

# Niobrara Shale Development

## Water Quality Questions and Answers

### Water Quality Division/Wyoming Department of Environmental Quality

Question: I am concerned that drilling for oil and hydraulic fracturing (fracking) is going to cause contamination of my drinking water well. Is my concern justified?

Answer: If done correctly and in accordance with the requirements of the Wyoming Oil and Gas Commission (WOGCC), oil and gas drilling and fracking should not cause contamination of your well. While no one can guarantee that an accident or equipment failure will not occur, the Niobrara Shale play is an extremely high profile development and both the industry and regulatory agencies are watching the development carefully to insure environmental protection requirements are being met. It should be noted that fracking has been a common practice in the oil & gas industry for many decades. It is fracking of shale formations which is a relatively new development.

Question: Media reports suggest that fracking has caused water well contamination in Pinedale and Pavillion Wyoming. Why will the Niobrara Shale development be any different?

Answer: There is no evidence that fracking has caused any water quality problems in Wyoming. In Pinedale contamination of some shallow industrial water supply wells was probably caused by lack of backflow prevention on vacuum trucks using the wells. In Pavillion, oil and gas development has been on-going for about 50 years. While the exact source of pollutants in some residents' wells near Pavillion has not been established, a working group will be looking at older pit closures and oil & gas well drilling procedures.

It should be noted that in both Pavillion and Pinedale, domestic water wells have been drilled into shallow intervals containing natural gas.

Question: Do you know what is in the fracking fluid?

Answer: According to the WOGCC, Niobrara Shale fracking fluid is +80% fresh water, 19% sand, and .07% additives. Primary additives are sodium chloride for clay control and a breaker to decrease viscosity. A surfactant, a gelling agent, a biocide, and a corrosion inhibitor are also usually used. One company (SM Energy) is planning to frack with carbon dioxide.

Newly adopted WOGCC regulations require operators to provide the Commission with the exact chemical content of their fracking fluid. While the information may be held as proprietary, if there is ever a question of aquifer contamination, the Commission will be able to provide DEQ with the chemical composition of the fracking fluid.

Q: How far is it from the bottom of my water well to the Niobrara formation?

A: Most water wells in Southeast Wyoming are less than seven hundred feet deep. The Niobrara is about eight thousand feet deep. This means that there is over seven thousand feet of vertical separation.

Question: Where can I get information on existing ground water quality.

Answer: A table with historic water quality on 144 wells in Laramie County can be found in Appendix A of the following document which is available on the internet:  
[http://library.wrds.uwyo.edu/wwdcrept/Laramie\\_County/Laramie\\_County-Water\\_Resource\\_Atlas-2008.html](http://library.wrds.uwyo.edu/wwdcrept/Laramie_County/Laramie_County-Water_Resource_Atlas-2008.html)

Question: Should I have the water quality of my well tested before drilling begins?

Answer: Knowing the background quality of your well could be very valuable information should a question of contamination ever arise.

Question: Will DEQ sample my well and analyze the quality of the water in my well?

Answer: Not usually. Since individual water wells are not "public water supplies" as defined under state and federal law, DEQ has no regulatory authority or responsibility for such wells. However, if there is a question of contamination of the aquifer serving those wells, DEQ does have authority and responsibility under its pollution control mandate. In such cases DEQ may ask individual residents for permission to sample their wells.

Question: If DEQ does not normally analyze the water from individual wells, where can I get that work done?

Answer: Private laboratories as well as the Wyoming Agriculture Dept. lab in Laramie (307-742-2984) will analyze well samples for a fee. Before selecting a lab it may be prudent to check the laboratory's certifications. Preferred labs are certified by US EPA. Consult the "Environmental Testing" or "Water Testing" on the internet or those sections of your local Yellow Pages for a list of laboratories within your area.

Question: If I have my well water analyzed, what chemicals should it be tested for?

Answer: DEQ has developed two guidelines that provide additional information on establishing 'baseline' quality of well water, and suggestions for sampling and testing water wells in areas of oil and gas development. These guidelines are available on DEQ's website at <http://deq.state.wy.us/wqd/groundwater/index.asp>

Question: I've had my well water analyzed and one or more of the constituents are in excess of federal drinking water standards. What should I do?

Answer: Many ground waters in Wyoming have inorganic chemical constituents which naturally exceed the safe drinking water levels established by the US EPA. Minor exceedences of levels for some constituents are probably not worrisome for most people, exceedences of levels for

other constituents, especially by large amounts, may mean that you should consider another drinking water source. DEQ has developed two guidelines that provide additional information on establishing 'baseline' quality of well water, and suggestions for sampling and testing water wells in areas of oil and gas development. These guidelines are available on DEQ's website at <http://deq.state.wy.us/wqd/groundwater/index.asp>. Consultation with your physician, your county health department and/or the Wyoming Health Department is recommended in such cases. You should also inform the DEQ of your sample results if contamination is found. If the DEQ determines that the contamination is due to natural causes, it will take no further action. However, if it appears that the contamination may be man induced, DEQ will do further investigation into the possible cause.

Question: I am concerned that surface water and ground water may be contaminated by runoff from the drilling operations or from spills out of waste ponds or trucks. What assurance do I have that such pollution sources are under control?

Answer: All construction activities which disturb more than an acre are required to have storm water pollution prevention plans in place and DEQ does random checks to insure that this requirement is met. Trucks do have the potential to spill due to accidents or carelessness. Diligence on the part of the oil & gas operators and the trucking companies coupled with a strong enforcement program by the regulatory agencies is the approach we use to minimize spills.

Question: Can my groundwater be contaminated by seepage out of waste ponds at the drill rig?

Answer: The WOGCC has liner and construction requirements for drilling fluid ponds. In addition, for the Niobrara Shale play, the WOGCC is requiring that fracking fluids be held in tanks rather than ponds.

Question: What should I do if I observe a spill that someone has failed to clean up?

Landowners who observe spills or other activities that pose a threat to surface or groundwater can contact DEQ's Spill and Complaint hotline at 307-777-7781 or provide information online at DEQ's website (<http://deq.state.wy.us/>) by clicking on the link "*Got a Spill?*".