained in fracking fluids and brines.

Unfortunately, there's no record of the frequency of testing for wellbore leakage in B.C., nor are there requirements to watch deep aquifers near oil and gas wells for contamination. Although current regulations stipulate that each one incidences of leakage must be repaired before well abandonment, there's no monitor program in situ for leakage after wells are permanently plugged, buried and abandoned. There is also the likelihood that the venting gases will contain hydrogen sulphide gas, which is poisonous and deadly at high concentrations.

Only wells that show wellbore leakage must be reported to the B.C. OGC and included within the database. consistent with regulations, all wells drilled after 2010 should be tested after initial completion and every one wells drilled after 1995 tested upon abandonment. There is no monitor

program in situ for the inspection of wells that have already been abandoned. These abandoned wells could leak for an extended time before the leakage is detected and repaired. Recent studies have also documented methane emissions from abandoned oil and gas wells in Pennsylvania.

Shale gas exploitation can have environmental impacts long after a well has been abandoned. Provinces should implement regulations that need monitoring wells after abandonment, reporting the results and applying corrective measures to prevent leaks from abandoned wells. To this day, only a few field investigations are administered in B.C. to directly monitor the leakage from abandoned wells. One showed that 35 per cent of investigated abandoned wells exhibit emissions of methane and hydrogen sulphide gas or a mixture of both.

The discrepancy between the database reports and therefore the field study — also as recent observations that human-made methane emissions are underestimated by 25 per cent to 40 per cent — suggest that wellbore leakages in B.C. may go unreported. To enhance health and environmental safety, active surveillance and monitoring are necessary. Many have had homes, buildings, or public parks built over top of them. A number of them were never plugged, and lots of these that were plugged have since failed and are leaking oil, gas, and toxic formation waters (water from the geologic layer being tapped for oil and gas). Yet this issue has been largely ignored. Oil and gas wells still be permitted inconsiderately for failing and failed plugged wells. When leaking wells are found, often nothing is completed to repair the difficulty.

As a result, greenhouse gases escape into the atmosphere and present an explosion risk for homes built over top of them. Groundwater, including sources of beverage, is understood to be impacted by abandoned wells in California, yet resources aren't getting used to trace groundwater contamination. The term “abandoned” typically

refers to wells that are taken out of production. At the top of their lifetime, wells could also be properly abandoned by operators like Chevron and Shell or they'll be orphaned. When operators properly abandon wells, they plug them with cement to stop oil, gas, and salty, toxic formation brine from escaping the formation that was tapped for production. Properly plugging a well helps prevent groundwater contamination and further air quality degradation from the well. The well-site at the surface can also be regraded to an ecological environment almost like its original state.

Wells that are improperly abandoned are either plugged incorrectly or are “orphaned” by their operators. When wells are orphaned, the financial liability for plugging the well and therefore the environmental cleanup falls on the state, and therefore, the taxpayers.

Biography :

Clifford A Lipscomb is the Director of Economic Research at Greenfield Advisors, a Chartered Valuation Surveyor, and has more than 18 years of experience in economic analysis, statistical analysis, consulting, and teaching. He holds Baccalaureate degrees in Economics and Sociology from Berry College as well as a PhD in Public Policy from the Georgia Institute of Technology. He serves as an Associate Editor of the Journal of Real Estate Literature. He won the 2014 International Association of Assessing Officers' Bernard L. Barnard Outstanding Technical Essay Award. He is currently a visiting Scholar at the Federal Reserve Bank of Atlanta.

cliff@greenfieldadvisors.com