

**The California Oil and Gas Report**

# Fracking Risks and Risk Management

Posted on [May 8, 2013](http://www.caloilgas.com/insurance-part-2/) by [Editor](http://www.caloilgas.com/author/Editor/)

#### By Dennis R. Luna and Michael Newman

##### Part 2 of a 4-part series

Oil and gas operations by their nature involve some environmental risks, which are well known and typically well managed. But shale gas fracking operations are associated with additional risks for which the industry is still developing mitigation techniques.

One of the unique aspects of fracking operations is the transportation, storage, and use of millions of gallons of water.

This intensive use of water resources can create a conflict of priorities and risks to local area residences. Can the municipal system support such an intense use of water? What will be the impact of withdrawing water from the shallow aquifers? Is there a potential to impact other groundwater users in the area by lowering the water table? The effects of this heavy use of a resource need to be carefully considered and managed so as to minimize the potential impacts to the surrounding areas.

Large quantities of frack water and flowback water must be handled at the drilling site and stored in holding ponds and frack tanks. Produced water may contain fracking additives. Holding ponds and tanks can represent short- and long-term risks of environmental damage.

If a heavy rainstorm causes a holding pond to overflow, additives in the water could cause environmental impacts to nearby land and water resources. If the pond is not well sealed, slow releases into the soil and groundwater could impact shallow aquifers.

These risks can be managed. Ponds can be designed with high enough banks to prevent overflow from almost any flood, and can be reinforced with synthetic liners to halt leaks into the ground.

Similar protective measures can be taken when operators construct pits to store drill cuttings, drilling muds and cement.

Another area of risk is the potential for releases from vertical casings of wells. These can impact shallow aquifers with fracking fluid or recovered methane. Typical well construction includes the use of several concentric casings, starting with the largest “conductor casing” used to stabilize shallow soils while drilling the well. Next is the “surface casing,” to establish a seal between the borehole and shallow formations nearby (which may include freshwater aquifers).

The primary risk-management tool associated with this risk is monitoring of nearby groundwater wells for exposure to fracking fluid constituents or natural gas. This might include sampling water wells within 1,000 feet of the well head for indicator parameters before and after drilling.

This monitoring helps to protect both the operator and the water well owners in the event a claim is made that the oil or gas well has impacted the aquifer water.

If the baseline assessment shows that the impact (such as methane) had been occurring naturally before the oil or gas well was drilled, the operator has a good defense against spurious claim.

If, on the other hand, baseline sampling shows there were no prior impacts, arguments about  what caused the impact (i.e., whether it is naturally occurring methane or an impact from fracking) are minimized.

One significant risk of any oil and gas operation is the potential for a “blowout” or loss of well during the drilling phases. In the case of shale gas drilling, this can also include the loss of “flowback” water and fracking chemicals from the production site.

The primary risk is the impact on surrounding farmland, homesteads and waterways. Potential damage can be much more costly if the well is in more populated area.

As with any oil and gas drilling operation, these risks are managed through sound drilling techniques, but blowouts can occur even when these techniques are used.

Finally, there are risks associated with the handling and storage of fracking additives at the drill pad location.

The tools for managing this risk are familiar to any prudent operator: proper material-handling techniques to maximize safety, and having contingency plans in place so response to a spill is quick and effective.

Dennis R. Luna, Esq., is the Editor In Chief of the California Oil and Gas Report and Managing Partner of Luna & Glushon. He is considered one of the top energy and real estate attorneys in California. Dennis is a graduate of Harvard Law School and a licensed Professional Engineer. He holds a Master of Science in Petroleum Engineering from the School of Petroleum Engineering at the University of Southern California, where he also earned a Bachelor of Science in Petroleum Engineering and a Master of Business Administration.

Michael Newman, the President of [*International Energy Insurance Brokers*](http://www.enrygyinsurancebrokers.net/), has specialized in providing insurance services to the oil and gas industry for almost 30 years. Mr. Newman has a Law degree from the University of Cambridge (UK) and an MBA from the USC Marshall School of Business.